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TRIANGULATION IN SOUTH CAROLINA

(1927 DATUM)

PART 2

First- and Second-Order Triangulation
and Traverse in Southeastern
Part of State

BY

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TRIANGULATION IN SOUTH CAROLINA (1927 DATUM)

PART II

FIRST- AND SECOND-ORDER TRIANGULATION AND TRAVERSE IN SOUTHEASTERN PART OF STATE

GENERAL STATEMENT

Previous triangulation publications of the United States Coast and Geodetic Survey have usually included the control data of a State in one large volume. Because of the inconvenience to the engineer in using a large publication in the field, the triangulation of South Carolina will be published in several parts, this publication being Part II of the series. By this method the engineer may obtain data for only that part of the State in which he is particularly interested.

In dividing the State into the several parts for publication the division was made along the county boundary lines. This publication contains complete data for all the control triangulation and traverse of the counties in the southeastern part of the State as shown on the index sketch (fig. 3) at the back of this volume. The locations of the arcs and traverses are shown also on the index sketch. The field observations for this triangulation and traverse were completed by the United States Coast and Geodetic Survey in 1938.

The geographic and plane-coordinate positions are based on the North American datum of 1927. On page 4 are given instructions on how to find data for a given station or stations in a particular region.

This volume is the twentieth of a series of publications, each of which contains the geographic positions on the new datum, and the descriptions and other data, for the available first-order (and, in some cases, the second-order) triangulation and traverse of a State, or occasionally of two States. The following volumes have already been published:

| | Special pub. No. |
|--|---------------------|
| Triangulation in Colorado..... | 160 |
| First-Order Triangulation in Southeast Alaska..... | 164 |
| First- and Second-Order Triangulation in Oregon..... | 175 |
| First-Order Triangulation in Kansas..... | 179 |
| First-Order Triangulation and Traverse in Louisiana..... | 183 |
| First-Order Triangulation in Missouri..... | 186 |

| | Special Pub. No. |
|--|---------------------|
| First-Order Triangulation and Traverse in Arkansas..... | 187 |
| Triangulation in Texas..... | 189 |
| Triangulation in Oklahoma..... | 190 |
| First- and Second-Order Triangulation and Traverse in North Carolina.. | 192 |
| First- and Second-Order Triangulation in Tennessee..... | 198 |
| First- and Second-Order Triangulation in California..... | 202 |
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| First- and Second-Order Triangulation in Michigan..... | 214 |
| First- and Second-Order Triangulation and Traverse in North Carolina, Volume II..... | 218 |
| Triangulation in New Mexico..... | 219 |
| Triangulation in South Carolina, Part I, First- and Second-Order Triangu- lation in northwestern part of State..... | 220 |

ARCS INCLUDED IN THIS PUBLICATION

The triangulation and traverse included in this publication consists of four first-order arcs, three second-order arcs, and three second-order traverses. Portions of several general arcs and traverses are included only so far as they lie within the limits of the southeastern part of the State. These arcs and traverses form a complete control survey system for the southeastern part of the State which is nearly an ideal system. The following list shows the various arcs of triangulation and traverse, the chiefs of party by whom they were established, and the years in which the work was done.

| Arcs | Chief of party | Year |
|---|----------------------|--------|
| First-order: | | |
| Augusta, Ga., to Beaufort, S. C..... | C. H. Sinclair..... | 1890 |
| | W. B. Fairfield..... | 1901-2 |
| | H. C. Warwick..... | 1932 |
| | C. D. Meaney..... | 1932 |
| Beaufort, S. C., to Jacksonville, N. C..... | do..... | 1932 |
| Ridgeland, S. C., to Jacksonville, Fla..... | do..... | 1932 |
| Tigerville to Georgetown..... | R. D. Horne..... | 1934 |
| Second-order: | | |
| Chappells to Charleston..... | J. Bowls, Jr..... | 1935 |
| Allendale, S. C., to Odum, Ga..... | M. A. Hecht..... | 1935 |
| Silver City, Ga., to Hardeeville, S. C..... | do..... | 1935 |
| Second-order traverse: | | |
| Norfolk, Va., to Savannah, Ga..... | M. E. Lutz..... | 1918 |
| Beaufort to Charleston..... | E. B. Roberts..... | 1924 |
| | L. P. Rayner..... | 1924 |
| Augusta, Ga., to Port Royal, S. C..... | W. B. Fairfield..... | 1901 |
| | W. H. Burger..... | 1907 |

COMPUTATIONS

The adjustments of the Augusta, Ga., to Beaufort, S. C., arc and the Beaufort, S. C., to Jacksonville, N. C., arc were at first fitted to the original net readjustment of the eastern part of the United States without including any part of the net. A subsequent adjustment with junction figures was made for the main arcs in this general area and subsidiary arcs and traverses were then fitted in. The adjustments were made under the supervision of the author. The descriptions of stations and sketches were prepared under the supervision of William M. Gibson. Valuable counsel was given by H. G. Avers

and C. H. Swick. In the computation and assembly of data much assistance was rendered by C. N. Claire, J. L. Stearn, and D. C. Ritchie.

In this volume are included several stations established by other agencies, namely, United States Geological Survey (U. S. G. S.); South Carolina Geodetic Survey (S. C. Geod. S.); Georgia Geodetic Survey (Ga. Geod. S.), and the United States Engineers (U. S. E.). These stations have been occupied or observed by the United States Coast and Geodetic Survey.

In addition to the stations which form the main network of triangulation in the southeastern part of the State, a number of objects, such as water tanks, stacks and church spires were observed from stations of the main scheme. The geographic positions of these supplementary stations have been computed and the data are included in the tables of geographic positions, pages 6 to 65. These stations are shown on the sketches and in the index, but only a few of them are described, as in most cases the name of the supplementary station is sufficient for its accurate identification by the engineer who may wish to use it.

CLASSIFICATION OF TRIANGULATION AND TRAVERSE

Triangulation is divided into different classes according to accuracy. The ultimate criterion applied in classifying the different grades is the actual error in length of any line. This is indicated by the discrepancy between the measured length of a base line and its length 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. The adjustment of the triangulation should be carried to the point where the side and angle equations have been satisfied before making the comparison between the computed and measured lengths.

To secure the accuracy indicated above, certain standards are adopted for the field work, the most important 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 appreciably exceed 1 second and the maximum triangle closure must not exceed 3 seconds; in second-order triangulation the average closing error must not exceed 3 seconds, and the maximum 5 seconds; and in third-order triangulation the average closing error must not exceed 5 seconds, and the maximum 10 seconds.

Traverse is also divided into different classes according to accuracy. The rule applied in classifying the different grades is based upon the position closure, either of closed loops of traverse or of connections to the fixed triangulation net. In first-order traverse the position closure must not exceed 1 part in 25,000, in second-order traverse 1 part in 10,000, and in third-order 1 part in 5,000. The engineer should use only adjusted data with which to connect his work and should evaluate these data according to the class of triangulation or traverse by which they were determined.

EXPLANATION OF TABLES OF GEOGRAPHIC POSITIONS

In the tables of geographic 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. The conversion from seconds of latitude and longitude to meters are given for those positions which are along the Atlantic coast.

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 usually followed in 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). Points whose positions are derived from a measured distance and azimuth are listed to thousandths of a second and are marked as being without check.

Points, the positions of which are marked as being without check, should be used by the surveyor with extreme caution. Many such positions are of sufficiently high order of accuracy to serve as control for ordinary mapping, but the engineer should by his own observations determine if the position used is free from blunder. When he does this, the accidental errors which remain because of lack of adjustment will not be of consequence in ordinary cases. When positive accuracy of a definite order is desired, the engineer should use only adjusted data, evaluating them according to the class of triangulation by which they were determined.

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.

If the station is described, the letter "d." is given in the first column of the table; and if described and marked, the letters "d. m." are given. Other letters used in this column are "n. d.", not described; "r.", recovered; "l.", lost; and "d. n. m.", described and not marked.

The tables may be conveniently consulted by using as finders the sketches and the index at the end of this publication. In the second column of the index will be found for each point a reference to the

page on which its geographic position is given, in the third column the page on which the description and plane coordinates (and elevation, if any) are given, and, finally, in the fourth column, the figure number of the sketch on which the station 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 6, the azimuth from Bunch to Vaughn is $50^\circ 53' 25''.12$, while the back azimuth, or azimuth from Vaughn to Bunch is $230^\circ 48' 43''.62$.

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 determined and may be used as the starting azimuth for traverse lines and other local surveys. Where the distance to the azimuth mark is less than one-fourth mile from the station mark, the azimuth is listed to whole seconds. In no case is an azimuth mark listed where the distance is less than one hundred meters from the station mark.

GEOGRAPHIC POSITIONS

Augusta, Ga., to Beaufort, S.C. arc

U. S. COAST AND GEODETIC SURVEY

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | | | | | | | | | | | |
|-------------------------------------|------------------------|----|--------|-------------------|---------|----|-------|--------------|----|-------|--------------|--------------------|-----------|----------|-----|----|-------|--------------|----|-------|--------------|-----------|-----------|----------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET | | | | | | | | | | |
| Principal points | | | | | | | | | | | | | | | | | | | | | | | | |
| Vaughn (Ga.), 1932, r. 1934 (d.m.) | 33 | 29 | 16.410 | | 281 | 42 | 35 | | | | Azimuth mark | | | | | | | | | | | | | |
| | 82 | 07 | 15.661 | | | | | | | | | | | | | | | | | | | | | |
| Bunch, 1902, r. 1932 (d.m.) | 33 | 35 | 03.809 | | 50 | 53 | 25.12 | 230 | 48 | 43.62 | Vaughn | 4.2292379 | 16,952.66 | 55,618.9 | | | | | | | | | | |
| | 81 | 58 | 44.123 | | | | | | | | | | | | 248 | 02 | 00 | Azimuth mark | | | | | | |
| Sumerau (Ga.), 1932, r. 1934 (d.m.) | 33 | 22 | 35.515 | | 136 | 32 | 54.86 | 316 | 28 | 45.01 | Vaughn | 4.2310325 | 17,022.86 | 55,849.2 | | | | | | | | | | |
| | 81 | 59 | 40.171 | | | | | | | | | | | | 183 | 35 | 14.86 | 3 | 35 | 45.78 | Bunch | 4.3635931 | 23,098.99 | 75,783.9 |
| | | | | | | | | | | | | | | | 43 | 53 | 45 | | | | Azimuth mark | | | |
| Smith, 1932 (d.m.) | 33 | 28 | 51.516 | | 49 | 05 | 45.89 | 229 | 01 | 01.15 | Sumerau | 4.2474030 | 17,676.77 | 57,994.5 | | | | | | | | | | |
| | 81 | 51 | 03.313 | | | | | | | | | | | | 91 | 49 | 40.40 | 271 | 40 | 45.05 | Vaughn | 4.3990368 | 25,063.21 | 82,228.2 |
| | | | | | | | | | | | | | | | 134 | 00 | 16.04 | 313 | 56 | 01.48 | Bunch | 4.2180262 | 16,520.62 | 54,201.4 |
| | | | | | | | | | | | | | | | 271 | 09 | 26 | | | | Azimuth mark | | | |
| Andrews, 1932 (d.m.) | 33 | 23 | 52.213 | | 79 | 28 | 58.70 | 259 | 24 | 28.69 | Sumerau | 4.1105871 | 12,899.92 | 42,322.5 | | | | | | | | | | |
| | 81 | 51 | 29.505 | | | | | | | | | | | | 184 | 11 | 39.59 | 4 | 11 | 54.03 | Smith | 3.9659415 | 9,245.74 | 30,333.7 |
| | | | | | | | | | | | | | | | 248 | 16 | 48 | | | | Azimuth mark | | | |
| Kinner, 1932 (d.m.) | 33 | 22 | 37.895 | | 89 | 52 | 00.20 | 269 | 44 | 25.12 | Sumerau | 4.3300612 | 21,382.64 | 70,152.9 | | | | | | | | | | |
| | 81 | 45 | 52.958 | | | | | | | | | | | | 104 | 46 | 21.52 | 284 | 43 | 16.32 | Andrews | 3.9539804 | 8,994.57 | 29,509.7 |
| | | | | | | | | | | | | | | | 145 | 09 | 54.24 | 325 | 07 | 03.27 | Smith | 4.1469822 | 14,027.56 | 46,022.1 |
| | | | | | | | | | | | | | | | 120 | 39 | 57 | | | | Azimuth mark | | | |
| Barney (Ga.), 1932, r. 1934 (d.m.) | 33 | 17 | 22.929 | | 142 | 29 | 05.71 | 322 | 26 | 28.49 | Sumerau | 4.0843747 | 12,144.36 | 39,843.6 | | | | | | | | | | |
| | 81 | 54 | 54.065 | | | | | | | | | | | | 203 | 47 | 05.90 | 23 | 48 | 58.34 | Andrews | 4.1175243 | 13,107.63 | 43,003.9 |
| | | | | | | | | | | | | | | | 235 | 13 | 17.21 | 55 | 18 | 14.55 | Kinner | 4.2311876 | 17,028.94 | 55,869.1 |
| | | | | | | | | | | | | | | | 92 | 52 | 13 | | | | Azimuth mark | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----|----|--------|--|-----|----|-------|-----|----|-------|---------|-----------|-----------|----------|-----|----|-------|-----|----|-------|---------------------------------------|-----------|-----------|-----------|
| Beech Island (Augusta north-west base), 1902, r. 1932 (d.m.) | 33 | 23 | 41.046 | | 265 | 17 | 38.48 | 83 | 18 | 40.89 | Andrews | 3.4698181 | 2,949.97 | 9,678.4 | | | | | | | | | | |
| | 81 | 53 | 22.875 | | | | | | | | | | | | 11 | 27 | 02.62 | 191 | 26 | 12.50 | Barney | 4.0750044 | 11,885.14 | 38,993.2 |
| | | | | | | | | | | | | | | | 78 | 19 | 56.41 | 258 | 16 | 28.80 | Sumerau | 3.9981931 | 9,958.48 | 32,672.1 |
| | | | | | | | | | | | | | | | 186 | 59 | 21 | | | | Azimuth mark | | | |
| Augusta southeast base, 1932, r. 1933 (d.m.) | 33 | 19 | 49.885 | | 59 | 19 | 23.94 | 239 | 16 | 42.06 | Barney | 3.9478215 | 8,867.91 | 29,094.1 | | | | | | | | | | |
| | 81 | 49 | 59.300 | | | | | | | | | | | | 108 | 48 | 34.35 | 288 | 43 | 14.98 | Sumerau | 4.2003587 | 15,862.03 | 52,040.7 |
| | | | | | | | | | | | | | | | 143 | 32 | 59.47 | 323 | 31 | 07.51 | Beech Island (Augusta northwest base) | 3.9472019 | 8,855.271 | 29,052.61 |
| | | | | | | | | | | | | | | | 224 | 22 | 55.8 | | | | Azimuth mark | | | |
| Bush, 1932 (d.m.) | 33 | 15 | 27.300 | | 97 | 51 | 23.49 | 277 | 42 | 10.75 | Barney | 4.4202089 | 26,315.33 | 86,336.2 | | | | | | | | | | |
| | 81 | 38 | 06.577 | | | | | | | | | | | | 137 | 45 | 08.31 | 317 | 40 | 52.14 | Kinner | 4.2535939 | 17,930.56 | 58,827.2 |
| | | | | | | | | | | | | | | | 5 | 13 | 07.0 | | | | Azimuth mark | | | |
| Hancock (Ga.), 1932 (d.m.) | 33 | 09 | 20.824 | | 142 | 22 | 46.84 | 322 | 18 | 44.36 | Barney | 4.2732214 | 18,759.51 | 61,546.8 | | | | | | | | | | |
| | 81 | 47 | 31.496 | | | | | | | | | | | | 185 | 55 | 18.94 | 5 | 56 | 12.99 | Kinner | 4.3924787 | 24,687.59 | 80,995.9 |
| | | | | | | | | | | | | | | | 232 | 18 | 04.90 | 52 | 23 | 14.28 | Bush | 4.2667122 | 18,480.43 | 60,631.2 |
| Key, 1932 (d.m.) | 33 | 09 | 24.459 | | 89 | 46 | 30.40 | 269 | 38 | 43.17 | Hancock | 4.3451467 | 22,138.42 | 72,632.5 | | | | | | | | | | |
| | 81 | 33 | 17.201 | | | | | | | | | | | | 146 | 10 | 52.60 | 326 | 08 | 14.12 | Bush | 4.1289783 | 13,457.93 | 44,153.2 |
| | | | | | | | | | | | | | | | 262 | 26 | 21.4 | | | | Azimuth mark | | | |
| Girard (Ga.), 1932 (d.m.) | 33 | 01 | 25.582 | | 143 | 57 | 40.78 | 323 | 53 | 56.28 | Hancock | 4.2579813 | 18,112.62 | 59,424.5 | | | | | | | | | | |
| | 81 | 40 | 40.283 | | | | | | | | | | | | 188 | 43 | 21.71 | 8 | 44 | 45.74 | Bush | 4.4188753 | 26,234.65 | 86,071.5 |
| | | | | | | | | | | | | | | | 217 | 52 | 52.68 | 37 | 56 | 54.58 | Key | 4.2718272 | 18,699.38 | 61,349.5 |
| | | | | | | | | | | | | | | | 193 | 27 | 13 | | | | Azimuth mark | | | |
| Allen, 1932 (d.m.) | 33 | 01 | 22.149 | | 90 | 18 | 03.44 | 270 | 08 | 27.59 | Girard | 4.4381230 | 27,423.51 | 89,972.0 | | | | | | | | | | |
| | 81 | 23 | 03.629 | | | | | | | | | | | | 133 | 05 | 05.56 | 312 | 59 | 30.58 | Key | 4.3378700 | 21,770.58 | 71,425.6 |
| | | | | | | | | | | | | | | | 20 | 00 | 00 | | | | Azimuth mark | | | |
| Millhaven (Ga.), 1932, r. 1935 (d.m.) | 32 | 56 | 07.869 | | 132 | 26 | 57.02 | 312 | 23 | 12.46 | Girard | 4.1616631 | 14,509.86 | 47,604.4 | | | | | | | | | | |
| | 81 | 33 | 47.747 | | | | | | | | | | | | 181 | 50 | 51.01 | 1 | 51 | 07.66 | Key | 4.3900974 | 24,552.59 | 80,553.0 |
| | | | | | | | | | | | | | | | 239 | 53 | 10.09 | 59 | 59 | 00.70 | Allen | 4.2861236 | 19,325.18 | 63,402.7 |
| | | | | | | | | | | | | | | | 42 | 17 | 39 | | | | Azimuth mark | | | |

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Augusta, Ga., to Beaufort, S.C. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|----|--------|-------------------|---------|----|-------|--------------|----|-------|-------------|------------------------------------|-----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Best, 1932, r. 1935 (d.m.) | 32 | 55 | 26.488 | | 94 | 07 | 31.19 | 274 | 01 | 16.63 | Millhaven | 4.2539717 | 17,946.17 | 58,878.4 |
| | 81 | 22 | 18.732 | | 173 | 55 | 46.05 | 353 | 55 | 21.61 | Allen | 4.0421127 | 11,018.25 | 36,149.0 |
| | | | | | 358 | 52 | 38 | | | | | Azimuth mark | | |
| Rouse, 1932, r. 1935 (d.m.) | 32 | 51 | 14.643 | | 119 | 37 | 06.52 | 299 | 31 | 32.88 | Millhaven | 4.2625263 | 18,303.17 | 60,049.6 |
| | 81 | 23 | 35.258 | | 182 | 30 | 41.54 | 2 | 30 | 58.74 | Allen | 4.2725978 | 18,732.59 | 61,458.5 |
| | | | | | 194 | 22 | 27.36 | 14 | 23 | 08.92 | Best | 3.9035832 | 8,009.09 | 26,276.5 |
| | | | | | 257 | 48 | 24.5 | | | | | Azimuth mark | | |
| Brunson, 1932, r. 1935 (d.m.) | 32 | 55 | 24.892 | | 68 | 05 | 30.35 | 247 | 58 | 51.01 | Rouse | 4.3141043 | 20,611.25 | 67,622.1 |
| | 81 | 11 | 19.836 | | 90 | 12 | 51.28 | 270 | 06 | 53.16 | Best | 4.2334927 | 17,119.56 | 56,166.4 |
| | | | | | 121 | 06 | 32.95 | 301 | 00 | 09.92 | Allen | 4.3290668 | 21,333.73 | 69,992.4 |
| Johnson, 1932 (d.m.) | 32 | 49 | 56.339 | | 103 | 21 | 46.69 | 283 | 18 | 14.44 | Rouse | 4.0195128 | 10,459.54 | 34,316.0 |
| | 81 | 17 | 03.896 | | 141 | 11 | 57.59 | 321 | 09 | 06.69 | Best | 4.1157579 | 13,054.43 | 42,829.4 |
| | | | | | 221 | 26 | 27.11 | 41 | 29 | 33.89 | Brunson | 4.1305523 | 13,506.80 | 44,313.6 |
| | | | | | 208 | 21 | 55.5 | | | | | Azimuth mark | | |
| Varnville, 1932, r. 1935 (d.m.) | 32 | 52 | 29.995 | | 78 | 19 | 13.40 | 258 | 11 | 18.44 | Johnson | 4.3664673 | 23,252.37 | 76,287.1 |
| | 81 | 02 | 28.386 | | 111 | 20 | 59.40 | 291 | 16 | 10.74 | Brunson | 4.1710125 | 14,825.61 | 48,640.4 |
| | | | | | 79 | 52 | 49.5 | | | | | Azimuth mark | | |
| Deloach, 1932 (d.m.) | 32 | 46 | 52.125 | | 111 | 45 | 44.46 | 291 | 40 | 47.81 | Johnson | 4.1856328 | 15,333.20 | 50,305.7 |
| | 81 | 07 | 56.373 | | 161 | 29 | 51.65 | 341 | 28 | 01.28 | Brunson | 4.2216309 | 16,658.31 | 54,653.1 |
| | | | | | 219 | 18 | 54.01 | 39 | 21 | 51.82 | Varnville | 4.1289652 | 13,457.52 | 44,151.9 |
| | | | | | 198 | 32 | 10.9 | | | | | Azimuth mark | | |
| Cummings, 1932 (d.m.) | 32 | 46 | 27.949 | | 92 | 51 | 52.29 | 272 | 46 | 37.86 | Deloach | 4.1799230 | 15,132.93 | 49,648.6 |
| | 80 | 58 | 15.593 | | 149 | 29 | 47.86 | 329 | 27 | 30.83 | Varnville | 4.1121640 | 12,946.85 | 42,476.5 |
| | | | | | 319 | 07 | 47 | | | | | Azimuth mark | | |
| Carmel, 1932 (d.m.) | 32 | 43 | 28.286 | | 171 | 12 | 31.78 | 351 | 12 | 11.59 | Deloach | 3.8030402 | 6,353.90 | 20,846.1 |
| | 81 | 07 | 19.057 | | 204 | 21 | 30.44 | 24 | 24 | 07.90 | Varnville | 4.2629501 | 18,321.04 | 60,108.3 |
| | | | | | 248 | 35 | 40.19 | 68 | 40 | 34.19 | Cummings | 4.1816128 | 15,191.92 | 49,842.2 |
| Cocock, 1932 (d.m.) | 32 | 41 | 32.154 | | 100 | 45 | 34.31 | 280 | 39 | 01.69 | Carmel | 4.2846282 | 19,258.76 | 63,184.8 |
| | 80 | 55 | 12.480 | | 152 | 23 | 33.43 | 332 | 21 | 54.42 | Cummings | 4.0121556 | 10,283.85 | 33,739.6 |
| | | | | | 49 | 33 | 41 | | | | | Azimuth mark | | |
| Little Rock, 1932 (d.m.) | 32 | 34 | 57.724 | | 145 | 13 | 23.37 | 325 | 09 | 36.99 | Carmel | 4.2822785 | 19,154.84 | 62,843.8 |
| | 81 | 00 | 19.491 | | 188 | 37 | 24.42 | 8 | 38 | 31.32 | Cummings | 4.3325497 | 21,506.51 | 70,556.0 |
| | | | | | 213 | 20 | 49.59 | 33 | 23 | 35.17 | Cocock | 4.1628211 | 14,548.60 | 47,731.5 |
| | | | | | 26 | 47 | 28.6 | | | | | Azimuth mark | | |
| Sheldon, 1932 (d.m.) | 32 | 35 | 57.824 | | 84 | 43 | 04.44 | 264 | 36 | 15.27 | Little Rock | 4.2987786 | 19,896.59 | 65,277.4 |
| | 80 | 47 | 39.862 | | 131 | 09 | 20.59 | 311 | 05 | 16.43 | Cocock | 4.1947804 | 15,659.59 | 51,376.5 |
| | | | | | 249 | 29 | 31.5 | | | | | Azimuth mark, reference mark no. 2 | | |
| Ridgeland, 1932, r. 1935 (d.m.) | 32 | 30 | 44.015 | | 138 | 15 | 44.37 | 318 | 13 | 20.50 | Little Rock | 4.0202163 | 10,476.50 | 34,371.7 |
| | 80 | 55 | 52.080 | | 182 | 57 | 27.90 | 2 | 57 | 49.24 | Cocock | 4.3008534 | 19,991.87 | 65,590.0 |
| | | | | | 232 | 59 | 33.30 | 53 | 03 | 58.17 | Sheldon | 4.2060999 | 16,073.11 | 52,733.2 |
| | | | | | 44 | 28 | 56 | | | | | Azimuth mark, reference mark no. 2 | | |
| Bolen, 1932 (d.m.) | 32 | 25 | 08.543 | | 144 | 31 | 31.22 | 324 | 28 | 59.74 | Ridgeland | 4.1035421 | 12,692.35 | 41,641.5 |
| | 80 | 51 | 09.879 | | 195 | 18 | 45.17 | 15 | 20 | 38.04 | Sheldon | 4.3167617 | 20,737.75 | 68,037.1 |
| | | | | | 78 | 11 | 18 | | | | | Azimuth mark, reference mark no. 2 | | |
| Supplementary points | | | | | | | | | | | | | | |
| West Augusta, municipal standpipe (Ga.), 1932 (n.d.) | 33 | 28 | 37.553 | | 97 | 56 | 28.2 | 277 | 53 | 24.2 | Vaughn | 3.939162 | 8,692.8 | 28,520 |
| | 82 | 01 | 40.167 | | 200 | 52 | 46.6 | 20 | 54 | 23.8 | Bunch | 4.105084 | 12,737.5 | 41,790 |
| | | | | | 268 | 27 | 09.0 | 88 | 33 | 00.3 | Smith | 4.216121 | 16,448.3 | 53,964 |
| Augusta, Forrest Hills Hotel, air beacon (Ga.), 1932 (n.d.) | 33 | 28 | 26.546 | | 102 | 44 | 57.8 | 282 | 42 | 32.5 | Vaughn | 3.843355 | 6,972.0 | 22,874 |
| | 82 | 02 | 50.256 | | 207 | 24 | 25.3 | 27 | 26 | 41.3 | Bunch | 4.139528 | 13,788.8 | 45,239 |
| | | | | | 267 | 31 | 56.7 | 87 | 38 | 26.7 | Smith | 4.261710 | 18,268.8 | 59,937 |

GEOGRAPHIC POSITIONS

Augusta, Ga., to Beaufort, S.C. arc- Continued

U. S. COAST AND GEODETIC SURVEY

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|--|------------------------|----|--------|-------------------|---------|----|-------|--------------|----|-------|--------------------------------------|-----------------------------------|-----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Augusta, longitude station (Ga.), 1890, r. 1932 (d.m.) | 33 | 28 | 23.726 | | 265 | 31 | 15.07 | 85 | 35 | 10.29 | Smith | 4.0430940 | 11,043.18 | 36,230.8 |
| | 81 | 58 | 09.738 | | 12 | 17 | 35.39 | 192 | 16 | 45.58 | Sumerau | 4.0405687 | 10,979.15 | 36,020.8 |
| | | | | | 341 | 51 | 53.2 | | | | | Azimuth mark, Union Depot, cupola | | |
| Augusta, Linwood Hospital, dome, finial (Ga.), 1932 (n.d.) | 33 | 27 | 58.120 | | 105 | 29 | 34.0 | 285 | 26 | 27.8 | Vaughn | 3.956381 | 9,044.4 | 29,673 |
| | 82 | 01 | 36.049 | | 198 | 40 | 36.0 | 18 | 42 | 11.0 | Bunch | 4.141290 | 13,844.9 | 45,423 |
| | | | | | 264 | 12 | 05.9 | 84 | 17 | 55.0 | Smith | 4.215373 | 16,420.0 | 53,871 |
| North Augusta, municipal standpipe, 1932 (n.d.) | 33 | 30 | 14.119 | | 173 | 10 | 44.9 | 353 | 10 | 22.0 | Bunch | 3.953690 | 8,988.6 | 29,490 |
| | 81 | 58 | 02.725 | | 283 | 11 | 42.6 | 103 | 15 | 34.1 | Smith | 4.046184 | 11,122.0 | 36,489 |
| | | | | | 3 | 02 | 51.2 | 183 | 02 | 47.4 | Augusta, longitude station | 3.532227 | 3,405.9 | 11,174 |
| Augusta, Georgia Power Co., stack (Ga.), 1932 (n.d.) | 33 | 28 | 48.426 | | 316 | 43 | 26.1 | 136 | 46 | 36.1 | Beech Island(Augusta northwest base) | 4.113985 | 13,001.2 | 42,655 |
| | 81 | 59 | 07.740 | | 4 | 10 | 24.4 | 184 | 10 | 06.6 | Sumerau | 4.061420 | 11,519.1 | 37,792 |
| | | | | | 183 | 00 | 52.2 | 3 | 01 | 05.3 | Bunch | 4.063747 | 11,581.0 | 37,995 |
| Augusta, Paine Negro College, spire (Ga.), 1902, r. 1932 (n.d.) | 33 | 28 | 09.788 | | 310 | 38 | 49.3 | 130 | 42 | 14.7 | Beech Island(Augusta northwest base) | 4.103901 | 12,702.8 | 41,676 |
| | 81 | 59 | 35.815 | | 0 | 37 | 34.8 | 180 | 37 | 32.4 | Sumerau | 4.012790 | 10,298.9 | 33,789 |
| | | | | | 185 | 57 | 58.3 | 5 | 58 | 26.8 | Bunch | 4.108055 | 12,824.9 | 42,076 |
| Augusta, International Vegetable Oil Corporation, silver water tank, finial (Ga.), 1932 (n.d.) | 33 | 27 | 05.840 | | 304 | 37 | 04.5 | 124 | 40 | 19.2 | Beech Island(Augusta northwest base) | 4.045258 | 11,098.3 | 36,412 |
| | 81 | 59 | 16.288 | | 4 | 14 | 22.0 | 184 | 14 | 08.9 | Sumerau | 3.921737 | 8,351.0 | 27,398 |
| | | | | | 183 | 13 | 26.5 | 3 | 13 | 44.3 | Bunch | 4.168758 | 14,748.8 | 48,388 |

| | | | | | | | | | | | | | | |
|---|----|----|--------|--|-----|----|------|-----|----|------|--------------------------------------|----------|----------|--------|
| Augusta, Christian Church, spire (Ga.), 1902, r. 1932 (n.d.) | 33 | 28 | 21.596 | | 97 | 48 | 45.9 | 277 | 48 | 35.7 | Augusta, longitude station | 2.683855 | 482.9 | 1,584 |
| | 81 | 57 | 51.209 | | 264 | 57 | 59.9 | 85 | 01 | 44.9 | Smith | 4.024151 | 10,571.8 | 34,684 |
| | | | | | 321 | 15 | 02.8 | 141 | 17 | 30.6 | Beech Island(Augusta northwest base) | 4.044515 | 11,079.4 | 36,350 |
| Augusta, St. Patricks Church, spire (Ga.), 1902, r. 1932 (n.d.) | 33 | 28 | 17.689 | | 129 | 38 | 52.8 | 309 | 38 | 48.0 | Augusta, longitude station | 2.464647 | 291.5 | 956 |
| | 81 | 58 | 01.045 | | 264 | 26 | 56.3 | 84 | 30 | 46.7 | Smith | 4.034862 | 10,835.8 | 35,550 |
| | | | | | 13 | 39 | 43.5 | 193 | 38 | 48.9 | Sumerau | 4.035362 | 10,848.3 | 35,591 |
| Augusta, Southern Finance Corporation, building, flagpole (Ga.), 1932 (n.d.) | 33 | 28 | 30.829 | | 266 | 31 | 41.4 | 86 | 35 | 27.9 | Smith | 4.026141 | 10,620.4 | 34,844 |
| | 81 | 57 | 53.914 | | 14 | 05 | 09.7 | 194 | 04 | 11.2 | Sumerau | 4.052519 | 11,285.5 | 37,026 |
| | | | | | 61 | 49 | 41.0 | 241 | 49 | 32.3 | Augusta, longitude station | 2.666029 | 463.5 | 1,521 |
| Augusta, Augusta Warehouse and Compress Company, tall slim tank (Ga.), 1932 (n.d.)* | 33 | 27 | 48.34 | | 189 | 14 | 35 | 9 | 15 | 22 | Bunch | 4.133310 | 13,592.8 | 44,596 |
| | 82 | 00 | 08.79 | | 355 | 36 | 38 | 175 | 36 | 54 | Sumerau | 3.985240 | 9,665.8 | 31,712 |
| Augusta, J. B. White, tank (Ga.), 1932 (n.d.)* | 33 | 28 | 32.31 | | 320 | 36 | 52 | 140 | 39 | 30 | Beech Island(Augusta northwest base) | 4.064693 | 11,606.3 | 38,078 |
| | 81 | 58 | 07.84 | | 10 | 29 | 05 | 190 | 29 | 04 | Augusta, longitude station | 2.429587 | 268.9 | 882 |
| Augusta, Free Clinic, spire (Ga.), 1932 (n.d.)* | 33 | 28 | 09.04 | | 182 | 20 | 31 | 2 | 20 | 42 | Bunch | 4.106838 | 12,789.0 | 41,959 |
| | 81 | 59 | 04.39 | | 313 | 04 | 36 | 133 | 07 | 44 | Beech Island(Augusta northwest base) | 4.082175 | 12,083.0 | 39,642 |
| McKnight (Ga.), 1902 (d.m.) | 33 | 31 | 14.396 | | 245 | 04 | 36.5 | 65 | 10 | 03.0 | Bunch | 4.225332 | 16,800.9 | 55,121 |
| | 82 | 08 | 34.966 | | | | | | | | | | | |
| Butler, 1902 (d.m.) | 33 | 30 | 24.723 | | 95 | 18 | 23.2 | 275 | 12 | 27.4 | McKnight | 4.222787 | 16,702.7 | 54,799 |
| | 81 | 57 | 50.505 | | 170 | 51 | 53.3 | 350 | 51 | 23.7 | Bunch | 3.939959 | 8,708.8 | 28,572 |
| | | | | | 330 | 54 | 52.9 | 150 | 57 | 20.4 | Beech Island(Augusta northwest base) | 4.153152 | 14,228.3 | 46,681 |

* No check on this position

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Augusta, Ga., to Beaufort, S.C. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|---------------------------------------|--------------------|----------|--------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Reservoir (Ga.), 1902, l. 1917 (d.m.) | 33 | 28 | 20.130 | | 118 | 45 | 24.5 | 298 | 41 | 55.1 | McKnight | 4.048052 | 11,170.0 | 36,647 |
| | 82 | 02 | 15.509 | | 203 | 39 | 56.1 | 23 | 41 | 52.8 | Bunch | 4.132909 | 13,580.3 | 44,555 |
| | | | | | 240 | 41 | 01.8 | 60 | 43 | 28.0 | Butler | 3.894564 | 7,844.5 | 25,736 |
| | | | | | 301 | 57 | 38.0 | 122 | 02 | 31.5 | Beech Island (Augusta northwest base) | 4.210174 | 16,224.6 | 53,230 |
| Augusta, post office (Ga.), 1902 (d.) | 33 | 28 | 25.297 | | 88 | 35 | 25.1 | 268 | 33 | 08.8 | Reservoir | 3.805146 | 6,384.8 | 20,947 |
| | 81 | 58 | 08.309 | | 187 | 07 | 09.2 | 7 | 07 | 19.0 | Butler | 3.569124 | 3,707.9 | 12,165 |
| | | | | | 319 | 52 | 54.8 | 139 | 55 | 32.1 | Beech Island (Augusta northwest base) | 4.058726 | 11,447.9 | 37,559 |
| Augusta, Clark Mill Company, water tank (Ga.), 1902 (n.d.) | 33 | 28 | 21.924 | | 89 | 26 | 06.2 | 269 | 24 | 09.8 | Reservoir | 3.736322 | 5,449.1 | 17,878 |
| | 81 | 58 | 44.484 | | 200 | 12 | 59.3 | 20 | 13 | 29.1 | Butler | 3.605485 | 4,031.7 | 13,227 |
| | | | | | 316 | 08 | 32.6 | 136 | 11 | 29.7 | Beech Island (Augusta northwest base) | 4.079030 | 11,995.8 | 39,356 |
| Augusta, United States Arsenal, flagstaff (Ga.), 1902 (n.d.) | 33 | 28 | 32.650 | | 73 | 35 | 15.6 | 253 | 34 | 47.7 | Reservoir | 3.135077 | 1,364.8 | 4,478 |
| | 82 | 01 | 24.805 | | 238 | 00 | 51.5 | 58 | 02 | 49.8 | Butler | 3.814327 | 6,521.2 | 21,395 |
| | | | | | 305 | 46 | 44.5 | 125 | 51 | 10.1 | Beech Island (Augusta northwest base) | 4.186167 | 15,352.1 | 50,368 |
| Augusta, Bon Air Hotel, flagstaff (Ga.), 1902 (n.d.) | 33 | 28 | 34.841 | | 231 | 50 | 43.3 | 51 | 52 | 15.4 | Butler | 3.738874 | 5,481.2 | 17,983 |
| | 82 | 00 | 37.496 | | 274 | 21 | 13.4 | 94 | 22 | 35.7 | Augusta, post office | 3.586947 | 3,863.2 | 12,675 |
| | | | | | 308 | 50 | 34.4 | 128 | 54 | 33.8 | Beech Island (Augusta northwest base) | 4.159000 | 14,421.2 | 47,314 |
| Augusta, Sibley Powder Company, obelisk chimney (Ga.), 1902, r. 1932 (n.d.) | 33 | 29 | 12.691 | | 0 | 50 | 29.1 | 180 | 50 | 25.3 | Sumerau | 4.087694 | 12,237.5 | 40,149 |
| | 81 | 59 | 33.219 | | 186 | 40 | 31.8 | 6 | 40 | 58.9 | Bunch | 4.037022 | 10,891.4 | 35,733 |
| | | | | | 230 | 03 | 46.8 | 50 | 04 | 43.3 | Butler | 3.538770 | 3,457.6 | 11,344 |

210550-40-2

| | | | | | | | | | | | | | | |
|---|----|----|--------|--|-----|----|------|-----|----|------|--|----------|----------|--------|
| Augusta, Richmond County Courthouse, dome (Ga.), 1902, r. 1932 (n.d.) | 33 | 28 | 15.053 | | 91 | 17 | 45.0 | 271 | 15 | 14.9 | Reservoir | 3.847003 | 7,030.8 | 23,067 |
| | 81 | 57 | 43.286 | | 177 | 19 | 45.8 | 357 | 19 | 41.8 | Butler | 3.601978 | 3,999.2 | 13,121 |
| | | | | | 321 | 25 | 45.2 | 141 | 28 | 08.7 | Beech Island (Augusta northwest base) | 4.033188 | 10,794.1 | 35,414 |
| Augusta, First Presbyterian Church, spire (Ga.), 1902 r. 1932 (n.d.) | 33 | 28 | 14.175 | | 91 | 34 | 02.3 | 271 | 31 | 37.3 | Reservoir | 3.832168 | 6,794.7 | 22,292 |
| | 81 | 57 | 52.459 | | 180 | 43 | 06.1 | 0 | 43 | 07.2 | Butler | 3.604467 | 4,022.2 | 13,196 |
| | | | | | 320 | 22 | 04.7 | 140 | 24 | 33.3 | Beech Island (Augusta northwest base) | 4.038325 | 10,922.6 | 35,835 |
| Augusta, St. Paul's Episcopal Church, spire (Ga.), 1902 (n.d.) | 33 | 28 | 32.350 | | 72 | 48 | 06.9 | 252 | 47 | 51.9 | Augusta, post office | 2.866128 | 734.7 | 2,410 |
| | 81 | 57 | 41.126 | | 86 | 58 | 45.8 | 266 | 56 | 14.5 | Reservoir | 3.850928 | 7,094.6 | 23,276 |
| | | | | | 176 | 00 | 00.4 | 355 | 59 | 55.2 | Butler | 3.540387 | 3,470.5 | 11,386 |
| Augusta, Enterprise Mills, south cupola (Ga.), 1902 (n.d.)* | 33 | 28 | 37.29 | | 206 | 49 | 36 | 26 | 50 | 12 | Butler | 3.569264 | 3,709.1 | 12,169 |
| | 81 | 58 | 55.36 | | 286 | 54 | 58 | 106 | 55 | 24 | Augusta, post office | 3.103717 | 1,269.7 | 4,166 |
| Augusta, cotton mill, cupola (Ga.), 1902 (n.d.)* | 33 | 28 | 17.86 | | 90 | 43 | 32 | 270 | 41 | 32 | Reservoir | 3.752371 | 5,654.2 | 18,550 |
| | 81 | 58 | 36.55 | | 252 | 33 | 05 | 72 | 33 | 20 | Augusta, post office | 2.883240 | 764.3 | 2,508 |
| North Augusta, Butler House, cupola, 1902 (n.d.)* | 33 | 30 | 14.43 | | 329 | 58 | 25 | 150 | 00 | 55 | Beech Island (Augusta north west base) | 4.145980 | 13,995.2 | 45,916 |
| | 81 | 57 | 53.86 | | 6 | 19 | 56 | 186 | 19 | 48 | Augusta, post office | 3.529295 | 3,382.9 | 11,099 |
| Beech Island, Hammond wind-mill, 1902 (n.d.) | 33 | 25 | 06.277 | | 36 | 53 | 04.3 | 216 | 52 | 22.3 | Beech Island (Augusta northwest base) | 3.516218 | 3,282.6 | 10,770 |
| | 81 | 52 | 06.638 | | 110 | 50 | 29.7 | 290 | 44 | 54.2 | Reservoir | 4.225881 | 16,822.1 | 55,191 |
| | | | | | 137 | 52 | 39.6 | 317 | 49 | 30.0 | Butler | 4.121645 | 13,232.6 | 43,414 |
| Beech Island, Hammond house, west chimney, 1902 (n.d.) | 33 | 25 | 05.316 | | 37 | 07 | 12.1 | 217 | 06 | 30.2 | Beech Island (Augusta northwest base) | 3.512638 | 3,255.7 | 10,681 |
| | 81 | 52 | 06.851 | | 110 | 56 | 32.7 | 290 | 50 | 57.3 | Reservoir | 4.226021 | 16,827.6 | 55,209 |
| | | | | | 137 | 58 | 52.0 | 317 | 55 | 42.5 | Butler | 4.122245 | 13,250.9 | 43,474 |
| Primary traverse station no. 124 Mac (U.S.G.S.) (Ga.), 1932 (d.m.)* | 33 | 09 | 20.325 | | 147 | 41 | | 327 | 41 | | Hancock | 1.259928 | 18.194 | 59.69 |

* No check on this position

GEOGRAPHIC POSITIONS

Augusta, Ga., to Beaufort, S.C. arc - Continued

U. S. COAST AND GEODETIC SURVEY

TRIANGULATION IN SOUTH CAROLINA—PART 2

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|--|------------------------|----|--------|-------------------|---------|----|-------|--------------|----|-------|-------------------|--------------------|-----------|----------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Curve B, 1901, r. 1932 (d.m.) | 33 | 03 | 21.685 | | 16 | 56 | 32.80 | 196 | 56 | 09.23 | Allen Key | 3.5853961 | 3,849.43 | 12,629.3 |
| | 81 | 22 | 20.405 | | 123 | 19 | 28.59 | 303 | 13 | 29.85 | Azimuth mark | 4.3089770 | 20,369.34 | 66,828.4 |
| | | | | | 356 | 12 | 27 | | | | | | | |
| Curve I, 1901, r. 1932 (d.m.) | 33 | 04 | 25.551 | | 160 | 02 | 05.68 | 340 | 00 | 55.15 | Key | 3.9911240 | 9,797.70 | 32,144.6 |
| | 81 | 31 | 08.103 | | 278 | 08 | 20.15 | 98 | 13 | 08.06 | Curve B Girard | 4.1408081 | 13,829.55 | 45,372.4 |
| | | | | | 69 | 33 | 53.92 | 249 | 28 | 41.88 | | 4.1999452 | 15,846.93 | 51,991.1 |
| Waikiki eccentric, 1932 (d.m.) | 32 | 58 | 24.984 | | 320 | 42 | 38.59 | 140 | 44 | 13.59 | Brunson Best | 3.8553248 | 7,166.79 | 23,513.0 |
| | 81 | 14 | 14.505 | | 66 | 25 | 21.70 | 246 | 20 | 58.34 | Azimuth mark | 4.1375796 | 13,727.13 | 45,036.4 |
| | | | | | 186 | 20 | 55.9 | | | | | | | |
| Waikiki, 1918, r. 1932 (d.m.)** | 32 | 58 | 25.511 | | 75 | 27 | | 255 | 27 | | Waikiki eccentric | 1.811541 | 64.795 | 212.58 |
| | 81 | 14 | 12.090 | | | | | | | | | | | |
| Omar eccentric, 1932 (d.m.) | 32 | 52 | 52.314 | | 110 | 50 | 53.38 | 290 | 46 | 32.21 | Best | 4.1260418 | 13,367.24 | 43,855.7 |
| | 81 | 14 | 17.936 | | 180 | 29 | 53.42 | 0 | 29 | 55.28 | Waikiki eccentric | 4.0106593 | 10,248.48 | 33,623.6 |
| | | | | | 224 | 32 | 46.06 | 44 | 34 | 22.50 | Brunson | 3.8193223 | 6,596.63 | 21,642.4 |
| | | | | | 178 | 13 | 22.9 | | | | Azimuth mark | | | |
| Omar, 1918, r. 1932 (d.m.)** | 32 | 52 | 52.496 | | 281 | 25 | | 101 | 25 | | Omar eccentric | 1.4519399 | 28.310 | 92.88 |
| | 81 | 14 | 19.004 | | | | | | | | | | | |
| Allendale, municipal water tank, 1932 (n.d.) | 33 | 00 | 38.558 | | 301 | 44 | 48.7 | 121 | 47 | 08.1 | Waikiki eccentric | 3.892993 | 7,816.2 | 25,644 |
| | 81 | 18 | 30.467 | | 310 | 47 | 44.0 | 130 | 51 | 38.4 | Brunson | 4.169659 | 14,779.5 | 48,489 |
| | | | | | 31 | 40 | 33.7 | 211 | 38 | 29.5 | Best | 4.052858 | 11,294.3 | 37,055 |
| Varnville, stack, northeast of four, 1932 (n.d.) | 32 | 51 | 00.423 | | 37 | 31 | 42.2 | 217 | 29 | 39.8 | DeLoach | 3.984193 | 9,642.6 | 31,636 |
| | 81 | 04 | 10.663 | | 126 | 10 | 25.4 | 306 | 06 | 32.4 | Brunson | 4.140310 | 13,813.7 | 45,320 |
| | | | | | 223 | 56 | 03.4 | 43 | 56 | 58.8 | Varnville | 3.583434 | 3,832.1 | 12,572 |

| | | | | | | | | | | | | | | |
|-------------------------------------|----|----|--------|--|-----|----|------|-----|----|------|-------------|----------|----------|--------|
| Ridgeland, tank, final, 1932 (n.d.) | 32 | 28 | 48.323 | | 169 | 01 | 12.0 | 349 | 00 | 26.5 | Little Rock | 4.064132 | 11,591.3 | 38,029 |
| | 80 | 58 | 54.042 | | 233 | 02 | 12.6 | 53 | 08 | 15.7 | Sheldon | 4.342981 | 22,028.3 | 72,271 |
| | | | | | 233 | 13 | 47.7 | 53 | 15 | 25.9 | Ridgeland | 3.774899 | 5,955.2 | 19,538 |

** Checked by traverse

GEOGRAPHIC POSITIONS

Beaufort, S.C., to Jacksonville, N.C. arc

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|-------------------------------|------------------------|----|--------|-------------------|---------|----|-------|--------------|----|-------|------------------------------------|--------------------|-----------|----------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points | | | | | | | | | | | | | | |
| Gray, 1932, r. 1933 (d.m.) | 32 | 29 | 28.917 | 890.7 | 50 | 03 | 44.00 | 230 | 00 | 27.37 | Bolen | 4.0964404 | 12,486.49 | 40,956.1 |
| | 80 | 45 | 03.464 | 90.4 | 97 | 49 | 41.00 | 277 | 43 | 52.49 | Ridgeland | 4.2327222 | 17,089.22 | 56,066.9 |
| | | | | | 161 | 12 | 03.01 | 341 | 10 | 38.88 | Sheldon | 4.1022857 | 12,655.69 | 41,521.2 |
| | | | | | 330 | 46 | 14.9 | | | | Azimuth mark, reference mark no. 2 | | | |
| Gardner, 1932, r. 1934 (d.m.) | 32 | 36 | 36.514 | 1,124.8 | 0 | 43 | 29.29 | 180 | 43 | 25.85 | Gray | 4.1196711 | 13,172.59 | 43,217.1 |
| | 80 | 44 | 57.081 | 1,488.3 | 74 | 19 | 40.66 | 254 | 18 | 12.95 | Sheldon | 3.6443052 | 4,408.65 | 14,464.0 |
| Chisolm, 1932, r. 1934 (d.m.) | 32 | 32 | 15.382 | 473.8 | 69 | 42 | 03.48 | 249 | 37 | 18.60 | Gray | 4.1689825 | 14,753.07 | 48,402.4 |
| | 80 | 36 | 13.473 | 351.6 | 110 | 59 | 34.25 | 290 | 53 | 24.77 | Sheldon | 4.2826462 | 19,171.06 | 62,897.1 |
| | | | | | 120 | 32 | 07.87 | 300 | 27 | 25.97 | Gardner | 4.2000414 | 15,850.44 | 52,002.7 |
| | | | | | 71 | 36 | 54 | | | | Azimuth mark, reference mark no. 2 | | | |
| Green Pond, 1932 (d.m.) | 32 | 43 | 54.476 | 1,678.1 | 356 | 47 | 52.41 | 176 | 48 | 17.31 | Chisolm | 4.3338201 | 21,568.51 | 70,762.7 |
| | 80 | 36 | 59.643 | 1,553.0 | 42 | 42 | 52.89 | 222 | 38 | 35.17 | Gardner | 4.2636614 | 18,351.07 | 60,206.8 |
| | | | | | 265 | 19 | 58.6 | | | | Azimuth mark, reference mark no. 2 | | | |
| Wiggins, 1932, r. 1934 (d.m.) | 32 | 36 | 04.902 | 151.0 | 34 | 26 | 08.50 | 214 | 24 | 28.51 | Chisolm | 3.9330223 | 8,570.82 | 28,119.4 |
| | 80 | 33 | 07.739 | 201.8 | 93 | 04 | 00.77 | 272 | 57 | 38.54 | Gardner | 4.2676753 | 18,521.46 | 60,765.8 |
| | | | | | 157 | 20 | 40.07 | 337 | 18 | 34.90 | Green Pond | 4.1952439 | 15,676.31 | 51,431.4 |
| | | | | | 242 | 44 | 40.0 | | | | Azimuth mark, reference mark no. 2 | | | |
| Padgett, 1932, r. 1934 (d.m.) | 32 | 47 | 29.767 | 917.0 | 17 | 13 | 05.48 | 197 | 10 | 50.05 | Wiggins | 4.3440852 | 22,084.38 | 72,455.2 |
| | 80 | 28 | 57.039 | 1,484.2 | 62 | 12 | 17.27 | 242 | 07 | 56.11 | Green Pond | 4.1524429 | 14,205.06 | 46,604.4 |
| | | | | | 312 | 37 | 54.1 | | | | Azimuth mark, reference mark no. 1 | | | |

| | | | | | | | | | | | | | | |
|--|----|----|--------|---------|-----|----|-------|-----|----|-------|------------------------------------|-----------|-----------|----------|
| Willtown, 1932, r. 1934 (d.m.) | 32 | 41 | 09.856 | 303.6 | 55 | 32 | 45.30 | 235 | 28 | 02.36 | Wiggins | 4.2197868 | 16,587.73 | 54,421.6 |
| | 80 | 24 | 23.196 | 604.3 | 104 | 29 | 27.73 | 284 | 22 | 38.97 | Green Pond | 4.3084275 | 20,343.59 | 66,743.9 |
| | | | | | 148 | 40 | 10.91 | 328 | 37 | 42.82 | Padgett | 4.1368401 | 13,703.77 | 44,959.8 |
| | | | | | 38 | 50 | 48 | | | | Azimuth mark, reference mark no. 2 | | | |
| Eureka, 1932, r. 1934 (d.m.) | 32 | 48 | 24.994 | 769.9 | 1 | 36 | 44.84 | 181 | 36 | 37.00 | Willtown | 4.1274139 | 13,409.54 | 43,994.5 |
| | 80 | 24 | 08.712 | 226.7 | 77 | 14 | 39.54 | 257 | 12 | 03.36 | Padgett | 3.8860554 | 7,692.29 | 25,237.1 |
| | | | | | 6 | 50 | 44 | | | | Azimuth mark, reference mark no. 2 | | | |
| Capwell, 1932 (d.m.) | 32 | 46 | 41.676 | 1,283.8 | 51 | 09 | 25.43 | 231 | 05 | 02.17 | Willtown | 4.2117750 | 16,284.52 | 53,426.8 |
| | 80 | 16 | 16.331 | 425.0 | 94 | 20 | 13.40 | 274 | 13 | 21.49 | Padgett | 4.2977812 | 19,850.95 | 65,127.7 |
| | | | | | 104 | 33 | 06.97 | 284 | 28 | 53.13 | Eureka | 4.1036977 | 12,696.90 | 41,656.4 |
| | | | | | 70 | 19 | 28 | | | | Azimuth mark, reference mark no. 2 | | | |
| Warren, 1932 (d.m.) | 32 | 49 | 38.666 | 1,191.1 | 354 | 58 | 35.48 | 174 | 58 | 45.46 | Capwell | 3.7322377 | 5,473.15 | 17,956.5 |
| | 80 | 16 | 34.745 | 903.7 | 37 | 55 | 05.28 | 217 | 50 | 51.81 | Willtown | 4.2979471 | 19,858.53 | 65,152.5 |
| | | | | | 79 | 09 | 20.88 | 259 | 05 | 14.85 | Eureka | 4.0800924 | 12,025.20 | 39,452.7 |
| | | | | | 344 | 09 | 29 | | | | Azimuth mark, reference mark no. 1 | | | |
| New Cut, 1850, r. 1933 (d.m.) | 32 | 41 | 51.583 | 1,589.0 | 86 | 22 | 20.47 | 266 | 15 | 26.67 | Willtown | 4.3009989 | 19,998.57 | 65,612.0 |
| | 80 | 11 | 37.073 | 965.7 | 140 | 53 | 16.35 | 320 | 50 | 45.34 | Capwell | 4.0614680 | 11,520.41 | 37,796.5 |
| | | | | | 151 | 43 | 11.23 | 331 | 40 | 30.15 | Warren | 4.2133024 | 16,341.89 | 53,615.0 |
| | | | | | 313 | 40 | 30.5 | | | | Azimuth mark, reference mark no. 3 | | | |
| Primary traverse station no. 47 Mac (U.S.G.S.), 1932, r. 1933 (d.m.) | 32 | 34 | 42.785 | 1,317.9 | 139 | 26 | 05.33 | 319 | 22 | 33.96 | Willtown | 4.1959650 | 15,702.36 | 51,516.8 |
| | 80 | 17 | 51.222 | 1,336.0 | 216 | 24 | 40.49 | 36 | 28 | 02.28 | New Cut | 4.2153411 | 16,418.79 | 53,867.3 |
| | | | | | 278 | 39 | 09 | | | | Azimuth mark, reference mark no. 2 | | | |

GEOGRAPHIC POSITIONS

Beaufort, S.C., to Jacksonville, N.C. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|----|--------|-------------------|---------|----|-------|--------------|----|-------|--|--------------------|-----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Edisto Island east base, 1849, r. 1933 (d.m.) | 32 | 33 | 15.301 | 471.3 | 111 | 55 | 44.44 | 291 | 53 | 26.18 | Primary traverse station no. 47 Mac (U.S.G.S.) | 3.8586512 | 7,221.90 | 23,693.9 |
| | 80 | 13 | 34.369 | 896.7 | | | | | | | | | | |
| | | | | | 130 | 52 | 55.86 | 310 | 47 | 06.10 | Willtown | 4.3494045 | 22,356.54 | 73,348.1 |
| | | | | | 190 | 52 | 28.48 | 10 | 53 | 31.72 | New Cut | 4.2093760 | 16,194.81 | 53,132.5 |
| Edisto Island west base, 1849, r. 1933 (d.m.) | 32 | 30 | 28.302 | 871.8 | 159 | 11 | 21.72 | 339 | 08 | 46.37 | Willtown | 4.3251998 | 21,144.61 | 69,371.9 |
| | 80 | 19 | 34.832 | 909.2 | 199 | 01 | 13.24 | 19 | 02 | 08.97 | Primary traverse station no. 47 Mac (U.S.G.S.) | 3.9186627 | 8,292.07 | 27,204.9 |
| | | | | | 241 | 18 | 02.47 | 61 | 21 | 16.31 | Edisto Island east base | 4.0302527 | 10,721.43 | 35,175.2 |
| | | | | | 316 | 25 | 09.9 | | | | Azimuth mark, reference mark no. 1 | | | |
| Bula, 1932, r. 1935 (d.m.) | 32 | 51 | 43.000 | 1,324.6 | 19 | 08 | 58.82 | 199 | 06 | 47.34 | New Cut | 4.2851853 | 19,283.48 | 63,265.9 |
| | 80 | 07 | 34.225 | 889.8 | 74 | 47 | 54.96 | 254 | 43 | 01.81 | Warren | 4.1634237 | 14,568.80 | 47,797.8 |
| | | | | | 226 | 33 | 19.5 | | | | Azimuth mark, reference mark no. 1 | | | |
| Johns, 1932 (d.m.) | 32 | 43 | 40.884 | 1,259.4 | 74 | 09 | 25.14 | 254 | 05 | 19.49 | New Cut | 4.0901593 | 12,307.20 | 40,377.9 |
| | 80 | 04 | 02.538 | 66.1 | 119 | 26 | 10.66 | 299 | 19 | 23.43 | Warren | 4.3515115 | 22,465.26 | 73,704.8 |
| | | | | | 159 | 40 | 02.82 | 339 | 38 | 08.18 | Bula | 4.1997546 | 15,839.98 | 51,968.3 |
| | | | | | 234 | 16 | 17 | | | | Azimuth mark, reference mark no. 2 | | | |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | | | | | | | |
|---|----|----|--------|---------|-----|----|-------|-----|----|-------|------------------------------------|-----------|-----------|-----------|
| Charleston west base, 1932, r. 1935, (d.m.) | 32 | 47 | 43.569 | 1,342.1 | 349 | 55 | 47.76 | 169 | 56 | 15.35 | Johns | 3.8803962 | 7,592.70 | 24,910.4 |
| | 80 | 04 | 53.523 | 1,392.6 | 150 | 28 | 17.81 | 330 | 26 | 50.69 | Bula | 3.9282781 | 8,477.70 | 27,813.9 |
| | | | | | 255 | 20 | 11.3 | | | | Azimuth mark, reference mark no. 2 | | | |
| Charleston east base, 1932, r. 1933 (d.m.) | 32 | 46 | 42.161 | 1,298.8 | 55 | 11 | 30.35 | 235 | 08 | 43.56 | Johns | 3.9901984 | 9,776.84 | 32,076.2 |
| | 79 | 58 | 54.255 | 1,411.9 | 101 | 27 | 56.77 | 281 | 24 | 42.22 | Charleston west base | 3.9794729 | 9,538.342 | 31,293.71 |
| | | | | | 124 | 27 | 24.32 | 304 | 22 | 42.49 | Bula | 4.2147355 | 16,395.91 | 53,792.2 |
| | | | | | 127 | 17 | 11.3 | | | | Azimuth mark, reference mark no. 2 | | | |
| Citadel, 1932, r. 1933 (d.m.) | 32 | 47 | 47.735 | 1,470.5 | 41 | 36 | 23.28 | 221 | 35 | 45.96 | Charleston east base | 3.4315689 | 2,701.28 | 8,862.4 |
| | 79 | 57 | 45.332 | 1,179.5 | 52 | 16 | 16.45 | 232 | 12 | 52.32 | Johns | 4.0940749 | 12,418.66 | 40,743.6 |
| | | | | | 89 | 22 | 20.37 | 269 | 18 | 28.44 | Charleston west base | 4.0469629 | 11,141.99 | 36,555.0 |
| | | | | | 115 | 21 | 57.39 | 295 | 16 | 38.13 | Bula | 4.2290406 | 16,944.96 | 55,593.6 |
| | | | | | 180 | 34 | 48.3 | | | | Azimuth mark, reference mark no. 1 | | | |
| Farm, 1932, r. 1935 (d.m.) | 32 | 53 | 58.929 | 1,815.3 | 337 | 45 | 08.54 | 157 | 46 | 46.04 | Citadel | 4.0917793 | 12,353.20 | 40,528.8 |
| | 80 | 00 | 45.086 | 1,171.7 | 29 | 12 | 41.63 | 209 | 10 | 26.87 | Charleston west base | 4.1220648 | 13,245.39 | 43,455.9 |
| | | | | | 68 | 32 | 25.78 | 248 | 28 | 43.66 | Bula | 4.0580482 | 11,430.05 | 37,500.1 |
| | | | | | 264 | 29 | 59.7 | | | | Azimuth mark, reference mark no. 1 | | | |
| Hamlin, 1932 (d.m.) | 32 | 50 | 36.491 | 1,124.1 | 69 | 27 | 03.21 | 249 | 22 | 14.87 | Citadel | 4.1697504 | 14,782.59 | 48,499.2 |
| | 79 | 48 | 53.340 | 1,387.2 | 108 | 40 | 43.79 | 288 | 34 | 17.49 | Farm | 4.2906154 | 19,526.09 | 64,061.8 |
| | | | | | 45 | 38 | 50.9 | | | | Azimuth mark, reference mark no. 2 | | | |
| Wando, 1932 (d.m.) | 32 | 56 | 08.813 | 271.5 | 330 | 02 | 23.16 | 150 | 04 | 25.36 | Hamlin | 4.0724057 | 11,814.24 | 38,760.6 |
| | 79 | 52 | 40.215 | 1,044.7 | 27 | 13 | 20.39 | 207 | 10 | 34.81 | Citadel | 4.2394214 | 17,354.87 | 56,938.4 |
| | | | | | 72 | 25 | 04.14 | 252 | 20 | 40.65 | Farm | 4.1211943 | 13,218.87 | 43,368.9 |
| | | | | | 261 | 01 | 26 | | | | Azimuth mark, reference mark no. 1 | | | |
| Sewee, 1932 (d.m.) | 32 | 54 | 48.359 | 1,489.7 | 48 | 49 | 36.55 | 228 | 46 | 31.46 | Hamlin | 4.0711272 | 11,779.51 | 38,646.6 |
| | 79 | 43 | 12.385 | 321.8 | 99 | 34 | 44.45 | 279 | 29 | 35.81 | Wando | 4.1749316 | 14,960.00 | 49,081.3 |
| | | | | | 49 | 40 | 45 | | | | Azimuth mark, reference mark no. 2 | | | |

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Beaufort, S.C., to Jacksonville, N.C. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---------------------------|------------------------|----|--------|-------------------|---------|----|-------|--------------|----|-------|------------------------------------|--------------------|-----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Dickson, 1932 (d.m.) | 32 | 59 | 53.978 | 1,662.8 | 315 | 09 | 36.89 | 135 | 12 | 52.80 | Sewee | 4.1229094 | 13,271.18 | 43,540.5 |
| | 79 | 49 | 12.509 | 324.7 | 358 | 20 | 14.43 | 178 | 20 | 24.85 | Hamlin | 4.2350454 | 17,180.88 | 56,367.6 |
| | | | | | 37 | 53 | 09.11 | 217 | 51 | 16.09 | Wando | 3.9438330 | 8,786.85 | 28,828.2 |
| | | | | | 266 | 11 | 54 | | | | Azimuth mark, reference mark no. 2 | | | |
| Mitchell, 1932 (d.m.) | 32 | 58 | 51.193 | 1,577.1 | 36 | 51 | 34.95 | 216 | 49 | 37.59 | Sewee | 3.9706977 | 9,347.55 | 30,667.8 |
| | 79 | 39 | 36.600 | 950.4 | 97 | 24 | 51.04 | 277 | 19 | 37.46 | Dickson | 4.1783092 | 15,076.80 | 49,464.5 |
| | | | | | 231 | 02 | 27 | | | | Azimuth mark, reference mark no. 2 | | | |
| Northhampton, 1932 (d.m.) | 33 | 03 | 07.308 | 225.1 | 315 | 06 | 42.63 | 135 | 09 | 27.49 | Mitchell | 4.0465660 | 11,131.82 | 36,521.6 |
| | 79 | 44 | 39.157 | 1,015.9 | 351 | 39 | 15.02 | 171 | 40 | 03.06 | Sewee | 4.1913043 | 15,534.75 | 50,966.9 |
| | | | | | 50 | 00 | 23.08 | 229 | 57 | 54.10 | Dickson | 3.9667370 | 9,262.69 | 30,389.3 |
| | | | | | 226 | 41 | 41 | | | | Azimuth mark, reference mark no. 1 | | | |
| Turp, 1932 (d.m.) | 33 | 04 | 01.490 | 45.9 | 351 | 01 | 56.41 | 171 | 02 | 28.07 | Mitchell | 3.9857486 | 9,677.18 | 31,749.2 |
| | 79 | 40 | 34.695 | 900.0 | 75 | 16 | 23.68 | 255 | 14 | 10.32 | Northampton | 3.8167641 | 6,557.89 | 21,515.3 |
| | | | | | 231 | 49 | 56.7 | | | | Azimuth mark, reference mark no. 1 | | | |
| Schuler, 1932 (d.m.) | 33 | 07 | 45.419 | 1,399.2 | 359 | 40 | 54.95 | 179 | 40 | 56.87 | Mitchell | 4.2163685 | 16,457.67 | 53,994.9 |
| | 79 | 39 | 40.119 | 1,040.0 | 11 | 35 | 51.03 | 191 | 35 | 21.23 | Turp | 3.8477015 | 7,042.09 | 23,103.9 |
| | | | | | 42 | 10 | 22.34 | 222 | 07 | 39.08 | Northampton | 4.0628108 | 11,556.09 | 37,913.6 |
| | | | | | 185 | 25 | 13.2 | | | | Azimuth mark, reference mark no. 3 | | | |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | | | | | | | |
|---|----|----|--------|---------|-----|----|-------|-----|----|-------|------------------------------------|-----------|-----------|----------|
| Awendaw, 1932 (d.m.) | 33 | 02 | 33.595 | 1,035.0 | 44 | 09 | 35.32 | 224 | 07 | 15.77 | Mitchell | 3.9798706 | 9,547.08 | 31,322.4 |
| | 79 | 35 | 20.448 | 530.6 | 108 | 23 | 46.14 | 288 | 20 | 54.74 | Turp | 3.9340236 | 8,590.60 | 28,184.3 |
| | | | | | 144 | 59 | 12.95 | 324 | 56 | 51.20 | Schuler | 4.0693565 | 11,731.58 | 38,489.4 |
| | | | | | 44 | 36 | 22 | | | | Azimuth mark, reference mark no. 3 | | | |
| Honey, 1932 (d.m.) | 33 | 10 | 33.329 | 1,026.8 | 10 | 37 | 39.01 | 190 | 36 | 40.63 | Awendaw | 4.1771425 | 15,036.35 | 49,331.8 |
| | 79 | 33 | 33.575 | 869.9 | 61 | 27 | 25.38 | 241 | 24 | 04.93 | Schuler | 4.0340696 | 10,816.07 | 35,485.7 |
| | | | | | 27 | 38 | 19 | | | | Azimuth mark, reference mark no. 3 | | | |
| McClellanville, 1932 (d.m.) | 33 | 05 | 42.937 | 1,322.7 | 61 | 05 | 45.78 | 241 | 02 | 03.83 | Awendaw | 4.0812036 | 12,056.01 | 39,553.8 |
| | 79 | 28 | 33.692 | 873.7 | 102 | 22 | 09.77 | 282 | 16 | 05.72 | Schuler | 4.2476184 | 17,685.54 | 58,023.3 |
| | | | | | 139 | 02 | 09.60 | 318 | 59 | 25.68 | Honey | 4.0737600 | 11,851.14 | 38,881.6 |
| | | | | | 229 | 15 | 28.6 | | | | Azimuth mark, reference mark no. 2 | | | |
| Waterhorn, 1932, r. 1934 (d.m.) | 33 | 12 | 52.093 | 1,604.8 | 1 | 22 | 56.97 | 181 | 22 | 50.24 | McClellanville | 4.1213852 | 13,224.68 | 43,388.0 |
| | 79 | 28 | 21.388 | 553.9 | 62 | 09 | 38.41 | 242 | 06 | 47.49 | Honey | 3.9612715 | 9,146.85 | 30,009.3 |
| | | | | | 30 | 25 | 46 | | | | Azimuth mark, reference mark no. 2 | | | |
| Santee, 1932, r. 1935 (d.m.) | 33 | 09 | 14.872 | 458.2 | 58 | 12 | 54.22 | 238 | 09 | 12.38 | McClellanville | 4.0928775 | 12,384.47 | 40,631.4 |
| | 79 | 21 | 47.736 | 1,237.1 | 97 | 34 | 54.73 | 277 | 28 | 28.60 | Honey | 4.2659555 | 18,448.26 | 60,525.7 |
| | | | | | 123 | 18 | 10.97 | 303 | 14 | 35.51 | Waterhorn | 4.0862673 | 12,197.40 | 40,017.6 |
| | | | | | 70 | 36 | 43 | | | | Azimuth mark, reference mark no. 2 | | | |
| Burgess, 1932, r. 1934 (d.m.) | 33 | 13 | 18.366 | 565.8 | 348 | 44 | 42.74 | 168 | 45 | 14.27 | Santee | 3.8835616 | 7,648.24 | 25,092.6 |
| | 79 | 22 | 45.338 | 1,174.0 | 84 | 42 | 42.31 | 264 | 39 | 38.21 | Waterhorn | 3.9415024 | 8,739.82 | 28,673.9 |
| | | | | | 194 | 36 | 25.5 | | | | Azimuth mark, reference mark no. 1 | | | |
| Supplementary points | | | | | | | | | | | | | | |
| Primary traverse station no. 6, 1917, Mac (U.S.C.S.) 1932 (d.m.)* | 32 | 43 | 53.820 | 1,657.9 | 232 | 51 | | 52 | 51 | | Green Pond | 1.524656 | 33.47 | 109.8 |
| | 80 | 37 | 00.668 | 17.4 | | | | | | | | | | |

* No check on this position

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Beaufort, S.C., to Jacksonville, N.C. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|--|---------|-------------------|--------------|------------------------------------|-----------|--------------|----------|--|------------|--------------------|--------|------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Meg eccentric, 1932, r. 1936 (d.m.) | 32 43 17.418 | | 536.5 | 75 22 33.19 | 255 17 21.76 | Willtown | 4.1908570 | 15,518.76 | 50,914.5 | | | | | |
| | 80 14 46.796 | | 1,218.6 | 159 40 48.04 | 339 39 59.61 | Capwell | 3.8267183 | 6,709.94 | 22,014.2 | | | | | |
| | | | | 298 08 14.70 | 118 09 57.22 | New Cut | 3.7485117 | 5,604.18 | 18,386.4 | | | | | |
| Meg, 1924, r. 1936 (d.m.)** | 32 43 17.463 | | 537.9 | 298 16 26 | 118 18 08 | New Cut | 3.746810 | 5,582.3 | 18,315 | | | | | |
| | 80 14 45.813 | | 1,193.0 | 86 55 | 266 55 | Meg eccentric | 1.408986 | 25.644 | 84.13 | | | | | |
| Air beacon no. 17, Jacksonville - Richmond, 1932 (d.) | 32 39 30.626 | | 943.4 | 115 57 55.0 | 295 55 44.8 | Willtown | 3.544234 | 6,986.1 | 22,920 | | | | | |
| | 80 20 22.099 | | 575.9 | 205 42 58.2 | 25 45 11.0 | Capwell | 4.168505 | 14,740.3 | 48,360 | | | | | |
| | | | | 252 20 58.6 | 72 25 42.0 | New Cut | 4.156895 | 14,351.4 | 47,085 | | | | | |
| Lombs, 1932, r. 1934 (d.m.) | 32 52 50.587 | | 1,558.3 | 321 46 26.37 | 141 49 32.53 | Charleston east base | 4.1596293 | 14,442.07 | 47,382.0 | | | | | |
| | 80 04 37.633 | | 978.3 | 2 30 11.43 | 182 30 02.81 | Charleston west base | 3.9762010 | 9,466.75 | 31,058.8 | | | | | |
| | | | | 65 37 05.81 | 245 35 29.96 | Bula | 3.7025170 | 5,041.00 | 16,538.7 | | | | | |
| | | | | 205 14 56.9 | | Azimuth mark, reference mark no. 1 | | | | | | | | |
| Air beacon no. 18, Jacksonville - Richmond, 1932 (d.) | 32 46 43.849 | | 1,350.8 | 296 19 03.5 | 116 23 00.0 | Johrs | 4.103737 | 12,698.0 | 41,660 | | | | | |
| | 80 11 19.646 | | 511.3 | 2 53 10.8 | 182 53 01.4 | New Cut | 3.954944 | 9,014.5 | 29,575 | | | | | |
| | | | | 123 19 27.1 | 303 16 36.4 | Warren | 3.991605 | 9,808.6 | 32,180 | | | | | |
| Francis Marion, 1924, r. 1933 (d.m.) | 32 47 08.777 | | 270.4 | 78 58 34.7 | 258 57 07.3 | Charleston east base | 3.631760 | 4,283.1 | 14,052 | | | | | |
| | 79 56 12.711 | | 330.8 | 116 28 39.9 | 296 27 49.8 | Citadel | 3.430128 | 2,692.3 | 8,833 | | | | | |
| | | | | 150 44 40.7 | 330 42 13.0 | Farm | 4.160913 | 14,484.8 | 47,522 | | | | | |
| | | | | 240 43 33.7 | 60 47 31.8 | Harlin | 4.117235 | 13,098.9 | 42,975 | | | | | |
| Goose Creek, 1889, r. 1933 (d.m.) | 32 54 58.709 | | 1,808.5 | 253 14 15.8 | 73 16 46.0 | Wando | 3.874897 | 7,497.2 | 24,597 | | | | | |
| | 79 57 16.544 | | 429.9 | 353 27 15.0 | 173 27 49.6 | Francis Marion | 4.163494 | 14,571.2 | 47,806 | | | | | |
| | | | | 3 13 45.1 | 183 13 29.5 | Citadel | 4.123764 | 13,297.3 | 43,626 | | | | | |
| | | | | 71 14 50.7 | 251 12 57.4 | Farm | 3.757672 | 5,723.6 | 18,778 | | | | | |

| | | | | | | | | | | | | |
|---|--------------|---------|---------|-------------|-------------|------------------------------------|----------|----------|----------|--|--|--|
| Citadel eccentric, 1933 (d.) | 32 47 46.035 | | 1,418.1 | 169 56 48.2 | 349 56 48.0 | Citadel | 1.725791 | 53.185 | 174.49 | | | |
| | 79 57 44.975 | | 1,170.2 | 295 32 36.7 | 115 33 26.6 | Francis Marion | 3.425049 | 2,661.0 | 8,730 | | | |
| Bond, 1924, r. 1933 (d.m.) | 32 47 53.303 | | 1,642.0 | 301 37 02.2 | 121 37 48.5 | Francis Marion | 3.417620 | 2,615.9 | 8,582 | | | |
| | 79 57 38.314 | | 996.9 | 46 47 40 | 226 47 36 | Citadel | 2.398846 | 250.5 | 822 | | | |
| Tees, 1928, r. 1932 (d.m.) | 33 03 36.800 | | 1,133.7 | 303 12 39.3 | 123 16 19.3 | Dickson | 4.097679 | 12,522.2 | 41,083 | | | |
| | 79 55 56.079 | | 1,454.8 | 339 45 33.9 | 159 47 20.6 | Wando | 4.167540 | 14,707.5 | 48,253 | | | |
| | | | | 52 39 01.4 | 232 35 31.2 | Mart | 4.100385 | 12,600.4 | 41,340 | | | |
| | | | | 79 15 48.3 | | Azimuth mark, reference mark no. 3 | | | | | | |
| Bridge eccentric, 1932 (d.m.) | 33 05 26.696 | | 822.4 | 310 46 19.7 | 130 50 29.2 | Dickson | 4.195461 | 15,684.2 | 51,457 | | | |
| | 79 56 50.047 | | 1,297.9 | 337 31 56.7 | 157 32 26.1 | Tees | 3.563892 | 3,663.5 | 12,019 | | | |
| | | | | 37 59 25.7 | 217 56 24.8 | Mart | 4.146034 | 13,997.0 | 45,922 | | | |
| Bridge, 1928, r. 1932 (d.m.)* | 33 05 31.484 | | 969.9 | 62 57 02 | 242 56 56 | Bridge eccentric | 2.510972 | 324.319 | 1,064.04 | | | |
| 79 56 38.909 | | 1,009.0 | | | | | | | | | | |
| Ville eccentric, 1932 (d.m.) | 32 54 35.315 | | 1,087.9 | 43 12 01.2 | 223 09 37.1 | Hamlin | 4.003854 | 10,089.1 | 33,101 | | | |
| | 79 44 27.761 | | 721.4 | 102 43 24.0 | 282 38 56.3 | Wando | 4.117779 | 13,115.3 | 43,029 | | | |
| | | | | 258 24 01.9 | 78 24 42.9 | Sewee | 3.300917 | 1,999.5 | 6,560 | | | |
| Ville, 1928, r. 1934 (d.m.)* | 32 54 36.424 | | 1,122.0 | 348 31 | 168 31 | Ville eccentric | 1.542265 | 34.855 | 114.35 | | | |
| 79 44 28.028 | | 728.3 | | | | | | | | | | |
| Charleston, United States Navy Yard, aviation beacon, 1932 (n.d.) | 32 51 37.683 | | 1,160.8 | 134 52 34.6 | 314 51 03.4 | Farm | 3.790148 | 6,168.1 | 20,237 | | | |
| | 79 57 56.905 | | 1,479.6 | 224 33 21.6 | 44 36 13.6 | Wando | 4.069155 | 11,725.1 | 38,471 | | | |
| | | | | 357 33 57.4 | 177 34 03.8 | Citadel | 3.850645 | 7,090.0 | 23,261 | | | |
| Charleston, airport, aviation beacon, 1932 (n.d.) | 32 53 40.982 | | 1,262.5 | 253 13 37.0 | 73 14 15.4 | Farm | 3.282487 | 1,916.4 | 6,287 | | | |
| | 80 01 55.687 | | 1,447.4 | 329 05 22.4 | 149 07 38.2 | Citadel | 4.103143 | 12,680.7 | 41,603 | | | |
| | | | | 69 46 06.2 | 249 44 38.4 | Lombs | 3.651910 | 4,486.5 | 14,719 | | | |
| Charleston, black water tank, with white circle, 1932 (n.d.) | 32 53 03.109 | | 95.8 | 87 42 34.8 | 267 39 15.8 | Lombs | 3.979385 | 9,536.4 | 31,287 | | | |
| | 79 58 31.066 | | 807.5 | 116 17 00.5 | 296 15 47.7 | Farm | 3.589356 | 3,884.7 | 12,745 | | | |
| | | | | 208 32 03.0 | 28 32 43.5 | Goose Creek | 3.607850 | 4,053.7 | 13,300 | | | |

**Checked by traverse
*No check on this position

GEOGRAPHIC POSITIONS

Beaufort, S.C., to Jacksonville, N.C. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|--|------------------------|----|--------|-------------------|---------|-----|-------|--------------|-----|-------|------------------------------------|--------------------|-----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Charleston, black water tank, 1932 (n.d.) | 32 | 50 | 05.163 | 159.0 | 358 | 16 | 26.6 | 178 | 16 | 29.2 | Citadel | 3.626394 | 4,235.4 | 13,896 |
| | 79 | 57 | 50.235 | 1,306.5 | 14 | 55 | 08.1 | 194 | 54 | 33.4 | Charleston east base | 3.811001 | 6,471.4 | 21,232 |
| | | | | | | 115 | 43 | 17.8 | 295 | 39 | 36.7 | Lambs | 4.070219 | 11,754.9 |
| Oakley, revolving beacon, 1932 (n.d.)* | 33 | 07 | 08.69 | 267.7 | 300 | 14 | 49 | 120 | 16 | 42 | Bridge eccentric | 3.794819 | 6,234.7 | 20,455 |
| | 80 | 00 | 17.73 | 459.7 | 313 | 52 | 11 | 133 | 54 | 34 | Tees | 3.973848 | 9,415.6 | 30,891 |
| Charleston, Epsicopal Church, spire, 1932 (n.d.) | 32 | 46 | 34.059 | 1,049.2 | 93 | 01 | 19.9 | 272 | 59 | 41.1 | Charleston east base | 3.677210 | 4,755.7 | 15,603 |
| | 79 | 55 | 51.771 | 1,347.3 | 98 | 40 | 37.9 | 278 | 35 | 44.5 | Charleston west base | 4.154099 | 14,259.3 | 46,782 |
| | | | | | 127 | 32 | 00.2 | 307 | 30 | 58.7 | Citadel | 3.571250 | 3,726.1 | 12,225 |
| Charleston, St. Matthews Lutheran Church, spire, 1932 (n.d.) | 32 | 47 | 11.837 | 364.6 | 334 | 03 | 47.1 | 154 | 03 | 48.0 | Francis Marion | 2.020422 | 104.8 | 344 |
| | 79 | 56 | 14.473 | 376.6 | 77 | 36 | 46.2 | 257 | 35 | 19.7 | Charleston east base | 3.629139 | 4,257.3 | 13,967 |
| | | | | | 115 | 04 | 26.2 | 295 | 03 | 37.0 | Citadel | 3.416649 | 2,610.1 | 8,563 |
| Charleston, stack, bell shaped top, 1932 (n.d.) | 32 | 48 | 10.893 | 335.6 | 48 | 11 | 01.6 | 228 | 09 | 58.0 | Charleston east base | 3.612667 | 4,098.9 | 13,448 |
| | 79 | 56 | 56.872 | 1,479.6 | 60 | 30 | 07.7 | 240 | 29 | 41.5 | Citadel | 3.160982 | 1,448.7 | 4,753 |
| | | | | | 125 | 45 | 08.9 | 305 | 40 | 59.1 | Lambs | 4.169046 | 14,758.6 | 48,421 |
| Charleston, United States Navy Yard, stack, 1932 (n.d.) | 32 | 51 | 42.553 | 1,310.8 | 55 | 04 | 05.6 | 235 | 00 | 26.1 | Charleston west base | 4.108808 | 12,847.2 | 42,150 |
| | 79 | 58 | 08.729 | 227.0 | 101 | 44 | 25.3 | 281 | 40 | 54.2 | Lambs | 4.013909 | 10,325.4 | 33,876 |
| | | | | | 135 | 57 | 32.2 | 315 | 56 | 07.3 | Farm | 3.766816 | 5,845.4 | 19,178 |
| Wagner 3 eccentric, 1924, r. 1934 (d.m.) | 32 | 57 | 04.538 | 139.8 | 58 | 07 | 56.28 | 238 | 05 | 35.18 | Sewee | 3.8998998 | 7,941.45 | 26,054.6 |
| | 79 | 38 | 52.835 | 1,372.3 | 160 | 55 | 17.36 | 340 | 54 | 53.55 | Mitchell | 3.5411533 | 3,476.59 | 11,406.1 |
| | | | | | 80 | 02 | 49 | | | | Azimuth mark, reference mark no. 3 | | | |
| Wagner 3, 1924, r. 1935 (d.m.)* | 32 | 57 | 04.148 | 127.8 | 110 | 10 | | 290 | 10 | | Wagner 3 eccentric | 1.5419535 | 34.830 | 114.27 |
| | 79 | 38 | 51.576 | 1,339.6 | | | | | | | | | | |
| Jeremy 2 eccentric, 1924, r. 1934 (d.m.) | 33 | 04 | 36.375 | 1,120.6 | 75 | 00 | 48.06 | 254 | 55 | 51.80 | Awendaw | 4.1639769 | 14,587.37 | 47,858.7 |
| | 79 | 26 | 17.378 | 450.7 | 120 | 07 | 30.59 | 300 | 06 | 16.17 | McClellanville | 3.6113938 | 4,086.90 | 13,408.4 |
| | | | | | 219 | 09 | 11.50 | 39 | 11 | 38.81 | Santee | 4.0440267 | 11,066.97 | 36,308.9 |
| Jeremy 2, 1924, r. 1935 (d.m.)* | 33 | 04 | 35.765 | 1,101.8 | 137 | 31 | | 317 | 31 | | Jeremy 2 eccentric | 1.405858 | 25.460 | 83.53 |
| | 79 | 26 | 16.715 | 433.5 | | | | | | | | | | |
| Cape Romaine Lighthouse, 1924, r. 1935 (d.) | 33 | 01 | 07.544 | 232.4 | 97 | 34 | 25.76 | 277 | 27 | 23.67 | Awendaw | 4.3068254 | 20,268.68 | 66,498.2 |
| | 79 | 22 | 26.114 | 677.8 | 131 | 41 | 08.56 | 311 | 37 | 48.05 | McClellanville | 4.1059765 | 12,763.70 | 41,875.6 |
| | | | | | 137 | 00 | 42.25 | 316 | 58 | 36.13 | Jeremy 2 eccentric | 3.9443440 | 8,797.19 | 28,662.1 |
| | | | | | 183 | 47 | 24.38 | 3 | 47 | 45.33 | Santee | 4.1774128 | 15,045.71 | 49,362.5 |

* No check on this position

GEOGRAPHIC POSITIONS

Ridgeland, S.C., to Jacksonville, Florida arc

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|-----------------------------------|------------------------|----|--------|-------------------|---------|-----|-------|--------------|----|-------|------------------------------------|------------------------------------|-----------|----------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points | | | | | | | | | | | | | | |
| Switzerland, 1932, r. 1935 (d.m.) | 32 | 25 | 41.274 | 1,271.4 | 217 | 56 | 34.98 | 37 | 59 | 04.57 | Ridgeland | 4.0729210 | 11,828.26 | 38,806.5 |
| | 81 | 00 | 30.718 | 802.5 | 273 | 53 | 39.15 | 93 | 58 | 39.86 | Bolen | 4.1669579 | 14,687.84 | 48,188.4 |
| | | | | | | 204 | 23 | 42.0 | | | | Azimuth mark, reference mark no. 1 | | |
| Pinckney, 1932, r. 1935 (d.m.) | 32 | 20 | 50.104 | 1,543.4 | 129 | 08 | 16.63 | 309 | 04 | 30.52 | Switzerland | 4.1528684 | 14,218.98 | 46,650.1 |
| | 80 | 53 | 28.584 | 747.4 | 168 | 25 | 47.57 | 348 | 24 | 30.62 | Ridgeland | 4.2712464 | 18,674.39 | 61,267.6 |
| | | | | | 204 | 28 | 34.50 | 24 | 29 | 48.79 | Bolen | 3.9418783 | 8,747.39 | 28,698.7 |
| | | | | | 276 | 36 | 42 | | | | Azimuth mark, reference mark no. 1 | | | |
| Hardee, 1932, r. 1935 (d.m.) | 32 | 19 | 39.888 | 1,228.6 | 206 | 53 | 08.21 | 26 | 55 | 03.91 | Switzerland | 4.0963010 | 12,482.48 | 40,952.9 |
| | 81 | 04 | 06.775 | 177.2 | 262 | 34 | 07.70 | 82 | 39 | 49.07 | Pinckney | 4.2260729 | 16,829.57 | 55,215.0 |
| | | | | | 251 | 06 | 35.4 | | | | Azimuth mark, reference mark no. 1 | | | |
| Pritchard, 1932, r. 1938 (d.m.) | 32 | 15 | 08.932 | 275.1 | 132 | 14 | 53.80 | 312 | 11 | 46.03 | Hardee | 4.0941081 | 12,419.61 | 40,746.7 |
| | 80 | 58 | 15.274 | 399.8 | 169 | 42 | 12.42 | 349 | 40 | 59.97 | Switzerland | 4.2966037 | 19,797.20 | 64,951.3 |
| | | | | | 215 | 29 | 44.27 | 35 | 32 | 17.46 | Pinckney | 4.1109637 | 12,911.11 | 42,359.2 |
| | | | | | 221 | 14 | 05 | | | | Azimuth mark, reference mark no. 1 | | | |
| Purry, 1932 (d.m.) | 32 | 16 | 17.628 | 543.0 | 214 | 20 | 19.62 | 34 | 21 | 46.59 | Hardee | 3.8777255 | 7,546.15 | 24,757.7 |
| | 81 | 06 | 49.524 | 1,296.1 | 278 | 53 | 45.89 | 98 | 58 | 20.39 | Pritchard | 4.1343416 | 13,625.16 | 44,701.9 |
| | | | | | 172 | 49 | 34 | | | | Azimuth mark, reference mark no. 3 | | | |

| | | | | | | | | | | | | | | |
|---|----|----|--------|---------|-----|----|-------|-----|----|-------|---------------------------------------|-----------|-----------|----------|
| Hudson, 1932, r. 1933 (d.m.) | 32 | 08 | 35.245 | 1,085.6 | 149 | 54 | 03.44 | 329 | 51 | 15.27 | Purry | 4.2165855 | 16,465.90 | 54,021.9 |
| | 81 | 01 | 34.000 | 891.1 | 168 | 57 | 22.27 | 348 | 56 | 00.78 | Hardee | 4.3193027 | 20,859.44 | 68,436.3 |
| | | | | | 203 | 12 | 58.18 | 23 | 14 | 44.07 | Pritchard | 4.1204484 | 13,196.19 | 43,294.5 |
| | | | | | 203 | 39 | 18.6 | | | | Azimuth mark, reference mark no. 2 | | | |
| Cherokee (Ga.), 1932, r. 1935 (d.m.) | 32 | 08 | 23.854 | 734.8 | 205 | 04 | 13.79 | 25 | 06 | 32.84 | Purry | 4.2071905 | 16,113.52 | 52,865.8 |
| | 81 | 11 | 10.417 | 273.0 | 268 | 37 | 37.12 | 88 | 42 | 43.78 | Hudson | 4.1792919 | 15,110.95 | 49,576.5 |
| | | | | | 336 | 46 | 49 | | | | Azimuth mark, reference mark no. 3 | | | |
| Savannah (Ga.), 1932 (d.m.) | 32 | 04 | 48.862 | 1,505.0 | 126 | 30 | 30.33 | 306 | 27 | 28.78 | Cherokee | 4.0467783 | 11,137.26 | 36,539.5 |
| | 81 | 05 | 28.859 | 756.9 | 174 | 19 | 02.53 | 354 | 18 | 19.58 | Purry | 4.3287911 | 21,320.19 | 69,948.0 |
| | | | | | 221 | 25 | 40.54 | 41 | 27 | 45.39 | Hudson | 3.9685921 | 9,302.34 | 30,519.4 |
| Cloud (Ga.), 1932, r. 1933 (d.m.) | 32 | 00 | 20.844 | 642.0 | 166 | 36 | 52.39 | 346 | 35 | 40.66 | Cherokee | 4.1845028 | 15,293.36 | 50,175.0 |
| | 81 | 08 | 55.331 | 1,452.3 | 213 | 15 | 27.78 | 33 | 17 | 17.32 | Savannah | 3.9944876 | 9,873.88 | 32,394.6 |
| | | | | | 301 | 57 | 52.7 | | | | Azimuth mark, reference mark no. 1 | | | |
| Brown (Ga.), 1932 (d.m.) | 32 | 03 | 22.533 | 694.0 | 219 | 54 | 23.14 | 39 | 57 | 00.56 | Cherokee | 4.0828894 | 12,102.90 | 39,707.6 |
| | 81 | 16 | 06.671 | 175.0 | 260 | 55 | 18.18 | 81 | 00 | 56.81 | Savannah | 4.2288952 | 16,939.29 | 55,575.0 |
| | | | | | 296 | 16 | 40.16 | 116 | 20 | 28.93 | Cloud | 4.1012726 | 12,626.20 | 41,424.5 |
| | | | | | 157 | 45 | 26.8 | | | | Azimuth mark, reference mark no. 3 | | | |
| Supplementary points | | | | | | | | | | | | | | |
| Beaufort Church, reference mark no. 2, 1931, r. 1935 (d.m.) | 32 | 26 | 04.575 | 140.9 | 84 | 10 | 25.71 | 264 | 04 | 41.40 | Bolen | 4.2269748 | 16,864.55 | 55,329.8 |
| | 80 | 40 | 27.768 | 725.4 | 131 | 10 | 51.77 | 311 | 08 | 23.79 | Gray | 3.9806152 | 9,563.46 | 31,376.1 |
| Colleton, 1931, r. 1934 (d.m.) | 32 | 18 | 19.537 | 601.8 | 157 | 12 | 34.34 | 337 | 10 | 45.89 | Bolen | 4.1356696 | 13,666.89 | 44,838.8 |
| | 80 | 47 | 47.264 | 1,236.5 | 218 | 42 | 01.50 | 38 | 45 | 56.80 | Beaufort Church, reference mark no. 2 | 4.2639442 | 18,363.03 | 60,246.0 |
| | | | | | 117 | 28 | 40.01 | 297 | 25 | 37.48 | Pinckney | 4.0026047 | 10,060.16 | 33,005.7 |

GEOGRAPHIC POSITIONS

Ridgeland, S.C., to Jacksonville, Fla. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|---------------------------------------|--------------------|----------|--------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Black (Marine), 1921, r. 1933 (d.) | 32 | 21 | 10.331 | 318.2 | 62 | 23 | 44.9 | 242 | 20 | 19.4 | Colleton | 4.054726 | 11,343.0 | 37,214 |
| | 80 | 41 | 23.041 | 602.5 | 115 | 36 | 30.9 | 295 | 31 | 16.6 | Bolen | 4.230539 | 17,003.5 | 55,786 |
| | | | | | 159 | 27 | 38.5 | 339 | 25 | 40.4 | Gray | 4.214903 | 16,402.2 | 53,813 |
| | | | | | 189 | 03 | 06.8 | 9 | 03 | 36.4 | Beaufort Church, reference mark no. 2 | 3.962746 | 9,178.0 | 30,111 |
| Beaufort Church, 1859, r. 1935 (d.m.) | 32 | 26 | 04.222 | 130.1 | 9 | 43 | 41.0 | 189 | 43 | 09.2 | Black (Marine) | 3.963061 | 9,184.6 | 30,133 |
| | 80 | 40 | 23.628 | 618.8 | 39 | 02 | 45.9 | 218 | 58 | 48.4 | Colleton | 4.265325 | 18,421.5 | 60,438 |
| | | | | | 130 | 48 | 48.9 | 310 | 46 | 18.8 | Gray | 3.984574 | 9,551.0 | 31,663 |
| Air beacon no. 16, Jacksonville - Richmond, 1932 (d.) | 32 | 33 | 25.701 | 791.7 | 54 | 16 | 31.5 | 234 | 10 | 03.5 | Beaufort Church, reference mark no. 2 | 4.366262 | 23,241.4 | 76,251 |
| | 80 | 28 | 25.518 | 665.7 | | | | | | | Gray | 4.432113 | 27,046.6 | 88,735 |
| | | | | | 74 | 25 | 46.8 | 254 | 16 | 50.3 | Chtsolm | 4.093437 | 12,400.4 | 40,684 |
| | | | | | 79 | 58 | 29.6 | 259 | 54 | 17.9 | | | | |
| Beaufort, black stack, 1932 (n.d.)* | 32 | 25 | 45.53 | 1,402.5 | 251 | 02 | 35 | 71 | 03 | 10 | Beaufort Church, reference mark no. 2 | 3.256774 | 1,806.0 | 5,925 |
| | 80 | 41 | 33.15 | 866.0 | 35 | 28 | 36 | 215 | 25 | 16 | Colleton | 4.226957 | 16,863.9 | 55,328 |
| Paris Island, high brick stack, 1932 (n.d.) | 32 | 21 | 02.099 | 64.7 | 114 | 02 | 07.6 | 293 | 56 | 18.0 | Bolen | 4.271217 | 18,673.1 | 61,263 |
| | 80 | 40 | 17.182 | 449.3 | 154 | 25 | 14.3 | 334 | 22 | 40.8 | Gray | 4.238321 | 17,311.0 | 56,795 |
| | | | | | 178 | 17 | 58.6 | 358 | 17 | 52.9 | Beaufort Church, reference mark no. 2 | 3.969473 | 9,321.2 | 30,581 |
| Paris Island, low white stack, 1932 (n.d.)* | 32 | 21 | 12.62 | 388.7 | 64 | 09 | 18 | 244 | 05 | 33 | Colleton | 4.086922 | 12,215.8 | 40,078 |
| | 80 | 40 | 47.03 | 1,229.7 | 183 | 12 | 08 | 3 | 12 | 18 | Beaufort Church, reference mark no. 2 | 3.954588 | 9,007.2 | 29,551 |
| Paris Island, highest of twins, stack, 1932 (n.d.)* | 32 | 20 | 57.92 | 1,784.1 | 63 | 49 | 30 | 243 | 46 | 07 | Colleton | 4.043312 | 11,048.7 | 36,249 |
| | 80 | 41 | 28.24 | 738.4 | 189 | 29 | 42 | 9 | 30 | 14 | Beaufort Church, reference mark no. 2 | 3.981235 | 9,577.1 | 31,421 |
| Paris Island, high, yellow and black tank, 1932 (n.d.) | 32 | 19 | 48.199 | 1,494.7 | 71 | 15 | 27.7 | 251 | 12 | 43.4 | Colleton | 3.928888 | 8,489.6 | 27,853 |
| | 80 | 42 | 39.962 | 1,045.2 | 126 | 32 | 54.7 | 306 | 28 | 21.7 | Bolen | 4.219709 | 15,584.8 | 54,412 |
| | | | | | 196 | 35 | 12.9 | 16 | 36 | 23.7 | Beaufort Church, reference mark no. 2 | 4.082692 | 12,097.4 | 39,690 |
| Paris Island, silver water tank, 1932 (n.d.) | 32 | 21 | 00.855 | 26.3 | 66 | 54 | 15.5 | 246 | 50 | 17.7 | Colleton | 4.102099 | 12,650.2 | 41,503 |
| | 80 | 40 | 22.471 | 587.6 | 154 | 53 | 17.6 | 334 | 50 | 47.0 | Gray | 4.237704 | 17,286.4 | 56,714 |
| | | | | | 179 | 09 | 08.9 | 359 | 09 | 06.1 | Beaufort Church, reference mark no. 2 | 3.971111 | 9,356.4 | 30,697 |
| Paris Island, white with black top, water tank, 1932 (n.d.) | 32 | 20 | 55.571 | 1,711.8 | 67 | 05 | 53.1 | 247 | 02 | 00.8 | Colleton | 4.091104 | 12,334.0 | 40,466 |
| | 80 | 40 | 32.969 | 862.1 | 115 | 07 | 47.0 | 295 | 02 | 05.9 | Bolen | 4.264378 | 18,381.4 | 60,306 |
| | | | | | 180 | 49 | 03.9 | 0 | 49 | 06.6 | Beaufort Church, reference mark no. 2 | 3.978599 | 9,519.2 | 31,231 |
| Bench Mark (U.S.G.S.), 1932, r. 1935 (d.m.)* | 32 | 25 | 43.093 | 1,327.4 | 18 | 11 | | 198 | 11 | | Switzerland | 1.770720 | 58.982 | 193.51 |
| | 81 | 00 | 30.014 | 784.1 | | | | | | | | | | |
| Air beacon no. 13, Jacksonville - Richmond, 1932 (d.) | 32 | 16 | 32.216 | 992.3 | 154 | 04 | 29.0 | 334 | 03 | 10.0 | Pinckney | 3.946121 | 8,833.3 | 28,981 |
| | 80 | 51 | 00.898 | 23.5 | 179 | 09 | 16.9 | 359 | 09 | 12.1 | Bolen | 4.201560 | 15,906.0 | 52,185 |
| | | | | | 236 | 51 | 45.6 | 56 | 53 | 29.0 | Colleton | 3.781727 | 6,049.6 | 19,848 |
| Air beacon no. 12, Jacksonville - Richmond, 1932 (d.) | 32 | 08 | 56.073 | 1,727.2 | 80 | 12 | 18.2 | 260 | 11 | 02.8 | Hudson | 3.576007 | 3,767.1 | 12,359 |
| | 80 | 59 | 12.356 | 323.8 | 138 | 40 | 36.0 | 318 | 36 | 32.3 | Purry | 4.258151 | 18,119.7 | 59,448 |
| | | | | | 187 | 24 | 45.7 | 7 | 25 | 16.1 | Pritchard | 4.063770 | 11,581.6 | 37,997 |
| Port Wentworth, northerly and highest of three, stack (Ga.), 1932 (n.d.)* | 32 | 09 | 02.80 | 86.2 | 70 | 27 | 06 | 250 | 25 | 57 | Cherokee | 3.554352 | 3,583.9 | 11,758 |
| | 81 | 09 | 01.56 | 40.9 | 194 | 27 | 57 | 14 | 29 | 07 | Purry | 4.140900 | 13,832.5 | 45,382 |
| Port Wentworth, center of three, stack (Ga.), 1932 (n.d.)* | 32 | 09 | 02.68 | 82.5 | 70 | 28 | 26 | 250 | 27 | 17 | Cherokee | 3.553450 | 3,576.4 | 11,734 |
| | 81 | 09 | 01.80 | 47.2 | 194 | 29 | 17 | 14 | 30 | 28 | Purry | 4.141067 | 13,837.8 | 45,400 |
| Port Wentworth, westerly of three, stack (Ga.), 1932 (n.d.)* | 32 | 09 | 02.55 | 78.5 | 70 | 30 | 02 | 250 | 28 | 54 | Cherokee | 3.552583 | 3,569.3 | 11,710 |
| | 81 | 09 | 02.04 | 53.5 | 194 | 30 | 31 | 14 | 31 | 42 | Purry | 4.141236 | 13,843.2 | 45,417 |

* No check on this position

GEOGRAPHIC POSITIONS

Ridgeland, S.C., to Jacksonville, Fla. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | | |
|---|------------------------|----|-------------------|---------|-----|----|--------------|-----|----|------------|------------------------------------|----------|----------|--------|
| | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET | |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Savannah south base, 1850, r. 1932 (d.m.) | 32 | 05 | 33.773 | 1,040.2 | 67 | 56 | 49.2 | 247 | 55 | 40.0 | Savannah | 3.566169 | 3,682.7 | 12,082 |
| | 81 | 03 | 18.709 | 490.5 | 112 | 59 | 39.7 | 292 | 55 | 28.9 | Cherokee | 4.128074 | 13,429.9 | 44,061 |
| | | | | | 206 | 08 | 49.3 | 26 | 09 | 45.0 | Hudson | 3.794296 | 6,227.2 | 20,430 |
| | | | | 18 | 59 | 08 | | | | | Azimuth mark, reference mark no. 2 | | | |
| Bench mark D 37 (Ga.), 1932 r. 1934 (d.m.)* | 32 | 08 | 23.777 | 732.4 | 264 | 38 | | 84 | 38 | | Cherokee | 1.403772 | 25.338 | 83.13 |
| | 81 | 11 | 11.380 | 298.2 | | | | | | | | | | |
| Masonic (Ga.), 1918, r. 1934 (d.m.) | 32 | 04 | 22.492 | 692.8 | 34 | 28 | 52.9 | 214 | 27 | 09.7 | Cloud | 3.955584 | 9,027.8 | 29,619 |
| | 81 | 05 | 40.604 | 1,065.0 | 130 | 42 | 40.6 | 310 | 39 | 45.3 | Cherokee | 4.057041 | 11,403.6 | 37,413 |
| | | | | | 239 | 26 | 55.4 | 59 | 28 | 10.8 | Savannah south base | 3.635543 | 4,320.6 | 14,175 |
| Savannah, black water tank (Ga.), 1932, r. 1934 (n.d.) | 32 | 07 | 06.432 | 198.1 | 119 | 57 | 48.5 | 299 | 56 | 24.6 | Cherokee | 3.679099 | 4,776.4 | 15,671 |
| | 81 | 08 | 32.530 | 852.8 | 189 | 01 | 19.5 | 9 | 02 | 14.4 | Purry | 4.235298 | 17,190.9 | 56,400 |
| | | | | | 227 | 22 | 02.5 | 47 | 27 | 31.4 | Fritchard | 4.341670 | 21,961.9 | 72,053 |
| Savannah, sugar refinery, water tank (Ga.), 1932 (n.d.) | 32 | 08 | 35.041 | 1,079.3 | 84 | 46 | 50.2 | 264 | 45 | 33.8 | Cherokee | 3.577478 | 3,779.9 | 12,401 |
| | 81 | 08 | 46.792 | 1,226.3 | 192 | 09 | 17.9 | 12 | 10 | 20.5 | Purry | 4.163632 | 14,575.8 | 47,821 |
| | | | | | 323 | 18 | 15.6 | 143 | 20 | 00.8 | Savannah | 3.938862 | 8,686.8 | 28,500 |
| Savannah, tall structure, aluminum water tank (Ga.), 1932, r. 1934 (n.d.) | 32 | 04 | 58.491 | 1,801.6 | 140 | 52 | 49.6 | 320 | 51 | 05.2 | Cherokee | 3.911416 | 8,154.9 | 26,755 |
| | 81 | 07 | 54.100 | 1,418.8 | 236 | 09 | 01.2 | 56 | 12 | 23.3 | Hudson | 4.078988 | 11,994.7 | 39,353 |
| | | | | | 274 | 26 | 30.4 | 94 | 27 | 47.5 | Savannah | 3.582122 | 3,820.5 | 12,534 |
| Savannah, Wesley Memorial Church, spire (Ga.), 1932 (n.d.) | 32 | 04 | 14.187 | 437.0 | 36 | 05 | 06.5 | 216 | 03 | 20.7 | Cloud | 3.948989 | 8,891.8 | 29,173 |
| | 81 | 05 | 35.798 | 938.9 | 153 | 46 | 20.0 | 333 | 46 | 17.4 | Masonic | 2.455166 | 285.2 | 936 |
| | | | | | 189 | 40 | 10.7 | 9 | 40 | 14.4 | Savannah | 3.034804 | 1,083.4 | 3,554 |

| | | | | | | | | | | | | | | |
|---|----|----|--------|---------|-----|----|------|-----|----|------------------------------------|------------------------------------|----------|----------|--------|
| Savannah, airport, aviation beacon (Ga.), 1932 (n.d.) | 32 | 01 | 07.989 | 246.1 | 49 | 06 | 06.7 | 229 | 07 | 32.8 | Cloud | 3.346202 | 2,219.2 | 7,281 |
| | 81 | 07 | 51.389 | 1,348.6 | 107 | 43 | 25.0 | 287 | 39 | 02.3 | Brown | 4.134813 | 13,640.0 | 44,751 |
| | | | | | 209 | 47 | 30.2 | 29 | 48 | 39.6 | Masonic | 3.839096 | 6,903.9 | 22,651 |
| Bank (Ga.), 1932, r. 1934 (d.m.) | 31 | 58 | 29.440 | 906.8 | 103 | 57 | 26.0 | 283 | 52 | 46.6 | Cloud | 4.154278 | 14,265.2 | 46,802 |
| | 81 | 00 | 07.878 | 206.8 | 144 | 14 | 32.9 | 324 | 11 | 42.7 | Savannah | 4.158530 | 14,405.6 | 47,262 |
| | | | | | 337 | 35 | 42 | | | | Azimuth mark, reference mark no. 2 | | | |
| Dock (U.S.E.) (Ga.), 1932, r. 1934 (d.m.) | 31 | 57 | 44.095 | 1,358.2 | 119 | 21 | 25.4 | 299 | 18 | 32.1 | Cloud | 3.993674 | 9,855.4 | 32,334 |
| | 81 | 03 | 28.063 | 736.9 | 255 | 06 | 19.0 | 75 | 08 | 05.0 | Bank | 3.735501 | 5,438.8 | 17,844 |
| | | | | | 184 | 27 | 13 | | | | Azimuth mark, Far (U.S.E.) | | | |
| Venus 2 (U.S.E.), 1932, r. 1934 (d.m.) | 32 | 03 | 43.958 | 1,354.0 | 29 | 27 | 13.0 | 209 | 25 | 22.6 | Bank | 4.046249 | 11,123.7 | 36,495 |
| | 80 | 56 | 39.554 | 1,037.5 | 98 | 14 | 00.0 | 278 | 09 | 19.0 | Savannah | 4.146934 | 14,026.0 | 46,017 |
| | | | | | 139 | 18 | 38.6 | 319 | 16 | 02.2 | Hudson | 4.073218 | 11,836.4 | 38,833 |
| | | | | 307 | 48 | 06 | | | | Azimuth mark, reference mark no. 2 | | | | |
| South End (U.S.E.) (Ga.), 1932 (d.m.) | 31 | 59 | 13.527 | 416.6 | 84 | 35 | 34.7 | 264 | 30 | 47.4 | Bank | 4.155502 | 14,305.5 | 46,934 |
| | 80 | 51 | 05.453 | 143.2 | 133 | 33 | 27.6 | 313 | 30 | 30.4 | Venus 2 (U.S.E.) | 4.082545 | 12,093.3 | 39,676 |
| | | | | | 198 | 44 | 17.3 | | | | Azimuth mark, reference mark no. 1 | | | |
| West Base (U.S.E.) (Ga.), 1932 (d.) | 32 | 01 | 08.568 | 263.9 | 341 | 43 | 20.9 | 161 | 43 | 44.6 | South End (U.S.E.) | 3.571894 | 3,731.6 | 12,243 |
| | 80 | 51 | 50.032 | 1,313.0 | 69 | 28 | 40.0 | 249 | 24 | 16.3 | Bank | 4.144796 | 13,957.1 | 45,791 |
| | | | | | 122 | 14 | 06.4 | 302 | 11 | 32.8 | Venus 2 (U.S.E.) | 3.953194 | 8,978.3 | 29,456 |
| Quarantine (U.S.E.), 1932 (d.m.) | 32 | 02 | 22.087 | 680.3 | 307 | 42 | 23.7 | 127 | 43 | 22.8 | West Base (U.S.E.) | 3.568397 | 3,701.7 | 12,145 |
| | 80 | 53 | 41.626 | 1,092.1 | 324 | 46 | 36.6 | 144 | 47 | 59.4 | South End (U.S.E.) | 3.851776 | 7,108.5 | 23,322 |
| | | | | | 118 | 23 | 33.7 | 298 | 21 | 59.2 | Venus 2 (U.S.E.) | 3.724720 | 5,305.4 | 17,406 |
| Tybee lighthouse (Ga.), 1932 (n.d.) | 32 | 01 | 19.301 | 594.5 | 7 | 53 | 47.8 | 187 | 53 | 36.9 | South End (U.S.E.) | 3.592291 | 3,911.0 | 12,831 |
| | 80 | 50 | 44.985 | 1,180.5 | 112 | 39 | 37.1 | 292 | 38 | 03.4 | Quarantine (U.S.E.) | 3.700900 | 5,022.3 | 16,477 |
| | | | | | 115 | 37 | 06.7 | 295 | 33 | 58.5 | Venus 2 (U.S.E.) | 4.013455 | 10,314.7 | 33,841 |
| Fort Screven, water tank (Ga.), 1932 (n.d.) | 32 | 01 | 11.798 | 363.4 | 9 | 47 | 43.7 | 189 | 47 | 31.0 | South End (U.S.E.) | 3.567815 | 3,696.7 | 12,128 |
| | 80 | 50 | 41.496 | 1,089.0 | 114 | 37 | 22.1 | 294 | 35 | 46.6 | Quarantine (U.S.E.) | 3.715909 | 5,198.9 | 17,057 |
| | | | | | 116 | 32 | 25.0 | 296 | 29 | 15.0 | Venus 2 (U.S.E.) | 4.021129 | 10,498.5 | 34,444 |

GEOGRAPHIC POSITIONS

Ridgeland, S.C., to Jacksonville, Fla. arc - Continued

| STATION | LATITUDE AND LONGITUDE ° / " | | | SECONDS IN METERS | AZIMUTH ° / " | | | BACK AZIMUTH ° / " | TO STATION | DISTANCE | | |
|---|---------------------------------|--|---------|-------------------|------------------|--|--------|-----------------------|------------|--------------------|--------|------|
| | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | |
| Burke (Ge.), 1918, r. 1934 (d.m.)* | 32 08 24.051 | | 740.8 | 289 48 | | | 109 48 | Cherokee | 1.253006 | 17.910 | 58.76 | |
| | 81 11 11.060 | | 289.9 | 44 47 | | | 224 47 | Bench mark D 37 | 1.075291 | 11.893 | 39.02 | |
| Tower, old, north corner, 1932 (n.d.)* | 32 02 19.593 | | 603.5 | 181 49 | | | 1 49 | Quarantine (U.S.E.) | 1.885757 | 76.37 | 252.2 | |
| | 80 53 41.718 | | 1,094.6 | | | | | | | | | |

GEOGRAPHIC POSITIONS

Chappels to Charleston arc

| STATION | LATITUDE AND LONGITUDE ° ' " | | | SECONDS IN METERS | AZIMUTH ° ' " | | | BACK AZIMUTH ° ' " | | | TO STATION | DISTANCE | | | | | |
|--|---------------------------------|----|--------|-------------------|------------------|----|------|-----------------------|----|------|--|--------------------|----------|--------|----------|----------|--------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET | | | |
| Principal points | | | | | | | | | | | | | | | | | |
| Transit traverse station no. 11 R (U.S.G.S.) eccentric 1935 (d.m.) | 34 | 00 | 19.945 | | 94 | 27 | 50 | | | | Azimuth mark | | | | | | |
| | 81 | 38 | 52.573 | | | | | | | | | | | | | | |
| Watson, 1935 (d.m.) | 33 | 50 | 50.718 | | 176 | 53 | 49.1 | 356 | 53 | 28.4 | Transit traverse station no. 11 R (U.S.G.S.) eccentric Azimuth mark | 4.244623 | 17,564.0 | 57,625 | | | |
| | 81 | 38 | 15.523 | | | | | | | | | | | | | | |
| | | | | | 270 | 02 | 10.5 | | | | | | | | | | |
| LX 1002 (S.C.Geod.S.) eccentric, 1935 (d.m.) | 33 | 54 | 39.464 | | 58 | 55 | 52.2 | 238 | 51 | 38.8 | Watson Transit traverse station no. 11 R (U.S.G.S.) eccentric Azimuth mark | 4.134900 | 13,642.7 | 44,759 | | | |
| | 81 | 30 | 40.986 | | | | | 309 | 41 | 35.1 | | | | | 4.215166 | 16,412.2 | 53,846 |
| | | | | | 187 | 33 | 51.4 | | | | | | | | | | |
| AK 824 (S.C.Geod.S.) eccentric 1935 (d.m.) | 33 | 42 | 26.040 | | 138 | 34 | 01.1 | 318 | 29 | 04.1 | Watson LX 1002 (S.C.Geod.S.) eccentric Azimuth mark, AK 823 (S.C.Geod.S.) | 4.317074 | 20,752.7 | 68,086 | | | |
| | 81 | 29 | 21.351 | | | | | 354 | 48 | 52.3 | | | | | 4.355822 | 22,689.3 | 74,440 |
| | | | | | 125 | 42 | 56.5 | | | | | | | | | | |

• No check on this position

GEOGRAPHIC POSITIONS

Chappells to Charleston, arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|----------------------------------|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|--|--------------------|----------|--------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Oak Grove, 1935 (d.m.) | 33 | 49 | 03.083 | | 40 | 07 | 24.1 | 220 | 03 | 41.7 | A K 824(S.C.Geod.S.) eccentric | 4.203860 | 15,990.4 | 52,462 |
| | 81 | 22 | 41.176 | | 97 | 55 | 52.3 | 277 | 47 | 12.0 | Watson | 4.384764 | 24,252.9 | 79,570 |
| | | | | | 130 | 04 | 44.6 | 310 | 00 | 17.2 | LX 1002(S.C.Geod.S.) eccentric | 4.207079 | 16,109.4 | 52,852 |
| | | | | | 101 | 57 | 31.9 | | | | Azimuth mark | | | |
| Tyler, 1935 (d.m.) | 33 | 38 | 49.866 | | 111 | 58 | 32.0 | 291 | 52 | 35.8 | A K 824(S.C.Geod.S.) eccentric | 4.251298 | 17,836.0 | 58,517 |
| | 81 | 18 | 39.035 | | 161 | 45 | 32.3 | 341 | 43 | 17.8 | Oak Grove | 4.298737 | 19,894.7 | 65,271 |
| | | | | | 238 | 43 | 51.9 | | | | Azimuth mark | | | |
| 10 S L (U.S.G.S.), 1935(d.m.) | 33 | 43 | 58.676 | | 41 | 11 | 33.8 | 221 | 08 | 34.6 | Tyler | 4.101703 | 12,638.7 | 41,465 |
| | 81 | 13 | 16.015 | | 83 | 31 | 25.5 | 263 | 22 | 29.6 | A K 824(S.C.Geod.S.) eccentric | 4.398248 | 25,017.7 | 82,079 |
| | | | | | 122 | 51 | 48.4 | 302 | 46 | 34.2 | Oak Grove | 4.238144 | 17,303.9 | 56,771 |
| | | | | | 134 | 29 | 51.7 | | | | Azimuth mark, LX 1053 (S.C.Geod.S.) | | | |
| OR 56 (S.C.Geod.S.), 1935 (d.m.) | 33 | 35 | 17.583 | | 131 | 57 | 29.4 | 311 | 54 | 53.0 | Tyler | 3.990615 | 9,786.2 | 32,107 |
| | 81 | 13 | 56.623 | | 183 | 43 | 31.9 | 3 | 43 | 54.4 | 10 SL(U.S.C.S.) | 4.206515 | 16,088.5 | 52,784 |
| | | | | | 18 | 28 | 46.4 | | | | Azimuth mark, OR 55 (S.C.Geod.S.) | | | |
| Woodford eccentric, 1935 (d.m.) | 33 | 40 | 27.287 | | 48 | 43 | 27.4 | 228 | 39 | 34.1 | OR 56(S.C.Geod.S.) | 4.160009 | 14,454.7 | 47,423 |
| | 81 | 06 | 55.338 | | 80 | 39 | 15.1 | 260 | 32 | 45.1 | Tyler | 4.264280 | 18,377.2 | 60,293 |
| | | | | | 123 | 37 | 39.4 | 303 | 34 | 08.2 | 10 SL (U.S.G.S.) | 4.070752 | 11,769.3 | 38,613 |
| | | | | | 332 | 58 | 39.7 | | | | Azimuth mark | | | |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | | | | | | | |
|--|----|----|--------|--|-----|----|------|-----|----|------|---------------------------------------|----------|----------|--------|
| OR 354 (S.C.Geod.S.) eccentric, 1935 (d.m.) | 33 | 36 | 56.691 | | 81 | 22 | 02.5 | 261 | 14 | 53.8 | OR 56(S.C.Geod.S.) | 4.305443 | 20,204.3 | 66,287 |
| | 81 | 01 | 01.968 | | 125 | 29 | 52.2 | 305 | 26 | 36.4 | Woodford eccentric | 4.048487 | 11,181.2 | 36,684 |
| | | | | | 312 | 48 | 17.4 | | | | Azimuth mark, OR 353 (S.C.Geod.S.) | | | |
| Wilson, 1918, r. 1935 (d.m.) | 33 | 29 | 30.048 | | 133 | 02 | 47.4 | 312 | 58 | 41.6 | OR 56(S.C.Geod.S.) | 4.195787 | 15,695.9 | 51,496 |
| | 81 | 06 | 31.789 | | 178 | 17 | 02.4 | 358 | 16 | 49.3 | Woodford eccentric | 4.306593 | 20,257.8 | 66,462 |
| | | | | | 211 | 42 | 12.7 | 31 | 45 | 15.0 | OR 354 (S.C.Geod.S.) eccentric | 4.208935 | 16,178.4 | 53,079 |
| | | | | | 59 | 14 | 53.0 | | | | Azimuth mark | | | |
| Neece's eccentric, 1935, r. 1937 (d.m.) | 33 | 31 | 54.044 | | 121 | 54 | 28.6 | 301 | 50 | 52.5 | OR 56 (S.C.Geod.S.) | 4.074596 | 11,874.0 | 38,957 |
| | 81 | 07 | 25.724 | | 182 | 50 | 02.4 | 2 | 50 | 19.2 | Woodford eccentric | 4.199531 | 15,831.8 | 51,941 |
| | | | | | 226 | 40 | 41.8 | 46 | 44 | 14.0 | OR 354 (S.C.Geod.S.) eccentric | 4.133464 | 13,597.7 | 44,612 |
| | | | | | 342 | 34 | 30.8 | 162 | 35 | 00.6 | Wilson | 3.667412 | 4,649.6 | 15,255 |
| Culler, 1935 (d.m.) | 33 | 32 | 00.984 | | 76 | 38 | 28.8 | 256 | 31 | 31.8 | Wilson | 4.301918 | 20,040.9 | 65,751 |
| | 80 | 53 | 56.461 | | 129 | 43 | 53.6 | 309 | 39 | 58.3 | OR 354(S.C.Geod.S.) eccentric | 4.154203 | 14,262.7 | 46,794 |
| | | | | | 125 | 57 | 22.4 | | | | Azimuth mark | | | |
| Ziegler, 1935 (d.m.) | 33 | 26 | 46.922 | | 111 | 53 | 20.0 | 291 | 48 | 52.4 | Wilson | 4.130405 | 13,502.2 | 44,298 |
| | 80 | 58 | 26.456 | | 167 | 57 | 16.8 | 347 | 55 | 50.9 | OR 354(S.C.Geod.S.) eccentric | 4.283524 | 19,209.8 | 63,024 |
| | | | | | 215 | 44 | 48.7 | 35 | 47 | 17.7 | Culler | 4.076450 | 11,924.8 | 39,123 |
| | | | | | 12 | 09 | 23.8 | | | | Azimuth mark | | | |
| Gramling, 1935 (d.m.) | 33 | 27 | 35.575 | | 85 | 44 | 52.0 | 265 | 37 | 47.5 | Ziegler | 4.299716 | 19,939.6 | 65,419 |
| | 80 | 45 | 36.575 | | 122 | 23 | 59.2 | 302 | 19 | 23.3 | Culler | 4.184019 | 15,276.3 | 50,119 |
| | | | | | 111 | 49 | 47.5 | | | | Azimuth mark | | | |
| OR 546 (S.C.Geod.S.) eccentric, 1935 (d.m.) | 33 | 23 | 01.904 | | 118 | 44 | 21.4 | 298 | 39 | 51.5 | Ziegler | 4.159411 | 14,434.8 | 47,358 |
| | 80 | 50 | 16.425 | | 161 | 07 | 43.3 | 341 | 05 | 42.0 | Culler | 4.244358 | 17,553.3 | 57,589 |
| | | | | | 220 | 35 | 34.0 | 40 | 38 | 09.1 | Gramling | 4.045587 | 11,106.7 | 36,439 |
| | | | | | 337 | 27 | 59.2 | | | | Azimuth mark, OR 545 (S.C.Geod.S.) | | | |

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Chappells to Charleston, arc - Continued

| STATION | LATITUDE AND LONGITUDE | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---------------------------|------------------------|----|-------------------|---------|----|------|--------------|----|------|----------------------------------|--------------------|----------|--------|
| | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | |
| Arant, 1935 (d.m.) | 33 | 22 | 38.329 | 92 | 43 | 57.6 | 272 | 38 | 28.1 | OR 546(S.C.Geod.S.) eccentric | 4.190135 | 15,493.0 | 50,830 |
| | 80 | 40 | 17.691 | 138 | 02 | 49.9 | 317 | 59 | 54.2 | Gramling | 4.090549 | 12,318.2 | 40,414 |
| | | | | 291 | 39 | 58.4 | | | | Azimuth mark | | | |
| Meyers, 1935 (d.m.) | 33 | 18 | 07.380 | 137 | 16 | 42.9 | 317 | 13 | 44.6 | OR 546(S.C.Geod.S.) eccentric | 4.091865 | 12,355.6 | 40,537 |
| | 80 | 44 | 52.111 | 176 | 14 | 49.2 | 356 | 14 | 24.6 | Gramling | 4.244092 | 17,542.5 | 57,554 |
| | | | | 220 | 20 | 55.4 | 40 | 23 | 26.2 | Arant | 4.039658 | 10,956.2 | 35,945 |
| | | | | 109 | 06 | 04 | | | | Azimuth mark | | | |
| Murray, 1935 (d.m.) | 33 | 17 | 25.946 | 94 | 53 | 18.4 | 274 | 47 | 58.8 | Meyers | 4.179444 | 15,116.2 | 49,594 |
| | 80 | 35 | 09.942 | 140 | 25 | 57.8 | 320 | 23 | 08.7 | Arant | 4.096507 | 12,488.4 | 40,972 |
| | | | | 40 | 58 | 34 | | | | Azimuth mark | | | |
| Reeves, 1935 (d.m.) | 33 | 12 | 05.461 | 138 | 43 | 51.6 | 318 | 40 | 24.1 | Meyers | 4.171456 | 14,840.8 | 48,690 |
| | 80 | 38 | 33.738 | 208 | 06 | 08.7 | 28 | 08 | 00.4 | Murray | 4.049000 | 11,194.4 | 36,727 |
| | | | | 289 | 25 | 59 | | | | Azimuth mark | | | |
| Smith, 1935 (d.m.) | 33 | 17 | 54.758 | 277 | 11 | 19.9 | 97 | 13 | 48.8 | Murray | 3.949591 | 7,072.8 | 23,205 |
| | 80 | 39 | 41.145 | 350 | 47 | 03.5 | 170 | 47 | 40.5 | Reeves | 4.037482 | 10,901.4 | 35,766 |
| | | | | 92 | 47 | 27.2 | 272 | 44 | 36.5 | Meyers | 3.906042 | 8,054.6 | 26,426 |
| | | | | 173 | 49 | 42.5 | 353 | 49 | 22.4 | Arant | 3.943846 | 8,727.1 | 28,829 |
| | | | | 356 | 57 | 50.4 | | | | Azimuth mark | | | |
| Enfinger, 1935 (d.m.) | 33 | 14 | 53.354 | 69 | 31 | 35.4 | 249 | 26 | 42.9 | Reeves | 4.169071 | 14,759.5 | 48,423 |
| | 80 | 29 | 39.883 | 118 | 51 | 00.3 | 298 | 47 | 59.2 | Murray | 3.989014 | 9,750.2 | 31,989 |
| | | | | 304 | 14 | 22.8 | | | | Azimuth mark | | | |

| | | | | | | | | | | | | | |
|----------------------------|----|----|--------|-----|----|------|-----|----|------|---|----------|----------|--------|
| Charlie, 1935 (d.m.) | 33 | 07 | 37.008 | 129 | 40 | 07.9 | 309 | 36 | 37.1 | Reeves | 4.112722 | 12,963.5 | 42,531 |
| | 80 | 32 | 08.474 | 165 | 29 | 29.0 | 345 | 27 | 49.5 | Murray | 4.272820 | 18,742.2 | 61,490 |
| | | | | 195 | 58 | 03.4 | 15 | 59 | 24.7 | Enfinger | 4.145590 | 13,982.7 | 45,875 |
| | | | | 201 | 46 | 48.2 | | | | Azimuth mark | | | |
| Huff, 1935 (d.m.) | 33 | 10 | 48.456 | 71 | 17 | 36.3 | 251 | 11 | 29.8 | Charlie | 4.263429 | 18,341.3 | 60,175 |
| | 80 | 20 | 58.309 | 119 | 13 | 32.3 | 299 | 08 | 46.6 | Enfinger | 4.189528 | 15,471.3 | 50,759 |
| | | | | 160 | 37 | 42.0 | | | | Azimuth mark | | | |
| Rhodes, 1935 (d.m.) | 33 | 05 | 51.062 | 108 | 43 | 03.0 | 288 | 39 | 39.7 | Charlie | 4.007986 | 10,185.6 | 33,417 |
| | 80 | 25 | 56.331 | 160 | 53 | 44.4 | 340 | 51 | 42.0 | Enfinger | 4.247527 | 17,681.8 | 58,011 |
| | | | | 220 | 06 | 44.6 | 40 | 09 | 27.5 | Huff | 4.078583 | 11,983.5 | 39,316 |
| | | | | 163 | 38 | 47 | | | | Azimuth mark | | | |
| Lime, 1934, r. 1935 (d.m.) | 32 | 58 | 15.714 | 324 | 35 | 52.4 | 144 | 38 | 52.0 | Bula | 4.171355 | 14,837.3 | 48,679 |
| | 80 | 13 | 04.816 | 274 | 24 | 30.4 | | | | Azimuth mark, refer- ence mark no. 1 | | | |
| Mart, 1932, r. 1935 (d.m.) | 32 | 59 | 28.488 | 292 | 06 | 41.3 | 112 | 11 | 57.8 | Wando | 4.212475 | 16,310.8 | 53,513 |
| | 80 | 02 | 21.895 | 346 | 04 | 50.3 | 166 | 05 | 42.9 | Farm | 4.019493 | 10,459.1 | 34,315 |
| | | | | 29 | 31 | 44.2 | 209 | 28 | 54.4 | Bula | 4.216863 | 16,476.4 | 54,056 |
| | | | | 82 | 23 | 59.6 | 262 | 18 | 09.6 | Lime | 4.226432 | 16,843.5 | 55,261 |
| | | | | 18 | 28 | 36.3 | | | | Azimuth mark, refer- ence mark no. 1 | | | |
| Alex, 1935 (d.m.) | 33 | 07 | 14.883 | 81 | 37 | 21.3 | 261 | 31 | 14.2 | Rhodes | 4.245938 | 17,617.2 | 57,799 |
| | 80 | 14 | 44.196 | 124 | 11 | 23.7 | 304 | 07 | 59.2 | Huff | 4.068820 | 11,717.1 | 38,442 |
| | | | | 351 | 10 | 05.2 | 171 | 10 | 59.4 | Lime | 4.225533 | 16,808.7 | 55,147 |
| | | | | 61 | 14 | 38.1 | | | | Azimuth mark | | | |
| Rudd, 1935 (d.m.) | 33 | 01 | 59.571 | 124 | 40 | 32.2 | 304 | 36 | 55.2 | Rhodes | 4.098444 | 12,544.2 | 41,155 |
| | 80 | 19 | 18.501 | 170 | 58 | 56.9 | 350 | 58 | 02.4 | Huff | 4.217412 | 16,497.3 | 54,125 |
| | | | | 216 | 12 | 00.5 | 36 | 14 | 30.2 | Alex | 4.080643 | 12,040.5 | 39,503 |
| | | | | 305 | 22 | 50.4 | 125 | 26 | 13.9 | Lime | 4.075619 | 11,902.0 | 39,048 |
| | | | | 22 | 25 | 35 | | | | Azimuth mark | | | |

GEOGRAPHIC POSITIONS

Chappells to Charleston, arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|-----------------------------------|--------------------|----------|--------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Taylor, 1935 (d.m.) | 33 | 03 | 24.046 | | 310 | 39 | 55.0 | 130 | 42 | 52.2 | Mart | 4.046509 | 11,130.4 | 36,517 |
| | 80 | 07 | 47.085 | | 40 | 59 | 23.5 | 220 | 56 | 30.4 | Lime | 4.099648 | 12,579.1 | 41,270 |
| | | | | | 81 | 47 | 55.2 | 261 | 41 | 38.2 | Rudd | 4.258342 | 18,127.7 | 59,474 |
| | | | | | 123 | 21 | 08.7 | 303 | 17 | 21.0 | Alex | 4.112115 | 12,945.4 | 42,472 |
| | | | | | 45 | 16 | 08.3 | | | | Azimuth mark | | | |
| Heape, 1935 (d.m.) | 32 | 57 | 19.053 | | 1 | 23 | 32.0 | 181 | 23 | 26.7 | Bula | 4.015163 | 10,355.3 | 33,974 |
| | 80 | 07 | 24.548 | | 101 | 11 | 56.3 | 281 | 08 | 51.2 | Lime | 3.954613 | 9,007.7 | 29,553 |
| | | | | | 177 | 01 | 24.0 | 357 | 01 | 11.7 | Taylor | 4.051505 | 11,259.1 | 36,939 |
| | | | | | 243 | 04 | 34.4 | 63 | 07 | 19.1 | Mart | 3.945114 | 8,812.8 | 28,913 |
| | | | | | 300 | 40 | 50.4 | 120 | 44 | 27.5 | Farm | 4.081757 | 12,071.4 | 39,604 |
| Supplementary points | | | | | | | | | | | | | | |
| Jedburg, 1935 (d.m.) | 33 | 03 | 15.623 | | 268 | 32 | 02.4 | 88 | 35 | 40.0 | Taylor | 4.015178 | 10,355.7 | 33,975 |
| | 80 | 14 | 26.121 | | 347 | 07 | 37.3 | 167 | 08 | 21.6 | Lime | 3.976668 | 9,476.9 | 31,092 |
| D C 100 (S.C.Geod.S.) eccentric, 1935 (d.m.) | 33 | 01 | 34.414 | | 228 | 31 | 47.4 | 48 | 33 | 07.7 | Taylor | 3.707661 | 5,101.1 | 16,736 |
| | 80 | 10 | 14.416 | | 330 | 42 | 40.3 | 150 | 44 | 12.8 | Heape | 3.955134 | 9,018.5 | 29,588 |
| | | | | | 35 | 52 | 04.1 | 215 | 50 | 31.3 | Lime | 3.878076 | 7,552.2 | 24,778 |
| | | | | | 115 | 32 | 15.6 | 295 | 29 | 58.4 | Jedburg | 3.859576 | 7,237.3 | 23,744 |
| | | | | | 300 | 58 | 28.9 | | | | Azimuth mark | | | |
| D C 100 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 01 | 34.661 | | 71 | 05 | | 251 | 05 | | D C 100(S.C.Geod.S.) eccentric | 1.369680 | 23,425 | 76.85 |
| | 80 | 10 | 13.562 | | | | | | | | | | | |
| Primary traverse station no. 54 (U.S.G.S.) eccentric, 1935 (d.m.) | 32 | 56 | 53.356 | | 119 | 41 | 04.4 | 299 | 39 | 31.1 | Lime | 3.709809 | 5,126.4 | 16,819 |
| | 80 | 10 | 13.314 | | 179 | 48 | 38.9 | 359 | 48 | 38.3 | D C 100(S.C.Geod.S.) eccentric | 3.937461 | 8,658.9 | 28,408 |
| | | | | | 259 | 44 | 34.8 | 79 | 46 | 06.6 | Heape | 3.648802 | 4,454.5 | 14,614 |
| | | | | | 1 | 49 | 07 | | | | Azimuth mark | | | |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | | | | | | | |
|---|----|----|--------|--|-----|----|------|-----|----|------|--|----------|----------|--------|
| Primary traverse station no. 54 (U.S.G.S.), 1935 (d.m.)* | 32 | 56 | 56.713 | | 3 | 13 | 29 | 183 | 13 | 29 | Primary traverse station no. 54 (U.S.G.S.)eccentric | 2.017801 | 104.184 | 341.81 |
| | 80 | 10 | 13.008 | | | | | | | | | | | |
| Primary traverse station no. 56 (U.S.G.S.) eccentric, 1935 (d.m.) | 32 | 58 | 07.906 | | 168 | 38 | 23.5 | 348 | 37 | 53.4 | Rudd | 3.862093 | 7,279.4 | 23,882 |
| | 80 | 18 | 23.247 | | 268 | 18 | 35.1 | 88 | 21 | 28.3 | Lime | 3.917647 | 8,272.7 | 27,141 |
| | | | | | 287 | 16 | 32 | | | | Azimuth mark | | | |
| Primary traverse station no. 56 (U.S.G.S.), 1935 (d.m.)* | 32 | 58 | 08.833 | | 18 | 24 | | 198 | 24 | | Primary traverse station no. 56 (U.S.G.S.)eccentric | 1.478639 | 30.105 | 98.77 |
| | 80 | 18 | 22.881 | | | | | | | | | | | |
| Bench mark no. 46 (U.S.G.S.), 1932, r. 1935 (d.m.)* | 32 | 53 | 59.129 | | 81 | 08 | | 261 | 08 | | Farm | 1.601951 | 39.990 | 131.20 |
| | 80 | 00 | 43.566 | | | | | | | | | | | |
| Primary traverse station no. 59 (U.S.G.S.) eccentric, 1935 (d.m.) | 33 | 12 | 29.678 | | 353 | 25 | 38.4 | 173 | 26 | 01.9 | Alex | 3.989533 | 9,761.9 | 32,027 |
| | 80 | 15 | 27.297 | | 70 | 02 | 22.2 | 249 | 59 | 21.0 | Huff | 3.960166 | 9,123.6 | 29,933 |
| | | | | | 106 | 18 | 53 | | | | Azimuth mark | | | |
| Primary traverse station no. 59 (U.S.G.S.), 1935 (d.m.)* | 33 | 12 | 29.749 | | 81 | 44 | | 261 | 44 | | Primary traverse station no. 59 (U.S.G.S.)eccentric | 1.182272 | 15.215 | 49.92 |
| | 80 | 15 | 26.716 | | | | | | | | | | | |
| D C 163 (S.C.Geod.S.), 1935 (d.m.) | 33 | 08 | 32.351 | | 182 | 50 | 30.0 | 2 | 50 | 34.4 | Huff | 3.623055 | 4,198.1 | 13,773 |
| | 80 | 21 | 06.343 | | 230 | 12 | 09.9 | 50 | 15 | 15.4 | Primary traverse station no. 59 (U.S.G.S.)eccentric | 4.057997 | 11,428.7 | 37,496 |
| | | | | | 283 | 31 | 00.2 | 103 | 34 | 29.0 | Alex | 4.008138 | 10,189.2 | 33,429 |
| Primary traverse station no. 67 (U.S.G.S.), 1935 (d.m.) | 33 | 11 | 55.953 | | 263 | 36 | 10.9 | 83 | 39 | 27.7 | Primary traverse sta- tion no. 59 (U.S.G.S.) eccentric | 3.971495 | 9,364.7 | 30,724 |
| | 80 | 21 | 26.636 | | 340 | 33 | 37.2 | 160 | 33 | 52.7 | Huff | 3.343417 | 2,205.0 | 7,234 |
| | | | | | 316 | 47 | 02 | | | | Azimuth mark | | | |
| Primary traverse station no. 64 (U.S.G.S.) eccentric, 1935 (d.m.) | 33 | 05 | 18.018 | | 130 | 24 | 25.1 | 310 | 22 | 39.1 | Charlie | 3.820040 | 6,607.5 | 21,678 |
| | 80 | 28 | 54.381 | | 257 | 33 | 12.2 | 77 | 34 | 49.4 | Rhodes | 3.674694 | 4,728.2 | 15,512 |
| | | | | | 191 | 48 | 04 | | | | Azimuth mark | | | |

* No check on this position

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Chappells to Charleston, arc - Continued

| STATION | LATITUDE AND LONGITUDE | | SECONDS IN METERS | AZIMUTH | | BACK AZIMUTH | | TO STATION | DISTANCE | | |
|---|------------------------|----|-------------------|---------|----|--------------|----|---|--------------------|----------|--------|
| | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | |
| Primary traverse station no. 64 (U.S.G.S.), 1935 (d.m.)* | 33 | 05 | 17.678 | 251 | 47 | 71 | 47 | Primary traverse station no. 64 (U.S.G.S.)eccentric | 1.525628 | 33.545 | 110.06 |
| | 80 | 28 | 55.610 | | | | | | | | |
| Primary traverse station no. 66 (U.S.G.S.) eccentric, 1935 (d.m.) | 33 | 12 | 41.628 | 40 | 48 | 220 | 45 | Charlie Enfinger Azimuth mark | 4.093172 | 12,392.9 | 40,659 |
| | 80 | 26 | 56.074 | 133 | 44 | 313 | 43 | | 3.768642 | 5,870.1 | 19,259 |
| | | | | 19 | 24 | 11.7 | | | | | |
| Primary traverse station no. 66 (U.S.G.S.), 1935 (d.m.)* | 33 | 12 | 40.703 | 208 | 10 | 28 | 10 | Primary traverse station no. 66 (U.S.G.S.)eccentric | 1.509498 | 32.322 | 106.04 |
| | 80 | 26 | 56.663 | | | | | | | | |
| OR 123 (S.C.Geod.S.) eccentric, 1935 (d.m.) | 33 | 20 | 35.593 | 335 | 03 | 155 | 04 | Smith Meyers Arant Azimuth mark | 3.737534 | 5,464.3 | 17,927 |
| | 80 | 41 | 10.211 | 51 | 30 | 231 | 28 | | 3.865350 | 7,334.2 | 24,062 |
| | | | | 199 | 44 | 19 | 45 | | 3.603971 | 4,017.6 | 13,181 |
| | | | | 61 | 51 | 05.4 | | | | | |
| OR 123 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 20 | 35.703 | 315 | 34 | 135 | 34 | OR 123(S.C.Geod.S.) eccentric | 0.675778 | 4.740 | 15.55 |
| | 80 | 41 | 10.339 | | | | | | | | |
| OR 317 (S.C.Geod.S.), 1935 (d.m.) | 33 | 27 | 51.436 | 273 | 46 | 93 | 49 | Gramling OR 546 (S.C.Geod.S.) eccentric Azimuth mark,OR 318 (S.C.Geod.S.) | 3.868107 | 7,380.9 | 24,216 |
| | 80 | 50 | 21.766 | 359 | 06 | 179 | 06 | | 3.950412 | 8,921.0 | 29,268 |
| | | | | 149 | 48 | 56.1 | | | | | |
| OR 546 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 23 | 01.899 | 267 | 29 | 87 | 29 | OR 546 (S.C.Geod.S.) eccentric | 0.559667 | 3.628 | 11.90 |
| | 80 | 50 | 16.565 | | | | | | | | |
| OR 334 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 32 | 01.256 | 283 | 24 | 103 | 24 | Culler | 1.557507 | 36.100 | 118.44 |
| | 80 | 53 | 57.822 | | | | | | | | |

| | | | | | | | | | | | |
|---|----|----|--------|-----|----|------|----|---|----------|----------|--------|
| OR 354 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 36 | 56.609 | 223 | 39 | 43 | 39 | OR 354 (S.C.Geod.S.) eccentric | 0.543447 | 3.495 | 11.47 |
| | 81 | 01 | 02.062 | | | | | | | | |
| Woodford, 1918, r. 1935 (d.m.)** | 33 | 40 | 26.185 | 146 | 43 | 326 | 43 | Woodford eccentric | 1.608483 | 40.596 | 133.19 |
| | 81 | 06 | 54.473 | | | | | | | | |
| Neece, 1918, l. 1937 (d.m.)* | 33 | 31 | 54.400 | 341 | 01 | 161 | 01 | Neece eccentric | 1.064720 | 11.607 | 38.08 |
| | 81 | 07 | 25.870 | | | | | | | | |
| LX 1054 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 43 | 59.010 | 344 | 21 | 164 | 21 | LX SL (U.S.G.S.) | 1.028368 | 10.675 | 35.02 |
| | 81 | 13 | 16.127 | | | | | | | | |
| LX 1002 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 54 | 38.329 | 202 | 05 | 22 | 05 | LX 1002 (S.C.Geod.S.) eccentric | 1.576917 | 37.750 | 123.85 |
| | 81 | 30 | 41.538 | | | | | | | | |
| Bench mark no. B2, 1918, r. 1935 (d.m.)* | 33 | 40 | 27.985 | 45 | 58 | 225 | 58 | Woodford eccentric | 1.490797 | 30.959 | 101.57 |
| | 81 | 06 | 54.474 | | | | | | | | |
| AK 824 (S.C.Geod.S.), 1935 (d.m.)* | 33 | 42 | 26.003 | 215 | 45 | 35 | 45 | AK 824 (S.C.Geod.S.) eccentric | 0.144885 | 1.396 | 4.58 |
| | 81 | 29 | 21.383 | | | | | | | | |
| Transit traverse station no. 11 R (U.S.G.S.), 1935(d.m.)* | 34 | 00 | 18.937 | 156 | 31 | 336 | 31 | Transit traverse station no. 11 R (U.S.G.S.) eccentric | 1.529623 | 33.855 | 111.07 |
| | 81 | 38 | 52.047 | | | | | | | | |
| LX 663 (S.C.Geod.S.), 1935 (d.m.) | 33 | 58 | 36.354 | 10 | 06 | 190 | 05 | Oak Grove LX 1002(S.C.Geod.S.) eccentric Transit traverse station no. 11 R (U.S.G.S.)eccentric Azimuth mark, LX 664 (S.C.Geod.S.) | 4.253837 | 17,940.6 | 58,860 |
| | 81 | 20 | 38.741 | 64 | 46 | 244 | 41 | | 4.233030 | 17,101.3 | 56,107 |
| | | | | 96 | 34 | 276 | 24 | | 4.451092 | 28,254.8 | 92,699 |
| | | | | 86 | 34 | 02.9 | | | | | |

* No check on this position
 ** Checked by traverse

GEOGRAPHIC POSITIONS

Chappells to Charleston arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|--|--------------------|----------|---------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd.) | | | | | | | | | | | | | | |
| Bird, 1935 (d.m.) | 34 | 11 | 15.436 | | 346 | 04 | 33.7 | 166 | 06 | 40.2 | LX 663 (S.C.Geod.S.) | 4.381917 | 24,094.5 | 79,050 |
| | 81 | 24 | 24.606 | | 17 | 29 | 30.4 | 197 | 25 | 59.6 | LX 1002 (S.C.Geod.S.) eccentric | 4.507445 | 32,169.6 | 105,543 |
| | | | | | 47 | 50 | 11.9 | 227 | 42 | 05.3 | Transit traverse station no. 11 R (U.S.G.S.) eccentric | 4.477828 | 30,048.9 | 98,585 |
| | | | | | 119 | 39 | 39.2 | | | | Azimuth mark, Traverse station N519 (S.C.Geod.S.) | | | |
| Summerville, aluminum water tank, 1935 (n.d.) | 33 | 01 | 09.962 | | 37 | 03 | 29.1 | 217 | 02 | 04.1 | Lime | 3.827717 | 6,725.4 | 22,065 |
| | 80 | 10 | 28.745 | | 96 | 22 | 58.9 | 276 | 18 | 10.2 | Rudd | 4.140914 | 13,832.9 | 45,383 |
| | | | | | 225 | 25 | 48.3 | 45 | 27 | 16.4 | Taylor | 3.769906 | 5,887.2 | 19,315 |
| Summerville, black water tank, 1935 (n.d.) | 33 | 00 | 31.717 | | 26 | 54 | 22.1 | 206 | 53 | 37.5 | Lime | 3.671913 | 4,698.0 | 15,413 |
| | 80 | 11 | 42.947 | | 102 | 55 | 40.0 | 282 | 51 | 31.7 | Rudd | 4.083323 | 12,129.1 | 39,794 |
| | | | | | 229 | 02 | 43.1 | 49 | 04 | 51.6 | Taylor | 3.903603 | 8,102.2 | 26,582 |
| Summerville, west part of, aluminum water tank, 1935 (n.d.) | 33 | 01 | 52.044 | | 19 | 30 | 38.9 | 199 | 29 | 49.4 | Lime | 3.849415 | 7,069.9 | 23,195 |
| | 80 | 11 | 33.887 | | 91 | 08 | 12.6 | 271 | 03 | 59.4 | Rudd | 4.081315 | 12,059.1 | 39,564 |
| | | | | | 244 | 16 | 00.4 | 64 | 13 | 04.1 | Taylor | 3.815030 | 6,531.8 | 21,430 |
| St. George, silver water tank, 1935 (n.d.) | 33 | 11 | 15.860 | | 103 | 16 | 13.7 | 283 | 13 | 56.6 | Reeves | 3.823879 | 6,666.2 | 21,871 |
| | 80 | 34 | 23.234 | | 173 | 56 | 57.3 | 353 | 56 | 31.7 | Murray | 4.059392 | 11,465.2 | 37,615 |
| | | | | | 227 | 34 | 39.3 | 47 | 37 | 14.6 | Enfinger | 3.997236 | 9,936.6 | 32,600 |
| Orangeburg, southwest of, silver water tank, 1935 (n.d.) | 33 | 29 | 21.236 | | 153 | 38 | 57.8 | 333 | 38 | 05.6 | Culler | 3.739778 | 5,492.6 | 18,020 |
| | 80 | 52 | 21.975 | | 287 | 14 | 37.9 | 107 | 18 | 21.5 | Grambling | 4.039885 | 10,961.9 | 35,964 |
| | | | | | 63 | 13 | 40.7 | 243 | 10 | 19.7 | Ziegler | 4.023014 | 10,544.2 | 34,594 |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | | | | | | | |
|--|----|----|--------|--|-----|----|------|-----|----|------|--|----------|----------|--------|
| Orangeburg, water tank, 1935 (n.d.) | 33 | 29 | 47.697 | | 339 | 15 | 05.3 | 159 | 15 | 34.4 | OR 317 (S.C.Geod.S.) | 3.583209 | 3,830.1 | 12,566 |
| | 80 | 51 | 14.311 | | 63 | 30 | 30.3 | 243 | 26 | 32.0 | Ziegler | 4.095902 | 12,471.0 | 40,915 |
| | | | | | 134 | 28 | 13.7 | 314 | 26 | 44.2 | Culler | 3.768117 | 5,863.0 | 19,236 |
| North, water tank, 1935 (n.d.)* | 33 | 36 | 52.10 | | 76 | 31 | 05 | 256 | 26 | 45 | OR 56(S.C.Geod.S.) | 4.095417 | 12,457.1 | 40,870 |
| | 81 | 06 | 06.84 | | 139 | 57 | 43 | 319 | 53 | 45 | 10 SL (U.S.G.S.) | 4.234879 | 17,174.3 | 56,346 |
| Batesburg, white tank, 1935 (n.d.) | 33 | 54 | 26.518 | | 262 | 05 | 17.2 | 82 | 06 | 19.6 | LX 1002(S.C.Geod.S.) eccentric | 3.462517 | 2,900.8 | 9,517 |
| | 81 | 32 | 32.826 | | 138 | 11 | 16.1 | 318 | 07 | 44.0 | Transit traverse station no. 11 R (U.S.G.S.)eccentric | 4.164849 | 14,616.7 | 47,955 |
| | | | | | 52 | 58 | 34.2 | 232 | 55 | 23.2 | Watson | 4.042779 | 11,035.2 | 36,205 |
| Leesville, smaller of two tanks, 1935 (n.d.) | 33 | 54 | 56.313 | | 323 | 34 | 40.5 | 143 | 34 | 48.8 | LX 1002(S.C.Geod.S.) eccentric | 2.809645 | 645.1 | 2,116 |
| | 81 | 30 | 55.895 | | 56 | 13 | 16.9 | 236 | 09 | 11.8 | Watson (U.S.G.S.) | 4.133466 | 13,597.7 | 44,612 |
| | | | | | 129 | 12 | 29.2 | 309 | 08 | 02.9 | Transit traverse station no. 11 R (U.S.G.S.) eccentric | 4.198284 | 15,786.4 | 51,793 |
| Leesville, taller of two tanks, 1935 (n.d.) | 33 | 55 | 01.075 | | 312 | 24 | 45.7 | 132 | 29 | 07.1 | Oak Grove | 4.213306 | 16,342.0 | 53,615 |
| | 81 | 30 | 30.323 | | 57 | 12 | 17.9 | 237 | 07 | 58.5 | Watson | 4.153125 | 14,227.4 | 46,678 |
| | | | | | 22 | 21 | 40.1 | 202 | 21 | 34.1 | LX 1002(S.C.Geod.S.) eccentric | 2.857326 | 720.0 | 2,362 |

* No check on this position

TRIANGULATION IN SOUTH CAROLINA--PART 2

GEOGRAPHIC POSITIONS

Allendale, S.C., to Odum, Ga. arc

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---------------------------|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|--------------|--------------------|----------|--------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points | | | | | | | | | | | | | | |
| Fifer (Ga.), 1935 (d.m.) | 32 | 47 | 25.954 | | 160 | 32 | 49.2 | 340 | 30 | 50.6 | Millhaven | 4.231795 | 17,052.8 | 55,947 |
| | 81 | 30 | 09.138 | | 235 | 27 | 29.2 | 55 | 31 | 02.7 | Rouse | 4.094603 | 12,433.8 | 40,793 |
| | | | | | 140 | 21 | 19 | | | | Azimuth mark | | | |
| Bascom (Ga.), 1935 (d.m.) | 32 | 50 | 24.866 | | 212 | 09 | 11.4 | 32 | 11 | 30.3 | Millhaven | 4.096322 | 12,483.1 | 40,955 |
| | 81 | 38 | 03.468 | | 266 | 02 | 57.1 | 86 | 10 | 48.0 | Rouse | 4.354672 | 22,629.3 | 74,243 |
| | | | | | 294 | 01 | 57.7 | 114 | 06 | 14.8 | Fifer | 4.130784 | 13,514.0 | 44,337 |
| | | | | | 84 | 40 | 01 | | | | Azimuth mark | | | |
| Hump (Ga.), 1935 (d.m.) | 32 | 40 | 15.176 | | 156 | 30 | 41.6 | 336 | 27 | 51.8 | Bascom | 4.311368 | 20,481.8 | 67,197 |
| | 81 | 32 | 49.574 | | 197 | 27 | 44.5 | 17 | 29 | 11.3 | Fifer | 4.143388 | 13,911.9 | 45,643 |
| | | | | | 45 | 24 | 49 | | | | Azimuth mark | | | |

GEOGRAPHIC POSITIONS

Silver City, Ga., to Hardeeville, S.C. arc

| STATION | LATITUDE AND LONGITUDE ° ' " | | | SECONDS IN METERS | AZIMUTH ° ' " | | | BACK AZIMUTH ° ' " | | | TO STATION | DISTANCE | | |
|--|---------------------------------|----|--------|-------------------|------------------|----|------|-----------------------|----|------|---|--------------------|----------|--------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points | | | | | | | | | | | | | | |
| Primary traverse station no. 111 Mac (U.S.G.S.) eccentric (Ga.), 1935 (d.m.) | 32 | 35 | 14.195 | | 155 | 23 | 13.4 | 335 | 21 | 45.5 | Hump | 4.008557 | 10,199.0 | 33,461 |
| | 81 | 30 | 06.549 | | 140 | 15 | 25 | | | | Azimuth mark | | | |
| Huggins (Ga.), 1935 (d.m.) | 32 | 32 | 43.755 | | 170 | 09 | 49.0 | 350 | 08 | 59.1 | Hump | 4.149629 | 14,113.3 | 46,303 |
| | 81 | 31 | 17.039 | | 201 | 38 | 16.6 | 21 | 38 | 54.5 | Primary traverse station no. 111 Mac (U.S.G.S.) eccentric | 3.697719 | 4,985.6 | 16,357 |
| | | | | | 201 | 00 | 16 | | | | Azimuth mark | | | |
| Pryor (Ga.), 1935 (d.m.) | 32 | 38 | 03.003 | | 32 | 38 | 58.6 | 212 | 36 | 48.5 | Huggins | 4.067340 | 11,677.2 | 38,311 |
| | 81 | 27 | 15.592 | | 40 | 36 | 57.7 | 220 | 35 | 25.5 | Primary traverse station no. 111 Mac (U.S.G.S.) eccentric | 3.835622 | 6,848.9 | 22,470 |
| | | | | | 115 | 05 | 39.0 | 295 | 02 | 36.7 | Hump | 3.982684 | 9,609.1 | 31,526 |
| 5C - 25 (Ga. Geod.S.) (Ga.), 1935 (d.m.) | 32 | 32 | 01.048 | | 102 | 20 | 42.9 | 282 | 18 | 38.8 | Huggins | 3.789684 | 6,161.5 | 20,215 |
| | 81 | 27 | 26.356 | | 181 | 26 | 29.9 | 1 | 26 | 35.7 | Pryor | 4.047396 | 11,153.1 | 36,591 |
| | | | | | 39 | 23 | 10 | | | | Azimuth mark | | | |
| Porter (Ga.), 1935 (d.m.) | 32 | 34 | 23.413 | | 64 | 12 | 02.7 | 244 | 08 | 55.8 | 6C-25(Ga.Geod. S.) | 4.002888 | 10,066.7 | 33,027 |
| | 81 | 21 | 39.043 | | 78 | 32 | 09.3 | 258 | 26 | 58.2 | Huggins | 4.187185 | 15,388.1 | 50,486 |
| | | | | | 127 | 39 | 00.9 | 307 | 35 | 59.6 | Pryor | 4.044538 | 11,080.0 | 36,352 |
| | | | | | 39 | 14 | 43.6 | | | | Azimuth mark | | | |
| Turkey (Ga.), 1935 (d.m.) | 32 | 27 | 34.810 | | 138 | 57 | 43.2 | 318 | 54 | 52.5 | Huggins | 4.101106 | 12,621.4 | 41,409 |
| | 81 | 25 | 59.445 | | 164 | 32 | 30.4 | 344 | 31 | 43.7 | 6C-25 (Ga.Geod.S.) | 3.929883 | 8,509.1 | 27,917 |
| | | | | | 208 | 20 | 58.6 | 28 | 23 | 18.6 | Porter | 4.155464 | 14,304.2 | 46,930 |
| | | | | | 236 | 47 | 16 | | | | Azimuth mark | | | |

GEOGRAPHIC POSITIONS

Silver City, Ga., to Hardeesville, S.C. arc - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|----|--------|-------------------|---------|-----|------|--------------|----|------|-------------|--------------------|----------|--------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Wyles (Ga.), 1935 (d.m.) | 32 | 24 | 31.847 | | 117 | 34 | 51.2 | 297 | 31 | 09.4 | Turkey | 4.085822 | 12,184.9 | 39,977 |
| | 81 | 19 | 05.912 | | 167 | 38 | 12.9 | 347 | 36 | 50.7 | Porter | 4.270809 | 18,655.6 | 61,206 |
| | | | | | | 153 | 55 | 04 | | | | Azimuth mark | | |
| Snooks (Ga.), 1935 (d.m.) | 32 | 31 | 18.609 | | 23 | 09 | 53.7 | 203 | 08 | 03.6 | Wyles | 4.134392 | 13,626.7 | 44,707 |
| | 81 | 15 | 40.778 | | 66 | 56 | 00.1 | 246 | 50 | 27.8 | Turkey | 4.244567 | 17,561.7 | 57,617 |
| | | | | | 121 | 22 | 04.0 | 301 | 18 | 51.3 | Porter | 4.039201 | 10,944.6 | 35,907 |
| | | | | | 359 | 01 | 24 | | | | | Azimuth mark | | |
| Berryville (Ga.), 1918, r.1935 (d.m.) | 32 | 25 | 42.173 | | 68 | 53 | 57.7 | 248 | 52 | 02.6 | Wyles | 3.779084 | 6,012.9 | 19,727 |
| | 81 | 15 | 31.239 | | 178 | 37 | 26.1 | 358 | 37 | 21.0 | Snooks | 4.015623 | 10,366.3 | 34,010 |
| | | | | | 172 | 53 | 55 | | | | | Azimuth mark | | |
| Jewels (Ga.), 1935 (d.m.) | 32 | 22 | 08.019 | | 110 | 08 | 11.2 | 290 | 04 | 03.1 | Wyles | 4.110264 | 12,890.3 | 42,291 |
| | 81 | 11 | 22.777 | | 135 | 28 | 11.8 | 315 | 25 | 58.7 | Berryville | 3.966437 | 9,256.3 | 30,368 |
| | | | | | 158 | 20 | 53.3 | 338 | 18 | 34.9 | Snooks | 4.261257 | 18,249.8 | 59,875 |
| | | | | | 248 | 52 | 17.1 | 68 | 58 | 06.5 | Switzerland | 4.261583 | 18,263.5 | 59,919 |
| | | | | | 291 | 46 | 46.2 | 111 | 50 | 39.5 | Hardee | 4.089203 | 12,280.1 | 40,289 |
| | | | | | 59 | 13 | 52 | | | | | Azimuth mark | | |
| Tillman, 1935 (d.m.) | 32 | 27 | 46.441 | | 292 | 31 | 26.7 | 112 | 34 | 37.4 | Switzerland | 4.002319 | 10,053.5 | 32,984 |
| | 81 | 06 | 26.174 | | 346 | 19 | 35.7 | 166 | 20 | 50.4 | Hardee | 4.188188 | 15,423.7 | 50,603 |
| | | | | | 36 | 39 | 05.0 | 216 | 36 | 26.0 | Jewels | 4.113598 | 12,989.7 | 42,617 |
| | | | | | 74 | 59 | 32.5 | 254 | 54 | 40.1 | Berryville | 4.168591 | 14,743.2 | 48,370 |
| | | | | | 114 | 20 | 03.3 | 294 | 15 | 05.4 | Snooks | 4.201012 | 15,885.9 | 52,119 |
| | | | | | 353 | 39 | 42.3 | | | | | Azimuth mark | | |
| Supplementary points | | | | | | | | | | | | | | |
| Bench mark no. M 37 (U.S.G.S.) (Ga.), 1918, r. 1935 (d.m.)* | 32 | 25 | 42.260 | | 275 | 56 | | 95 | 56 | | Berryville | 1.413635 | 25.920 | 85.04 |
| | 81 | 15 | 32.226 | | | | | | | | | | | |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | | | | | | | |
|--|----|--------|--------|--|-----|----|------|-----|----|------|---|--------------|----------|----------|
| Stillwell (Ga.), 1918, r. 1935 (d.m.) | 32 | 22 | 39.509 | | 118 | 28 | 57.6 | 298 | 26 | 46.8 | Wyles | 3.860951 | 7,260.2 | 23,820 |
| | 81 | 15 | 01.706 | | 172 | 11 | 30.3 | 352 | 11 | 14.5 | Berryville | 3.754293 | 5,679.3 | 18,633 |
| | | | | | 279 | 36 | 10.3 | 99 | 38 | 07.5 | Jewels | 3.763787 | 5,804.8 | 19,045 |
| | | | | | 171 | 23 | 08.5 | | | | | Azimuth mark | | |
| Ebenezer (U.S.E.) eccentric (Ga.), 1935 (d.m.) | 32 | 22 | 41.673 | | 297 | 35 | 27.2 | 117 | 39 | 06.2 | Hardee | 4.081978 | 12,077.5 | 39,624 |
| | 81 | 10 | 56.032 | | 33 | 59 | 58.7 | 213 | 59 | 44.4 | Jewels | 3.097042 | 1,250.4 | 4,102 |
| | | | | | 340 | 38 | 12 | | | | | Azimuth mark | | |
| Ebenezer (U.S.E.) (Ga.), 1935 (d.m.)* | 32 | 22 | 42.573 | | 333 | 12 | | 153 | 12 | | Ebenezer (U.S.E.) eccentric | 1.492397 | 31.074 | 101.95 |
| | 81 | 10 | 56.568 | | | | | | | | | | | |
| Tillman, W.M. Ritter Lumber Company, black stack, 1935 (d.) | 32 | 26 | 52.924 | | 40 | 54 | 05.6 | 220 | 51 | 29.8 | Jewels | 4.064722 | 11,607.1 | 38,081 |
| | 81 | 06 | 32.077 | | 119 | 46 | 41.1 | 299 | 41 | 46.4 | Snooks | 4.217462 | 16,499.2 | 54,131 |
| | | | | | 185 | 20 | 26.1 | 5 | 20 | 29.3 | Tillman | 3.218973 | 1,655.7 | 5,432 |
| Primary traverse station no. 111, Mac (U.S.G.S.) (Ga.), 1935 (d.m.)* | 32 | 35 | 14.416 | | 53 | 57 | | 233 | 57 | | Primary traverse station no. 111 Mac (U.S.G.S.) eccentric | 1.062995 | 11.561 | 37.93 |
| | 81 | 30 | 06.191 | | | | | | | | | | | |
| Bench mark (U.S.G.S.) (Ga.), 1935 (d.m.)* | 32 | 27 | 34.584 | | 261 | 14 | | 81 | 14 | | Turkey | 1.660249 | 45.735 | 150.05 |
| | 81 | 26 | 01.176 | | | | | | | | | | | |
| 6C-21 (Ga. Geod.S.) (Ga.), 1935 (d.m.) | 32 | 28 | 26.093 | | 57 | 02 | 29.0 | 237 | 01 | 39.0 | Turkey | 3.462862 | 2,903.1 | 9,525 |
| | 81 | 24 | 26.175 | | 144 | 37 | 32.2 | 324 | 35 | 55.4 | 6C-25 (Ga. Geod.S.) | 3.909655 | 8,121.9 | 26,647 |
| | | | | | 145 | 45 | 52.8 | | | | | Azimuth mark | | |
| Primary traverse station no. 113 (U.S.G.S.) (Ga.), 1935 (d.m.)* | 32 | 28 | 36.101 | | 322 | 33 | 54.6 | 142 | 33 | 59.5 | 6C-21 (Ga. Geod.S.) | 2.589081 | 388.223 | 1,273.69 |
| 81 | 24 | 35.212 | | | | | | | | | | | | |

* No check on this position

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Tigerville to Georgetown arc

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | BACK AZIMUTH | TO STATION | DISTANCE | | |
|--|------------------------------|--|--|---|------------------------------|---------------------------|------------------------------------|-----------------------|----------------------|------|
| | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points | | | | | | | | | | |
| Jamestown, 1934 (d.m.) | 33 17 52.270 79 40 58.972 | | | 38 09 30.4 | | | Azimuth mark, reference mark no. 1 | | | |
| Echaw, 1934 (d.m.) | 33 16 15.991 79 36 05.451 | | | 111 21 14.67 297 34 03.58 273 42 11 | 291 18 33.59 117 38 17.98 | Jamestown Waterhorn | 3.9113607 4.1321615 | 8,153.81 13,556.93 | 26,751.3 44,478.0 | |
| Nob, 1918, r. 1937 (d.m.) | 34 03 17.653 80 58 51.318 | | | 33 04 39 | | | Azimuth mark, reference mark no. 2 | | | |
| Columbia west base, 1934, r. 1935 (d.m.) | 33 57 21.636 80 57 44.887 | | | 171 10 17.46 288 47 36.0 | 351 09 40.31 | Nob | 4.0453578 | 11,100.89 | 36,420.2 | |
| Supplementary points | | | | | | | | | | |
| Jackson 2, 1934 (d.m.) | 34 01 13.173 80 55 16.678 | | | 28 04 46.6 124 52 39.5 330 15 56 | 208 03 23.8 304 50 39.3 | Columbia west base Nob | 3.907663 3.826726 | 8,084.7 6,710.1 | 26,525 22,015 | |

U. S. COAST AND GEODESIC SURVEY

| | | | | | | | | | |
|---|------------------------------|--|--|--|---|--|----------------------------------|--------------------------------|----------------------------|
| Observatory, 1934, r. 1935 (d.m.) | 33 59 51.394 81 01 36.129 | | | 213 37 28.0 255 27 42.8 307 50 26.3 158 46 24.9 | 33 39 00.2 75 31 15.1 127 52 35.6 | Nob Jackson 2 Columbia west base Azimuth mark, reference mark no. 3 | 3.882703 4.002493 3.876126 | 7,633.1 10,057.6 7,518.4 | 25,043 32,997 24,667 |
| Columbia, Melton Memorial Observatory, astronomical instrument, center, 1934, r. 1935 (n.d.)* | 33 59 50.668 81 01 35.783 | | | 158 21 | 338 21 | Observatory | 1.381151 | 24.052 | 78.91 |
| Columbia, meridian mark (U.S.G.S.), 1934, r. 1935 (d.m.)* | 33 59 50.826 81 01 35.208 | | | 126 31 | 306 31 | Observatory | 1.468406 | 29.404 | 96.47 |
| Columbia, United States Veterans Hospital, stack, 1934 (n.d.) | 33 58 35.076 80 57 44.931 | | | 217 58 52.0 | 38 00 14.9 | Jackson 2 | 3.791052 | 6,180.9 | 20,279 |
| Columbia, United States Veterans Hospital, tank, 1934 (n.d.) | 33 58 33.161 80 57 46.864 | | | 358 40 46.3 | 178 40 47.5 | Columbia west base | 3.343276 | 2,204.3 | 7,232 |
| Columbia, United States Veterans Hospital, dome, 1934 (n.d.)* | 33 58 38.27 80 57 40.26 | | | | | | | | |
| Columbia, State Capitol, dome, base of flag staff, 1934 (d.) | 34 00 00.555 81 01 59.873 | | | 218 31 29.7 294 51 12.8 | 38 33 15.2 114 51 26.0 | Nob Observatory | 3.890081 2.827095 | 7,763.9 671.6 | 25,472 2,203 |
| Columbia, large steel water tank, 1934 (n.d.)* | 34 00 31.85 81 00 04.29 | | | 62 07 54 200 07 10 | 242 07 03 20 07 50 | Observatory Nob | 3.425884 3.735654 | 2,666.1 5,440.7 | 8,747 17,850 |

*No check on this position

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Norfolk, Va. to Savannah, Ga. traverse

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|--------------------------------|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|------------|--------------------|-----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Principal points | | | | | | | | | | | | | | |
| Columbia, 1918 (d.m.) | 34 | 00 | 14.692 | | 221 | 26 | 49.8 | 41 | 28 | 38.4 | Nob | 3.8763567 | 7,522.41 | 24,679.8 |
| | 81 | 02 | 05.469 | | | | | | | | | | | |
| Top, 1918, r. 1919 (d.m.) | 33 | 50 | 07.541 | | 197 | 26 | 40.2 | 17 | 28 | 48.1 | Columbia | 4.2924846 | 19,610.32 | 64,338.2 |
| | 81 | 05 | 54.558 | | | | | | | | | | | |
| Gaston, 1918 (d.m.) | 33 | 48 | 56.242 | | 192 | 59 | 34.4 | 12 | 59 | 45.4 | Top | 3.3530454 | 2,254.48 | 7,396.6 |
| | 81 | 06 | 14.271 | | | | | | | | | | | |
| Flanders, 1918, r. 1919 (d.m.) | 33 | 46 | 37.223 | | 182 | 48 | 55.6 | 2 | 49 | 00.2 | Gaston | 3.6322872 | 4,288.32 | 14,069.3 |
| | 81 | 06 | 22.461 | | | | | | | | | | | |
| Swansea, 1918, r. 1919 (d.m.) | 33 | 42 | 31.170 | | 178 | 42 | 51.1 | 358 | 42 | 47.4 | Flanders | 3.8798221 | 7,582.67 | 24,877.5 |
| | 81 | 06 | 15.848 | | | | | | | | | | | |
| Miller, 1918, r. 1919 (d.m.) | 33 | 41 | 11.302 | | 205 | 01 | 40.5 | 25 | 02 | 05.2 | Swansea | 3.4338911 | 2,715.76 | 8,910.0 |
| | 81 | 07 | 00.466 | | | | | | | | | | | |
| Douglas, 1918, r. 1919 (d.m.) | 33 | 38 | 47.158 | | 155 | 25 | 41.9 | 335 | 25 | 11.9 | Woodford | 3.5256720 | 3,354.84 | 11,006.7 |
| | 81 | 06 | 00.320 | | | | | | | | | | | |
| North, 1918, r. 1919 (d.m.) | 33 | 38 | 02.961 | | 185 | 11 | 31.0 | 5 | 11 | 33.7 | Douglas | 3.1358579 | 1,367.28 | 4,485.8 |
| | 81 | 06 | 05.121 | | | | | | | | | | | |
| Livingston, 1918 (d.m.) | 33 | 33 | 23.463 | | 190 | 56 | 40.1 | 10 | 57 | 15.8 | North | 3.9430342 | 8,770.70 | 28,775.2 |
| | 81 | 07 | 09.732 | | | | | | | | | | | |
| Norway, 1918, r. 1919 (d.m.) | 33 | 29 | 03.606 | | 236 | 52 | 14.0 | 56 | 52 | 40.7 | Wilson | 3.1733812 | 1,490.67 | 4,890.6 |
| | 81 | 07 | 20.147 | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---------------------------------|----|----|--------|--|-----|----|------|-----|----|------|-----------|-----------|----------|----------|
| Creco, 1918, r. 1919 (d.m.) | 33 | 25 | 47.086 | | 186 | 31 | 31.4 | 6 | 31 | 46.2 | Norway | 3.7848966 | 6,093.92 | 19,993.1 |
| | 81 | 07 | 46.971 | | | | | | | | | | | |
| Otside, 1918, r. 1919 (d.m.) | 33 | 24 | 12.653 | | 186 | 17 | 22.0 | 6 | 17 | 28.8 | Creco | 3.4664105 | 2,926.92 | 9,602.7 |
| | 81 | 07 | 59.383 | | | | | | | | | | | |
| Plaza, 1918, r. 1919 (d.m.) | 33 | 21 | 02.046 | | 186 | 28 | 01.6 | 6 | 28 | 15.8 | Otside | 3.7715727 | 5,909.80 | 19,389.1 |
| | 81 | 08 | 25.142 | | | | | | | | | | | |
| Denmark, 1918, r. 1919 (d.m.) | 33 | 18 | 57.757 | | 186 | 15 | 13.6 | 6 | 15 | 22.6 | Plaza | 3.5856831 | 3,851.97 | 12,637.7 |
| | 81 | 08 | 41.371 | | | | | | | | | | | |
| Pete, 1918, r. 1919 (d.m.) | 33 | 17 | 29.668 | | 186 | 29 | 28.9 | 6 | 29 | 35.4 | Denmark | 3.4363704 | 2,731.31 | 8,961.0 |
| | 81 | 08 | 53.308 | | | | | | | | | | | |
| Luther, 1918, r. 1919 (d.m.) | 33 | 16 | 24.204 | | 195 | 27 | 32.6 | 15 | 27 | 44.4 | Pete | 3.3206598 | 2,092.47 | 6,865.0 |
| | 81 | 09 | 14.864 | | | | | | | | | | | |
| Barnum, 1918, r. 1919 (d.m.) | 33 | 15 | 24.491 | | 196 | 04 | 52.5 | 16 | 05 | 03.8 | Luther | 3.2820626 | 1,914.53 | 6,281.3 |
| | 81 | 09 | 35.356 | | | | | | | | | | | |
| Zion, 1918, r. 1919 (d.m.) | 33 | 13 | 48.548 | | 206 | 20 | 08.7 | 26 | 20 | 39.7 | Barnum | 3.5182687 | 3,298.14 | 10,820.6 |
| | 81 | 10 | 31.883 | | | | | | | | | | | |
| Govan, 1918, r. 1919 (d.m.) | 33 | 12 | 39.249 | | 179 | 16 | 53.3 | 359 | 16 | 52.7 | Zion | 3.3294119 | 2,135.07 | 7,004.8 |
| | 81 | 10 | 30.849 | | | | | | | | | | | |
| Olar, 1918, r. 1919 (d.m.) | 33 | 11 | 10.130 | | 195 | 29 | 43.7 | 15 | 29 | 59.8 | Govan | 3.4547030 | 2,849.07 | 9,347.3 |
| | 81 | 11 | 00.240 | | | | | | | | | | | |
| Schofield, 1918, r. 1919 (d.m.) | 33 | 08 | 44.102 | | 195 | 55 | 30.2 | 15 | 55 | 57.3 | Olar | 3.6700858 | 4,678.28 | 15,348.7 |
| | 81 | 11 | 49.791 | | | | | | | | | | | |
| Ulmers, 1918, r. 1919 (d.m.) | 33 | 05 | 54.907 | | 190 | 52 | 11.7 | 10 | 52 | 32.8 | Schofield | 3.7248961 | 5,307.57 | 17,413.3 |
| | 81 | 12 | 28.410 | | | | | | | | | | | |
| Harding, 1918, r. 1919 (d.m.) | 33 | 04 | 06.220 | | 191 | 14 | 37.5 | 11 | 14 | 51.5 | Ulmers | 3.5332367 | 3,413.79 | 11,200.1 |
| | 81 | 12 | 54.080 | | | | | | | | | | | |

GEOGRAPHIC POSITIONS

Norfolk, Va. to Savannah, Ga. traverse - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---------------------------------|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|----------------------|--------------------|----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Sycamore, 1918, r. 1919 (d.m.) | 33 | 01 | 42.813 | | 190 | 49 | 29.7 | 10 | 49 | 47.5 | Harding | 3.6530060 | 4,497.86 | 14,756.7 |
| | 81 | 13 | 26.645 | | 10 | 59 | 15.7 | 190 | 58 | 50.9 | Waikiki | 3.7917953 | 6,191.49 | 20,313.2 |
| Fairfax, 1918, r. 1931 (d.m.) | 32 | 57 | 31.604 | | 181 | 09 | 57.6 | 1 | 09 | 58.4 | Waikiki | 3.2203636 | 1,660.98 | 5,449.4 |
| | 81 | 14 | 13.392 | | | | | | | | | | | |
| Spring, 1918, r. 1919 (d.m.) | 32 | 55 | 40.820 | | 181 | 00 | 18.9 | 1 | 00 | 20.2 | Fairfax | 3.5331728 | 3,413.29 | 11,198.4 |
| | 81 | 14 | 15.697 | | 0 | 56 | 59.1 | 180 | 56 | 57.4 | Omar | 3.7148330 | 5,186.01 | 17,014.4 |
| Joint, 1918, r. 1919 (d.m.) | 32 | 58 | 54.198 | | 309 | 29 | 13.2 | 129 | 30 | 17.8 | Fairfax | 3.6021027 | 4,000.39 | 13,124.6 |
| | 81 | 16 | 12.266 | | | | | | | | | | | |
| Allen, 1918, r. 1919 (d.m.) | 32 | 59 | 46.143 | | 309 | 10 | 20.1 | 129 | 11 | 01.3 | Joint | 3.4036486 | 2,533.08 | 8,310.6 |
| | 81 | 17 | 27.897 | | 134 | 50 | 07.7 | 314 | 49 | 33.6 | Allendale water tank | 3.3598897 | 2,290.29 | 7,514.1 |
| Extension, 1907, r. 1919 (d.m.) | 33 | 00 | 33.756 | | 219 | 57 | 18.6 | 39 | 57 | 21.2 | Allendale water tank | 2.2854898 | 192.97 | 633.1 |
| | 81 | 18 | 35.242 | | 309 | 59 | 31.4 | 130 | 00 | 08.1 | Allen | 3.3583190 | 2,282.02 | 7,486.9 |
| Luray, 1918, l. 1931 (d.m.) | 32 | 49 | 39.552 | | 181 | 11 | 08.4 | 1 | 11 | 11.0 | Omar | 3.7741477 | 5,944.94 | 19,504.4 |
| | 81 | 14 | 23.736 | | | | | | | | | | | |
| Canton, 1918, l. 1931 (d.m.) | 32 | 47 | 40.388 | | 181 | 21 | 17.3 | 1 | 21 | 19.1 | Luray | 3.5548856 | 3,671.86 | 12,046.8 |
| | 81 | 14 | 27.074 | | | | | | | | | | | |
| Estill, 1918, r. 1931 (d.m.) | 32 | 45 | 17.537 | | 180 | 58 | 07.3 | 0 | 58 | 08.9 | Canton | 3.6435617 | 4,401.11 | 14,439.3 |
| | 81 | 14 | 29.934 | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---------------------------------------|----|----|--------|-------|-----|----|------|-----|----|------|-----------|-----------|----------|----------|
| Ben, 1918, r. 1919 (d.m.) | 32 | 43 | 43.783 | | 181 | 26 | 04.7 | 1 | 26 | 06.2 | Estill | 3.4607418 | 2,888.96 | 9,478.2 |
| | 81 | 14 | 32.712 | | | | | | | | | | | |
| Carolina, 1918, r. 1919 (d.m.) | 32 | 41 | 39.806 | | 180 | 55 | 34.6 | 0 | 55 | 35.9 | Ben | 3.5820135 | 3,819.56 | 12,531.3 |
| | 81 | 14 | 35.084 | | | | | | | | | | | |
| Scotia, 1918, r. 1919 (d.m.) | 32 | 39 | 20.666 | | 181 | 16 | 39.8 | 1 | 16 | 41.8 | Carolina | 3.6321698 | 4,287.16 | 14,065.5 |
| | 81 | 14 | 38.754 | | | | | | | | | | | |
| Garnett, 1918 (d.m.) | 32 | 36 | 06.501 | | 181 | 07 | 58.7 | 1 | 08 | 01.2 | Scotia | 3.7768617 | 5,982.21 | 19,626.6 |
| | 81 | 14 | 43.293 | | | | | | | | | | | |
| Savannah, 1918, r. 1919 (d.m.) | 32 | 32 | 26.108 | | 186 | 53 | 21.7 | 6 | 53 | 38.6 | Garnett | 3.8549507 | 6,838.34 | 22,435.5 |
| | 81 | 15 | 14.750 | | | | | | | | | | | |
| Garner (Ga.), 1918, r. 1919 (d.m.) | 32 | 30 | 32.582 | | 205 | 23 | 15.2 | 25 | 23 | 49.4 | Savannah | 3.5878176 | 3,870.95 | 12,699.9 |
| | 81 | 16 | 18.353 | | | | | | | | | | | |
| Glyo (Ga.), 1918, r. 1919 (d.m.) | 32 | 28 | 36.110 | | 172 | 14 | 47.6 | 352 | 14 | 37.5 | Garner | 3.5588086 | 3,620.83 | 11,879.3 |
| | 81 | 15 | 59.639 | | | | | | | | | | | |
| Cleveland (Ga.), 1918, r. 1919 (d.m.) | 32 | 19 | 20.587 | 634.1 | 172 | 18 | 14.7 | 352 | 17 | 57.8 | Stillwell | 3.7912014 | 6,183.03 | 20,285.5 |
| | 81 | 14 | 30.031 | 785.5 | | | | | | | | | | |

GEOGRAPHIC POSITIONS

Norfolk, Va. to Savannah, Ga. traverse - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|--------------------------------------|------------------------------|--------------------|----------------------------|----------------------------|----------------------|------------------------|----------------------|----------------------|--|--|------------|--------------------|--------|------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Rincon (Ga.), 1918, r. 1919 (d.m.) | 32 17 35.679 81 14 12.677 | 1,099.0 331.7 | 172 00 14.4 | 352 00 05.1 | Cleveland | 3.5136379 | 3,263.16 | 10,705.9 | | | | | | |
| Exley (Ga.), 1918 (d.m.) | 32 14 52.000 91 13 46.019 | 1,601.7 1,204.7 | 172 07 24.1 | 352 07 09.9 | Rincon | 3.7066938 | 5,089.72 | 16,698.5 | | | | | | |
| Roosevelt (Ga.), 1918 (d.m.) | 32 11 56.040 81 13 17.929 | 1,726.1 469.6 | 172 16 25.0 | 352 16 10.0 | Exley | 3.7379558 | 5,469.60 | 17,944.8 | | | | | | |
| Meinhard (Ga.), 1918, l. 1934 (d.m.) | 32 10 16.858 81 12 18.723 | 519.3 490.5 | 153 05 19.4 332 57 37.5 | 333 04 47.9 152 58 13.5 | Roosevelt Burke | 3.5348038 3.5911617 | 3,426.13 3,900.87 | 11,240.6 12,798.1 | | | | | | |
| Chatham (Ga.), 1918, r. 1919 (d.m.) | 32 06 24.704 81 10 00.071 | 760.9 1.9 | 153 09 22.8 | 333 08 45.0 | Burke | 3.6149226 | 4,120.24 | 13,517.8 | | | | | | |
| Central A (Ga.), 1918 (d.m.) | 32 05 45.244 81 09 36.820 | 1,393.6 965.5 | 153 21 49.6 | 333 21 37.2 | Chatham | 3.1334556 | 1,359.74 | 4,461.1 | | | | | | |
| Central (Ga.), 1918 (d.m.) | 32 05 47.128 81 09 31.477 | 1,451.6 825.4 | 67 30 03.4 147 04 03.8 | 247 30 00.6 327 03 48.6 | Central A Chatham | 2.1808223 3.1395633 | 151.64 1,379.00 | 497.5 4,524.3 | | | | | | |
| Supplementary points | | | | | | | | | | | | | | |
| Elmwood C, 1918 (d.m.) | 34 01 41.186 81 02 30.200 | | | | | | | | | | | | | |
| Elmwood B, 1918 (d.m.) | 34 01 16.402 81 02 44.208 | | 205 12 07.3 | 25 12 15.1 | Elmwood C | 2.9263229 | 843.96 | 2,768.9 | | | | | | |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | |
|-------------------------|------------------------------|--|---|---|------------------------------------|-------------------------------------|-----------------------------|----------------------------|
| Elmwood A, 1918 (d.m.) | 34 00 50.578 81 02 59.074 | | 205 36 43.1 | 25 36 51.4 | Elmwood B | 2.9456517 | 882.37 | 2,894.9 |
| Elmwood, 1918 (d.m.) | 34 00 49.984 81 02 59.410 | | 205 11 34.9 205 36 08.8 308 08 57.2 | 25 11 35.1 25 36 17.4 128 09 27.3 | Elmwood A Elmwood B Columbia | 1.3064894 2.9555060 3.2455573 | 20.25 902.62 1,760.18 | 66.4 2,961.3 5,774.8 |
| Columbia E, 1918 (d.m.) | 34 00 40.366 81 02 53.336 | | 154 55 22.0 152 15 23.4 | 334 55 18.8 332 15 20.0 | Elmwood A Elmwood | 2.5409310 2.5248098 | 347.40 334.82 | 1,139.8 1,098.5 |
| Columbia D, 1918 (d.m.) | 34 00 31.009 81 02 49.197 | | 159 46 41.3 | 339 46 39.0 | Columbia E | 2.4874876 | 307.25 | 1,008.0 |
| Columbia C, 1918 (d.m.) | 34 00 27.304 81 02 46.294 | | 146 52 42.4 | 326 52 40.8 | Columbia D | 2.1344672 | 136.29 | 447.1 |
| Columbia B, 1918 (d.m.) | 34 00 22.392 81 02 39.300 | | 130 08 20.1 | 310 08 16.2 | Columbia C | 2.3706426 | 234.77 | 770.2 |
| Columbia A, 1918 (d.m.) | 34 00 16.824 81 02 27.467 | | 119 27 53.9 276 38 18.7 | 299 27 47.3 96 38 27.5 | Columbia B Columbia | 2.5425292 2.7545883 | 348.76 568.31 | 1,144.2 1,864.5 |
| Congaree B, 1918 (d.m.) | 34 00 02.814 81 02 21.268 | | 159 46 19.2 227 55 38.9 | 339 46 15.7 47 55 47.9 | Columbia A Columbia | 2.6628201 2.7373390 | 460.07 546.18 | 1,509.4 1,791.9 |
| Congaree A, 1918 (d.m.) | 33 59 29.638 81 02 06.390 | | 159 31 03.1 | 339 30 54.8 | Congaree B | 3.0378805 | 1,091.14 | 3,579.8 |
| Congaree, 1918 (d.m.) | 33 59 02.573 81 01 54.300 | | 159 35 21.2 172 38 59.2 | 339 35 14.4 352 38 53.0 | Congaree A Columbia | 2.9492812 3.3503297 | 889.78 2,240.45 | 2,919.2 7,350.5 |
| Cayce D, 1918 (d.m.) | 33 58 56.582 81 01 56.732 | | 198 41 09.1 | 18 41 10.5 | Congaree | 2.2897517 | 194.87 | 639.3 |
| Cayce C, 1918 (d.m.) | 33 58 52.899 81 02 00.770 | | 222 24 22.5 | 42 24 24.8 | Cayce D | 2.1865976 | 153.67 | 504.2 |
| Cayce B, 1918 (d.m.) | 33 58 51.407 81 02 04.793 | | 246 00 13.8 | 66 00 16.0 | Cayce C | 2.0532283 | 113.04 | 370.9 |

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Norfolk, Va. to Savannah, Ga. traverse - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---------------------------------|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|------------|--------------------|----------|----------|
| | ° | ' | " | | ° | ' | " | ° | ' | " | | LOGARITHM (METERS) | METERS | FEET |
| Supplementary points (cont'd) | | | | | | | | | | | | | | |
| Cayce A, 1918 (d.m.) | 33 | 58 | 47.364 | | 255 | 53 | 05.2 | 75 | 53 | 16.0 | Cayce B | 2.7082620 | 510.81 | 1,675.9 |
| | 81 | 02 | 24.092 | | | | | | | | | | | |
| Cayce, 1918 (d.m.) | 33 | 58 | 10.483 | | 235 | 55 | 01.3 | 55 | 55 | 37.9 | Cayce A | 3.3070584 | 2,028.00 | 6,653.5 |
| | 81 | 03 | 29.527 | | 209 | 24 | 22.3 | 29 | 25 | 09.3 | Columbia | 3.6427837 | 4,393.23 | 14,413.5 |
| Kid, 1918, 1. 1919 (d.m.) | 33 | 56 | 58.827 | | 162 | 50 | 29.5 | 342 | 50 | 14.7 | Cayce | 3.3637312 | 2,310.63 | 7,580.8 |
| | 81 | 03 | 02.974 | | | | | | | | | | | |
| Dixiana, 1918, 1. 1919 (d.m.) | 33 | 55 | 10.782 | | 192 | 40 | 09.4 | 12 | 40 | 25.7 | Kid | 3.5330127 | 3,412.03 | 11,194.3 |
| | 81 | 03 | 32.117 | | | | | | | | | | | |
| Logan, 1918, 1. 1919 (d.m.) | 33 | 54 | 28.380 | | 212 | 32 | 55.4 | 32 | 33 | 13.5 | Dixiana | 3.1903057 | 1,549.91 | 5,085.0 |
| | 81 | 04 | 04.579 | | | | | | | | | | | |
| Picardy C, 1918, r. 1919 (d.m.) | 33 | 54 | 11.534 | | 233 | 52 | 52.3 | 53 | 53 | 07.7 | Logan | 2.9447634 | 880.57 | 2,889.0 |
| | 81 | 04 | 32.267 | | | | | | | | | | | |
| Picardy B, 1918, 1. 1919 (d.m.) | 33 | 53 | 30.611 | | 196 | 03 | 47.1 | 16 | 03 | 55.0 | Picardy C | 3.1179596 | 1,312.08 | 4,304.7 |
| | 81 | 04 | 46.398 | | | | | | | | | | | |
| Picardy A, 1918, 1. 1919 (d.m.) | 33 | 53 | 05.968 | | 205 | 34 | 40.8 | 25 | 34 | 48.7 | Picardy B | 2.9251924 | 841.77 | 2,761.7 |
| | 81 | 05 | 00.542 | | | | | | | | | | | |
| Picardy, 1918, 1. 1919 (d.m.) | 33 | 52 | 27.422 | | 157 | 04 | 16.4 | 337 | 04 | 05.5 | Picardy A | 3.1104186 | 1,289.49 | 4,230.6 |
| | 81 | 04 | 40.992 | | | | | | | | | | | |
| Top I, 1918, 1. 1919 (d.m.) | 33 | 52 | 17.851 | | 156 | 51 | 59.2 | 336 | 51 | 56.5 | Picardy | 2.5060569 | 320.67 | 1,052.1 |
| | 81 | 04 | 36.090 | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---------------------------------|----|----|--------|--|-----|----|------|-----|----|------|-----------|-----------|----------|---------|
| Top H, 1918, 1. 1919 (d.m.) | 33 | 52 | 11.759 | | 229 | 58 | 35.5 | 49 | 58 | 40.2 | Top I | 2.4652118 | 291.89 | 957.6 |
| | 81 | 04 | 44.787 | | | | | | | | | | | |
| Top G, 1918, 1. 1919 (d.m.) | 33 | 52 | 09.290 | | 256 | 27 | 29.2 | 76 | 27 | 36.1 | Top H | 2.5118192 | 324.95 | 1,066.1 |
| | 81 | 04 | 57.079 | | | | | | | | | | | |
| Top F, 1918, 1. 1919 (d.m.) | 33 | 52 | 13.176 | | 284 | 13 | 10.0 | 104 | 13 | 20.2 | Top G | 2.6879051 | 487.42 | 1,599.1 |
| | 81 | 05 | 15.462 | | | | | | | | | | | |
| Top E, 1918, r. 1919 (d.m.) | 33 | 52 | 08.855 | | 246 | 41 | 55.3 | 66 | 42 | 02.0 | Top F | 2.5270754 | 336.57 | 1,104.2 |
| | 81 | 05 | 27.489 | | | | | | | | | | | |
| Top D, 1918, r. 1919 (d.m.) | 33 | 51 | 45.186 | | 203 | 54 | 19.4 | 23 | 54 | 26.4 | Top E | 2.9018238 | 797.67 | 2,617.0 |
| | 81 | 05 | 40.065 | | | | | | | | | | | |
| Top C, 1918, r. 1919 (d.m.) | 33 | 51 | 24.414 | | 204 | 12 | 16.9 | 24 | 12 | 23.1 | Top D | 2.8461453 | 701.69 | 2,302.1 |
| | 81 | 05 | 51.257 | | | | | | | | | | | |
| Top B, 1918, r. 1919 (d.m.) | 33 | 51 | 01.287 | | 151 | 01 | 39.9 | 331 | 01 | 31.4 | Top C | 2.9108826 | 814.48 | 2,672.2 |
| | 81 | 05 | 35.910 | | | | | | | | | | | |
| Top A, 1918, r. 1919 (d.m.) | 33 | 50 | 24.306 | | 198 | 06 | 48.6 | 18 | 06 | 56.7 | Top B | 3.0787471 | 1,198.80 | 3,933.1 |
| | 81 | 05 | 50.408 | | 11 | 40 | 20.4 | 191 | 40 | 18.1 | Top | 2.7221673 | 527.43 | 1,730.4 |
| Swansea I, 1918, r. 1919 (d.m.) | 33 | 45 | 19.899 | | 182 | 34 | 45.9 | 2 | 34 | 48.2 | Flanders | 3.3774421 | 2,384.75 | 7,824.0 |
| | 81 | 06 | 26.632 | | | | | | | | | | | |
| Swansea H, 1918, r. 1919 (d.m.) | 33 | 45 | 02.227 | | 154 | 24 | 09.3 | 334 | 24 | 03.7 | Swansea I | 2.7808336 | 603.72 | 1,980.7 |
| | 81 | 06 | 16.497 | | | | | | | | | | | |
| Swansea G, 1918, r. 1919 (d.m.) | 33 | 44 | 46.352 | | 186 | 18 | 10.5 | 6 | 18 | 11.7 | Swansea H | 2.6920450 | 492.09 | 1,614.5 |
| | 81 | 06 | 18.596 | | | | | | | | | | | |
| Swansea F, 1918, r. 1919 (d.m.) | 33 | 44 | 27.796 | | 161 | 43 | 52.0 | 341 | 43 | 47.9 | Swansea G | 2.7796228 | 602.04 | 1,975.2 |
| | 81 | 06 | 11.264 | | | | | | | | | | | |
| Swansea E, 1918 (d.m.) | 33 | 43 | 54.416 | | 194 | 17 | 02.8 | 14 | 17 | 08.4 | Swansea F | 3.0258096 | 1,061.23 | 3,481.7 |
| | 81 | 06 | 21.436 | | | | | | | | | | | |

GEOGRAPHIC POSITIONS

Norfolk, Va. to Savannah, Ga. traverse - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | | | | | | | | | | | |
|------------------------------------|------------------------|----|--------|-------------------|---------|----|------|--------------|----|------|--------------|--------------------|----------|----------|-----|----|------|-----|----|------|------------|-----------|----------|---------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET | | | | | | | | | | |
| Supplementary points (cont'd) | | | | | | | | | | | | | | | | | | | | | | | | |
| Swansea D, 1918 (d.m.) | 33 | 43 | 35.543 | | 165 | 26 | 05.9 | 345 | 26 | 02.6 | Swansea E | 2.7787230 | 600.79 | 1,971.1 | | | | | | | | | | |
| | 81 | 06 | 15.567 | | | | | | | | | | | | | | | | | | | | | |
| Swansea C, 1918, r. 1919 (d.m.) | 33 | 43 | 26.382 | | 149 | 09 | 20.0 | 329 | 09 | 16.4 | Swansea D | 2.5168477 | 328.74 | 1,078.5 | | | | | | | | | | |
| | 81 | 06 | 09.020 | | | | | | | | | | | | | | | | | | | | | |
| Swansea B, 1918, r. 1919 (d.m.) | 33 | 42 | 48.950 | | 166 | 10 | 14.7 | 346 | 10 | 08.6 | Swansea C | 3.0747060 | 1,187.70 | 3,896.6 | | | | | | | | | | |
| | 81 | 05 | 57.994 | | | | | | | | | | | | 40 | 00 | 28.3 | 220 | 00 | 18.4 | Swansea | 2.8543891 | 715.14 | 2,346.3 |
| Swansea A, 1918, r. 1919 (d.m.) | 33 | 42 | 26.567 | | 197 | 28 | 06.7 | 17 | 28 | 11.4 | Swansea B | 2.8591080 | 722.95 | 2,371.9 | | | | | | | | | | |
| | 81 | 06 | 06.422 | | | | | | | | | | | | 120 | 17 | 57.7 | 300 | 17 | 52.4 | Swansea | 2.4489062 | 281.13 | 922.3 |
| Miller A, 1918, r. 1919 (d.m.) | 33 | 42 | 17.754 | | 204 | 44 | 55.1 | 24 | 44 | 59.2 | Swansea | 2.6581551 | 455.15 | 1,493.3 | | | | | | | | | | |
| | 81 | 06 | 23.248 | | | | | | | | | | | | 25 | 05 | 27.6 | 205 | 05 | 07.1 | Miller | 3.3542265 | 2,260.61 | 7,416.7 |
| | | | | | | | | | | | | | | | 237 | 55 | 32.8 | 57 | 55 | 42.2 | Swansea A | 2.7086979 | 511.33 | 1,677.6 |
| Livingston C, 1918, r. 1919 (d.m.) | 33 | 35 | 03.903 | | 184 | 48 | 19.0 | 4 | 48 | 29.0 | North | 3.7432016 | 5,536.07 | 18,162.9 | | | | | | | | | | |
| | 81 | 06 | 23.115 | | | | | | | | | | | | | | | | | | | | | |
| Livingston B, 1918, r. 1919 (d.m.) | 33 | 34 | 28.618 | | 199 | 22 | 36.6 | 19 | 22 | 44.8 | Livingston C | 3.0615893 | 1,152.36 | 3,780.7 | | | | | | | | | | |
| | 81 | 06 | 37.942 | | | | | | | | | | | | | | | | | | | | | |
| Livingston A, 1918 (d.m.) | 33 | 34 | 03.919 | | 224 | 54 | 16.6 | 44 | 54 | 32.9 | Livingston B | 3.0311678 | 1,074.40 | 3,524.9 | | | | | | | | | | |
| | 81 | 07 | 07.350 | | | | | | | | | | | | 2 | 49 | 19.7 | 182 | 49 | 18.4 | Livingston | 3.0961845 | 1,247.91 | 4,094.2 |
| Neece B, 1918 (d.m.) | 33 | 32 | 59.460 | | 183 | 44 | 34.8 | 3 | 44 | 35.8 | Livingston | 2.8698560 | 741.06 | 2,431.3 | | | | | | | | | | |
| | 81 | 07 | 11.607 | | | | | | | | | | | | | | | | | | | | | |
| Neece A, 1918 (d.m.) | 33 | 32 | 27.028 | | 219 | 59 | 46.1 | 40 | 00 | 14.1 | Neece B | 3.1153830 | 1,304.32 | 4,279.3 | | | | | | | | | | |
| | 81 | 07 | 44.103 | | | | | | | | | | | | 334 | 55 | 08.6 | 154 | 55 | 18.7 | Neece | 3.0452667 | 1,109.86 | 3,641.3 |

U. S. COAST AND GEODETIC SURVEY

| | | | | | | | | | | | | | | |
|--------------------------------|----|----|--------|--|-----|----|------|-----|----|------|----------|-----------|----------|---------|
| Norway G, 1918 (d.m.) | 33 | 31 | 53.064 | | 161 | 21 | 16.2 | 341 | 21 | 08.6 | Neece A | 3.0431121 | 1,104.36 | 3,623.2 |
| | 81 | 07 | 30.418 | | | | | | | | | | | |
| Norway F, 1918, r. 1919 (d.m.) | 33 | 31 | 35.604 | | 161 | 23 | 21.1 | 341 | 23 | 17.2 | Norway G | 2.7540218 | 567.57 | 1,862.1 |
| | 81 | 07 | 23.398 | | | | | | | | | | | |
| Norway E, 1918, r. 1919 (d.m.) | 33 | 31 | 12.661 | | 147 | 47 | 48.7 | 327 | 47 | 39.2 | Norway F | 2.9218823 | 835.38 | 2,740.7 |
| | 81 | 07 | 06.146 | | | | | | | | | | | |
| Norway D, 1918, r. 1919 (d.m.) | 33 | 31 | 05.522 | | 170 | 44 | 03.2 | 350 | 44 | 02.4 | Norway E | 2.3479728 | 222.83 | 731.1 |
| | 81 | 07 | 04.755 | | | | | | | | | | | |
| Norway C, 1918, r. 1919(d.m.) | 33 | 30 | 40.214 | | 190 | 07 | 57.6 | 10 | 08 | 00.6 | Norway D | 2.8987555 | 792.06 | 2,598.6 |
| | 81 | 07 | 10.155 | | | | | | | | | | | |
| Norway B, 1918, r. 1919(d.m.) | 33 | 30 | 07.810 | | 172 | 56 | 29.2 | 352 | 56 | 26.6 | Norway C | 3.0025775 | 1,005.95 | 3,300.4 |
| | 81 | 07 | 05.365 | | | | | | | | | | | |
| Norway A, 1918, r. 1919(d.m.) | 33 | 29 | 37.046 | | 195 | 59 | 06.7 | 15 | 59 | 12.5 | Norway B | 2.9938340 | 985.90 | 3,234.6 |
| | 81 | 07 | 15.884 | | | | | | | | | | | |

TRIANGULATION IN SOUTH CAROLINA—PART 2

GEOGRAPHIC POSITIONS

Beaufort to Charleston traverse

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | | | | |
|-----------------------------------|------------------------------|--------------------|----------------------|-----------------------|------------------|-----------------------|--------------------|--------------------|--|--|------------|--------------------|--------|------|--|--|--|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET | | | |
| Principal points | | | | | | | | | | | | | | | | | |
| Salt Bridge, 1901, r. 1924 (d.m.) | 32 26 52.030 80 43 55.874 | 1,602.7 1,459.4 | 284 51 47.4 | 104 53 41.2 | Beaufort Church | 3.7585378 | 5,735.06 | 18,815.8 | | | | | | | | | |
| Hill, 1924, r. 1932 (d.m.) | 32 29 29.265 80 45 02.356 | 901.4 61.5 | 340 16 27.6 69 42 | 160 17 03.3 249 42 | Salt Bridge Gray | 3.7113884 1.489199 | 5,145.04 30.846 | 16,890.0 101.20 | | | | | | | | | |
| Brook, 1924, r. 1933 (d.m.) | 32 31 12.861 80 45 46.149 | 396.2 1,204.4 | 340 17 17.5 | 160 17 41.0 | Hill | 3.5301676 | 3,389.75 | 11,121.2 | | | | | | | | | |
| Sea, 1924, r. 1933 (d.m.) | 32 31 48.589 80 46 01.060 | 1,496.7 27.7 | 340 31 30.6 | 160 31 38.6 | Brook | 3.0671880 | 1,167.31 | 3,829.7 | | | | | | | | | |
| Saw, 1924 (d.m.) | 32 33 03.455 80 44 52.901 | 106.4 1,380.2 | 37 38 41.3 | 217 38 04.6 | Sea | 3.4642317 | 2,912.27 | 9,554.7 | | | | | | | | | |
| Dale, 1924 (d.m.) | 32 33 29.573 80 43 36.927 | 911.0 963.4 | 67 54 49.2 | 247 54 08.3 | Saw | 3.3302447 | 2,139.17 | 7,018.3 | | | | | | | | | |
| Long, 1924, r. 1934 (d.m.) | 32 34 39.574 80 40 11.711 | 1,219.0 305.5 | 68 04 31.7 | 248 02 41.2 | Dale | 3.7612626 | 5,771.15 | 18,934.2 | | | | | | | | | |
| Short, 1924, r. 1934 (d.m.) | 32 35 29.704 80 37 44.051 | 915.0 1,148.8 | 68 09 41.2 | 248 08 21.7 | Long | 3.6179581 | 4,149.14 | 13,612.6 | | | | | | | | | |
| Zeb, 1924 (d.m.) | 32 37 10.812 80 32 47.225 | 333.1 1,231.2 | 68 06 06.7 | 248 03 26.8 | Short | 3.9213107 | 8,342.78 | 27,371.5 | | | | | | | | | |
| Zip, 1924 (d.m.) | 32 38 01.191 80 30 19.023 | 36.7 495.9 | 68 07 34.7 | 248 06 14.8 | Zeb | 3.6194537 | 4,163.45 | 13,659.6 | | | | | | | | | |
| Bridge, 1924, r. 1934 (d.m.) | 32 39 53.326 80 24 48.776 | 1,642.7 1,271.0 | 68 09 27.5 | 248 06 29.3 | Zip | 3.9672759 | 9,274.19 | 30,427.1 | | | | | | | | | |

210530°-40-5

| | | | | | | | | |
|---------------------------------|------------------------------|--------------------|--|--|---------------------------------|-----------------------------------|--------------------------------|-------------------------------|
| Tank, 1924, r. 1934 (d.m.) | 32 40 35.114 80 22 45.572 | 1,081.7 1,187.3 | 68 09 32.8 | 248 08 26.3 | Bridge | 3.5389067 | 3,458.65 | 11,347.3 |
| Cross, 1924 (d.m.) | 32 41 46.058 80 19 15.569 | 1,418.8 405.5 | 68 14 27.3 248 08 26.0 | 248 12 33.9 68 10 51.8 | Tank Meg | 3.7702039 3.8790335 | 5,891.20 7,568.91 | 19,328.0 24,832.3 |
| Pip, 1924, r. 1934 (d.m.) | 32 44 14.099 80 11 57.588 | 434.3 1,499.4 | 68 17 44.9 | 248 16 13.9 | Meg | 3.6734841 | 4,715.03 | 15,469.2 |
| Yonges, 1924, r. 1933 (d.m.) | 32 44 55.598 80 09 55.106 | 1,712.7 1,434.6 | 68 09 50.2 | 248 08 43.9 | Pip | 3.5359878 | 3,435.48 | 11,271.2 |
| Oak, 1924, r. 1933 (d.m.) | 32 45 07.164 80 09 21.260 | 220.7 553.4 | 67 59 10.5 | 247 58 52.2 | Yonges | 2.9779110 | 950.41 | 3,118.1 |
| Piston, 1924, r. 1933 (d.m.) | 32 45 05.139 80 08 00.549 | 158.3 14.3 | 91 42 24.0 | 271 41 40.3 | Oak | 3.5226377 | 2,102.02 | 6,896.4 |
| Curve, 1924, r. 1933 (d.m.) | 32 45 06.065 80 07 52.684 | 186.8 1,371.5 | 82 04 10.8 | 262 04 06.5 | Piston | 2.3153804 | 206.72 | 678.2 |
| Stono, 1924 (d.m.) | 32 45 40.340 80 06 23.757 | 1,242.7 618.4 | 65 29 18.3 | 245 28 30.2 | Curve | 3.4055643 | 2,544.28 | 8,347.4 |
| Pack, 1924, r. 1933 (d.m.) | 32 46 21.889 80 04 36.389 | 674.3 947.1 | 65 24 01.9 | 245 23 03.8 | Stono | 3.4876616 | 3,073.70 | 10,084.3 |
| Top, 1924, r. 1933 (d.m.) | 32 47 01.764 80 02 52.075 | 54.3 1,355.1 | 65 39 43.4 | 245 38 46.9 | Pack | 3.4741706 | 2,979.69 | 9,775.9 |
| Road, 1924, r. 1933 (d.m.) | 32 47 17.270 80 01 19.222 | 532.0 500.2 | 78 49 29.5 | 258 48 39.3 | Top | 3.391464 | 2,463.0 | 8,081 |
| Track, 1924 (d.m.) | 32 47 38.835 79 59 08.411 | 1,196.3 218.9 | 78 57 59.4 | 258 56 48.6 | Road | 3.5400816 | 3,468.02 | 11,378.0 |
| West Base, 1924, r. 1934 (d.m.) | 32 47 43.250 79 58 46.188 | 1,332.3 1,201.8 | 76 45 55.8 260 02 55.8 284 52 44.5 | 256 45 43.8 80 03 32.5 104 54 07.5 | Track Bond Francis Marion | 2.7737969 3.253574 3.616201 | 594.01 1,792.973 4,132.4 | 1,948.8 5,892.45 13,558 |

GEOGRAPHIC POSITIONS

Augusta, Ga. to Fort Royal, S.C. traverse

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|------------------------------------|------------------------|--------------|--|-------------------|-------------|---------------------------------------|-----------|--------------|----------|--|------------|--------------------|--------|------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points | | | | | | | | | | | | | | |
| Azimuth No. 10, 1901 (d.n.m.) | 33 13 06.011 | 81 44 05.010 | | 143 32 26.8 | 323 27 20.5 | Beech Island (Augusta northwest base) | 4.3849174 | 24,261.26 | 79,597.2 | | | | | |
| Millpond, 1901 (d.m.) | 33 09 39.152 | 81 41 01.415 | | 143 32 39.6 | 323 30 59.0 | Azimuth No. 10 | 3.9031512 | 8,001.13 | 26,250.4 | | | | | |
| Pobbins, 1901 (d.m.) | 33 08 34.761 | 81 33 41.742 | | 118 44 04.4 | 298 42 48.0 | Millpond | 3.6156949 | 4,127.57 | 13,541.9 | | | | | |
| Hattievville, 1901, 1. 1932 (d.m.) | 33 06 40.199 | 81 36 37.039 | | 137 31 16.9 | 317 30 08.8 | Robbins | 3.6799688 | 4,785.96 | 15,701.9 | | | | | |
| Azimuth No. 9, 1901 (d.n.m.) | 33 04 42.578 | 81 31 49.718 | | 115 57 22.7 | 295 54 45.8 | Hattievville | 3.9183016 | 8,285.17 | 27,182.3 | | | | | |
| Curve H, 1901 (d.m.) | 33 04 28.437 | 81 30 25.055 | | 85 27 01.4 | 265 26 37.9 | Curve I | 3.0492662 | 1,120.12 | 3,674.9 | | | | | |
| Martin, 1901 (d.m.) | 33 04 05.553 | 81 28 46.830 | | 105 28 27.8 | 285 27 34.2 | Curve H | 3.4221900 | 2,643.57 | 8,673.1 | | | | | |
| Curve G, 1901 (d.m.) | 33 04 13.395 | 81 27 48.036 | | 81 00 08.6 | 260 59 36.5 | Martin | 3.1886202 | 1,544.12 | 5,066.0 | | | | | |
| Curve F, 1901 (d.m.) | 33 04 56.176 | 81 26 22.121 | | 57 33 25.8 | 237 32 42.2 | Curve G | 3.3902808 | 2,456.30 | 8,058.7 | | | | | |
| Curve E, 1901 (d.m.) | 33 04 58.546 | 81 25 58.494 | | 84 34 26.8 | 264 34 10.6 | Curve F | 2.8875343 | 771.85 | 2,532.3 | | | | | |

| | | | | | | | | | | | | |
|--|--------------|--------------|--|-------------|-------------|--------------------------|-----------|----------|----------|--|--|--|
| Beldoc, 1901 (d.m.) | 33 04 39.414 | 81 25 03.577 | | 112 29 04.6 | 292 28 34.6 | Curve E | 3.1879354 | 1,541.47 | 5,057.3 | | | |
| Curve D, 1901 (d.m.) | 33 04 08.240 | 81 24 18.800 | | 129 35 20.9 | 309 34 56.4 | Beldoc | 3.1781254 | 1,507.04 | 4,944.3 | | | |
| Curve C, 1901 (d.m.) | 33 04 03.658 | 81 23 23.209 | | 95 35 44.5 | 275 35 14.1 | Curve D | 3.1610410 | 1,448.91 | 4,753.6 | | | |
| Appelton, 1901, 1. 1932 (d.m.) | 33 02 57.627 | 81 22 19.309 | | 308 25 53.8 | 128 26 28.1 | Curve B | 3.3180602 | 2,079.99 | 6,824.1 | | | |
| Azimuth No. 8, 1901 (d.n.m.) | 33 02 04.185 | 81 20 58.767 | | 177 48 10.6 | 357 48 10.0 | Curve B | 2.8702181 | 741.68 | 2,433.3 | | | |
| Curve A, 1901, 1. 1918 (d.m.) | 33 01 48.111 | 81 20 34.549 | | 128 14 14.4 | 308 14 01.2 | Azimuth No. 8 | 2.9031428 | 800.10 | 2,625.0 | | | |
| Allendale, 1901, 1. 1918 (d.m.) | 33 00 39.964 | 81 18 45.197 | | 126 29 54.4 | 306 28 54.8 | Curve A | 3.5477950 | 3,530.17 | 11,581.9 | | | |
| Allendale northeast base, 1907 (d.m.) | 33 00 40.987 | 81 18 35.472 | | 306 30 10.0 | 126 30 15.4 | Extension | 2.5071486 | 321.48 | 1,054.7 | | | |
| Allendale southwest base, 1907 (d.m.) | 33 00 36.636 | 81 18 39.181 | | 358 27 39.2 | 178 27 39.3 | Extension | 2.547983 | 222.83 | 731.1 | | | |
| | | | | 82 53 00.1 | 262 52 54.8 | Allendale | 2.405483 | 254.38 | 834.6 | | | |
| | | | | 123 17 40.5 | 303 17 37.2 | Allendale | 2.271377 | 186.80 | 612.9 | | | |
| | | | | 215 41 08.5 | 35 41 10.5 | Allendale northeast base | 2.217621 | 165.05 | 541.5 | | | |
| | | | | 310 56 02.5 | 130 56 04.6 | Extension | 2.131529 | 135.37 | 444.1 | | | |
| Street, 1907 (d.) | 33 00 34.247 | 81 18 41.518 | | 217 04 55.4 | 37 04 58.7 | Allendale northeast base | 2.415459 | 260.29 | 854.0 | | | |
| | | | | 219 29 58.9 | 39 30 00.1 | Allendale southwest base | 1.979420 | 95.37 | 312.9 | | | |
| | | | | 275 17 44.0 | 95 17 47.4 | Extension | 2.213867 | 163.63 | 536.8 | | | |
| Allendale Latitude Station, 1907, 1. 1918 (d.m.) | 33 00 31.307 | 81 18 40.927 | | 170 22 36.9 | 350 22 36.6 | Street | 1.963132 | 91.86 | 301.4 | | | |
| | | | | 242 54 58.2 | 62 55 01.3 | Extension | 2.219461 | 165.75 | 543.8 | | | |
| Azimuth No. 7, 1901 (d.n.m.) | 32 58 51.086 | 81 16 07.879 | | 129 24 23.4 | 309 22 57.8 | Allendale | 3.7230353 | 5,284.88 | 17,338.8 | | | |

GEOGRAPHIC POSITIONS

Augusta, Ga. to Port Royal, S.C. traverse - Continued

| STATION | LATITUDE AND LONGITUDE | | | SECONDS IN METERS | AZIMUTH | | | BACK AZIMUTH | | | TO STATION | DISTANCE | | |
|---|------------------------|--------|--|-------------------|-------------|-----------------------------|-----------|--------------|----------|--|------------|--------------------|--------|------|
| | | | | | | | | | | | | LOGARITHM (METERS) | METERS | FEET |
| Principal points (cont'd) | | | | | | | | | | | | | | |
| Brunson, Azimuth no. 6, 1901 (d.n.m.) | 32 55 | 24.952 | | 129 26 16.2 | 309 23 34.4 | Azimuth no. 7 | 4.0000475 | 10,001.10 | 32,811.9 | | | | | |
| | 81 11 | 10.407 | | | | | | | | | | | | |
| Varnville, Azimuth no. 5, 1901 (d.n.m.) | 32 50 | 48.566 | | 129 28 20.4 | 309 24 44.2 | Brunson, Azimuth no. 6 | 4.1271621 | 13,401.77 | 43,969.0 | | | | | |
| | 81 04 | 32.239 | | | | | | | | | | | | |
| Cummings, Azimuth no. 4, 1901 (d.n.m.) | 32 46 | 28.479 | | 129 30 12.1 | 309 26 49.5 | Varnville, Azimuth no. 5 | 4.1004547 | 12,602.44 | 41,346.5 | | | | | |
| | 80 58 | 18.309 | | | | | | | | | | | | |
| Early Branch, Azimuth no. 3, 1901 (d.n.m.) | 32 44 | 50.378 | | 129 31 07.4 | 309 29 51.3 | Cummings, Azimuth no. 4 | 3.6767058 | 4,750.13 | 15,584.4 | | | | | |
| | 80 55 | 57.512 | | | | | | | | | | | | |
| Davidson, Azimuth no. 2, 1901 (d.n.m.) | 32 43 | 36.024 | | 129 31 14.3 | 309 30 16.6 | Early Branch, Azimuth no. 3 | 3.5562948 | 3,599.94 | 11,810.8 | | | | | |
| | 80 54 | 10.843 | | | | | | | | | | | | |
| Yemassee, 1901 (d.n.m.) | 32 40 | 27.976 | | 129 33 18.7 | 309 30 53.2 | Davidson, Azimuth no. 2 | 3.9590479 | 9,100.14 | 29,856.0 | | | | | |
| | 80 49 | 41.395 | | | | | | | | | | | | |
| Sheldon, Azimuth no. 1, 1901 (d.n.m.) | 32 35 | 51.484 | | 160 15 07.0 | 340 14 03.7 | Yemassee Salt Bridge | 3.9566379 | 9,049.78 | 29,690.8 | | | | | |
| | 80 47 | 44.034 | | 340 16 04.4 | 160 18 07.1 | | 4.2467879 | 17,651.76 | 57,912.5 | | | | | |
| Supplementary points | | | | | | | | | | | | | | |
| Allendale, Methodist Church, spire, 1907, r. 1918 (d.) | 33 00 | 30.154 | | 201 11 53.0 | 21 11 54.6 | Allendale southwest base | 2.330712 | 214.1 | 702 | | | | | |
| | 81 18 | 42.164 | | | | | | | | | | | | |
| Allendale, Baptist Church, (white), spire, 1907, l. 1918 (d.) | 33 00 | 29.176 | | 169 09 30.8 | 349 09 29.8 | Allendale southwest base | 2.369168 | 234.0 | 768 | | | | | |
| | 81 18 | 37.466 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|--|-------|--------|--|-------------|-------------|--------------------------|----------|-------|-----|--|--|--|
| Allendale, Presbyterian Church spire, 1907, r. 1918 (d.) | 33 00 | 29.457 | | 156 16 16.1 | 336 16 14.0 | Allendale southwest base | 2.383014 | 241.6 | 793 | | | |
| | 81 18 | 35.436 | | | | | | | | | | |
| Allendale, Baptist Church (negro), spire, 1907, l. 1918 (d.) | 33 00 | 34.085 | | 124 33 44.0 | 304 33 41.6 | Allendale southwest base | 2.141481 | 138.5 | 454 | | | |
| | 81 18 | 34.787 | | | | | | | | | | |
| Allendale, Seaboard Oil Mill, stack, 1907, r. 1918 (d.) | 33 00 | 42.285 | | 29 40 18.7 | 209 40 16.6 | Allendale southwest base | 2.301655 | 200.3 | 657 | | | |
| | 81 18 | 35.361 | | | | | | | | | | |

U. S. COAST AND GEODETIC SURVEY

TRIANGULATION IN SOUTH CAROLINA—PART 2

DESCRIPTIONS, ELEVATIONS, AND PLANE COORDINATES OF TRIANGULATION AND TRAVERSE STATIONS

Until recently, in triangulation publications of this Bureau, the elevations and plane coordinates of the triangulation stations have been listed in separate tables apart from the descriptions. In this publication, for the convenience of the engineer and others who use the information, the elevation and plane coordinates of a station are given with its description, where the data are readily available. Thus there appears in the description of each station all the information concerning the station except its geographic position, and this may be found in the list of geographic positions.

EXPLANATION OF DESCRIPTIONS

The following descriptions of stations may be conveniently consulted by reference to the illustrations at the end of this publication or to the index. Azimuths given in the descriptions are geodetic azimuths, unless noted otherwise, and are reckoned continuously from true south around by west to 360° , south being 0° , west 90° , north 180° , and east 270° . These azimuths should not be confused with plane-coordinate or "grid" azimuths. (See p. 72.) Where magnetic azimuths are given they are indicated as such. Wherever the name of a point is printed in *italic* in the body of the descriptions, its position may be found in the tables.

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 where there is evidence that the surface mark has been disturbed.

The name and dates given in each description immediately after the county 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 station and reference marks referred to in the following descriptions and notes consist of a disk and shank of bronze cast in one piece. The disk of the station mark (see fig. 1) 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 Superintendent, Washington, D. C. \$250 fine or imprisonment for disturbing this mark." On the marks made since March 1921, the word "Director" replaces the word "Superintendent" in the inscription. 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. In recent years the slits in the stems of both station and

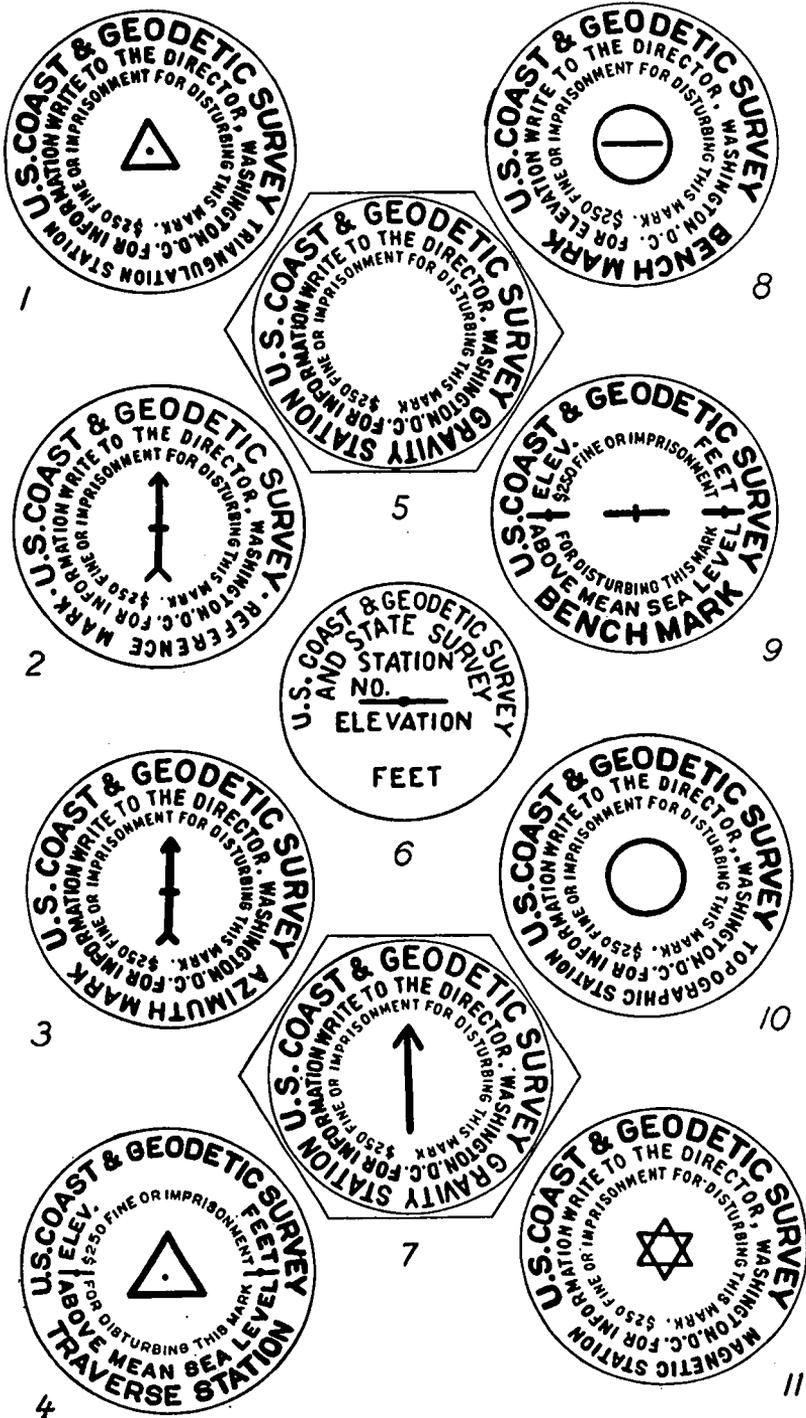


FIGURE 1.—Standard marks of the United States Coast and Geodetic Survey.

- | | | |
|--------------------------------|------------------------------------|-------------------------------|
| 1. Triangulation station mark. | 5. Gravity station mark. | 8. Tidal bench mark. |
| 2. Reference mark. | 6. Local control survey mark. | 9. Geodetic bench mark. |
| 3. Azimuth mark. | 7. Gravity station reference mark. | 10. Topographic station mark. |
| 4. Traverse station mark. | | 11. Magnetic station mark. |

reference disks have been enlarged so that the two prongs may be spread far apart and set in concrete without the use of a wedge. The marks used between about 1915 and 1920 have grooves cut around the shank instead of the slit.

The old type of station mark used in marking stations 20 or more years ago consists also of a disk and shank made of bronze and cast in one piece. The disk, which is somewhat smaller than the disk of the marks described above, has a polished center with an inscribed triangle. Around the polished part are the letters "U. S. C. & G. S." and a raised flange around the edge.

The standard disk reference mark shown in figure 1 is of the same size and shape as the newer type of station mark, described above, but instead of a triangle it has an arrow at the center of the disk which, when the mark is properly set, points to the station. The legend is the same as for the station mark except that the words "reference mark" take the place of the words "triangulation station."

The standard disk azimuth mark, referred to on page 69, is also shown in figure 1. It is the same as the reference mark described above except that the words "azimuth mark" take the place of the words "reference mark" in the inscribed legend.

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, reference, and witness marks. The notes were made as general as possible in order that it might not be necessary in the field 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, the number of the note describing the mark in detail is also given.

STANDARD NOTES ON THE MARKING OF STATIONS

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 concrete in a drill hole or depression, (d) an iron spike set point up in concrete 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 concrete in a drill hole or depression, (d) an iron spike set with concrete 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 and azimuth marks

Note 11.—A standard disk reference or azimuth 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 or azimuth 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 or azimuth 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.

Additional note on the marking of stations

Note 16.—A large nail embedded in concrete, with the point projecting one-half inch, at the center of a 4-inch or 6-inch tile which is set in a block of concrete 2½ feet in diameter and about 3 feet long, the top of which is flush with the surface of the ground. The underground mark is the same as the surface mark except that the block of concrete in which the tile is embedded is smaller. The surface mark is inscribed "U. S. C. & G. S. 1902."

ELEVATIONS

The elevations of some of the triangulation stations and bench marks included in this publication have been determined by means of spirit levels. Where the elevation of a station has been determined (only a few are included in this publication) it is given at the end of the description of the station. The elevations are based on mean sea-level datum.

Elevations determined by first- or second-order leveling are given to two decimal places in meters and one decimal place in feet, not because the absolute elevations are certain to this degree of refinement but because differences between adjacent marks are uncertain only in the last decimal place given.

Unless otherwise specified, the point to which the elevation refers is the top of the surface mark.

EXPLANATION OF PLANE-COORDINATE SYSTEM

In order to meet the various demands imposed upon it by engineering and surveying operations, a plane-coordinate system must satisfy conditions which naturally accompany requirements for accurate computations and exact results. The preservation of angles is one important factor to be considered; another factor of utmost importance is the elimination of variations of scale. Since variations of scale are inevitable, it becomes necessary to select a projection which will give definite scale values in certain directions, so that scale values may be tabulated, and through their use, when utmost accuracy is desired, one can eliminate the distortions of scale which result from the projection of spheroidal coordinates onto a plane.

These various requirements pointed very definitely to the adoption of one of the conformal projections. After due consideration it was decided to employ the Lambert conformal projection with two standard parallels in States with greatest extent in an east-west direction and the transverse Mercator projection where the greatest extent was in a north-south direction. Such a rule, however, could be applied only in those States which were of such limited extent in one of these directions that the entire State could be included in a single zone. It therefore became necessary to divide the larger States into a number of zones, using the projection in each which would satisfy the requirements of accuracy indicated by the limiting scale error, and at the same time keep to a minimum the number of zones required.

For these reasons the Lambert conformal projection with two zones was adopted for South Carolina (see fig. 2). It will be noticed that the junction lines between zones follow the county boundary lines; so that all stations in any county will be included in the same zone. Since, however, some surveys will extend across these artificial boundaries, the coordinates of stations which lie within what may be termed the borderland of two contiguous zones are given on both zones. With these data the engineer will not have to go from one zone of coordinates to the other in extending a survey a short distance beyond a boundary. Care must always be taken, however, to use in direct combination only coordinates which are given on the same zone. Where it is necessary to go from one zone or system to another, suitable directions for so doing will be found in Special Publication No. 193.

Each geodetic position in this publication has been reduced to plane coordinates which are given at the end of the description of the station. These coordinates are based upon the Lambert conformal projection of South Carolina with two zones. The zone upon which a station has been computed is denoted in the description by either the initial N (north) or S (south) directly preceding the plane coordinates in the second paragraph of each description. Coordinate tables for the State have been prepared by this Bureau as a basis for computing the coordinates (see p. 161). The purpose in view in supplying these coordinates has been to provide for computations of surveys by the usual methods of plane surveying in which the convergence of the meridians is not considered. A State-wide application can now be made of principles ordinarily confined in common practice to very restricted areas.

The x and y coordinates are given in feet to two decimal places. This is one place farther than geodetic positions justify, but it was

thought desirable to accept the positions as if they were correct to three decimal places, and carry two decimal places in the coordinates for use in adjusting traverses between fixed points.

The plane coordinates are in all essential features merely the plane representation of the spheroidal coordinates given in the tables of geodetic positions. For definite instructions regarding the use of plane coordinates, reference should be made to the following manuals of this Bureau: Special Publication No. 193, Manual of plane-coordinate computation, cost 35 cents, and Special Publication No. 194, Manual of traverse computation on the Lambert grid, cost 20 cents. These manuals may be procured from the Superintendent of Documents, Washington, D. C.

A few stations, for which geodetic positions are given in this publication, lie so far outside the State that plane coordinates were not computed for them on the grid of this State. If it becomes necessary to use any of these as control for local surveys, their coordinates should be obtained from the Coast and Geodetic Survey on the grid of the State in which they lie. Computation of traverses tied to them would then have to be made by passing from one grid to the other. The method of accomplishing this is given in Special Publication No. 193. It is not thought that this necessity will arise very often, but when it does occur the method of handling it is not complicated and the necessary computations can easily be made.

Explanation of plane lengths

The length of line between any two stations can be computed from the differences of coordinates just as is done in ordinary plane surveying. The resulting length is affected by the distortion due to the reduction of the actual curved surface of the earth to a plane. It must be corrected for the scale of the grid at that point to reduce it to the sea-level length listed in the geographic-position tables. Should it be desired to obtain the actual ground-level length, a further correction must be applied, as described on page 5 for lines of triangulation.

Explanation of plane or grid azimuths

The plane or grid azimuths given in the descriptions of stations are based upon the central meridian of the proper zone, and they therefore differ from the geodetic azimuths which appear in the lists of geographic positions and in the descriptions. The back azimuth differs from the forward azimuth by exactly 180° , hence it is necessary to list the azimuth of each line in only one direction.

Many of the azimuths listed are to special azimuth marks located at comparatively short distances from the stations. These marks have been placed at such positions as to be visible from the ground at the stations, and thus are readily available as starting azimuths for local surveys such as traverses. Since 1927 it has been the custom to establish these azimuth marks at most of the first-order stations determined by this Bureau.

The plane or grid azimuth from a triangulation station to an azimuth mark or other triangulation station may be computed in two ways; first, by means of the formula:

$$\text{geodetic azimuth—grid azimuth} = +\theta - \frac{x_2 - x_1}{2\rho_0^2 \sin 1''} \left(y_1 - y_0 + \frac{y_2 - y_1}{3} \right),^*$$

in which θ is the mapping angle obtained from table II of the plane-coordinate projection tables (pp. 164 and 170), x_1 , x_2 , y_1 , and y_2 are

the coordinates of the stations, and $\frac{1}{2\rho_0^2 \sin 1''}$ and y_0 are obtained

from the table of constants, page 161, for the zone in which the stations are located; and second, by means of the usual plane-surveying method using the formula:

$$\text{tangent grid azimuth} = \frac{\Delta x}{\Delta y},$$

in which Δx and Δy are the respective differences of the x and y coordinates of the two stations.

Since the second term of the first formula is negligible for distances up to approximately 1 mile, the mapping angle, θ , may be applied directly to the geodetic azimuth to obtain the grid azimuth. The first formula, using only the θ angle, will give more consistent results for azimuths over short distances than the second formula. This is due to the fact that there are not sufficient significant figures in the differences of the x and y coordinates to make the second formula sufficiently exact.

Inconsistencies between plane azimuths, as computed from the two formulas, may also arise when the coordinates of a triangulation station are derived from a "no check" geodetic position. This results from discarding the third decimal place of the seconds of latitude and longitude and thus using only hundredths of seconds for computing the plane-coordinate position.

Since these inconsistencies diminish as the distance between the stations increases, the second formula has been used to compute the plane azimuths of such lines as are of sufficient length to make the differences negligible. In other words, when the distances between the stations are such that both formulas give practically the same result, the second (or tangent) formula has been used.

The first formula (neglecting the second term) has been used in computing the plane azimuths to all azimuth marks whose coordinates were not known; this includes practically all special azimuth marks, the distances to such marks being nearly always less than one mile, and very rarely known with sufficient accuracy to permit the computation of the position of the mark. The first formula was also used for computing the plane azimuths to stations whose plane coordinates were derived from "no check" geodetic positions, and to other azimuth marks whose coordinates were known, but for which consistent results were not obtained through the use of the second formula. In the descriptions of stations, the plane azimuths computed by means of the first formula are marked by footnotes.

* See Special Publication No. 103, *Manual of plane-coordinate computation*, p. 13.

DESCRIPTIONS AND PLANE COORDINATES

AUGUSTA, GA., TO BEAUFORT, S. C., ARC

Principal points

Vaughn (Columbia County, Ga., H. C. Warwick, 1932; 1934).—About 9 miles west of center section of Augusta, in center of land between two cultivated fields, on south side of cultivated field, on property of W. F. Vaughn, who lives on south side of road (hedge surrounds front yard of his farmhouse). To reach from intersection of Green and Fifteenth Streets in Augusta, follow Fifteenth Street south to Walton Way, follow Walton Way west 2.85 miles to fork at "Forest Hill" sign, take right fork and go 1.15 miles, continuing straight ahead at T-road right, continue 0.9 mile, keeping to main road right at fork, continue 0.3 mile to cross-roads just beyond Horseshow Inn, turn left and go 2.9 miles to station at top of grade. Station is 100 meters (328 feet) north of Vaughn's residence, 118 feet northeast of post at east entrance to Vaughn's property and 30 feet north of center line of Wheeler Road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 12 inches below surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. No. 1 projects 5 inches above ground, is 165 feet east of east entrance, 17 feet south of center line of road, and 78.10 feet from station in azimuth $308^{\circ}42'$. No. 2 projects 8 inches above ground, is 10 feet east of brick post at east entrance, 13 feet south of center line of road, and 112.80 feet from station in azimuth $62^{\circ}47'$. Azimuth mark projects 2 inches above ground, is at edge of cultivated field, 15 feet south of center line of road which curves to northeast about 75 feet east of mark, and approximately 0.1 mile from station in azimuth $281^{\circ}42'35''$. Azimuth from station to *Augusta, Forest Hill Hotel, air beacon*, is $282^{\circ}42'32''$.¹

Plane coordinates: (N), $x=1,658,306.25$ feet; $y=179,436.04$ feet; the grid azimuth to the azimuth mark= $282^{\circ}20'32''$.¹ (S), $x=1,658,374.39$ feet; $y=603,784.69$ feet; the grid azimuth to the azimuth mark= $282^{\circ}19'12''$.¹

Bunch (Edgefield County, W. B. Fairfield, 1902; 1932).—About 8 miles north of Augusta, Ga., on highest ground in cultivated field of property owned by Mrs. Ollie Bunch (widow of E. M. Bunch) and son who lived in old house. To reach from Augusta, Ga., follow U. S. Highway 25 north about 8 miles to Jack Reynolds' Log Store on left, turn left (west) onto graded dirt road and go 0.3 mile to forks with mail box No. 40 on left, take left fork (ungraded sand road) and go west 0.5 mile to graded red-dirt road, continue west across red graded road onto graded dirt road and go 1.35 miles to fork to right with dead oak and double oak in small triangle about 20 feet on side. Station is across field, about 155 meters (509 feet) south-southwest from this point, and about 300 meters (984 feet) west of Bunch's house. Original surface mark was nail in concrete at center of 4-inch tile in block of concrete 2.5 feet in diameter and 3 feet long inscribed "U. S. C. & G. S., 1902." Underground mark is same as surface mark except that block of concrete is smaller. In 1932, nail in surface mark was replaced by standard station disk. Original reference mark is nail in 4-inch tile set in and surrounded by mass of concrete 15 inches in diameter, inscribed "U. S. C. & G. S." with an arrow pointing toward station, at above-mentioned triangular plot at road fork, and 154.28 meters (506.2 feet) from station in azimuth $207^{\circ}36'42''$. Reference and azimuth marks (1932) are standard reference disks in concrete, note 11a, projecting about 5 inches above ground. No. 1 is about 0.2 mile west of Bunch's house, 9 feet north of center line of road, and 267.12 feet from station in azimuth $138^{\circ}02'$. No. 2 is 45.7 feet west of double-oak tree in above-mentioned triangular plot, 18 feet north of center line of road, and 475.28 feet from station in azimuth $204^{\circ}13'01''$. Azimuth mark is about 50 feet north-west of Bunch's house, 5.3 meters (17 feet) south of center line of road, and about 0.2 mile from station in azimuth $248^{\circ}02'00''$. Following azimuths are from station: *North Augusta, municipal standpipe*, $353^{\circ}10'22''.0$; *Augusta, Ga., Linwood Hospital dome, finial*, $18^{\circ}42'11''.0$; Bunch's house, west chimney, $255^{\circ}06'18''.2$.

Plane coordinates: (N), $x=1,701,838.75$ feet; $y=214,103.90$ feet; the grid azimuth to the azimuth mark= $248^{\circ}35'09''$.¹ (S), $x=1,701,854.44$ feet; $y=638,465.99$ feet; the grid azimuth to the azimuth mark= $248^{\circ}33'59''$.¹

Sumerau (Richmond County, Ga., H. C. Warwick, 1932; 1934).—About 6.5 miles south of center of Augusta, Ga. To reach from intersection of Seventh

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

and Broad Streets in Augusta, follow State Highway 21 south 1.55 miles to forks at Atlantic service station, continue on State Highway 21 (left fork), 1.6 miles to forks, continue on State Highway 21 (left fork) 4.55 miles to lane leading to left 0.55 mile beyond creek crossing at foot of grade and just before reaching top of grade, follow lane past house on left 0.18 mile, continue straight on old abandoned road at right fork 0.1 mile to its end. Station is about 300 feet southeast of end of abandoned road, and at site of old well surrounded by brush and bushes. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 8 inches above ground. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 4 inches above ground, is at edge of woods, 10 feet south of 10-inch pine tree, 5 feet east of east edge of cultivated field, and 498.0 feet from station in azimuth $238^{\circ}35'45''$. Reference mark No. 2 projects 4 inches above ground, is at edge of woods, at north edge of low north-and-south ridge separating two fields, 4 feet north of edge of cultivated field, and 285.40 feet from station in azimuth $149^{\circ}26'$. Azimuth mark projects 5 inches above ground, is 10 feet southwest of center line of old road, 3 feet east of gate into pasture, and approximately 0.15 mile from station in azimuth $43^{\circ}53'45''$.

Plane coordinates: (N), $x=1,696,355.81$ feet; $y=138,513.61$ feet; the grid azimuth to the azimuth mark= $44^{\circ}27'26''$.¹ (S), $x=1,696,397.85$ feet; $y=562,881.14$ feet; the grid azimuth to the azimuth mark= $44^{\circ}26'15''$.¹

Smith (Aiken County, H. C. Warwick, 1932).—About 7 miles east of Augusta, Ga., and 2 miles southeast of Bath, S. C. To reach from Augusta, Ga., follow U. S. Highway 1 to east end of Savannah River bridge, continue 4.9 miles to Atlantic Refining Co. filling station on right about 100 yards east of overhead crossing of Southern Railway, turn right onto graded dirt road and go 2.05 miles southeast to top of long grade and station, near top of grade, on land belonging to M. S. Smith, about 0.2 mile west of Smith's store, near west end of rough semi-circle of tenant houses, 65 feet north of east end of tenant house, 27 feet southwest of center line of road, 17 feet northeast of west one of three pine trees, and 16 feet north of east one of three pine trees. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Upper mark projects 5 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects about 5 inches above ground, is in south edge of field, 89 feet east-northeast of east one of three pine trees, 24 feet northeast of center line of road, and 90.31 feet from station in azimuth $251^{\circ}25'$. Reference mark No. 2 projects about 5 inches above ground, is in south edge of field, 94 feet north of east one of three pine trees, 21 feet north-east of center line of road, and 91.98 feet from station in azimuth $140^{\circ}01'$. Azimuth mark projects 7 inches above ground, is outside of garden fence, 33 feet east of center of concrete steps to Smith's store, 30 feet south of center line of road, 4 feet south of fence corner, and about 0.15 mile from station in azimuth $271^{\circ}09'26''$. Azimuth from station to chalk mine building, center of roof, south vent pipe, is $184^{\circ}41'46''$.

Plane coordinates: (N), $x=1,740,509.47$ feet; $y=176,121.38$ feet; the grid azimuth to the azimuth mark= $271^{\circ}38'15''$.¹ (S), $x=1,740,534.31$ feet; $y=600,498.59$ feet; the grid azimuth to the azimuth mark= $271^{\circ}37'14''$.¹

Andrews (Aiken County, H. C. Warwick, 1932).—About 8 miles southeast of Augusta, Ga., on high sand hill on property of J. E. Andrews, about 600 feet southwest of his farmhouse, 43 feet from 14-inch pine tree, and 6.9 feet southwest of 6-inch pine tree. To reach from Augusta, Ga., follow Georgia State Highway 52 over Savannah River bridge to State Highway 28, follow latter southeast to Cunningham's stucco garage (1.8 miles southeast of Sandbar Ferry bridge) turn left onto dirt road and go east 0.2 mile, turn right onto main road and go southeast, 1.7 miles to left fork, keep left and go 0.95 mile to ungraded road leading to right, follow this road 0.3 mile to crossroads, turn right and go 0.1 mile to Andrews' farmhouse, continue south past house 0.1 mile to edge of field, thence to right up edge of scrub timber about 150 yards to station site. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 7 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 8 inches above ground, is at foot of hill, at edge of cultivated field, and 91.75 feet (slope distance) from station in azimuth $240^{\circ}31'$. Reference mark No. 2 projects 6 inches above ground, is on southeast slope of hill, 67.07 feet (slope distance) from

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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station in azimuth $357^{\circ}20'$. Azimuth mark projects 5 inches above ground, is at edge of woods and cultivated field, 10 feet east of center line of road, and about 0.2 mile from station in azimuth $248^{\circ}16'48''$.

Plane coordinates: (S), $x=1,738,069.09$ feet; $y=570,266.40$ feet; the grid azimuth to the azimuth mark= $248^{\circ}44'51''$.¹

Kinner (Aiken County, H. C. Warwick, 1932).—About 15 miles east-southeast of Augusta, Ga. and 11 miles north of Ellenton, S. C. To reach from intersection of Georgia State Highway 52 and Green Street in Augusta, follow Georgia State Highway 52 southeast to bridge over Savannah River to South Carolina State Highway 28, follow latter southeast 14.2 miles to sawmill on right and dirt road leading to left just after passing two Shell filling stations at left, follow dirt road 0.4 mile to Mrs. Glover's store at crossroads, continue straight ahead 2.9 miles to crossroads with open tool shed on right, turn left onto main road for 1.25 miles to top of slight grade with group of farm buildings on right, turn in at barnyard gate, then left into narrow lane just behind Nathaniel Smith's house and to station. Station is 170 feet north-northeast of northeast corner of Smith's house, near north end of small uncultivated triangular plot, 10 feet west of east fence and 9 feet east of west fence around plot. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects about 3 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a, projecting about 6 inches above ground. Reference mark No. 1 is in southeast corner of small plot, 105.4 feet northeast of northeast corner of Smith's house, 1 foot west of fence and 73.55 feet from station in azimuth $330^{\circ}30'$. Reference mark No. 2 is about 65 yards northwest of Smith's house, 33.2 feet south of 8-inch pine tree, 29 feet east of center line of road and 220.70 feet from station in azimuth $53^{\circ}19'$. Azimuth mark is near top of slight grade, about 0.2 mile north of Smith's house, 5.5 meters (18 feet) west of center line of road, 0.5 meter (2 feet) west of edge of bank and is about 0.2 mile from station in azimuth $120^{\circ}39'57''$. Azimuth from station to short black stack near chalk mine dump is $158^{\circ}52'51''$.

Plane coordinates: (S), $x=1,766,546.69$ feet; $y=562,535.14$ feet; the grid azimuth to the azimuth mark= $121^{\circ}04'56''$.¹

Barney (Richmond County, Ga., H. C. Warwick, 1932; 1934).—About 13 miles south-southwest of Augusta, Ga. To reach from intersection of 7th and Broad Streets in Augusta, follow State Highway 21 south for 1.55 miles to fork, take left fork (State Highway 21) and go 1.6 miles to fork, take left fork and go 9.75 miles (0.15 mile beyond end of pavement) to fork, take left fork and go 1.4 miles to fork, take left fork and go 0.4 mile to crossroads with "No hunting and fishing" sign in southeast corner, turn left and go 0.2 mile to Tommy Loyd's house. Station is in opening in trees, 174 feet northeast of northeast corner of house, 164 feet north of old log cabin, 44 feet east of 10-inch poplar tree and about 40 feet north of cultivated field. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 2 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 2 inches above ground, is at south edge of cultivated field, at northeast corner of old log cabin, and 164.19 feet from station in azimuth $305^{\circ}13'$. Reference mark No. 2 projects 4 inches above ground, is 71 feet northeast of northeast corner of house, 5 feet north of log outhouse, and 103.44 feet from station in azimuth $28^{\circ}17'$. Azimuth mark projects 4 inches above ground, is 0.15 mile north of road to station, 18 feet west of center line of north-south road, and about 0.2 mile from station in azimuth $92^{\circ}52'13''$.

Plane coordinates: (S), $x=1,720,384.50$ feet; $y=531,069.31$ feet; the grid azimuth to the azimuth mark= $93^{\circ}22'07''$.¹

Beech Island (Augusta northwest base) (Aiken County, W. B. Fairfield, 1902; 1932).—At Beech Island, about 7.5 miles southeast of Augusta, Ga., 0.1 mile south of milepost No. 7, along reverse curve of Charleston & Western Carolina Railway, on narrow flat area east of railroad right-of-way which appears to be an old abandoned railroad grade, along extension of tangent, which is near south end of reverse curve, about 0.25 mile west of State Highway 28, 325 meters (1,066 feet) north of dirt cross road, 30 meters (98 feet) east of track, 19 meters (62 feet) south-southwest of 30-inch pine tree, 10.8 meters (35 feet) east of edge of cut and 10.4 meters (34 feet) west of 24-inch pine tree in ditch. To reach from Augusta, Ga., follow Georgia State Highway 52 southeast to bridge across Savannah River, cross bridge and follow South Carolina State Highway 28

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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southeast 3.6 miles to dim farm road to right opposite State highway marker and about 50 yards northeast of post with two mail boxes, turn west onto farm road and go to tenant cabin on west edge of field near woods, here turn left and go about 0.2 mile around edge of fields to station site. Surface mark was nail in concrete in center of tile, surrounded by block of concrete. Underground mark was same as surface except that block of concrete was smaller. Second underground mark consists of bottle buried in upright position 5 feet below surface of ground. In 1932 only second underground mark was recovered, apparently undisturbed. Station was remarked, and two reference marks and azimuth mark established. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a, projecting about 5 inches above ground. Reference mark No. 1 is in west edge of field, 18.7 meters (61 feet) east of edge of cut, 6.5 meters (21 feet) east-northeast of 30-inch pine tree in ditch and 23.65 meters (77.6 feet) from station in azimuth $181^{\circ}52'$. Reference mark No. 2 is in west edge of field, on small ridge east of ditch, 24 meters (79 feet) east of cut, 12 meters (39 feet) north-northeast of 3-foot pine tree in ditch, 8.9 meters (29 feet) east-southeast of 24-inch pine tree in ditch and 37.55 meters (123.2 feet) from station in azimuth $306^{\circ}42'$. Azimuth mark is in east edge of field, 8.3 meters (27 feet) west of center line of State Highway 28 (this point is 3.5 miles from end of bridge) and about 0.2 mile from station in azimuth $186^{\circ}59'21''$. Following azimuths are from station: Center of south concrete chimney of white bungalow with flat pyramidal roof, $217^{\circ}19'37''$; west rail at top of grade opposite Augusta southeast base, $323^{\circ}28'05''$. This station was used as the northwest end of Augusta base. Elevation: 178.70 feet.

Plane coordinates: (S), $x=1,728,448.15$ feet; $y=569,217.63$ feet; the grid azimuth to the azimuth mark = $187^{\circ}28'25''$.¹

Augusta southeast base (Aiken County, H. C. Warwick, 1932; 1933).—At southern end of Augusta base line, at Hankinson station (Kathwood Post Office) on Charleston & Western Carolina Railway. To reach from Augusta, Ga., follow Georgia State Highway 52 over Savannah River bridge to South Carolina State Highway 28, follow latter southeast to dirt road (9.3 miles southeast of Sandbar Ferry bridge and about 100 yards north of Matlock Church), turn right (west) onto dirt road for 1.0 mile to Hankinson station (wooden platform). Mark is 80 feet south of southwest corner of Hankinson station platform, on west side of railway right-of-way, opposite telegraph pole 1239, 63 feet northwest of intersection of railway and dirt road, 9.46 meters (31.0 feet) west of northeast rail, and 2 feet north of fence. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Upper mark is flush with surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 6 inches above ground, is just east of Hankinson station, on south side of dirt road 45 meters (148 feet) east of center line of main track, 94.5 feet south of southeast corner of brick general store (Kathwood Post Office), 39.5 feet south of field corner fence, 17 feet south of center line of roadway and 181.7 feet (reported 55.19 meters (181.1 feet) in 1933) from station in azimuth $233^{\circ}16'$. Reference mark No. 2 is flush with surface of ground, in drainage ditch on right-of-way, 794 meters (2,605 feet) south of mile post 12, 393.2 feet northwest of north side of Hankinson station platform, 22.2 feet west of right-of-way fence, 2 meters (7 feet) north of and on opposite side of track from telegraph pole 1242, 5.34 feet west of west rail of railway, and 481.7 feet (reported 150.24 meters (492.9 feet) in 1933) from station in azimuth $145^{\circ}56'44''$. Azimuth mark projects 6 inches above ground, is beside dirt road leading to State Highway 28, 200 meters (656 feet) south of house of H. L. Lake of Kathwood, 30 feet north of small trail leading eastward, 24 feet east of road, and about 0.5 mile from station in azimuth $224^{\circ}22'55''$. Azimuth from station to lightning rod on dwelling on Lake's estate, distant 0.6 mile, is $219^{\circ}31'32''$. Elevation: 153.68 feet.

Plane coordinates: (S), $x=1,745,522.61$ feet; $y=545,713.59$ feet; the grid azimuth to the azimuth mark = $224^{\circ}50'09''$.¹

Bush (Barnwell County, H. C. Warwick, 1932).—About 6.5 miles east-northeast of Ellenton, on summit of hill locally known as Bald Hill which had recently been cut over, with two small pines left near north edge. Station is 25.8 feet northeast of 10-inch pine and 22.7 feet west of 8-inch pine tree. To reach from junction of State Highway 28 and Main Street in Ellenton, follow graded dirt

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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road northeast 5.2 miles to road fork (there are several buildings and lone tree in fork), turn left and go 0.8 mile to dim farm road at left opposite lone 10-inch hickory tree to south, and about 200 feet beyond right bend in main road with house on left, turn left and go 0.45 mile on rough farm road to top of hill and station site. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects about 5 inches above ground, is on slope of hill, on south edge of old wagon track, and 91.90 feet (slope distance) from station in azimuth $217^{\circ}59'$. Reference mark No. 2 projects about 6 inches above ground, is on slope of hill, at edge of brush, and 152.40 feet (slope distance) from station in azimuth $320^{\circ}50'$. Azimuth mark projects 7 inches above ground, is on north side of road, about 80 yards southeast of house, about 55 yards west-northwest of 10-inch hickory tree south of road, 5.2 meters (17 feet) north of center line of road, and about 0.4 mile from station in azimuth $5^{\circ}13' 07''.0$. Azimuth from station to northeast corner of brick chimney on house with galvanized iron roof, distant about 0.5 mile, $48^{\circ}19'08''.7$.

Plane coordinates: (S), $x=1,805,832.92$ feet; $y=518,753.06$ feet; the grid azimuth to the azimuth mark= $5^{\circ}33'52''.4$ ¹

Hancock (Burke County, Ga., H. C. Warwick, 1932).—About 9 miles air line north-northwest of Girard, Ga. To reach from main corner in Girard, follow main road leading northeast (locally known as Augusta Road) 9.85 miles (or 0.8 mile beyond store on right) to crossroads with cluster of mail boxes in west angle of road intersection, turn right and go 0.1 mile to crossroads, turn right and go 0.15 mile, take light-sandy left fork and go 1.0 mile to fork about 400 feet beyond farmhouse on right, take right fork and go 0.8 mile, take left fork (not left T-road) and go 0.55 mile, keep straight ahead at right fork, and continue 0.5 mile to crossroads. Station is 36 feet west of this road intersection, 30 feet west of center line of north-and-south road and 6 feet north of center line of east-and-west road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches above ground. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 5 inches above ground, is in southeast angle of road intersection, 65 feet south of east-west road, 43 feet east of north-south road and 73.21 feet from station in azimuth $350^{\circ}31'$. Reference mark No. 2 projects 6 inches above ground, is 6 feet south of east-west road, and 61.31 feet from station in azimuth $105^{\circ}13'$. *Primary traverse station No. 124 Mac (U. S. G. S.)* (see description thereof) is 18.194 meters (59.69 feet) from station in azimuth $327^{\circ}41'$.

Plane coordinates: (S), $x=1,757,584.19$ feet; $y=482,041.23$ feet.

Key (Barnwell County, H. C. Warwick, 1932).—About 11.5 miles east-south-east of Ellenton, in small field on land belonging to D. P. Key, 270.5 feet west-northwest of Key's house, 183 feet west of fence corner, 170 feet east of fence corner, 34 feet south of center line of road and 16 feet south of fence line. To reach from Allendale, follow State Highway 28 northeast for 16.9 miles to crossroads with State Highway arrow (marked "Milletville") in southwest corner, turn right onto graded dirt road and go 2.3 miles to fork, take left fork and go 1.8 miles to T-road junction with metal garage on north side (group of trees in Y formed by road junctions), take fork and go 0.8 mile to Mr. Key's house and station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 13 inches below surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects about 6 inches above ground, is just inside of fence, 65 feet west of fence corner, 20 feet south of center line of road, and is 118.10 feet from station in azimuth $256^{\circ}50'$. Reference mark No. 2 projects about 7 inches above ground, is in east edge of field, 37 feet north of fence corner, and 305.80 feet from station in azimuth $313^{\circ}22'$. Azimuth mark projects about 6 inches above ground, is in south edge of field, about 100 yards east of Negro cabin north of road, 30 yards south of edge of woods, 3 meters (10 feet) north of center line of road, and about 0.25 mile from station in azimuth $262^{\circ}26' 21''.4$.

Plane coordinates: (S), $x=1,830,211.95$ feet; $y=481,943.67$ feet; the grid azimuth to the azimuth mark= $262^{\circ}44'29''.2$ ¹

Girard (Burke County, Ga., H. C. Warwick, 1932).—About 2.3 miles by road east-southeast of Girard, Ga. To reach from Girard, go east past drug store about 300 feet, turn right onto main road for 2.1 miles to dim cross road 200 feet

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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beyond farmhouse on right, turn right for 0.3 mile to fork, take left fork 125 feet to station. Station is 60 feet south of blazed oak tree and 30 feet east of center line of road. Station and reference marks are surrounded by scrub oak and brush. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches above surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 6 inches above ground, and is 101.72 feet from station in azimuth $262^{\circ}25'$. Reference mark No. 2 projects 4 inches above ground, is 50 feet east of sand road leading southwest, 41.5 feet west of blazed oak tree, 25 feet west of road leading to station and 79.87 feet from station in azimuth $120^{\circ}41'$. Azimuth mark projects 6 inches above ground, is on main road to Stone Bluff, about 300 feet south of dim road leading to station, 18 feet west of center line of road, 4 feet north of telephone pole and about 0.2 mile from station in azimuth $193^{\circ}27'13''$.

Plane coordinates: (S), $x=1,792,232.84$ feet; $y=433,768.28$ feet; the grid azimuth to the azimuth mark= $193^{\circ}49'22''.1$

Allen (Allendale County, H. C. Warwick, 1932).—About 4.5 miles slightly north of west of Allendale. To reach from main corner of business district in Allendale, follow State Highway 28 northwest 2.8 miles to dirt cross road, turn left and go 2.35 miles to T-road with farmhouse on left side of road, turn right and go 0.4 mile to station site. Station is about 0.15 mile north of cross road and farmhouse, in east edge of cotton field, 184 feet south by west of 14-inch pine tree, a few feet east of road, and 27 feet west of center line of north-south road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 12 inches below surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 6 inches above ground, is at edge of cultivated field, 70 feet south of pine tree, 15 feet east of center line of road, and is 95.83 feet from station in azimuth $227^{\circ}43'$. Reference mark No. 2 projects 5 inches above ground, is at edge of cultivated field, 10 feet east of center line of road, and 62.46 feet from station in azimuth $346^{\circ}07'$. Azimuth mark projects 6 inches above ground, is in southwest corner of road intersection, about 200 feet east of farmhouse, 50 feet southeast of largest tree in grove at farmhouse, 39 feet southwest of 12-inch tree in northeast corner of road intersection, 25 feet east of east edge of garden, 15 feet west of north-south road, and about 0.15 mile from station in azimuth $20^{\circ}00'00''$.

Plane coordinates: (S), $x=1,882,195.18$ feet; $y=432,967.14$ feet; the grid azimuth to the azimuth mark= $20^{\circ}12'34''.1$

Millhaven (Screven County, Ga., H. C. Warwick, 1932; 1935).—About 7 miles, air line, northeast of Hilltonia, Ga., 5 miles, by road, east of Millhaven, Ga. To reach from Millhaven, take road behind post office for 0.75 mile to fork, take left fork for 4.4 miles to station, 400 feet northwest of center line of road, 350 feet northwest of farm buildings belonging to Mrs. M. L. Harrison, at south edge of trail and northwest edge of cultivated field, 40 feet southwest of group of sweet-gum trees, at point where trail turns downhill to farm road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper projects 10 inches. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects about 8 inches, is 58 feet northwest of group of gum trees, 45 feet west of 16-inch oak and 93.20 feet (slope) from station in azimuth $200^{\circ}16'$. Reference mark No. 2 projects 10 inches, is 31 feet south-southwest of center line of road and 90.65 feet (slope) from station in azimuth $114^{\circ}06'$. Azimuth mark projects 8 inches, is 400 feet west of farm buildings, 100 feet west of lone pine, on north side of road, 20 feet north of center line of road leading to station and about 0.2 mile from station in azimuth $42^{\circ}17'39''$.

Plane coordinates: (S), $x=1,827,184.12$ feet; $y=401,452.93$ feet; the grid azimuth to the azimuth mark= $42^{\circ}36'03''.1$

Best (Allendale County, H. C. Warwick, 1932; 1935).—About 7 miles southwest of Allendale, at summit of ridge on prominent hill on property belonging to Metropolitan Life Insurance Co. of Columbia. To reach from Allendale, at junction of State Highways 28 and 331, follow latter west for 0.8 mile to cross road, turn left for 6.8 miles to gate on west side of road (across road from bungalow), turn right for 0.1 mile to Y, bear right through field to station, about 300 yards northwest of gate and 150 yards north of Negro cabin. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper is

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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flush with ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 6 inches and is 87.75 feet from station in azimuth 289°25'. Reference mark No. 2 projects 6 inches, is about 15 feet west of range from station to north chimney of Negro cabin to south and 113.8 feet from station in azimuth 54° 04'. Azimuth mark projects 6 inches, is just inside gate at northeast corner of woods (southeast of station), 33 feet west of main road, 10 feet south of farm road along north edge of woods and about 300 yards from station in azimuth 358°52'38". A water tank, finial, is 0.25 mile from station in azimuth 351°27'25".

Plane coordinates: (S), $x=1,885,890.72$ feet; $y=397,009.96$ feet; the grid azimuth to the azimuth mark = 359°04'47".¹

Rouse (Allendale County, H. C. Warwick, 1932; 1935).—About 14 miles, by road south of Allendale. To reach from Allendale at junction of State Highways 28 and 331, follow latter west for 0.8 mile to cross roads, turn left (south) for 8.95 miles to Y, take left fork for 4.1 miles to Haskell Store, turn left for 0.2 mile to Y and T road, turn left on dim road through yard and follow for 0.7 mile to tenant house. Station is at south edge of cultivated field, on highest ground in vicinity, just south of group of seven pines, 150 feet north of tenant cabin belonging to Rouse estate and 16 feet south of triangular-blazed 15-inch pine. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper projects 2 inches. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 4 inches, is at west edge of large cultivated field, 94 feet northwest of sandy farm road and 134.53 feet from station in azimuth 316°32'. Reference mark No. 2 projects 4 inches, is about 100 feet northwest of tenant cabin and 127.63 feet from station in azimuth 59°57'. Azimuth mark projects 6 inches, is at eastern edge of large cultivated field at west edge of small woods, 10 feet east of center line of farm road and about 0.4 mile from station in azimuth 257°48'24".⁵ To reach from station go east on main road for 0.4 mile to Y, turn sharp left for 0.1 mile to mark.

Plane coordinates: (S), $x=1,879,272.80$ feet; $y=371,582.29$ feet; the grid azimuth to the azimuth mark = 258°01'15".³

Brunson (Hampton County, H. C. Warwick, 1932; 1935).—At Brunson, village on State Highway 28, in Brunson High School grounds, 141 feet north of northeast corner of school building, 114.5 feet west of southwest corner of brick church east of road, and 49 feet southeast of 3-foot live oak in northeast corner of grounds. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 3 inches below surface of ground. Reference marks are standard reference disks in concrete, note 11a. There is no azimuth mark. Reference mark No. 1 is flush with surface of ground, in school yard, 24 feet north of northeast corner of school building, and 117.13 feet from station in azimuth 305°12'. Reference mark No. 2 projects 4 inches above ground, is in west edge of school grounds, at north steps to school building, 192.5 feet northwest of northwest corner of building, and 195.89 feet from station in azimuth 28°47'.

Plane coordinates: (S), $x=1,942,052.56$ feet; $y=396,698.99$ feet.

Johnson (Allendale County, H. C. Warwick, 1932).—About 6 miles northwest of Estill, 3 miles northwest of Luray, on property belonging to J. M. and E. H. Rouse (old Johnson plantation), in former front yard of burned house, 56 feet east of 4.5-foot tree just west of iron gate through ornamental brick fence, 30 feet east of gate, 28 feet south of brick fence on north side of lot and 20 feet west of brick pile (ruins of house). To reach from Allendale follow State Highway 28 southwest for 6 miles to Fairfax and State Highway 33 south for 9.1 miles to north edge of Luray, turn right onto dirt road (across railroad tracts) for 0.8 mile to forks, take left fork for 2.3 miles to crossroads, turn south on sandy road for 0.5 mile to farm road forking to left at row of plantation buildings. Follow this road for about 300 yards to rear of barn, near burned house and chinaberry tree, turn right through board and wire gate to station about 200 yards southwest across field. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper projects 6 inches. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 4 inches, is 150 feet west of barns, 100 feet south of fence line, 75 feet north of 4-foot tree, 30 feet east of brick pile and 91.40 feet from station in azimuth 243°32'. Reference mark No. 2 projects 5 inches, is 250 feet west of barns, 50 feet southwest of 4-foot tree, 42 feet west of old fireplace and 102.85 feet from station in azimuth 337°36'. Azimuth mark projects 6 inches, is at west edge of

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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woods and east edge of open field, 40 feet east of very dim north-south road and about 0.3 mile from station in azimuth $208^{\circ}21'55''.5$. To reach from station, follow lane to main road, go north 0.3 mile to crossroads and east on dim road for 0.2 mile to mark.

Plane coordinates: (S), $x=1,912,636.06$ feet; $y=363,561.42$ feet; the grid azimuth to the azimuth mark = $208^{\circ}31'13''.1$

Varnville (Hampton County, H. C. Warwick, 1932; 1935).—About 4 miles east of Hampton, 2.9 miles northeast of Varnville, in west corner of cultivated field belonging to Frank Tuten, 295 feet south-southeast of lone live-oak in uncultivated area between State Highway 63 and county road at farm road intersection, 140 feet northwest of front door of deserted cabin, 108 feet south-southeast of center line of county road and 17 feet northeast of fence. To reach from Varnville (village on State Highway 28), follow State Highway 63 northeast 2.9 miles to lone live-oak on right and dim farm road, follow farm road (right) by tree, to corner of fenced field and station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 12 inches below surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 6 inches, is 97 feet west of 18-inch lone pine in field, 18 feet southeast of center line of road, 1 foot north of fence and 149.15 feet from station in azimuth $187^{\circ}24'$. Reference mark No. 2 projects 5 inches, is 156 feet west of front door of deserted cabin, 6.5 feet northeast of center line of farm road, 1.5 feet west of fence and 110.20 feet from station in azimuth $342^{\circ}15'$. Azimuth mark projects 7 inches, is about 40 yards southeast of east end of small patch of pine timber west of road, 10.5 meters (34 feet) southeast of center line of State Highway 63, 12 feet southeast of ditch and about 0.25 mile from station in azimuth $79^{\circ}52'49''.5$. Chimney above white gable of house is about 0.75 mile from station in azimuth $69^{\circ}06'53''.2$.

Plane coordinates: (S), $x=1,987,345.03$ feet; $y=378,974.27$ feet; the grid azimuth to the azimuth mark = $79^{\circ}54'10''.3$.

Deloach (Hampton County, H. C. Warwick, 1932).—About 7 miles east of Estill, 6 miles south of Varnville, at junction of Mount Carmel and Varnville roads, on pasture land owned by E. C. Deloach, 175 feet southeast of his farmhouse, 62 feet east of center line of Varnville road, 34 feet southwest of center line of Mount Carmel road, 32 feet east of gatepost, and 18 feet southwest of fence line paralleling Mount Carmel road. To reach from Estill, follow dirt road east 5.2 miles through Lena to Nixonville crossroads, turn north and go 2.9 miles to farm of Deloach. To reach from main section of village of Varnville, go south 6 miles to station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 8 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 6 inches above ground, is on north edge of pasture, on fence line along Mount Carmel road, 16 feet southwest of center line of road, and 161.50 feet from station in azimuth $312^{\circ}53'$. Reference mark No. 2 projects 3 inches above ground, is at west edge of pasture, on fence line paralleling Varnville road, 24 feet east of center line of road, and 110.39 feet from station in azimuth $42^{\circ}36'$. Azimuth mark projects 4 inches above ground, is in yard about 150 feet west of farmhouse occupied by A. B. Deloach, 30 feet east of center line of Varnville road, 11 feet south of 24-inch oak tree, and about 0.3 mile from station in azimuth $198^{\circ}32'10''.9$.

Plane coordinates: (S), $x=1,959,330.01$ feet; $y=344,852.33$ feet; the grid azimuth to the azimuth mark = $198^{\circ}36'30''.4$.

Cummings (Hampton County, H. C. Warwick, 1932).—About 9.5 miles northwest of Yemassee, 1.3 miles southeast of Cummings railroad station, on northeast side of State Highway 28 and Charleston & Western Carolina Railway, in narrow uncultivated field, about 270 feet north of railroad milepost No. 78, 107.3 feet east-northeast of east rail of railway, 96.5 feet south of northern one of two broken-off sycamore trees in fenced field, and 92.5 feet west of 10-inch pecan tree in southwest corner of fenced field and 50 feet northwest of corner of cultivated field, on northeast right-of-way line of railway. To reach from Yemassee, follow State Highway 28 northwest 9.1 miles to three white mail boxes on right, (two are numbered 59 and 60), cross tracks and turn right along northeast side of railway and go about 200 yards to station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 13 inches below surface of ground. Reference and azimuth marks are standard reference

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

disks in concrete, note 11a. Reference mark No. 1 projects 7 inches above ground, is in 2-strand fence line, 158 feet north of milepost No. 78, on railroad right-of-way, 45.5 feet east-northeast of east rail of railway and 115.80 feet from station in azimuth $341^{\circ}50'$. Reference mark No. 2 projects about 5 inches above ground, is in fence line, 96.7 feet east-northeast of east rail of railway, 47.5 feet south-southeast of 6-inch sycamore tree at end of fence and 185.75 feet from station in azimuth $126^{\circ}14'$. Azimuth mark projects about 4 inches above ground, is 39 feet southwest of center line of State Highway 28, 12.5 feet north of high tension pole No. 996, 5 feet north of fence line and approximately 0.2 mile from station in azimuth $319^{\circ}07'47''$.

Plane coordinates: (S), $x=2,008,914.34$ feet; $y=342,384.77$ feet; the grid azimuth to the azimuth mark $=319^{\circ}06'50''$.¹

Carmel (Hampton County, H. C. Warwick, 1932).—About 9 miles southwest of Varnville, 7.6 miles east of Estill, on grounds of Mount Carmel Church, 165 feet north of northeast corner of church, 60 feet west of center line of road, 24 feet southwest of 7-inch oak tree and 21 feet southwest of drive leading from northwest to church. To reach from Ridgeland, follow State Highway 36 north 14 miles to Greys, go west 1.9 miles on dirt road to road fork and follow right fork (main road) northwest 5.6 miles to Mount Carmel Church. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 8 inches above ground. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 5 inches above ground, is 102.5 feet northeast of northeast corner of church, 46 feet west of center line of road, 5 feet east of northwest drive and 92.31 feet from station in azimuth $279^{\circ}04'$. Reference mark No. 2 projects 4 inches above ground, is surrounded by scrub pine, 118 feet northwest of northeast corner of church and 91.64 feet from station in azimuth $357^{\circ}31'$.

Plane coordinates: (S), $x=1,962,491.95$ feet; $y=324,248.74$ feet.

Cocock (Hampton County, H. C. Warwick, 1932).—About 4.5 miles west of Yemassee, 0.25 mile north of McPhersonville school and church and on property line between land owned by Misses Millicent and Elsa Colcock and McPhersonville Presbyterian Church. The Misses Colcock donated this land to the church and still have supervision over it. To reach from Baker's drug store in Yemassee (village at junction of U. S. Highway 17 and State Highway 28), follow dirt-sand road paralleling Atlantic Coast Line tracks 4.6 miles to McPhersonville church and school, thence northwest 0.25 mile to station, in an east-and-west fence line, 114 feet south-southeast of 24-inch pine tree (largest in vicinity), 48 feet east of center line of road and 28 feet east of fence corner. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects about 5 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a, projecting 6 inches above ground. Reference mark No. 1 is 16 feet west of center line of road, 5 feet west of fence, and 102.20 feet from station in azimuth $349^{\circ}19'$. Reference mark No. 2 is in fence line, 51 feet west of 24-inch pine tree east of road, 16 feet west of road and 118.97 feet from station in azimuth $99^{\circ}51'$. Azimuth mark is in uncultivated area dotted with scrub pine, about 12 feet south of dim wagon track and approximately 285 yards (paced) from station in azimuth $49^{\circ}33'41''$. All three reference marks are located on property owned by Mr. Kress.

Plane coordinates: (S), $x=2,024,571.36$ feet; $y=312,500.20$ feet; the grid azimuth to the azimuth mark $=49^{\circ}31'04''$.¹

Little Rock (Jasper County, H. C. Warwick, 1932).—About 7 miles north of Ridgeland, 5 miles west of Coosawhatchie, on grounds of Little Rock (colored) Church, 99 feet west of center line of State Highway 36, 56 feet west of an 8-inch oak tree with three blazes on east side which is in southeast corner of church grounds and 42.5 feet south of southeast corner of church. To reach from Ridgeland, follow State Highway 36 north 7.7 miles to church. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 2 inches above ground, is in northeast corner of church grounds, 63 feet northeast of northeast corner of church, 50 feet west of center line of State Highway 36, 11 feet northwest of lone 8-inch oak tree and 116.88 feet from station in azimuth $232^{\circ}48'$. Reference mark No. 2 projects 2 inches above ground, is in southwest corner of church grounds, 70 feet west of southwest corner of church,

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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8 feet east of cultivated field and 94.81 feet from station in azimuth $119^{\circ}23'$. Azimuth mark projects 4 inches above ground, is in southwest corner of pine grove, 61 feet southwest of tall scarred pine tree which is only large tree in grove, 33 feet east of center line of State Highway 36, 5 feet west of fence paralleling road, and about 0.3 mile from station in azimuth $26^{\circ}47'28''$.⁶

Plane coordinates: (S), $x=1,998,332.25$ feet; $y=272,630.54$ feet; the grid azimuth to the azimuth mark= $26^{\circ}47'39''$.¹

Sheldon (Beaufort County, C. D. Meaney, 1932).—In Sheldon, 13 miles northeast of Ridgeland, 13 miles north-northwest of Beaufort. To reach from Garden Corners, follow State Highway 28 north and west 2 miles to dirt road (church on right), turn left onto dirt road and go about 0.1 mile to Spring Hill Church on right (white church with green trimmings). Station is on south boundary of church property, about on line between large pine tree south of church and oak tree in southeast corner of churchyard, 63 feet west of center line of road, 43 feet east of 30-inch pine tree, 42.4 feet south-southeast of southeast corner of main church and 36 feet west of 24-inch 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. Reference mark No. 1 is on north side of cultivated field, at west end of drainage ditch, 33 feet east of center line of road leading by station, 8 feet south of woven-wire fence and 196.8 feet from station in azimuth $229^{\circ}23'$. Reference mark No. 2 is at southwest angle of cross roads, at northeast corner of cultivated field, 30 feet south of center line of State Highway 28, 20 feet west of farm cross road, 10 feet southwest of west end of culvert and about 0.4 mile from station in azimuth $249^{\circ}29'31''$.⁵ Reference mark No. 3 is on edge of drainage ditch between two cultivated fields 125.7 feet west-northwest of southwest corner of church, 121.3 feet west of northwest corner of church and 215.9 feet from station in azimuth $128^{\circ}27'$.

Plane coordinates: (S), $x=2,063,317.93$ feet; $y=278,765.95$ feet; the grid azimuth to reference mark No. 2= $249^{\circ}22'48''$.¹

Ridgeland (Jasper County, C. D. Meaney, 1932; 1935).—About 4 miles northeast of Ridgeland, on property of New Road Church. To reach from Yemassee, follow U. S. Highway 17 south 9.6 miles (0.5 mile beyond bridge over Coosawhatchie River) to old dirt road on left and Standard service station on right, turn left onto dirt road and go 3.3 miles to New Road Church in "V" of road fork. To reach from main corner in Ridgeland, take road leading east off U. S. Highway 17 and go 1.1 miles to T-road junction, turn left and go 3.15 miles to church and station, in churchyard, on southwest side of church, and 61.0 feet southeast of center line of main road, 42.2 feet west of south corner of church, 29.85 feet southwest of west corner of church. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is among tall pines, 83.0 feet southeast of corner of church, 12 feet south of center line of road along north edge of area of tall pines, and 129.45 feet from station in azimuth $276^{\circ}21'$. Reference mark No. 2 (azimuth) is in scrub-pine area, about 40 feet northwest of center line of main road, and approximately 0.2 mile from station in azimuth $44^{\circ}28'56''$. Reference mark No. 3 is in scrub-pine area, opposite (west) side of road from church and old house, on extended halfway line between church and old house, and 136.5 feet from station in azimuth $176^{\circ}45'$.

Plane coordinates: (S), $x=2,021,230.03$ feet; $y=246,998.17$ feet; the grid azimuth to reference mark No. 2= $44^{\circ}26'41''$.¹

Bolen (Jasper County, C. D. Meaney, 1932).—About 9 miles southeast of Ridgeland, on old Bolen Hall plantation, now part of Chelsea Club property. To reach from intersection of dirt road and U. S. Highway 17 at main corner in Ridgeland, follow dirt road east 1.1 miles, turn sharply to right 0.1 mile, turn left 0.2 mile to T-road, turn left for 4.4 miles to T-road at store, turn right for 2.3 miles on main road to another store on left and turn left for 2.7 miles to end of road and station. Station is east of northeast corner of fenced-in cultivated area, about 125 meters (410 feet) east of woods rider's house, 100 meters (328 feet) west of river, 20.7 meters (68 feet) southwest of 5-foot butt oak, 16.8 meters (55 feet) east of corner post and 7.6 meters (25 feet) south of center line of dim road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is 23 meters (75 feet) north of 5-foot butt oak and 124.30 feet from station in azimuth $195^{\circ}18'$. Reference mark No. 2 (azimuth) is 4 meters (13 feet) northeast

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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of 10-inch cedar tree, 3 meters (10 feet) south of center line of dirt road and about 0.2 mile from station in azimuth $78^{\circ}11'18''$. Reference mark No. 3 is 18 meters (59 feet) northwest of northeast corner of fenced-in cultivated area, 3 meters (10 feet) north of center line of dirt road, and 110.23 feet from station in azimuth $100^{\circ}50'$.

Plane coordinates: (S), $x=2,045,443.08$ feet; $y=213,121.01$ feet; the grid azimuth to reference mark No. 2= $78^{\circ}06'29''$.¹

Supplementary points

West Augusta, municipal standpipe (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: (N), $x=1,686,549.53$ feet; $y=175,209.32$ feet. (S), $x=1,686,579.92$ feet; $y=599,569.06$ feet.

Augusta, Forrest Hills Hotel, air beacon (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: (N), $x=1,680,600.84$ feet; $y=174,157.44$ feet. (S), $x=1,680,632.20$ feet; $y=598,515.15$ feet.

Augusta, longitude station (Richmond County, Ga., C. H. Sinclair, 1890; 1932).—In Augusta City Hall grounds (formerly post office), near southwest corner of small park which fronts on Ninth or Calhoun Street, 27.85 meters (91.4 feet) from west fence, 23.80 meters (78.1 feet) from Ninth Street and 7.60 meters (24.9 feet) from south fence. Station was marked by foundation of brick and cement pier, 10 inches below surface of ground. A cast-iron cylindrical box 12 inches in diameter with handhole cover was installed over pier by city engineers. In 1932, standard station disk (stamped Augusta Long., 1890-1932) was set in original pier. Reference mark No. 1 (1932) is standard reference disk in concrete, note 11a; it projects 6 inches above ground, is just south of wire fence at north boundary of grass plot, 38.2 meters (125 feet) west of center line of Ninth Street, 11.95 meters (39.2 feet) southwest of southwest corner (southeast wing) of city hall, 3.3 meters (11 feet) east of west boundary fence and 26.216 meters (86.01 feet) from station in azimuth $192^{\circ}32'$. Reference mark No. 2 (1932) is a standard reference disk in drill hole in concrete curbing, at southeast corner of grass plot, 8.8 meters (29 feet) west of center line of Ninth Street at north boundary of Standard Oil Co.'s filling station, and 25.110 meters (82.38 feet) from station in azimuth $311^{\circ}03'$. Cupola, Union Depot, (azimuth mark) is in azimuth $341^{\circ}51'53''.2$.

Plane coordinates: (N), $x=1,704,361.59$ feet; $y=173,636.32$ feet; the grid azimuth to the cupola, Union Depot= $342^{\circ}24'43''.1$. (S), $x=1,704,390.75$ feet; $y=598,002.38$ feet; the grid azimuth to the cupola, Union Depot= $342^{\circ}23'33''.9$.¹

Augusta, Linwood Hospital, dome, finial (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: (N), $x=1,686,858.05$ feet; $y=171,219.97$ feet. (S), $x=1,686,889.83$ feet; $y=595,580.21$ feet.

North Augusta, municipal standpipe (Aiken County, H. C. Warwick, 1932).—Plane coordinates: (N), $x=1,705,062.05$ feet; $y=184,789.01$ feet. (S), $x=1,705,087.40$ feet; $y=609,154.26$ feet.

Augusta, Georgia Power Co., stack (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: (N), $x=1,699,472.27$ feet; $y=176,180.27$ feet. (S), $x=1,699,501.04$ feet; $y=600,544.43$ feet.

Augusta, Paine Negro College, spire (Richmond County, Ga., W. B. Fairfield, 1902; 1932).—Plane coordinates: (N), $x=1,697,055.90$ feet; $y=172,297.99$ feet. (S), $x=1,697,086.24$ feet; $y=596,661.70$ feet.

Augusta, International Vegetable Oil Corporation, silver water tank, finial (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: (N), $x=1,698,647.28$ feet; $y=165,818.07$ feet. (S), $x=1,698,679.66$ feet; $y=590,183.00$ feet.

Augusta, Christian Church, spire (Richmond County, Ga., W. B. Fairfield, 1902; 1932).—Plane coordinates: (N), $x=1,705,929.23$ feet; $y=173,406.07$ feet. (S), $x=1,705,958.29$ feet; $y=597,772.68$ feet.

Augusta, St. Patricks Church, spire (Richmond County, Ga., W. B. Fairfield, 1902; 1932).—Plane coordinates: (N), $x=1,705,092.20$ feet; $y=173,019.08$ feet. (S), $x=1,705,121.48$ feet; $y=597,385.45$ feet.

Augusta, Southern Finance Corporation, building, flagpole (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: (N), $x=1,705,708.95$ feet; $y=174,341.50$ feet. (S), $x=1,705,737.73$ feet; $y=598,707.95$ feet.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

Augusta, Augusta Warehouse and Compress Company, tall slim tank (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: *(N), $x=1,694,241$ feet; $y=170,158$ feet. (S), $x=1,694,272$ feet; $y=594,520$ feet.

Augusta, J. B. White, tank (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: *(N), $x=1,704,531$ feet; $y=174,502$ feet. (S), $x=1,704,560$ feet; $y=598,868$ feet.

Augusta, Free Clinic, spire (Richmond County, Ga., H. C. Warwick, 1932).—Plane coordinates: *(N), $x=1,699,717$ feet; $y=172,196$ feet. (S), $x=1,699,748$ feet; $y=596,561$ feet.

McKnight (Columbia County, Ga., W. B. Fairfield, 1902).—About 2 miles south of Evans railway station, on the farm of W. J. McKnight, in a cultivated field directly in front of his dwelling house. The station is on the west side of the county road from Evans and is marked according to note 16. A reference mark, consisting of a large nail embedded in concrete at the center of a 4-inch tile which in turn is set in a block of concrete 15 inches in diameter, is in the yard just east of the garden fence line, 6 meters (20 feet) north of the fence on the north side of the lane leading to the barn and 73.98 meters (242.7 feet) from the station in azimuth $113^{\circ}48'$. The southeast corner of the south chimney of McKnight's house is 53.22 meters (174.6 feet) from the station in azimuth $127^{\circ}06'$.

Plane coordinates: (N), $x=1,651,590.82$ feet; $y=191,438.26$ feet. (S), $x=1,651,618.21$ feet; $y=615,783.40$ feet.

Butler (Aiken County, W. B. Fairfield, 1902).—In North Augusta, on what is known as old Butler place owned by Dr. W. E. Mealing, and about 300 meters (984 feet) north of large square brick house located on top of hill. Station is at north end of peach orchard, about 150 meters (492 feet) west of Augusta & Aiken Electric Railway and about 4 meters (13 feet) west of boundary line between Butler property and that of P. B. Tobin. Station is marked according to note 16. A reference mark consisting of large nail in center of 4-inch tile imbedded in block of concrete flush with surface of ground is on property line 3.84 meters (12.60 feet) from station in azimuth $270^{\circ}27'$. Other azimuths are as follows: *Cupola of Butler's house* $15^{\circ}17'$; peak of roof of reservoir, distant about 500 meters (1,640 feet), $47^{\circ}00'$; and east chimney of Tobin's house, distant about 150 meters (492 feet), $207^{\circ}11'$.

Plane coordinates: (N), $x=1,706,107.08$ feet; $y=185,851.01$ feet. (S), $x=1,706,131.97$ feet; $y=610,216.51$ feet.

Reservoir (Richmond County, Ga., W. B. Fairfield, 1902).—On Monte-Sano Hills about 4 miles northwest of Augusta, in reservation in which are located reservoir, filtering works and basin of Augusta city waterworks. The station is in west part of grounds, 305 meters (1001 feet) from south line fence, 205 meters (673 feet) from north line fence, 34 meters (112 feet) from west line and 6.5 meters (21 feet) north of prolongation of line of south curbing of reservoir. In 1902 plans had been made to build new reservoir between old one and station, but this would not disturb station. Station is marked according to note 16. Reference mark, consisting of large nail embedded in concrete at center of 4-inch tile which in turn is set in block of concrete 15 inches in diameter, is in fence line on west side of reservation 34.12 meters (111.9 feet) from station in azimuth $91^{\circ}57'$. Large pine tree, marked with blaze and several nails in form of triangle, is 11.49 meters (37.7 feet) from station in azimuth $358^{\circ}56'$. Other azimuths from station are as follows: Southwest corner of reservation fence, $15^{\circ}06'$; northwest corner of same fence, $173^{\circ}51'$; filtering house, west cupola, $299^{\circ}26'$. Station was reported lost in 1917.

Plane coordinates: (N), $x=1,683,537.72$ feet; $y=173,478.69$ feet. (S), $x=1,683,569.02$ feet; $y=597,837.54$ feet.

Augusta, post office (Richmond County, Ga., W. B. Fairfield, 1902).—Iron staff used by United States Weather Bureau to support its wind vane and anemometer on tower at northeast corner of post office building in Augusta.

Plane coordinates: (N), $x=1,704,484.17$ feet; $y=173,793.96$ feet. (S), $x=1,704,513.26$ feet; $y=598,160.04$ feet.

Augusta, Clark Mill Company, water tank (Richmond County, Ga., W. B. Fairfield, 1902).—Plane coordinates: (N), $x=1,701,416.37$ feet; $y=173,482.43$ feet. (S), $x=1,701,445.87$ feet; $y=597,847.51$ feet.

Augusta, United States Arsenal, flagstaff (Richmond County, Ga., W. B. Fairfield, 1902).—Plane coordinates: (N), $x=1,687,845.84$ feet; $y=174,700.58$ feet. (S), $x=1,687,876.28$ feet; $y=599,060.83$ feet.

*No check on this position.

For notes in regard to marking of stations see p. 68.

Augusta, Bon Air Hotel, flagstaff (Richmond County, Ga., W. B. Fairfield, 1902).—Plane coordinates: (N), $x=1,691,855.64$ feet; $y=174,881.88$ feet. (S), $x=1,691,885.60$ feet; $y=599,243.54$ feet.

Augusta, Sibley Powder Company, obelisk chimney (Richmond County, Ga., W. B. Fairfield, 1902; 1932).—Plane coordinates: (N), $x=1,697,338.01$ feet; $y=178,653.97$ feet. (S), $x=1,697,366.13$ feet; $y=603,017.16$ feet.

Augusta, Richmond County Courthouse, dome (Richmond County, Ga., W. B. Fairfield, 1902; 1932).—Plane coordinates: (N), $x=1,706,594.15$ feet; $y=172,738.34$ feet. (S), $x=1,706,623.37$ feet; $y=597,105.24$ feet.

Augusta, First Presbyterian Church, spire (Richmond County, Ga., W. B. Fairfield, 1902; 1932).—Plane coordinates: (N), $x=1,705,816.20$ feet; $y=172,656.97$ feet. (S), $x=1,705,845.53$ feet; $y=597,023.61$ feet.

Augusta, St. Paul's Episcopal Church, spire (Richmond County, Ga., W. B. Fairfield, 1902).—Plane coordinates: (N), $x=1,706,793.70$ feet; $y=174,484.97$ feet. (S), $x=1,706,822.33$ feet; $y=598,851.75$ feet.

Augusta, Enterprise Mills, south cupola (Richmond County, Ga., W. B. Fairfield, 1902).—Plane coordinates: *(N), $x=1,700,510$ feet; $y=175,044$ feet. (S), $x=1,700,539$ feet; $y=599,409$ feet.

Augusta, cotton mill, cupola (Richmond County, Ga., W. B. Fairfield, 1902).—Plane coordinates: *(N), $x=1,702,085$ feet; $y=173,065$ feet. (S), $x=1,702,114$ feet; $y=597,431$ feet.

North Augusta, Butler House, cupola (Aiken County, W. B. Fairfield, 1902).—Plane coordinates: *(N), $x=1,705,813$ feet; $y=184,813$ feet. (S), $x=1,705,838$ feet; $y=609,179$ feet.

Beech Island, Hammond windmill (Aiken County, W. B. Fairfield, 1902).—Plane coordinates: (S), $x=1,734,982.78$ feet; $y=577,777.72$ feet.

Beech Island, Hammond house, west chimney (Aiken County, W. B. Fairfield, 1902).—Plane coordinates: (S), $x=1,734,963.93$ feet; $y=577,680.74$ feet.

Primary traverse station No. 124 Mac (U. S. G. S.) (Burke County, Ga., H. C. Warwick, 1932).—About 9 miles north-northwest of Girard. To reach from main corner in Girard, follow main road leading northeast (locally known as Augusta road) 9.85 miles (or 0.8 mile beyond store on right) to crossroads with cluster of mail boxes in west angle of road intersection, turn right and go 0.1 mile to crossroads, turn right and go 0.15 mile, take light-sand left fork and go 1.0 mile to fork about 400 feet beyond farmhouse on right, take right fork and go 0.8 mile, take left fork (not left T-road) and go 0.55 mile, keep straight ahead at right fork and continue 0.5 mile to crossroads. Station is 30 feet south of this intersection. Marked by standard U. S. Geological Survey disk in top of iron pipe which projects 12 inches above ground, and is stamped "Prim. Trav. Sta. 12 or 124, Elev. 304, 1917, MAC." Station *Hancock* (see description thereof) is 18.194 meters (59.69 feet) from station in azimuth $147^{\circ}41'$.

Plane coordinates: *(S), $x=1,757,615.68$ feet; $y=481,990.56$ feet.

Curve B (Allendale County, W. B. Fairfield, 1901; 1932).—About 5 miles northwest of Allendale, 1 mile northwest of Appleton, at point of intersection of second curve northwest of Appleton on Charleston & Western Carolina Railway, on land formerly owned by Mary Walker and now by Federal Land Bank of Columbia. To reach from Allendale, follow State Highway 28 northwest 4 miles to Appleton, cross railway tracks and keep to main road past railway station, turn north and go 0.1 mile to fork, take left fork over hill just southwest of church and go northwest (parallel to railroad) 1.0 mile to 10-inch oak tree which is just south of sand farm road. Station is 50 yards north of this tree, in cultivated field. Original station mark was nail in center of 4-inch tile surrounded by mass of concrete. In 1932 nail was replaced with standard station disk. Mark is 8 inches below surface of ground. Reference and azimuth marks (1932) are standard reference disks in concrete, note 11a. Reference mark No. 1 projects 4 inches above ground, is 35.65 feet northeast of northeast rail of railway, 32.5 feet southeast of 14-inch oak tree, 9 feet southwest of center line of sand farm road, and 211.1 feet from station in azimuth $21^{\circ}49'$. Reference mark No. 2 projects 4 inches above ground, is 72 feet south of 18-inch triangular-blazed pine tree, 66.6 feet northeast of northeast rail of railway, 10 feet southwest of center line of sand farm road, and 179.2 feet from station in azimuth $108^{\circ}13'$. Azimuth mark projects 3 inches above ground, is 20.93 feet northeast of northeast rail of railway, 10.5 feet southwest of center line of sand farm road, and about 0.15 mile from station in azimuth $356^{\circ}12'27''$.

*No check on this position.

For notes in regard to marking of stations see p. 68.

Plane coordinates: (S), $x=1,885,918.10$ feet; $y=445,034.47$ feet; the grid azimuth to the azimuth mark= $356^{\circ}24'37''$.¹

Curve I (Allendale County, W. B. Fairfield, 1901; 1932).—About 14 miles northwest of Allendale, 1.1 miles southeast of Millettsville, at point of intersection of tangents of south rail of first curve on Charleston & Western Carolina Railway northwest of Averill, and on land owned by J. J. Walker. To reach from Allendale, follow State Highway 28 northwest (toward Augusta, Ga.) 12 miles to graded road to left (southwest). This road is Browns Landing Road, and is 0.5 mile northwest of point where State Highway 28 crosses railway in Martins. Turn southwest and follow this road southwest and west 2.6 miles to curve 0.35 mile northwest of Averill railroad station. Station is in cultivated field, about 125 feet from railroad tracks and 20 yards south of road. Station is marked by nail in 4-inch sewer pipe set in and surrounded by circular mass of concrete 14 inches in diameter, 8 inches below surface of ground.

Plane coordinates: (S), $x=1,841,037.86$ feet; $y=451,679.15$ feet.

Waikiki eccentric (Allendale County, H. C. Warwick, 1932).—About one mile north of Fairfax. To reach from Fairfax, take road leading north from State Highway 28 at railway water tank (across road from Fairfax Library) and go 0.45 mile to cemetery entrance, turn west and go 0.1 mile, turn north and go past school (on west) 0.5 mile to station, 35 feet east of center line of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 10 inches below surface of ground. Reference and azimuth marks are standard reference disks in concrete, note 11a, projecting 4 inches above ground. No. 1 is on fence line, 11 feet west of center line of road, and 30.98 meters (101.6 feet) from station in azimuth $30^{\circ}16'$. No. 2 is on fence line, 11 feet west of center line of road, and 27.78 meters (91.1 feet) from station in azimuth $150^{\circ}20'$. Azimuth mark is about 80 yards west of Seaboard Air Line Railway, 32 feet west of telephone line, 17 feet west of center line of road, and approximately 0.35 mile from station in azimuth $186^{\circ}20'55''$.⁹ Station *Waikiki* (see description thereof) is 64.795 meters (212.58 feet) from station in azimuth $255^{\circ}27'$.

Plane coordinates: (S), $x=1,927,205.31$ feet; $y=414,929.42$ feet; the grid azimuth to the azimuth mark= $186^{\circ}28'41''$.^{3,1}

Waikiki (Allendale County, M. E. Lutz, 1918; 1932).—About 1 mile north of Fairfax, at point of intersection of tangents of west rail of first curve north of Fairfax of Seaboard Air Line Railway, 80 yards north of "Yard Limit" sign, and 8 yards south of "Fairfax R. R. Crossing" sign, 6.5 meters (21 feet) west of west rail. To reach from Fairfax, take road leading north from State Highway 28 at railway water tank (across road from Fairfax Library) and go 0.45 mile to cemetery entrance, turn west and go 0.1 mile, turn north and go past school on west 0.5 mile to point where dim track leads across field towards railway and station, distant about 50 yards. Surface mark is standard station disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Station *Waikiki eccentric* (see description thereof) is 64.795 meters (212.58 feet) from station in azimuth $75^{\circ}27'$.

Plane coordinates: *(S), $x=1,927,411.17$ feet; $y=414,982.21$ feet.

Omar eccentric (Hampton County, H. C. Warwick, 1932).—About 5.2 miles south of Fairfax, in cultivated field, and 34.08 meters (111.8 feet) east of east rail of Seaboard Air Line Railway, 10 meters (33 feet) east of center line of paved road (highway and railroad parallel each other on long tangent in this locality). To reach from Puroil filling station in Gifford, follow State Highway 33 (bituminous macadam road) north 1.45 miles to station site. To reach from junction of State Highways 33 and 28 in Fairfax, follow State Highway 33 south 5.2 miles to station site. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches above ground. Reference and azimuth marks are standard reference disks in concrete, note 11a. No. 1 projects 8 inches above ground, is 25 feet west of center line of highway, and 95.28 feet from station in azimuth $39^{\circ}13'$. No. 2 projects 8 inches above ground, is 26 feet west of center line of highway, and 124.2 feet from station in azimuth $152^{\circ}42'$. Azimuth mark projects 6 inches above ground, is 45.98 feet east of east rail of Seaboard Air Line Railway, 32 feet west of center line of highway, and approximately 0.25 mile from station in azimuth $178^{\circ}13'22''$.⁹ Station *Omar* (see description thereof) is 28.310 meters (92.88 feet) from station in azimuth $101^{\circ}25'$. Azimuth from station to Fairfax, railroad water tank, center, distant 5 miles, is $180^{\circ}51'13''$.³

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

**Checked by traverse.

For notes in regard to marking of stations see p. 68.

Plane coordinates: (S), $x=1,926,836.86$ feet; $y=381,310.22$ feet; the grid azimuth to the azimuth mark= $178^{\circ}21'10''.2$.¹

Omar (Hampton County, M. E. Lutz, 1918; 1932).—About 5.2 miles south of Fairfax, 1.5 miles north of Gifford railroad station, on Seaboard Air Line Railway right-of-way, 0.3 mile south of milepost No. 441, on top of bank of shallow cut, between railway tracks and highway (no fence), 161 yards north of railway signpost "Gifford" and 5.77 meters (18.9 feet) east of east rail. To reach from Puroil filling station in Gifford, follow State Highway 33 (bituminous macadam road) north 1.45 miles to station. To reach from junction of State Highways 33 and 28 in Fairfax, follow State Highway 28 south 5.2 miles to station. Surface mark is standard station disk in concrete, note 1a, projecting 2 inches above ground. Underground mark is copper bolt in concrete, note 7b. U. S. C. & G. S. bench mark Q, marked by standard bench mark disk in top of concrete post, is 31.38 meters (102.9 feet) from station. It was not recovered in 1932, possibly being covered by spoil from bank of ditch. Station *Omar eccentric* (see description thereof) is 28.310 meters (92.88 feet) from station in azimuth $281^{\circ}25'$.

Plane coordinates: *(S), $x=1,926,745.82$ feet; $y=381,328.82$ feet.

Allendale, municipal water tank (Allendale County, H. C. Warwick, 1932).—Plane coordinates: (S), $x=1,905,439.72$ feet; $y=428,485.18$ feet.

Varnville, stack, northeast of four (Hampton County, H. C. Warwick, 1932).—Plane coordinates: (S), $x=1,978,616.44$ feet; $y=369,926.72$ feet.

Ridgeland, tank, finial (Jasper County, H. C. Warwick, 1932).—Plane coordinates: (S), $x=2,005,581.66$ feet; $y=235,300.14$ feet.

BEAUFORT, S. C., TO JACKSONVILLE, N. C., ARC

Principal points

Gray (Beaufort County, C. D. Meaney, 1932; 1933).—About 5.5 miles northwest of Beaufort at Grays Hill railway station on Charleston & Western Carolina Railway, in clear space between trees and north-south wire fence line, 32.3 meters (106 feet) west of west rail of main line track, 28.5 meters (94 feet) northwest of northwest corner of Grays Hill loading shed and 4.3 meters (14 feet) east of wire fence line. To reach from Beaufort, follow State Highway 28 north for about 6 miles to dirt crossroads (transformer station here) and turn left on dirt road for 0.5 mile, thence turn left to railway station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 23.8 meters (78 feet) northwest of northwest corner of general store, 9.4 meters (31 feet) east of east rail of main line track of Charleston & Western Carolina Railway, 3.4 meters (11 feet) west of center line of dirt road leading south past store and 145.53 feet from station in azimuth $235^{\circ}59'$. Reference mark No. 2 is 17 meters (56 feet) southeast of railway milepost, 10 meters (33 feet) east of center line of main line of railway, in fence line of front yard of house, 3 meters (10 feet) north of southwest corner of yard and about 0.25 mile from station in azimuth $330^{\circ}46'14.''9$. Reference mark No. 3 is 32.8 meters (108 feet) west of west rail of main line of railway, 20.7 meters (68 feet) north of north edge of brick garage, 20.5 meters (67 feet) southwest of southwest corner of Grays Hill loading shed, 3.6 meters (12 feet) east of north-south wire fence line and 113.53 feet from station in azimuth $341^{\circ}24'$. *Hill* (see description thereof) is 30.846 meters (101.20 feet) from station in azimuth $249^{\circ}43'$.

Plane coordinates: (S), $x=2,076,790.61$ feet; $y=239,492.88$ feet; the grid azimuth to reference mark No. 2= $330^{\circ}38'06''.6$.¹

Gardner (Beaufort County, C. D. Meaney, 1932; 1934).—About 13 miles north-northwest of Beaufort on State Highway 32, 4 miles east-northeast of Sheldon, in churchyard between Jerusalem Church and schoolhouse, 14 meters (46 feet) northwest of center line of highway, 8.55 meters (28.1 feet) north of south corner of churchyard fence, and 8.25 meters (27.1 feet) south of south corner of concrete church steps. To reach from junction of State Highways 28 and 32 in Gardens Corners, follow State Highway 32 northeast for 0.9 mile to station at church. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is 8 meters (26 feet) southeast of center line of road and 33.363 meters (109.46 feet) from station in azimuth $273^{\circ}17'$. Reference mark No. 2 as originally established

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

**Checked by traverse.

was 9 meters (30 feet) northwest of center line of road, 0.5 meter (2 feet) southeast of telegraph pole and 39.340 meters (129.07 feet) from station in azimuth $36^{\circ}36'$. In 1933, due to road construction reference mark No. 2 was moved to point 24.88 meters (81.6 feet) from station still in azimuth $36^{\circ}36'$. Reference mark No. 3 (azimuth) as originally established was 9 meters (30 feet) southeast of center line of road and about 516 yards from station in azimuth $43^{\circ}15'07''$. In 1933, due to road construction, this mark was moved to point 1,106.1 feet from station in azimuth $41^{\circ}39'$.

Plane coordinates: (S), $x=2,077,234.30$ feet; $y=282,706.08$ feet.

Chisolm (Beaufort County, C. D. Meaney, 1932; 1934).—About 8 miles north-northeast of Beaufort, at Chisolm Post Office, on land belonging to H. L. Sanders, in pasture on north side of road, 50 meters (164 feet) west of west edge of post office 29 meters (95 feet) east-northeast of brick portals, 26.3 meters (86 feet) southeast of southeast corner of whitewashed tenant house and 5.2 meters (17 feet) north of east-west wire fence line. To reach from Beaufort, follow State Highway 28 north for about 10 miles to T-road (right) at sign "Dale and Chisolm," turn right on main road for 3.2 miles to sign "Coosaw and Chisolm," turn right on main T-road for 1.6 miles to fork at sign "Chisolm Island" and take left fork for 4.9 miles to Chisolm Post Office. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is in same pasture as station, 32.5 meters (107 feet) north of east-west wire fence line and 111.72 feet from station in azimuth $204^{\circ}05'$. Reference mark No. 2 is 20 meters (66 feet) east-southeast of southwest corner of fenced field, 3 meters (10 feet) south of centerline of dirt road and about 0.2 mile from station in azimuth $71^{\circ}36'54''$. Reference mark No. 3 is 8.8 meters (29 feet) northwest of brick portals and 114.46 feet from station in azimuth $80^{\circ}18'$.

Plane coordinates: (S), $x=2,122,122.17$ feet; $y=256,454.58$ feet; the grid azimuth to reference mark No. 2= $71^{\circ}23'57''$.¹

Green Pond (Colleton County, C. D. Meaney, 1932).—At Green Pond, about 12 miles (air line) south of Walterboro. To reach from main corner at Walterboro, follow U. S. Highway 17 west for about 0.3 mile to two forks in dirt road at Clover's service station; take State Highway 303 (right dirt fork) south for 12 miles to Atlantic Coast Line Railroad crossing at Green Pond and continue west on dirt road just north of tracks for about 0.1 mile to where road turns right across railroad Y. Station is in V formed by road and Y track, about 300 feet west-northwest of railroad station, 67.4 feet north of north rail of northerly sidetrack, 67 feet southeast of south rail of Y track and 21 feet north of road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is on south side of plowed field, 60.2 feet north of north rail of northerly sidetrack, 16 feet north of road leading by station and 106.9 feet from station in azimuth $263^{\circ}35'$. Reference mark No. 2 is on 10-foot bank on railroad right-of-way about 75 feet southwest of southwest corner of white house where road turns sharp right and crosses track, 40 feet north of spur track, 30 feet south of road leading along north side of track and about 0.3 mile from station in azimuth $265^{\circ}19'58''$. Reference mark No. 3 is on south side of tall pine grove, on railroad right-of-way, 73.45 feet north-northwest of south rail of Y track, 60 feet west of road crossing track into woods and 140.45 feet from station in azimuth $129^{\circ}35'$. *Primary traverse station No. 6 Mac (U. S. G. S.)* (see description thereof) is 33.47 meters (109.8 feet) from station in azimuth $52^{\circ}51'$. Elevation: 28.51 feet.

Plane coordinates: (S), $x=2,117,912.15$ feet; $y=327,088.61$ feet; the grid azimuth to reference mark No. 2= $265^{\circ}07'26''$.¹

Wiggins (Colleton County, C. D. Meaney, 1932; 1934).—About 10 miles south-southeast of Green Pond. To reach from railroad crossing at Green Pond, follow State Highway 303 south for 1.45 miles to junction with State Highway 32 from left; continue on State Highway 32 southwest for 0.65 mile and turn left on main road at Smith's service station (at sign "Wiggins") for 8.25 miles (0.65 mile beyond railroad crossing at Wiggins); take right fork (house in southwest angle) for 0.45 mile and turn right on slanting T-road for 0.2 mile to dim fork (right) at left bend in road. Station is about 15 meters up dim trail, on east edge of cultivated field at point just before woods start to south, about 250 meters (820 feet) northwest of group of farm buildings, 28 meters (92 feet) southwest of gate to lane, 24 meters (79 feet), southwest of intersection of main road to southeast and lane to farm buildings, and 5.2 meters (17 feet) northwest of dim road leading south into woods. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

mark No. 1 is 22 meters (72 feet) northeast of gate to field to north, 15.8 meters (52 feet) northwest of center line of main dirt road and 134.90 feet from station in azimuth $226^{\circ}39'$. Reference mark No. 2 is on east side of north-south dirt road, about 30 meters (98 feet) north of intersection of north-south and east-west road to station, 5 meters (16 feet) east of center line of north-south dirt road and about 0.25 mile from station in azimuth $242^{\circ}44'40''$. Reference mark No. 3 is about 35 meters (115 feet) south of gate to field to east, 7.6 meters (25 feet) east of center line of main dirt road and 117.75 feet from station in azimuth $331^{\circ}40'$.

Plane coordinates: (S), $x=2,137,923.73$ feet; $y=279,712.96$ feet; the grid azimuth to reference mark No. 2= $242^{\circ}30'01''$.¹

Padgett (Colleton County, C. D. Meaney, 1932; 1934).—About 13 miles southwest of Walterboro and 2 miles northwest of Jacksonboro. To reach from Walterboro, go east on U. S. Highway 17 for 13.5 miles to station, in southeast corner of field, about 100 yards west-northwest of E. M. Padgett's house on northeast side of U. S. Highway 17, about 115 feet east-southeast of small house in field, 54.4 feet northeast of center line of highway, 41 feet northwest of corner post of field and 16 feet northeast of wire fence line. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is at northwest corner of cultivated field, about 40 feet southwest of center line of highway, 15 feet southwest of culvert, 10 feet east of center line of lane down west side of field and about 0.4 mile from station in azimuth $312^{\circ}37'54''$. Reference mark No. 2 is 41 feet southwest of center line of highway, 15 feet west of right-of-way post 145, 1 foot north of wire fence line and 113.2 feet from station in azimuth $8^{\circ}37'$. Reference mark No. 3 is 40.5 feet northeast of center line of highway, 20 feet south of southeast corner of small house in field, 1 foot northeast of wire fence and 104.1 feet from station in azimuth $121^{\circ}56'$.

Plane coordinates: (S), $x=2,159,029.58$ feet; $y=349,021.97$ feet; the grid azimuth to reference mark No. 1= $312^{\circ}20'59''$.¹

Willtown (Charleston County, C. D. Meaney, 1932; 1934).—About 4 miles southwest of town of Adams Run. To reach from railroad crossing in Hollywood (opposite to and about 1 mile from Meggets) follow U. S. Highway 17 west for 4.1 miles and take graded dirt road straight ahead where concrete highway turns right; from here continue for 6.05 miles crossing over all cross roads to station, located in pine woods in northeast angle of oblique cross roads, about 200 feet east-northeast of stone gateposts and entrance to Arthur Whitney estate, 57 feet east-northeast of 12-inch blazed pine, 41.4 feet north of road to station and 37 feet southwest of center line of cross road leading northeast. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is in pine woods, about 200 feet east-northeast of road intersection, 39 feet southeast of center line of road leading to station and 99.55 feet from station in azimuth $287^{\circ}04'$. Reference mark No. 2 is in pine woods, 20 feet southeast of center line of road leading to station, and about 0.1 mile from station in azimuth $38^{\circ}50'48''$. Reference mark No. 3 is 80.8 feet east of center line of main north gatepost, 12.5 feet north of center line of private road leading through gate, and 138.7 feet from station in azimuth $46^{\circ}29'$.

Plane coordinates: (S), $x=2,182,622.29$ feet; $y=310,752.67$ feet; the grid azimuth to reference mark No. 2= $38^{\circ}31'25''$.¹

Eureka (Charleston County, C. D. Meaney, 1932; 1934).—About 17 miles east-southeast of Walterboro and 7 miles north-northwest of Adams Run. To reach from Adams Run, go west and north on U. S. Highway 17 from T-road south about 100 feet east of E. Thornby's gas station, for 5.25 miles and turn right around store and gas station opposite Parkers Ferry Railroad station; continue north on this dirt cross road for 3.25 miles to station on north side of Eureka schoolyard, 240 feet west of center line of road leading by school, 57.2 feet north-northwest of northeast corner of school and 47 feet north of northwest corner of school. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is on east side of schoolyard, 68 feet north of lane from road to schoolhouse, 25 feet west of center line of road leading by school, 1 foot west of north-south wire fence line and 214.65 feet from station in azimuth $266^{\circ}30'$. Reference mark No. 2 is on south side of cultivated field, about 300 feet west

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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of road, 2 feet north of row of trees and woven wire fence line and about 0.2 mile from station in azimuth $6^{\circ}50'44''$. Reference mark No. 3 is in schoolyard, 60.7 feet south-southwest of northwest corner of schoolhouse, 30.15 feet west-southwest of southwest corner of schoolhouse and 107.69 feet from station in azimuth $11^{\circ}40'$.

Plane coordinates: (S), $x=2,183,610.35$ feet; $y=354,733.54$ feet; the grid azimuth to reference mark No. 2= $6^{\circ}31'13''$.¹

Capwell (Charleston County, C. D. Meaney, 1932).—About 2.5 miles west-northwest of Ravenels. To reach from Ashley River Bridge in Charleston, follow U. S. Highway 17 west for 12 miles to dirt road (old Savannah road) reached just before railroad crossing at Rantowles; continue right on main dirt road (past all crossroads and T-roads) for 7.1 miles (or 0.7 mile beyond railroad crossing and left T-road) to crossroads where B. T. Doyle lives in southwest angle and continue straight ahead (west) for 0.15 mile to station, located in thinly wooded area, directly across road from cultivated field, 10.4 meters (34 feet) west of 24-inch pine and 9.4 meters (31 feet) south of center line of dirt road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is 5.2 meters (17 feet) north of center line of dirt road, 3.7 meters (12 feet) south of east-west fence around cultivated field, and 132.50 feet from station in azimuth $224^{\circ}18'$. Reference mark No. 2 is 16.7 meters (55 feet) west of 18-inch lone pine standing on highway right-of-way, 4.9 meters (16 feet) north of center line of dirt road, 4 meters (13 feet) south of east-west fence line, and about 0.1 mile from station in azimuth $70^{\circ}19'28''$. Reference mark No. 3 is 5.5 meters (18 feet) north of center line of dirt road, 4 meters (13 feet) south of east-west fence around cultivated field, and 120.18 feet from station in azimuth $90^{\circ}25'$.

Plane coordinates: (S), $x=2,223,999.35$ feet; $y=344,546.71$ feet; the grid azimuth to reference mark No. 2= $69^{\circ}55'39''$.¹

Warren (Charleston County, C. D. Meaney, 1932).—About 5 miles northwest of Ravenels. To reach from Charleston side of Ashley River Bridge, follow U. S. Highway 17 west for 12 miles to Rantowles and take dirt road (right) just before reaching railroad crossing at Rantowles; continue ahead on main road (past all crossroads and T-roads) for 7.1 miles to crossroads at B. T. Doyle's residence in southwest angle; take road right leading northwest for 0.8 mile; turn left at T-road junction for 2.4 miles to Warrens crossroads and continue straight ahead for 0.5 mile. Station is about 300 feet southeast of old sawmill on west side of road, 200 feet north of Mr. Powell's house on east side of road, 51.7 feet south-southeast of 12-inch blazed pine on east side of road and 46 feet east of center line of road leading to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is 20 feet west of center line of road to station, 20 feet south of right-of-way post and about 0.2 mile from station in azimuth $344^{\circ}09'29''$. Reference mark No. 2 is 25 feet west of center line of road and 108.2 feet from station in azimuth $20^{\circ}28'$. Reference mark No. 3 is 25.3 feet north of right-of-way post on west side of road, 23 feet west of center line of road, 10 feet southwest of mail box and 96.85 feet from station in azimuth $115^{\circ}05'$.

Plane coordinates: (S), $x=2,222,304.21$ feet; $y=362,421.04$ feet; the grid azimuth to reference mark No. 1= $343^{\circ}45'50''$.¹

New Cut (Charleston County, C. O. Boutelle, 1850; 1933).—About 16 miles west-southwest of Charleston, on Nancy Hart place on Wadmalow Island, on south shore of Wadmalow River, abreast Light No. 4, in cultivated field southwest of house, about 87 meters (285 feet) from high-water line, 65 meters (213 feet) southeast of fertilizer warehouse, 150 feet southwest of old 2-story house, and 20 meters (66 feet) east of hedge along west edge of field. To reach from Ashley River Bridge in Charleston, follow U. S. Highway 17 west for 9 miles to asphalt road turning left at sign "Johns Island," follow main road (which becomes dirt road at 1.6 miles) for 6.2 miles to T-road, turn right for 0.3 mile, thence right for 2.5 miles and follow right fork (Martins Point Road) for 3.5 miles to dim road, turn right for 0.8 mile and turn left (west) on T-road to abandoned cabin, go north and continue west to whitewashed cabin on north side of road, turn north around cabin and continue about 120 yards to old 2-story house. Station was originally marked by copper nail in stub inclosed in earthen cone set 3 feet below surface and surface mark consisting of copper bolt in granite post. Range marks were established at right angles to each other, consisting of four stubs with tacks, 2 in

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

each line, the two nearest at 20 feet from station and others at 20 paces. In 1902, station was re-marked by placing bottle inside of cone with top about 4 inches above tip of cone and filling with sand and cement. Original stone post was then reset in sand and cement above cone with top projecting about 6 inches. Letters "U. S. C. & G. S." were traced in cement around stone. In 1917 standard station disk was placed in contact with and above stone post and surrounded with cement and two reference marks were established. Reference mark No. 1 was iron cone with bottle placed 4 inches above cone, in corner of yard and 36.900 meters (121.06 feet) from station in azimuth $231^{\circ}56'$. Reference mark No. 2 was bottle in cement at base of concrete pier with cross lines and nail in surface, on west side of farm road and 109.24 feet from station in azimuth $124^{\circ}53'$. In 1932, station was re-marked by standard station disks in concrete, notes 1a and 7a. Upper mark projects 8 inches. Two reference disks were also established, note 11a. New reference mark No. 1 (1932) is 3.5 meters (11 feet) south of southwest corner of brick foundation of 2-story house and 41.78 meters (137.1 feet) from station in azimuth $223^{\circ}29'$. Reference mark No. 3 (1932) (azimuth) is in west edge of yard of third house southeast of station, 20 meters (66 feet) south of southwest corner of house and 0.25 mile from station in azimuth $313^{\circ}40'30''.5$.

Plane coordinates: (S), $x=2,248,065.66$ feet; $y=315,405.08$ feet; the grid azimuth to reference mark No. 3= $313^{\circ}14'09''.4$ ¹

Primary traverse station No. 47 Mac (U. S. G. S.) (Charleston County, C. D. Meaney, 1932; 1933).—About 10 miles south of Adams Run, on Edisto Island, about 1.75 miles northeast of Edisto Island Post Office, in southwest angle of intersection of Edisto Island Road and road to old steamboat landing on Steamboat Creek, known as Murray's Corner, 40 feet southwest of center line of intersection of crossroads, 32 feet west of center line of cross road, 27 feet south of center line of Edisto Island Road and 22.4 feet north of northeast corner of cabin. To reach from Adams Run, go south on Adams Run and Dawho Road and follow main Edisto Island Road south for 12.7 miles to station. Station is standard U. S. Geological Survey capped iron pipe surrounded by block of concrete and stamped "Prim. Trav. Sta. No. 47, 1917 Mac." Reference marks Nos. 1, 2, and 3 (established 1932) are standard disks in concrete, note 11a. Reference mark No. 1 is 68.1 feet northeast of northeast corner of store, 26 feet west of center line of north-south road and 156.4 feet from station in azimuth $211^{\circ}25'$. Reference mark No. 2 is on bank, 18 feet south of center line of Edisto Island Road, 5 feet northeast of 24-inch live oak on bank and about 0.15 mile from station in azimuth $278^{\circ}39'09''$. Reference mark No. 3 is 55.6 feet west of southwest corner of store in northwest angle of crossroads, 32 feet north of center line of Edisto Island Road and 101.4 feet from station in azimuth $140^{\circ}12'$. Reference mark No. 4 (established 1933) is standard disk in concrete, note 11b, 38 meters (125 feet) southeast of store, 22.75 meters (74.6 feet) southeast of intersection of two roads, 20.67 meters (67.8 feet) east of center line of north-south road, 14.46 meters (47.4 feet) south of center line of Edisto Island Road and 29.254 meters (95.98 feet) from station in azimuth $297^{\circ}47'$.

Plane coordinates: (S), $x=2,216,383.15$ feet; $y=271,843.24$ feet; the grid azimuth to reference mark No. 2= $278^{\circ}16'12''.1$

Edisto Island east base (Charleston County, C. O. Boutelle, 1849; 1933).—On Pockoy Island (part of Edisto Island) about 2.5 miles east of Edisto Island Post Office, 0.5 mile east of Bleak Hall, on old Bleak Hall plantation (being made into game preserve), 303 meters (994 feet) from northeastern end of Pockoy Island, 135 meters (443 feet) southeast of center line of dim farm road from Bleak Hall to northeastern end of island and 83.9 meters (275.3 feet) from south shore of island. To reach from Charleston, follow U. S. Highway 17 to Adams Run; turn south on Dawho Road for 14.5 miles to Bradley's store at Edisto Island Post Office; turn south on Edisto Beach Road for 0.65 mile to fork near church; take left road straight ahead (following Botany Beach sign) for 1.35 miles to cross roads; turn left for 1.7 miles to house (Bleak Hall), pass through farmyards and follow fence line east about 0.5 mile to first palmetto trees in field to south and continue south across field 150 yards to station. Underground mark is roughly shaped inverted prism of granite, 2.5 feet long and 4 inches square at top, with copper bolt in center of top. Top of post is 3.5 feet below surface of ground and was covered with earthenware cone marked "U. S. Coast Survey." Surface mark is copper bolt in top of 4-sided stone, about 4 feet high and 18 inches square,

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

placed on base consisting of two stones, each about 3 feet square and 1 foot thick, placed directly over underground mark. Sides of surface stone are inscribed: north, "1849"; east "Base—"; south, "A. D. Bache, Supt.,"; and west, "U. S. Coast Survey." In 1902 stones were found to have been dug up and were reset, by measurements from reference stones, in more permanent manner in bed of cement. Reference stones were granite blocks, about 12 inches square, with copper bolts in tops. Two of the stones were on projection of base line, one east and other west of station, and two others were placed at right angles to line, north and south of station, respectively. In 1917 reference stones were recovered, out of plumb, at following distances from station: 48.085 meters (157.76 feet), 50.12 meters (164.4 feet), 48.02 meters (157.5 feet), and 50.15 meters (164.5 feet). Three standard reference disks in concrete, note 11a, were established in 1932. Reference mark No. 1 is in same field as station and 142.65 feet from station in azimuth $228^{\circ}10'$. Reference mark No. 2 is in same field as station, about 25 meters (82 feet) northwest of tidal marsh and 164.15 feet from station in azimuth $343^{\circ}50'$. Reference mark No. 3 is in same field as station and about 0.25 mile from station in azimuth $89^{\circ}39'09''.5$.

Plane coordinates: (S), $x=2,238,426.25$ feet; $y=263,156.75$ feet; the grid azimuth to reference mark No. 3= $89^{\circ}13'52''.3$.¹

Edisto Island west base (Charleston County, C. O. Boutelle, 1849; 1933).—About 4.5 miles southwest of Edisto Island Post Office, near southwest extremity of Edisto Island, in west corner of what is known as "Tripod Field," on land said to belong to Edisto Beach Co., about 64 meters (210 feet) northeast of edge of fringe of timber between field and creek and 49 meters (161 feet) southeast of edge of woods to northwest. To reach from Edisto Island Post Office (Bradley's store), follow Edisto Beach Road south for 0.65 mile to fork at church; take right fork towards beach 2.6 miles to narrow sandy road to right just beyond cabins and turn right (southwest) on this road for 1.3 miles to wire gate across road; go through fence to left and through brush into field to east of gate and follow down northwest side of field 0.5 mile to station site. Underground mark is roughly shaped inverted prism of granite, 2.5 feet long by 4 inches square at top, with copper bolt in center of top, and set in ground so that top of post is 3.5 feet below surface of ground. Surface mark is copper bolt in top of 4-sided stone, about 3.5 feet high and 18 inches square, placed on base consisting of stone about 2.5 feet square set with its top about level with ground. Reference stones were granite blocks with copper bolts in top. Two of these stones were recovered (leaning slightly) in 1917, south 44.950 meters (147.47 feet) and west 46.20 meters (151.6 feet) from station. Concrete pier 3 feet deep, with bottle in cement at bottom and cross lines on surface was established 49.7 meters (163.1 feet) north of station in 1917. Three standard reference disks in concrete, note 11a, were established in 1932. Reference mark No. 1 is at edge of woods to southeast, and about 0.5 mile from station in azimuth $316^{\circ}25'09''.9$. Reference mark No. 2 is at edge of woods to southwest and 64.37 meters (211.2 feet) from station in azimuth $59^{\circ}43'$. Reference mark No. 3 is at edge of woods to northwest and is 48.755 meters (159.96 feet) from station in azimuth $139^{\circ}56'$.

Plane coordinates: (S), $x=2,207,682.22$ feet; $y=246,068.28$ feet; the grid azimuth to reference mark No. 1= $316^{\circ}03'09''.0$.¹

Bula (Charleston County, C. D. Meaney, 1932; 1935).—About 12 miles northwest of Charleston. To reach from Charleston, follow U. S. Highway 17 across Ashley River Bridge 1.3 miles from bridge to junction with State Highway 62, turn right (northwest) on State Highway 62 for 10.5 miles to where road leads through cut with 6-foot vertical banks and another dirt road leads south through left bank; follow left dirt road south for 1.8 miles, keeping straight ahead at 0.65 mile where main road turns left and station is in pine woods area, 111 feet east-northeast of gate in wire fence on west side of road, 55 feet southeast of barb wire fence on opposite side of road, 54.5 feet south of 24-inch blazed pine on west side of road and 32 feet southeast of center line of road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is at north edge of old cultivated field, at end of old wagon road and about 0.25 mile from station in azimuth $226^{\circ}33'19''.5$. Reference mark No. 2 is in pine woods, 125 feet east-southeast of road to station and 94.61 feet from station in azimuth $295^{\circ}03'$. Reference mark No. 3 is 15 feet northwest of center

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

line of road to station, 3 feet southeast of northerly gate post in wire fence on west side of road and 107.39 feet from station in azimuth $54^{\circ}08'$.

Plane coordinates: (S), $x=2,268,320.99$ feet; $y=375,336.89$ feet; the grid azimuth to reference mark No. 1= $226^{\circ}04'46''.1$

Johns (Charleston County, C. D. Meaney, 1932).—About 8.5 miles west-southwest of center of Charleston. To reach from Charleston, follow U. S. Highway 17 west and south for 9 miles beyond Charleston end of Ashley River Bridge; turn left onto asphalt road towards Johns Island for 1.6 miles to crossroads at end of pavement; continue straight ahead for 4.85 miles, 0.25 mile past T-road on right; turn left at crossroads 1 mile to station which is 14.7 meters (48 feet) southeast of center line of dirt road and 8.9 meters (29 feet) northeast of 10-inch blazed pine. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is 6.7 meters (22 feet) northwest of center line of dirt road and 120.80 feet from station in azimuth $204^{\circ}30'$. Reference mark No. 2 (azimuth) is 6 meters (20 feet) northwest of center line of dirt road and about 0.2 mile from station in azimuth $234^{\circ}16'17''$. Reference mark No. 3 is 5.8 meters (19 feet) northwest of center line of dirt road and 140.85 feet from station in azimuth $87^{\circ}46'$.

Plane coordinates: (S), $x=2,286,808.47$ feet; $y=326,771.49$ feet; the grid azimuth to reference mark No. 2= $233^{\circ}45'48''.1$

Charleston west base (Charleston County, C. D. Meaney, 1932; 1935).—About 8 miles west of Charleston, in or very near property line between Atlantic Coast Line Railroad and P. B. Bradley's property, in southwest angle of Atlantic Coast Line Railroad track and farm road crossing track, 135 yards south of U. S. Highway 17, about 50 yards east of point of tangency of first curve of railroad, 27.5 feet south of center line of railroad track, 21 feet west of center line of farm road and 19.1 feet north of triangular-blazed 8-inch oak tree on west side of road. To reach from Charleston, follow U. S. Highway 17 west for 6.9 miles from west end of Ashley River Bridge; turn left (south) on dim farm road just east of creosoted transmission pole 5203 and continue south 135 yards to station. Road is 1.7 miles east of Johns Island Road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Station and reference marks were not stamped "Charleston," but "W. Base, 1932." Reference mark No. 1 is 87 feet north of center line of railroad track, 7 feet east of farm road on west side of field and 35 meters (115 feet) from station in azimuth $195^{\circ}50'$. Reference mark No. 2 (azimuth) is 19 meters (62 feet) west of west end of concrete culvert on U. S. Highway 17, 18.6 meters (61 feet) south of center line of U. S. Highway 17, 4.9 meters (16 feet) southeast of South Carolina Power Co., pole No. 5200 and about 0.25 mile from station in azimuth $255^{\circ}20'11''.3$. Reference mark No. 3 is in north side of cultivated field, 26.5 meters (87 feet) east of center line of dirt road, 7.3 meters (24 feet) south of center line of Atlantic Coast Line Railroad and 33.28 meters (109.2 feet) from station in azimuth $279^{\circ}22'$.

Plane coordinates: (S), $x=2,282,239.09$ feet; $y=351,257.75$ feet; the grid azimuth to reference mark No. 2= $254^{\circ}50'10''.4$

Charleston east base (Charleston County, C. D. Meaney, 1932; 1933).—About 2 miles west of downtown Charleston, at Brennan Station on Croghan branch of Atlantic Coast Line Railroad, on property line of J. M. Harrison on south and Windermere Development Co. on north, on spoil bank between two drainage ditches leading south from railroad, about 0.25 mile south of U. S. Highway 17, 19.7 meters (65 feet) south of south end of Brennan freight shed, 12.8 meters (42 feet) south of center line of main track of Atlantic Coast Line Railroad and 10.2 meters (33 feet) southwest of field road. To reach from Charleston, follow U. S. Highway 17 west for 0.9 mile from west end of Ashley River Bridge, turn southwest on dirt lane just opposite galvanized iron warehouse with public scale sign and follow lane for 0.2 mile across tracks to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 36.5 meters (120 feet) east of east end of Brennan freight shed, 30.5 meters (100 feet) east of center line of dirt road, 28 meters (92 feet) southwest of southwest corner of first brick house east of Brennan freight shed, 6.1 meters (20 feet) north of center line of main track of Atlantic Coast Line Railroad and 39.5 meters (130 feet) from station in azimuth $252^{\circ}51'$. Reference mark No. 2 (azimuth) is about

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

50 meters (164 feet) west-southwest of Standard Service Station, 26.8 meters (88 feet) south of center line of U. S. Highway 17, 20 meters (66 feet) south of 24-inch culvert under highway and about 0.5 mile from station in azimuth $127^{\circ}17'11''.3$. Reference mark No. 3 is 6.8 meters (22 feet) north of center line of main track of Atlantic Coast Line Railroad, 2.5 feet west of west end of Brennan freight shed and 41.5 meters (136 feet) from station in azimuth $129^{\circ}41'$. Azimuth from station to Windermere, water tank, is $278^{\circ}57'36''$.

Plane coordinates: (S), $x=2,312,965.16$ feet; $y=345,334.50$ feet; the grid azimuth to reference mark No. 2 = $126^{\circ}43'54''.7$.¹

Citadel (Charleston County, C. D. Meaney, 1932; 1933).—At Charleston, on grounds of The Citadel (military college), behind mess hall on northern one of two high knolls, at edge of tidal marsh, about 60 meters (197 feet) south of south end of laundry and 9 meters (30 feet) south of small lone oak. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 (azimuth) is 7 meters (23 feet) south of south rail of Seaboard Air Line Railway tracks, 3 feet south of tall black telephone pole and about 0.25 mile from station in azimuth $180^{\circ}34'48''.3$. Reference mark No. 2 is in north angle of two wings of mess hall, 5.7 meters (19 feet) from main wing, 2.8 meters (9 feet) from kitchen wing and 37.940 meters (124.47 feet) from station in azimuth $257^{\circ}29'$. Reference mark No. 3 is near laundry, 12 meters (39 feet) southeast of large live oak which is in range with south end of laundry and 33.263 meters (109.13 feet) from station in azimuth $158^{\circ}54'$. Station *Bond* (see description thereof) is 250.5 meters (822 feet) from station in azimuth $226^{\circ}47'36''$. Elevation: 13.90 feet.

Plane coordinates: (S), $x=2,318,783.97$ feet; $y=352,018.53$ feet; the grid azimuth to reference mark No. 1 = $180^{\circ}00'54''.2$.¹

Farm (Charleston County, C. D. Meaney, 1932; 1935).—About 10 miles northwest of center of Charleston, at Farms railroad crossing, in northwest angle of railroad tracks and paved road, 153 feet west of west rail of tracks, 44 feet south of center line of paved road and 22 feet southeast of two pines that were cut completely around trunk. To reach from Francis Marion Hotel on King Street in Charleston, follow U. S. Highways 17 and 78 north for 7.35 miles to North Charleston railroad station; continue north on same highway for 2.3 miles to T-road at Gulf service station (airport on right) and turn right for 0.3 mile to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Upper mark projects 2 inches. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) projects 4 inches, is in scrub pine area, 105 feet west of 10-inch live oak, 35 feet south of center line of road and 0.5 mile from station in azimuth $264^{\circ}29'59''.7$. Reference mark No. 2 projects 4 inches, is 95 feet west of railroad crossing, 38 feet south of center line of road and 109.60 feet from station in azimuth $304^{\circ}03'$. Reference mark No. 3 projects 5 inches, is in pine grove, 29 feet south of center line of road and 127.2 feet from station in azimuth $42^{\circ}42'$. Bench mark (U. S. G. S.) is 39.990 meters (131.20 feet) from station in azimuth $261^{\circ}08'$.

Plane coordinates: (S), $x=2,303,088.86$ feet; $y=389,382.03$ feet; the grid azimuth to reference mark No. 1 = $263^{\circ}57'43''.5$.¹

Hamlin (Charleston County, C. D. Meaney, 1932).—About 5 miles northeast of Mount Pleasant, at Christ Church, on land belonging to Mrs. O. D. Hamlin, about 70 meters (230 feet) north-northeast of small store on east-southeast side of State Highway 40, 55 meters (180 feet) south-southwest of church, 15.1 meters (50 feet) east-southeast of center line of State Highway 40 and 13 meters (43 feet) south of northwest corner of fence around graveyard. To reach from Mount Pleasant, follow State Highway 40 northeast for 5.3 miles to church on right of highway. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 20.6 meters (68 feet) north of northeast corner of small store, 15.5 meters (51 feet) east-southeast of center line of State Highway 40 and 183.50 feet from station in azimuth $41^{\circ}37'$. Reference mark No. 2 (azimuth) is 11 meters (36 feet) west-northwest of center line of State Highway 40 and about 0.3 mile from station in azimuth $45^{\circ}38'50''.9$. Reference mark No. 3 is 11 meters (36 feet) west-northwest of center line of State Highway 40 and 104.37 feet from station in azimuth $166^{\circ}12'$. Elevation: 21.99 feet.

Plane coordinates: (S), $x=2,363,999.84$ feet; $y=369,551.56$ feet; the grid azimuth to reference mark No. 2 = $45^{\circ}00'07''.1$.¹

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Wando (Berkeley County, C. D. Meaney, 1932).—About 10 miles northeast of Charleston and 2.5 miles west of Cainhoy, in unsettled region between Wando and Cooper Rivers, in center of small pine timber growth, 150 feet east-northeast of enclosed plot of ground with sign "Sample Plot No. 1, Carolina Wood Preserving Co.," 61 feet east-northeast of dim cross road intersection and 27.4 feet east-northeast of 12-inch triangular-blazed pine. To reach from Mount Pleasant, follow State Highway 40 northeast for 14.4 miles to Cainhoy Road which bears west at tourist camp and filling station; follow Cainhoy Road (dirt) northwest for 4.9 miles to road forking to left at point 1.15 miles north of Guerin Bridge; follow left fork 0.5 mile to county line road and turn left for 4.45 miles to Wando crossroads; continue straight ahead (southwest) 0.7 mile to oblique crossroads about 100 yards beyond logging railroad track; turn back sharply to right on this road and follow straight ahead for 0.25 mile; turn onto sand road forking to left at 8-inch triangular-blazed oak on right; follow 0.3 mile and take left fork at triangular blaze on left; follow straight ahead 1.7 miles (passing fork to right at 0.35 mile, oblique crossroads at 0.55 mile, main road at 1.35 miles, oblique crossroads at 1.55 miles, triangular blaze on right, most of these roads are dim woods trails), turn left at fork (small triangular-blazed tree on left) and follow 0.2 mile to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is about 200 feet northwest of fork where road turns left to station, about 20 feet west of log road and about 0.2 mile from station in azimuth $261^{\circ}01'26''$. Reference mark No. 2 is in pine woods and 92.9 feet from station in azimuth $326^{\circ}54'$. Reference mark No. 3 is in pine woods, 63 feet west of dim crossroads, 5 feet north of dim wood road and 117.05 feet from station in azimuth $69^{\circ}46'$.

Plane coordinates: (S), $x=2,344,287.04$ feet; $y=402,921.98$ feet; the grid azimuth to reference mark No. 1 = $260^{\circ}24'46''$.¹

Sewee (Charleston County, C. D. Meaney, 1932).—About 19 miles southwest of McClellanville, 12 miles northeast of Mount Pleasant on land belonging to Atlantic Coast Lumber Co., in burned over area and 15 meters (49 feet) southeast of center line of Sewee Road. To reach from Mount Pleasant, follow State Highway 40 northeast for 12.5 miles to lower junction with Sewee and Bulls Island Road, thence northeast 150 yards to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 8.5 meters (28 feet) northwest of center line of Sewee Road and 103.75 feet from station in azimuth $180^{\circ}33'$. Reference mark No. 2 (azimuth) is 1.5 meters (5 feet) southeast of intersection of State Highway 40 and old shell road and about 0.1 mile from station in azimuth $49^{\circ}40'45''$. Reference mark No. 3 is 7 meters (23 feet) northwest of center line of Sewee Road and 115.84 feet from station in azimuth $87^{\circ}46'$.

Plane coordinates: (S), $x=2,392,776.54$ feet; $y=395,344.33$ feet; the grid azimuth to reference mark No. 2 = $48^{\circ}58'55''$.¹

Dickson (Berkeley County, C. D. Meaney, 1932).—About 15 miles north-northeast of Mount Pleasant and 12 miles west-southwest of Awendaw Post Office. To reach from Awendaw Post Office, follow State Highway 40 southwest for 8.85 miles; turn right on Cainhoy Road (main-traveled road) at Standard gas station on right and follow for 5.45 miles to crossroads; turn left (west) for 1.7 miles and turn right on T-road for about 200 feet and take right fork; follow this road for 0.95 mile (0.1 mile beyond railroad crossing); turn right at crossroads for 0.2 mile and turn left on dim road at railroad crossing sign; continue for 0.4 mile (over cross roads and swamp bridge); from bridge continue 0.3 mile (taking left fork when out of swamp trees) and keep straight ahead at crossroads on main-traveled road for 1.55 miles to schoolhouse on left in front of Richard Kenlaw's house. Station is in pine woods in schoolyard, about 100 feet northeast of R. Kenlaw's house, 56 feet southwest of center line of road leading to station, 55.4 feet north-northwest of northwest corner of schoolhouse and about 25 feet north of triangular-blazed pine. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 61.8 feet northeast of northeast corner of schoolhouse, 22 feet northeast of center line of road leading by station and 106.75 feet from station in azimuth $257^{\circ}25'$. Reference mark No. 2 (azimuth) is in pine woods, about 25 feet north of center line of dim road

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

leading east from station and about 0.2 mile from station in azimuth $266^{\circ}11'54''$. Reference mark No. 3 is in pine woods, 25 feet west-southwest of center line of road leading by station and 121.7 feet from station in azimuth $133^{\circ}55'$.

Plane coordinates: (S), $x=2,361,732.68$ feet; $y=425,869.75$ feet; the grid azimuth to reference mark No. 2= $265^{\circ}33'20''$.¹

Mitchell (Charleston County, C. D. Meaney, 1932).—About 14 miles southwest of McClellanville, 4.6 miles southwest of Awendaw Post Office, on land owned and occupied by Thomas Mitchell (colored), 0.5 mile south of small saw-mill, in cleared area, about 130 meters (427 feet) northwest of T. Mitchell's house which sets back in timber, 28 meters (92 feet) northeast of northeast side of school and 22 meters (72 feet) southeast of center line of State Highway 40. To reach from intersection of State Highway 40 and dirt road at McClellanville, follow State Highway 40 southwest for about 14 miles to little Eighteen Mile School on southeast side of highway and station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 10.7 meters (35 feet) southeast of center line of highway and 140.78 feet from station in azimuth $221^{\circ}28'$. Reference mark No. 2 (azimuth) is about 50 meters (164 feet) east of small house, 10.7 meters (35 feet) northwest of center line of State Highway 40, 2 feet west of southwest corner of fence around cultivated field and about 0.2 mile from station in azimuth $231^{\circ}02'27''$. Reference mark No. 3 is 10 meters (33 feet) northwest of center line of State Highway 40, directly across highway from school and 133.00 feet from station in azimuth $110^{\circ}10'$. Elevation: 22.22 feet.

Plane coordinates: (S), $x=2,410,857.62$ feet; $y=420,112.48$ feet; the grid azimuth to reference mark No. 2= $230^{\circ}18'39''$.¹

Northampton (Berkeley County, C. D. Meaney, 1932).—About 8 miles west of Awendaw Post Office, on site of old Northampton Schoolhouse, about 150 yards north of Mr. S. C. Cumbee's house and 45 feet east of center line of road leading by station. To reach from Awendaw Post Office, follow State Highway 40 southwest for 8.85 miles to Standard gas station on right; turn right on Cainhoy Road (main-traveled dirt road) for 5.45 miles to crossroads; continue straight on main road for 4 miles to fork with large white fire notice sign in V of roads; follow left fork for 2.05 miles and take left fork at fence corner; continue 0.3 mile and turn right opposite gate behind Cumbee's house to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is in pine woods, about 200 yards south of row of tall pine timber and about 0.2 mile from station in azimuth $226^{\circ}41'41''$. Reference mark No. 2 is in pine woods and 131.2 feet from station in azimuth $293^{\circ}45'$. Reference mark No. 3 is 49 feet west of center line of road leading by station, about 40 feet north of swamp and 130.0 feet from station in azimuth $95^{\circ}08'$.

Plane coordinates: (S), $x=2,384,778.08$ feet; $y=445,676.27$ feet; the grid azimuth to reference mark No. 1= $226^{\circ}00'39''$.¹

Turp (Berkeley County, C. D. Meaney, 1932).—About 10.6 miles southwest of Honey Hill Post Office, 12 meters (39 feet) south of center line of road in a deserted section of country. To reach from McClellanville, follow graded road to Honey Hill Post Office; thence on State Highway 178 west for 0.1 mile, turn left around green house toward church, and continue 0.1 mile; take right fork, passing to right of two old chimneys and follow main road for 6.5 miles, past all crossroads and T-roads; turn right on fork among turpentine trees and follow main road for 1.2 miles to Schuler's lane; continue on main road for 4.05 miles and turn left for 0.6 mile to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is 35 meters (115 feet) north of dim road leading northeast of station and about 500 yards from station in azimuth $231^{\circ}49'56''$.⁷ Reference mark No. 2 is 31.085 meters (101.98 feet) from station in azimuth $310^{\circ}12'$. Reference mark No. 3 is 3 meters (10 feet) south of road and 31.974 meters (104.90 feet) from station in azimuth $175^{\circ}39'$.

Plane coordinates: (S), $x=2,405,514.74$ feet; $y=451,406.72$ feet; the grid azimuth to reference mark No. 1= $231^{\circ}06'41''$.³

Schuler (Berkeley County, C. D. Meaney, 1932).—About 12 miles west-northwest of McClellanville, 6 miles southwest of Honey Hill Post Office, in pine

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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tree area, about 150 feet northeast of Mr. Schuler's house, 47.3 feet southeast of southwest corner of cultivated field, 45 feet north of center line of road to Mr. Schuler's log house and 29.5 feet north of blazed 24-inch twin hardwood tree. To reach from Honey Hill Post Office, follow State Highway 179 west for 0.1 mile, turn left around green house toward church and continue 0.1 mile; take right fork, passing to right of two old chimneys, and follow main road for 6.5 miles, past all crossroads and T-roads and 0.2 mile beyond dim cross road; turn right on fork among turpentine trees and follow main road for 1.2 miles to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 40 feet north of center line of road to station, 26.4 feet southeast of corner post of small cultivated field where rail and woven wire fence meet and 118.5 feet from station in azimuth $292^{\circ}55'$. Reference mark No. 2 is 38.5 feet northeast of well in front of Mr. Schuler's house, 34.7 feet east-southeast of southeast corner of log barn and 139.6 feet from station in azimuth $67^{\circ}02'$. Reference mark No. 3 (azimuth) is on north side of broom-sedge field, south side of cut-over timber land and about 0.4 mile from station in azimuth $185^{\circ}25'13''.2$.

Plane coordinates: (S), $x=2,409,870.75$ feet; $y=474,094.18$ feet; the grid azimuth to reference mark No. 3= $184^{\circ}41'28''.0^1$

Awendaw (Charleston County, C. D. Meaney, 1932).—About 7.5 miles west-southwest of McClellanville on the grounds of St. James Church (colored), 26.5 meters (87 feet) northwest of center line of State Highway 40 and 7 meters (23 feet) southwest of southwest side of church. To reach from intersection of State Highway 40 and dirt road to McClellanville, follow State Highway 40 southwest for 7.5 miles, or 1.5 miles beyond Rivers Garage and Store, to St. James Church on northwest side of highway. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Upper mark projects about 6 inches. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is 6.4 meters (21 feet) southeast of center line of State Highway 40, directly across highway from church, 4 meters (13 feet) west of 30-inch oak and 128.89 feet from station in azimuth $286^{\circ}23'$. Reference mark No. 2 is in west corner of cultivated field just northeast of negro shack, 7.9 meters (26 feet) southeast of center line of State Highway 40 and 186.20 feet from station in azimuth $14^{\circ}07'$. Reference mark No. 3 (azimuth) is in north edge of cultivated field, 7 meters (23 feet) southeast of center line of State Highway 40 and about 0.2 mile from station in azimuth $44^{\circ}36'22''$. Elevation: 20.04 feet.

Plane coordinates: (S), $x=2,432,373.92$ feet; $y=442,872.28$ feet; the grid azimuth to reference mark No. 3= $43^{\circ}50'15''.1$

Honey (Berkeley County, C. D. Meaney, 1932).—About 9 miles northwest of McClellanville and 1.25 miles southeast of Honey Hill Post Office. To reach from intersection of State Highway 40 and south road at McClellanville, cross State Highway 40 and follow dirt road northwest for 0.2 mile to fork; turn on left fork for 2.5 miles and turn right around small store and follow left fork (to Palmers Bridge); continue 6.45 miles, or 2.1 miles beyond Berkeley County line at bridges, and follow main road 0.15 mile beyond sharp right bend, and 200 feet beyond T-road on left. Station is in field opposite hump in road, 46 feet southeast of center line of dirt State Highway 179 and 30.5 feet southeast of woven wire fence. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is on north side of field, about 75 feet southeast of State Highway 179, 10 feet south of fence and 199.35 feet from station in azimuth $272^{\circ}25'$. Reference mark No. 2 is at north edge of timber, about 130 feet southeast of State Highway 179, about 75 feet north of pit and 127.6 feet from station in azimuth $2^{\circ}48'$. Reference mark No. 3 (azimuth) is in open field where road takes sharp bend to north, about 20 feet east of borrow pit, 1 foot east of north-south wire fence and about 0.2 mile from station in azimuth $27^{\circ}38'19''$.

Plane coordinates: (S), $x=2,440,806.39$ feet; $y=491,474.79$ feet; the grid azimuth to reference mark No. 3= $26^{\circ}51'15''.1$

McClellanville (Charleston County, C. D. Meaney, 1932).—About 1 mile northwest of McClellanville, in open field on property belonging to Eddy McClellan. To reach from McClellanville, go to intersection of State Highway 40 and southern one of two roads leading into McClellanville from State Highway 40. Station

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

is 15.5 meters (51 feet) southeast of center line of State Highway 40. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 10 meters (33 feet) northwest of center line of State Highway 40 and 244.18 feet from station in azimuth $211^{\circ}52'$. Reference mark No. 2 (azimuth) is 11 meters (36 feet) northwest of center line of State Highway 40 and about 0.25 mile from station in azimuth $229^{\circ}15'28''$.⁶ Reference mark No. 3 is at southwest corner of field, 11.3 meters (37 feet) southeast of center line of State Highway 40, 7.3 meters (24 feet) northeast of center line of graded road to McClellanville, 2 feet east of corner post of field and 106.71 feet from station in azimuth $60^{\circ}42'$. Elevation: 13.33 feet.

Plane coordinates: (S), $x=2,466,717.66$ feet; $y=462,488.67$ feet; the grid azimuth to reference mark No. 2= $228^{\circ}25'40''$.¹

Waterhorn (Berkeley County, C. D. Meaney, 1932; 1934).—About 8.5 miles north of McClellanville and 6 miles east-northeast of Honey Hill Post Office. To reach from Honey Hill Post Office, follow State Highway 179 east for 100 yards and turn left just before reaching first house on left; at 0.1 mile from post office turn right at garden fence; and go 1.45 miles, turn right at fork (sign on left fork reads "Road closed—keep out"); and go 1.90 miles, follow left fork 0.3 miles, turn on right fork and go 0.75 mile, turn right at crossroads and continue straight ahead for 4.05 miles, passing crossroads and over bridge to station. Station is in southwest angle of crossroads, 82 feet west-northwest of intersection of roads, 36 feet north-northeast of triangular-blazed 12-inch pine on south side of road to station, 26.5 feet north of center line of timber road and 19.5 feet northwest of triangular-blazed 12-inch pine on north side of road to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 projects 6 inches and is in northeast angle of crossroads, about 18 feet south of east-west road and 125.90 feet from station in azimuth $286^{\circ}51'$. Reference mark No. 2 (azimuth) projects about 6 inches, is on slight knoll and about 250 yards from station in azimuth $30^{\circ}25'46''$. Reference mark No. 3 is 10 feet northwest of center line of road and 127.78 feet from station in azimuth $162^{\circ}10'$.

Plane coordinates: (S), $x=2,467,134.56$ feet; $y=505,871.91$ feet; the grid azimuth to reference mark No. 2= $29^{\circ}35'51''$.¹

Santee (Charleston County, C. D. Meaney, 1932; 1935).—About 7.25 miles northwest of McClellanville on grounds of Santee Gun Club, about 90 meters (295 feet) west of Gun Club office, 30 meters (98 feet) west of ditch, 19 meters (62 feet) south of 30-inch live oak, 6.4 meters (21 feet) south of center line of road and 5.8 meters (19 feet) north of fence line. To reach from intersection of southerly of two roads into McClellanville from State Highway 40, follow State Highway 40 north for 2.8 miles; turn right on topsoil road for 1.65 miles and take dim right fork just beyond T-road (right) and follow main traveled road along telephone line for 3.7 miles; turn left about 300 feet beyond large symmetrical live oak and continue beyond Negro house for total of 0.1 mile, cross ditch on left just before reaching gate to Gun Club office and station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is 16 meters (52 feet) south of bridge over ditch, 3 meters (10 feet) west of dim trail, 3 feet west of telephone pole and 133.80 feet from station in azimuth $301^{\circ}40'$. Reference mark No. 2 (azimuth) is in cultivated field, 0.1 mile north of symmetrical live oak, 3 meters (10 feet) west of center line of road and about 1,000 feet from station in azimuth $70^{\circ}36'43''$. Reference mark No. 3 is at northwest corner of truck garden, about 45 meters (148 feet) north of brown house just southwest of garden, 11 meters (36 feet) southwest of 30-inch live oak, 12 feet south of center line of road passing north of station, 1 foot north of corner post of garden and 138.68 feet from station in azimuth $105^{\circ}35'$. To reach from Georgetown, go south on U. S. Highway 701 to south end of Santee River bridge; proceed south and turn as follows (keeping straight ahead at all intersections except as notes); 0.0 south end of bridge; 1.0 turn left at filling station; 2.55 left fork; 5.70 station.

Plane coordinates: (S), $x=2,500,916.20$ feet; $y=484,423.95$ feet; the grid azimuth to reference mark No. 2= $69^{\circ}43'14''$.¹

Burgess (Georgetown County, C. D. Meaney, 1932; 1934).—About 11 miles south-southwest of Georgetown. To reach from Georgetown, follow Front Street and State Highway 701 south for 12.35 miles to station, located about 67 yards

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

along State Highway 701 from W. L. Burgess' service station and 15 meters (49 feet) north of center line of highway. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is 11 meters east of center line of highway and 0.45 mile from station in azimuth $194^{\circ}36'25''.5$. Reference mark No. 2 is 116.55 feet from station in azimuth $233^{\circ}18'$. Reference mark No. 3 is 107.31 feet from station in azimuth $103^{\circ}34'$. Elevation: 30.48 feet.

Plane coordinates: (S), $x=2,495,640.58$ feet; $y=508,954.10$ feet; the grid azimuth to reference mark No. 1 = $193^{\circ}43'27''.6$.¹

Supplementary points

Primary traverse station No. 6, 1917 Mac (U. S. G. S.) (Colleton County, C. D. Meaney, 1932).—About 12 miles south of Walterboro, at Green Pond, 92 feet east of center of Atlantic Coast Line Railroad water tank and 5.5 feet north of north rail of northerly sidetrack. Mark is iron post stamped "Prim. Trav. Sta. No. 6 1917 Mac" projecting about 3 feet and is loose in ground. Station *Green Pond* (see description thereof) is 33.47 meters (109.8 feet) from station in azimuth $232^{\circ}51'$. Elevation: 30.59 feet.

Plane coordinates:* (S), $x=2,117,824.84$ feet; $y=327,022.00$ feet.

Meg eccentric (Charleston County, C. D. Meaney, 1932; 1936).—In vicinity of Meggetts, about 200 meters (656 feet) south of Seaboard Air Line Railway station, 24.4 meters (80 feet) west of center line of macadam road and 10 meters (33 feet) north of north rail of railway tracks. Marked by standard reference disk in concrete, note 11a, which is reference mark No. 3 of station *Meg*. Station *Meg* (see description thereof) is 25.644 meters (84.13 feet) from station in azimuth $266^{\circ}55'$.

Plane coordinates: (S), $x=2,231,791.28$ feet; $y=323,959.01$ feet.

Meg (Charleston County, L. P. Raynor, 1924; 1936).—In vicinity of Meggetts, 200 meters (656 feet) west of Seaboard Air Line Railway station, 3 meters (10 feet) south of crossing of main road from Meggetts to Charleston and 2.6 meters (9 feet) north-northwest of center line of railway. Surface mark is standard station disk in concrete, note 1a. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 (concrete block badly chipped and may have been disturbed) is in side of ditch and 40.64 feet from station in azimuth $217^{\circ}28'$. Reference mark No. 2 is 14.7 meters (48 feet) south of south rail of tracks, 9 meters (30 feet) west of center line of macadam road and 62.30 feet from station in azimuth $313^{\circ}49'$. Reference mark No. 3 (stamped "Meg. ecc. R. M. #3 1932") (see description of *Meg eccentric*) is 25.644 meters (84.13 feet) from station in azimuth $86^{\circ}55'$.

Plane coordinates:** (S), $x=2,231,871.22$ feet; $y=323,963.82$ feet.

Air beacon No. 17, Jacksonville-Richmond (Charleston County, C. D. Meaney, 1932).—About 4.7 miles from Adams Run, at Legares Plantation. To reach from Adams Run, follow Adams Run-Dawho dirt road from its junction with U. S. Highway 17 (50 feet east of Thornley's Service Station) for 0.75 mile to fork at sign giving directions to Girl Scout Camp and Edisto Island; take main road for 1.65 miles to railroad crossing; continue for 2.15 miles to where Adams Run-Dawho road turns right and continue ahead for 0.15 mile to station on right across road from pond. Revolving light is 24.54 meters (80.5 feet) high and two fixed red lights are 24.7 meters (81 feet) high. One of red lights points in direction of arrow and the other 180° from arrow.

Plane coordinates: (S), $x=2,203,290.38$ feet; $y=300,847.67$ feet.

Lambs (Charleston County, C. D. Meaney, 1932; 1934).—About 10.5 miles northwest of center of Charleston, on east shore of Ashley River, 600 meters (1,968 feet) southeast of point formed by a decided horseshoe bend of river, on highest ground in vicinity, on sand knoll sparsely strewn with scrub oaks. Ruins of old brick boilerhouse is about 300 meters (984 feet) from station and to left of range to point in river mentioned above. Sand pit is about 400 meters (1,312 feet) east of station. Spur railway track for removal of sand runs into pit. To reach from downtown Charleston, go north about 6 miles on U. S. Highway 17 to concrete overhead bridge over railroad tracks; continue 1.05 miles and turn left on sand-clay T-road marked "Dorchester Road"; follow main road 6.15 miles

*No check on this position.

**Checked by traverse.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

(or 3.25 miles beyond crossing of Atlantic Coast Line Railroad tracks) and turn left on dim road (sign "Private road") opposite road coming in from right for 0.25 mile (keeping straight ahead at cross roads); continue 0.1 mile to locked gate (get key from Tom Allen in large house inside fence), drive through gate and proceed about 60 feet (keep straight ahead where main road turns right to house); continue about 120 feet and take left fork which leads onto old railroad grade with tracks taken up; follow about 0.35 mile or 100 feet beyond path leading east to sand pit and 360 yards beyond point opposite southwest end of large old shed on left. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is about at middle of west side of old brick foundation and at southwest corner of old wooden building (in ruins) and stands on its foundation, which is about 300 meters (984 feet) long 75 meters (246 feet) wide, and approximately 500 meters (1,640 feet) from station in azimuth $205^{\circ}14'56''$.⁹ Reference mark No. 2 is on east side of old abandoned railroad grade opposite station and 34.895 meters (114.48 feet) from station in azimuth $300^{\circ}19'$. Reference mark No. 3 is in open area and 37.615 meters (123.41 feet) from station in azimuth $18^{\circ}57'$.

Plane coordinates: (S), $x=2,283,323.22$ feet; $y=382,295.61$ feet; the grid azimuth to reference mark No. 1 = $204^{\circ}44'54''$.¹

Air beacon No. 18, Jacksonville-Richmond (Charleston County, C. D. Meaney, 1932).—About 12.7 miles by road from St. Paul's High School, 2 miles west of Rantowles and 18 feet northeast of 11- by 14-foot yellow building which has "J-R" printed in black letters on northwest side and "18" on southeast side. To reach from Rantowles railroad crossing on U. S. Highway 17, turn west on old Jacksonboro-Charleston Road at sign "Charleston 12.7 M. Adams Run 18.8 M. Jacksonboro" and follow for 1.9 miles to bridge over creek; continue ahead for 0.35 mile and turn left for 0.1 mile, thence right 0.1 mile to station. Beacon is four-sided steel tower with revolving light 87 feet high and two red lights, pointing northeast and southwest for Charleston and Savannah.

Plane coordinates: (S), $x=2,249,327.08$ feet; $y=344,951.71$ feet.

Francis Marion (Charleston County, L. P. Raynor, 1924; 1933).—In Charleston, on roof of highest penthouse on roof of Francis Marion Hotel, in northwest corner of roof, 1.42 meters (4.7 feet) south of inside of north coping of penthouse, 0.98 meter (3.2 feet) east of inside of west coping of penthouse, and directly under line between crosses cut in tile on top of north and west walls, 1.833 meters (6.01 feet) from north cross and 1.940 meters (6.36 feet) from west cross. Eight brass tacks with crosses on tops were placed in north-and-south and east-and-west lines, two on each side of station, at following distances from station; north, 0.842 meter (2.76 feet) and 0.416 meter (1.36 feet); south, 0.671 meter (2.20 feet) and 0.281 meter (0.92 feet); east, 0.611 meter (2.00 feet) and 0.335 meter (1.10 feet); and west, 0.660 meter (2.17 feet) and 0.364 meter (1.19 feet). In 1932, station was re-marked by standard station disk grouted in concrete roof. Two standard reference disks grouted in concrete roof of penthouse were established in 1932. No. 1 is in northeast corner, and 4.05 meters (13.3 feet) from station in azimuth $228^{\circ}38'$. No. 2 is in southwest corner, 3.875 meters (12.71 feet) from station in azimuth $349^{\circ}01'$.

Plane coordinates: (S), $x=2,326,729.43$ feet; $y=348,160.59$ feet.

Goose Creek (Berkeley County, E. Ellicott, 1889; 1933).—About 50 yards north of north bank of Goose Creek, about 250 yards from mouth at point where Goose Creek empties into Cooper River, on fairly hard ground, about 2 meters (7 feet) from edge of marshland and about 6 meters (20 feet) south of several scrub pin oaks. Tree line is about 35 meters (115 feet) inland from station. Original station mark was boulder with hole drilled in top. In 1932, standard station disk in 18- by 18-inch mass of cement was placed over boulders. Three standard reference disks in concrete posts were established in 1928. Reference mark No. 1 is 7.66 meters (25.1 feet) from station in azimuth $80^{\circ}41'$. Reference mark No. 2 is 32.88 meters (107.9 feet) from station in azimuth $146^{\circ}18'$. Reference mark No. 3 is 10.18 meters (33.4 feet) from station in azimuth $182^{\circ}48'$. Reference mark No. 4, established in 1919, is standard reference disk in cement, projecting about 4 inches and was recovered about 3 meters (10 feet) from edge of bank of Goose Creek and 30.07 meters (98.7 feet) from station in azimuth $52^{\circ}11'$.

Plane coordinates: (S), $x=2,320,808.36$ feet; $y=395,594.94$ feet.

Citadel eccentric (Charleston County, C. D. Cowie, 1933).—Station not permanently marked and not recoverable.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

Plane coordinates: (S), $x=2,318,816.14$ feet; $y=351,847.04$ feet.

Bond (Charleston County, L. P. Raynor, 1924; 1933).—At Charleston, on campus of The Citadel, near north edge of parade ground, about 375 meters (1,230 feet) southeast of Seaboard Air Line Railway tracks, 230 meters (755 feet) east of main dormitory and 100 meters (328 feet) south of alumni building. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is 51.185 meters (167.93 feet) from station in azimuth $130^{\circ}13'$. Reference mark No. 2 is 65.000 meters (213.25 feet) from station in azimuth $199^{\circ}26'$. Station is 250.5 meters (822 feet) from station *Citadel* (see description thereof) in azimuth $46^{\circ}47'40''$.

Plane coordinates: (S), $x=2,319,377.29$ feet; $y=352,586.90$ feet.

Tees (Berkeley County, R. F. A. Studds, 1928; 1932).—At Dean Hall Plantation, on point of land lying between north and west banks of Cooper River and south bank of west branch of Cooper River, about 300 meters (984 feet) north of north bank of Cooper River and 300 meters (984 feet) south of south bank of west branch of Cooper River, near eastern edge of prominent grove of pines and at west side of duck preserve which extends out to confluence of east and west branches of Cooper River. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 (1928) is 9.65 meters (31.7 feet) from station in azimuth $21^{\circ}22'$. Reference mark No. 2 (1928) is 11.27 meters (37.0 feet) from station in azimuth $102^{\circ}58'$. Reference mark No. 3 (1932) (azimuth) is 40 meters (131 feet) north of intersection of dirt road and macadam road, 14 meters (46 feet) north of 36-inch lone oak, 6 meters (20 feet) north west of 30-inch pine and about 0.4 mile from station in azimuth $79^{\circ}15'48''$. 3.

Plane coordinates: (S), $x=2,327,135.77$ feet; $y=448,020.39$ feet; the grid azimuth to reference mark No. 3= $78^{\circ}40'54''.7^1$

Bridge eccentric (Berkeley County, C. D. Meaney, 1932).—About 7.5 miles south-southeast of Moncks corner, 5 miles east of Strawberry station on Seaboard Air Line Railway, on west bank of west branch of Cooper River, opposite buildings of Bluff plantation, 16.9 meters (55 feet) (slope) north of north rail of railway tracks, 13 meters (43 feet) from center line of farm road at its end at railway fill and 11 meters (36 feet) from bottom of fill. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is across farm road at bottom of railway fill and 29.165 meters (95.69 feet) from station in azimuth $36^{\circ}50'$. Reference mark No. 2 is at edge of farm road leading through Bluff plantation and 62.150 meters (203.90 feet) from station in azimuth $91^{\circ}05'$. Station *Bridge* (see description thereof) is 324.319 meters (1,064.04 feet) from station in azimuth $242^{\circ}56'56''$.

Plane coordinates: (S), $x=2,322,431.84$ feet; $y=459,080.00$ feet; the grid azimuth to station *Bridge*= $242^{\circ}22'32''.2$

Bridge (Berkeley County, R. F. A. Studds, 1928; 1932).—On west side of west branch of Cooper River, on fill of Seaboard Air Line Railway, about 20 meters (66 feet) west of west end of trestle and bridge across Cooper River and about 2 meters (7 feet) south of railway tracks. Surface mark is standard disk in concrete, note 1a. Underground mark is glass bottle in concrete, with neck projecting a little above concrete, note 7d. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is 12.92 meters (42.4 feet) from station in azimuth $60^{\circ}05'$. Reference mark No. 2 is 15.22 meters (49.9 feet) from station in azimuth $235^{\circ}27'$. Reference mark No. 3, a bench mark established in 1928, is 23.15 meters (76.0 feet) from station in azimuth $221^{\circ}36'$. Station *Bridge eccentric* (see description thereof) is 324.319 meters (1,064.04 feet) from station in azimuth $62^{\circ}57'02''.1$

Plane coordinates:*(S), $x=2,323,374.53$ feet; $y=459,573.36$ feet.

Ville eccentric (Charleston County, C. D. Meaney, 1932).—About 14 miles northeast of Charleston, 0.75 mile south of Woodville, on east bank of Wando River, on land belonging to Rosa Spencer of Charleston, on slight rise on site of old house marked by brick and debris, about 100 meters (328 feet) east of tenant house and 35 meters (115 feet) south of high-water mark of Wando River. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks, established in 1928 for station *Ville*, are standard reference disks in concrete, note 11a. Reference mark No. 1 is 25.737 meters (84.44 feet) from station in azimuth $184^{\circ}48'$. Reference mark No. 2 is 24.013 meters (78.78

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

² This azimuth has been computed by the first formula (p. 73), using both terms.

feet) from station in azimuth $169^{\circ}54'$. Station *Ville* (see description thereof) is 34.855 meters (114.35 feet) from station in azimuth $168^{\circ}31'$.

Plane coordinates: (S), $x=2,386,367.18$ feet; $y=393,948.66$ feet.

Ville (Charleston County, R. F. A. Studds, 1928; 1934).—About 14 miles northeast of Charleston and 0.75 mile south of Woodville, on east bank of Wando River, directly across from Taylor plantation, about 300 meters (984 feet) in from edge of marsh, on high-water line and on point at head of corduroy walkway, about 10 meters (33 feet) wide, which was formerly site of dock. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is 12.44 meters (40.8 feet) from station in azimuth $313^{\circ}04'$. Reference mark No. 2 is 10.85 meters (35.6 feet) from station in azimuth $345^{\circ}27'$. Station *Ville eccentric* (see description thereof) is 34.855 meters (114.35 feet) from station in azimuth $348^{\circ}31'$.

Plane coordinates: *(S), $x=2,386,343.08$ feet; $y=394,060.45$ feet.

Charleston, United States Navy Yard, aviation beacon (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,317,567.70$ feet; $y=375,246.15$ feet.

Charleston, airport, aviation beacon (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,297,086.35$ feet; $y=387,512.44$ feet.

Charleston, water tank, black with white circle (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,314,569.88$ feet; $y=383,850.39$ feet.

Charleston, black water tank (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,318,228.69$ feet; $y=365,902.14$ feet.

Oakley, revolving beacon (Charleston County, C. D. Meaney, 1932).—Plane coordinates: *(S), $x=2,304,666$ feet; $y=469,215$ feet.

Charleston, Episcopal Church, spire (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,328,552.64$ feet; $y=344,670.31$ feet.

Charleston, St. Matthews Lutheran Church, spire (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,326,575.91$ feet; $y=348,468.29$ feet.

Charleston, stack, bell-shaped top (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,322,896.91$ feet; $y=354,399.80$ feet.

Charleston, United States Navy Yard, stack (Charleston County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,316,554.35$ feet; $y=375,728.39$ feet.

Wagner 3 eccentric (Charleston County, E. B. Roberts, 1924; 1934).—About 14 miles southwest of McClellanville, on mainland bordering northwest edge of Sewee Bay, on land belonging to Mrs. J. R. King, almost in front of and 75 yards east of old 2-story house and 5 paces east of small marsh. Marked by standard reference disk in concrete, note 11a, which is reference mark No. 1 of station *Wagner 3*. Reference marks are standard reference disks in concrete, note 11a. Azimuth from station to reference mark No. 2 of station *Wagner 3* is $237^{\circ}51'$. Reference mark No. 3, established 1932, is close to road leading to island, 3 meters (10 feet) southwest of southwest corner of small dwelling house and about 125 meters (410 feet) from station in azimuth $80^{\circ}02'49''$. Station *Wagner 3* (see description thereof) is 34.830 meters (114.27 feet) from station in azimuth $290^{\circ}10'$.

Plane coordinates: (S), $x=2,414,723.83$ feet; $y=409,382.36$ feet.

Wagner 3 (Charleston County, E. B. Roberts, 1924; 1935).—On strip of shell beach of mainland bordering northwest edge of Sewee Bay, 14 miles southwest of McClellanville, on land owned by Mrs. J. R. King, about 10 meters (33 feet) north of inshore end of old wharf and 34 paces southeast of more southwesterly of two old chimneys. Marked by standard station disk in concrete, note 1a. In 1932, shell beach in vicinity of station mark was eroded leaving station 7 meters (23 feet) outside of extreme high-water mark and projecting 2 feet above surface. Mark was firm but will doubtless eventually be washed away. Reference marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is station *Wagner 3 eccentric* (see description thereof) and is 34.830 meters (114.27 feet) from station in azimuth $110^{\circ}10'$. No. 2 is about 8 paces northeast of more northeasterly of two old chimneys and 42.840 meters (140.55) feet from station in azimuth $197^{\circ}47'$.

Plane coordinates: *(S), $x=2,414,831.62$ feet; $y=409,344.32$ feet.

Jeremy 2 eccentric (Charleston County, E. B. Roberts, 1924; 1934).—About $1\frac{1}{2}$ miles east of McClellanville, and on south end of extreme seaward point of

*No check on this position.

For notes in regard to marking of stations see p. 68.

Jeremy Island or first projecting strip of trees east of McClellanville. Marked by standard reference disk in concrete, note 11a, which is reference mark No. 1 of station *Jeremy 2*. Station *Jeremy 2* (see description thereof) is 25.460 meters (83.53 feet) from station in azimuth $317^{\circ}31'$. Azimuth from station to reference mark No. 2 of station *Jeremy 2* is $286^{\circ}46'$; and to *Cape Romaine Lighthouse* $316^{\circ}58'36''.1$.

Plane coordinates: (S), $x=2,478,412.85$ feet; $y=455,932.50$ feet.

Jeremy 2 (Charleston County, E. B. Roberts, 1924; 1934).—About 1.5 miles east of McClellanville, on south end of extreme seaward point of Jeremy Island or first projecting strip of trees east of McClellanville, on firm ground, 1 meter (3 feet) from spring tides high-water mark, and about equi-distant from two outermost cedar 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. Reference mark No. 1 is station *Jeremy 2 eccentric* (see description thereof) and is 25.460 meters (83.53 feet) from station in azimuth $137^{\circ}31'$. No 2. is 18.437 meters (60.49 feet) from station in azimuth $241^{\circ}53'$.

Plane coordinates: *(S), $x=2,478,470.17$ feet; $y=455,871.70$ feet.

Cape Romaine Lighthouse (Charleston County, E. B. Roberts, 1924; 1935).—At Raccoon Key. Center of lighthouse lamp is the station established in 1924. Point "A" (established 1934) is a drill hole in stone balcony opposite the north-east doorway, 2.278 meters (7.47 feet) from station in azimuth $255^{\circ}02'$. Finial of lighthouse is eccentric, 0.0443 meter (0.145 foot) from station in azimuth $59^{\circ}14'$. Eccentric No. 1 is a drill hole surrounded by a triangle cut in the stone balcony, 2.443 meters (8.02 feet) from station in azimuth $233^{\circ}48'$. Eccentric No. 2 is a standard bronze disk stamped "Eccentric No. 2" and is 2.489 meters (8.17 feet) from station in azimuth $184^{\circ}33'$.

Plane coordinates: (S), $x=2,498,415.12$ feet; $y=435,128.12$ feet.

RIDGELAND, S. C., TO JACKSONVILLE, FLA., ARC

Principal points

Switzerland (Jasper County, C. D. Meaney, 1932; 1935).—At Switzerland Post Office, 10.6 miles north of Hardeeville, 3.9 miles south along U. S. Highway 17 from Ridgeland, 87.5 feet south of south corner of railroad platform at Switzerland station, 68 feet southeast of southeast rail of double track of Atlantic Coast Line Railroad, 49 feet northwest of center line of highway and 30 feet west of southerly of two pines on west edge of highway, across highway from yellow house south of post office. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is 25 feet southeast of center line of highway, at fence corner and about 0.45 mile from station in azimuth $204^{\circ}23'42''.0$. Reference mark No. 2 is 23 yards north of north end of post office and gas station, 10 yards east of center line of highway, just east of edge of road fork to post office and gas station and 287 feet from station in azimuth $218^{\circ}26'$. Reference mark No. 3 is 80.13 feet southeast of southeast rail of track, 9 yards northwest of center line of highway and 129.10 feet from station in azimuth $16^{\circ}18'$. *Bench mark* (U. S. G. S.) (see description thereof) is 58.982 meters (193.51 feet) from station in azimuth $198^{\circ}11'$. Elevation: 50.03 feet.

Plane coordinates: (S) $x=1,997,367.06$ feet; $y=216,397.03$ feet; the grid azimuth to reference mark No. 1 = $204^{\circ}23'58''.7$.¹

Pinckney (Beaufort County, C. D. Meaney, 1932; 1935).—About 11 miles south-southwest of Ridgeland. To reach from Ridgeland, follow dirt road east 1.1 miles from main corner on State Highway 17; turn sharp right 0.1 mile, then left 0.2 mile to T-road; turn left for 4.4 miles to another T-road; turn right at store and follow main road 2.3 miles to T-road on left; keep straight ahead on main road south 5.6 miles to T-road on left at sign "To Nomasee Farm," and proceed east and south 2.2 miles on main road to Joe Pinckney's store and gas station at point where road turns to east. Station is on land owned and occupied by Joe Pinckney, 20.4 meters (67 feet) south of south side of store, 16.5 meters (54 feet) west of 4-foot butt-oak, 14.9 meters (49 feet) southwest of turn in highway and 5.2 meters (17 feet) south of east-west fence. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is 5 meters (16 feet) north of center line of dirt road, directly across road from Thadd Bailey's store and about 0.2 mile from station in azimuth $276^{\circ}36'42''$. Reference mark No. 2 is at point where land slopes away to water's edge of branch leading to Oakite River, 32.9 meters (108 feet) northwest of west side of white-washed house and 120.29 feet from station in azimuth $23^{\circ}20'$. Reference mark No. 3 is 23 meters (75 feet) west of center line of north-and-south dirt road, 11.3 meters (37 feet) northwest of northwest corner of store and 0.3 meter (1 foot) south of fence corner post and 116.82 feet from station in azimuth $147^{\circ}39'$.

Plane coordinates: (S), $x=2,033,580.01$ feet; $y=186,989.27$ feet; the grid azimuth to reference mark No. 1 = $276^{\circ}33'08.4''$.¹

Hardee (Jasper County, C. D. Meaney, 1932; 1935).—About 3 miles north of Hardeeville. To reach from Hardeeville, go northeast 3.15 miles from main corner on U. S. Highway 17 and turn left on dirt road about 150 yards before reaching overhead bridge for tram railway; cross tracks and continue 0.35 mile to T-road; turn left for about 100 feet, go through gate and proceed 0.4 mile to station site, about 7 meters (23 feet) south of center line of road at this point. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is 6 meters (20 feet) north of center line of road and approximately 0.35 mile from station in azimuth $251^{\circ}06'35''$.⁴ Reference mark No. 2 is 3 meters (10 feet) south of center line of road and 115.5 feet from station in azimuth $71^{\circ}10'$. Reference mark No. 3 is in woods and 101.8 feet from station in azimuth $175^{\circ}56'$.

Plane coordinates: (S), $x=1,978,824.28$ feet; $y=179,882.93$ feet; the grid azimuth to reference mark No. 1 = $251^{\circ}08'49''.8$.¹

Pritchard (Beaufort County, C. D. Meaney, 1932; 1938).—To reach from Hardeeville, follow State Highway 33 east for 7.5 miles (or 1 mile beyond railroad crossing at Pritchardville) to dirt road leading north at sign "Camp St. Mary's Okcete" and follow this road for 1 mile to station in northeast edge of field, 10 meters (33 feet) southeast of center line of road and 2.1 meters (7 feet) southeast of wire fence line. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is at north corner of clearing on southeast side of road, 10 meters (33 feet) southeast of center line of road, 4.2 meters (14 feet) southeast of wire fence line, and about 0.2 mile from station in azimuth $221^{\circ}14'05''$. Reference mark No. 2 is 41.7 meters (137 feet) southeast of center line of road, 2.4 meters (8 feet) southwest of 24-inch pine, and 120.10 feet from station in azimuth $280^{\circ}08'$. Reference mark No. 4 (replacing No. 3 destroyed due to highway construction) projects 6 inches and is 10.3 meters (34 feet) southeast of center line of road, 2.8 meters (9 feet) southeast of wire fence line, and 135.39 feet from station in azimuth $40^{\circ}43'$.

Plane coordinates: (S), $x=2,008,994.10$ feet; $y=152,494.95$ feet; the grid azimuth to reference mark No. 1 = $221^{\circ}13'08''.1$

Purry (Jasper County, C. D. Meaney, 1932).—About 2.25 miles southwest of Hardeeville. To reach from junction of U. S. Highway 17 and State Highway 170 (5 miles south of Hardeeville), take dim road to west about 100 yards north of junction, and follow main-traveled road 4.9 miles to lane which turns east to John Powell's house. Station is on property of John Powell (colored), in northeast angle of road fork, 14 meters (46 feet) east of center line of main road, 10 meters (33 feet) north of lane, 9 meters (30 feet) northeast of north gatepost, 7 meters (23 feet) north of lone hickory tree on north edge of lane and 6 meters (20 feet) east of fence. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is 4 meters (13 feet) north of lane to house and 122.50 feet from station in azimuth $280^{\circ}33'$. Reference mark No. 2 is 5 meters (16 feet) west of center line of main road and 111.51 feet from station in azimuth $20^{\circ}36'$. Reference mark No. 3 (azimuth) is 26 meters (85 feet) east of center line of main road, on fence line marking north boundary of field in which station is located, at south end of pine forest and about 0.22 mile from station in azimuth $172^{\circ}49'34''$.

Plane coordinates: (S), $x=1,964,836.72$ feet; $y=159,455.03$ feet; the grid azimuth to reference mark No. 3 = $172^{\circ}53'17''.1$

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Hudson (Beaufort County, C. D. Meaney, 1932; 1933).—About 6 miles north-east of downtown Savannah, Ga., across Savannah River on property of Delta Club, on bank 16.2 meters (53 feet) east of center line of road, 12.8 meters (42 feet) south of center line of south drive to house, 7 meters (23 feet) northeast of 3-foot stump and about 100 meters (328 feet) south-southwest of superintendent's house. To reach from corner of Bay and Bull Streets in Savannah, go north 15.3 miles on U. S. Highway 17 to junction with State Highway 170 and take dirt road to southeast on north side of Atlantic gas station (road leading to old Screven Ferry) for 2.8 miles; turn right at T-road junction and continue 3.25 miles; take right fork through iron gate leading to Delta Club property and follow 0.45 mile to south entrance to superintendent's house on east side of road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark No. 1 is probably standard disk in concrete casing over underground culvert on west side of road, is 7.9 meters (26 feet) south of center line of road to main building on west side of road, and 41.640 meters (136.61 feet) from station in azimuth $181^{\circ}18'$. Reference marks Nos. 2 and 3 are standard reference disks in concrete, note 11a. Reference mark No. 2 (azimuth) is 10 meters (33 feet) west of center line of road and about 0.25 mile from station in azimuth $203^{\circ}39'18''$. Reference mark No. 3 is 16.2 meters (53 feet) west by north of brick coping around tree on east side of road, 9.4 meters (31 feet) west of center line of road and 40.185 meters (131.84 feet) from station in azimuth $70^{\circ}02'$.

Plane coordinates: (S), $x=1,991,917.20$ feet; $y=112,709.17$ feet; the grid azimuth to reference mark No. 2 = $203^{\circ}40'09''.8$.¹

Cherokee (Chatham County, Ga., C. D. Meaney, 1932; 1934).—About 7 miles northwest of downtown Savannah, in northeast corner of intersection of dirt road and tracks of Seaboard Air Line Railway, in the vicinity of milepost 146, on railway right-of-way fence line, about 47 feet south of center line of dirt road and 46.9 feet east of east rail of tracks. To reach from junction of State Highway 21 and U. S. Highway 17 six miles northwest of Savannah, turn left on dirt road at point where concrete turns right and go 0.25 mile; turn right on T-road across railway tracks, take plain middle fork and proceed 0.5 mile to Seaboard Air Line tracks at station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 is on fence line paralleling road, 15 feet north of center line of road and 90.30 feet from station in azimuth $218^{\circ}18'$. Reference mark No. 2 is 43.75 feet east of east rail of tracks, 3 feet west of right-of-way fence line, and 103.83 feet from station in azimuth $334^{\circ}58'$. Reference mark No. 3 (azimuth) is 24 feet west of west rail of tracks, 3 feet northwest of telephone pole, and about 375 meters (1,230 feet) from station in azimuth $336^{\circ}46'49''$. Bench mark D 37 (see description thereof) is 83.13 feet from station in azimuth $84^{\circ}38'$.

Plane coordinates: (S), $x=1,942,350.73$ feet; $y=111,608.03$ feet; the grid azimuth to reference mark No. 3 = $336^{\circ}52'53''.9$.¹

Savannah (Chatham County, Ga., C. D. Meaney, 1932).—At Savannah, Ga., on north side of roof of Savannah Banking and Trust Co. Building, 11.06 meters (36.3 feet) west of inside of coping of east wall, 10.13 meters (33.2 feet) northwest of inside of coping at northwest corner of jog in east wall, 4.43 meters (14.5 feet) north of center line of vent pipe in north and south center line axis of building and 2.66 meters (8.7 feet) south of center line of vent pipe just south of inside face of coping in north wall. Station is a standard disk set in concrete block 4 inches high. Reference marks are standard reference disks in concrete blocks 4 inches high. Reference mark No. 1 is at northeast corner of roof, just south of brick chimney and 10.875 meters (35.68 feet) from station in azimuth $280^{\circ}10'$. Reference mark No. 2 is at corner formed by east wall and penthouse and 14.38 meters (47.18 feet) from station in azimuth $340^{\circ}55'$. Azimuth from station to St. John Episcopal Church spire is $22^{\circ}38'05''.4$.

Plane coordinates: (S), $x=1,971,702.47$ feet; $y=89,842.26$ feet.

Cloud (Chatham County, Ga., C. D. Meaney, 1932; 1933).—About 6 miles southwest of downtown section to Savannah. To reach from Bay Street in Savannah, go about $2\frac{1}{2}$ miles south to Fifty-second Street where concrete road narrows down, continue 3.4 miles south (street changes name to White Bluff Road), turn right onto gravel crossroad (Buckhalter Road) and go 1.65 miles (or 100 yards beyond large yellow house on north side of road). Station is in field on north side of road and to west from Esau Brown's (colored) house, 12.8

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

meters (42 feet) north of center line of road, and 33.4 meters (110 feet) southwest of southwest corner of Brown'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 southeast angle of intersection of gravel road and north-south dirt road, 25 meters (82 feet) east of center line of dirt road, 14 meters (46 feet) south of center line of gravel road, and approximately 0.4 mile from station in azimuth $301^{\circ}57'52''.7$. No. 2 is on south side of road, 20.7 meters (68 feet) south by west of southwest corner of Brown's yard, 7.6 meters (25 feet) south of center line of road, and 31.976 meters (104.91 feet) from station in azimuth $340^{\circ}24'$. No. 3 is on north side of road, 9.3 meters (31 feet) north of center line of road, and 30.080 meters (98.69 feet) from station in azimuth $113^{\circ}18'$.

Plane coordinates: (S), $x=1,953,897.77$ feet; $y=62,776.53$ feet; the grid azimuth to reference mark No. 1= $302^{\circ}02'44''.3$.¹

Brown (Chatham County, Ga., C. D. Meaney, 1932).—About $10\frac{1}{2}$ miles a little south of west of downtown section of Savannah, on property of Julia Brown. To reach from Savannah, take U. S. Highway 17 south at Bull Street and go 8.8 miles (or 1.2 miles beyond Pan America Gas Station on left and Atlantic Gas Station on right), turn right onto dirt T-road opposite house on left with barn about 200 feet north and go 3.7 miles (or 0.45 mile beyond large house on right). Station is in southwest corner of cultivated and cleared field, about 300 feet south along road from Julia Brown's house, 43.0 feet east of center line of dirt road, and 32.4 feet north of southwest corner post (burnt stump) of 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-west fence line around field, and 100.80 feet from station in azimuth $237^{\circ}44'$. No. 2 is in north-south fence line around field, 14 feet east of center line of road leading to station, and 102.25 feet from station in azimuth $140^{\circ}44'$. No. 3 is in north-south road, about 25 feet east-northeast of 30-inch live oak in southeast angle of cross roads, and approximately 0.3 mile from station in azimuth $157^{\circ}45'26''.8$.

Plane coordinates: (S), $x=1,916,798.10$ feet; $y=81,211.74$ feet; the grid azimuth to reference mark No. 3= $157^{\circ}54'13''.3$.¹

Supplementary points

Beaufort Church, reference mark No. 2 (Beaufort County, C. A. Egner, 1931; 1935).—In Beaufort, near Baptist Church on Charles Street between Prince and King Streets, and in open field just west of churchyard. Marked by standard reference disk in concrete, note 11a, which is reference mark No. 2 of station *Beaufort Church*. Station *Beaufort Church* (see description thereof) is about 107 meters (351 feet) from station in approximate azimuth 276° .

Plane coordinates: (S), $x=2,100,468.54$ feet; $y=218,907.16$ feet.

Colleton (Beaufort County, C. A. Egner, 1931; 1934).—On the Colleton River side of Colleton Neck, near north extremity of high ground (Victoria Bluff) facing river, on property belonging to H. S. Cram, in open ground about 85 meters (279 feet) from edge of bluff. Ruins of old house with large tabby-stone fireplace stand about 100 meters (328 feet) northeast of station. To reach from post office at Bluffton, go north on asphalt for 0.3 mile and turn right about 200 feet east of Atlantic Gas Station (at this point State Highway 33 turns south into main street of Bluffton); follow straight road east for 0.45 mile and take main road (left) for 1.1 miles to T-road junction; turn right for 1.1 miles to dim cross roads ("No Hunting & Fishing" sign on northeast angle); continue for 1.35 miles and keep straight ahead at right fork to Deephaven; continue straight ahead for 1.75 miles (passing through two gates, house of H. S. Cram on left) and follow about 500 feet; turn right on main road opposite house on left for 0.4 mile (or 100 yards beyond white house) and take dim left fork for 1.4 miles to its end at river bluff and station site. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is alongside path and 76.212 meters (250.04 feet) from station in azimuth $102^{\circ}34'$. Reference mark No. 2 is across path and 52.420 meters (171.98 feet) from station in azimuth $335^{\circ}03'$. Witness marks are triangular blazes on prominent oak trees at the following distances and azimuths from station: Witness mark No. 1, 16.50 meters (54.13 feet), azimuth $192^{\circ}53'$; witness mark No. 2, 40.83 meters (134.0 feet), azimuth $262^{\circ}51'$.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Plane coordinates: (S), $x=2,062,891.62$ feet; $y=171,816.76$ feet.

Black (Marine) (Beaufort County, F. S. Borden, 1921; 1933).—Center of large steel water tank, about 0.8 mile south of northeast end of Parris Island, about 1 mile N. 85° W. of wharf on east side of island, about 75 meters (246 feet) north of Horse Island Road, and at water-softening plant of Marine Training Station. Tank is about 120 feet tall, painted aluminum with black, white, and yellow stripes on top, and has ball and finial on top.

Plane coordinates: (S), $x=2,095,818.97$ feet; $y=189,157.32$ feet.

Beaufort Church (Beaufort County, C. O. Boutelle, 1859; 1935).—Approximate geometric center of steeple of Baptist Church on Charles Street between Prince and King Streets in Beaufort. There are four small holes close together in center of steeple and one nearest geometric center of steeple marks station. Two standard reference disks in concrete piers were established in 1931. No. 1 is across street and a little north of front of church, and 37.342 meters (122.51 feet) from station in azimuth 229°54'. No. 2 is station *Beaufort Church, reference mark no. 2* (see description thereof), on east side of open field just west of churchyard, and about 107 meters (351 feet) from station in approximate azimuth 96°. Azimuth from station to aero beacon is 317°28'34''.

Plane coordinates: (S), $x=2,100,818.34$ feet; $y=218,872.58$ feet.

Air beacon No. 16, Jacksonville-Richmond (Colleton County, C. D. Meaney, 1932).—About 19.6 miles northeast of Green Pond. To reach from junction of State Highways 32 and 303 follow State Highway 32 northeast 2.9 miles to Airy Hall Road, turn south on Airy Hall Road for 9.5 miles to railroad tracks, continue 2 miles to ferry at brickyard, follow Island Road 4.4 miles, take right fork 0.4 mile to T-road and turn right for 0.4 mile to end of road at house. Station is 75 meters (246 feet) southwest of this house. Beacon has "16" printed on east side, "J—R" on west, and yellow arrow pointing north on roof. Revolving light is 16.15 meters (53.0 feet) high and makes four complete revolutions every 1 minute and 5 seconds. Red light is 17.20 meters (56.4 feet) high and signals dash, dot, dash.

Plane coordinates: (S), $x=2,162,147.03$ feet; $y=263,736.43$ feet.

Beaufort, black stack (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: *(S), $x=2,094,870$ feet; $y=216,966$ feet.

Parris Island, high brick stack (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,101,471.30$ feet; $y=188,342.57$ feet.

Parris Island, low white stack (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: *(S), $x=2,098,907$ feet; $y=189,398$ feet.

Parris Island, highest of twin stacks (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: *(S), $x=2,095,377$ feet; $y=187,902$ feet.

Parris Island, high, yellow and black tank (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,089,243.06$ feet; $y=180,838.46$ feet.

Parris Island, silver water tank (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,101,017.96$ feet; $y=188,215.44$ feet.

Parris Island, water tank, white with black top (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,100,119.01$ feet; $y=187,678.66$ feet.

Bench mark 1918 (U. S. G. S.) (Jasper County, C. D. Meaney, 1932; 1935).—At Switzerland Post Office, about 10.6 miles north of Hardceville and 3.9 miles south along U. S. Highway 17 from Ridgeland, 30 yards northeast of north end of Atlantic Coast Line Railroad station platform, 18 yards west of center line of highway and 7 yards northwest of center line of road forking to the right from highway and crossing tracks southwest of railroad station. Station is a United States Geological Survey bench mark stamped "El. 50 ft. 1918." *Switzerland* (see description thereof) is 58.982 meters (193.51 feet) from station in azimuth 18°11'.

Plane coordinates: *(S), $x=1,997,427.41$ feet; $y=216,580.85$ feet.

Air beacon No. 13, Jacksonville-Richmond (Beaufort County, C. D. Meaney, 1932).—About 3 miles northeast of Bluffton. To reach from Hardceville at junction of U. S. Highway 17 and State Highway 33, go east 5.25 miles on State Highway 33 to junction with State Highway 170, continue 9.7 miles on State Highway 33 to point where it turns right; continue straight ahead 0.1 mile to village of Bluffton; turn left at cross roads for 1.7 miles to T-intersection with red farmhouse on left; turn left for 1.6 miles to another T-intersection, and turn right for 0.8 mile to beacon. Beacon is double-faced light making 3 revolutions per minute which causes 6 flashes per minute in every direction. Light is 113.5 feet

*No check on this position.

For notes in regard to marking of stations see p. 68.

high. Red lights shine east-northeast and west-southwest, and flash dot, dot, dot, dash and repeat. Red lights are 116.3 feet high.

Plane coordinates: (S), $x=2,046,287.23$ feet; $y=160,943.21$ feet.

Air beacon No. 12, Jacksonville-Richmond (Beaufort County, C. D. Meaney, 1932).—About 24.8 miles north-northeast of Savannah, Ga. To reach from corner of Bay and Bull Streets in Savannah, go 16 miles toward Charleston on U. S. Highway 17 to junction of State Highway 170 at Atlantic gas station on right; turn right on old Savannah-Augusta Road (graded dirt) and follow southeast 1.8 miles to Levys Post Office on right; continue 1.1 miles on main-traveled road, or 0.3 mile beyond Seaboard Air Line Railway, to T-road; proceed right 3.4 miles to fork (L. N. Bailey's store on left); follow left fork 0.3 mile to house on left; turn left and continue 1.6 miles to fork; turn right, and continue 0.6 mile to beacon. Revolving light is 27.3 meters (90 feet) above ground, and red lights, 28.45 meters (93.3 feet).

Plane coordinates: (S), $x=2,004,096.51$ feet; $y=114,813.29$ feet.

Port Wentworth, northerly and highest of three, stack (Chatham County, Ga., C. D. Meaney, 1932).—Plane coordinates: *(S), $x=1,953,437$ feet; $y=115,526$ feet.

Port Wentworth, center of three, stack (Chatham County, Ga., C. D. Meaney, 1932).—Plane coordinates: *(S), $x=1,953,416$ feet; $y=115,514$ feet.

Port Wentworth, westerly of three, stack (Chatham County, Ga., C. D. Meaney, 1932).—Plane coordinates: *(S), $x=1,953,395$ feet; $y=115,501$ feet.

Savannah south base (Beaufort County, C. O. Boutelle, 1850; 1932).—On north shore of Savannah River, north of east side of city of Savannah, Ga., on Screven's plantation, on east side of Union Causeway Road, about 600 meters (1,968 feet) north of ruins of old ferry slip on Black Creek, and on low dam on east side of canal which borders causeway on east. Union Causeway road is no longer used but may be identified by oyster-shell fill above marsh level. Whole vicinity is grown over with tall marsh reeds. Marked by 1-inch copper bolt in top of 4- by 4-inch granite post projecting about 8 inches. In 1913, earth was removed from upper part of post and space was filled with sand and cement. A standard station disk was then placed in cement south of post. (True station mark is copper bolt, not station disk.) Standard reference disk in top of 6-inch stovepipe filled with sand and cement was established in 1913, 17.46 meters (57.3 feet) from station in azimuth $297^{\circ}19'$. This mark was not recovered in 1932 and two additional standard reference disks in concrete, note 11a, were established. No. 1 is 78.94 feet from station in azimuth $306^{\circ}57'$. No. 2 is 3 meters (10 feet) east of 15-inch tree which stands at high-water line on east side of canal, and approximately 160 meters (525 feet) from station in azimuth $18^{\circ}59'08''$. Distances and azimuths from station are: small tree by bridge, 10.1 meters (33 feet), $339^{\circ}47'$; chimney of dwelling house, about 160 meters (525 feet), $12^{\circ}53'$; and chimney of Screven's house, about $\frac{1}{2}$ mile, $259^{\circ}22'$.

Plane coordinates: (S), $x=1,982,903.94$ feet; $y=94,373.16$ feet; the grid azimuth to reference mark No. 2 = $19^{\circ}00'56''$.

Bench mark D 37 (Chatham County, Ga., C. D. Meaney, 1932; 1934).—About 7 miles northwest of Savannah, Ga. Station is 11.893 meters (39.02 feet) southwest of station *Burke* (see description thereof) in azimuth $44^{\circ}47'$ and 83.13 feet west-southwest of *Cherokee* (see description thereof) in azimuth $84^{\circ}38'$. To reach, follow directions given in description of station *Cherokee*.

Plane coordinates: *(S), $x=1,942,268.16$ feet; $y=111,600.39$ feet.

Masonic (Chatham County, Ga., M. E. Lutz, 1918; 1934).—At Savannah, Ga. Station mark is a standard disk set in roof of penthouse on roof of Masonic Building, at corner of Bull and West Charlton Streets, 2.01 meters (6.6 feet) from northwest corner of roof, 1.51 meters (5.0 feet) from west wall and 1.35 meters (4.4 feet) from north wall.

Plane coordinates: (S), $x=1,970,689.45$ feet; $y=87,178.20$ feet.

Savannah, black water tank (Chatham County, Ga., C. D. Meaney, 1932; 1934).—Plane coordinates: (S), $x=1,955,916.85$ feet; $y=103,762.60$ feet.

Savannah, sugar refinery, water tank (Chatham County, Ga., C. D. Meaney, 1932).—Plane coordinates: (S), $x=1,954,702.62$ feet; $y=112,719.05$ feet.

Savannah, tall structure, aluminum water tank (Chatham County, Ga., C. D. Meaney, 1932; 1934).—Plane coordinates: (S), $x=1,959,206.06$ feet; $y=90,828.61$ feet.

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Savannah, Wesley Memorial Church, spire (Chatham County, Ga., C. D. Meaney, 1932).—Plane coordinates: (S), $x=1,971,102.28$ feet; $y=86,338.53$ feet.

Savannah, airport, aviation beacon (Chatham County, Ga., C. D. Meaney, 1932).—Plane coordinates: (S), $x=1,959,410.33$ feet; $y=67,533.72$ feet.

Bank (Chatham County, Ga., C. D. Meaney, 1932; 1934).—About 9 miles southeast of Savannah, Ga., and 2 miles south of Savannah Oglethorpe Hotel, on east bank of Wilmington River, in front of large white house, 20 meters (66 feet) west of southwest corner of house, 19 meters (62 feet) east of east bank of river and 4 meters (13 feet) southwest of southwest corner of yard fence. To reach from Savannah, follow U. S. Highway 17 (Price Street) for 4 blocks east of Bull Street to Victory Drive; turn east on double drive and follow U. S. Highway 80 (Tybee Road) for 7.7 miles to asphalt road to right leading south to Oglethorpe Hotel; follow asphalt road (becomes shell after passing hotel) south for 3.4 miles to fork at end of shell; take right fork for 0.05 mile to river and turn right along bluff for 0.05 mile to station at "Sunny Bank" cottage. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard reference disks in concrete, note 11a. Reference mark No. 1 is 5 meters (16 feet) west of 24-inch oak, 4 meters (13 feet) east of east bank of river and 88.14 feet from station in azimuth $183^{\circ}00'$. Reference mark No. 2 (azimuth) is 20 meters (66 feet) south of southwest corner of small brown house, 5 meters (16 feet) southwest of woven wire fence, 5 meters (16 feet) northeast of dim road and about 160 meters (525 feet) from station in azimuth $337^{\circ}35'42''$. Reference mark No. 3 is 109.33 feet from station in azimuth $20^{\circ}58'$.

Plane coordinates: (S), $x=1,999,321.31$ feet; $y=51,485.34$ feet; the grid azimuth to reference mark No. 2 = $337^{\circ}35'46''$.¹

Dock (U. S. E.) (Chatham County, Ga., C. D. Meaney, 1932; 1934).—About 2.5 miles seaward (south-southwest) of town of Isle of Hope, Ga., on west bank of Skidway River and about 50 feet west of No. 3 front range at Skidway Narrows. Station (an old United States Engineers station) stamped "Dock 1932" is a standard disk in top of pipe which is set in barrel-shaped cement block. Top of pipe projects 1 foot above cement. Reference mark No. 1 (azimuth) is triangulation station Knoll (U. S. E.) stamped "Dock No. 1" and is about 250 feet west of No. 2 front range on edge of woods, about 80 feet east of dyke and about 400 meters (1,312 feet) from station in azimuth $147^{\circ}13'$. Reference mark No. 2 is just above high-water line and 81.45 feet from station in azimuth $346^{\circ}42'$. Following distances and azimuths are from station: Station Far (U. S. E.) about 2,500 feet, $184^{\circ}27'13''$; station Turn (U. S. E.) about 750 feet, $347^{\circ}24'$.

Plane coordinates: (S), $x=1,982,073.08$ feet; $y=46,907.61$ feet; the grid azimuth to station Far (U. S. E.) = $184^{\circ}29'06''$.¹

Venus 2 (U. S. E.) (Beaufort County, C. D. Meaney, 1932; 1934).—On north side of Savannah River, on hydraulic spoil bank about 3 miles up river from quarantine station, about 200 feet southeast of small brick house painted white (probably old Venus Point beacon), and 100 feet north-northeast of water's edge at low tide. Marked by standard station disk set in old concrete barrel-shaped block. Reference mark No. 1 is standard reference disk in concrete barrel, in tall grass area, about 150 feet east-southeast of brick house painted white, and 97.6 feet from station in azimuth $195^{\circ}28'$. Reference mark No. 2 is standard reference disk in concrete, note 11a, on edge of swamp grass, about 150 feet back from water's edge at low tide, and approximately 0.2 mile from station in azimuth $307^{\circ}48'03''$.

Plane coordinates: (S), $x=2,017,251.38$ feet; $y=83,275.34$ feet; the grid azimuth to reference mark No. 2 = $307^{\circ}46'14''$.²

South End (U. S. E.) (Chatham County, Ga., C. D. Meaney, 1932).—At south end of Tybee Beach, Ga., at intersection of center line of Chatham Avenue and extension of center line of Butler Avenue and just back of most offshore sand dunes. Surface mark is a station of United States Engineers stamped "South End 1932," note 1a. Reference marks Nos. 1 and 3 are standard reference disks in concrete, note 11a. Reference mark No. 1 (azimuth) is at intersection of Butler Avenue and spur tracks of Central of Georgia Railroad, 42 feet south of center line of 16th Street, 18 feet east of east rail of railroad tracks, 12 feet west of center line of Butler Avenue, 9 feet east of center line of Railroad Avenue, 2.5 feet southwest of railroad crossing sign and about 0.35 mile from station in azimuth $198^{\circ}44'17''$.³ Reference mark No. 2 is standard disk in concrete foundation of the westerly of a pair of steps to large green beach house owned by

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Amfco Club (American Fire Insurance Co.) and 102.68 feet from station in azimuth $231^{\circ}17'$. Reference mark No. 3 is 30 feet northwest of the end of Chatham Avenue, 27 feet west of center line of Chatham Avenue, 3 feet south of telephone pole and 149.57 feet from station in azimuth $166^{\circ}16'$.

Plane coordinates: (S), $x=2,046,044.30$ feet; $y=55,973.31$ feet; the grid azimuth to reference mark No. 1 = $198^{\circ}39'26''.2^1$

West Base (U. S. E.) (Chatham County, Ga., C. D. Meaney, 1932).—On north side of Tybee Island, Ga., on soft marsh between railroad and bank of river, about 1 mile west of Tybee Light, 0.9 mile west of toll house, 100 yards north of highway and 60 yards north of railroad. To reach from Savannah, Ga., follow U. S. Highway 80 southeast for 16.3 miles to station which can be reached only by walking.

Plane coordinates: (S), $x=2,042,189.36$ feet; $y=67,594.27$ feet.

Quarantine (U. S. E.) (Beaufort County, C. D. Meaney, 1932).—On beach on northeast side of Savannah River, across channel from Fort Pulaski, 1 mile northeast and across channel from present quarantine station, and just north of low white masonry tower of old light (now abandoned). Marked by standard disk station mark cemented in top of concrete cylinder 1.4 feet in diameter at top. Cylinder is inscribed with letters "U. S. E. D. 1913" in top of it. Reference mark No. 1 is standard reference disk in concrete, note 11a, 100 feet northeast of old tower, and 185.7 feet from station in azimuth $341^{\circ}59'$. North corner of old lighthouse tower is 76.87 meters (252.2 feet) from station in azimuth $1^{\circ}49'$

Plane coordinates: (S), $x=2,032,572.99$ feet; $y=75,013.12$ feet.

Tybee Lighthouse (Chatham County, Ga., C. D. Meaney, 1932).—Plane coordinates: (S), $x=2,047,788.72$ feet; $y=68,686.68$ feet.

Fort Screven, water tank (Chatham County, Ga., C. D. Meaney, 1932).—

Plane coordinates: (S), $x=2,048,090.25$ feet; $y=67,928.86$ feet.

Burke (Chatham County, Ga., M. E. Lutz, 1918; 1934).—On Seaboard Air Line Railway right-of-way about 8 miles north of Savannah, 342 meters (1,122 feet) south of milepost 489, 210 meters (689 feet) south of milepost 146, 5 meters (16 feet) south of center line of public road, and 2.05 meters (6.7 feet) east of east rail of railway tracks. *Bench mark D S7* (see description thereof) is 11.893 meters (39.02 feet) from station in azimuth $44^{\circ}47'$.

Plane coordinates: *(S), $x=1,942,295.47$ feet; $y=111,628.04$ feet.

Tower, old, north corner (Beaufort County, C. D. Meaney, 1932).—Plane coordinates: *(S), $x=2,032,565$ feet; $y=74,761$ feet.

CHAPPELS TO CHARLESTON ARC

Principal points

Transit traverse station No. 11 R (U. S. G. S.) eccentric (Saluda County, J. Bowie, Jr., 1935).—About 7 miles northwest of Batesburg. To reach from Batesburg, go northwest on U. S. Highway 178 for 7.3 miles to cross roads (sign "Sardis Church") and turn right for 2.8 miles to cross roads at J. A. Ridgell's store and station in northeast corner, about 49 feet east of north-south road, 35 feet west of granary and 27 feet north of east-west road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Upper mark is 14 inches below surface of ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 7 inches, is about 15 feet south of center line of road and 46.516 meters (152.61 feet) east of station in azimuth $284^{\circ}18'$. Reference mark No. 2 projects 7 inches, is 45 feet south of southeast corner of store, 17 feet west of center line of road, 1 foot north of telephone pole (leaning), 1 foot east of fence line, and 52.608 meters (172.60 feet) south of station in azimuth $32^{\circ}10'$. Azimuth mark projects 8 inches and is on crown of first hill west of station, on east-west road, 20 feet north of center line of road, and 498 paces west of station in azimuth $94^{\circ}27'50''$. *Transit traverse station No. 11 R (U. S. G. S.)* (see description thereof) is 33.855 meters (111.07 feet) south of station in azimuth $336^{\circ}31'$.

Plane coordinates: (N), $x=1,803,627.40$ feet; $y=366,546.41$ feet; the grid azimuth to the azimuth mark = $94^{\circ}49'47''.1$

Watson (Saluda County, J. Bowie, Jr., 1935).—About 1.3 miles east of Southern Railway station in Ridge Springs, on property belonging to R. M. Watson (occupied by P. Murphy), 143 feet northwest of center line of State Highway 23, 52.5

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

feet northwest of northwest corner of Murphy's house, 46 feet southeast of 20-inch pecan tree, 27 feet northwest of 24-inch hickory tree and 16 feet southwest of southwest corner of garage. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 2 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 12 inches, is 36 feet south of center line of dirt road, 3 feet northwest of telephone pole, 2 feet north-northeast of power pole 1622 and 56.601 meters (185.70 feet) south-southwest of station in azimuth $4^{\circ}34'$. Reference mark No. 2 projects 10 inches, is 35.5 feet south of center line of highway, 2 feet west of telephone pole, 2 feet east of power pole 1624, and 87.008 meters (285.46 feet) southwest of station in azimuth $42^{\circ}53'$. Azimuth mark projects 6 inches, is 60 paces southwest of center line of highway, 14 paces south of northwest corner of fence of pigpen, 3 feet west of fence line and 0.25 mile east of station in azimuth $270^{\circ}02'10''.5$. Red tank is 0.5 mile from station in azimuth $76^{\circ}25'35''$.

Plane coordinates: (N), $x=1,806,385.02$ feet; $y=308,989.41$ feet; the grid azimuth to the azimuth mark= $270^{\circ}23'46''.3$.¹ (S), $x=1,806,374.22$ feet; $y=733,380.85$ feet; the grid azimuth to the azimuth mark= $270^{\circ}23'00''.8$.¹

L X 1002 (S. C. Geod. S.) eccentric (Lexington County, J. Bowie, Jr., 1935).—About 1 mile south of Leesville. To reach from Leesville railway station, go south 0.15 mile to junction of U. S. Highway 1 and State Highway 245 and turn right (south) 0.4 mile on State Highway 245 to schoolhouse on left and station, located 140 feet southwest of southwest corner of Hampton Junior High School (colored) and 24.7 meters (81 feet) east of center line of pavement. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark is set flush with ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 6 inches and is 70 feet south of southwest corner of schoolhouse, 1 foot north of northwest corner of coalhouse and 38.208 meters (125.35 feet) east-southeast of station in azimuth $267^{\circ}28'$. Reference mark No. 2 projects 7 inches and is 1 foot west of northwest corner of Calvary M. E. Church, 1 foot north of north vestry, and 34.505 meters (113.21 feet) southeast of station in azimuth $333^{\circ}31'$. **L X 1003 (S. C. Geod. S.)** (not stamped) is about 12 inches below surface of ground, 8 paces west of center line of road, 4 feet west of west side ditch, directly across road from door of Calvary M. E. Church and 0.4 mile south of station in azimuth $0^{\circ}44'02''.5$. **L X 1002 (S. C. Geod. S.)** (not stamped) is 14 inches below surface of ground, 20 feet east of center line of road, 20 feet southwest of piece of railroad rail used as a property corner, and 37.750 meters (123.85 feet) southwest of station in azimuth $22^{\circ}05'$. Azimuth mark projects 6 inches and is in back yard of Julius Adams, 12 feet north of east-west fence, 2 feet east of barn, and is 0.5 mile north of station in azimuth $187^{\circ}33'51''.4$. To reach from station, go west to U. S. Highway 1 and turn right for 0.15 mile, thence right for 0.1 mile to Mr. Adams' house and mark. Finial of taller of two silver tanks in Leesville is in azimuth $202^{\circ}21'34''.1$.

Plane coordinates: (N), $x=1,844,838.88$ feet; $y=331,894.10$ feet; the grid azimuth to the azimuth mark= $187^{\circ}51'10''.6$.¹ (S), $x=1,844,826.17$ feet; $y=756,294.76$ feet; the grid azimuth to the azimuth mark= $187^{\circ}50'34''.1$.¹

A K 824 (S. C. Geod. S.) eccentric (Aiken County, J. Bowie Jr., 1935).—About 12 miles southeast of Monetta and 11 miles northwest of Perry, on narrow strip of land bordered on southwest by State Highway 39 and on northeast by cultivated field, 22 feet northeast of center line of highway, at top of hill. To reach from Southern Railway station at Perry, go northwest on State Highway 39 for 11.1 miles to crossroads at service station in settlement called "Barefoot" and continue northwest on State Highway 39 for 0.7 mile to station on right. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference marks are standard disks in concrete, note 11b. Reference mark No. 1 is 6 paces southwest of center line of highway and 26.71 meters (87.6 feet) from station in azimuth $354^{\circ}28'$. Reference mark No. 2 is 6 paces northeast of center line of highway and 26.942 meters (88.39 feet) from station in azimuth $122^{\circ}07'$. **AK 823 (S. C. Geod. S.)** (azimuth) is 7 paces southwest of center line of State Highway 39, 2 paces east of northeast corner of old shed at a Y-intersection west to Foxtown and 0.4 mile from station in azimuth $125^{\circ}42'56''.5$. **AK 824 (S. C. Geod. S.)** (see description thereof) is 1.396 meters (4.58 feet) from station in azimuth $35^{\circ}45'$.

Plane coordinates: (N), $x=1,851,193.24$ feet; $y=257,726.28$ feet; the grid azimuth to **AK 823 (S. C. Geod. S.)**= $125^{\circ}59'30''.8$.¹ (S), $x=1,851,193.62$

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

feet; $y=682,125.12$ feet; the grid azimuth to AK 823 (S. C. Geod. S.)= $125^{\circ}58'55''.8$.¹

Oak Grove (Lexington County, J. Bowie, Jr., 1935).—About 11 miles (air line) southeast of Leesville. To reach from intersection of U. S. Highways 1 and 178 in Batesburg, go south on U. S. Highway 178 about 14 miles to Fairview (cross-roads with four gas stations); turn left (northeast) on first of two roads for 4 miles to Y-road at left just before reaching Oak Grove Church and directly opposite cemetery, turn left for 0.5 mile to station on right in acute angle of intersection of county road with dim road, 121 paces east of intersection, 10.90 meters (35.8 feet) south of center line of dim road and 10.20 meters (33.5 feet) north of center line of county road. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 5 inches and is 5.80 meters (19.0 feet) south of center line of road, 1.40 meters (4.6 feet) south of road ditch and 72.057 meters (236.41 feet) from station in azimuth $308^{\circ}35'$. Reference mark No. 2 projects 4 inches and is 6.205 meters (20.36 feet) south of center line of road, 2 meters (7 feet) south of road ditch and 31.582 meters (103.62 feet) from station in azimuth $78^{\circ}20'$. Azimuth mark projects 6 inches and is at bend in road 8 paces south of center line of road, 7 paces east of 12-inch water oak tree, 3 paces south of road ditch and 0.25 mile from station in azimuth $101^{\circ}57'31''.9$.

Plane coordinates: (N), $x=1,885,151.14$ feet; $y=297,715.25$ feet; the grid azimuth to the azimuth mark = $102^{\circ}10'20''.3$. (S), $x=1,885,146.17$ feet; $y=722,120.00$ feet; the grid azimuth to the azimuth mark= $102^{\circ}09'53''.3$.¹

Tyler (Aiken County, J. Bowie, Jr., 1935).—About 3 miles east of Wagener and 1.25 miles northwest of Perry, on site of tenant house and farm buildings on property belonging to A. L. Tyler, about 64 feet northwest of 20-inch mock-orange tree, 61 feet north-northwest of 8-inch chinaberry tree, 57.5 feet northeast of northeast corner of house, 57 feet north-northeast of southeast corner of smoke-house, 36 feet northeast of 18-inch mulberry tree, 35 feet south-southeast of southwest corner of barn and 26.5 feet east by north of southeast corner of garden fence. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark is set flush with ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 6 inches and is 6 paces west-northwest of northwest corner of house, 4 paces east of 20-inch chinaberry tree and 25.006 meters (82.04 feet) from station in azimuth $56^{\circ}17'$. Reference mark No. 2 projects 6 inches and is 11 paces east of 8-inch chinaberry tree, 3 paces north of center line of entrance lane and 27.752 meters (91.05 feet) from station in azimuth $299^{\circ}36'$. Azimuth mark projects 6 inches and is 54 paces south of dirt road railway crossing, 7 paces west of west rail of railway, 2 paces east of center line of wagon road and 0.4 mile from station in azimuth $238^{\circ}43'51''.9$.

Plane coordinates: (N), $x=1,905,391.80$ feet; $y=235,661.25$ feet; the grid azimuth to the azimuth mark= $238^{\circ}54'23''.6$. (S), $x=1,905,394.42$ feet; $y=660,067.94$ feet; the grid azimuth to the azimuth mark= $238^{\circ}54'01''.4$.¹

10 S L (U. S. G. S.) (Lexington County, J. Bowie, Jr., 1935).—About 11 miles northwest of North and 2.5 miles southeast of Pelion, on property belonging to C. O. Glenn, in southeast angle of intersection of U. S. Highway 178 and farm road, 122 feet north-northeast of well, 86 feet north of northwest corner of main part of house, 35.5 feet southwest of center line of highway, 22 feet southeast of center line of farm road and 10 feet northeast of 4-inch oak. Mark, projecting 1 inch, was established as triangulation station and new reference marks set, notes 1a and 11b. Reference mark No. 1 projects 6 inches, is 17 paces southeast of center line of farm road, 10 paces northeast of center line of U. S. Highway 178 and 27.490 meters (90.19 feet) from station in azimuth $262^{\circ}44'$. Reference mark No. 2 projects 6 inches, is 10 paces northeast of center line of U. S. Highway 178 and 68.321 meters (224.15 feet) from station in azimuth $150^{\circ}35'$. *L X 1053* (S. C. Geod. S.) (azimuth) is set flush with ground (note 1b) and is at point of intersection of first curve, on pine knoll, 14 paces west of center line of U. S. Highway 178 and about 1 mile from station in azimuth $134^{\circ}29'51''.7$. *L X 1054* (S. C. Geod. S.) is set about 12 inches below surface of ground and is in southwest angle of farm road crossing, 6 paces southwest of center line of U. S. Highway 178, 5 paces northwest of center line of farm road and 10.675 meters (35.02 feet) from station in azimuth $164^{\circ}21'$.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Plane coordinates: (N), $x=1,932,769.30$ feet; $y=266,804.65$ feet; the grid azimuth to L X 1053 (S. C. Geod. S.) = $134^{\circ}37'21''.0$ ¹ (S), $x=1,932,768.78$ feet; $y=691,213.56$ feet; the grid azimuth to L X 1053 (S. C. Geod. S.) = $134^{\circ}37'05''.3$ ¹

O R 56 (S. C. Geod. S.) (Orangeburg County, J. Bowie Jr., 1935).—About 7.5 miles (air line) west of North at small settlement of Sawyerdale on State Highway 3. To reach from North, follow U. S. Highway 178 west from junction of State Highway 6 for 6 miles to junction with State Highway 3 and turn left for 5.7 miles to station on right, on property line of Mattie Poole and Mrs. R. Beach, 34 paces north of gas pump of Poole's Gulf filling station on west side of highway, 9.63 meters (31.6 feet) west of center line of highway and 5 feet east of northeast fence corner. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark is set flush with ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 4 inches, is 24 feet west of center line of highway and 34.43 meters (113.0 feet) from station in azimuth $202^{\circ}58'$. Reference mark No. 2 projects 5 inches, is 45 feet northwest of northwest corner of barn, 39 feet east of center line of highway and 24.125 meters (79.15 feet) from station in azimuth $314^{\circ}51'$. **O R 55 (S. C. Geod. S.)** (azimuth) is set flush with ground and is at T-road east, 9.60 meters (31.5 feet) east of center line of State Highway 3, 2.90 meters (9.5 feet) north of center line of T-road, 6 feet west of right-of-way stake 1416 and about 1.2 miles from station in azimuth $18^{\circ}28'46''.4$.

Plane coordinates: (N), $x=1,929,218.99$ feet; $y=214,139.39$ feet; the grid azimuth to O R 55 (S. C. Geod. S.) = $18^{\circ}36'38''.7$ ¹ (S), $x=1,929,222.68$ feet; $y=638,549.19$ feet; the grid azimuth to O R 55 (S. C. Geod. S.) = $18^{\circ}36'22''.1$ ¹

Woodford eccentric (Orangeburg County, J. Bowie, Jr., 1935).—About 19 miles northwest of Orangeburg and 4.5 miles north-northwest of North, on west side of Seaboard Air Line right-of-way, 0.6 mile north of Woodford depot and 0.2 mile south of milepost 385. To reach from junction of U. S. Highway 178 and State Highway 6 in North, go north on State Highway 6 for 3.8 miles to Seaboard Air Line Railway station in Woodford, turn left and continue north on State Highway 6 on west side of tracks for 0.6 mile to home of J. D. Gissendanner on left and station, in southeast angle of farm road crossing opposite home of J. D. Gissendanner, 70.4 feet west of west rail of tracks and 19 feet south of center line of farm road crossing. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 12 paces west of west rail of tracks, 5 paces east of center line of highway and 199.07 feet from station in azimuth $336^{\circ}05'$. Reference mark No. 2 is 15 paces north of north side of house, 3 paces south of southwest corner of garage and 157.62 feet from station in azimuth $88^{\circ}38'$. Azimuth mark is about 0.05 mile southeast of Woodford railway station, 8 paces east of center line of State Highway 6 and 0.6 mile from station in azimuth $332^{\circ}58'39''.7$. Following distances and azimuths are from station: *Woodford* (see description thereof) 133.19 feet, azimuth $326^{\circ}43'$; *Bench mark No. B2* (see description thereof) 101.57 feet, azimuth $225^{\circ}58'$.

Plane coordinates: (N), $x=1,964,896.61$ feet; $y=245,383.82$ feet; the grid azimuth to the azimuth mark = $333^{\circ}02'34''.2$ ¹ (S), $x=1,964,897.20$ feet; $y=669,794.69$ feet; the grid azimuth to the azimuth mark = $333^{\circ}02'25''.9$ ¹

O R 354 (S. C. Geod. S.) eccentric (Orangeburg County, J. Bowie, Jr., 1935).—About 12 miles northwest of Orangeburg, 8 miles northeast of Neeses, and 5 miles east of North, on high cleared ridge, 0.15 mile east of white house (home of Elliott McCormick) on north side of U. S. Highway 178, about 255 paces northwest of orange-colored filling station and 8.9 meters (29 feet) north of center line of highway. Mark is standard disk in concrete, note 7a, and is set 15 inches below surface of ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 6 inches, is 6 meters (20 feet) south of center line of highway and 19.18 meters (62.9 feet) from station in azimuth $4^{\circ}32'$. Reference mark No. 2 projects 4 inches, is 5 meters (16 feet) north of center line of highway, 1 meter (3 feet) north of ditch and 57.010 meters (187.04 feet) from station in azimuth $129^{\circ}10'$. Azimuth mark projects 6 inches, is 100 feet northwest of store at orange-colored filling station, 5 meters (16 feet) south of center line of highway and 249 paces from station in azimuth $316^{\circ}02'26''$. **O R 353 (S. C. Geod. S.)** projects 4 inches and is 23.1 meters (76 feet) west of center line of farm T-road, 13.2 meters (43 feet) west of mail boxes, 7.7 meters (25 feet) south of center line of U. S. Highway 178, on top of bank of 5-foot cut,

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

1 meter (3 feet) from edge of cut, and 0.55 mile from station in azimuth $312^{\circ}48'17''.4$. O R 354 (S. C. Geod. S.) projects 3 inches and is 5.4 meters (18 feet) from center line of U. S. highway 178 and 3.495 meters (11.47 feet) from station in azimuth $43^{\circ}39'$.

Plane coordinates: (N), $x=1,994,759.01$ feet; $y=224,076.86$ feet; the grid azimuth to O R 353 (S. C. Geod. S.)= $312^{\circ}48'52''.4$.¹ (S), $x=1,994,759.21$ feet; $y=648,489.02$ feet; the grid azimuth to O R 353 (S. C. Geod. S.)= $312^{\circ}48'51''.2$.

Wilson (Orangeburg County, M. E. Lutz, 1918; 1935).—About 3 miles north of Norway, 3 miles southeast of Neeces and 1 mile east of Seaboard Air Line Railway tracks at milepost 240½, near highest part of heavily wooded hill on property belonging to L. D. Hughs. To reach from junction of State Highways 4 and 6 at Neeces, go south on State Highway 6 for 3 miles and turn left for 0.95 mile or 0.5 mile past home of G. O. Wilson; turn left on sand T-road for 0.1 mile and bear left on dim woods road at triangular-blazed pine on left, 0.15 mile to another blazed pine on left and station, 220 yards northeast of G. O. Wilson's house, 100 feet east of highest part of hill, 56 feet south of center line of woods road and 47.8 feet east-southeast of 8-inch triangular-blazed pine tree. Surface and underground marks are standard disks in concrete, notes 1a and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 18 paces east of 8-inch triangular-blazed pine, 2 paces north of center line of woods road and 23.281 meters (76.38 feet) from station in azimuth $185^{\circ}36'$. Reference mark No. 2 is 19 paces west of 8-inch triangular-blazed pine, 3 paces south of center line of woods road and 26.627 meters (87.36 feet) from station in azimuth $88^{\circ}20'$. Azimuth mark is 100 yards east of farmhouse, 8 paces west of center line of State Highway 6, 4 paces south of center line of road to farmhouse and 0.7 mile from station in azimuth $59^{\circ}14'53''.0$.

Plane coordinates: (S), $x=1,966,818.75$ feet; $y=603,360.93$ feet; the grid azimuth to the azimuth mark= $59^{\circ}18'26''.4$.¹

Neeces eccentric (Orangeburg County, J. Bowie, Jr., 1935; 1937).—At Neeces, on property belonging to G. B. Dommineck, in fenced in pecan orchard, about 140 yards northeast of Seaboard Air Line Railway, 69 feet south of center line of State Highway 4, 47.5 feet northwest of 16-inch pecan tree, 41 feet southwest of northwest corner of G. B. Dommineck's house, 30 feet southwest of east fence line, 24 feet southeast of north fence line, 18 feet southeast of 14-inch pecan tree and 16 feet southwest of 2-inch pecan tree. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projected 6 inches, was on south side of sidewalk, 9 paces north of center line of street and 30.770 meters (100.95 feet) from station in azimuth $184^{\circ}00'$. Reference mark No. 2 projected 6 inches, was on north side of sidewalk, 27 feet south of center line of street and 24.631 meters (80.81 feet) from station in azimuth $100^{\circ}32'$. In 1937, reference marks had to be moved due to highway construction, so new marks were set on line between old reference marks and station. The distance between station and reference mark No. 1 is now 109.03 feet and to reference mark No. 2, 71.24 feet. Azimuth mark projects 6 inches, is 13 paces southeast of southeast corner of wood bungalow, 7 paces north of center line of street, 6 paces west of third power pole west of railway, 2 paces north of ditch, and about 0.15 mile from station in azimuth $78^{\circ}08'44''$. Following distances and azimuths are from station: O R 3 (S. C. Geod. S.) about 125 meters (410 feet), azimuth $78^{\circ}41'$; *Neeces* (see description thereof) 11.607 meters (38.08 feet), azimuth $161^{\circ}01'$.

Plane coordinates: (S), $x=1,962,268.04$ feet; $y=617,920.29$ feet; the grid azimuth to the azimuth mark= $78^{\circ}12'47''.1$

Culler (Orangeburg County, J. Bowie, Jr., 1935).—About 3.5 miles northwest of Orangeburg. To reach from Orangeburg, go west 3.8 miles on U. S. Highway 178. Station is directly across paved road from H. H. Culler's home, 10.8 meters (35 feet) east of center line of road and 6 meters (20 feet) north of field road. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Mark is set 14 inches below surface of ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is set flush with ground and is 40 feet north of driveway to house, 1 foot east of telephone pole in H. H. Culler's yard and 38.400 meters (125.98 feet) from station in azimuth $347^{\circ}19'$. Reference mark No. 2 projects 7 inches and is 20 feet west of center line of pavement, 3 feet northwest of station O R 334 (S. C. Geod. S.), 1 foot southeast of

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 69.

southeast corner of garden fence and 34.057 meters (111.74 feet) from station in azimuth $111^{\circ}53'$. Azimuth mark projects 6 inches and is 23 paces west of center line of paved road, 65 feet southeast of southeast corner of frame church, 9 paces north of center line of dirt road, and 0.3 mile from station in azimuth $125^{\circ}57'22''.4$. Following distances and azimuths are from station: *O R 334* (S. C. Geod. S.) (see description thereof) 36.100 meters (118.44 feet), azimuth $103^{\circ}24'$; *O R 335* (S. C. Geod. S.) (not visible from ground) 0.75 mile, azimuth $130^{\circ}45'54''.2$; *Orangeburg, water tank*, azimuth $314^{\circ}26'44''.2$; *Orangeburg, southwest of, silver water tank*, azimuth $333^{\circ}38'05''.6$.

Plane coordinates: (N), $x=2,030,776.36$ feet; $y=194,200.96$ feet; the grid azimuth to the azimuth mark= $125^{\circ}53'57''.2$.¹ (S), $x=2,030,774.07$ feet; $y=618,614.32$ feet; the grid azimuth to the azimuth mark= $125^{\circ}54'04''.4$.¹

Ziegler (Orangeburg County, J. Bowie, Jr., 1935).—About 7 miles southwest of Orangeburg. To reach from city square in Orangeburg, go 2.5 miles southwest on State Highway 4 to junction of State Highway 33; keep left on State Highway 33 for 3.2 miles to dirt Y intersection; bear right and continue for 1.75 miles and turn right for 0.4 mile to cross roads; turn right 0.25 mile to C. C. Ziegler's plantation and station on right, in pecan grove, 150 yards west of C. C. Ziegler's house, 74 feet east of north gatepost, 40 feet northeast of northeast side of cultivated field, 22.4 feet southeast of second pecan tree from west, in front row of trees north of road and 15 feet north of center line of road leading to house. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Station mark is 12 inches below surface of ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 2 paces north of center line of road to house, 2 feet west of 10-inch oak tree, and 28.325 meters (92.93 feet) from station in azimuth $272^{\circ}48'$. Reference mark No. 2 is 2 paces east of center line of farm road, 1 foot east of west fence around pecan grove and 37.516 meters (123.08 feet) from station in azimuth $159^{\circ}09'$. Azimuth mark is 3 paces east of center line of farm road, 1 foot east of west fence around field and about 0.3 mile from station in azimuth $12^{\circ}09'23''.8$. To reach mark from station, go west on farm road 0.25 mile to cross roads and turn left for 0.2 mile along west side of cultivated field to mark on left.

Plane coordinates: (S), $x=2,007,926.47$ feet; $y=586,857.10$ feet; the grid azimuth to the azimuth mark= $12^{\circ}08'32''.9$.¹

Gramling (Orangeburg County, J. Bowie, Jr., 1935).—About 9 miles north-northwest of Bowman, 8 miles northeast of Rowesville and 6.5 miles east-southeast of Orangeburg. To reach from Atlantic Coast Line Railroad crossing in Orangeburg, at intersection of U. S. Highway 21 and State Highway 4, go 0.7 mile northeast on State Highway 4 and turn right for 5.2 miles to end of pavement at J. Gramling's house (large white house on south side of highway); continue on dirt road 0.3 mile to T-road and turn right (south) 70 paces to station on property belonging to J. Gramling, 66 paces south of center line of State Highway 4, 18 paces west of fenceline, in northeast corner of field, 33.5 feet south of 6-inch dogwood tree, 23 feet southwest of twin pine with 15- and 18-inch trunks and 22 feet west of 9-inch red oak. Station is standard disk in concrete, note 7a and is set 15 inches below surface of ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 4 inches, is at edge of woods, 24 paces west of southeast corner of field, where path enters woods, 15 paces east of 20-inch pine and 230.57 feet from station in azimuth $31^{\circ}12'$. Reference mark No. 2 projects 4 inches, 11 paces west of telephone pole, 6 paces south of center line of State Highway 4, 2 paces south of side ditch, 1 foot south of fence, and 227.52 feet from station in azimuth $161^{\circ}27'$. Azimuth mark projects 6 inches, is 23 paces west of end of pavement on State Highway 4, 12 paces south of center line of highway, 9 paces east of drive, 1 foot east of telephone pole and about 0.3 mile from station in azimuth $111^{\circ}49'47''.5$.

Plane coordinates: (N), $x=2,073,158.88$ feet; $y=167,443.73$ feet; the grid azimuth to the azimuth mark= $111^{\circ}41'40''.1$.¹ (S), $x=2,073,151.20$ feet; $y=591,857.00$ feet; the grid azimuth to the azimuth mark= $111^{\circ}41'57''.2$.¹

OR 546 (S. C. Geod. S.) **eccentric** (Orangeburg County, J. Bowie, Jr., 1935).—About 0.85 mile north of center of Rowesville and 0.25 mile north of Rowesville city limits, at point of intersection of curve on U. S. Highway 21, 14.5 meters (48 feet) southwest of center line of highway, in center of old wagon road, 41 paces east of railway track and 5.2 meters (17 feet) northwest of guyed telephone pole. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark is set 8 inches below surface of ground. Reference and azimuth

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

marks are standard disks in concrete, note 11b. Reference mark No. 1 (note 11b) projects 10 inches, is 11.5 meters (38 feet) west of center line of highway and 33.298 meters (109.25 feet) from station in azimuth $174^{\circ}47'$. Reference mark No. 2 (note 11b) projects 4 inches, is 9.7 meters (32 feet) east-northeast of center line of highway and 34.048 meters (111.71 feet) from station in azimuth $302^{\circ}12'$. O R 545 (S. C. Geod. S.) is the azimuth mark and is about 0.85 mile from station in azimuth $337^{\circ}27'59''.2$. O R 546 (S. C. Geod. S.) (see description thereof) is 3.628 meters (11.90 feet) from station in azimuth $87^{\circ}29'$. Laplace azimuth mark (note 11b) is about 0.3 mile east of U. S. Highway 21, about 0.1 mile east of a six-point cross roads of two wagon roads and a graded dirt road, 3 paces south of center line of a wagon road, and about 1.9 miles from station in azimuth $337^{\circ}41'39''.7$. To reach from station, go 1.9 miles south on U. S. Highway 21 to dirt T-road; turn left (east) for 0.2 mile to 6-point cross roads of two wagon roads and graded dirt road; turn left (north) at cross roads and bear right (east) on wagon road for 0.1 mile to mark located 3 paces south of center line of road.

Plane coordinates: (S), $x=2,049,484.35$ feet; $y=564,151.34$ feet; the grid azimuth to O R 545 (S. C. Geod. S.)= $337^{\circ}22'41''.4$.¹

Arant (Orangeburg County, J. Bowie, Jr., 1935).—About 9.4 miles east of Rowesville and 2 miles (air line) north of Bowman. To reach from Bowman, go to Stroman's Texaco Service Station on U. S. Highway 178 and turn northeast on good sand-clay road for 1.3 miles to T-road at three mail boxes opposite old house on left; turn right on T-road (poor narrow road) for 0.3 mile to dim Y-road; take main road (left) 0.15 mile to Negro cabin on right and continue 0.25 mile to Y-road; bear left 0.35 mile to reverse Y and turn sharp left 0.25 mile to tenant house and station on property belonging to G. Arant, in yard of unoccupied tenant house, 8.6 meters (28 feet) southeast of southwest corner of small building, 8.3 meters (27 feet) northwest of northeast corner of small building, 7 meters (23 feet) north of northwest corner of log barn and 6.6 meters (22 feet) south of southeast corner of small building. Station is standard disk set in concrete, note 7a, set flush with ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 6 inches, is 6 paces northwest of chimney of house, 17 feet north of corner of porch of tenant house, and 36.195 meters (118.75 feet) from station in azimuth $210^{\circ}08'$. Reference mark No. 2 projects 6 inches, is 1.5 feet southeast of southeast corner of tenant house and 31.300 meters (102.69 feet) from station in azimuth $243^{\circ}36'$. Azimuth mark projects 12 inches, is at a tenant house, 1 foot west of chimney of house and about 0.3 mile from station in azimuth $291^{\circ}39'58''.4$.

Plane coordinates: (N), $x=2,100,275.41$ feet; $y=137,472.71$ feet; the grid azimuth to the azimuth mark= $291^{\circ}28'51''.0$.¹ (S), $x=2,100,261.45$ feet; $y=561,886.98$ feet; the grid azimuth to the azimuth mark= $291^{\circ}29'14''.5$.¹

Meyers (Orangeburg County, J. Bowie, Jr., 1935).—About 5 miles southwest of Bowman. To reach from intersection of U. S. Highway 178 and State Highway 121 at Bowman, go 5.1 miles southwest on State Highway 121 to T-road just beyond where woods end on both sides of road, and turn left for 0.3 mile to station on right, on property belonging to D. W. Meyers, in small cleared area surrounded by pine and oak trees, about 0.2 mile east-southeast of Ike and Fannie Kizer's house, 88.5 feet south-southeast of 24-inch triangular-blazed pine, 61.5 feet south-southwest of 20-inch pine, and 50 feet south-southwest of woods road. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 14 paces north of center line of woods road, 10 paces southeast of 36-inch oak, and 48.688 meters (159.74 feet) from station in azimuth $227^{\circ}31'$. Reference mark No. 2 is 24 paces west of 24-inch blazed pine, 5 feet north of center line of woods road, and 46.689 meters (153.18 feet) from station in azimuth $110^{\circ}42'$. Azimuth mark is on property line of Mrs. F. Kizer, 15 paces north of north corner of house, 1 foot north of north corner of fence around garden, and about 0.2 mile from station in azimuth $109^{\circ}06'04''$.

Plane coordinates: (S), $x=2,077,055.96$ feet; $y=534,438.19$ feet; the grid azimuth to the azimuth mark= $108^{\circ}57'50''.1$

Murray (Dorchester-Orangeburg Counties, J. Bowie, Jr., 1935).—About 7.5 miles northwest of St. George and 7 miles northeast of Rowesville, near Orangeburg-Dorchester County line. To reach from intersection of U. S. Highway 178 and State Highway 121, go 7.1 miles southeast on U. S. Highway 178 to dirt cross roads and turn left for 0.9 mile to T. H. Murray's house and station on right,

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

43.9 meters (144 feet) south-southwest of south chimney of house, 43.7 meters (143 feet) southwest of southwest corner of T. H. Murray's house, 20 paces east of center line of dirt road, 7.1 meters (23 feet) north-northeast of northwest corner of main part of barn, 6.9 meters (23 feet) east-southeast of 8-inch cypress post, and 6.5 meters (21 feet) northwest of northeast corner of main part of barn. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Mark is set 12 inches below surface of ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 12 inches, is 3 paces west of center line of road, 6 feet east of fence corner, and 31.130 meters (102.13 feet) from station in azimuth $70^{\circ}59'$. Reference mark No. 2 projects 8 inches, is 6 paces west of center line of road, 5 feet east of 10-inch cherry tree and 34.507 meters (113.21 feet) from station in azimuth $150^{\circ}17'$. Azimuth mark projects 8 inches, is at edge of pine woods, 16 paces south-southeast of corner of cleared field, 11 paces east-southeast of wire fence line, and about 0.2 mile from station in azimuth $40^{\circ}58'34''$.

Plane coordinates: (S), $x=2,126,483.10$ feet; $y=530,406.99$ feet; the grid azimuth to the azimuth mark = $40^{\circ}45'02''$.¹

Reeves (Dorchester County, J. Bowie, Jr., 1935).—About 0.3 mile southeast of Southern Railway station at Reevesville. To reach from depot in Reevesville, go south 0.1 mile and bear left 0.05 mile to Y in front of Reevesville Methodist Church and turn left for 0.15 mile to station on right, 24 paces west of edge of cultivated field, and 6.2 meters (20 feet) south of center line of dirt road. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 3 inches. Reference and azimuth marks are standard disks in concrete, notes 11a and 11b. Reference mark No. 1 (note 11a) is flush with ground 14 paces east of break in woods, 4 paces north of center line of road, and 41.305 meters (135.51 feet) from station in azimuth $277^{\circ}14'$. Reference mark No. 2 (note 11b) projects 3 inches, is 5 paces north of center line of road, and 34.380 meters (112.80 feet) from station in azimuth $128^{\circ}22'$. Azimuth mark (note 11b) projects 6 inches, is 12 feet north of center line of first bend in road, 2 feet north of side ditch and about 0.1 mile from station in azimuth $289^{\circ}25'59''$. Reevesville Methodist Church spire is 0.15 mile from station in azimuth $109^{\circ}08'37''$.

Plane coordinates: (S), $x=2,109,294.02$ feet; $y=497,953.31$ feet; the grid azimuth to the azimuth mark = $289^{\circ}14'18''$.¹

Smith (Orangeburg County, J. Bowie, Jr., 1935).—About 11.2 miles southeast of Rowesville and 3.5 miles south-southeast of Bowman. To reach from junction of U. S. Highway 178 and State Highway 121 (Sinclair service station in northwest angle) at Bowman, go south 0.25 mile on U. S. Highway 178 to dirt T-road; turn right (west) for 0.2 mile to end of road at T; turn left (south) for 2.7 miles to fork and take left fork (main road) 0.75 mile to M. Smith's house and station on left (east), on property belonging to Marion Smith, at northwest corner of gum and cypress swamp, 157 feet southwest of south chimney of M. Smith's house, 99 feet south-southwest of southwest corner of garden, and 23 feet east of center line of dirt road. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 14 inches, is 8 paces south of southwest corner of barn, 2 feet southeast of southeast corner of garden fence, and 42.252 meters (138.62 feet) from station in azimuth $227^{\circ}47'$. Reference mark No. 2 projects 10 inches, is in northeast corner of uncultivated ground at southeast corner of cultivated field, is 5 paces west of center line of road and 88.151 meters (289.21 feet) from station in azimuth $3^{\circ}33'$. Azimuth mark projects 10 inches, is in yard of abandoned house, 53 paces southwest of 10-inch oak, 4 feet west of roadway cut bank, and about 0.3 mile from station in azimuth $356^{\circ}57'50''$.⁴

Plane coordinates: (S), $x=2,103,452.83$ feet; $y=533,236.62$ feet; the grid azimuth to the azimuth mark = $356^{\circ}46'46''$.⁵

Enfinger (Dorchester County, J. Bowie, Jr., 1935).—About 3.5 miles northwest of Harleyville. To reach from intersection of U. S. Highways 15 and 178 in Rosinville, go southeast 0.55 mile on U. S. Highway 178 to cross roads (house on right); bear left on road at about 45° angle to U. S. Highway 178 for 0.75 mile to Y just beyond small cabin on left; bear left 1.1 miles to T-road (mail box in northwest fence corner); turn right for 0.05 mile and turn right again for 0.15 mile along edge of cultivated field to station on property belonging to L. P. Enfinger on knoll on north side of old graveyard in thick clump of chinaberry

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

bushes surmounted by a single tall tree, on knoll about 0.2 mile north across field from L. P. Fnfinger's house, 22 paces north of tall tree, 13 paces east of west edge of plot and 7 paces west of east edge of plot. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 4 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 12 inches, is 6 feet north of edge of cultivated field and 51.898 meters (170.27 feet) from station in azimuth $224^{\circ}56'$. Reference mark No. 2 projects 2 inches, is 15 feet south and 5 feet east of cultivated field, 3 feet south of small wild plum tree and 70.369 meters (230.87 feet) from station in azimuth $132^{\circ}25'$. Azimuth mark projects 6 inches, is in triangular intersection of north-south road and east-west road, 8 feet north of center line of east-west road, and about 0.6 mile from station in azimuth $304^{\circ}14'22''.8$.

Plane coordinates: (S), $x=2,154,573.97$ feet; $y=515,107.51$ feet; the grid azimuth to the azimuth mark= $303^{\circ}57'51''.5$.¹

Charlie (Dorchester County, J. Bowie, Jr., 1935).—About 4.5 miles southeast of St. George. To reach from traffic light in St. George, go 3.55 miles east on U. S. Highway 78 to Byrd; turn right across Southern Railway tracks just west of depot for 2.65 miles to bridge; continue 0.15 mile and bear right on dim Y-road just beyond crotched 30-inch oak tree on right and go 0.1 mile to crossroads; continue straight ahead on very dim road 0.05 mile to Y; bear left for 0.15 mile to reverse Y; continue straight ahead to southwest corner of cultivated field; bear right around corner of field for 0.05 mile; bear left for 0.25 mile to reverse Y; bear right for 0.05 mile to Y; bear left for 0.2 mile to triangular-blazed 20-inch pine tree and station on left, on property belonging to Charlie Wilson in thickly wooded pine area, 65 feet east of 20-inch blazed pine, 50 feet east-southeast of dim Y-road, 38.7 feet north of 12-inch blazed-pine, 36.5 feet southwest of center line of woods road and 18 feet west of 12-inch triangular-blazed pine. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 4 paces north of center line of woods road and 40.553 meters (133.05 feet) from station in azimuth $241^{\circ}38'$. Reference mark No. 2 is 24 paces northwest of center line of woods road and 33.902 meters (111.23 feet) from station in azimuth $152^{\circ}26'$. Azimuth mark is on north side of first cultivated field northeast of station in line with house seen through trees northeast of station, 11 paces west of 30-inch pine and about 0.3 mile from station in azimuth $201^{\circ}46'48''.2$.

Plane coordinates: (S), $x=2,142,149.55$ feet; $y=470,950.17$ feet; the grid azimuth to the azimuth mark= $201^{\circ}31'37''.8$.¹

Huff (Dorchester County, J. Bowie, Jr., 1935).—About 9 miles north of Summerville. To reach from Summerville, go northwest on U. S. Highway 78 to junction with U. S. Highway 178; continue northwest on U. S. Highway 178 for 0.8 mile to cross roads; turn right for 1.1 miles (crossing Walnut Branch Bridge at 0.4 mile) to Y; turn left for 1.2 miles to Y and turn left for 0.2 mile to station on property belonging to J. L. Huff, 18.15 meters (59.5 feet) east-southeast of 17-inch chinaberry tree and 8.6 meters (28 feet) west of center line of road and southeast corner of old house site. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark projects 7 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 8 inches, is 20 feet south of east-west ditch, 15 feet east of center line of road and 127.57 feet from station in azimuth $322^{\circ}25'$. Reference mark No. 2 projects 9 inches, is 90 feet north of wooden bridge, 10 feet east of center line of road and 189.05 feet from station in azimuth $176^{\circ}30'$. Azimuth mark projects 9 inches and is 100 feet north of T-road with 2 mail boxes (Nos. 19 and 20) on west side of road, 17 feet west of center line of road, 12 feet northeast of 18-inch pine and about 0.3 mile from station in azimuth $160^{\circ}37'42''.0$. To reach from station, go north on road to T-road and continue straight ahead 100 feet to mark on left.

Plane coordinates: (S), $x=2,199,021.34$ feet; $y=490,600.44$ feet; the grid azimuth to the azimuth mark= $160^{\circ}16'26''.6$.¹

Rhodes (Dorchester County, J. Bowie Jr., 1935).—About 6.5 miles west of Ridgeville and 3.5 miles southwest of Dorchester. To reach from Southern Railway crossing in Dorchester, turn left and follow main road 3.9 miles to T-road; turn left for 0.15 mile to T-road; turn right 0.15 mile to church on right and continue 0.75 mile to schoolhouse on left; turn right on T-road along fence for 0.2 mile to gate on right; turn left for 0.6 mile to triangular-blazed tree on left; turn sharp left and follow main road 0.3 mile to triangular-blazed tree on right and

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

fork; bear right for 0.2 mile to Y and triangular-blazed tree bear right and go 0.2 mile to gate in fence, go through gate and continue 60 yards northwest to station, at south end of large clearing surrounded by high pine timber, on property belonging to D. C. Rhodes, 27 feet east of 20-inch triangular-blazed pine, 21.5 feet west-northwest of very dim woods road, 14.2 feet north of fence corner at gate and 11 feet north-northwest of northwest fence line. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 43 paces east-northeast of gate, 6 paces south of center line of woods road and 137.80 feet from station in azimuth $318^{\circ}16'$. Reference mark No. 2 is 17 paces north of fence corner and 93.51 feet from station in azimuth $31^{\circ}23'$. Azimuth mark in cleared field is about 0.1 mile south of north edge of clearing, 21 paces southwest of lone 16-inch tree in clearing and about 0.2 mile from station in azimuth $163^{\circ}38'47''$.

Plane coordinates: (S), $x=2,173,854.77$ feet; $y=460,398.22$ feet; the grid azimuth to the azimuth mark = $163^{\circ}20'14''$.¹

Lime (Dorchester County, K. G. Crosby, 1934; 1935).—About 4.2 miles southwest of Summerville, on north edge of cultivated field, on south side of road along north side of Ashley River between Bacons Bridge and Slands Bridge, on property belonging to A. J. Limehouse. To reach from Southern Railway depot in Summerville, go southwest on State Highway 61 and 64 for 1.2 miles to cross roads; turn left on State Highway 61 for 3.2 miles to sign "Site of Old Dorchester" at cross roads, and turn right for 1 mile to station on left, about 100 yards northeast of D. Windham home, 50 feet south of center line of old Charleston-Augusta Road, 32 feet south of fence line (old fence torn down, new fence 20 feet north of old fence line) and 25 feet east of gatepost, 12 feet high, on old fence line. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 (azimuth) is midway between telephone poles 1021 and 1022, 15 feet north of center line of old Charleston-Augusta Road and about 0.3 mile from station in azimuth $274^{\circ}24'30''$.⁴ Reference mark No. 2 is 1 foot northeast of southeast corner post of fence around small garden plot in rear of house and 304.77 feet from station in azimuth $61^{\circ}27'$. Reference mark No. 3 is at north edge of cultivated field, 28 paces east-southeast of northwest corner of fence around field, 4 paces south of new fence line and 149.15 feet from station in azimuth $102^{\circ}38'$.

Plane coordinates: (S), $x=2,239,828.54$ feet; $y=414,801.85$ feet; the grid azimuth to reference mark No. 1 = $273^{\circ}58'57''$.¹

Mart (Berkeley County, C. D. Meaney, 1932; 1935).—About 16 miles north-northwest of Charleston. To reach from Francis Marion Hotel in Charleston, follow U. S. Highway 17 (King Street) north 16 miles, or 10.6 miles north along U. S. Highway 17 from Dorchester Road, 1.6 miles north of junction of U. S. Highways 52 and 78, and 0.5 mile north of center of bridge over Goose Creek. Station is 51.5 feet north of triangular-blazed 12-inch pine, 41 feet east of center line of U. S. Highway 17, 40 feet west of edge of bank of right-of-way line of Atlantic Coast Line Railroad. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 (azimuth) is on high bank about 30 feet west of center line of U. S. Highway 17, 3 feet west of right-of-way post on edge of bank and about 0.25 mile from station in azimuth $18^{\circ}28'36''$.³ Reference mark No. 2 is 38 feet west of center line of U. S. Highway 17 and 45.476 meters (149.2 feet) from station in azimuth $47^{\circ}17'$. Reference mark No. 3 is 34 feet west of center line of U. S. Highway 17 and 34.031 meters (111.65 feet) from station in azimuth $153^{\circ}02'$.

Plane coordinates: (S), $x=2,294,531.14$ feet; $y=422,609.85$ feet; the grid azimuth to reference mark No. 1 = $17^{\circ}57'12''$.¹

Alex (Berkeley County, J. Bowie, Jr., 1935).—About 8 miles northwest of Summerville and 4.5 miles east-northeast of Ridgeville. To reach from intersection of U. S. Highway 78 and State Highway 64 at north side of Summerville (sign "Welcome to Summerville"), go west on U. S. Highway 78 for 9 miles to intersection with State Highway 27 (old store and Esso Station on left), turn sharp right on main road bearing right around camp meeting ground at 0.75 mile; continue for 0.1 mile and bear left (keeping on main road) for 0.2 mile to T-road at 4 mail boxes; turn left (northwest) for 0.6 mile to Y at 2 mail boxes (one of them marked H. M. Riley) and bear right (north) for 1.5 miles to station on left, in

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

southeast corner of pasture on property belonging to A. J. Smith and tenanted by W. L. Alexander, 100 yards east of W. L. Alexander's house, 38 feet east of north-south fence, 28 feet north of center line of road and 16 feet north of fence. Station marked by standard disk in concrete, note 7a. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 8 inches, is 25 feet north of center line of road, 1 foot north of fence line and 140.7 feet from station in azimuth $256^{\circ}34'$. Reference mark No. 2 projects 6 inches, is 35 feet northwest of pump, 8 feet east of center line of ditch, and 145.80 feet from station in azimuth $159^{\circ}14'$. Azimuth mark is 75 feet south-southwest of G. J. Smith's mail box, 15 feet west of fence line, 4 paces east of center line of road, and about 0.3 mile from station in azimuth $61^{\circ}14'38''$.¹

Plane coordinates: (S), $x=2,230,971.64$ feet; $y=469,228.59$ feet; the grid azimuth to the azimuth mark $=60^{\circ}49'58''$.¹

Rudd (Dorchester County, J. Bowie, Jr., 1935).—About 8.5 miles northwest of Summerville and 4.2 miles southwest of Ridgeville. To reach from Southern Railway depot in Summerville, go west 1 block and turn right on State Highway 61 for 1.8 miles to junction with U. S. Highway 78; continue straight ahead on U. S. Highway 78 for 7.1 miles to intersection with State Highway 27; turn left for 2 miles to Southern Railway at Ridgeville, cross tracks and continue for 4.4 miles on State Highway 27 to 20-inch triangular-blazed pine on right and station on left on grassy plot in front of W. E. Rudd's house, 125.5 feet south of 20-inch triangular-blazed pine, 42 feet north of drive to house and 34.5 feet southeast of center line of State Highway 27. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 7 paces east of center line of highway, 1 pace east of fence corner, 1 pace south of fence line and 41.519 meters (136.22 feet) from station in azimuth $217^{\circ}45'$. Reference mark No. 2 is 6 paces south of center line of drive to house, 4 paces north of 6-inch gum tree and 37.367 meters (122.59 feet) from station in azimuth $311^{\circ}33'$. Azimuth mark is on south edge of cultivated field, 75 paces southeast of southwest corner of field, 14 paces southeast of pine stump, 5 feet northwest of another 24-inch pine stump, 2 paces northeast of old fence line and about 0.15 mile from station in azimuth $22^{\circ}25'35''$.

Plane coordinates: (S), $x=2,207,848.54$ feet; $y=437,203.89$ feet; the grid azimuth to the azimuth mark $=22^{\circ}03'25''$.¹

Taylor (Berkeley County, J. Bowie, Jr., 1935).—About 5.8 miles (air line) northwest of Mount Holly and 2.7 miles (air line) northeast of Summerville. To reach from Southern Railway station in Summerville, go northeast 0.55 mile on State Highway 64 to intersection with U. S. Highway 78 at sign "Summerville" over road; continue on State Highway 64 for 1.85 miles to Y and bear left (crossing wooden bridge) on narrow road for 1.55 miles to station across road from two deserted houses and barn on property belonging to Robert Taylor, about 150 feet northwest of most northerly of two deserted houses and 56 feet west of 15-inch poplar tree, 50 feet north of 15-inch sweet-gum tree, 44 feet southwest of 15-inch water-oak tree and 39 feet west of center line of road. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark projects 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 5 inches, is 100 feet west of barn, 3 paces southeast of center line of road, 3 feet north of 7-inch oak and 48.844 meters (160.25 feet) from station in azimuth $242^{\circ}47'$. Reference mark No. 2 projects 6 inches, is 30 paces east of center line of road, 14 paces southeast of old well, 4 paces east of northwest corner of house, 18 inches north of most southerly of 2 deserted houses, and 61.082 meters (200.40 feet) from station in azimuth $359^{\circ}20'$. Azimuth mark projects 6 inches, is 5 paces west of center line of road, 1 pace west of ditch and about 0.25 mile from station in azimuth $45^{\circ}16'08''$.³

Plane coordinates: (S), $x=2,266,638.02$ feet; $y=446,174.09$ feet; the grid azimuth to the azimuth mark $=44^{\circ}47'42''$.⁰.¹

Heape (Dorchester County, J. Bowie, Jr., 1935).—About 5.5 miles (air line) south of Summerville and 2.2 miles southwest of Ladson depot. To reach from Station *D C 100* (*S. C. Geod. S.*) *eccentric* at junction of U. S. Highway 78 and State Highway 64 at Summerville, go southeast on U. S. Highway 78 for 5.2 miles to reverse Y (dirt) at Ladson Post Office, (also Esso service station) and turn right on Ladson Road (sign) for 0.75 mile to Ladson depot, cross Southern

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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Railway tracks and turn left between picket fence on right and small 2-story white house on left; follow main road 2.25 miles to gate across road in county line fence. pass through gate and go 0.4 mile to J. E. Heape's house on right; continue 0.15 mile to station on left, on property belonging to J. E. Heape, 80 yards west of old cabin, 72 feet west of ruins of old tobacco barn and 44 feet southwest of center line of dirt road. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 14 inches. Reference marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 10 inches, is at foot of tall pine tree and 28.346 meters (93.00 feet) from station in azimuth $337^{\circ}45'$. Reference mark No. 2 projects 10 inches, is 3 paces northeast of center line of dirt road and 37.189 meters (122.01 feet) from station in azimuth $132^{\circ}50'$.

Plane coordinates: (S), $x=2,268,863.41$ feet; $y=409,304.32$ feet.

Supplementary points

Jedburg (Dorchester County, J. Bowie, Jr., 1935).—At Jedburg, about 100 yards southwest of Southern Railway Depot, in southwest angle of two dirt roads, 170 feet west of north-south road and 120 feet south of east-west road. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark projects 12 inches. Reference marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 14 inches, is 6 paces east of center line of road, 3 paces east of cut bank and 56.876 meters (186.60 feet) from station in azimuth $299^{\circ}17'$. Reference mark No. 2 projects 16 inches, is 5 paces north of center line of road, 3 feet north of cut bank and 42.995 meters (141.06 feet) from station in azimuth $172^{\circ}37'$. D C 105 (S. C. Geod. S.) is a U. S. C. & G. S. and State Survey standard disk set 6 inches below ground, in front of railway depot between mail line and side track, 8.25 meters (27.1 feet) south of west corner of depot, 6.45 meters (21.2 feet) southwest of south corner of depot, 1.35 meters (4.4 feet) southwest of southwest rail of main line track, 1 meter (3 feet) northeast of northeast rail of side track and about 100 yards from station in azimuth $238^{\circ}54'$. D C 106 (S. C. Geod. S.) is a U. S. C. & G. S. and State Survey standard disk set flush with ground, 13 paces southwest of triangular-blazed 10-inch pine, 5 paces southeast of center line of road, 2 feet southeast of cut bank and about 0.45 mile from station in azimuth $25^{\circ}21'37''.4$.

Plane coordinates: (S), $x=2,232,683.40$ feet; $y=445,059.81$ feet.

D C 100 (S. C. Geod. S.) eccentric (Dorchester County, J. Bowie, Jr., 1935).—About 0.5 mile northeast of Southern Railway depot in Summerville, on property belonging to Episcopal Church, 112 feet northwest of westerly brick column supporting large sign "Summerville," 70 feet southwest of intersection of U. S. Highway 78 and State Highway 64, 59 feet west of center line of State Highway 64, and 37.6 feet south of center line of U. S. Highway 78. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark projects 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 10 inches, is 35 paces north of center line of U. S. Highway 78, 12 paces west of center line of State Highway 64, 2 paces southeast of 20-inch pine, and 48.396 meters (158.78 feet) from station in azimuth $218^{\circ}38'$. Reference mark No. 2 projects 8 inches, is 45.5 feet west of southeast corner of school, 33 feet north of center line of U. S. Highway 78, 26 feet southwest of southwest corner of Dorchester county school, 20.2 feet northwest of highway sign "U. S. 78 and S. C. 2", and 43.980 meters (144.29 feet) from station in azimuth $151^{\circ}38'$. Azimuth mark projects 6 inches and is 200 feet east of brick drying sheds, 20 feet north of center line of U. S. Highway 78, 2 feet west of railway crossing sign and about 0.4 mile from station in azimuth $300^{\circ}58'28''.9$. D C 101 (S. C. Geod. S.) is on north shoulder of U. S. Highway 78, 58 paces west of bridge for road to north, passing to west of sawmill, 6 paces south of 5-inch triangular-blazed pine 3 paces south of ditch, 4.5 feet north of edge of pavement, and about 0.55 mile from station in azimuth $123^{\circ}07'25''.1$. To reach from Summerville railway station, go north 0.55 mile on State Highway 64 to station. D C 100 (S. C. Geod. S.) (see description thereof) is 23.425 meters (76.85 feet) from station in azimuth $251^{\circ}05'$.

Plane coordinates: (S), $x=2,254,186.49$ feet; $y=434,993.42$ feet; the grid azimuth to the azimuth mark = $300^{\circ}31'22''.8$.¹

D C 100 (S. C. Geod. S.) (Dorchester County, J. Bowie, Jr., 1935).—About 0.5 mile northeast of Southern Railway depot in Summerville, 20.9 meters (69 feet)

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

west of most westerly of four gas pumps at Texaco service station, 10.68 meters (35.0 feet) south of "Stop" sign on west side of State Highway 64, 10 meters (33 feet) north of center line of U. S. Highway 78, 7.77 meters (25.5 feet) north-west of intersection of U. S. Highway 78 and State Highway 64, and 4 meters (13 feet) west of center line of State Highway 64. Station is U. S. C. & G. S. and State Survey standard disk in concrete set 18 inches below surface of ground. *D C 100 (S. C. Geod. S.) eccentric* (see description thereof) is 23.425 meters (76.85 feet) from station in azimuth $71^{\circ}05'$. Azimuth from station to *D C 101 (S. C. Geod. S.)* (see description of *D C 100 (S. C. Geod. S.) eccentric*) is $121^{\circ}54'33''.2$.

Plane coordinates: (S) , $x=2,254,258.99$ feet; $y=435,018.97$ feet.

Primary traverse station No. 54 (U. S. G. S.) eccentric (Dorchester County, J. Bowie Jr., 1935).—About 5 miles (air line) south of Summerville, at site of Old Fort Dorchester, 0.1 mile north of north wall of fort, on property belonging to Cooper River Lumber Co., in semicircular grassy clearing, 24.4 feet south-southeast of 6-inch gum tree, 13.5 feet west of road running north from fort, and 1 foot west of fence line. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 3 paces east of center line of dirt road leading to fort, 1.5 feet west of fence line, and 33.021 meters (108.34 feet) from station in azimuth $192^{\circ}22'$. Reference mark No. 2 is 150 yards north of north wall of fort, 3 paces east of center line of dirt road to fort, 1.5 feet west of fence line, and 36.112 meters (118.48 feet) from station in azimuth $349^{\circ}55'$. Azimuth mark is 8 paces west of north entrance to fort, 1 pace north of north wall of fort, and about 0.1 mile from station in azimuth $1^{\circ}49'07''$. *Primary traverse station No. 54 (U. S. G. S.)* (see description thereof) is 104.184 meters (341.81 feet) from station in azimuth $183^{\circ}13'29''$.

Plane coordinates: (S) , $x=2,254,504.33$ feet; $y=406,588.80$ feet; the grid azimuth to the azimuth mark = $1^{\circ}22'00''.1$

Primary traverse station No. 54 (U. S. G. S.) (Dorchester County, J. Bowie, Jr., 1935).—About 5 miles (air line) south of Summerville, near Old Fort Dorchester, at Y formed by old Charleston-Augusta Road and short road to Fort Dorchester, 37.5 feet west of telephone pole 3560, 35.6 feet east of fence around cemetery, and 30 feet south of center line of curve of Charleston-Augusta Road. *Primary traverse station No. 54 (U. S. G. S.) eccentric* (see description thereof) is 104.184 meters (341.81 feet) from station in azimuth $3^{\circ}13'29''$.

Plane coordinates: (S) , $x=2,254,520.90$ feet; $y=406,930.22$ feet.

Primary traverse station No. 56 (U. S. G. S.) eccentric (Dorchester County, J. Bowie Jr., 1935).—About 8 miles (air line) southwest of Summerville. To reach from Southern Railway Depot in Summerville, go southwest 7.25 miles on State Highway 64, and bear right on State Highway 65 at Y for 1.4 miles to station on left at Y, in old uncultivated field, on property belonging to Mrs. Annie Limehouse, 80 feet southwest of intersection of State Highway 65 and a road running west-northwest, 54 feet south of center line of west-northwest road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Mark projects 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 6 inches, is 130 feet south of center line of State Highway 65, 20 feet north of clump of pines, 5 feet north of 5-inch pine and 38.100 meters (125.00 feet) from station in azimuth $327^{\circ}33'$. Reference mark No. 2 projects 6 inches, is 37 paces south of center line of road running west-northwest, 13 paces southwest of 8-inch pine, 10 paces southeast of 9-inch pine, 10 paces east of edge of underbrush and 43.631 meters (143.15 feet) from station in azimuth $74^{\circ}37'$. Azimuth mark projects 6 inches, is in northwest corner of cleared field, 40 feet south of center line of State Highway 65, 25 feet northwest of ditch and 345 feet from station in azimuth $287^{\circ}16'52''$. *Primary traverse station No. 56 (U. S. G. S.)* (see description thereof) is 30.105 meters (98.77 feet) from station in azimuth $198^{\circ}24'$.

Plane coordinates: (S) , $x=2,212,706.69$ feet; $y=413,822.53$ feet; the grid azimuth to the azimuth mark = $286^{\circ}54'12''.1$

Primary traverse station No. 56 (U. S. G. S.) (Dorchester County, J. Bowie, Jr., 1935).—About 8 miles (air line) southwest of Summerville. To reach from Southern Railway Depot in Summerville, go 7.25 miles southwest on State Highway 64 and bear right on State Highway 65 at Y for 1.4 miles to station on left at Y, on north shoulder of road, 65 feet west of intersection of State Highway 65 and road

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

running west-northwest, 15 feet west of center line of wooden culvert, 12 feet north of center line of road and 5 feet south of side ditch. Station is a U. S. Geological Survey standard disk, projecting 12 inches. *Primary traverse station No. 56 (U. S. G. S.) eccentric* (see description thereof) is 30.105 meters (98.77 feet) from station in azimuth $18^{\circ}24'$.

Plane coordinates: $*(S), x=2,212,737.24$ feet; $y=413,916.42$ feet.

Bench mark No. 46 (U. S. G. S.) (Charleston County, C. D. Meaney, 1932; 1935).—About 10 miles northwest of center of Charleston, at Farms railroad crossing, about 20 feet east of depot and 20 feet west of west rail of track. Station is a U. S. Geological Survey bench mark set in 5-inch water pipe filled with concrete, projecting 16 inches. Station *Farm* (see description thereof) is 39.990 meters (131.20 feet) distant in azimuth $81^{\circ}08'$.

Plane coordinates: $*(S), x=2,303,218.27$ feet; $y=389,403.47$ feet.

Primary traverse station No. 59 (U. S. G. S.) eccentric (Berkeley County, J. Bowie, Jr., 1935).—About 13 miles (air line) north-northwest of Summerville. To reach from Southern Railway Depot in Summerville, go southwest 1 block and turn right on State Highway 61 for 1.8 miles to junction of U. S. Highway 78; continue straight ahead on U. S. Highway 78 for 2.7 miles to Jedburg; turn right on good graded road opposite Texaco service station on left and just east of old garage on right for 7.7 miles to intersection with State Highway 31 and turn left for 7.25 miles to station on left, on property belonging to L. E. Rudd, in west angle of intersection of State Highway 31 and sand-clay road to southwest, 0.1 mile southeast of old church on southwest side of road and L. E. Rudd's house on northeast side of road, 41.7 feet southwest of center line of highway and 37.4 feet northwest of center line of sand-clay road. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is in east angle of road intersection, 9 paces north of center line of State Highway 31 and 40.226 meters (131.97 feet) from station in azimuth $257^{\circ}57'$. Reference mark No. 2 is 8 paces northeast of center line of State Highway 31 and 42.519 meters (139.50 feet) from station in azimuth $140^{\circ}56'$. Azimuth mark is 53 paces south-southwest of center line of State Highway 31, 1 pace east of top of embankment, at drainage ditch and about 0.3 mile from station in azimuth $106^{\circ}18'53''$. *Primary traverse station No. 59 (U. S. G. S.)* (see description thereof) is 15.215 meters (49.92 feet) from station in azimuth $261^{\circ}44'$.

Plane coordinates: $(S), x=2,227,081.54$ feet; $y=501,016.53$ feet; the grid azimuth to the azimuth mark = $105^{\circ}54'37''$.¹

Primary traverse station No. 59 (U. S. G. S.) (Berkeley County, J. Bowie, Jr., 1935).—About 13 miles (air line) north-northwest of Summerville. *Primary traverse station No. 59 (U. S. G. S.) eccentric* (see description thereof) is 15.215 meters (49.92 feet) from station in azimuth $81^{\circ}44'$.

Plane coordinates: $*(S), x=2,227,130.86$ feet; $y=501,024.04$ feet.

D C 163 (S. C. Geod. S.) (Dorchester County, J. Bowie, Jr., 1935).—About 7.3 miles southeast of Harleyville and 2.4 miles northeast of Dorchester, on property belonging to Cooper River Lumber Co. and leased by W. T. Hilton, at Y junction of U. S. Highways 78 and 178, 43.25 feet west of southwest corner of concrete foundation for gas pumps and 10.7 feet southeast of southeast corner of Texaco service station. Station is a U. S. C. & G. S. and State Survey standard disk in 6- by 6-inch concrete post, flush with ground. Reference and azimuth marks are standard disks in concrete, notes 11b and 11c. Reference mark No. 1 projects 6 inches, is in angle formed by Y in highway and 27.036 meters (88.70 feet) from station in azimuth $281^{\circ}24'$. Reference mark No. 2 projects 6 inches, is 12 paces south of center line of U. S. Highway 78 and 25.722 meters (84.39 feet) from station in azimuth $17^{\circ}01'$. Azimuth mark is set flush with ground, note 11c, and is 10 paces northwest of center line of U. S. Highway 78, 4 paces south of corner of fence and about 0.25 mile from station in azimuth $84^{\circ}47'12''$.⁵

Plane coordinates: $(S), x=2,198,423.30$ feet; $y=476,841.03$ feet; the grid azimuth to the azimuth mark = $84^{\circ}26'01''$.^{5,1}

Primary traverse station No. 67 (U. S. G. S.) (Dorchester County, J. Bowie, Jr., 1935).—About 6.7 miles east of Harleyville. To reach from junction of U. S. Highways 78 and 178 in Harleyville, go northwest on U. S. Highway 178 for 0.8 mile to cross roads; turn right on dirt road for 0.4 mile to Walnut Branch Bridge; continue straight ahead on main road 0.75 mile to fork; take left fork for 0.05 mile to another fork; take left fork for 1.2 miles to reverse fork and bear left 0.4 mile to station *Huff*; keep straight ahead 0.2 mile to cross roads and continue

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

1.3 miles to station on left, about 145 feet south-southeast of southwest corner of Bethel Church, 105 feet southeast of southeast corner of church and 60 feet southwest of center line of dirt road. Station is a U. S. Geological Survey disk on 3-inch iron pipe projecting 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 6 inches, is 4 paces west of center line of dirt road and 39.008 meters (127.98 feet) from station in azimuth $180^{\circ}01'$. Reference mark No. 2 projects 5 inches, is 5 paces north of southeast corner of fence, 1 foot south of wire fence line and 42.206 meters (138.47 feet) from station in azimuth $90^{\circ}04'$. Azimuth mark projects 6 inches, is 26 paces northwest of northwest corner of unpainted frame house, 5 paces west of center line of dirt road, 4 paces west of cut bank and about 0.2 mile from station in azimuth $316^{\circ}47'02''$.

Plane coordinates: (S), $x=2,196,572.18$ feet; $y=497,407.16$ feet; the grid azimuth to the azimuth mark= $316^{\circ}26'02''$.¹

Primary traverse station No. 64 (U. S. G. S.) eccentric (Dorchester County, J. Bowie, Jr., 1935).—About 6 miles southwest of Dorchester and 5 miles south-southwest of Pregnal at intersection of old Charleston-Augusta Road and road to Pregnal, on property belonging to Charlie Rumble, in southwest corner of field, 14.4 meters (47 feet), northeast of telephone pole across Pregnal Road, 14 paces north of Charleston-Augusta Road and 6 paces east of Pregnal Road. Underground mark, projecting 4 inches, is a standard station disk in concrete, note 7a. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 4 inches, is 36 paces north of fence corner, 5 paces east of center line of Pregnal Road, 5 paces west of fence line and 26.703 meters (87.61 feet) from station in azimuth $181^{\circ}48'$. Reference mark No. 2 projects 6 inches, is 32 paces east of fence corner, 3 paces north of center line of Charleston-Augusta Road, 1 pace north of fence line and 28.828 meters (94.58 feet) from station in azimuth $310^{\circ}16'$. Azimuth mark projects 8 inches, is 31 paces north of southeast corner of woods and dim Y-road to southwest, 3 paces east of center line of Pregnal Road, 2 paces south of fence post, 1 pace east of fence line and about 0.2 mile from station in azimuth $191^{\circ}48'04''$. *Primary traverse station No. 64 (U. S. G. S.)* (see description thereof) is 33.545 meters (110.06 feet) from station in azimuth $71^{\circ}47'$.

Plane coordinates: (S), $x=2,158,724.65$ feet; $y=456,980.54$ feet; the grid azimuth to the azimuth mark= $191^{\circ}31'08''$.¹

Primary traverse station No. 64 (U. S. G. S.) (Dorchester County, J. Bowie, Jr., 1935).—About 6 miles southwest of Dorchester and 5 miles south-southwest of Pregnal, 25 paces west of intersection of old Charleston-Augusta Road and road to Pregnal, 15 paces west of creosoted telephone pole, 13 paces west of fence corner and 3 paces south of old Charleston-Augusta Road. Mark projects 2 inches and inscription is indistinct except for numeral "64." *Primary traverse station No. 64 (U. S. G. S.) eccentric* (see description thereof) is 33.545 meters (110.06 feet) from station in azimuth $251^{\circ}47'$.

Plane coordinates: *(S), $x=2,158,620.25$ feet; $y=456,945.66$ feet.

Primary traverse station No. 66 (U. S. G. S.) eccentric (Dorchester County, J. Bowie, Jr., 1935).—At Harleyville, in northwest corner of school grounds, about 251 feet northwest of northwest corner of schoolhouse, 60.3 feet southeast of east rail of Atlantic Coast Line Railroad, 33 feet southeast of center line of dirt road and 20 feet southwest of south bank of drainage ditch. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark is set flush with ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 5 inches, is 4 paces west of 10-inch oak, 1 pace south of south bank of ditch and 63.456 meters (208.19 feet) from station in azimuth $277^{\circ}54'$. Reference mark No. 2 projects 6 inches, is 13 paces north of entrance drive in southwest corner of school grounds, 7 paces east of center line of dirt road and 71.476 meters (234.50 feet) from station in azimuth $19^{\circ}58'$. Azimuth mark projects 7 inches, is 78 paces west and across tracks from triangular 5-foot concrete post marked "C 37," 10 paces northeast of 10-inch pine, 5 paces west of west rail, 3 feet west of railroad ditch bank and about 0.25 mile from station in azimuth $19^{\circ}24'11''$.⁷ *Primary traverse station No. 66 (U. S. G. S.)* (see description thereof) is 32.322 meters (106.04 feet) from station in azimuth $28^{\circ}10'$. School cupola is about 90 meters (295 feet) from station in azimuth $304^{\circ}43'$.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

*No check on this position.

For notes in regard to marking of stations see p. 68.

Plane coordinates: (S), $x=2,168,555.11$ feet; $y=501,864.46$ feet; the grid azimuth to the azimuth mark = $19^{\circ}06'11''.2^1$

Primary traverse station No. 66 (U. S. G. S.) (Dorchester County, J. Bowie, Jr., 1935).—At Harleyville, in northwest corner of school grounds, about 12 feet east of center line of dirt road and 3 feet west of west bank of berm ditch. Station is a bronze cap on 3-inch iron pipe projecting 6 inches. *Primary traverse station No. 66 (U. S. G. S.) eccentric* (see description thereof) is 32.322 meters (106.04 feet) distant in azimuth $208^{\circ}10'$.

Plane coordinates: *(S), $x=2,168,505.56$ feet; $y=501,770.71$ feet.

O R 123 (S. C. Geod. S.) eccentric (Orangeburg County, J. Bowie, Jr., 1935).—About 0.4 mile southwest of Bowman. To reach from intersection of U. S. Highway 178 and State Highway 121 in Bowman, go 0.4 mile southwest on State Highway 121 to south side of cultivated field and station on property belonging to D. R. Whetsell, about 100 yards northwest of north corner of woods lot, 38 feet southeast of center line of State Highway 121, 13.5 feet southeast of fence corner at northeast side of small cultivated plot and 0.8 foot southwest of fence line. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 6 paces northwest of center line of road, 4 paces southeast of fence corner and 30.966 meters (101.59 feet) from station in azimuth $89^{\circ}35'$. Reference mark No. 2 is 5 paces northwest of center line of road, 1 foot southeast of fence line and 27.684 meters (90.83 feet) from station in azimuth $192^{\circ}52'$. Azimuth mark is 26 paces northwest of junction of State Highway 121 and dim woods road, 10 paces west of center line of State Highway 121, 5 feet east of edge of small embankment and about 0.3 mile from station in azimuth $61^{\circ}51'05''.4$. *O R 123 (S. C. Geod. S.)* (see description thereof) is 4.740 meters (15.55 feet) from station in azimuth $135^{\circ}34'$. *O R 307 (S. C. Geod. S.)* (see description of *O R 123 (S. C. Geod. S.)*) is 0.4 mile from station in azimuth $223^{\circ}05'27''.6$.

Plane coordinates: (S), $x=2,095,844.71$ feet; $y=549,468.51$ feet; the grid azimuth to the azimuth mark = $61^{\circ}40'50''.1^1$

O R 123 (S. C. Geod. S.) (Orangeburg County, J. Bowie, Jr., 1935).—About 0.4 mile southwest of Bowman. To reach from intersection of U. S. Highway 178 and State Highway 121 in Bowman, go southwest on State Highway 121 for 0.4 mile to station on left about 22.5 feet southeast of center line of road and 1.5 feet west of fence corner. Station is a U. S. C. & G. S. and State survey standard disk set in 6-inch concrete post 6 inches below surface of ground. *O R 123 (S. C. Geod. S.) eccentric* (see description thereof) is 4.740 meters (15.55 feet) from station in azimuth $315^{\circ}34'$. *O R 307 (S. C. Geod. S.)* is 6 feet southeast of northwest curb corner of intersection of U. S. Highway 178 and State Highway 121 in Bowman. Station is a U. S. C. & G. S. and State survey standard disk in 6-inch concrete post 3 inches below surface of ground, and is about 0.4 mile from station in azimuth $223^{\circ}29'56''.4$.

Plane coordinates: *(S), $x=2,095,833.80$ feet; $y=549,479.60$ feet.

O R 317 (S. C. Geod. S.) (Orangeburg County, J. Bowie, Jr., 1935).—About 2.25 miles southeast of center of Orangeburg and about 0.8 mile southeast of junction of U. S. Highways 178 and 21 and 115.5 feet south of south corner of shed of large barn, 74.9 feet west-southwest of nail in bottle cap in power pole, 63.55 feet west-northwest of nail in bottle cap in highway sign and 35.5 feet southwest of center line of highway at point of intersection of a highway curve. Surface mark is standard disk in concrete, note 1a, set flush with surface of ground. Reference and azimuth marks are standard disks in concrete, notes 11b and 1a. Reference mark No. 1 (note 11b) projects 10 inches, is at north corner of Negro cabin, and 89.395 meters (293.29 feet) from station in azimuth $73^{\circ}26'$. Reference mark No. 2 (note 11b) projects 10 inches, is 15 paces southwest of center line of highway, 11 paces north-northeast of large sign board, 2 paces northwest of center line of lane and 52.421 meters (171.98 feet) from station in azimuth $136^{\circ}16'$. *O R 318 (S. C. Geod. S.)* (azimuth) is a U. S. C. & G. S. and State survey standard disk in concrete, note 1a, and is in northwest angle of farm road crossing highway at Four Oaks Service Station, 21 paces northeast of center line of highway, 2 paces northwest of center line of farm road, and about 0.3 mile from station in azimuth $149^{\circ}48'56''.1$.

Plane coordinates: (S), $x=2,048,986.78$ feet; $y=593,414.12$ feet; the grid azimuth to *O R 318 (S. C. Geod. S.)* = $149^{\circ}43'41''.2^1$

*No check on this position.

¹This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

O R 546 (S. C. Geod. S.) (Orangeburg County, J. Bowie, Jr., 1935).—About 0.85 mile north of center of Rowesville and 0.25 mile north of Rowesville city limits. Station is a U. S. C. & G. S. and State survey standard disk in concrete projecting 2 inches. *O R 546 (S. C. Geod. S.) eccentric* (see description thereof) is 3.628 meters (11.90 feet) from the station in azimuth $267^{\circ}29'$. **O R 545 (S. C. Geod. S.)** is a U. S. C. & G. S. and State survey standard disk in concrete, note 1a, and was used as an azimuth for *O R 546 (S. C. Geod. S.) eccentric*. Azimuth from station to **O R 545 (S. C. Geod. S.)** is $337^{\circ}19'36''$.1.

Plane coordinates: *(S), $x=2,049,472.48$ feet; $y=564,150.81$ feet.

O R 334 (S. C. Geod. S.) (Orangeburg County, J. Bowie, Jr., 1935).—About 3.5 miles northwest of Orangeburg. Station is a U. S. C. & G. S. and State survey disk set about 13 inches below surface of ground, and is about 15 feet west of center line of paved road, 7 feet south of southeast corner of garden, and 36.100 meters (118.44 feet) from station *Culler* (see description thereof) in azimuth $103^{\circ}24'$. **O R 335 (S. C. Geod. S.)**, a U. S. C. & G. S. and State survey standard disk in concrete projecting 4 inches, note 1a, is about 4 miles northwest of Orangeburg and is 125 feet southwest of southwest corner of store at cross roads, 9.40 meters (30.8 feet) south of dirt cross road, 8.40 meters (27.6 feet) west of center line of pavement, and 0.75 mile from station *Culler* (see description thereof). Azimuth from station to **O R 335 (S. C. Geod. S.)** is $131^{\circ}30'11''$.7.

Plane coordinates: *(N), $x=2,030,661.11$ feet; $y=194,228.34$ feet. (S), $x=2,030,658.84$ feet; $y=618,641.70$ feet.

O R 354 (S. C. Geod. S.) (Orangeburg County, J. Bowie, Jr., 1935).—About 12 miles northwest of Orangeburg, 8 miles northeast of Neeses and 5 miles east of North, on property belonging to E. McCormick, 255 paces northwest of orange-colored filling station and 5.4 meters (18 feet) north of center line of U. S. Highway 178. Station is a U. S. C. & G. S. and State Survey standard disk in concrete and projects 3 inches. Station *O R 354 (S. C. Geod. S.) eccentric* (see description thereof) is 3.495 meters (11.47 feet) from station in azimuth $223^{\circ}39'$. **O R 353 (S. C. Geod. S.)** projects 4 inches, is on top of bank of 5-foot cut, 23.1 meters (76 feet) west of center line of farm T-road, 13.2 meters (43 feet) west of mail boxes, 7.7 meters (25 feet) south of center line of U. S. Highway 178, 1 meter (3 feet) from edge of cut and about 0.55 mile from station in azimuth $312^{\circ}33'39''$.0.

Plane coordinates: *(N), $x=1,994,751.05$ feet; $y=224,068.58$ feet. (S), $x=1,994,751.26$ feet; $y=648,480.74$ feet.

Woodford (Orangeburg County, M. E. Lutz, 1918; 1935).—About 19 miles northwest of Orangeburg and 4.5 miles north-northwest of North, on west side of Seaboard Air Line right-of-way, 0.6 mile north of Woodford Depot. To reach from junction of U. S. Highway 178 and State Highway 6 in North, go north on State Highway 6 for 3.8 miles to Seaboard Air Line Railway Station in Woodford, turn left and continue north on State Highway 6 on west side of tracks for 0.6 mile to home of J. D. Gissendanner on left and station in southeast angle of farm road crossing, 215 meters (705 feet) south of milepost 385, 50 yards south-southeast of J. D. Gissendanner's home, 45 yards south of farm road crossing, 40 feet east of center line of county road, 7.7 meters (25 feet) west of west railway track, beneath telephone lines and 1.5 meters (5 feet) above track. Surface and underground marks are standard disks in concrete, notes 1a and 7b. Reference mark *Bench mark No. B 2* (see description thereof) is 182.07 feet north-northeast of station. *Woodford eccentric* (see description thereof) is 40.596 meters (133.19 feet) from station in azimuth $146^{\circ}43'$.

Plane coordinates: *(N), $x=1,964,969.60$ feet; $y=245,272.35$ feet. (S), $x=1,964,970.18$ feet; $y=669,683.22$ feet.

Neeses (Orangeburg County, M. E. Lutz, 1918; 1937).—At Neeses, on south side of east-west street, one block south of Seaboard Air Line Railway Depot, 125 meters (410 feet) east of main line track of railway and 10 meters (33 feet) south of center line of street. Surface and underground marks are standard disks in concrete, notes 1a and 7b. In 1935 station recovered as described and occupied eccentrically (see description of *Neeses eccentric*). In 1937 station destroyed due to highway construction.

Plane coordinates: *(S), $x=1,962,255.72$ feet; $y=617,956.29$ feet.

L X 1054 (S. C. Geod. S.) (Lexington County, J. Bowie, Jr., 1935).—About 11 miles northwest of North and 2.5 miles southeast of Pelion, in southwest angle of farm road crossing, 6 paces southwest of center line of U. S. Highway 178 and 5 paces northwest of center line of farm road. Station is a U. S. C. & G. S. and

*No check on this position.

**Checked by traverse.

State survey standard disk in concrete, (note 1b) set about 12 inches below surface of ground. L. X. 1053 (S. C. Geod. S.) is a U. S. C. & G. S. and State survey standard disk in concrete set flush with surface of ground, at point of intersection of first curve, on pine knoll, 14 paces west of center line of U. S. Highway 178, and is used as an azimuth mark for station 10 S. L. (S. C. Geod. S.) (see description thereof). Azimuth from station to L. X. 1053 (S. C. Geod. S.) is $134^{\circ}18'40''$.⁴

Plane coordinates: *(N), $x=1,932,759.92$ feet; $y=266,838.43$ feet. (S), $x=1,932,759.39$ feet; $y=691,247.34$ feet.

L X 1002 (S. C. Geod. S.) (Lexington County, J. Bowie, Jr., 1935).—About 0.25 mile south of Leesville, 20 feet east of center line of road, 20 feet southwest of piece of railroad rail used as property corner. Station (unstamped) is a U. S. C. & G. S. and State survey standard disk in concrete set 14 inches below surface of ground. L. X. 1002 (S. C. Geod. S.) *eccentric* (see description thereof) is 37.750 meters (123.85 feet) from station in azimuth $202^{\circ}05'$. L. X. 1003 (S. C. Geod. S.) (unstamped) is set about 14 inches below surface of ground, and is across road from door of Calvary M. E. Church, about 0.9 mile south of intersection of U. S. Highway 1 and State Highway 245, 20 feet west of center line of road, 4 feet west of west side ditch and about 0.4 mile from station in azimuth $359^{\circ}23'03''$.⁹

Plane coordinates: *(N), $x=1,844,791.78$ feet; $y=331,779.60$ feet. (S), $x=1,844,779.09$ feet; $y=756,180.25$ feet.

Bench mark No. B 2 (Orangeburg County, M. E. Lutz, 1918; 1935).—About 4.5 miles north-northwest of North. Station is standard bench mark tablet set in 4- by 4-inch concrete post projecting 2 feet and is about 10 feet east from east rail of Seaboard Air Line tracks and 182.07 feet north-northeast of *Woodford*. Station *Woodford eccentric* (see description thereof) is 30.959 meters (101.57 feet) distant in azimuth $45^{\circ}58'$.

Plane coordinates: *(N), $x=1,964,969.73$ feet; $y=245,454.30$ feet. (S), $x=1,964,970.31$ feet; $y=669,865.16$ feet.

A K 824 (S. C. Geod. S.) (Aiken County, J. Bowie, Jr., 1935).—About 12 miles southeast of Monetta and 11 miles north of Perry. Station is a U. S. C. & G. S. and State survey standard disk set in 6-inch square concrete post. *A K 824 (S. C. Geod. S.) eccentric* (see description thereof) is 1.396 meters (4.58 feet) from station in azimuth $215^{\circ}45'$. Elevation: 552.31 feet.

Plane coordinates: *(N), $x=1,851,190.52$ feet; $y=257,722.56$ feet. (S), $x=1,851,190.90$ feet; $y=682,121.40$ feet.

Transit traverse station No. 11 R (U. S. G. S.) (Saluda County, J. Bowie, Jr., 1935).—About 7 miles northwest of Batesburg. To reach from Batesburg, go northwest on U. S. Highway 178 for 7.3 miles to sign "Sardis Church" at cross roads and turn right for 2.8 miles to Ridgell's cross roads and station, located in J. A. Ridgell's front yard about 100 feet east of north-south road, 45 feet south of center line of east-west road, 30 feet northwest of northwest corner of house and 12 feet northeast of 6-inch pear tree. Station is a U. S. Geological Survey standard disk in 6-inch block of concrete projecting 2 inches. *Transit traverse station No. 11 R (U. S. G. S.) eccentric* (see description thereof) is 33.855 meters (111.07 feet) from station in azimuth $156^{\circ}31'$.

Plane coordinates: (N), $x=1,803,671.03$ feet; $y=366,444.24$ feet.

L X 663 (S. C. Geod. S.) (Lexington County, J. Bowie, Jr., 1935).—About 10.5 miles north-northeast of Leesville and 5.5 miles west of Lexington at crest of grade, 23 meters (75 feet) northwest of northwest corner of Lewie Hall's jewelry shop, 8.9 meters (29 feet) south of U. S. Highway 1, 7.6 meters (25 feet) north-northwest of northeast corner of wooden observation tower owned by L. Hall and 7.5 meters (25 feet) northeast of northwest corner of tower. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Upper mark is set 7 inches below surface of ground. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 6 inches, is 11.2 meters (37 feet) north of center line of highway and 25.850 meters (84.81 feet) from station in azimuth $212^{\circ}55'$. Reference mark No. 2 projects 8 inches, is 10.2 meters (33 feet) north of center line of highway and 27.790 meters (91.17 feet) from station in azimuth $128^{\circ}39'$. L X 664 (S. C. Geod. S.) (azimuth) is set flush with ground, 58 paces west of Marmac Hotel sign, 5 paces south of center line of highway and about 0.6 mile from station in azimuth $86^{\circ}34'02''$.⁹

Plane coordinates: (N), $x=1,895,677.95$ feet; $y=355,625.28$ feet; the grid azimuth to L X 664 (S. C. Geod. S.) = $86^{\circ}45'42''$.¹

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Bird (Newberry County, J. Bowie, Jr., 1935).—About 0.6 mile (air line) southeast of Little Mountain, on more northeasterly of two peaks of Little Mountain, at old Bird place. To reach from Columbia, go west-northwest on U. S. Highway, 76 to Little Mountain, from Columbia, Newberry & Laurens Railroad Station, continue east on U. S. Highway 76 for 0.1 mile; turn right on gravel road (brick church on left) for 0.3 mile and continue straight ahead on rough farm road at point where main road bears left for 0.65 mile to abandoned house and barn on summit of mountain and station, 71 feet east from northeast corner of barn, 36.4 feet north of old well and 14 feet west of barnyard fence. Surface and underground marks are standard disks in concrete, notes 1b and 7b. Reference and azimuth marks are standard disks in concrete, note 12c. Reference mark No. 1 projects 4 inches and is set in 36 x 36 inch rectangular boulder, 5 paces northeast of east corner of barn and 24.808 meters (81.39 feet) southwest of station in azimuth $45^{\circ}16'$. Reference mark No. 2 projects 6 inches and is set in 24 x 24 inch square boulder, 32.367 meters (106.19 feet) north-northwest of station in azimuth $158^{\circ}08'$. U. S. C. & G. S. and State survey traverse station N 519 (S. C. Geod. S.) (azimuth) projects 3 inches, is 0.5 mile west of railroad station in Little Mountain on U. S. Highway 76, 61 paces west of west town limits, 50 paces east of gravel T-road south, at point of intersection of first curve west from town, 8 paces south of center line of highway, 8 paces west of third telephone pole west of town and about 1 mile northwest of station in azimuth $119^{\circ}39'39''.2$.

Plane coordinates: (N), $x=1,876,964.12$ feet; $y=432,424.95$ feet; the grid azimuth to N 519 (S. C. Geod. S.)= $119^{\circ}53'26''.0$ ¹

Summerville, aluminum water tank (Dorchester County, J. Bowie, Jr., 1935).—Plane coordinates: (S), $x=2,252,985.96$ feet; $y=432,512.73$ feet.

Summerville, black water tank (Dorchester County, J. Bowie, Jr., 1935).—Plane coordinates: (S), $x=2,246,697.75$ feet; $y=428,598.77$ feet.

Summerville, west part of, aluminum water tank (Dorchester County, J. Bowie, Jr., 1935).—Plane coordinates: (S), $x=2,247,406.96$ feet; $y=436,722.48$ feet.

St. George, silver water tank (Dorchester County, J. Bowie, Jr., 1935).—Plane coordinates: (S), $x=2,130,599.64$ feet; $y=493,019.71$ feet.

Orangeburg, southwest of, silver water tank (Orangeburg County, J. Bowie, Jr., 1935).—Plane coordinates: (N), $x=2,038,795.57$ feet; $y=178,062.16$ feet. (S), $x=2,038,791.97$ feet; $y=602,476.57$ feet.

Orangeburg, water tank (Orangeburg County, J. Bowie, Jr., 1935).—Plane coordinates: (N), $x=2,044,522.99$ feet; $y=180,744.63$ feet. (S), $x=2,044,518.97$ feet; $y=605,158.52$ feet.

North, water tank (Orangeburg County, J. Bowie, Jr., 1935).—Plane coordinates: *(N), $x=1,968,974$ feet; $y=223,628$ feet. (S), $x=1,968,975$ feet; $y=648,040$ feet.

Batesburg, white tank (Lexington County, J. Bowie, Jr., 1935).—Plane coordinates: (N), $x=1,835,405.93$ feet; $y=330,634.44$ feet. (S), $x=1,835,392.69$ feet; $y=755,033.29$ feet.

Leesville, smaller of two tanks (Lexington County, J. Bowie, Jr., 1935).—Plane coordinates: (N), $x=1,843,590.99$ feet; $y=333,603.55$ feet. (S), $x=1,843,577.87$ feet; $y=758,004.13$ feet.

Leesville, taller of two tanks (Lexington County, J. Bowie, Jr., 1935).—Plane coordinates: (N), $x=1,845,748.51$ feet; $y=334,074.03$ feet. (S), $x=1,845,735.49$ feet; $y=758,475.02$ feet.

ALLEDALE, S. C., TO ODUM, GA., ARC

Principal points

Fifer (Screven County, Ga., M. A. Hecht, 1935).—About 10.5 miles southeast of Hilltonia and 8 miles east-northeast of Sylvania. To reach from east side of courthouse in Sylvania, go east on Branan Bridge Road (dirt) for 4.8 miles to Y (keeping on main road); bear left for 0.9 mile to store and crossroads; continue straight for 3 miles to T-road right and Bazemore's store; turn right for 0.05 mile and take left fork for 0.35 mile to a 22-inch triangular-blazed pine; turn left into woods for about 80 yards (passing graveyard on left) to 8-inch triangular-blazed pine. Station is on property belonging to J. L. Humphrey estate, about 100 yards east of road, on small hill covered with large pines, about 80 yards southeast of graveyard, 50.7 feet northeast of center of 30-inch pine twisted at base and

¹No check on this position.

²This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 08.

28.1 feet southwest of center of 8-inch pine. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is 9 yards west-northwest of 36-inch pine, 9 yards east-southeast of 36-inch pine, and 101.75 feet from station in azimuth $353^{\circ}38'$. Reference mark No. 2 is 14 yards south-southwest of 24-inch pine, 11 yards east of 24-inch oak, and 105.84 feet from station in azimuth $121^{\circ}46'$. Azimuth mark is about 60 yards southeast of home of Willie Brown (colored), 8 yards east-northeast of center line of road, 5 feet east of wire fence line, and about 0.15 mile from station in azimuth $140^{\circ}21'19''$.

Plane coordinates: (S), $x=1,845,563.09$ feet; $y=348,614.36$ feet; the grid azimuth to the azimuth mark = $140^{\circ}37'43''.9^1$

Bascom (Screven County, Ga., M. A. Hecht, 1935).—About 5 miles north of Sylvania and 3.5 miles south-southeast of Hilltonia. To reach from courthouse at Hilltonia, go north on State Highway 24 for 6.75 miles to T-road and windmill; turn left for 0.35 mile to triangular-blazed pine and house; turn left across bridge, pass through gate and continue about 150 yards to top of hill and station at top of cleared hill, on edge of cultivated field, 58 feet southeast of 3-inch twin scrub oak and 21 paces north of bunch of four scrub oaks. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is on edge of cultivated field, 4 feet north-northeast of bunch of three scrub oaks, and 93.12 feet from station in azimuth $312^{\circ}46'$. Reference mark No. 2 is on north slope of hill, about 40 feet southeast of 3-inch scrub oak and 122.70 feet from station in azimuth $139^{\circ}21'$. Azimuth mark is just south of east-west fence line, on top of bank, 95 yards west of unpainted cabin on left side of road, 5 paces north of center line of road, and 0.15 mile from station in azimuth $84^{\circ}40'01''$. The following azimuths are from station: Courthouse at Sylvania, final, $1^{\circ}08'45''.7$; Sylvania, aluminum municipal water tank, ball on top, $2^{\circ}06'33''.8$.

Plane coordinates: (S), $x=1,805,181.38$ feet; $y=366,913.59$ feet; the grid azimuth to the azimuth mark = $85^{\circ}00'44''.5^1$

Hump (Screven County, Ga., M. A. Hecht, 1935).—About 7 miles southeast of Sylvania and 6 miles northwest of Newington. To reach from courthouse at Sylvania, go south on State Highway 21 for 7.25 miles to T-road on left running between fences; turn left for 1.1 miles to T-road; turn left for 0.1 mile to scrub oak thicket, and turn right at triangular-blazed pine. Station is near south edge of sparsely-wooded grove of scrub oaks, near north end of cultivated field, on property belonging to Corrie Hills, about 58 feet west-northwest of 18-inch triangular-blazed pine, 47.4 feet northeast of fence line, and 28.7 feet south of 6-inch pine. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 4 inches, is along fence line and 74.28 feet from station in azimuth $66^{\circ}01'$. Reference mark No. 2 projects 5 inches, is 2 feet east of 2-inch oak and 93.61 feet from station in azimuth $186^{\circ}29'$. Azimuth mark is in southwest corner of cultivated field, 12 feet north of center line of east-west road, 10 feet east of center line of north-south road, 3 feet northeast of fence corner, and 0.15 mile from station in azimuth $45^{\circ}24'49''$.

Plane coordinates: (S), $x=1,831,641.18$ feet; $y=305,149.39$ feet; the grid azimuth to the azimuth mark = $45^{\circ}42'42''.1$

SILVER CITY, GA., TO HARDEVILLE, S. C. ARC

Principal points

Primary traverse station No. 111 Mac (U. S. G. S.) *eccentric* (Screven County, Ga., M. A. Hecht, 1935).—At Newington, Ga., which is on State Highway 21, on Savannah and Atlantic Railroad right-of-way, 0.2 mile southeast of railroad station, 97 feet northeast of center line of State Highway 21, 90.7 feet northwest of center line of dim cross road, 28.4 feet northeast of frog of railroad track and 25.5 feet southwest of fence line parallel to railroad tracks. Station and underground marks are standard disks in concrete, notes 1b and 7a. Reference and azimuth marks are standard reference disks in concrete, note 11b. Reference mark No. 1 is along fence line, 17 paces northeast of center line of railroad tracks, 11 paces east-southeast of dim cross road and 122.99 feet from station in azimuth $313^{\circ}45'$. Reference mark No. 2 is 45 feet southwest of center line of State Highway 21, 6 feet southwest of east corner of porch of temporary school and

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

154.75 feet from station in azimuth $74^{\circ}46'$. Azimuth mark is at cross road, 25 paces south of southwest corner of railroad station, 11 paces southwest of center line of southwest railroad tracks, 9 paces northeast of center line of State Highway 21, 6 paces southeast of center line of dirt road and 0.15 mile from station in azimuth $140^{\circ}15'25''$. Station 19C-3 (Ga. Geod. S.) is a standard disk (no number stamped) in concrete about 0.4 foot below level of roadbed cinders, on the railroad right-of-way in front of railroad station between main line and side tracks, 51 feet north of center line of cross road, 4.95 feet east of near rail of main line and 0.2 mile from station in azimuth $143^{\circ}18'11''$. Primary traverse station No. 111 Mac (U. S. G. S.) is in south corner of cultivated field, 12 feet northeast of northwest-southeast fence, 12 feet northwest of northeast-southwest fence and 37.93 feet from station in azimuth $233^{\circ}57'$.

Plane coordinates: (S), $x=1,845,431.33$ feet; $y=274,663.70$ feet; the grid azimuth to the azimuth mark = $140^{\circ}31'49''$.¹

Huggins (Sereven County, Ga., M. A. Hecht, 1935).—About 3 miles southwest of Newington, Ga., and 2 miles northeast of Oliver, Ga. To reach from Newington Post Office go 0.3 mile southwest on road to Oliver to end of street, turn left for 3 miles to top of grade just after crossing creek to cabin on right and station on left. Station is on property belonging to John Huggins, about 38 paces east-southeast of Negro cabin, 61 feet east-southeast of 24-inch pine, 44 feet northeast of 12-inch twin oak and 32 feet east of center line of road. Station and underground marks are standard disks in concrete, notes 1b and 7a. Reference and azimuth marks are standard reference disks in concrete, note 11b. Reference mark No. 1 is 5 paces west-northwest of center line of road, 2.5 paces east-southeast of fence line and 153.25 feet from station in azimuth $192^{\circ}55'$. Reference mark No. 2 is 17 paces west of center line of road, 14 paces south of 18-inch pine and 112.10 feet from station in azimuth $78^{\circ}19'$. Azimuth mark is 23 paces north of 30-inch corrugated pipe under road, 16 paces south of telephone pole, 7 paces east of center line of road and 0.15 mile from station in azimuth $201^{\circ}00'16''$.

Plane coordinates: (S), $x=1,839,324.89$ feet; $y=259,490.08$ feet; the grid azimuth to the azimuth mark = $201^{\circ}17'18''$.¹

Pryor (Sereven County, Ga., M. A. Hecht, 1935).—About 7 miles north of Kildare and 4.5 miles northeast of Newington, Ga., on property belonging to Ben R. Pryor. To reach from Newington Post Office, go 0.45 mile southeast on State Highway 21, turn left across railway tracks at cross road, go 1.8 miles to T-road, turn left and go 2.35 miles to cross road, turn left for 0.8 mile to church on right and continue straight ahead for 0.5 mile and station is about 70 yards south of old house, 146 feet southeast of 16-inch red oak with triangular blaze on southeast side and 26 feet northeast of center line of road. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Upper mark projects 3 inches. Reference marks are standard disks in concrete, note 11b. Reference mark No. 1 projects about 2 inches, is about 10 feet southwest of center line of road, 1 foot northeast of fence line and 106.03 feet from station in azimuth $135^{\circ}29'$. Reference mark No. 2 projects about 4 inches, is 15 feet southwest of center line of road, 5 feet northeast of fence line and 107.55 feet from station in azimuth $356^{\circ}45'$. Azimuth mark projects about 2 inches, is 32 feet southwest of center line of road, 1 foot northeast of fence line and 250 yards from station in azimuth $338^{\circ}01'37''$.

Plane coordinates: (S), $x=1,860,132.03$ feet; $y=291,656.46$ feet; the grid azimuth to the azimuth mark = $338^{\circ}16'28''$.¹

6C-25 (Ga. Geod. S.) (Effingham County, Ga., M. A. Hecht, 1935).—At Kildare, on Savannah & Augusta Railway right-of-way, 83 feet southwest of southeast corner of railway depot, 79.6 feet northwest of center line of Oliver-Clyo Road, 68.5 feet northeast of fence line, 41 feet northeast of center line of dim road paralleling railway tracks and 30.8 feet southwest of center line of tracks. To reach from railway station at Newington, go southeast on State Highway 21 for 3.4 miles to end of pavement and county line; continue 1.4 miles to cross roads and turn left for 0.45 mile to Kildare depot. Station is a standard U. S. C. & G. S. and State survey traverse disk (stamped "6C-25") set in concrete and projects 1 inch. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is at fence corner, 6 paces northwest of center line of Oliver-Clyo Road and 95.85 feet from station in azimuth $12^{\circ}46'$. Reference mark No. 2 is along fence line, 62 paces northwest of center line of Oliver-Clyo Road, 27 feet southwest of dim road paralleling railway tracks and 125.61 feet from station in azimuth $112^{\circ}00'$. Azimuth mark is at south corner of fence adjoining C. A.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Sowell's blacksmith shop, 75 feet northwest of Sowell's house, 12 feet northwest of center line of main road and 0.15 mile from station in azimuth $39^{\circ}23'10''$. 6C-26 (Ga. Geod. S.) is at northeast corner of triangular patch of woods, 135 feet northeast of intersection of State Highway 21 and Oliver-Clyo Road, 15.5 feet southeast of center line of road, 12 feet northeast of 16-inch pine (the most eastern in this patch of woods), 9 feet northwest of dim woods road and 0.4 mile from station in azimuth $38^{\circ}43'56''$.¹

Plane coordinates: (S), $x=1,859,052.54$ feet; $y=255,082.38$ feet; the grid azimuth to the azimuth mark= $39^{\circ}38'07''$.¹

Porter (Effingham County, Ga., M. A. Hecht, 1935).—About 8.5 miles southeast of Newington and 7.5 miles north-northeast of Shawnee, on high bluff on south bank of Savannah River, just west of Porter's Landing; on property belonging to Henry Edwards. To reach from railway depot in Kildare, go north on road that crosses tracks for 3.5 miles to Mispah Church at T-road, turn left for 1.2 miles to creek, continue 0.2 mile to Y in road, bear left on woods road for 0.25 mile to Y in road, keep straight ahead for 0.55 mile to Y in road, bear left for 0.05 mile to Y in road, bear right for 0.4 mile to cross road, continue 0.25 mile to Y in road (turn left here to azimuth mark) and turn right for 0.5 mile to station on right, which is 55 feet east-southeast of fence line, 52 feet south of crest of high bank sloping into river, 30 feet north of 22-inch live oak and 26 feet southwest of double red oak. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark projects 10 inches. Reference and azimuth marks are standard disks in concrete, notes 11a and 11b. Reference mark No. 1 projects 8 inches, is about 20 feet south of 14-inch cedar tree and 89.78 feet from station in azimuth $294^{\circ}48'$. Reference mark No. 2 projects 10 inches, is about 30 feet north-northeast of 16-inch pine tree and fence corner and 85.22 feet from station in azimuth $169^{\circ}58'$. Azimuth mark in southwest end of field projects 3 inches, is 1 foot north of board fence line and 0.3 mile from station in azimuth $39^{\circ}14'43''$.⁶ To reach mark from station, go south on road for 0.5 mile to reverse Y, turn right for 0.05 mile to gate in fence and mark is 40 yards west of gate along and inside of fence line.

Plane coordinates: (S), $x=1,888,835.83$ feet; $y=269,353.77$ feet; the grid azimuth to the azimuth mark= $39^{\circ}26'31''$.¹

Turkey (Effingham County, Ga., M. A. Hecht, 1935).—About 2.5 miles east of Egypt and 1.7 miles southwest of Shawnee, at Turkey Branch Baptist Church. To reach from courthouse at Sylvania, go south 23.2 miles on State Highway 21 to T-road; turn right for 0.85 mile to Shawnee; turn left for 0.1 mile parallel to Savannah & Atlanta Railway tracks; turn right on T-road, cross tracks and continue 1.8 miles to Turkey Branch Baptist Church and station, about on dividing line of county road right-of-way and churchyard, 66.9 feet northeast of north-west corner of church, 29.3 feet west-northwest of southwest corner of wire fence around family graveyard, 27.6 feet northwest of center of 36-inch stump, 23.5 feet south-southwest of center line of road and 16.3 feet west-southwest of center of 30-inch stump. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark is flush with surface of ground. Reference and azimuth marks are standard disks in concrete, notes 11b and 11a. Reference mark No. 1 (note 11b) is 7 yards northwest of center line of road, 6 feet southeast of fence line and 103.62 feet from station in azimuth $226^{\circ}06'$. Reference mark No. 2 (note 11a) is 2 yards east of northeast corner of church, 1.5 yards south of cemetery gate and 91.60 feet from station in azimuth $343^{\circ}35'$. Azimuth mark (note 11b) is 61 yards west-southwest of center line of north-south road, 10 yards north-northwest of center line of east-west road, 4.5 yards south of fence line and 0.2 mile from station in azimuth $236^{\circ}47'16''$. *Bench mark* (U. S. G. S.) is 150.05 feet from station in azimuth $81^{\circ}14'$.

Plane coordinates: (S), $x=1,866,382.29$ feet; $y=228,145.71$ feet; the grid azimuth to the azimuth mark= $237^{\circ}01'25''$.¹

Wyles (Effingham County, Ga., M. A. Hecht, 1935).—About 7 miles northeast of Guyton and 2.7 miles north of Springfield. To reach from post office in Springfield, go 3.1 miles north on State Highway 21 to Y right and station in acute angle, 34 feet east-northeast of center of highway, 30 feet northwest of center line of side road and 23 feet north of center one of three pine trees. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark projects about 8 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects about 12 inches, is 7 yards

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

southwest of center line of highway and 141.06 feet from station in azimuth $359^{\circ}36'$. Reference mark No. 2 projects about 12 inches, is 9 yards southwest of center line of highway and 111.41 feet from station in azimuth $125^{\circ}38'$. Azimuth mark projects about 6 inches, is 15 feet southwest of center line of highway and 0.15 mile by road from station in azimuth $153^{\circ}55'04''$.

Plane coordinates: (S), $x=1,901,758.91$ feet; $y=209,529.41$ feet; the grid azimuth to the azimuth mark= $154^{\circ}05'28''$.¹

Snooks (Effingham County, Ga., M. A. Hecht, 1935).—About 2.5 miles northeast of Clyo and 0.1 mile south of Savannah River, on high bluff, in west edge of cleared right-of-way of telephone line and northeast of and across road from cultivated field on property belonging to Mrs. Phoebe Snooks, 41.2 feet northwest of telephone pole 2255, 25 feet northeast of center line of road, 18 feet west of center of telephone line and 17 feet northeast of wire fence line. To reach from courthouse in Springfield, take road on northwest side of courthouse for 9 miles to Clyo; turn right across railway tracks just beyond depot, thence turn left on road parallel to railway for 0.25 mile; bear right for 2.15 miles to small school on right, continue for 0.1 mile to T-road right at 30-inch gum on right opposite house on left; turn right for 0.45 mile to gate, go through gate and follow farm road for 0.25 mile to station on right. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is on bank, 3 feet west of 30-inch stump and 64.48 feet from station in azimuth $280^{\circ}07'$. Reference mark No. 2 is in field on northwest side of telephone pole 2256 and 166.6 feet from station in azimuth $350^{\circ}24'$. Azimuth mark projects 5 inches, is 19 paces west of telephone pole 2260, 18 paces north of road leading to station, 15 paces southwest of southwest corner of cultivated field and is 0.15 mile from station in azimuth $359^{\circ}01'24''$.

Plane coordinates: (S), $x=1,919,447.49$ feet; $y=250,587.27$ feet; the grid azimuth to the azimuth mark= $359^{\circ}09'56''$.¹

Berryville (Effingham County, Ga., M. E. Lutz, 1918; 1935).—At railway stop Berrys, on right-of-way of Seaboard Air Line Railway. To reach from courthouse in Springfield, go north on dirt road paralleling west side of courthouse for 4.5 miles to T-road right, opposite abandoned house in woods on left, and turn right for 1.2 miles to railway crossing and station, about 150 yards south-southeast of sawmill, 75 yards east of schoolhouse, 40 yards south-southeast of railway waiting room, 57.2 feet south-southeast of railway caution sign, 51.5 feet south of center line of east-west dirt road and 18.04 feet east of east rail of tracks. Surface and underground marks are standard disks in concrete, notes 1a and 7b. Upper mark projects 4 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 is just south of wire fence line, 14 yards north of center line of dirt road and 147.36 feet from station in azimuth $234^{\circ}39'$. Reference mark No. 2 is 15 yards east of east rail of railway and 141.03 feet from station in azimuth $345^{\circ}10'$. Azimuth mark is 13 yards east of east rail of railway, 12 yards south of center line of dirt road, 10.5 yards southeast of railway caution sign and 0.2 mile from station in azimuth $172^{\circ}53'55''$. *Bench mark No. M 37 (U. S. G. S.)* (see description thereof) is 25.920 meters (85.04 feet) from station in azimuth $95^{\circ}56'$.

Plane coordinates: (S), $x=1,920,180.64$ feet; $y=216,585.91$ feet; the grid azimuth to the azimuth mark= $173^{\circ}02'22''$.¹

Jewels (Effingham County, Ga., M. A. Hecht, 1935).—About 7 miles east of Springfield and 6 miles north-northeast of Rincon, on the road from Rincon to Ebenezer. To reach from post office in Springfield, go southeast on State Highway 21 for 0.25 mile to T-road left, just before rounding curve to right; turn and follow main road straight ahead for 3.45 miles to Stillwell Railway Station; cross tracks; turn right onto main road for 2.6 miles to cross road and turn left onto road to Ebenezer for 2.2 miles to station on right, in open pine woods, 34 feet southeast of center line of road and 22.2 feet east of triangular-blazed 20-inch pine. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Upper mark projects 6 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference Mark No. 1 is 30 feet northwest of center line of road, 9 feet south of 18-inch triangular-blazed pine and 115.62 feet from station in azimuth $202^{\circ}00'$. Reference mark No. 2 is 21 feet northwest of center line of road, 9 feet east of 14-inch triangular-blazed pine and 152.37 feet from station in azimuth $76^{\circ}18'$. Azimuth mark is 21 feet south of 11-inch triangular-blazed pine, 17 feet northwest of center line of road and 0.15 mile from station in azimuth $59^{\circ}13'52''$.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

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Plane coordinates: (S), $x=1,941,438.05$ feet; $y=194,898.63$ feet; the grid azimuth to the azimuth mark = $59^{\circ}20'04''.1$

Tillman (Jasper County, M. A. Hecht, 1935).—At Tillman, on land between railway and new State Highway 33 to Hardeeville, about 40 paces south of railway crossing of road from Ridgeland, 114.2 feet north of 8-inch twin chinaberry tree, 58.2 feet (slope) west of west rail of railway and 38 feet east of center line of highway. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference and azimuth marks are standard disks in concrete, notes 11a and 11b. Reference mark No. 1 is 8 paces east of center line of north-south road, 8 paces south of center line of east-west road, 6 feet south of northwest corner of fence, 6 inches west of yard fence and 165.48 feet from station in azimuth $231^{\circ}28'$. Reference mark No. 2 is 14 paces west of center line of Highway 33, 3 paces east of northwest corner of abandoned store and 126.38 feet from station in azimuth $132^{\circ}32'$. Azimuth mark is 50 yards south of railway sign "Hardwood," 19 paces east of center line of highway, 14 paces west of west rail of main line track and 0.7 mile from station in azimuth $353^{\circ}39'42''.3$.

Plane coordinates: (S), $x=1,966,912.61$ feet; $y=229,062.88$ feet; the grid azimuth to the azimuth mark = $353^{\circ}43'12''.6.1$

Supplementary points

Bench mark No. M 37 (U. S. G. S.) (Effingham County, Ga., M. E. Lutz, 1918; 1935).—At railway stop Berrys on Seaboard Air Line Railway. Station is a U. S. Geological Survey standard disk marked "M-37, Elev. 94.524 feet." Station *Berryville* (see description thereof) is 25.920 meters (85.04 feet) distant in azimuth $275^{\circ}56'$.

Plane coordinates: *(S), $x=1,920,096.08$ feet; $y=216,594.91$ feet.

Stillwell (Effingham County, Ga., M. E. Lutz, 1918; 1935).—At Stillwell Railway Depot of Seaboard Air Line Railway. To reach from post office in Springfield, go 0.3 mile south on State Highway 21 to T-road and turn left for 3.6 miles to railway depot. Station is 78.8 feet southeast of southeast corner of depot, 37.5 feet south-southeast of railway crossing sign, 23.3 feet east-northeast of east rail of east track and 20 feet west of center line of north-south road. Surface and underground marks are standard disks in concrete, notes 1a and 7b. Upper mark projects 12 inches. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 (1935) is 20 paces west of center line of north-south road, 7 paces east of east rail of east track and 150.63 feet from station in azimuth $352^{\circ}11'$. Reference mark No. 2 (1935) is 11 paces north of northeast corner of store, 18 inches south of southeast corner of ice house, 6 inches east of board fence and 214.07 feet from station in azimuth $97^{\circ}29'$. Azimuth mark (1935) is 13 paces south of signal post 476, 5 paces south of small trestle, 2 paces east of east rail of east track and 0.25 mile from station in azimuth $171^{\circ}23'08''.5$.

Plane coordinates: (S), $x=1,922,668.05$ feet; $y=198,120.21$ feet; the grid azimuth to the azimuth mark = $171^{\circ}31'19''.6.1$

Ebenezer (U. S. E.) **eccentric** (Effingham County, Ga., M. A. Hecht, 1935).—About 8.25 miles (air line) east of Springfield and 8.25 miles (road) from Rincon, at boat landing at Ebenezer Church on south side of Savannah River, on northeast side of parking ground, 36 paces west of west bank of river and 47.54 feet south-southwest of 10-inch sweet gum tree with triangular blaze on south side. To reach from post office in Springfield, go south on State Highway 21 for 0.3 mile to T-road; turn left for 3.6 miles to depot and railway crossing in Stillwell; cross tracks, turn left (south) on main road for 2.65 miles to T-road and sign "Ebenezer 3 Miles"; turn left for 3.1 miles to Ebenezer Church and turn left at church for 0.2 mile to parking ground and station on right. To reach from Rincon, turn east from State Highway 21 just south of school for 3.7 miles to crossroads; bear left for 1.35 miles to crossroads and turn right for 3.1 miles to Ebenezer Church. Surface and underground marks are standard triangulation disks in concrete, notes 1b and 7a. Upper mark projects 1 inch. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects 4 inches, is on west side of parking ground, in east edge of clearing of small pines and is 75.82 feet from station in azimuth $45^{\circ}08'$. Azimuth mark projects 6 inches, is in small pine growth, 16 paces east of center line of road to church and is about 390 feet south-southeast of station in azimuth $340^{\circ}38'12''$. The following distances and azimuths are from station: *Ebenezer* (U. S. E.) (see description thereof),

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

101.95 feet, azimuth $153^{\circ}12'$; azimuth mark for *Ebenezer* (U. S. E.), about 540 feet, azimuth $348^{\circ}30'22''$.

Plane coordinates: (S), $x=1,943,737.87$ feet; $y=198,295.57$ feet; the grid azimuth to the azimuth mark= $340^{\circ}44'09''$.¹

Ebenezer (U. S. E.) (Effingham County, Ga., M. A. Hecht, 1935).—About 8.25 miles (air line) east of Springfield and 8.25 miles (by road) from Rincon, at boat landing at Ebenezer Church on south side of Savannah River, in line with northeast edge of road leading from church to landing, 14 paces south of south bank of river, 3 paces southeast of 30-inch live oak and 3 paces northwest of 20-inch live oak and 30-inch oak growing together. Station is a U. S. Engineers disk set in 8- by 8-inch concrete post projecting about 10 inches, and stamped "Ebenezer 1935 Elev. 36.42." Azimuth from station to *Ebenezer* (U. S. E.) eccentric (see description thereof) is $333^{\circ}12'$.

Plane coordinates: *(S), $x=1,943,692.04$ feet; $y=198,386.60$ feet.

Tillman, W. M. Ritter Lumber Company, black stack (Jasper County, M. A. Hecht, 1935).—About 1 mile south of Tillman. Station is the center of black stack of W. M. Ritter Lumber Company.

Plane coordinates: (S), $x=1,966,401.24$ feet; $y=223,655.10$ feet.

Primary traverse station No. 111 Mac (U. S. G. S.) (Screven County, Ga., M. A. Hecht, 1935).—At Newington. Azimuth to *Primary traverse station No. 111 Mac* (U. S. G. S.) eccentric (see description thereof) is $53^{\circ}57'$.

Plane coordinates: *(S), $x=1,845,462.07$ feet; $y=274,685.88$ feet.

Bench mark (U. S. G. S.) (Effingham County, Ga., M. A. Hecht, 1935).—About 2.5 miles east of Egypt and 1.7 miles southwest of Shawnee. Azimuth from station to station *Turkey* (see description thereof) is $261^{\circ}14'$.

Plane coordinates: *(S), $x=1,866,233.89$ feet; $y=228,123.49$ feet.

6C-21 (Ga. Geod. S.) (Effingham County, Ga., M. A. Hecht, 1935).—At Shawnee. To reach from post office in Springfield, go 10.4 miles north on State Highway 21 (or 0.15 mile beyond J. W. Remleys store on left) to T-road; turn left for 0.85 mile to Shawnee; turn left just before crossing railway tracks and go 0.1 mile; turn right, cross tracks and then turn left along tracks for 0.1 mile to station on right, 14 paces southeast of 24-inch pine, 11 paces south of most southerly of four erect cross ties and 29.48 feet west of west rail of railway tracks. Station is a standard traverse disk set in 6-inch concrete cylinder and projects about 1 inch. Reference and azimuth marks are standard disks in concrete, note 11b. Reference mark No. 1 projects about 3 inches, is in southeast edge of pine woods, 12 paces north of wire fence corner and wooden gate and 109.15 feet from station in azimuth $95^{\circ}55'$. Reference mark No. 2 projects about 3 inches, is about 30 feet west of west rail of railway track, 3 feet above track level and 135.40 feet from station in azimuth $326^{\circ}48'$. Azimuth mark is at first switch north of Shawnee, 13 paces north-northeast of clearance post, 10 paces east of east rail of railway tracks, 8 paces south of telephone pole and 0.6 mile from station in azimuth $145^{\circ}45'52''$.⁸

Plane coordinates: (S), $x=1,874,393.95$ feet; $y=233,296.29$ feet; the grid azimuth to the azimuth mark= $145^{\circ}59'11''$.^{4,1}

Primary traverse station No. 113 (U. S. G. S.) (Effingham County, Ga., M. A. Hecht, 1935).—A primary traverse station of the U. S. Geological Survey. Station *6C-21* (Ga. Geod. S.) is 1,273.69 feet from station in azimuth $322^{\circ}33'54''$.⁶

Plane coordinates: *(S), $x=1,873,623.70$ feet; $y=234,310.67$ feet.

TIGERVILLE TO GEORGETOWN ARC

Principal points

Jamestown (Berkeley County, R. D. Horne, 1934).—About 1.05 miles northeast of village of Jamestown, 0.55 mile southwest of southwest end of steel span of railway bridge over Santee River and 141 feet northwest of northwest rail of main line of Seaboard Air Line Railway tracks at point on rail that is 12 rail-lengths (about 400 feet) northeast of railway sign "Jamestown." Surface and underground marks are standard disks in concrete, notes 1b and 7a; upper mark projects about 1 foot above ground. Reference marks are standard disks in concrete, note 11b. Reference mark No. 1 (azimuth) is about 200 feet southwest of highest highway fill in immediate vicinity, 40 feet northwest of center line of highway on bank of excavation and about 0.45 mile from station in azimuth

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

⁸ No check on this position.

For notes in regard to marking of stations see p. 68.

38°09'30".4. Reference mark No. 2 is about 300 feet northeast of highway drainage culvert, 39 feet northwest of center line of highway and 158.22 feet from station in azimuth 72°26'. Reference mark No. 3 is 37 feet northwest of center line of highway and 128.03 feet from station in azimuth 168°33'.

Plane coordinates: (S), $x=2,402,397.85$ feet; $y=535,337.50$ feet; the grid azimuth to reference mark No. 1=37°26'28".2.

Echaw (Berkeley County, R. D. Horne, 1934).—About 1 mile south of Santee River, halfway between villages of Jamestown and Honey Hill, in large track of wooded land owned by Atlantic Coast Line Corporation. To reach from railroad depot in Jamestown, go southeast on sandy road 3.5 miles to George W. Wiles' house on left (north) side of road; turn in here and pass through gate at back of house into lane, then into sandy trail through woods, and follow trail 3.5 miles from Mr. Wiles' house to station about 100 yards back from (southwest of) fork in dim road through woods, 51 feet east of 14-inch pine burnt at bottom, 39 feet south of 12-inch pine leaning southwest, 27 feet south of 16-inch pine with large triangle blaze on south side, and 8 paces southeast of center line of woods road. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Reference and azimuth marks are standard disks in concrete, note 11b. No. 1 is 17 paces southeast of 15-inch outstanding pine, 3 paces north of center line of trail, and 166.8 feet from station in azimuth 255°24'. No. 2 (azimuth) is 15 paces northeast of 24-inch pine, 8 paces south of 8-inch pine, 7 paces southwest of 12-inch pine with two blazes, 2 paces south of center line of trail, and about 0.2 mile from station in azimuth 273°42'11". No. 3 is 14 paces east of blazed 12-inch pine, 9 paces west of outstanding 12-inch pine, 9 paces east of center line of road, and 150.9 feet from station in azimuth 56°31'.

Plane coordinates: (S), $x=2,427,438.57$ feet; $y=525,929.18$ feet; the grid azimuth to reference mark No. 2=272°56'29".1

Nob (Richland County, M. E. Lutz, 1918; 1937).—About 5.25 miles north of Columbia. To reach from Columbia, follow U. S. Highway 1 north to Segar's Puroil service station at fork of U. S. Highway 1 and dirt road about 500 feet north of railway bridge and 1.65 miles southeast of Dents railway station, take left fork for 0.2 mile to station, 33 feet north of center line of dirt road and 10 feet west of small lane to north. Surface mark is standard disk in concrete, note 1a. Underground mark is glass bottle in concrete, note 7d. Reference marks are probably standard disks in concrete. Reference mark (1918) is 10 paces northeast of telephone pole, 7 paces south of center line of dirt road, 2 feet north of fence line and fence corner and 73.95 feet from station in azimuth 7°59'. Reference mark No. 2 (azimuth) is about 350 feet south of Jolly Pig roadside inn, 41 feet south of center line of U. S. Highway 1 and about 0.5 mile from station in azimuth 33°04'39". Reference mark No. 3 is 7 paces south of center line of dirt road, 3 paces west of telephone pole, 2 paces north of fence and 95.70 feet from station in azimuth 266°18'. Azimuth from station to station *Jackson* 2 is 304°50'39".3. On January 24, 1939, due to road construction, reference mark (1918) and reference mark No. 3 were moved on line to new locations, the distances being 134.25 feet (slope) and 116.10 feet (slope) respectively from the station. The station may be lost due to a slide in an adjacent sand-pit.

Plane coordinates: (N), $x=2,005,778.80$ feet; $y=383,883.26$ feet; the grid azimuth to reference mark No. 2=33°04'00".

Columbia west base (Richland County, R. D. Horne, 1934; 1935).—About 6 miles southeast of Columbia, 0.5 mile west-northwest of Simms railroad station, on land owned by W. R. Bryant. To reach from capitol at Columbia, follow U. S. Highway 76 southeast 6.4 miles to dirt T-road on right, at sign "Eastover-18; Sumter-40," turn right (southwest) and go 1.4 miles, almost to second railroad crossing, turn right and go 0.2 mile on farm road parallel to railroad, bear right and go 0.3 mile to main line of Atlantic Coast Line Railroad crossing, bear left instead of crossing tracks and go 135 feet to station, 59 paces northeast of tenant house, 45 paces west-northwest of railroad crossing, 125.3 feet southwest of 18-inch pine with "No Trespassing" notice, 44.3 feet southwest of southwest rail of railroad, 26.7 feet west-southwest of telephone pole and 12.6 feet north of center line of private dirt road. Surface mark is standard disk in concrete, note 1b. Underground mark is nail in concrete, note 7c. Upper mark projects about 5 inches. Reference and azimuth marks are standard disks in concrete, note 11a. Reference mark No. 1 projects about 2 inches and is 28 paces southeast of telephone pole, 20 paces northwest of 12-inch oak, 14 paces southeast of railroad crossing,

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

21.6 feet southwest of southwest rail of railroad, in line with telephone poles, 16.5 feet east of center line of farm road and 197.32 feet (slope) from station in azimuth $284^{\circ}14'$. Reference mark No. 2 (azimuth) is set flush with ground and is 0.2 mile from Simms (loading) station, 83.5 feet south of south corner of section house, 55 feet west of lone elm tree, 42.3 feet southeast of center line of dirt road, 12 paces south of railroad crossing, 23.1 feet west-southwest of southwest rail of railroad, 18.2 feet southwest of switch for Simms siding, 4 paces east of dirt road on west side of railroad and about 0.3 mile from station in azimuth $288^{\circ}47'36''$. 0. Reference mark No. 3 projects about 2 inches and is 73.7 feet northeast of southwest rail of railroad, 11 paces northwest of 18-inch pine with "No Trespassing" notice, 10 paces southwest of 14-inch pine, 10 paces southeast of 10-inch pine, 21.2 feet northeast of center line of farm road, 3 paces northwest of 4-inch hickory tree and 136.10 feet from station in azimuth $169^{\circ}35'$. Azimuth from station to *Columbia, United States Veterans' Hospital, tank* is $178^{\circ}40'47''$. 5.

Plane coordinates: (N), $x=2,011,381.51$ feet; $y=347,897.92$ feet; the grid azimuth to reference mark No. 2 = $288^{\circ}46'19''$. 7.¹

Supplementary points

Jackson 2 (Richland County, R. D. Horne, 1934).—About 6 miles east of Columbia, on Army reservation at Camp Jackson, 0.25 mile south of base hospital and on highest part of Tank Hill. To reach from Columbia, follow U. S. Highway 76 east about 4 miles to macadam road on left at bottom of hill, just east of concrete bridge with sign "Camp Jackson—2 miles"; turn left onto macadam road and go about 2 miles to crossroads; turn left onto main concrete pavement and go 2 miles to two forks; turn right and go to top of hill where pavement ends in sand road; turn right and go 0.3 mile to station, 31.5 feet west of southeast pier (former support for tank "Z 601"), 31 feet south of northwest pier, 17 paces northwest of center line of sand road which circles top of hill and 11.5 feet southwest of southwest tank pier. Surface mark is standard disk in concrete, note 1a; this is surface mark of traverse station Jackson, which was reported removed and replaced. It is not known whether underground mark of station Jackson (bottle in concrete) was disturbed or is still in position. Reference marks are standard disks in concrete, note 11b. Reference mark No. 1 is 25.1 feet southeast of south end of next to most easterly concrete foundation, 23.4 feet southeast of south end of most easterly foundation, 8 feet east of center line of road and 136.8 feet from station in azimuth $246^{\circ}15'$. Reference mark No. 2 (azimuth) is 8 paces southwest of center line of sand road through sparse woods and just across road from large lone pine and about 250 yards from station in azimuth $330^{\circ}15'56''$. Reference mark No. 3 is about 6 yards east of center line of sand road and 133.1 feet from station in azimuth $350^{\circ}34'$. Azimuth from station to *Columbia, United States Veterans' Hospital, stack* is $38^{\circ}00'14''$. 9.

Plane coordinates: (N), $x=2,023,848.05$ feet; $y=371,309.27$ feet; the grid azimuth to reference mark No. 2 = $330^{\circ}13'16''$. 1

Observatory (Richland County, R. D. Horne, 1934; 1935).—In Columbia, on grounds of University of South Carolina, near intersection of Bull and Green Streets, on lawn between Davis and Petigru Halls, just north of Melton Memorial Observatory, 78.2 feet west of southwest corner of Davis Hall and 54.5 feet north-northwest of center of inlaid tile compass in steps of observatory. Surface and underground marks are standard disks in concrete, notes 1b and 7a. Mark is just below surface of ground. Reference mark No. 1 is standard disk cemented in top of curb around cellar window, 14 feet south-southeast of northwest corner of Davis Hall and 133.25 feet from station in azimuth $193^{\circ}42'$. Reference mark No. 2 is standard disk cemented in top step of entrance to lawn of Petigru Hall and 84.05 feet from station in azimuth $123^{\circ}18'$. Reference mark No. 3 (azimuth) is standard disk cemented in top of east curb of Bull Street, 36 paces north-northwest of northwest corner of intersection of Senate and Bull Streets and about 0.3 mile from station in azimuth $158^{\circ}46'24''$. 9. Following distances and azimuths are from station: Presbyterian Church, spire (top center) $150^{\circ}12'22''$. 8; Shandon Presbyterian Church, spire (highest point), about 1.5 miles, $271^{\circ}04'10''$. 4; *Columbia, Meridian Mark (U. S. G. S.)* (see description thereof), 96.47 feet, $306^{\circ}31'$; *Columbia, Melton Memorial Observatory, astronomical instrument, center* (see description thereof), 78.91 feet, $338^{\circ}21'$.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Plane coordinates: (N), $x=1,991,906.37$ feet; $y=363,034.69$ feet; the grid azimuth to reference mark No. 3= $158^{\circ}47'19''.2$.¹

Columbia, Melton Memorial Observatory, astronomical instrument, center (Richland County, R. D. Horne, 1934; 1935).—In Columbia, on grounds of University of South Carolina, near intersection of Bull and Green Streets. Station is bolt set flush with ground on first floor of Melton Memorial Observatory, centered under equatorial pier of telescope on second floor of building, connected by traverse. Station *Observatory* (see description thereof) is 78.91 feet from station in azimuth $158^{\circ}21'$.

Plane coordinates: (N), $x=1,991,935.48$ feet; $y=362,961.30$ feet.

Columbia, meridian mark (U. S. G. S.) (Richland County, R. D. Horne, 1934; 1935).—In Columbia, on grounds of University of South Carolina, near intersection of Bull and Green Streets, 62.8 feet north-northwest of most southerly face of granite memorial monument, 36.9 feet west-northwest of most westerly wall of Observatory Building. Mark is standard U. S. Geological Survey "Meridian Mark" set in 6-inch square granite post. Station *Observatory* (see description thereof) is 96.47 feet from station in azimuth $126^{\circ}31'$.

Plane coordinates: (N), $x=1,991,983.90$ feet; $y=362,977.26$ feet.

Columbia, United States Veterans Hospital, stack (Richland County, R. D. Horne, 1934).—Plane coordinates: (N), $x=2,011,375.07$ feet; $y=355,321.37$ feet.

Columbia, United States Veterans Hospital, tank (Richland County, R. D. Horne, 1934).—Plane coordinates: (N), $x=2,011,212.34$ feet; $y=355,127.73$ feet.

Columbia, United States Veterans Hospital, dome (Richland County, R. D. Horne, 1934).—Plane coordinates: *(N), $x=2,011,768$ feet; $y=355,644$ feet.

Columbia, State Capitol, dome, base of flagstaff (Richland County, R. D. Horne, 1934).—Plane coordinates: (N), $x=1,989,907.52$ feet; $y=363,961.30$ feet.

Columbia, large steel water tank (Richland County, R. D. Horne, 1934).—Plane coordinates: *(N), $x=1,999,639$ feet; $y=367,123$ feet.

NORFOLK, VA., TO SAVANNAH, GA., TRAVERSE

Principal points

Columbia (Richland County, M. E. Lutz, 1918).—At Columbia, near north-west corner of roof of Palmetto Building, 3.31 meters (10.9 feet) from north edge of coping, 3.00 meters (9.8 feet) from west edge of coping, and 2.11 meters (6.9 feet) west of west side of penthouse. Station is marked by standard disk set in tile roof of building.

Plane coordinates: (N), $x=1,989,436.85$ feet; $y=365,390.40$ feet; the grid azimuth to station *Nob*= $221^{\circ}28'00''.1$.

Top (Lexington County, M. E. Lutz, 1918; 1919).—About 1 mile north of Gaston Railway Station, on Seaboard Air Line Railway right-of-way, on east bank of cut, 900 meters (2,953 feet) south of milepost 373, 0.25 mile south of curve in railway, 300 meters (984 feet) south of public road crossing, about 10 meters (33 feet) east of railway tracks and 6 meters (20 feet) above tracks. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 325 meters (1,066 feet) south of private road crossing, 10 meters (33 feet) east of east rail of tracks, about 6 meters (20 feet) above tracks and 25.23 meters (82.8 feet) from station.

Plane coordinates: (N), $x=1,970,090.55$ feet; $y=304,031.36$ feet; the grid azimuth to station *Columbia*= $197^{\circ}29'59''.6$.

Gaston (Lexington County, M. E. Lutz, 1918).—At Gaston railway station, on Seaboard Air Line Railway right-of-way, at curve about 300 meters (984 feet) south of depot, at intersection of prolongation of northward tangent to curve of east rail of main track and southward tangent to curve of west rail and 6.03 meters (19.8 feet) west of west rail of main track. Passing track lies between station and main line track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b.

Plane coordinates: (N), $x=1,968,420.22$ feet; $y=296,825.95$ feet; the grid azimuth to station *Top*= $193^{\circ}03'05''.6$.

Flanders (Lexington County, M. E. Lutz, 1918; 1919).—About 3 miles north of Swansea railway station, on Seaboard Air Line Railway right-of-way, on hill, 600 meters (1,968 feet) north of milepost 378, 200 meters (656 feet) south of

*No check on this position.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

short spur track and private road crossing, 5.67 meters (18.6 feet) west of west rail of main track and about 2 meters (7 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b.

Plane coordinates: (N), $x=1,967,714.47$ feet; $y=282,774.47$ feet; the grid azimuth to station *Gaston* = $182^{\circ}52'31''.2$.

Swansea (Lexington County, M. E. Lutz, 1918; 1919).—About 2 miles south of Swansea Railway Station, on hill, on land belonging to William Witt, about 570 meters (1,870 feet) north of milepost 383, about 250 meters (820 feet) north of curve of Seaboard Air Line Railway right-of-way, 160 meters (525 feet) east of tenant house, 150 meters (493 feet) east of private road which crosses track and leads to tenant house and about 3 meters (10 feet) north of prolongation of southward tangent to curve of west rail of Seaboard Air Line Railway main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is nearly on line between station and tenant house, about 5 meters (16 feet) north of north edge of cultivated land and 15.73 meters (51.6 feet) from station.

Plane coordinates: (N), $x=1,968,247.12$ feet; $y=257,902.54$ feet; the grid azimuth to station *Flanders* = $178^{\circ}46'23''.4$. (S), $x=1,968,247.19$ feet; $y=682,313.42$ feet; the grid azimuth to station *Flanders* = $178^{\circ}46'15''.8$.

Miller (Orangeburg County, M. E. Lutz, 1918; 1919).—About 3.5 miles south of Swansea Railway Station, on Seaboard Air Line Railway right-of-way at intersection of tangents to curve of west rail of main track, 435 meters (1,427 feet) south of milepost 384 and 22.79 meters (74.8 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is just south of private road crossing, 8.46 meters (27.8 feet) east of east rail of track and 35.79 meters (117.4 feet) from station.

Plane coordinates: (N), $x=1,964,468.35$ feet; $y=249,833.45$ feet; the grid azimuth to station *Swansea* = $205^{\circ}05'37''.6$. (S), $x=1,964,468.74$ feet; $y=674,244.23$ feet; the grid azimuth to station *Swansea* = $205^{\circ}05'29''.9$.

Douglas (Orangeburg County, M. E. Lutz, 1918; 1919).—1.25 miles south of Woodford Railway Station, on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of west rail of track, 350 meters (1,148 feet) south of milepost 387 and 18.50 meters (60.7 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telegraph poles, 35 meters (115 feet) south of milepost 387, 8.61 meters (28.2 feet) west of west rail of track and 31.15 meters (102.2 feet) from station.

Plane coordinates: (N), $x=1,969,536.65$ feet; $y=235,257.71$ feet; the grid azimuth to station *Woodford* = $155^{\circ}29'06''.9$. (S), $x=1,969,537.59$ feet; $y=659,668.97$ feet; the grid azimuth to station *Woodford* = $155^{\circ}28'57''.9$.

North (Orangeburg County, M. E. Lutz, 1918; 1919).—1 mile north of North Railway Station, on Seaboard Air Line Railway right-of-way on west bank of cut, 105 meters (344 feet) south of milepost 388, about 10 meters (33 feet) north of public road crossing, 7.4 meters (24 feet) west of west rail of main track and about 3 meters (10 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on west side of public road paralleling track, north of road which crosses track and 19.68 meters (64.6 feet) from station.

Plane coordinates: (N), $x=1,969,126.28$ feet; $y=230,790.58$ feet; the grid azimuth to station *Douglas* = $185^{\circ}14'55''.4$. (S), $x=1,969,127.35$ feet; $y=655,201.97$ feet; the grid azimuth to station *Douglas* = $185^{\circ}14'49''.9$.

Livingston (Orangeburg County, M. E. Lutz, 1918).—About 250 meters (820 feet) north of depot at Livingston Railway Station, on Seaboard Air Line Railway right-of-way on east bank of cut, between public wagon road and railway track, 170 meters (558 feet) north of switch stand at north end of sidetrack, 7.5 meters (25 feet) east of east rail of track and 6.6 feet above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telegraph poles, 7.29 meters (24 feet) west of west rail of track, about 6.6 feet above track and 17.40 meters (57.1 feet) from station.

Plane coordinates: (N), $x=1,963,629.75$ feet; $y=202,544.17$ feet; the grid azimuth to station *North* = $191^{\circ}00'42''.1$. (S), $x=1,963,632.14$ feet; $y=626,956.74$ feet; the grid azimuth to station *North* = $191^{\circ}00'34''.4$.

Norway (Orangeburg County, M. E. Lutz, 1918; 1919).—About 2 miles north of Norway Railway Station, on Seaboard Air Line Railway right-of-way, 150 meters (492 feet) south of private road crossing, 60 meters (197 feet) north of milepost 399, 60 meters (197 feet) north of whistle post and 6.54 meters (21.5 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark T 1 (U. S. C. & G. S.), is 69.37 meters (227.6 feet) from station.

Plane coordinates: (S), $x=1,962,720.17$ feet; $y=600,692.89$ feet; the grid azimuth to station *Wilson* = $236^{\circ}56'13''.9$.

Creco (Orangeburg County, M. E. Lutz, 1918; 1919).—About 1 mile south of Norway Railway Station, on Seaboard Air Line Railway right-of-way, 395 meters (1,296 feet) north of milepost 403, 157 meters (515 feet) south of road crossing and 2.85 meters (9.4 feet) west of west rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark Q 1 (U. S. C. & G. S.), is 147.96 meters (485.4 feet) from station.

Plane coordinates: (S), $x=1,960,423.66$ feet; $y=580,832.81$ feet; the grid azimuth to station *Norway* = $186^{\circ}35'45''.9$.

Outside (Orangeburg County, M. E. Lutz, 1918; 1919).—About 1.33 miles north of Outside Railway Station, on Seaboard Air Line Railway right-of-way, about 680 meters (2,231 feet) south of milepost 405 and 2.71 meters (8.9 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark P 1 (U. S. C. & G. S.), is 10.53 meters (34.5 feet) from station.

Plane coordinates: (S), $x=1,959,359.63$ feet; $y=571,289.61$ feet; the grid azimuth to station *Creco* = $186^{\circ}21'43''.1$.

Plaza (Bamberg County, M. E. Lutz, 1918; 1919).—About 1.5 miles north of Denmark Railway Station, on Seaboard Air Line Railway right-of-way, about 385 meters (1,263 feet) south of milepost 408 and 2.36 meters (7.7 feet) west of west rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark N 1 (U. S. C. & G. S.), is 10.12 meters (33.2 feet) from station.

Plane coordinates: (S), $x=1,957,150.18$ feet; $y=552,027.74$ feet; the grid azimuth to station *Outside* = $186^{\circ}32'36''.8$.

Denmark (Bamberg County, M. E. Lutz, 1918; 1919).—On Seaboard Air Line Railway right-of-way, on east bank of cut, 580 meters (1,903 feet) north of milepost 411, 400 meters (1,312 feet) south of Atlantic Coast Line Railroad crossing at Denmark railway station, 5.3 meters (17 feet) east of east rail of main track and 2 meters (7 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark K 1 (U. S. C. & G. S.), is 13.23 meters (43.4 feet) from station in azimuth $73^{\circ}45'$.

Plane coordinates: (S), $x=1,955,756.30$ feet; $y=539,467.81$ feet; the grid azimuth to station *Plaza* = $186^{\circ}19'57''.6$.

Pete (Bamberg County, M. E. Lutz, 1918, 1919).—1.5 miles south of Denmark Railway Station, on Seaboard Air Line Railway right-of-way, at intersection of prolongation of southward tangent to curve of west rail and northward tangent to curve of east rail, about 1,095 meters (3,593 feet) north of milepost 413, 5.1 meters (17 feet) east of east rail of track and about 3 feet below track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b.

Plane coordinates: (S), $x=1,954,730.75$ feet; $y=530,566.21$ feet; the grid azimuth to station *Denmark* = $186^{\circ}34'19''.4$.

Luther (Bamberg County, M. E. Lutz, 1918; 1919).—Near Luther siding, on Seaboard Air Line Railway right-of-way, on east bank of cut, 580 meters (1,903 feet) north of milepost 414, 130 meters (427 feet) south of switch at south end of Luther siding, 9.9 meters (32 feet) east of east rail of main track and about 4 meters (13 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is in cut, 130 meters (427 feet) south of switch, 2.97 meters (9.7 feet) west of west rail of track and 14.72 meters (48.3 feet) (slope) from station.

Plane coordinates: (S), $x=1,952,891.28$ feet; $y=523,952.58$ feet; the grid azimuth to station *Pete* = $195^{\circ}32'34''.9$.

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Barnum (Bamberg County, M. E. Lutz, 1918; 1919).—About 3.25 miles north of Govan Railway Station, on Seaboard Air Line Railway right-of-way at intersection of prolongation of south tangent to curve of east rail and northward tangent to curve of west rail of main track, 280 meters (919 feet) north of milepost 415 and 6.57 meters (21.6 feet) east of east rail. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telegraph poles, 7.33 meters (24.0 feet) west of west rail, 1.5 feet below track and 20.57 meters (67.5 feet) from station.

Plane coordinates: (S), $x=1,951,142.30$ feet; $y=517,920.10$ feet; the grid azimuth to station *Luther* = $196^{\circ}10'05''.9$.

Zion (Bamberg County, M. E. Lutz, 1918; 1919).—About 0.5 mile north of Govan Railway Station, on cultivated land just west of Seaboard Air Line Railway right-of-way, at intersection of prolongation of northward tangent to curve of east rail and southward tangent to curve of west rail of main track, 210 meters (689 feet) north of milepost 417 and 24.5 meters (80 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 28 meters (92 feet) south of public road crossing, 4.93 meters (16.2 feet) west of west rail of track and 19.56 meters (64.2 feet) from station.

Plane coordinates: (S), $x=1,946,326.04$ feet; $y=508,231.13$ feet; the grid azimuth to station *Barnum* = $206^{\circ}25'52''.9$.

Govan (Bamberg County, M. E. Lutz, 1918; 1919).—About 1.25 miles south of Govan Railway Station, on Seaboard Air Line Railway right-of-way at curve at milepost 418, at intersection of tangents to curve of west rail of main track, about 100 meters (328 feet) north of milepost and 16.78 meters (55.1 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is about 125 meters (410 feet) north of milepost 418, 22.2 meters (73 feet) east of east rail of main track and 23.12 meters (75.9 feet) from station.

Plane coordinates: (S), $x=1,946,402.21$ feet; $y=501,227.16$ feet; the grid azimuth to station *Zion* = $179^{\circ}22'36''.9$.

Olar (Bamberg County, M. E. Lutz, 1918; 1919).—About 600 meters (1.968 feet) north of Olar Railway Station, on Seaboard Air Line Railway right-of-way, on east bank of cut, 55 meters (180 feet) north of milepost 420, 12 meters (39 feet) east of track, 8 meters (26 feet) west of public road and 5 meters (16 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is about 12 meters (39 feet) east of track, 9 meters (30 feet) west of public road paralleling track, about 4 meters (13 feet) above track and 32.32 meters (106.0 feet) from station.

Plane coordinates: (S), $x=1,943,889.41$ feet; $y=492,224.52$ feet; the grid azimuth to station *Govan* = $195^{\circ}35'43''.4$.

Schofield (Bamberg County, M. E. Lutz, 1918; 1919).—About 0.5 mile north of Schofield Railway Station, on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of west rail of main track, 200 meters (656 feet) north of milepost 423 and 2.75 meters (9.0 feet) west of west rail. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark F (U. S. C. & G. S.), is 129.43 meters (424.6 feet) from station.

Plane coordinates: (S), $x=1,939,650.66$ feet; $y=477,473.79$ feet; the grid azimuth to station *Olar* = $196^{\circ}01'56''.9$.

Ulmers (Allendale County, M. E. Lutz, 1918; 1919).—About 300 meters (984 feet) north of depot at Ulmers station, on Seaboard Air Line Railway right-of-way, at cut, 275 meters (902 feet) south of milepost 426, 10 meters (33 feet) east of east rail of main track and about 5 meters (16 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telephone poles, about 15 meters (49 feet) east of east rail of track, 5 meters (16 feet) above track and 17.07 meters (56.0 feet) from station.

Plane coordinates: (S), $x=1,936,333.29$ feet; $y=460,380.59$ feet; the grid azimuth to station *Schofield* = $190^{\circ}58'59''.4$.

Harding (Allendale County, M. E. Lutz, 1918; 1919).—1.75 miles south of Ulmera Railway Station, on Seaboard Air Line Railway right-of-way, 475 meters

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(1,558 feet) south of milepost 428, 35 meters (115 feet) south of switch at side-track, 5.43 meters (17.8 feet) west of west rail of main track and 3 meters (10 feet) north of private road which crosses track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark C (U. S. C. & G. S.), is 14.32 meters (47.0 feet) from station.

Plane coordinates: (S), $x=1,934,127.16$ feet; $y=449,400.70$ feet; the grid azimuth to station *Ulmers* = $191^{\circ}21'39''.1$.

Sycamore (Allendale County, M. E. Lutz, 1918; 1919).—About 0.5 mile south of Sycamore Railway Station, on Seaboard Air Line Railway right-of-way, 145 meters (476 feet) south of milepost 431, 5 meters (16 feet) south of private road crossing and 2.26 meters (7.4 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telephone poles, 10 meters (33 feet) south of private road crossing, 8.06 meters (26.4 feet) west of west rail of main track and 18.59 meters (61.0 feet) from station.

Plane coordinates: (S), $x=1,931,325.04$ feet; $y=434,913.45$ feet; the grid azimuth to station *Harding* = $190^{\circ}56'49''.0$.

Fairfax (Allendale County, M. E. Lutz, 1918; 1931).—At Fairfax Railway Station, at crossing of Seaboard Air Line Railway and Charleston & Western Carolina Railway, 50 meters (164 feet) south of depot, 3.82 meters (12.5 feet) west of west rail of Seaboard Air Line Railway main track, 3.21 meters (10.5 feet) south of south rail of Charleston & Western Carolina Railway main track and 3 feet north of northeast corner of interlocking tower located at crossing. Surface mark is standard disk in concrete, note 1a, 8 inches below surface of ground. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark U (U. S. C. & G. S.) is a standard disk in concrete post, at base of steps to interlocking tower and 30.60 meters (100.4 feet) from station.

Plane coordinates: (S), $x=1,927,288.01$ feet; $y=409,534.58$ feet; the grid azimuth to station *Waikiki* = $181^{\circ}17'42''.4$.

Spring (Hampton County, M. E. Lutz, 1918; 1919).—About 2 miles south of Fairfax Railway Station, on Seaboard Air Line Railway right-of-way, about 145 meters (476 feet) south of milepost 438, 140 meters (459 feet) north of private road crossing and 3 meters (10 feet) west of west rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is in line with telegraph poles, 160 meters (525 feet) north of private road crossing, 7.43 meters (24.4 feet) west of west rail of track and 17.95 meters (58.9 feet) from station.

Plane coordinates: (S), $x=1,927,066.26$ feet; $y=398,339.10$ feet; the grid azimuth to station *Fairfax* = $181^{\circ}08'05''.0$.

Joint (Allendale County, M. E. Lutz, 1918; 1919).—About 2.5 miles west of Fairfax railway station, on Charleston & Western Carolina Railway right-of-way, 680 meters (2,231 feet) west of milepost 56, 101 meters (331 feet) west of private road crossing, 25 meters (82 feet) north of center line of public road to Fairfax and 1.59 meters (5.2 feet) north of north rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, U. S. G. S. bench mark, stamped "Elev. 149 feet," is 8.14 meters (26.7 feet) from station.

Plane coordinates: (S), $x=1,917,180.97$ feet; $y=417,905.98$ feet; the grid azimuth to station *Fairfax* = $309^{\circ}38'02''.7$.

Allen (Allendale County, M. E. Lutz, 1918; 1919).—About 1.25 miles from Allendale, on Charleston & Western Carolina Railway right-of-way, about 75 meters (246 feet) south of most western switch-stand of sidetrack, about 75 meters (246 feet) east of milepost 54, 6.48 meters (21.3 feet) south of south rail of main track and about 6 meters (20 feet) north of public road from Fairfax to Allendale. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is about 30 meters (98 feet) west of milepost 54, about 5 meters (16 feet) from center line of public road from Fairfax to Allendale, about 5 meters (16 feet) from private road that joins main highway and 35.24 meters (115.6 feet) from station in azimuth $130^{\circ}33'$.

Plane coordinates: (S), $x=1,910,753.15$ feet; $y=423,172.86$ feet; the grid azimuth to *Allendale, municipal water tank* = $134^{\circ}59'38''.5$.

Extension (Allendale County, M. E. Lutz, 1918; 1919).—At Allendale, on Charleston & Western Carolina Railway right-of-way, 150 meters (492 feet) west

of depot, 16,450 meters (53.97 feet) north of north rail of main track, on prolongation of westward tangent to curve of north rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete—note 7b. Reference mark, bench mark X (U. S. C. & G. S.), is 34.34 meters (112.7 feet) from station.

Plane coordinates: (S), $x=1,905,031.75$ feet; $y=428,001.11$ feet; the grid azimuth to *Allendale, municipal water tank* = $220^{\circ}07'26''$.0.

Luray (Hampton County, M. E. Lutz, 1918; 1919).—2.15 miles south of Gifford, about 1 mile north of Luray Railway Station on Seaboard Air Line Railway right-of-way, 200 yards south of electric transformer station on east side of State Highway 33 which parallels railway, 15 meters (49 feet) south of milepost 445, 10 meters (33 feet) north of private road crossing and 2.90 meters (9.5 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark O (U. S. C. & G. S.), is 13.72 meters (45.0 feet) from station. In 1931 the station was reported last.

Plane coordinates: (S), $x=1,926,297.78$ feet; $y=361,830.85$ feet; the grid azimuth to station *Omar* = $181^{\circ}18'58''$.9.

Canton (Hampton County, M. E. Lutz, 1918).—About 1.25 miles south of Luray Railway Station, on Seaboard Air Line Railway right-of-way, 490 meters (1,608 feet) south of milepost 447, 85 meters (279 feet) south of private road crossing and 6.03 meters (19.8 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark M (U. S. C. & G. S.) is 16.04 meters (52.6 feet) from station. Reported lost in 1931.

Plane coordinates: (S), $x=1,925,985.40$ feet; $y=349,788.90$ feet; the grid azimuth to station *Luray* = $181^{\circ}29'09''$.5.

Estill (Hampton County, M. E. Lutz, 1918; 1931).—At Estill Railway Station, on Seaboard Air Line Railway right-of-way, in ornamental hedge in grassy park surrounding city water tank, 35 meters (115 feet) north of depot, 12.33 meters (40.5 feet) west of city water tank and 8.919 meters (29.26 feet) east of west rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark K (U. S. C. & G. S.) is 10.52 meters (34.5 feet) from station in azimuth $272^{\circ}20'$. Primary traverse station No. 78 (U. S. G. S.), marked "Elev. 113 feet," is 49.65 meters (162.9 feet) from station in azimuth $356^{\circ}19'$.

Plane coordinates: (S), $x=1,925,708.14$ feet; $y=335,353.13$ feet; the grid azimuth to station *Canton* = $181^{\circ}06'01''$.1.

Ben (Hampton County, M. E. Lutz, 1918; 1919).—About 2 miles south of Estill Railway Station, on Seaboard Air Line Railway right-of-way, about 0.25 mile north of public road crossing, 280 meters (919 feet) north of milepost 452, 6.00 meters (19.7 feet) west of west rail of main track and 3 feet above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark I (U. S. C. & G. S.) is 17.56 meters (57.6 feet) from station.

Plane coordinates: (S), $x=1,925,449.02$ feet; $y=325,879.01$ feet; the grid azimuth to station *Estill* = $181^{\circ}34'00''$.0.

Carolina (Hampton County, M. E. Lutz, 1918; 1919).—About 1 mile north of Scotia Railway Station, on Seaboard Air Line Railway right-of-way, at cut, 315 meters (1,033 feet) south of milepost 454, 6.7 meters (22 feet) east of east rail of track and 1.5 meters (5 feet) above rail. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark (U. S. C. & G. S.), marked "Elevation 104 feet" is 67.90 meters (222.8 feet) from station.

Plane coordinates: (S), $x=1,925,217.50$ feet; $y=313,350.49$ feet; the grid azimuth to station *Ben* = $181^{\circ}03'31''$.2.

Scotia (Hampton County, M. E. Lutz, 1918; 1919).—About 1.5 miles south of Scotia Railway Station, on Seaboard Air Line Railway right-of-way, 220 meters (722 feet) north of milepost 457, 3 meters (10 feet) north of private road crossing and 2.41 meters (7.9 feet) west of west rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark (U. S. G. S.), marked "Elev. 82 feet" is 18.22 meters (59.8 feet) from station.

Plane coordinates: (S), $x=1,924,871.25$ feet; $y=299,290.01$ feet; the grid azimuth to station *Carolina* = $181^{\circ}24'38''$.4.

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Garnett (Hampton County, M. E. Lutz, 1918).—406 meters (1,312 feet) south of Garnett Railway Station, on Seaboard Air Line Railway right-of-way at intersection of tangents to curve of west rail of main track and 2.99 meters (9.8 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on the right-of-way fence line, 13.60 meters (44.6 feet) east of east rail of track and 24.43 meters (80.2 feet) from station.

Plane coordinates: (S), $x=1,924,437.43$ feet; $y=279,669.08$ feet; the grid azimuth to station *Scotia* = $181^{\circ}15'59''.8$

Savannah (Jasper County, M. E. Lutz, 1918; 1919).—About 1.25 miles north of Savannah River, on Seaboard Air Line Railway right-of-way at curve at Myers railway siding, at intersection of tangents to curve of west rail of main track, 300 meters (984 feet) north of milepost 465 and 21.33 meters (70.0 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, station *Mac 80* (U. S. G. S.) is 51.67 meters (169.5 feet) from station.

Plane coordinates: (S), $x=1,921,692.57$ feet; $y=257,403.06$ feet; the grid azimuth to station *Garnett* = $187^{\circ}01'39''.8$

Garner (Effingham County, Ga., M. E. Lutz, 1918; 1919).—About 2 miles north of Clyo depot on Seaboard Air Line Railway, at the curve at milepost 467, at the intersection of the tangents to the west rail, and 75 meters (246 feet) west of that rail. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, a nail or bolt in concrete mound, is on the right-of-way fence line, 60 meters (197 feet) south of the milepost, and 64.11 meters (210.3 feet) from station in azimuth $295^{\circ}17'$.

Plane coordinates: (S), $x=1,916,218.18$ feet; $y=245,944.05$ feet; the grid azimuth to station *Savannah* = $205^{\circ}32'07''.9$

Clyo (Effingham County, Ga., M. E. Lutz, 1918; 1919).—About 780 meters (2,559 feet) south of Clyo depot on the Seaboard Air Line Railway, 860 meters (2,822 feet) north of milepost 470, 80 meters (262 feet) south of whistle post, and 2.35 meters (7.7 feet) west of west rail of main track. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark is a nail or bolt in concrete mound, is 750 meters (2,461 feet) south of depot, 9.12 meters (29.9 feet) west of west rail of main track, and 36.39 meters (119.4 feet) from station in azimuth $161^{\circ}29'$.

Plane coordinates: (S), $x=1,917,790.95$ feet; $y=234,169.61$ feet; the grid azimuth to station *Garner* = $172^{\circ}23'30''.3$

Cleveland (Effingham County, Ga., M. E. Lutz, 1918; 1919).—2 miles north of Rincon depot on the Seaboard Air Line Railway, 315 meters (1,033 feet) south of milepost 480, 40 meters (131 feet) south from private road crossing, and 5.34 meters (17.5 feet) west of west rail of main track. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, a nail or bolt in concrete mound, is 7.88 meters (25.9 feet) east of east rail of main track, and 17.12 meters (56.2 feet) from station in azimuth $293^{\circ}14'$.

Plane coordinates: (S), $x=1,925,338.38$ feet; $y=178,011.31$ feet; the grid azimuth to station *Stillwell* = $172^{\circ}26'08''.7$

Rincon (Effingham County, Ga., M. E. Lutz, 1918; 1919).—At Rincon depot on Seaboard Air Line Railway, 125 meters (410 feet) south of water tank, 10 meters (33 feet) south of a public road crossing and 1.79 meters (5.9 feet) east of east rail of main track. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, a nail or bolt in concrete mound, is 26.90 meters (88.3 feet) east of east rail of main track, on east side of the main street and 25.12 meters (82.4 feet) from station in azimuth 264° .

Plane coordinates: (S), $x=1,926,803.74$ feet; $y=167,406.14$ feet; the grid azimuth to station *Cleveland* = $172^{\circ}07'58''.9$

Exley (Effingham County, Ga., M. E. Lutz, 1918).—At Exley depot on Seaboard Air Line Railway, 25 meters (82 feet) south of the depot, 110 meters (361 feet) north from the switch at south end of passing track, 5.48 meters (18.0 feet) east of east rail of main track. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, bench mark H 37 (U. S. C. & G. S.), is 14.96 meters (49.1 feet) from station in azimuth $89^{\circ}22'$.

Plane coordinates: (S), $x=1,929,056.05$ feet; $y=150,859.99$ feet; the grid azimuth to station *Rincon* = $172^{\circ}14'54''.2$

Roosevelt (Chatham County, Ga., M. E. Lutz, 1918).—On the right-of-way of the Savannah & Atlanta Railway, just west of the first curve north of Meinhard depot on the Seaboard Air Line Railway, at the intersection of the tangents

to the west rail of the Seaboard track, and 4.08 meters (13.4 feet) east of east rail of Savannah and Atlanta Railway main track. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, bench mark F 37 (U. S. C. & G. S.), is 25.15 meters (82.5 feet) from station in azimuth $201^{\circ}55'$.

Plane coordinates: (S), $x = 1,931,431.18$ feet; $y = 133,072.55$ feet; the grid azimuth to station *Exley* = $172^{\circ}23'39''$.7.

Meinhard (Chatham County, Ga., M. E. Lutz, 1918).—About $\frac{3}{4}$ mile south of Meinhard depot on the Seaboard Air Line Railway, 130 meters (426 feet) north of milepost 491, 90 meters (295 feet) north of whistle post, and 2.85 meters (9.4 feet) west of west rail of main track. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, a nail or bolt in concrete mound, is 95 meters (312 feet) north from whistle post, 15.68 meters (51.4 feet) east of east rail, and 20.02 meters (65.7 feet) from station in azimuth $240^{\circ}55'$. In 1934, station and reference marks reported destroyed.

Plane coordinates: (S), $x = 1,936,499.36$ feet; $y = 123,039.00$ feet; the grid azimuth to station *Roosevelt* = $153^{\circ}12'02''$.1.

Chatham (Chatham County, Ga., M. E. Lutz, 1918; 1919).—About 5 miles north of Savannah, on Seaboard Air Line Railway, 30 meters (98 feet) north from a whistle post, 160 meters (525 feet) north of milepost 496, 225 meters (738 feet) north of a public road crossing and 3.43 meters (11.3 feet) west of west rail of main track. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, a nail or bolt in concrete mound, is 11.12 meters (36.5 feet) east of east rail of main track and 16.09 meters (52.8 feet) from station in azimuth $248^{\circ}32'$.

Plane coordinates: (S), $x = 1,948,380.70$ feet; $y = 99,556.61$ feet; the grid azimuth to station *Burke* = $153^{\circ}14'50''$.1.

Central A (Chatham County, Ga., M. E. Lutz, 1918).—About $\frac{1}{4}$ mile north of the first curve north of Central Junction. Station is marked by file scratch across west rail of main track. Reference mark is common with that of station *Central*.

Plane coordinates: (S), $x = 1,950,374.74$ feet; $y = 95,565.72$ feet; the grid azimuth to station *Chatham* = $153^{\circ}27'03''$.9.

Central (Chatham County, Ga., M. E. Lutz, 1918).—On the Atlantic Coast Line Railway, about 7 miles north of Savannah at the curve at milepost 7; at the intersection of the tangents to each rail of main track, about 200 meters (656 feet) north of milepost, and 7.82 meters (25.7 feet) west of west rail. Surface and underground marks are in accordance with notes 1a and 7b. Reference mark, a nail or bolt in concrete mound, is approximately on line from *Central* to *Central A*, $\frac{1}{4}$ mile north of first curve north of Central Junction, 140.86 meters (462.1 feet) from station in azimuth $65^{\circ}36'26''$.

Plane coordinates: (S), $x = 1,950,834.70$ feet; $y = 95,755.42$ feet; the grid azimuth to station *Chatham* = $147^{\circ}09'15''$.2.

Supplementary points

Elmwood C (Richland County, M. E. Lutz, 1918).—About 3 miles north of Columbia, on Seaboard Air Line Railway right-of-way, at curve about 700 meters (2,297 feet) south of milepost 357, at intersection of tangents to curve of west rail of main track and 0.4 meter (1 foot) west of east rail. Station is marked by nail driven in a 2- by 4-inch wooden stub set in concrete between rails.

Plane coordinates: (N), $x = 1,987,358.43$ feet; $y = 374,134.28$ feet; the grid azimuth to station *College* = $199^{\circ}52'16''$.6.²

Elmwood B (Richland County, M. E. Lutz, 1918).—About 2 miles north of railway passenger station at Columbia, on Seaboard Air Line Railway right-of-way, about 70 meters (230 feet) north of milepost 358, 25 meters (82 feet) south of signboard "Yard Limit" and 1.54 meters (5.1 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is glass bottle with neck projecting slightly above concrete, note 7d.

Plane coordinates: (N), $x = 1,986,178.32$ feet; $y = 371,629.57$ feet; the grid azimuth to station *Elmwood C* = $205^{\circ}13'40''$.0.

Elmwood A (Richland County, M. E. Lutz, 1918).—About 1 mile north of railway station at Columbia, just west of Seaboard Air Line Railway right-of-way, at curve, at intersection of tangent to curve of west rail of main track, about 35 meters (115 feet) west of west rail, 20.4 meters (67 feet) from station *Elmwood* on opposite side of a public road, and 2 meters (7 feet) above track level. Surface mark is standard station disk in concrete, note 1a. Underground mark is glass

² This azimuth has been computed by the first formula (p. 73), using both terms.

For notes in regard to marking of stations see p. 68.

bottle with neck projecting slightly above concrete, note 7d. Reference mark is standard disk in irregular mass of concrete, note 11c, stamped "Elmwood and A" and is 37.48 meters (123.0 feet) from station.

Plane coordinates: (N), $x=1,984,925.69$ feet; $y=369,019.81$ feet; the grid azimuth to station *Elmwood B* = $205^{\circ}38'24''.1$.

Elmwood (Richland County, M. E. Lutz, 1918).—About 1 mile north of passenger station at Columbia, just west of Seaboard Air Line Railway right-of-way, on prolongation of northward tangent to curve of west rail of main track, about 170 meters (558 feet) from point of tangency, at east side of cultivated track and on west side of public road, 20.4 meters (67 feet) from station *Elmwood A*, and about 3 meters (10 feet) above track level. Surface mark is standard station disk in concrete, note 1a. Underground mark is glass bottle with neck projecting slightly above concrete, note 7d. Reference mark is standard disk in concrete, note 11c, stamped "Elmwood and A" and is 54.13 meters (177.6 feet) from station, 1.87 meters (6.1 feet) west of west rail of main track, and 0.4 meter (1 foot) south of signboard "Columbia."

Plane coordinates: (N), $x=1,984,897.38$ feet; $y=368,959.70$ feet; the grid azimuth to station *Elmwood A* = $205^{\circ}13'$.

Columbia E (Richland County, M. E. Lutz, 1918).—At Columbia, on Seaboard Air Line Railway right-of-way, about 80 meters (262 feet) north of Elmwood Avenue, at intersection of tangents to curve of west rail of main track and 0.43 meter (1.4 feet) west of east rail. Station is marked by nail driven in a 2- by 4-inch wooden stub set in concrete between rails. Reference mark, bench mark R 2 (U. S. C. & G. S.) is 77.03 meters (252.7 feet) from station.

Plane coordinates: (N), $x=1,985,408.26$ feet; $y=367,987.29$ feet; the grid azimuth to station *Elmwood* = $152^{\circ}17'01''.3$.

Columbia D (Richland County, M. E. Lutz, 1918).—At Columbia, on Seaboard Air Line Railway, at north end of curve about 165 meters (541 feet) north of milepost 359, on prolongation of northward tangent to curve of west rail of main track, 60 meters (197 feet) south from an overhead road crossing and 2 meters (7 feet) west of west rail of track. Surface mark is standard station disk in concrete, note 1a. Underground mark is glass bottle with neck projecting a little above concrete, note 7d.

Plane coordinates: (N), $x=1,985,756.24$ feet; $y=367,041.27$ feet; the grid azimuth to station *Columbia E* = $159^{\circ}48'16''.8$.

Columbia C (Richland County, M. E. Lutz, 1918).—At Columbia, at curve in cut, about 0.5 mile north of railway station, on Seaboard Air Line Railway right-of-way, on prolongation of southward tangent to curve of the east rail of main track, about 25 meters (82 feet) north of milepost 359 and 2.63 meters (8.6 feet) west of west rail of track. Surface mark is standard station disk in concrete, note 1a. Underground mark is glass bottle with neck projecting a little above concrete, note 7d.

Plane coordinates: (N), $x=1,986,000.39$ feet; $y=366,666.68$ feet; the grid azimuth to station *Columbia D* = $146^{\circ}54'16''$.

Columbia B (Richland County, M. E. Lutz, 1918).—At Columbia, about 0.5 mile north of passenger depot, on Seaboard Air Line Railway right-of-way, on prolongation of northward tangent to curve of east rail of main track, about 20 meters (66 feet) south of first switch north of water tank, and 0.3 meter (1 foot) west of east rail. Station is marked by nail driven in a 2- by 4-inch wooden stub set in concrete.

Plane coordinates: (N), $x=1,986,588.99$ feet; $y=366,169.91$ feet; the grid azimuth to station *Columbia C* = $130^{\circ}09'50''$.

Columbia A (Richland County, M. E. Lutz, 1918).—About 400 meters (1,312 feet) north of railway station at Columbia, on Seaboard Air Line Railway right-of-way, at first curve, on prolongation of southward tangent to curve of west rail of main track, and 7.76 meters (25.5 feet) east of east rail of track. Surface mark is standard station disk in concrete, note 1a. Underground mark is glass bottle with neck projecting a little above concrete, note 7d. Reference mark is center of fire plug, the top of which is 2 feet above ground, and is 12.65 meters (41.5 feet) from station.

Plane coordinates: (N), $x=1,987,584.96$ feet; $y=365,606.69$ feet; the grid azimuth to station *Columbia B* = $119^{\circ}29'17''.2$.

Congaree B (Richland County, M. E. Lutz, 1918).—In Columbia, at corner of Lincoln and Lady streets, 19.24 meters (63.1 feet) northwest of northwest corner of express room of Seaboard Air Line Railway passenger station, about

15 meters (49 feet) south of center line of Lady Street, and 7.55 meters (24.8 feet) west of west rail of main track. Surface mark is standard station disk in concrete, note 1a. Underground mark is glass bottle with neck projecting slightly above concrete, note 7d. Reference mark, bench mark O 2 (U. S. C. & G. S.) is 65.01 meters (213.3 feet) from station.

Plane coordinates: (N), $x=1,988,106.28$ feet; $y=364,190.23$ feet; the grid azimuth to station *Columbia A* = $159^{\circ}47'38''.9$.

Congaree A (Richland County, M. E. Lutz, 1918).—About 0.5 mile south of railway station at Columbia, on Seaboard Air Line Railway right-of-way, on steel trestle about 15 meters (49 feet) south of south end of bridge. Station is marked by a scratch on west rail of track.

Plane coordinates: (N), $x=1,989,357.74$ feet; $y=360,836.38$ feet; the grid azimuth to station *Congaree B* = $159^{\circ}32'14''.6$.

Congaree (Richland County, M. E. Lutz, 1918).—About 1 mile south of railway station at Columbia, on Seaboard Air Line Railway right-of-way, at north end of first curve, on prolongation of northward tangent to curve of west rail of main track, about 30 meters (98 feet) south of south end of steel trestle, and 10 meters (33 feet) below track level. Surface mark is standard station disk in concrete, note 1a. Underground mark is glass bottle with neck projecting slightly above concrete, note 7d. Reference mark, bench mark N 2 (U. S. C. & G. S.) is 22.63 meters (74.2 feet) from station.

Plane coordinates: (N), $x=1,990,374.92$ feet; $y=358,100.22$ feet; the grid azimuth to station *Congaree A* = $159^{\circ}36'25''.7$.

Cayce D (Richland County, M. E. Lutz, 1918).—About 1 mile south of Columbia railway station, at curve on Seaboard Air Line Railway right-of-way, 37 meters (121 feet) north of milepost 361 and 3.42 meters (11.2 feet) east of east rail of main track. Station mark is nail driven in 2- by 4-inch wooden stub set in concrete, note 1a.

Plane coordinates: (N), $x=1,990,169.90$ feet; $y=357,494.66$ feet; the grid azimuth to station *Congaree* = $198^{\circ}42'15''$.

Cayce C (Richland County, M. E. Lutz, 1918).—About 1 mile south of Columbia railway station, on Seaboard Air Line Railway right-of-way, at curve, about 110 meters (361 feet) south of milepost 361, 80 meters (262 feet) north of Olympia Avenue and 2.65 meters (8.7 feet) east of east rail of main track. Station mark is nail driven in 2- by 4-inch wooden stub set in concrete, note 1a.

Plane coordinates: (N), $x=1,989,829.78$ feet; $y=357,122.51$ feet; the grid azimuth to station *Cayce D* = $222^{\circ}25'31''$.

Cayce B (Richland County, M. E. Lutz, 1918).—About 1 mile south of Columbia railway station, at south end of trestle across Olympia Avenue, on Seaboard Air Line Railway right-of-way at south end of curve at milepost 361 and between rails of main track and on prolongation of southward tangent to curve of west rail. Station mark is nail driven in 2- by 4-inch wooden stub set in concrete between cross ties, note 1a.

Plane coordinates: (N), $x=1,989,490.93$ feet; $y=356,971.81$ feet; the grid azimuth to station *Cayce C* = $246^{\circ}01'24''$.

Cayce A (Richland County, M. E. Lutz, 1918).—1 mile north of Cayce railway station, on Seaboard Air Line Railway right-of-way at curve 0.5 mile north of steel bridge across Congaree River, at intersection of prolongation of southward tangent to curve of east rail of main track and northward tangent to curve of west rail and 12.97 meters (42.6 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is glass bottle in concrete, note 7d. Reference mark, standard disk in concrete, note 11c is 20 meters (66 feet) south of switch leading to Olympia Cotton Mill, 16.88 meters (55.4 feet) east of east rail of track and 37.77 meters (123.9 feet) from station.

Plane coordinates: (N), $x=1,987,865.53$ feet; $y=356,563.76$ feet; the grid azimuth to station *Cayce B* = $255^{\circ}54'26''.5$.

Cayce (Lexington County, M. E. Lutz, 1918).—On Seaboard Air Line and Southern Railway right-of-way, near connecting track, about 0.75 mile west of Cayce Railway Station. Seaboard Air Line main track makes large curve just east of station; storage track is on prolongation of southward tangent to this curve and triangulation station is on prolongation of northward tangent to curve of east rail. Station is about 200 meters (656 feet) east of American Agricultural Chemical Company's plant, 6 meters (20 feet) east of storage track and 3.5 meters (11 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on west edge of cultivated land, 6 meters (20 feet)

east of storage track, 3.5 meters (11 feet) above track, and 27.20 meters (89.2 feet) from station.

Plane coordinates: (N), $x=1,982,352.93$ feet; $y=352,838.44$ feet; the grid azimuth to station *Cayce A* = $235^{\circ}56'59''.5$.

Kid (Lexington County, M. E. Lutz, 1918; 1919).—About 1 mile south of southern limit of yard at Cayce Railway Station, on Seaboard Air Line Railway right-of-way at curve at milepost 364, at intersection of prolongation of northward tangent to curve of west rail of main track and southward tangent to curve of east rail and 20.21 meters (66.3 feet) east of east rail of track. Surface mark is standard disk, stamped "Logan," in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk stamped "Picardy B" in concrete, note 11c, is 8.35 meters (27.4 feet) west of west rail of track and 32.81 meters (107.6 feet) from station. Station and reference marks have been disturbed by a section foreman. Station is considered lost.

Plane coordinates: (N), $x=1,984,585.69$ feet; $y=345,594.13$ feet; the grid azimuth to station *Cayce* = $162^{\circ}52'12''.9$.

Dixiana (Lexington County, M. E. Lutz, 1918; 1919).—At Dixiana Railway Station, on Seaboard Air Line Railway right-of-way at curve, at intersection of tangents to curve of east rail of main track, 260 meters (853 feet) south of milepost 366 and 13.37 meters (43.9 feet) east of east rail of track. Private road runs between station and railway tracks. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark K 2 (U. S. C. & G. S.), is 76.87 meters (252.2 feet) from station. Station mark has been disturbed by a section foreman. The reference mark, however, was not disturbed.

Plane coordinates: (N), $x=1,982,124.25$ feet; $y=334,674.10$ feet; the grid azimuth to station *Kid* = $192^{\circ}42'09''.1$.

Logan (Lexington County, M. E. Lutz, 1918; 1919).—1 mile south of Dixiana railway station, on Seaboard Air Line Railway right-of-way, at intersection of prolongation of southward tangent to curve of west rail of main track and northward tangent to curve of east rail, 275 meters (902 feet) south of milepost 367, 15 meters (49 feet) south of public road crossing and 14.48 meters (47.5 feet) east of east rail of track. Surface mark is standard disk stamped "Kid," in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk, in concrete note 11c, (in 1932, found removed) is just south of public road, between railway track and private road, 5.81 meters (19.1 feet) east of east rail of track and 18.92 meters (62.1 feet) from station. Station and reference marks have been disturbed by a section foreman and the station should be considered as lost.

Plane coordinates: (N), $x=1,979,385.64$ feet; $y=330,389.72$ feet; the grid azimuth to station *Dixiana* = $212^{\circ}35'13''.3$.

Picardy C (Lexington County, M. E. Lutz, 1918; 1919).—1.5 miles south of Dixiana Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of prolongation of northward tangent to curve of west rail of main track and southward tangent to curve of east rail, 460 meters (1,509 feet) north of milepost 368, on cultivated land about 30 meters (98 feet) west of west rail of track and 5 meters (16 feet) above track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c is on east edge of west side of cut at curve, 11 meters (36 feet) west of west rail of track, about 4 meters (13 feet) above track and 22.14 meters (72.6 feet) from station. Station mark has been disturbed by a section foreman. The reference mark, however, was not disturbed.

Plane coordinates: (N), $x=1,977,050.70$ feet; $y=328,688.54$ feet; the grid azimuth to station *Logan* = $233^{\circ}55'25''.8$.

Picardy B (Lexington County, M. E. Lutz, 1918; 1919).—About 8 miles south of Columbia Railway Station, on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 840 meters (2,756 feet) south of milepost 368, 20 meters south of whistling post, 5.80 meters (19.0 feet) east of east rail of track and about 3 feet above track. Surface mark is standard disk stamped "Top H", in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 7.65 meters (25.1 feet) east of east rail of main track, 5 meters (16 feet) north of whistling post, about 3 feet above track and 16.15 meters (53.0 feet) from station. Station mark has been disturbed by a section foreman. The reference mark, however, was not disturbed.

Plane coordinates: (N), $x=1,975,856.39$ feet; $y=324,552.92$ feet; the grid azimuth to station *Picardy C* = $196^{\circ}06'28''.8$.

Picardy A (Lexington County, M. E. Lutz, 1918; 1919).—About 9 miles south of Columbia, at curve on Seaboard Air Line Railway right-of-way, at intersection of prolongation of northward tangent to curve of east rail and southward tangent to curve of west rail, on cultivated land, 90 meters (295 feet) south of milepost 369 and 37.11 meters (121.8 feet) west of west rail of track. Surface mark is standard disk stamped "Top F," in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark J 2 (U. S. C. & G. S.) is 49.14 meters (161.2 feet) from station. Station mark has been disturbed by a section foreman. The reference mark, however, was not disturbed.

Plane coordinates: (N), $x=1,974,662.03$ feet; $y=322,062.90$ feet; the grid azimuth to station *Picardy B* = $205^{\circ}37'30''.4$.

Picardy (Lexington County, M. E. Lutz, 1918; 1919).—About 10 miles south of Columbia, on wooded hill on west side of Seaboard Air Line Railway track between mileposts 369 and 370, on prolongation of northward tangent to curve at milepost 370 and 600 meters (1,968 feet) southeast of point of tangency. Station, *Picardy A* and *Top I* are in straight line which crosses hill and intersects Seaboard Air Line Railway track about 0.25 mile south of milepost 370. Surface mark is standard disk stamped "Top I," in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on west side of wagon road, about 1.6 feet below station and 20.71 meters (67.9 feet) from station. Station mark has been disturbed by a section foreman. The reference mark, however, was not disturbed.

Plane coordinates: (N), $x=1,976,307.19$ feet; $y=318,165.36$ feet; the grid azimuth to station *Picardy A* = $157^{\circ}06'55''.0$.

Top I (Lexington County, M. E. Lutz, 1918; 1919).—About 5 miles north of Gaston Railway Station, on Seaboard Air Line Railway right-of-way, about 0.25 mile south of milepost 370 and 2.24 meters (7.3 feet) west of west rail of main track. Surface mark is standard disk, stamped "Reference mark Logan," in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Mark has been disturbed by a section foreman and the station should be considered as lost.

Plane coordinates: (N), $x=1,976,719.78$ feet; $y=317,197.60$ feet; the grid azimuth to station *Picardy* = $156^{\circ}54'35''.1$.

Top H (Lexington County, M. E. Lutz, 1918; 1919).—About 5 miles north of Gaston Railway Station, on Seaboard Air Line Railway right-of-way at north end of curve about 0.5 mile south of milepost 370, on prolongation of northward tangent to curve of west rail of main track and 8.6 meters (28 feet) east of east rail of track. Surface mark is standard disk, stamped "Picardy," in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark I 2 (U. S. C. & G. S.), is 27.56 meters (90.4 feet) from station. Station mark has been disturbed by a section foreman and the station should be considered as lost.

Plane coordinates: (N), $x=1,975,985.98$ feet; $y=316,582.33$ feet; the grid azimuth to station *Top I* = $230^{\circ}01'16''.1$.

Top G (Lexington County, M. E. Lutz, 1918; 1919).—About 4.75 miles north of Gaston Railway Station, on Seaboard Air Line Railway right-of-way at south end of curve 585 meters (1,919 feet) north of milepost 371, on prolongation of southward tangent to curve of west rail of main track and 10.74 meters (35.2 feet) east of east rail of track. Surface mark is standard disk, stamped "Picardy A," in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Mark has been disturbed by a section foreman and the station should be considered as lost.

Plane coordinates: (N), $x=1,974,949.32$ feet; $y=316,333.54$ feet; the grid azimuth to station *Top H* = $256^{\circ}30'16''.9$.

Top F (Lexington County, M. E. Lutz, 1918; 1919).—About 4 miles north of Gaston Railway Station, on Seaboard Air Line Railway right-of-way, at curve, 200 meters (656 feet) north of milepost 371, 11.46 meters (37.6 feet) west of west rail of main track and 3 feet above track. Surface mark is standard disk, stamped "Top G," in concrete, note 1a. Underground mark is copper bolt in concrete. Mark has been disturbed by a section foreman and the station should be considered as lost.

Plane coordinates: (N), $x=1,973,399.53$ feet; $y=316,727.68$ feet; the grid azimuth to station *Top G* = $284^{\circ}16'07''.9$.

Top E (Lexington County, M. E. Lutz, 1918; 1919).—About 3.5 miles north of Gaston Railway Station, on Seaboard Air Line Railway right-of-way at curve, 130 meters (427 feet) south of milepost 371, on prolongation of southward tangent

to curve of east rail of main track and 16.56 meters (54.3 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 13.67 meters (44.8 feet) west of west rail of main track and 18.58 meters (61.0 feet) from station.

Plane coordinates: (N), $x=1,972,384.99$ feet; $y=316,291.80$ feet; the grid azimuth to station *Top F* = $246^{\circ}45'00''$.1.

Top D (Lexington County, M. E. Lutz, 1918; 1919).—About 3 miles north of Gaston railway station, on Seaboard Air Line Railway right-of-way near highest point of track 695 meters (2,280 feet) north of milepost 372, 140 meters (459 feet) north of private road crossing and 1.77 meters (5.8 feet) east of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b.

Plane coordinates: (N), $x=1,971,322.29$ feet; $y=313,900.30$ feet; the grid azimuth to station *Top E* = $203^{\circ}57'31''$.4.

Top C (Lexington County, M. E. Lutz, 1918; 1919).—About 2.5 miles north of Gaston Railway Station, just west of Seaboard Air Line Railway right-of-way, at curve at milepost 372, at intersection of tangents to curve of east rail of main track, 49.53 meters (162.5 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark H 2, (U. S. C. & G. S.), is 60.33 meters (197.9 feet) from station.

Plane coordinates: (N), $x=1,970,376.42$ feet; $y=311,801.50$ feet; the grid azimuth to station *Top D* = $204^{\circ}15'35''$.1.

Top B (Lexington County, M. E. Lutz, 1918; 1919).—About 2 miles north of Gaston Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 815 meters (2,674 feet) north of milepost 373, 40.79 meters (133.8 feet) east of east rail of track and about 4 meters (13 feet) below track. Surface mark is standard disk, marked "Top", in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 30 meters (98 feet) east of east rail of track, 10 meters (33 feet) north of 10-inch pine and 15.17 meters (49.8 feet) from station.

Plane coordinates: (N), $x=1,971,668.62$ feet; $y=309,462.57$ feet; the grid azimuth to station *Top C* = $151^{\circ}04'49''$.6.

Top A (Lexington County, M. E. Lutz, 1918; 1919).—1.5 miles north of Gaston Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 370 meters (1,214 feet) south of milepost 373 and 2.12 meters (7.0 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b.

Plane coordinates: (N), $x=1,970,442.26$ feet; $y=305,725.64$ feet; the grid azimuth to station *Top B* = $198^{\circ}10'06''$.4.

Swansea I (Lexington County, M. E. Lutz, 1918; 1919).—About 1.25 miles north of Swansea Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of prolongation of northward tangent to curve of west rail of track and southward tangent to curve of east rail, 170 meters (558 feet) south of milepost 379, 17.6 meters (57.7 feet) west of west rail of track and about 4 meters (13 feet) below track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telegraph poles, 9.7 meters (32 feet) west of west rail of track, about 4 meters (13 feet) below track and 9.60 meters (31.5 feet) from station.

Plane coordinates: (N), $x=1,967,354.09$ feet; $y=274,958.82$ feet; the grid azimuth to station *Flanders* = $182^{\circ}38'24''$.2. (S), $x=1,967,353.53$ feet; $y=699,369.80$ feet; the grid azimuth to station *Flanders* = $182^{\circ}38'16''$.3.

Swansea H (Lexington County, M. E. Lutz, 1918; 1919).—About 0.75 mile north of Swansea Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 770 meters (2,526 feet) south of milepost 379 and 23.58 meters (77.4 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 130 meters (426 feet) south of public road crossing, 7.2 meters east of east rail of track and 16.33 meters (53.6 feet) from station.

Plane coordinates: (N), $x=1,968,208.00$ feet; $y=273,171.64$ feet; the grid azimuth to station *Swansea I* = $154^{\circ}27'41''$.9. (S), $x=1,968,207.51$ feet; $y=697,582.61$ feet; the grid azimuth to station *Swansea I* = $154^{\circ}27'35''$.8.

Swansea G (Lexington County, M. E. Lutz, 1918; 1919).—0.5 mile north of Swansea Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of track, 360 meters (1,181 feet) north of milepost 380 and 8.76 meters (28.7 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line between telegraph poles, 10 meters (33 feet) west of west rail of track and 12.88 meters (42.3 feet) from station.

Plane coordinates: (N), $x=1,968,029.10$ feet; $y=271,567.11$ feet; the grid azimuth to station *Swansea H* = $186^{\circ}21'43''.3$. (S), $x=1,968,028.66$ feet; $y=695,978.06$ feet; the grid azimuth to station *Swansea H* = $186^{\circ}21'36''.6$.

Swansea F (Lexington County, M. E. Lutz, 1918; 1919).—220 yards north of Swansea Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 240 meters (787 feet) south of milepost 380 and 18.17 meters (59.6 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on land belonging to J. C. Reynolds, 29.41 meters (96.5 feet) east of east rail of track, 10 meters (33 feet) south of Reynolds' dwelling and 18.09 meters (59.4 feet) from station.

Plane coordinates: (N), $x=1,968,646.37$ feet; $y=269,690.85$ feet; the grid azimuth to station *Swansea G* = $161^{\circ}47'21''.6$. (S), $x=1,968,646.01$ feet; $y=694,101.80$ feet; the grid azimuth to station *Swansea G* = $161^{\circ}47'13''.7$.

Swansea E (Lexington County, M. E. Lutz, 1918).—On Seaboard Air Line Railway right-of-way, at first curve south of Swansea Railway Station, at intersection of tangents to curve of east rail of track and 21.2 meters (69.6 feet) west of west rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on prolongation of northward tangent to curve of west rail, 18.72 meters (61.4 feet) west of west rail of track and 19.05 meters (62.5 feet) from station.

Plane coordinates: (N), $x=1,967,783.80$ feet; $y=266,317.65$ feet; the grid azimuth to station *Swansea F* = $194^{\circ}20'38''.0$. (S), $x=1,967,783.55$ feet; $y=690,728.53$ feet; the grid azimuth to station *Swansea F* = $194^{\circ}20'30''.6$.

Swansea D (Lexington County, M. E. Lutz, 1918).—About 0.25 mile south of Swansea Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 14.1 meters (46.3 feet) from milepost 258, 2.89 meters (9.5 feet) west of west rail of track and about 3 feet below track. Station mark is nail driven in 2- by 4-inch stake set in concrete.

Plane coordinates: (N), $x=1,968,277.53$ feet; $y=264,409.38$ feet; the grid azimuth to station *Swansea E* = $165^{\circ}29'37''.9$. (S), $x=1,968,277.36$ feet; $y=688,820.27$ feet; the grid azimuth to station *Swansea E* = $165^{\circ}29'29''.6$.

Swansea C (Lexington County, M. E. Lutz, 1918; 1919).—1 mile south of Swansea Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 605 meters (1985 feet) south of milepost 381 and 5.12 meters (16.8 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 50 meters (164 feet) south of whistle post, 7.11 meters (23.3 feet) west of west rail of track, about 3 feet above track and 14.41 meters (47.3 feet) from station.

Plane coordinates: (N), $x=1,968,829.57$ feet; $y=263,482.83$ feet; the grid azimuth to station *Swansea D* = $149^{\circ}12'48''.4$. (S), $x=1,968,829.44$ feet; $y=687,893.74$ feet; the grid azimuth to station *Swansea D* = $149^{\circ}12'39''.9$.

Swansea B (Lexington County, M. E. Lutz, 1918; 1919).—1.75 miles south of Swansea Railway Station, on Seaboard Air Line Railway right-of-way, at intersection of prolongation of southward tangent to curve of west rail of main track and northward tangent to curve of east rail, 185 meters (607 feet) south of milepost 382 and 15.91 meters (52.2 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on prolongation of northward tangent to curve of east rail of track, 9.71 meters (31.9 feet) east of east rail, about 3 feet above track and 25.99 meters (85.3 feet) from station.

Plane coordinates: (N), $x=1,969,757.28$ feet; $y=259,698.20$ feet; the grid azimuth to station *Swansea C* = $166^{\circ}13'36''.9$. (S), $x=1,969,757.27$ feet; $y=684,109.11$ feet; the grid azimuth to station *Swansea C* = $166^{\circ}13'30''.7$.

Swansea A (Lexington County, M. E. Lutz, 1918; 1919).—2 miles south of Swansea Railway Station, at curve on Seaboard Air Line right-of-way, at intersection of tangents to curve of west rail of main track, 720 meters (2,362 feet) north of milepost 383 and 24.34 meters (79.9 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark C2 (U. S. C. & G. S.), is 176.44 meters (578.9 feet) from station.

Plane coordinates: (N), $x=1,969,043.01$ feet; $y=257,436.40$ feet; the grid azimuth to station *Swansea B* = $197^{\circ}31'33''.5$. (S), $x=1,969,043.10$ feet; $y=681,847.31$ feet; the grid azimuth to station *Swansea B* = $197^{\circ}31'25''.2$.

Miller A (Lexington County, M. E. Lutz, 1918; 1919).—About 2.5 miles south Swansea Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangent to curve of west rail of main track, 210 meters (689 feet) north of milepost 383 and 16.77 meters (55 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is about on line with northward tangent to curve in track, 9.09 meters (29.8 feet) west of west rail of track and 23.98 meters (78.7 feet) from station.

Plane coordinates: (N), $x=1,967,620.55$ feet; $y=256,547.06$ feet; the grid azimuth to station *Miller* = $25^{\circ}09'04''.2$. (S), $x=1,967,620.67$ feet; $y=680,957.92$ feet; the grid azimuth to station *Miller* = $25^{\circ}08'56''.5$.

Livingston C (Orangeburg County, M. E. Lutz, 1918; 1919).—About 1.5 miles south of North Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of west rail of main track, 785 meters (2,575 feet) north of milepost 392, 5.5 meters (18 feet) east of east rail of track and about 3 meters (10 feet) below track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is at edge of cultivated land, about 20 meters (66 feet) east of track, 6 meters (20 feet) below track and 15.43 meters (50.6 feet) from station.

Plane coordinates: (S), $x=1,967,587.55$ feet; $y=637,104.64$ feet; the grid azimuth to station *North* = $184^{\circ}51'47''.7$.

Livingston B (Orangeburg County, M. E. Lutz, 1918; 1919).—About 1.5 miles north of Livingston Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of prolongation of southward tangent to curve of east rail of main track and northward tangent to curve of west rail, 355 meters (1,165 feet) south of milepost 392 and 10.51 meters (34.5 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with southward tangent to curve of east rail of track, 6.94 meters (22.8 feet) east of east rail, about 4.9 feet above track and 20.41 meters (67.0 feet) from station.

Plane coordinates: (S), $x=1,966,329.46$ feet; $y=633,539.46$ feet; the grid azimuth to station *Livingston C* = $199^{\circ}26'13''.4$.

Livingston A (Orangeburg County, M. E. Lutz, 1918).—About 1 mile north of Livingston Railway Station, on cultivated land, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track and 30 meters (98 feet) west of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 6.17 meters (20.2 feet) west of west rail of track, about 2.4 feet below track and 29.84 meters (97.9 feet) from station.

Plane coordinates: (S), $x=1,963,838.33$ feet; $y=631,045.66$ feet; the grid azimuth to station *Livingston B* = $224^{\circ}58'09''.5$.

Neces B (Orangeburg County, M. E. Lutz, 1918).—About 220 yards south of Livingston Railway Station, on Seaboard Air Line Railway right-of-way at first curve south of railway station at intersection of tangents to curve of east rail of main track and 32 meters (105 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is 6.89 meters (22.6 feet) east of east rail of track, about 3 feet below track and 25.57 meters (83.9 feet) from station.

Plane coordinates: (S), $x=1,963,470.66$ feet; $y=624,530.85$ feet; the grid azimuth to station *Livingston* = $183^{\circ}48'29''.8$.

Neces A (Orangeburg County, M. E. Lutz, 1918).—About 0.25 mile north of Neces Railway Station, on cultivated land just west of Seaboard Air Line Rail-

way right-of-way, at first curve and at intersection of tangents to curve of east rail of main track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telegraph pole, 8.64 meters (28.3 feet) west of west rail of track and 49.68 meters (163.0 feet) from station.

Plane coordinates: (S), $x=1,960,716.28$ feet; $y=621,256.02$ feet; the grid azimuth to station *Neece* B = $220^{\circ}03'59''.0$.

Norway G (Orangeburg County, M. E. Lutz, 1918).—At *Neece* Railway Station, on Seaboard Air Line Railway right-of-way, about 120 meters (394 feet) south of depot and 22 meters (72 feet) south of switch stand at south end of side track. Surface mark is file scratches across top of east rail of main track. Reference mark, bench mark V 1 (U. S. C. & G. S.), is 6.99 meters (22.9 feet) from station.

Plane coordinates: (S), $x=1,961,870.56$ feet; $y=617,821.66$ feet; the grid azimuth to station *Neece* A = $161^{\circ}25'21''.5$.

Norway F (Orangeburg County, M. E. Lutz, 1918; 1919).—About 0.25 mile south of *Neece* Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 105 meters (344 feet) north of milepost 396, 5 meters (16 feet) west of west rail of track and 2 meters (7 feet) below track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is about 60 meters (197 feet) south of private road crossing, 14.24 meters (46.7 feet) west of west rail of track, 3 meters (10 feet) below track and 54.01 meters (177.2 feet) from station.

Plane coordinates: (S), $x=1,962,462.75$ feet; $y=616,056.27$ feet; the grid azimuth to station *Norway* G = $161^{\circ}27'22''.6$.

Norway E (Orangeburg County, M. E. Lutz, 1918; 1919).—About 1 mile south of *Neece* Railway Station, at curve on Seaboard Air Line Railway right-of-way, on prolongation of northward tangent to curve of east rail of main track, 720 meters (2,362 feet) south of milepost 396 and 2.34 meters (7.7 feet) east of east rail of track. Surface mark is nail driven in 2- by 4-inch wooden stub set in concrete. Underground mark is copper bolt in concrete, note 7b. Reference mark is standard disk in concrete, note 11c.

Plane coordinates: (S), $x=1,963,920.70$ feet; $y=613,735.58$ feet; the grid azimuth to station *Norway* F = $147^{\circ}51'40''.8$.

Norway D (Orangeburg County, M. E. Lutz, 1918; 1919).—About 1.12 miles south of *Neece* Railway Station, at south end of curve on Seaboard Air Line Railway right-of-way, on prolongation of southward tangent to curve of east rail of main track, about 580 meters (1,903 feet) north of milepost 397 and 3 feet east of east rail of track. Station mark is nail driven in 2- by 4-inch wooden stub set in concrete. Underground mark is copper bolt in concrete, note 7b. Reference mark is standard disk in concrete, note 11c.

Plane coordinates: (S), $x=1,964,037.60$ feet; $y=613,013.94$ feet; the grid azimuth to station *Norway* E = $170^{\circ}47'54''$.

Norway C (Orangeburg County, M. E. Lutz, 1918; 1919).—About 1.5 miles south of *Neece* Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of tangents to curve of east rail of main track, 130 meters (427 feet) south of milepost 397 and 8.45 meters (27.7 feet) west of west rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telephone poles, 8.30 meters (27.2 feet) west of west rail of track and 20.32 meters (66.7 feet) from station.

Plane coordinates: (S), $x=1,963,577.54$ feet; $y=610,456.46$ feet; the grid azimuth to station *Norway* D = $190^{\circ}11'51''.9$.

Norway B (Orangeburg County, M. E. Lutz, 1918; 1919).—About 2 miles south of *Neece* Railway Station, at curve on Seaboard Air Line Railway right-of-way, at intersection of prolongation of southward tangent to curve of west rail and northward tangent to curve of east rail of track, 465 meters (1,526 feet) north of milepost 398 and 11.15 meters (36.6 feet) east of east rail of track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, standard disk in concrete, note 11c, is on line with telegraph poles, 6.36 meters (20.9 feet) west of west rail of track and 24.26 meters (79.6 feet) from station.

Plane coordinates: (S), $x=1,963,979.41$ feet; $y=607,180.75$ feet; the grid azimuth to station *Norway* C = $173^{\circ}00'20''.9$.

Norway A (Orangeburg County, M. E. Lutz, 1918; 1919).—On Seaboard Air Line Railway right-of-way at first curve north of *Norway* Railway Station, at

intersection of prolongation of southward tangent to curve of east rail and northward tangent to curve of west rail of main track, 510 meters (1,673 feet) south of milepost 398, 2.02 meters (6.6 feet) west of west rail of track and about 3 feet below track. Surface mark is standard disk in concrete, note 1a. Underground mark is copper bolt in concrete, note 7b. Reference mark, bench mark U 1 (U. S. C. & G. S.), is 4.99 meters (16.4 feet) west of west rail of main track and 68.79 meters (225.7 feet) from station.

Plane coordinates: (S), $x=1,963,085.09$ feet; $y=604,072.36$ feet; the grid azimuth to station *Norway B* = $196^{\circ}03'04''$.1.

BEAUFORT TO CHARLESTON TRAVERSE

Principal points

Salt Bridge (Beaufort County, W. B. Fairfield, 1901; 1924).—About $3\frac{1}{2}$ miles west of Beaufort, on the south side of road that leads from Beaufort to Port Royal Ferry, on the south side of the Charleston & Western Carolina Railway, not far from bridge (known locally as Salt Water Bridge) that crosses Salt Water Creek, on the prolongation of the 16-mile tangent of the railway that extends from Yemassee to Salt Bridge, 100 meters (328 feet) south of the south bank of the creek, in field belonging to Henry Cherry. Marked by a 4-inch tile pipe, filled with and set in concrete; a spike in the center of the tile marks the station.

Plane coordinates: (S), $x=2,082,620.24$ feet; $y=223,652.55$ feet; the grid azimuth to station *Beaufort Church* = $284^{\circ}43'01''$.4.

Hill (Beaufort County, E. B. Roberts, 1924; 1932).—At Grays Hill, on Charleston & Western Carolina Railway right-of-way, between main track and side track which is west of main track and about 10 meters (33 feet) north of road crossing. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark, not found in 1932, is standard disk in concrete, note 11a, 4.962 meters (16.28 feet) from station in azimuth $251^{\circ}02'$. *Gray* (see description thereof) is 30.846 meters (101.20 feet) from station in azimuth $69^{\circ}42'$.

Plane coordinates: (S), $x=2,076,885.43$ feet; $y=239,528.08$ feet; the grid azimuth to station *Salt Bridge* = $340^{\circ}08'18''$.5.

Brook (Beaufort County, E. B. Roberts, 1924; 1933).—On west side of track of Charleston & Western Carolina Railway about 1,000 meters (3,281 feet) south of road crossing at Seabrook. To reach from Seabrook, follow road paralleling railway track to station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark, standard disk in concrete, note 11a, is 7.415 meters (24.33 feet) from station in azimuth $201^{\circ}41'$.

Plane coordinates: (S), $x=2,073,110.88$ feet; $y=249,988.79$ feet; the grid azimuth to station *Hill* = $340^{\circ}09'32''$.3.

Sea (Beaufort County, E. B. Roberts, 1924; 1933).—About 60 meters (197 feet) from south end of trestle across Coosaw River, on Charleston & Western Carolina Railway right-of-way, 1.5 meters (5 feet) east of east rail of track. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark, standard disk in concrete, note 11a, is 5.63 meters (18.5 feet) from station in azimuth $77^{\circ}25'$. Azimuth from station to water tank, northeast corner, 16.8 meters (55 feet), is $356^{\circ}54'$.

Plane coordinates: (S), $x=2,071,826.11$ feet; $y=253,596.49$ feet; the grid azimuth to station *Brook* = $340^{\circ}23'53''$.6.

Saw (Beaufort County, E. B. Roberts, 1924).—East of trestle over Hospa Creek, on Seaboard Air Line Railway right-of-way and 2.5 meters (8 feet) south of south rail of track. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark, standard disk in concrete, note 11a, is 5.262 meters (17.26 feet) from station in azimuth $134^{\circ}24'$.

Plane coordinates: (S), $x=2,077,643.43$ feet; $y=261,175.68$ feet; the grid azimuth to station *Sea* = $37^{\circ}30'27''$.4.

Dale (Beaufort County, E. B. Roberts, 1924).—On Seaboard Air Line Railway right-of-way, 46.6 meters (153 feet) south of milepost 470 and 2 meters (7 feet) west of west rail of track. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark, standard disk in concrete, note 11a, is 11.418 meters (37.46 feet) from station in azimuth $276^{\circ}58'$.

Plane coordinates: (S), $x=2,084,139.56$ feet; $y=263,831.33$ feet; the grid azimuth to station *Saw* = $67^{\circ}45'54''$.0."

Long (Beaufort County, E. B. Roberts, 1924; 1934).—On the Seaboard Air Line Railway fill west of Wimbee Creek, 1.5 meters (5 feet) north of the north

rail and 3.5 meters (11 feet) north of the south rail. The surface and underground marks are standard traverse disks in concrete, notes 1a and 7a. The surface mark is about 6 inches below the surface of the ground and stamped "Long 1924." Reference marks are standard reference disks in concrete, note 11a. The old reference mark stamped "Long 1924" is 6.25 meters (20.5 feet) from station in azimuth $14^{\circ}48'$. An additional reference mark established in 1934 and stamped "No. 1" is 123.40 meters (404.9 feet) from station in azimuth $247^{\circ}23'$.

Plane coordinates: (S), $x=2,101,681.43$ feet; $y=270,955.82$ feet.

Short (Beaufort County, E. B. Roberts, 1924; 1934).—On the Seaboard Air Line Railway east of the Combahee River bridge, 15 meters (49 feet) from trestle, on the south side of the track, 3.55 meters (11.6 feet) south of the north rail and 1.56 meters (5.1 feet) south of the south rail. The surface and underground marks are standard traverse disks in concrete, notes 1a and 7a. The surface mark is approximately 1 foot below the surface of the ground and stamped "Short 1924." Old reference mark is standard reference disk in concrete, note 11a. The old reference mark stamped "Short 1924" is 5.427 meters (17.81 feet) from station in azimuth $174^{\circ}11'$. An additional reference mark established in 1934 and stamped "No. 1" was cemented in the concrete abutment of the railroad bridge and is 76.205 meters (250.02 feet) from station in azimuth $69^{\circ}22'$.

Plane coordinates: (S), $x=2,114,298.73$ feet; $y=276,063.93$ feet.

Zeb (Colleton County, E. B. Roberts, 1924).—In vicinity of Meggetts, on Seaboard Air Line Railway right-of-way east of a trestle bridge across Chehaw River and 2 meters (7 feet) north of north rail of track. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark, standard disk in concrete, note 11a, is 6.079 meters (19.94 feet) from station in azimuth $5^{\circ}58'$.

Plane coordinates: (S), $x=2,139,649.80$ feet; $y=286,381.09$ feet.

Zip (Colleton County, E. B. Roberts, 1924).—On Seaboard Air Line Railway right-of-way, 1,200 meters (3,937 feet) east of water tank, 300 meters (984 feet) east of milepost 456, on north side of track, midway between main track and sidetrack. Surface mark is standard disk in concrete, note 1a. Reference mark, standard disk in concrete, note 11a, is 5.784 meters (18.98 feet) from station in azimuth $120^{\circ}13'$.

Plane coordinates: (S), $x=2,152,301.36$ feet; $y=291,529.43$ feet; the grid azimuth to station *Zeb* = $67^{\circ}51'25''.0$.

Bridge (Charleston County, E. B. Roberts, 1924; 1934).—On the east bank of the South Edisto River in the railroad embankment of the Seaboard Air Line Railway, 30 meters (98 feet) from bridge across Edisto River, 500 meters (1,640 feet) east of milepost 450, on the north side of the embankment, 1.415 meters (4.64 feet) north of the center line of the north rail and 9.60 meters (31.5 feet) east of the end of a fill. Station is marked with standard disk stamped "Bridge 1924" set in a concrete block 12 inches square. The reference mark is a standard disk stamped "Bridge 1924" set in a concrete block 6 inches square and is 5.315 meters (17.44 feet) from station in azimuth $356^{\circ}09'$.

Plane coordinates: (S), $x=2,180,479.23$ feet; $y=303,006.54$ feet.

Tank (Charleston County, E. B. Roberts, 1924; 1934).—About 1.7 miles east of railroad bridge over South Edisto River, along edge of embankment of Seaboard Air Line Railway, about 400 meters (1,312 feet) west of concrete foundation of railroad water tank on north side of railroad, 225 meters (738 feet) west of milepost 448, 6 feet east of center line of dirt road crossing railroad at right angles and 5 feet north of north rail of track. Surface mark is standard disk in concrete, note 1a. Reference mark, standard disk in concrete, note 11a, is 17.121 meters (56.17 feet) from station in azimuth $213^{\circ}38'$.

Plane coordinates: (S), $x=2,190,986.37$ feet; $y=307,289.90$ feet; the grid azimuth to station *Bridge* = $67^{\circ}49'16''.2$.

Cross (Charleston County, E. B. Roberts, 1924).—About 5 miles south of Meggetts, 200 meters (656 feet) west of Towles Railroad Station, at crossing of Seaboard Air Line Railway and branch of Atlantic Coast Line Railroad, 5 meters (16 feet) north of north rail of Atlantic Coast Line Railroad track and 3 meters (10 feet) east of east rail of Seaboard Air Line Railway track. Surface mark is standard disk in concrete note 1a. Reference mark, standard disk in concrete, note 11a, is 15.795 meters (51.82 feet) from station in azimuth $271^{\circ}57'$.

Plane coordinates: (S), $x=2,208,889.77$ feet; $y=314,570.19$ feet; the grid azimuth to station *Tank* = $67^{\circ}52'16''.4$.

Pip (Charleston County, L. P. Raynor, 1924; 1934).—3 miles east of Meggetts, on Seaboard Air Line Railway right-of-way, 400 meters (1,312 feet) west of water

tank, 1.8 meters (6 feet) south-southeast of south-southeast rail of track and at east side of public road crossing. Surface mark is standard disk in concrete, note 1a, covered with dirt and cinders. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is 8.892 meters (29.17 feet) from station. Reference mark No. 2 is 15.480 meters (50.79 feet) from station.

Plane coordinates: (S), $x=2,246,203.01$ feet; $y=329,793.78$ feet; the grid azimuth to station $Meg=67^{\circ}51'35''.3$.

Yonges (Charleston County, L. P. Raynor, 1924; 1933).—At the north end of Church Flats, $2\frac{1}{4}$ miles southwest of Rantowles Crossing. Station is 2 meters ($7\frac{1}{2}$ feet) north-northwest of the north-northwest rail of the Seaboard Air Line Railway, 9 meters ($29\frac{1}{2}$ feet) west-southwest of signpost marked Yonges, 4.9 meters (16 feet) east-northeast of center line of paved road, 10 meters (33 feet) northeast of center of pile of earth at end of south track, 120 meters (394 feet) northwest of house now (1933) owned by Mr. Chisholm and opposite a loading platform at siding called Wideawake. The station can be reached by a side road leading south from the concrete pavement, just east of the first curve west of Clementina Tourist Cabins. There is a good landing on the Stono River, south of the house. Surface mark is a standard traverse disk set in concrete, note 1a. Reference marks are standard reference disks, notes 11a and 13a. The later additional reference mark was established in 1933. The 1924 reference mark is 16.92 meters (55.5 feet) from station in azimuth $343^{\circ}15'$. The 1933 reference mark is 15.78 meters (51.8 feet) from station in azimuth $276^{\circ}47'$.

Plane coordinates: (S), $x=2,256,631.38$ feet; $y=334,068.77$ feet.

Oak (Charleston County, L. P. Raynor, 1924; 1933).—At the P. I. of the first curve west of the west bridge over the Stono River on the Seaboard Air Line Railway, 8 meters (26 feet) west of a little slough north of the track and 3 meters (10 feet) from a large charred oak stump and 21 meters (69 feet) from the track. Station can be reached by a side road leading from the pavement to Mr. Carter's house and by walking across the field east of the trees. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 11.93 meters (39.1 feet) from station in azimuth $320^{\circ}26'$. No. 2 is 9.71 meters (31.9 feet) from station in azimuth $43^{\circ}13'$.

Plane coordinates: (S), $x=2,259,512.54$ feet; $y=335,260.65$ feet; the grid azimuth to beacon No. 2= $43^{\circ}32'54''.9$.

Piston (Charleston County, L. P. Raynor, 1924; 1933).—On John's Island, 250 meters (820 feet) east of west bridge over Stono River, in grass at the edge of cinders, 7 feet south of south rail of Seaboard Air Line Railway. Footpath leads down embankment about 10 meters (33 feet) east of station. Surface mark is standard disk in concrete, note 1a.

Plane coordinates: (S), $x=2,266,406.93$ feet; $y=335,112.05$ feet; the grid azimuth to station $Oak=91^{\circ}14'05''.1$.

Curve (Charleston County, L. P. Raynor, 1924; 1933).—About 400 meters (1,312 feet) east of west crossing of Stono River by Seaboard Air Line Railway, 5 meters (16 feet) south of south rail of track and in line with south rail of track facing east from station. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference marks are standard disks in concrete, note 11a. Reference mark No. 1 is 103.28 feet from station. Reference mark No. 2 is 8.06 meters (26.4 feet) from station.

Plane coordinates: (S), $x=2,267,077.82$ feet; $y=335,211.16$ feet; the grid azimuth to station $Piston=81^{\circ}35'47''.5$.

Stono (Charleston County, L. P. Raynor, 1924).—30 meters east of signboard at Stono Railway Station, between main track and sidetrack of Seaboard Air Line Railway, 10 meters (33 feet) east of public road crossing and 7 feet north of north rail of main track. Surface mark is standard disk in concrete, note 1a. Reference mark No. 1, standard disk in concrete, note 11a, is 9.57 meters (31.4 feet) from station in azimuth $304^{\circ}06'$. Reference mark No. 2, bench mark (U. S. G. S.) is 9.104 meters (29.87 feet) from station in azimuth $120^{\circ}36'$.

Plane coordinates: (S), $x=2,274,642.76$ feet; $y=338,738.45$ feet; the grid azimuth to station $Curve=65^{\circ}00'06''.7$.

Pack (Charleston County, L. P. Raynor, 1924).—On north side of John's Island, on right-of-way of Seaboard Air Line Railway at point where it first crosses Stono River west of Charleston, on fill about 12 feet west of west end of trestle crossing Stono River and about 5 feet north of north rail of track. Surface mark, not found in 1932, is standard disk in concrete, note 1a. Two standard reference marks are set on side of railway track and about 10 feet north of where River

Road crosses railway. Reference mark No. 2 was not found in 1932. Station reported lost in 1933.

Plane coordinates: (S), $x=2,283,774.08$ feet; $y=343,016.31$ feet; the grid azimuth to station *Stono* = $64^{\circ}53'51''.9$.

Top (Charleston County, L. P. Raynor, 1924; 1933).—About 5 miles west of Charleston, 1 mile west of Dupont, on the right-of-way of the Seaboard Air Line Railway between Charleston and Savannah and about 1.5 miles west of where the Savannah Road crosses the railroad, and near the first curve west of this crossing. The station is about 10 meters (33 feet) west of a lightly traveled road and in line with the right-hand rail as one faces toward Charleston. It is set on the hill and about 6 feet north of the north rail at the curve. It may be reached by truck from the Savannah Road by taking the road leading by Melvin Station of the Atlantic Coast Line Railroad. Surface and underground marks are standard traverse disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 26.821 meters (88.00 feet) from station in azimuth $227^{\circ}54'$. No. 2 is 19.919 meters (65.35 feet) from station in azimuth $302^{\circ}56'$.

Plane coordinates: (S), $x=2,292,643.80$ feet; $y=347,125.32$ feet; the grid azimuth to Box and Barrel Factory, east stack = $332^{\circ}22'19''.3$.

Road (Charleston County, L. P. Raynor, 1924; 1933).—About 4 miles west of Charleston. The station is marked by a standard traverse disk set in the concrete roadbed of the Savannah Road, where it crosses the right-of-way of the Seaboard Air Line Railway and is near the south edge of the concrete and about 5 feet north of the north rail of railroad. In 1933 the original reference marks could not be found and were replaced by new ones set in new localities with respect to the station according to note 13a. No. 1 is 17.260 meters (56.63 feet) from station in azimuth $87^{\circ}14'$. No. 2 is 32.079 meters (105.25 feet) from station in azimuth $126^{\circ}19'$.

Plane coordinates: (S), $x=2,300,555.91$ feet; $y=348,764.99$ feet; the grid azimuth to West Silo = $269^{\circ}55'42''.9$.

Track (Charleston County, L. P. Raynor, 1924).—About 1,200 meters (3,937 feet) west of Seaboard Air Line Railway bridge over Ashley River, on Seaboard Air Line Railway right-of-way at first curve beyond bridge, 10 feet east of first road crossing west of bridge and about 6 feet south of south rail of track. Surface and underground marks are standard disks in concrete, notes 1a and 7a. Reference mark, standard disk in concrete, note 11a, is 16.25 meters (53.3 feet) from station in azimuth $283^{\circ}53'$.

Plane coordinates: (S), $x=2,311,701.40$ feet; $y=351,049.97$ feet.

West Base (Charleston County, L. P. Raynor, 1924; 1934).—On the main line of the Seaboard Air Line Railway running from Charleston to Savannah, about 600 meters (1,968 feet) west of bridge crossing the Ashley River. Station is 2.4 meters (8 feet) south of the south rail and approximately halfway between the eighth and ninth telegraph poles (south of track) west of the bridge. Surface and underground marks are standard disks set in concrete, notes 1a and 7a. Reference mark is a standard reference disk set in concrete, note 11a. Neither the station disk nor reference mark is stamped. The reference mark is 7.21 meters (23.7 feet) from station in azimuth $197^{\circ}13'$.

Plane coordinates: (S), $x=2,313,593.97$ feet; $y=351,514.49$ feet; the grid azimuth to Ashley Bridge, southeast tower = $307^{\circ}59'27''.8$.

AUGUSTA, GA., TO PORT ROYAL, S. C., TRAVERSE

Principal points

Azimuth No. 10 (Aiken County, W. B. Fairfield, 1901).—The station is at the 8-kilometer mark from station *Millpond* and is some 1,400 meters (4,593 feet) south of Ellenton railway station. The station is not marked.

Plane coordinates: (S), $x=1,775,298.40$ feet; $y=504,874.08$ feet; the grid azimuth to station *Beech Island* (*Augusta northwest base*) = $143^{\circ}56'26''.3$.

Millpond (Barnwell County, W. B. Fairfield, 1901).—Station is at the first curve north of Robbins railway station at Burke's Mill and Millpond. It is about 100 feet from railroad in low, swampy place and is marked by a 2-foot drain tile pipe set in cement with nail in center.

Plane coordinates: (S), $x=1,790,757.90$ feet; $y=483,660.87$ feet; the grid azimuth to station *Azimuth No. 10* = $143^{\circ}54'59''.9$.

For notes in regard to marking of stations see p. 68.

Robbins (Barnwell County, W. B. Fairfield, 1901).—Station is at the first curve south of Robbins railway station, about 20 feet from track in low, swampy place. It is marked by a pine stub with nail in center.

Plane coordinates: (S), $x=1,802,591.30$ feet; $y=477,078.33$ feet; the grid azimuth to station *Millpond* = $119^{\circ}05'08''.8$.

Hattieville (Barnwell County, W. B. Fairfield, 1901).—The station is about 200 meters (656 feet) south of Hattieville railway station, about 50 feet from the track in a low, wet place. It is marked by a 2-foot drain tile pipe set in cement with nail in center. In 1932, station was reported lost.

Plane coordinates: (S), $x=1,813,127.01$ feet; $y=465,437.14$ feet; the grid azimuth to station *Robbins* = $137^{\circ}51'13''.4$.

Azimuth No. 9 (Allendale County, W. B. Fairfield, 1901).—Station is about 1,700 meters (5,577 feet) from Avrillo and about 400 meters (1,312 feet) south of Millett Railroad Station. Station is not marked.

Plane coordinates: (S), $x=1,837,505.45$ feet; $y=453,417.57$ feet; the grid azimuth to station *Curve I* = $296^{\circ}12'12''.2$.

Curve H (Allendale County, W. B. Fairfield, 1901).—Station is about 500 meters (1,640 feet) south of Avrillo Railroad Station, 40 feet from track between railroad and cornfield. It is marked by a 2-foot drain tile pipe set in concrete with nail in center.

Plane coordinates: (S), $x=1,844,702.34$ feet; $y=451,952.98$ feet; the grid azimuth to station *Curve I* = $85^{\circ}43'35''.4$.

Martin (Allendale County, W. B. Fairfield, 1901).—Station is 400 meters (1,312 feet) beyond the first curve north of Martin Railway Station and 30 feet from track in edge of swamp. It is marked by a 2-foot drain tile pipe set in cement with nail in center.

Plane coordinates: (S), $x=1,853,049.84$ feet; $y=449,601.00$ feet; the grid azimuth to station *Curve H* = $105^{\circ}44'08''.3$.

Curve G (Allendale County, W. B. Fairfield, 1901).—Station is at the first curve south of Martin Railway Station, 30 feet from track in edge of swamp. It is marked by a 2-foot drain tile pipe set in cement with nail in center.

Plane coordinates: (S), $x=1,858,056.60$ feet; $y=450,371.19$ feet; the grid azimuth to station *Martin* = $81^{\circ}15'17''.1$.

Curve F (Allendale County, W. B. Fairfield, 1901).—Station is on second curve west of Baldock Railway Station, about 75 feet from railway and in edge of pine woods. Marked by nail set in concrete in 2-foot drain tile pipe set in cement.

Plane coordinates: (S), $x=1,864,875.17$ feet; $y=454,665.50$ feet; the grid azimuth to station *Curve G* = $57^{\circ}47'50''.8$.

Curve E (Allendale County, W. B. Fairfield, 1901).—Station is on the first curve west of Baldock Railway Station. Marked by nail set in concrete in a 2-foot drain tile pipe set in concrete.

Plane coordinates: (S), $x=1,867,396.94$ feet; $y=454,894.56$ feet; the grid azimuth to station *Curve F* = $84^{\circ}48'35''.6$.

Beldoc (Allendale County, W. B. Fairfield, 1901).—Station is on first curve south of Baldock Railway Station, about 25 feet from the track in edge of swamp. Marked by a nail in a 6- by 6-inch pine stub.

Plane coordinates: (S), $x=1,872,061.78$ feet; $y=452,942.06$ feet; the grid azimuth to station *Curve E* = $112^{\circ}42'43''.5$.

Curve D (Allendale County, W. B. Fairfield, 1901).—Station is at the second curve south of Baldock Railroad Station, in cornfield and about 75 feet from the railway. Marked by nail set in concrete in a 2-foot drain tile pipe.

Plane coordinates: (S), $x=1,875,859.65$ feet; $y=449,776.69$ feet; the grid azimuth to station *Beldoc* = $129^{\circ}48'35''.4$.

Curve C (Allendale County, W. B. Fairfield, 1901).—Station is at the third curve north of Appleton Railway Station, in cornfield owned by Joe Rice, who lives in a large house on the opposite side of railway. Marked by nail set in concrete set in a 2-foot drain tile pipe.

Plane coordinates: (S), $x=1,880,588.56$ feet; $y=449,295.68$ feet; the grid azimuth to station *Curve B* = $308^{\circ}38'38''.1$.

Appleton (Allendale County, W. B. Fairfield, 1901; 1932).—Station is at the first curve north of Appleton Railway Station, in a cornfield owned by Joe All. Marked by nail set in concrete set in a 2-foot drain tile pipe. In 1932, station was reported lost.

Plane coordinates: (S), $x=1,886,002.78$ feet; $y=442,602.77$ feet; the grid azimuth to station *Curve B* = $178^{\circ}00'20''.1$.

For notes in regard to marking of stations see p. 68.

Azimuth No. 8 (Allendale County, W. B. Fairfield, 1901).—Station is at the 800 meter (2,625 feet) mark beyond station *Curve A*.

Plane coordinates: (S), $x=1,892,840.28$ feet; $y=437,178.33$ feet; the grid azimuth to station *Appleton* = $128^{\circ}25'34''$.5.

Curve A (Allendale County, W. B. Fairfield, 1901).—Station is at the second curve north of Allendale Railway Station. The curve is so slight that the mark falls between the rails of the track. Marked by a 2-foot drain tile pipe set in concrete, the top of which is 8 inches below the surface of ground. In 1918, station was reported destroyed.

Plane coordinates: (S), $x=1,894,896.64$ feet; $y=435,547.07$ feet; the grid azimuth to station *Azimuth No. 8* = $128^{\circ}25'26''$.8.

Allendale (Allendale County, W. B. Fairfield, 1901; 1907).—Station is at the first curve north of Allendale Railway Station and is at the end of the 36-mile tangent from *Yemassee*. The curve is so slight that the mark falls about 2 feet outside of the rail of the track. Marked by nail set in concrete set in a 2-foot drain tile pipe. In 1918, recovery party was unable to find station.

Plane coordinates: (S), $x=1,904,185.87$ feet; $y=428,630.99$ feet; the grid azimuth to station *Curve A* = $126^{\circ}40'07''$.2.

Allendale northeast base (Allendale County, W. H. Burger, 1907).—In town of Allendale, in driveway and near gateway of property of Seaboard Oil Mill. Marked by nail in $2\frac{1}{2}$ - by $2\frac{1}{2}$ -inch wooden stub driven flush with ground.

Plane coordinates: (S), $x=1,905,014.27$ feet; $y=428,731.94$ feet; the grid azimuth to station *Allendale* = $83^{\circ}03'08''$.1.

Allendale southwest base (Allendale County, W. H. Burger, 1907).—In town of Allendale, at edge of road just northeast of crossing of road leading from the Seaboard Oil Mill to the tracks of the Charleston & Western Carolina Railway. Marked by nail in $2\frac{1}{2}$ - by $2\frac{1}{2}$ -inch wooden stub driven flush with ground.

Plane coordinates: (S), $x=1,904,697.11$ feet; $y=428,293.07$ feet; the grid azimuth to station *Allendale northeast base* = $215^{\circ}51'18''$.1

Street (Allendale County, W. H. Burger, 1907).—Station located in street running southwest from the Seaboard Oil Mill and southwest of the Charleston & Western Carolina Railway tracks. Marked by a nail in center of wooden stub.

Plane coordinates: (S), $x=1,904,497.38$ feet; $y=428,052.24$ feet; the grid azimuth to station *Allendale northeast base* = $217^{\circ}15'06''$.1.

Allendale, latitude station (Allendale County, W. H. Burger, 1907).—In town of Allendale, located near the northeast side of the lot on which the Methodist (White) Church stands, 15.78 meters (51.8 feet) from the fence corner to the southeast, 21.72 meters (71.3 feet) from the fence corner to northwest. Marked by a 2-inch iron pipe 26 inches long driven with top even with surface of ground and in center of triangle formed by the 4- by 6-inch wooden posts used in the latitude pier. Posts are 3 feet in ground and sawed off close to surface of ground. In 1918, station was reported destroyed.

Plane coordinates: (S), $x=1,904,546.88$ feet; $y=427,754.97$ feet; the grid azimuth to station *Extension* = $243^{\circ}05'09''$.1

Azimuth No. 7 (Allendale County, W. B. Fairfield, 1901).—Station is at the end of the 53-kilometer mark from *Yemassee*. The station is not marked.

Plane coordinates: (S), $x=1,917,553.83$ feet; $y=417,590.53$ feet; the grid azimuth to station *Allendale* = $129^{\circ}33'10''$.6.

Brunson, Azimuth No. 6 (Hampton County, W. B. Fairfield, 1901).—Station is at the end of the 43-kilometer mark from *Yemassee*. The station is not marked.

Plane coordinates: (S), $x=1,942,856.30$ feet; $y=396,703.62$ feet; the grid azimuth to station *Azimuth No. 7* = $129^{\circ}32'21''$.5.

Varnville, Azimuth No. 5 (Hampton County, W. B. Fairfield, 1901).—Station is at the 29,600-meter mark from *Yemassee*, and about 500 meters (1,640 feet) east of Varnville Railway Station. The station is not marked.

Plane coordinates: (S), $x=1,976,774.97$ feet; $y=368,729.68$ feet; the grid azimuth to station *Brunson Azimuth No. 6* = $129^{\circ}30'49''$.0.

Cummings, Azimuth No. 4 (Hampton County, W. B. Fairfield, 1901).—Station is 1 mile south of Cummings Railway Station, at the 17-kilometer mark from *Yemassee*. The station is not marked.

Plane coordinates: (S), $x=2,008,682.43$ feet; $y=342,438.30$ feet; the grid azimuth to station *Varnville Azimuth No. 5* = $129^{\circ}29'17''$.3.

Early Branch, Azimuth No. 3 (Hampton County, W. B. Fairfield, 1901).—Station is near the Early Branch Railway Station, at the 12,200-meter mark from *Yemassee*. The station is not marked.

¹ This azimuth has been computed by the first formula (p. 73), neglecting the second term.

For notes in regard to marking of stations see p. 68.

Plane coordinates: (S), $x=2,020,710.12$ feet; $y=332,529.74$ feet; the grid azimuth to station *Cummings Azimuth No. 4* = $129^{\circ}28'55''.6$.

Davidson, Azimuth No. 2 (Hampton County, W. B. Fairfield, 1901).—Station is at Davidson Switch, at the 8,600-meter mark from *Yemassee*. The station is not marked.

Plane coordinates: (S), $x=2,029,827.31$ feet; $y=325,022.69$ feet; the grid azimuth to station *Early Branch Azimuth No. 3* = $129^{\circ}28'04''.4$.

Yemassee (Beaufort County, W. B. Fairfield, 1901).—Station is at the intersection of the 16-mile tangent from Salt Bridge and the 35-mile tangent from Allendale on the Charleston & Western Carolina Railway, about $1\frac{1}{4}$ miles from the Yemassee Railway Station, in a low swamp. Marked by nail set in concrete set in a 2-foot drain tile pipe.

Plane coordinates: (S), $x=2,052,876.38$ feet; $y=306,048.31$ feet; the grid azimuth to station *Davidson Azimuth No. 2* = $129^{\circ}27'42''.4$.

Sheldon, Azimuth No. 1 (Beaufort County, W. B. Fairfield, 1901).—The station is at Sheldon Railway Station at the 17,200-meter mark from *Salt Bridge*. The station is not marked.

Plane coordinates: (S), $x=2,062,962.22$ feet; $y=278,124.54$ feet; the grid azimuth to station *Yemassee* = $160^{\circ}08'26''.5$.

Supplementary points

Allendale, Methodist Church, spire (Allendale County, W. H. Burger, 1907; 1918).—Spire of the Methodist Church, located 1 block southwest and $1\frac{1}{2}$ blocks northwest of the Charleston & Western Carolina Railway Depot.

Plane coordinates: (S), $x=1,904,441.14$ feet; $y=427,638.83$ feet.

Allendale, Baptist Church (White), spire (Allendale County, W. H. Burger, 1907).—Spire of the Baptist (White) Church, located 1 block southwest and 1 block northwest of the Charleston & Western Carolina Railway Depot. In 1918 the church was reported destroyed.

Plane coordinates: (S), $x=1,904,839.26$ feet; $y=427,538.77$ feet.

Allendale, Presbyterian Church, spire (Allendale County, W. H. Burger, 1907; 1918).—Spire of the Presbyterian (White) Church, located 1 block southwest and $1\frac{1}{2}$ blocks northwest of the Charleston & Western Carolina Railway Depot.

Plane coordinates: (S), $x=1,905,013.86$ feet; $y=427,566.68$ feet.

Allendale, Baptist Church (Negro), spire (Allendale County, W. H. Burger, 1907; 1918).—In 1918, church was reported destroyed. Spire of the Baptist (Negro) Church, located 1 block northwest of the Charleston & Western Carolina Railway Depot near railway tracks.

Plane coordinates: (S), $x=1,905,070.55$ feet; $y=428,034.19$ feet.

Allendale, Seaboard Oil Mill, stack (Allendale County, W. H. Burger, 1907; 1918).—Center of tall iron smokestack of the Seaboard Oil Mill.

Plane coordinates: (S), $x=1,905,024.06$ feet; $y=428,863.02$ feet.

Plane-Coordinate Projection Tables

Table of Constants

| Constant | Zone | |
|---|-----------------|-----------------|
| | North | South |
| Standard parallel (south)..... | 33° 46' | 32° 20' |
| Standard parallel (north)..... | 34° 58' | 33° 40' |
| Central meridian..... | 81° 00' | 81° 00' |
| l | 0.56449738 | 0.54465157 |
| $\log l$ | 9.7516619306-10 | 9.7361187599-10 |
| $\log K$ | 7.6419678060 | 7.6521509551 |
| y_0 | 497,599.22 | 424,761.35 |
| $\log \frac{1}{2\rho_0^2 \sin^2 I}$ | 0.3731036-10 | 0.3732337-10 |

$$\text{Geodetic azimuth-grid azimuth} = + \theta - \frac{\chi_2 - \chi_1}{2\rho_0^2 \sin^2 I} (y_1 - y_0 + \frac{y_2 - y_1}{3})$$

Table I, north zone

| Latitude | R | y' (y value on the central meridian) | Tabular difference of R for one second of latitude | Scale correction | |
|----------|---------------|--------------------------------------|--|-------------------------------|----------------------|
| | | | | In units of 7th place of logs | Expressed as a ratio |
| | Feet | Feet | Feet | | |
| 33 00 | 31,127,724.75 | 0 | 101.09167 | +987.1 | 1.0002273 |
| 01 | 121,659.25 | 6,065.50 | 09117 | 957.5 | 2205 |
| 02 | 115,593.78 | 12,130.97 | 09083 | 928.3 | 2137 |
| 03 | 109,528.33 | 18,196.42 | 09033 | 899.5 | 2071 |
| 04 | 103,462.91 | 24,261.84 | 09000 | 871.0 | 2006 |
| 05 | 097,397.51 | 30,327.24 | 08967 | 842.9 | 1941 |
| 33 06 | 31,091,332.13 | 36,392.62 | 101.08933 | +815.1 | 1.0001877 |
| 07 | 085,266.77 | 42,457.98 | 08883 | 787.7 | 1814 |
| 08 | 079,201.44 | 48,523.31 | 08850 | 760.6 | 1751 |
| 09 | 073,136.13 | 54,588.62 | 08833 | 733.9 | 1690 |
| 10 | 067,070.83 | 60,653.92 | 08783 | 707.6 | 1629 |
| 33 11 | 31,061,005.56 | 66,719.19 | 101.08750 | +681.6 | 1.0001569 |
| 12 | 054,940.31 | 72,784.44 | 08733 | 656.0 | 1510 |
| 13 | 048,875.07 | 78,849.68 | 08683 | 630.7 | 1452 |
| 14 | 042,809.86 | 84,914.89 | 08667 | 605.8 | 1395 |
| 15 | 036,744.66 | 90,980.09 | 08633 | 581.3 | 1338 |
| 33 16 | 31,030,679.48 | 97,045.27 | 101.08600 | +557.1 | 1.0001283 |
| 17 | 024,614.32 | 103,110.43 | 08583 | 533.3 | 1228 |
| 18 | 018,549.17 | 109,175.58 | 08550 | 509.8 | 1174 |
| 19 | 012,484.04 | 115,240.71 | 08517 | 486.7 | 1121 |
| 20 | 006,418.93 | 121,305.82 | 08500 | 464.0 | 1068 |
| 33 21 | 31,000,353.83 | 127,370.92 | 101.08483 | +441.6 | 1.0001017 |
| 22 | 30,994,288.74 | 133,436.01 | 08450 | 419.6 | 0966 |
| 23 | 988,223.67 | 139,501.08 | 08433 | 398.0 | 0916 |
| 24 | 982,158.61 | 145,566.14 | 08400 | 376.7 | 0867 |
| 25 | 976,093.57 | 151,631.18 | 08400 | 355.8 | 0819 |

Table I, north zone - Continued

| Latitude | R | y' (y-value on the central meridian) | Tabular dif- ference of R for one second of latitude | Scale correction | |
|----------|---------------|---|--|-------------------------------------|----------------------------|
| | | | | In units of 7th place of logs | Expressed as a ratio |
| | Feet | Feet | Feet | | |
| 33 26 | 30,970,028.53 | 157,696.22 | 101.08367 | +335.2 | 1.0000772 |
| 27 | 963,963.51 | 163,761.24 | .08350 | 315.0 | 0725 |
| 28 | 957,898.50 | 169,826.25 | 08317 | 295.2 | 0680 |
| 29 | 951,833.51 | 175,891.24 | 08317 | 275.7 | 0635 |
| 30 | 945,768.52 | 181,956.23 | 08300 | 256.6 | 0591 |
| 33 31 | 30,939,703.54 | 188,021.21 | 101.08283 | +237.9 | 1.0000548 |
| 32 | 933,638.57 | 194,086.18 | 08267 | 219.5 | 0505 |
| 33 | 927,573.61 | 200,151.14 | 08250 | 201.4 | 0464 |
| 34 | 921,508.66 | 206,216.09 | 08233 | 183.8 | 0423 |
| 35 | 915,443.72 | 212,281.03 | 08233 | 166.5 | 0383 |
| 33 36 | 30,909,378.78 | 218,345.97 | 101.08217 | +149.6 | 1.0000344 |
| 37 | 903,313.85 | 224,410.90 | 08200 | 133.0 | 0306 |
| 38 | 897,248.93 | 230,475.82 | 08200 | 116.8 | 0269 |
| 39 | 891,184.01 | 236,540.74 | 08183 | 100.9 | 0232 |
| 40 | 885,119.10 | 242,605.65 | 08183 | 85.4 | 0197 |
| 33 41 | 30,879,054.19 | 248,670.56 | 101.08167 | + 70.3 | 1.0000162 |
| 42 | 872,989.29 | 254,735.46 | 08167 | 55.5 | 0128 |
| 43 | 866,924.39 | 260,800.36 | 08150 | 41.1 | 0095 |
| 44 | 860,859.50 | 266,865.25 | 08150 | 27.1 | 0062 |
| 45 | 854,794.61 | 272,930.14 | 08150 | 13.4 | 0031 |
| 33 46 | 30,848,729.72 | 278,995.03 | 101.08150 | 0.0 | 1.0000000 |
| 47 | 842,664.83 | 285,059.92 | 08150 | - 12.9 | 0.9999970 |
| 48 | 836,599.94 | 291,124.81 | 08150 | 25.5 | 9941 |
| 49 | 830,535.05 | 297,189.70 | 08133 | 37.7 | 9913 |
| 50 | 824,470.17 | 303,254.58 | 08150 | 49.6 | 9886 |
| 33 51 | 30,818,405.28 | 309,319.47 | 101.08150 | - 61.1 | 0.9999859 |
| 52 | 812,340.39 | 315,384.36 | 08133 | 72.3 | 9834 |
| 53 | 806,275.51 | 321,449.24 | 08150 | 83.1 | 9809 |
| 54 | 800,210.62 | 327,514.13 | 08167 | 93.5 | 9785 |
| 55 | 794,145.72 | 333,579.03 | 08150 | 103.5 | 9762 |
| 33 56 | 30,788,080.83 | 339,643.92 | 101.08167 | -113.2 | 0.9999739 |
| 57 | 782,015.93 | 345,708.82 | 08167 | 122.5 | 9718 |
| 58 | 775,951.03 | 351,773.72 | 08183 | 131.5 | 9697 |
| 59 | 769,886.12 | 357,838.63 | 08183 | 140.1 | 9677 |
| 34 00 | 763,821.21 | 363,903.54 | 08200 | 148.3 | 9659 |
| 34 01 | 30,757,756.29 | 369,968.46 | 101.08217 | -156.2 | 0.9999640 |
| 02 | 751,691.36 | 376,033.39 | 08217 | 163.7 | 9623 |
| 03 | 745,626.43 | 382,098.32 | 08217 | 170.8 | 9607 |
| 04 | 739,561.50 | 388,163.25 | 08250 | 177.6 | 9591 |
| 05 | 733,496.55 | 394,228.20 | 08250 | 184.0 | 9576 |
| 34 06 | 30,727,431.60 | 400,293.15 | 101.08267 | -190.0 | 0.9999563 |
| 07 | 721,366.64 | 406,358.11 | 08283 | 195.7 | 9549 |
| 08 | 715,301.67 | 412,423.08 | 08300 | 201.0 | 9537 |
| 09 | 709,236.69 | 418,488.06 | 08317 | 205.9 | 9526 |
| 10 | 703,171.70 | 424,553.05 | 08333 | 210.5 | 9515 |

Table I, north zone - Continued

| Latitude | R | y'(y value on the central meridian) | | Tabular difference of R for one second of latitude | Scale correction | |
|----------|---------------|-------------------------------------|-----------|--|-------------------------------|----------------------|
| | | Feet | Feet | | In units of 7th place of logs | Expressed as a ratio |
| 34 11 | 30,697,106.70 | 430,618.05 | 101.08350 | -214.7 | 0.9999506 | |
| | 691,041.69 | 436,683.06 | 08367 | 218.6 | 9497 | |
| | 684,976.67 | 442,748.08 | 08400 | 222.1 | 9489 | |
| | 678,911.63 | 448,813.12 | 08417 | 225.2 | 9481 | |
| | 672,846.58 | 454,878.17 | 08433 | 227.9 | 9475 | |
| 34 16 | 30,666,781.52 | 460,943.23 | 101.08450 | -230.3 | 0.9999470 | |
| | 660,716.45 | 467,008.30 | 08483 | 232.3 | 9465 | |
| | 654,651.36 | 473,073.39 | 08500 | 234.0 | 9461 | |
| | 648,586.26 | 479,138.49 | 08533 | 235.3 | 9458 | |
| | 642,521.14 | 485,203.61 | 08550 | 236.2 | 9456 | |
| 34 21 | 30,636,456.01 | 491,268.74 | 101.08583 | -236.8 | 0.9999455 | |
| | 630,390.86 | 497,333.89 | 08617 | 237.0 | 9454 | |
| | 624,325.69 | 503,399.06 | 08633 | 236.8 | 9455 | |
| | 618,260.51 | 509,464.24 | 08667 | 236.3 | 9456 | |
| | 612,195.31 | 515,529.44 | 08700 | 235.4 | 9458 | |
| 34 26 | 30,606,130.09 | 521,594.66 | 101.08733 | -234.1 | 0.9999461 | |
| | 600,064.85 | 527,659.90 | 08767 | 232.5 | 9465 | |
| | 593,999.59 | 533,725.16 | 08800 | 230.5 | 9469 | |
| | 587,934.31 | 539,790.44 | 08817 | 228.1 | 9475 | |
| | 581,869.02 | 545,855.73 | 08867 | 225.4 | 9481 | |
| 34 31 | 30,575,803.70 | 551,921.05 | 101.08900 | -222.3 | 0.9999488 | |
| | 569,738.36 | 557,986.39 | 08933 | 218.9 | 9496 | |
| | 563,673.00 | 564,051.75 | 08983 | 215.1 | 9505 | |
| | 557,607.61 | 570,117.14 | 09000 | 210.9 | 9514 | |
| | 551,542.21 | 576,182.54 | 09050 | 206.3 | 9525 | |
| 34 36 | 30,545,476.78 | 582,247.97 | 101.09100 | -201.4 | 0.9999536 | |
| | 539,411.32 | 588,313.43 | 09133 | 196.1 | 9548 | |
| | 533,345.84 | 594,378.91 | 09167 | 190.4 | 9562 | |
| | 527,280.34 | 600,444.41 | 09217 | 184.4 | 9575 | |
| | 521,214.81 | 606,509.94 | 09267 | 178.0 | 9590 | |
| 34 41 | 30,515,149.25 | 612,575.50 | 101.09300 | -171.2 | 0.9999606 | |
| | 509,083.67 | 618,641.08 | 09350 | 164.1 | 9622 | |
| | 503,018.06 | 624,706.69 | 09383 | 156.6 | 9639 | |
| | 496,952.43 | 630,772.32 | 09450 | 148.7 | 9658 | |
| | 490,886.76 | 636,837.99 | 09483 | 140.5 | 9676 | |
| 34 46 | 30,484,821.07 | 642,903.68 | 101.09533 | -131.9 | 0.9999696 | |
| | 478,755.35 | 648,969.40 | 09600 | 122.9 | 9717 | |
| | 472,689.59 | 655,035.16 | 09633 | 113.6 | 9738 | |
| | 466,623.81 | 661,100.94 | 09683 | 103.9 | 9761 | |
| | 460,558.00 | 667,166.75 | 09733 | 93.8 | 9784 | |
| 34 51 | 30,454,492.16 | 673,232.59 | 101.09800 | - 83.3 | 0.9999808 | |
| | 448,426.28 | 679,298.47 | 09850 | 72.5 | 9833 | |
| | 442,360.37 | 685,364.38 | 09900 | 61.3 | 9859 | |
| | 436,294.43 | 691,430.32 | 09950 | 49.8 | 9885 | |
| | 430,228.46 | 697,496.29 | 10017 | 37.9 | 9913 | |

Table I, north zone - Continued

| Latitude | R | y' (y value on the central meridian) | Tabular difference of R for one second of latitude | Scale correction | |
|----------|---------------|--------------------------------------|--|-------------------------------|----------------------|
| | | | | In units of 7th place of logs | Expressed as a ratio |
| | Feet | Feet | Feet | | |
| 34 56 | 30,424,162.45 | 703,562.30 | 101.10067 | - 25.6 | 0.9999941 |
| 57 | 418,096.41 | 709,628.34 | 10117 | - 13.0 | 9970 |
| 58 | 412,030.34 | 715,694.41 | 10183 | 0.0 | 1.0000000 |
| 59 | 405,964.23 | 721,760.52 | 10250 | + 13.4 | 0031 |
| 35 00 | 399,898.08 | 727,826.67 | 10317 | 27.2 | 0063 |
| 35 01 | 30,393,831.89 | 733,892.86 | 101.10367 | + 41.3 | 1.0000095 |
| 02 | 387,765.67 | 739,959.08 | 10417 | 55.8 | 0128 |
| 03 | 381,699.42 | 746,025.33 | 10500 | 70.7 | 0163 |
| 04 | 375,633.12 | 752,091.63 | 10567 | 85.9 | 0198 |
| 05 | 369,566.78 | 758,157.97 | 10617 | 101.5 | 0234 |
| 35 06 | 30,363,500.41 | 764,224.34 | 101.10683 | +117.4 | 1.0000270 |
| 07 | 357,434.00 | 770,290.75 | 10750 | 133.8 | 0308 |
| 08 | 351,367.55 | 776,357.20 | 10833 | 150.5 | 0347 |
| 09 | 345,301.05 | 782,423.70 | 10883 | 167.6 | 0386 |
| 10 | 339,234.52 | 788,490.23 | 10950 | 185.0 | 0486 |
| 35 11 | 30,333,167.95 | 794,556.80 | 101.11033 | +202.8 | 1.0000467 |
| 12 | 327,101.33 | 800,623.42 | 11100 | 221.0 | 0509 |
| 13 | 321,034.67 | 806,690.08 | 11183 | 239.6 | 0559 |
| 14 | 314,967.96 | 812,756.79 | 11233 | 258.5 | 0595 |
| 15 | 308,901.22 | 818,823.53 | 11317 | 277.8 | 0640 |
| 35 16 | 30,302,834.43 | 824,890.32 | 101.11400 | +297.4 | 1.0000685 |
| 17 | 296,767.59 | 830,957.16 | 11467 | 317.5 | 0731 |
| 18 | 290,700.71 | 837,024.04 | 11550 | 337.9 | 0778 |
| 19 | 284,633.78 | 843,090.97 | 11617 | 358.7 | 0826 |
| 20 | 278,566.81 | 849,157.94 | 11700 | 379.8 | 0875 |
| 35 21 | 30,272,499.79 | 855,224.96 | 101.11783 | +401.3 | 1.0000924 |
| 22 | 266,432.72 | 861,292.03 | 11850 | 423.2 | 0974 |
| 23 | 260,365.61 | 867,359.14 | 11950 | 445.5 | 1026 |
| 24 | 254,298.44 | 873,426.31 | 12017 | 468.1 | 1078 |
| 25 | 248,231.23 | 879,493.52 | 12100 | 491.1 | 1131 |
| 35 26 | 30,242,163.97 | 885,560.78 | 101.12183 | +514.4 | 1.0001184 |
| 27 | 236,096.66 | 891,628.09 | 12267 | 538.2 | 1239 |
| 28 | 230,029.30 | 897,695.45 | 12350 | 562.3 | 1295 |
| 29 | 223,961.89 | 903,762.86 | 12450 | 586.8 | 1351 |
| 30 | 217,894.42 | 909,830.33 | | 611.6 | 1408 |

Table II, north zone
(1" of longitude = 0°56449738 of θ)

| Longitude | θ | Longitude | θ | Longitude | θ |
|-----------|---------------|-----------|---------------|-----------|---------------|
| 78 20 | +1 30 19.1748 | | | | |
| 21 | 29 45.3050 | 78 26 | +1 26 55.9558 | 78 31 | +1 24 06.6066 |
| 22 | 29 11.4352 | 27 | 26 22.0859 | 32 | 23 32.7367 |
| 23 | 28 37.5653 | 28 | 25 48.2161 | 33 | 22 58.8669 |
| 24 | 28 03.6955 | 29 | 25 14.3463 | 34 | 22 24.9970 |
| 25 | 27 29.8256 | 30 | 24 40.4764 | 35 | 21 51.1272 |

Table II, north zone - Continued
(1" of longitude = 0r56449738 of θ)

| Longi- tude | θ | Longi- tude | θ | Longi- tude | θ |
|----------------|---------------|----------------|---------------|----------------|---------------|
| • | • | • | • | • | • |
| 78 36 | +1 21 17.2574 | 79 21 | +0 55 53.1144 | 80 06 | +0 30 28.9715 |
| 37 | 20 43.3875 | 22 | 55 19.2446 | 07 | 29 55.1017 |
| 38 | 20 09.5177 | 23 | 54 45.3748 | 08 | 29 21.2318 |
| 39 | 19 35.6478 | 24 | 54 11.5049 | 09 | 28 47.3620 |
| 40 | 19 01.7780 | 25 | 53 37.6351 | 10 | 28 13.4921 |
| 78 41 | +1 18 27.9081 | 79 26 | +0 53 03.7652 | 80 11 | +0 27 39.6223 |
| 42 | 17 54.0383 | 27 | 52 29.8954 | 12 | 27 05.7525 |
| 43 | 17 20.1685 | 28 | 51 56.0255 | 13 | 26 31.8826 |
| 44 | 16 46.2986 | 29 | 51 22.1557 | 14 | 25 58.0128 |
| 45 | 16 12.4288 | 30 | 50 48.2859 | 15 | 25 24.1429 |
| 78 46 | +1 15 38.5589 | 79 31 | +0 50 14.4160 | 80 16 | +0 24 50.2731 |
| 47 | 15 04.6891 | 32 | 49 40.5462 | 17 | 24 16.4032 |
| 48 | 14 30.8192 | 33 | 49 06.6763 | 18 | 23 42.5334 |
| 49 | 13 56.9494 | 34 | 48 32.8065 | 19 | 23 08.6636 |
| 50 | 13 23.0796 | 35 | 47 58.9366 | 20 | 22 34.7937 |
| 78 51 | +1 12 49.2097 | 79 36 | +0 47 25.0668 | 80 21 | +0 22 00.9239 |
| 52 | 12 15.3399 | 37 | 46 51.1970 | 22 | 21 27.0540 |
| 53 | 11 41.4700 | 38 | 46 17.3271 | 23 | 20 53.1842 |
| 54 | 11 07.6002 | 39 | 45 43.4573 | 24 | 20 19.3143 |
| 55 | 10 33.7304 | 40 | 45 09.5874 | 25 | 19 45.4445 |
| 78 56 | +1 09 59.8605 | 79 41 | +0 44 35.7176 | 80 26 | +0 19 11.5747 |
| 57 | 09 25.9907 | 42 | 44 01.8477 | 27 | 18 37.7048 |
| 58 | 08 52.1208 | 43 | 43 27.9779 | 28 | 18 03.8350 |
| 59 | 08 18.2510 | 44 | 42 54.1081 | 29 | 17 29.9651 |
| 79 00 | 07 44.3811 | 45 | 42 20.2382 | 30 | 16 56.0953 |
| 79 01 | +1 07 10.5113 | 79 46 | +0 41 46.3684 | 80 31 | +0 16 22.2254 |
| 02 | 06 36.6415 | 47 | 41 12.4985 | 32 | 15 48.3556 |
| 03 | 06 02.7716 | 48 | 40 38.6287 | 33 | 15 14.4858 |
| 04 | 05 28.9018 | 49 | 40 04.7588 | 34 | 14 40.6159 |
| 05 | 04 55.0319 | 50 | 39 30.8890 | 35 | 14 06.7461 |
| 79 06 | +1 04 21.1621 | 79 51 | +0 38 57.0192 | 80 36 | +0 13 32.8762 |
| 07 | 03 47.2922 | 52 | 38 23.1493 | 37 | 12 59.0064 |
| 08 | 03 13.4224 | 53 | 37 49.2795 | 38 | 12 25.1365 |
| 09 | 02 39.5526 | 54 | 37 15.4096 | 39 | 11 51.2667 |
| 10 | 02 05.6827 | 55 | 36 41.5398 | 40 | 11 17.3969 |
| 79 11 | +1 01 31.8129 | 79 56 | +0 36 07.6699 | 80 41 | +0 10 43.5270 |
| 12 | 00 57.9430 | 57 | 35 33.8001 | 42 | 10 09.6572 |
| 13 | 00 24.0732 | 58 | 34 59.9303 | 43 | 09 35.7873 |
| 14 | +0 59 50.2033 | 59 | 34 26.0604 | 44 | 09 01.9175 |
| 15 | 59 16.3335 | 80 00 | 33 52.1906 | 45 | 08 28.0476 |
| 79 16 | +0 58 42.4637 | 80 01 | +0 33 18.3207 | 80 46 | +0 07 54.1778 |
| 17 | 58 08.5938 | 02 | 32 44.4509 | 47 | 07 20.3080 |
| 18 | 57 34.7240 | 03 | 32 10.5810 | 48 | 06 46.4381 |
| 19 | 57 00.8541 | 04 | 31 36.7112 | 49 | 06 12.5683 |
| 20 | 56 26.9843 | 05 | 31 02.8414 | 50 | 05 38.6984 |

Table II, north zone - Continued
 (1" of longitude = 0r56449738 of θ)

| Longi- tude | θ | | | | Longi- tude | θ | | | | Longi- tude | θ | | | |
|----------------|----------|----|---------|------|----------------|----------|----|---------|------|----------------|----------|----|---------|------|
| ° | ' | " | ''' | '''' | ° | ' | " | ''' | '''' | ° | ' | " | ''' | '''' |
| 80 51 | +0 | 05 | 04.8286 | | 81 36 | -0 | 20 | 19.3143 | | 82 21 | -0 | 45 | 43.4573 | |
| 52 | | 04 | 30.9587 | | 37 | | 20 | 53.1842 | | 22 | | 46 | 17.3271 | |
| 53 | | 03 | 57.0889 | | 38 | | 21 | 27.0540 | | 23 | | 46 | 51.1970 | |
| 54 | | 03 | 23.2191 | | 39 | | 22 | 00.9239 | | 24 | | 47 | 25.0668 | |
| 55 | | 02 | 49.3492 | | 40 | | 22 | 34.7937 | | 25 | | 47 | 58.9366 | |
| 80 56 | +0 | 02 | 15.4794 | | 81 41 | -0 | 23 | 08.6636 | | 82 26 | -0 | 48 | 32.8065 | |
| 57 | | 01 | 41.6095 | | 42 | | 23 | 42.5334 | | 27 | | 49 | 06.6763 | |
| 58 | | 01 | 07.7397 | | 43 | | 24 | 16.4032 | | 28 | | 49 | 40.5462 | |
| 59 | | 00 | 33.8698 | | 44 | | 24 | 50.2731 | | 29 | | 50 | 14.4160 | |
| 81 00 | | 00 | 00.0000 | | 45 | | 25 | 24.1429 | | 30 | | 50 | 48.2859 | |
| 81 01 | -0 | 00 | 33.8698 | | 81 46 | -0 | 25 | 58.0128 | | 82 31 | -0 | 51 | 22.1557 | |
| 02 | | 01 | 07.7397 | | 47 | | 26 | 31.8826 | | 32 | | 51 | 56.0255 | |
| 03 | | 01 | 41.6095 | | 48 | | 27 | 05.7525 | | 33 | | 52 | 29.8954 | |
| 04 | | 02 | 15.4794 | | 49 | | 27 | 39.6223 | | 34 | | 53 | 03.7652 | |
| 05 | | 02 | 49.3492 | | 50 | | 28 | 13.4921 | | 35 | | 53 | 37.6351 | |
| 81 06 | -0 | 03 | 23.2191 | | 81 51 | -0 | 28 | 47.3620 | | 82 36 | -0 | 54 | 11.5049 | |
| 07 | | 03 | 57.0889 | | 52 | | 29 | 21.2318 | | 37 | | 54 | 45.3748 | |
| 08 | | 04 | 30.9587 | | 53 | | 29 | 55.1017 | | 38 | | 55 | 19.2446 | |
| 09 | | 05 | 04.8286 | | 54 | | 30 | 28.9715 | | 39 | | 55 | 53.1144 | |
| 10 | | 05 | 38.6984 | | 55 | | 31 | 02.8414 | | 40 | | 56 | 26.9843 | |
| 81 11 | -0 | 06 | 12.5683 | | 81 56 | -0 | 31 | 36.7112 | | 82 41 | -0 | 57 | 00.8541 | |
| 12 | | 06 | 46.4381 | | 57 | | 32 | 10.5810 | | 42 | | 57 | 34.7240 | |
| 13 | | 07 | 20.3080 | | 58 | | 32 | 44.4509 | | 43 | | 58 | 08.5938 | |
| 14 | | 07 | 54.1778 | | 59 | | 33 | 18.3207 | | 44 | | 58 | 42.4637 | |
| 15 | | 08 | 28.0476 | | 82 00 | | 33 | 52.1906 | | 45 | | 59 | 16.3335 | |
| 81 16 | -0 | 09 | 01.9175 | | 82 01 | -0 | 34 | 26.0604 | | 82 46 | -0 | 59 | 50.2033 | |
| 17 | | 09 | 35.7873 | | 02 | | 34 | 59.9303 | | 47 | -1 | 00 | 24.0732 | |
| 18 | | 10 | 09.6572 | | 03 | | 35 | 33.8001 | | 48 | | 00 | 57.9430 | |
| 19 | | 10 | 43.5270 | | 04 | | 36 | 07.6699 | | 49 | | 01 | 31.8129 | |
| 20 | | 11 | 17.3969 | | 05 | | 36 | 41.5398 | | 50 | | 02 | 05.6827 | |
| 81 21 | -0 | 11 | 51.2667 | | 82 06 | -0 | 37 | 15.4096 | | 82 51 | -1 | 02 | 39.5526 | |
| 22 | | 12 | 25.1365 | | 07 | | 37 | 49.2795 | | 52 | | 03 | 13.4224 | |
| 23 | | 12 | 59.0064 | | 08 | | 38 | 23.1493 | | 53 | | 03 | 47.2922 | |
| 24 | | 13 | 32.8762 | | 09 | | 38 | 57.0192 | | 54 | | 04 | 21.1621 | |
| 25 | | 14 | 06.7461 | | 10 | | 39 | 30.8890 | | 55 | | 04 | 55.0319 | |
| 81 26 | -0 | 14 | 40.6159 | | 82 11 | -0 | 40 | 04.7588 | | 82 56 | -1 | 05 | 28.9018 | |
| 27 | | 15 | 14.4858 | | 12 | | 40 | 38.6287 | | 57 | | 06 | 02.7716 | |
| 28 | | 15 | 48.3556 | | 13 | | 41 | 12.4985 | | 58 | | 06 | 36.6415 | |
| 29 | | 16 | 22.2254 | | 14 | | 41 | 46.3684 | | 59 | | 07 | 10.5113 | |
| 30 | | 16 | 56.0953 | | 15 | | 42 | 20.2382 | | 83 00 | | 07 | 44.3811 | |
| 81 31 | -0 | 17 | 29.9651 | | 82 16 | -0 | 42 | 54.1081 | | 83 01 | -1 | 08 | 18.2510 | |
| 32 | | 18 | 03.8350 | | 17 | | 43 | 27.9779 | | 02 | | 08 | 52.1208 | |
| 33 | | 18 | 37.7048 | | 18 | | 44 | 01.8477 | | 03 | | 09 | 25.9907 | |
| 34 | | 19 | 11.5747 | | 19 | | 44 | 35.7176 | | 04 | | 09 | 59.8605 | |
| 35 | | 19 | 45.4445 | | 20 | | 45 | 09.5874 | | 05 | | 10 | 33.7304 | |

Table II, north zone - Continued
(1" of longitude = 0r56449738 of θ)

| Longi- tude | | θ | Longi- tude | | θ | Longi- tude | | θ |
|----------------|----|---------------|----------------|----|---------------|----------------|----|---------------|
| ° | ' | ° | ' | ° | ' | ° | ' | ° |
| 83 | 06 | -1 11 07.6002 | 83 | 16 | -1 16 46.2986 | 83 | 26 | -1 22 24.9970 |
| | 07 | 11 41.4700 | | 17 | 17 20.1685 | | 27 | 22 58.8669 |
| | 08 | 12 15.3399 | | 18 | 17 54.0383 | | 28 | 23 32.7367 |
| | 09 | 12 49.2097 | | 19 | 18 27.9081 | | 29 | 24 06.6066 |
| | 10 | 13 23.0796 | | 20 | 19 01.7780 | | 30 | 24 40.4764 |
| 83 | 11 | -1 13 56.9494 | 83 | 21 | -1 19 35.6478 | 83 | 31 | -1 25 14.3463 |
| | 12 | 14 30.8192 | | 22 | 20 09.5177 | | 32 | 25 48.2161 |
| | 13 | 15 04.6891 | | 23 | 20 43.3875 | | 33 | 26 22.0859 |
| | 14 | 15 38.5589 | | 24 | 21 17.2574 | | 34 | 26 55.9558 |
| | 15 | 16 12.4288 | | 25 | 21 51.1272 | | 35 | 27 29.8256 |

Table I, south zone

| Latitude | R | y'(y value on the central meridian) | Tabular dif- ference of R for one second of latitude | Scale correction | | |
|----------|----|--|--|-------------------------------------|----------------------------|-----------|
| | | | | In units of 7th place of logs | Expressed as a ratio | |
| ° | ' | Feet | Feet | Feet | | |
| 31 | 50 | 32,676,887.65 | 0 | 101.06367 | +600.7 | 1.0001383 |
| | 51 | 670,823.83 | 6,063.82 | 06333 | 575.4 | 1325 |
| | 52 | 664,760.03 | 12,127.62 | 06317 | 550.5 | 1268 |
| | 53 | 658,696.24 | 18,191.41 | 06283 | 526.0 | 1211 |
| | 54 | 652,632.47 | 24,255.18 | 06250 | 501.8 | 1155 |
| | 55 | 646,568.72 | 30,318.93 | 06217 | 478.0 | 1101 |
| 31 | 56 | 32,640,504.99 | 36,382.66 | 101.06200 | +454.5 | 1.0001047 |
| | 57 | 634,441.27 | 42,446.38 | 06167 | 431.4 | 0993 |
| | 58 | 628,377.57 | 48,510.08 | 06133 | 408.7 | 0941 |
| | 59 | 622,313.89 | 54,573.76 | 06117 | 386.3 | 0889 |
| 32 | 00 | 616,250.22 | 60,637.43 | 06100 | 364.3 | 0839 |
| 32 | 01 | 32,610,186.56 | 66,701.09 | 101.06067 | +342.6 | 1.0000789 |
| | 02 | 604,122.92 | 72,764.73 | 06050 | 321.3 | 0740 |
| | 03 | 598,059.29 | 78,828.36 | 06033 | 300.4 | 0692 |
| | 04 | 591,995.67 | 84,891.98 | 06000 | 279.8 | 0644 |
| | 05 | 585,932.07 | 90,955.58 | 05983 | 259.6 | 0598 |
| 32 | 06 | 32,579,868.48 | 97,019.17 | 101.05983 | +239.8 | 1.0000552 |
| | 07 | 573,804.89 | 103,082.76 | 05950 | 220.3 | 0507 |
| | 08 | 567,741.32 | 109,146.33 | 05933 | 201.2 | 0463 |
| | 09 | 561,677.76 | 115,209.89 | 05917 | 182.4 | 0420 |
| | 10 | 555,614.21 | 121,273.44 | 05900 | 164.0 | 0378 |
| 32 | 11 | 32,549,550.67 | 127,336.98 | 101.05883 | +146.0 | 1.0000336 |
| | 12 | 543,487.14 | 133,400.51 | 05867 | 128.3 | 0295 |
| | 13 | 537,423.62 | 139,464.03 | 05867 | 111.0 | 0256 |
| | 14 | 531,360.10 | 145,527.55 | 05850 | 94.0 | 0216 |
| | 15 | 525,296.59 | 151,591.06 | 05833 | 77.4 | 0178 |
| 32 | 16 | 32,519,233.09 | 157,654.56 | 101.05833 | + 61.2 | 1.0000141 |
| | 17 | 513,169.59 | 163,718.06 | 05817 | 45.4 | 0105 |
| | 18 | 507,106.10 | 169,781.55 | 05800 | 29.9 | 0069 |
| | 19 | 501,042.62 | 175,845.03 | 05800 | 14.8 | 0034 |
| | 20 | 494,979.14 | 181,908.51 | 05800 | 0.0 | 0000 |

Table I, south zone - Continued

| Latitude | R | y' (y value on the central meridian) | Tabular dif- ference of R for one second of latitude | Scale correction | |
|----------|---------------|---|--|-------------------------------------|----------------------------|
| | | | | In units of 7th place of logs | Expressed as a ratio |
| | Feet | Feet | Feet | | |
| 32 21 | 32,488,915.66 | 187,971.99 | 101.05783 | -14.4 | 0.9999967 |
| 22 | 482,852.19 | 194,035.46 | 05783 | 28.4 | 9935 |
| 23 | 476,788.72 | 200,098.93 | 05783 | 42.1 | 9903 |
| 24 | 470,725.25 | 206,162.40 | 05767 | 55.4 | 9872 |
| 25 | 464,661.79 | 212,225.86 | 05783 | 68.4 | 9842 |
| 32 26 | 32,458,598.32 | 218,289.33 | 101.05767 | -81.0 | 0.9999813 |
| 27 | 452,534.86 | 224,352.79 | 05767 | 93.2 | 9785 |
| 28 | 446,471.40 | 230,416.25 | 05767 | 105.1 | 9758 |
| 29 | 440,407.94 | 236,479.71 | 05767 | 116.6 | 9732 |
| 30 | 434,344.48 | 242,543.17 | 05767 | 127.7 | 9706 |
| 32 31 | 32,428,281.02 | 248,606.63 | 101.05783 | -138.5 | 0.9999681 |
| 32 | 422,217.55 | 254,670.10 | 05783 | 148.9 | 9657 |
| 33 | 416,154.08 | 260,733.57 | 05783 | 159.0 | 9634 |
| 34 | 410,090.61 | 266,797.04 | 05783 | 168.7 | 9612 |
| 35 | 404,027.14 | 272,860.51 | 05783 | 178.0 | 9590 |
| 32 36 | 32,397,963.67 | 278,923.98 | 101.05800 | -187.0 | 0.9999569 |
| 37 | 391,900.19 | 284,987.46 | 05800 | 195.6 | 9550 |
| 38 | 385,836.71 | 291,050.94 | 05817 | 203.8 | 9531 |
| 39 | 379,773.22 | 297,114.43 | 05833 | 211.7 | 9513 |
| 40 | 373,709.72 | 303,177.93 | 05833 | 219.2 | 9496 |
| 32 41 | 32,367,646.22 | 309,241.43 | 101.05850 | -226.3 | 0.9999479 |
| 42 | 361,582.71 | 315,304.94 | 05850 | 233.1 | 9463 |
| 43 | 355,519.20 | 321,368.45 | 05867 | 239.5 | 9449 |
| 44 | 349,455.68 | 327,431.97 | 05883 | 245.5 | 9435 |
| 45 | 343,392.15 | 333,495.50 | 05900 | 251.2 | 9422 |
| 32 46 | 32,337,328.61 | 339,559.04 | 101.05917 | -256.5 | 0.9999409 |
| 47 | 331,265.06 | 345,622.59 | 05933 | 261.4 | 9398 |
| 48 | 325,201.50 | 351,686.15 | 05950 | 266.0 | 9388 |
| 49 | 319,137.93 | 357,749.72 | 05967 | 270.2 | 9378 |
| 50 | 313,074.35 | 363,813.30 | 05983 | 274.1 | 9369 |
| 32 51 | 32,307,010.76 | 369,876.89 | 101.06000 | -277.6 | 0.9999361 |
| 52 | 300,947.16 | 375,940.49 | 06017 | 280.7 | 9354 |
| 53 | 294,883.55 | 382,004.10 | 06050 | 283.5 | 9347 |
| 54 | 288,819.92 | 388,067.73 | 06067 | 285.9 | 9342 |
| 55 | 282,756.28 | 394,131.37 | 06083 | 287.9 | 9337 |
| 32 56 | 32,276,692.63 | 400,195.02 | 101.06117 | -289.6 | 0.9999333 |
| 57 | 270,628.96 | 406,258.69 | 06133 | 290.9 | 9330 |
| 58 | 264,565.28 | 412,322.37 | 06167 | 291.8 | 9328 |
| 59 | 258,501.58 | 418,386.07 | 06183 | 292.4 | 9327 |
| 33 00 | 252,437.87 | 424,449.78 | 06217 | 292.6 | 9326 |
| 33 01 | 32,246,374.14 | 430,513.51 | 101.06250 | -292.4 | 0.9999327 |
| 02 | 240,310.39 | 436,577.26 | 06283 | 291.9 | 9328 |
| 03 | 234,246.62 | 442,641.03 | 06300 | 291.0 | 9330 |
| 04 | 228,182.84 | 448,704.81 | 06333 | 289.7 | 9333 |
| 05 | 222,119.04 | 454,768.61 | 06367 | 288.1 | 9337 |

Table I, south zone - Continued

| Latitude | R | y'(y value on the central meridian) | Tabular dif- ference of R for one second of latitude | Scale correction | |
|----------|---------------|--|--|-------------------------------------|----------------------------|
| | | | | In units of 7th place of logs | Expressed as a ratio |
| | Feet | Feet | Feet | | |
| 33 06 | 32,216,055.22 | 460,832.43 | 101.06400 | -286.1 | 0.9999341 |
| 07 | 209,991.38 | 466,896.27 | 06433 | 283.8 | 9347 |
| 08 | 203,927.52 | 472,960.13 | 06467 | 281.1 | 9353 |
| 09 | 197,863.64 | 479,024.01 | 06500 | 278.0 | 9360 |
| 10 | 191,799.74 | 485,087.91 | 06533 | 274.5 | 9368 |
| 33 11 | 32,185,735.82 | 491,151.83 | 101.06583 | -270.7 | 0.9999377 |
| 12 | 179,671.87 | 497,215.78 | 06600 | 266.5 | 9386 |
| 13 | 173,607.91 | 503,279.74 | 06650 | 261.9 | 9397 |
| 14 | 167,543.92 | 509,343.73 | 06700 | 257.0 | 9408 |
| 15 | 161,479.90 | 515,407.75 | 06733 | 251.7 | 9420 |
| 33 16 | 32,155,415.86 | 521,471.79 | 101.06767 | -246.0 | 0.9999434 |
| 17 | 149,351.80 | 527,535.85 | 06817 | 240.0 | 9447 |
| 18 | 143,287.71 | 533,599.94 | 06850 | 233.6 | 9462 |
| 19 | 137,223.60 | 539,664.05 | 06900 | 226.8 | 9478 |
| 20 | 131,159.46 | 545,728.19 | 06933 | 219.7 | 9494 |
| 33 21 | 32,125,095.30 | 551,792.35 | 101.07000 | -212.2 | 0.9999511 |
| 22 | 119,031.10 | 557,856.55 | 07033 | 204.4 | 9529 |
| 23 | 112,966.88 | 563,920.77 | 07083 | 196.2 | 9543 |
| 24 | 106,902.63 | 569,985.02 | 07117 | 187.6 | 9568 |
| 25 | 100,838.36 | 576,049.29 | 07183 | 178.6 | 9589 |
| 33 26 | 32,094,774.05 | 582,113.60 | 101.07233 | -169.3 | 0.9999610 |
| 27 | 088,709.71 | 588,177.94 | 07283 | 159.6 | 9633 |
| 28 | 082,645.34 | 594,242.31 | 07333 | 149.5 | 9656 |
| 29 | 076,580.94 | 600,306.71 | 07367 | 139.1 | 9680 |
| 30 | 070,516.52 | 606,371.13 | 07433 | 128.3 | 9705 |
| 33 31 | 32,064,452.06 | 612,435.59 | 101.07500 | -117.1 | 0.9999730 |
| 32 | 058,387.56 | 618,500.09 | 07550 | 105.6 | 9757 |
| 33 | 052,323.03 | 624,564.62 | 07600 | 93.7 | 9784 |
| 34 | 046,258.47 | 630,629.18 | 07650 | 81.4 | 9813 |
| 35 | 040,193.88 | 636,693.77 | 07717 | 68.7 | 9842 |
| 33 36 | 32,034,129.25 | 642,758.40 | 101.07767 | - 55.7 | 0.9999872 |
| 37 | 028,064.59 | 648,823.06 | 07833 | 42.3 | 9903 |
| 38 | 021,999.89 | 654,887.76 | 07900 | 28.6 | 9934 |
| 39 | 015,935.15 | 660,952.50 | 07950 | 14.5 | 9967 |
| 40 | 009,870.38 | 667,017.27 | 08000 | 0.0 | 1.0000000 |
| 33 41 | 32,003,805.58 | 673,082.07 | 101.08083 | + 14.9 | 1.0000034 |
| 42 | 31,997,740.73 | 679,146.92 | 08133 | 30.1 | 0069 |
| 43 | 991,675.85 | 685,211.80 | 08217 | 45.7 | 0105 |
| 44 | 985,610.92 | 691,276.73 | 08267 | 61.6 | 0142 |
| 45 | 979,545.96 | 697,341.69 | 08333 | 77.9 | 0179 |
| 33 46 | 31,973,480.96 | 703,406.69 | 101.08400 | + 94.6 | 1.0000218 |
| 47 | 967,415.92 | 709,471.73 | 08467 | 111.7 | 0257 |
| 48 | 961,350.84 | 715,536.81 | 08550 | 129.1 | 0297 |
| 49 | 955,285.71 | 721,601.94 | 08600 | 146.9 | 0338 |
| 50 | 949,220.55 | 727,667.10 | 08683 | 165.1 | 0380 |

Table I, south zone - Continued

| Latitude | R | y'(y value on the central meridian) | Tabular difference of R for one second of latitude | Scale correction | |
|----------|---------------|-------------------------------------|--|-------------------------------|----------------------|
| | | | | In units of 7th place of logs | Expressed as a ratio |
| | Feet | Feet | Feet | | |
| 33 51 | 31,943,155.34 | 733,732.31 | 101.08750 | +183.6 | 1.0000423 |
| 52 | 937,090.09 | 739,797.56 | 08817 | 202.5 | 0466 |
| 53 | 931,024.80 | 745,862.85 | 08900 | 221.8 | 0511 |
| 54 | 924,959.46 | 751,928.19 | 08967 | 241.5 | 0556 |
| 55 | 918,894.08 | 757,993.57 | 09050 | 261.5 | 0602 |
| 33 56 | 31,912,828.65 | 764,059.00 | 101.09117 | +281.9 | 1.0000649 |
| 57 | 906,763.18 | 770,124.47 | 09200 | 302.6 | 0697 |
| 58 | 900,697.66 | 776,189.99 | 09267 | 323.7 | 0745 |
| 59 | 894,632.10 | 782,255.55 | 09350 | 345.2 | 0795 |
| 34 00 | 888,566.49 | 788,321.16 | 09433 | 367.1 | 0845 |
| 34 01 | 31,882,500.83 | 794,386.82 | 101.09517 | +389.3 | 1.0000896 |
| 02 | 876,435.12 | 800,452.53 | 09583 | 411.9 | 0948 |
| 03 | 870,369.37 | 806,518.28 | 09683 | 434.9 | 1001 |
| 04 | 864,303.56 | 812,584.09 | 09750 | 458.3 | 1055 |
| 05 | 858,237.71 | 818,649.94 | 09833 | 482.0 | 1110 |
| 34 06 | 31,852,171.81 | 824,715.84 | 101.09933 | +506.1 | 1.0001165 |
| 07 | 846,105.85 | 830,781.80 | 10000 | 530.6 | 1222 |
| 08 | 840,039.85 | 836,847.80 | 10100 | 555.4 | 1279 |
| 09 | 833,973.79 | 842,913.86 | 10183 | 580.6 | 1337 |
| 10 | 827,907.68 | 848,979.97 | | 606.2 | 1396 |

Table II, south zone
(1" of longitude = 0:54465157 of θ)

| Longitude | θ | Longitude | θ | Longitude | θ |
|-----------|---------------|-----------|---------------|-----------|---------------|
| 78 45 | +1 13 31.6777 | 79 06 | +1 02 05.4167 | 79 26 | +0 51 11.8349 |
| 46 | 12 58.9986 | 07 | 01 32.7376 | 27 | 50 39.1558 |
| 47 | 12 26.3195 | 08 | 01 00.0586 | 28 | 50 06.4767 |
| 48 | 11 53.6404 | 09 | 00 27.3795 | 29 | 49 33.7976 |
| 49 | 11 20.9613 | 10 | +0 59 54.7004 | 30 | 49 01.1185 |
| 50 | 10 48.2822 | | | | |
| 78 51 | +1 10 15.6032 | 79 11 | +0 59 22.0213 | 79 31 | +0 48 28.4394 |
| 52 | 09 42.9241 | 12 | 58 49.3422 | 32 | 47 55.7603 |
| 53 | 09 10.2450 | 13 | 58 16.6631 | 33 | 47 23.0812 |
| 54 | 08 37.5659 | 14 | 57 43.9840 | 34 | 46 50.4021 |
| 55 | 08 04.8868 | 15 | 57 11.3049 | 35 | 46 17.7230 |
| 78 56 | +1 07 32.2077 | 79 16 | +0 56 38.6258 | 79 36 | +0 45 45.0439 |
| 57 | 06 59.5286 | 17 | 56 05.9467 | 37 | 45 12.3648 |
| 58 | 06 26.8495 | 18 | 55 33.2676 | 38 | 44 39.6857 |
| 59 | 05 54.1704 | 19 | 55 00.5885 | 39 | 44 07.0066 |
| 79 00 | 05 21.4913 | 20 | 54 27.9094 | 40 | 43 34.3275 |
| 79 01 | +1 04 48.8122 | 79 21 | +0 53 55.2303 | 79 41 | +0 43 01.6484 |
| 02 | 04 16.1331 | 22 | 53 22.5512 | 42 | 42 28.9693 |
| 03 | 03 43.4540 | 23 | 52 49.8721 | 43 | 41 56.2903 |
| 04 | 03 10.7749 | 24 | 52 17.1930 | 44 | 41 23.6112 |
| 05 | 02 38.0958 | 25 | 51 44.5139 | 45 | 40 50.9321 |

Table II, south zone - Continued
(1" of longitude = 0r54465157 of θ)

| Longitude | θ | Longitude | θ | Longitude | θ |
|-----------|---------------|-----------|---------------|-----------|---------------|
| 79 46 | +0 40 18.2530 | 80 36 | +0 13 04.2983 | 81 26 | -0 14 09.6564 |
| 47 | 39 45.5739 | 37 | 12 31.6192 | 27 | 14 42.3355 |
| 48 | 39 12.8948 | 38 | 11 58.9401 | 28 | 15 15.0146 |
| 49 | 38 40.2157 | 39 | 11 26.2610 | 29 | 15 47.6937 |
| 50 | 38 07.5366 | 40 | 10 53.5819 | 30 | 16 20.3728 |
| 79 51 | +0 37 34.8575 | 80 41 | +0 10 20.9028 | 81 31 | -0 16 53.0519 |
| 52 | 37 02.1784 | 42 | 09 48.2237 | 32 | 17 25.7310 |
| 53 | 36 29.4993 | 43 | 09 15.5446 | 33 | 17 58.4101 |
| 54 | 35 56.8202 | 44 | 08 42.8655 | 34 | 18 31.0892 |
| 55 | 35 24.1411 | 45 | 08 10.1864 | 35 | 19 03.7683 |
| 79 56 | +0 34 51.4620 | 80 46 | +0 07 37.5073 | 81 36 | -0 19 36.4474 |
| 57 | 34 18.7829 | 47 | 07 04.8282 | 37 | 20 09.1265 |
| 58 | 33 46.1038 | 48 | 06 32.1491 | 38 | 20 41.8056 |
| 59 | 33 13.4247 | 49 | 05 59.4700 | 39 | 21 14.4847 |
| 80 00 | 32 40.7457 | 50 | 05 26.7909 | 40 | 21 47.1638 |
| 80 01 | +0 32 08.0666 | 80 51 | +0 04 54.1118 | 81 41 | -0 22 19.8429 |
| 02 | 31 35.3875 | 52 | 04 21.4328 | 42 | 22 52.5220 |
| 03 | 31 02.7084 | 53 | 03 48.7537 | 43 | 23 25.2011 |
| 04 | 30 30.0293 | 54 | 03 16.0746 | 44 | 23 57.8801 |
| 05 | 29 57.3502 | 55 | 02 43.3955 | 45 | 24 30.5592 |
| 80 06 | +0 29 24.6711 | 80 56 | +0 02 10.7164 | 81 46 | -0 25 03.2383 |
| 07 | 28 51.9920 | 57 | 01 38.0373 | 47 | 25 35.9174 |
| 08 | 28 19.3129 | 58 | 01 05.3582 | 48 | 26 08.5965 |
| 09 | 27 46.6338 | 59 | 00 32.6791 | 49 | 26 41.2756 |
| 10 | 27 13.9547 | 81 00 | 00 00.0000 | 50 | 27 13.9547 |
| 80 11 | +0 26 41.2756 | 81 01 | -0 00 32.6791 | 81 51 | -0 27 46.6338 |
| 12 | 26 08.5965 | 02 | 01 05.3582 | 52 | 28 19.3129 |
| 13 | 25 35.9174 | 03 | 01 38.0373 | 53 | 28 51.9920 |
| 14 | 25 03.2383 | 04 | 02 10.7164 | 54 | 29 24.6711 |
| 15 | 24 30.5592 | 05 | 02 43.3955 | 55 | 29 57.3502 |
| 80 16 | +0 23 57.8801 | 81 06 | -0 03 16.0746 | 81 56 | -0 30 30.0293 |
| 17 | 23 25.2011 | 07 | 03 48.7537 | 57 | 31 02.7084 |
| 18 | 22 52.5220 | 08 | 04 21.4328 | 58 | 31 35.3875 |
| 19 | 22 19.8429 | 09 | 04 54.1118 | 59 | 32 08.0666 |
| 20 | 21 47.1638 | 10 | 05 26.7909 | 82 00 | 32 40.7457 |
| 80 21 | +0 21 14.4847 | 81 11 | -0 05 59.4700 | 82 01 | -0 33 13.4247 |
| 22 | 20 41.8056 | 12 | 06 32.1491 | 02 | 33 46.1038 |
| 23 | 20 09.1265 | 13 | 07 04.8282 | 03 | 34 18.7829 |
| 24 | 19 36.4474 | 14 | 07 37.5073 | 04 | 34 51.4620 |
| 25 | 19 03.7683 | 15 | 08 10.1864 | 05 | 35 24.1411 |
| 80 26 | +0 18 31.0892 | 81 16 | -0 08 42.8655 | 82 06 | -0 35 56.8202 |
| 27 | 17 58.4101 | 17 | 09 15.5446 | 07 | 36 29.4993 |
| 28 | 17 25.7310 | 18 | 09 48.2237 | 08 | 37 02.1784 |
| 29 | 16 53.0519 | 19 | 10 20.9028 | 09 | 37 34.8575 |
| 30 | 16 20.3728 | 20 | 10 53.5819 | 10 | 38 07.5366 |
| 80 31 | +0 15 47.6937 | 81 21 | -0 11 26.2610 | 82 11 | -0 38 40.2157 |
| 32 | 15 15.0146 | 22 | 11 58.9401 | 12 | 39 12.8948 |
| 33 | 14 42.3355 | 23 | 12 31.6192 | 13 | 39 45.5739 |
| 34 | 14 09.6564 | 24 | 13 04.2983 | 14 | 40 18.2530 |
| 35 | 13 36.9774 | 25 | 13 36.9774 | 15 | 40 50.9321 |

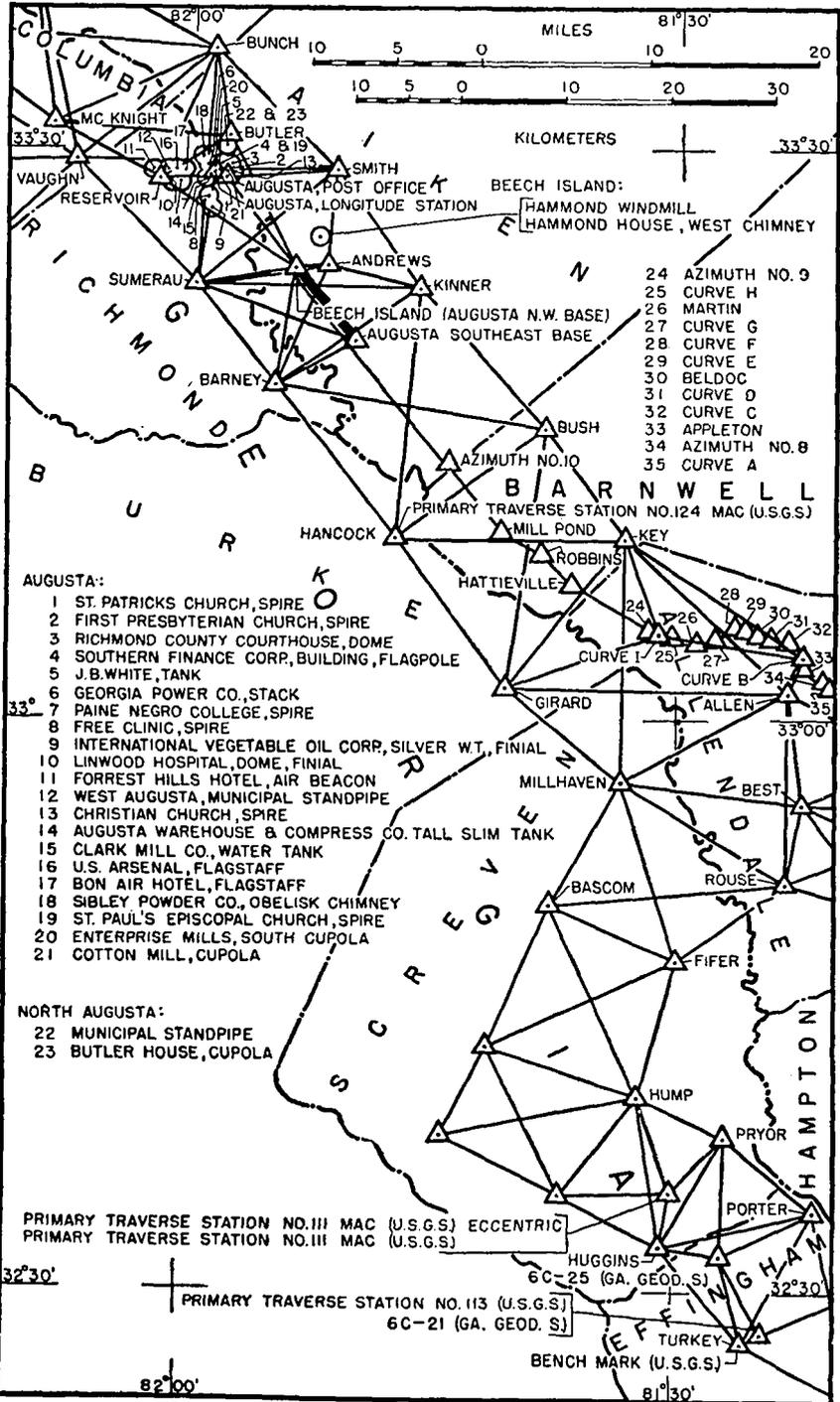


FIGURE 4.—Triangulation along the Augusta, Ga., to Beaufort, S. C., arc; the Allendale, S. C., to Odum, Ga., arc; the Silver City, Ga., to Hardeeville, S. C., arc; and the Beaufort to Charleston traverse.

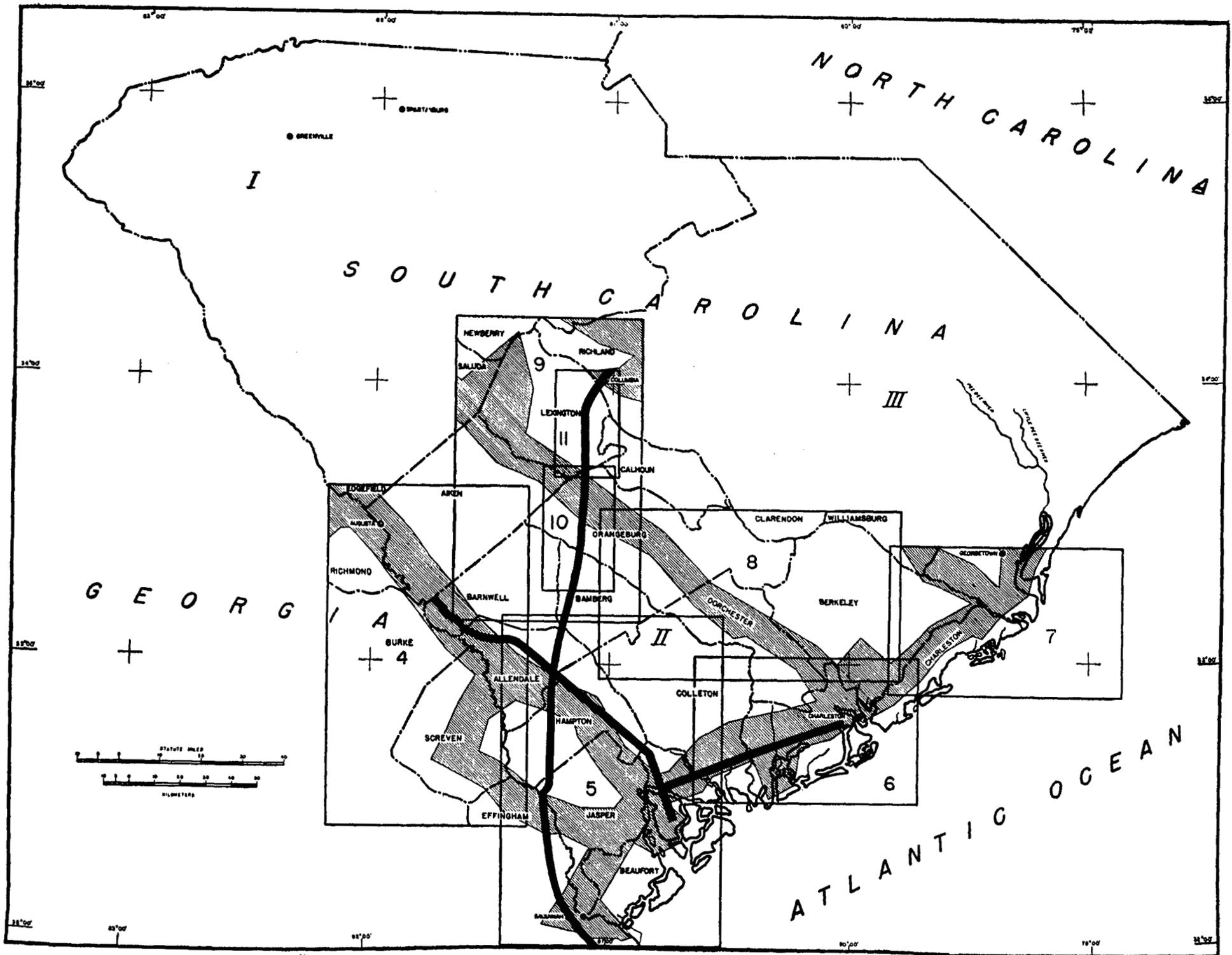


FIGURE 3.—Index map of southeastern South Carolina showing areas covered by each of the following sketches 4 to 11.

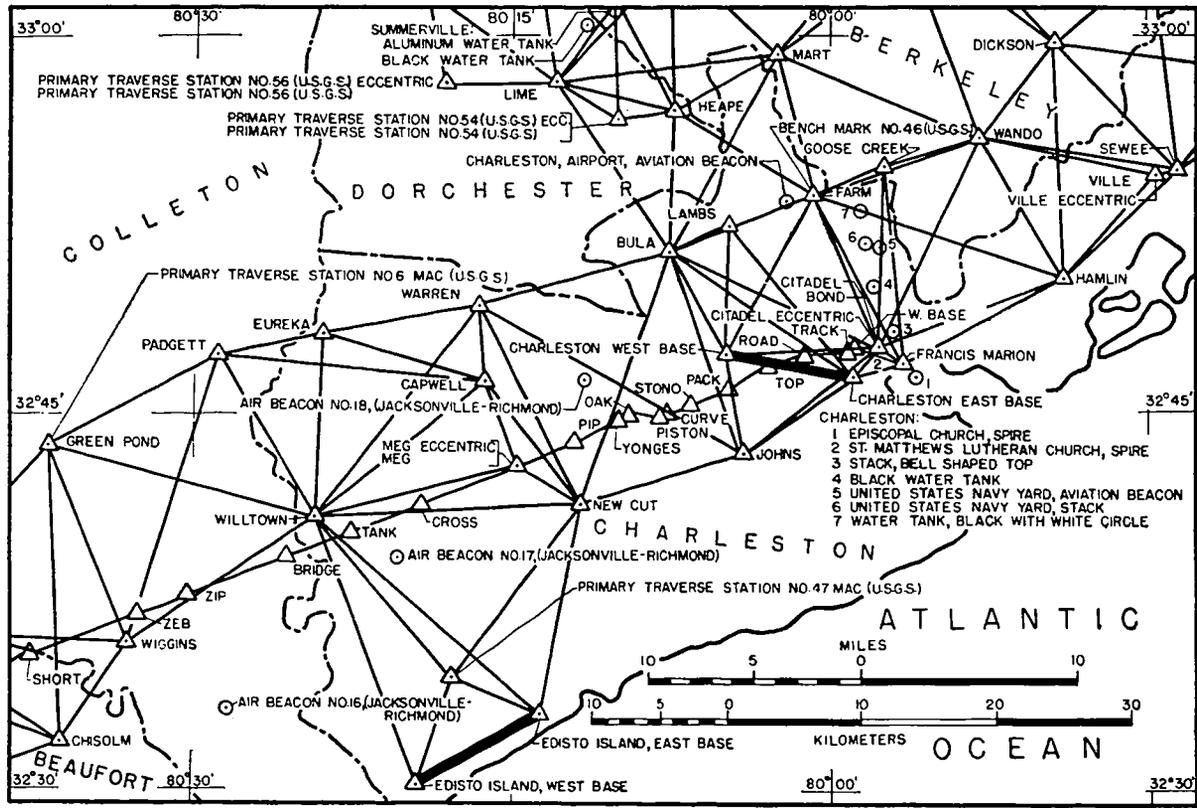


FIGURE 6.—Triangulation along the Beaufort, S. C., to Jacksonville, N. C., arc; the Chappells to Charleston arc; and the Beaufort to Charleston traverse.

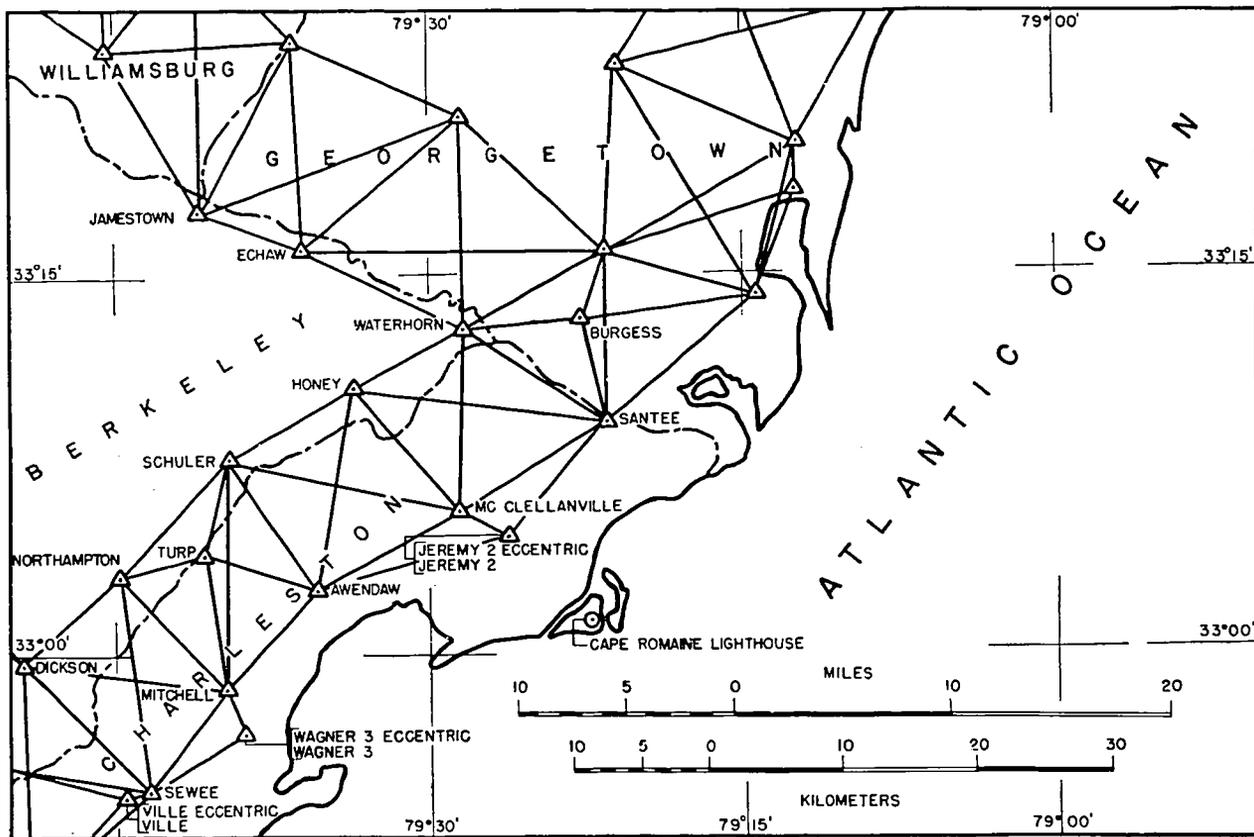


FIGURE 7.—Triangulation along the Tigerville to Georgetown arc; and the Beaufort, S. C., to Jacksonville, N. C., arc.

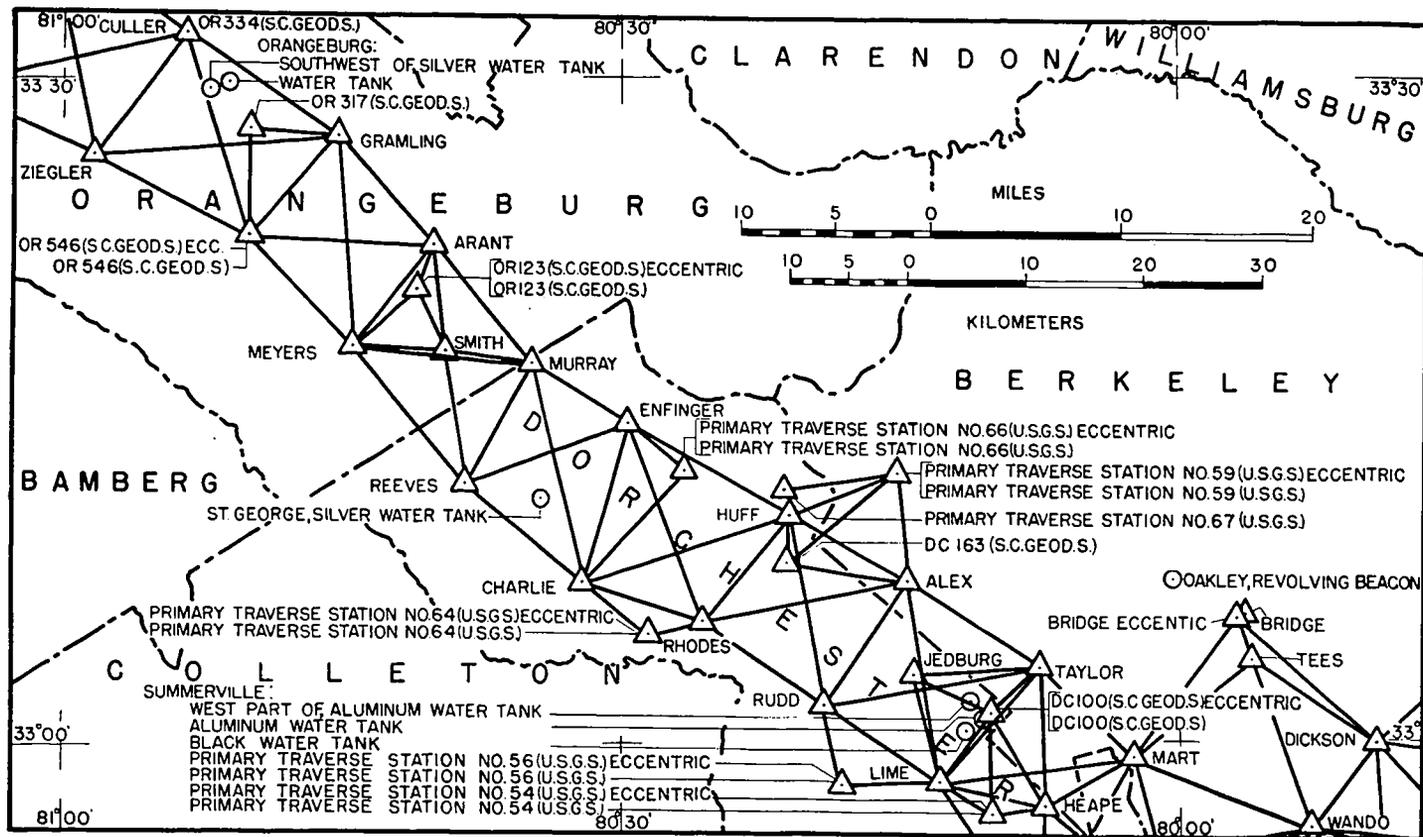


FIGURE 8.—Triangulation along the Chappells to Charleston arc; and the Beaufort, S. C., to Jacksonville, N. C., arc.

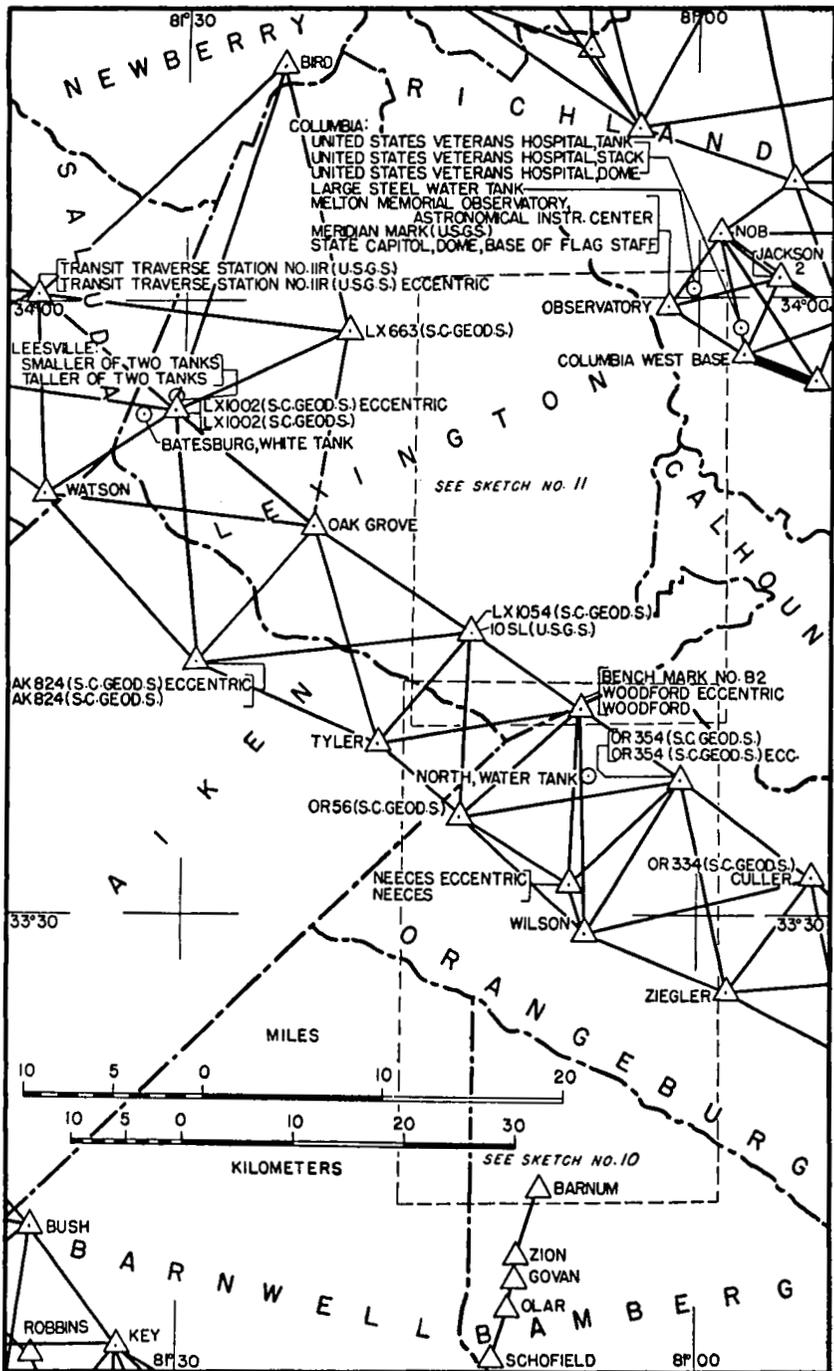


FIGURE 9.—Triangulation along the Chappells to Charleston arc; the Augusta, Ga., to Braufort, S. C., arc; the Tigerville to Georgetown arc; and the Norfolk, Va., to Savannah, Ga., traverse.

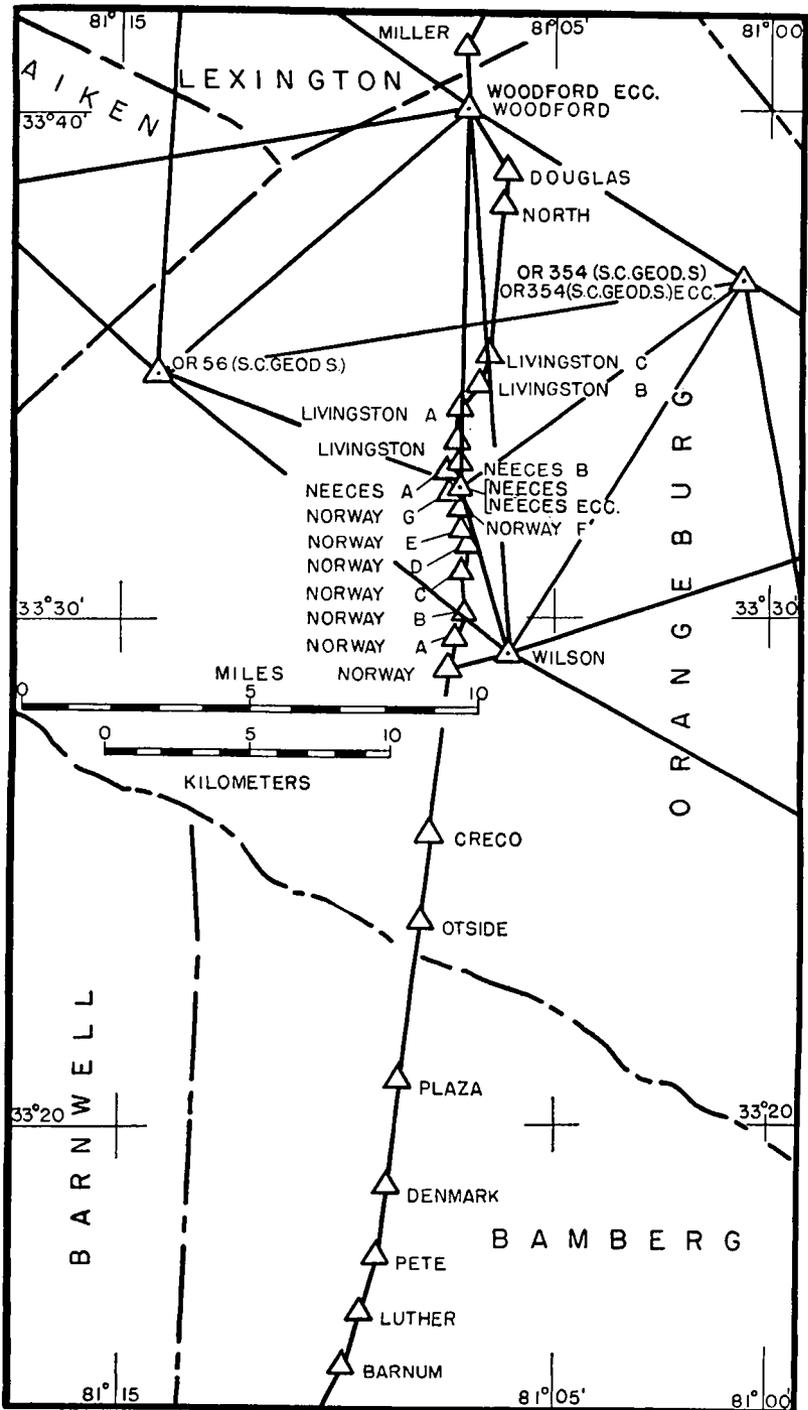


FIGURE 10.—Triangulation along the Chappells to Charleston arc; and the Norfolk, Va., to Savannah, Ga., traverse.

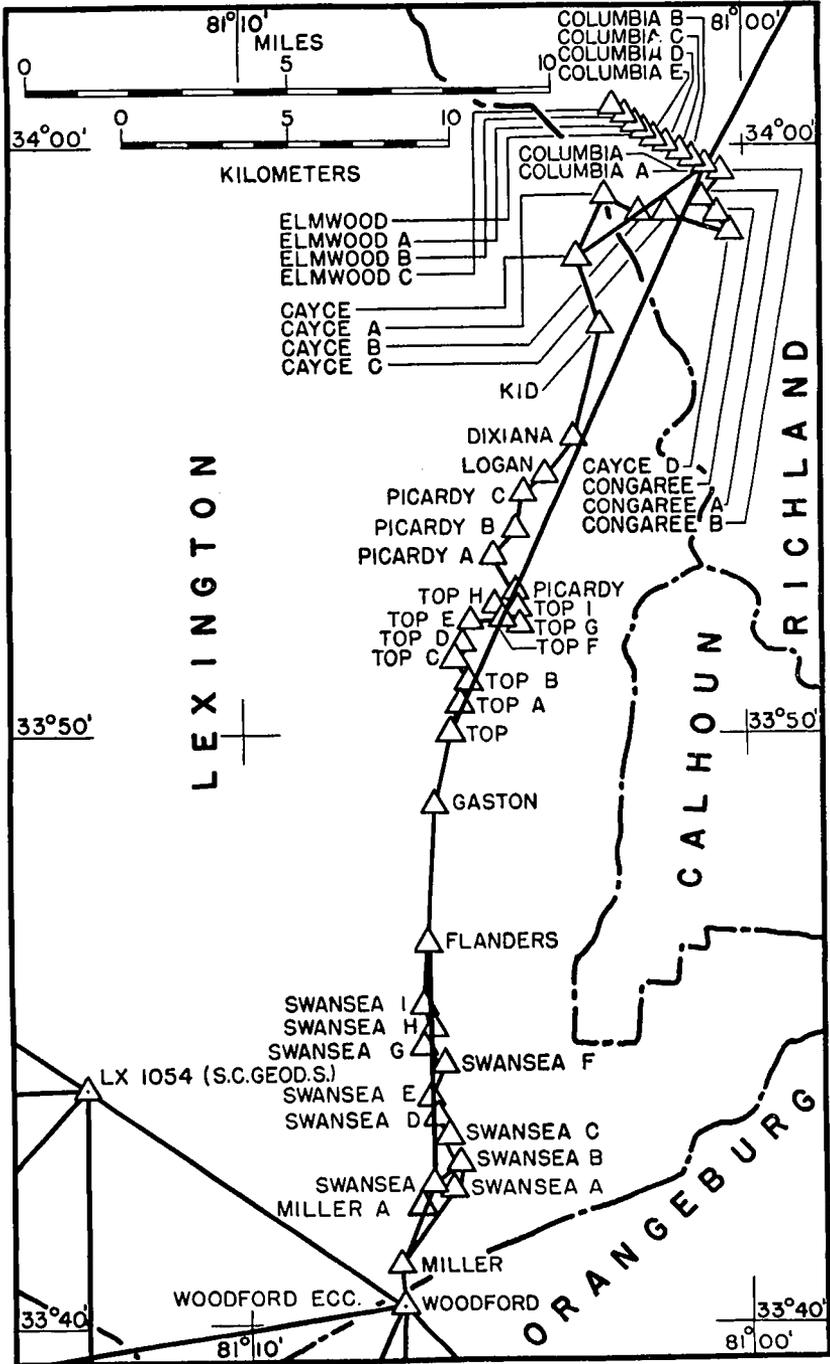


FIGURE 11.—Triangulation along the Chappells to Charleston arc; and the Norfolk, Va., to Savannah, Ga., traverse.

INDEX TO GEOGRAPHIC POSITIONS, DESCRIPTIONS, PLANE COORDINATES, AND SKETCHES

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|--|------------------------|--|---------------|
| | <i>Page</i> | <i>Page</i> | <i>Figure</i> |
| A K 824 (S. C. Geod. S.)..... | 41 | 128 | 9 |
| A K 824 (S. C. Geod. S.) eccentric..... | 33 | 112 | 0 |
| Air beacon (see also aviation beacon). | | | |
| Air beacon: | | | |
| Augusta, Forrest Hills Hotel (Ga.)..... | 0 | 84 | 4 |
| No. 12, Jacksonville-Richmond..... | 20 | 109 | 5 |
| No. 13, Jacksonville-Richmond..... | 29 | 108 | 5 |
| No. 16, Jacksonville-Richmond..... | 28 | 108 | 6 |
| No. 17, Jacksonville-Richmond..... | 22 | 100 | 6 |
| No. 18, Jacksonville-Richmond..... | 22 | 101 | 0 |
| Airport: | | | |
| Charleston, aviation beacon..... | 23 | 103 | 6 |
| Savannah, aviation beacon (Ga.)..... | 31 | 110 | 5 |
| Alex..... | 37 | 120 | 8 |
| Allen..... | 7 | 79 | 4, 5 |
| Allen (Traverse station)..... | 52 | 142 | 5 |
| Allendale..... | 63 | 159 | 5 |
| Allendale: | | | |
| Baptist Church (Negro), spire..... | 65 | 160 | 5 |
| Baptist Church (White), spire..... | 64 | 160 | 5 |
| Latitude station..... | 63 | 159 | 5 |
| Methodist Church, spire..... | 64 | 160 | 5 |
| Municipal water tank..... | 14 | 88 | 5 |
| Northeast base..... | 63 | 159 | 5 |
| Presbyterian Church, spire..... | 65 | 160 | 5 |
| Seaboard Oil Mill, stack..... | 65 | 160 | 5 |
| Southwest base..... | 63 | 159 | 5 |
| Andrews..... | 6 | 75 | 4 |
| Appleton..... | 63 | 158 | 4, 5 |
| Arant..... | 36 | 117 | 8 |
| Astronomical instrument, Columbia, Melton Memorial Ob- servatory, center..... | 40 | 138 | 9 |
| Augusta: | | | |
| Augusta Warehouse and Compress Company, tall slim tank (Ga.)..... | 11 | 85 | 4 |
| Bon Air Hotel, flagstaff (Ga.)..... | 12 | 86 | 4 |
| Christian Church, spire (Ga.)..... | 11 | 84 | 4 |
| Clark Mill Company, water tank (Ga.)..... | 12 | 85 | 4 |
| Cotton Mill, cupola (Ga.)..... | 13 | 86 | 4 |
| Enterprise Mills, south cupola (Ga.)..... | 13 | 86 | 4 |
| First Presbyterian Church, spire (Ga.)..... | 13 | 86 | 4 |
| Forrest Hills Hotel, air beacon (Ga.)..... | 9 | 84 | 4 |
| Free Clinic, spire (Ga.)..... | 11 | 85 | 4 |
| Georgia Power Co., stack (Ga.)..... | 10 | 84 | 4 |
| International Vegetable Oil Corporation, silver water tank, finial (Ga.)..... | 10 | 84 | 4 |
| J. B. White, tank (Ga.)..... | 11 | 85 | 4 |
| Linwood Hospital, dome, finial (Ga.)..... | 10 | 84 | 4 |
| Longitude station (Ga.)..... | 10 | 84 | 4 |
| Northwest base (Beech Island)..... | 7 | 76 | 4 |
| Paine Negro College, spire (Ga.)..... | 10 | 84 | 4 |
| Post office (Ga.)..... | 12 | 85 | 4 |
| Richmond County Courthouse, dome (Ga.)..... | 13 | 86 | 4 |
| St. Patricks Church, spire (Ga.)..... | 11 | 84 | 4 |
| St. Paul's Episcopal Church, spire (Ga.)..... | 13 | 86 | 4 |
| Sibley Powder Company, obelisk chimney (Ga.)..... | 12 | 86 | 4 |
| Southeast base..... | 7 | 77 | 4 |
| Southern Finance Corporation, building, flagpole (Ga.)..... | 11 | 84 | 4 |
| United States Arsenal, flagstaff (Ga.)..... | 12 | 85 | 4 |
| Aviation beacon: | | | |
| Charleston, Airport..... | 23 | 103 | 6 |
| Charleston, United States Navy Yard..... | 23 | 103 | 6 |
| Savannah, Airport (Ga.)..... | 31 | 110 | 5 |
| Awendaw..... | 21 | 98 | 7 |

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|--|---------------------|--------------------------------------|---------------|
| Azimuth: | <i>Page</i> | <i>Page</i> | <i>Figure</i> |
| No. 1, Sheldon | 64 | 160 | 5 |
| No. 2, Davidson | 64 | 100 | 6 |
| No. 3, Early Branch | 61 | 159 | 5 |
| No. 4, Cummings | 64 | 159 | 5 |
| No. 5, Varnville | 64 | 159 | 6 |
| No. 6, Brunson | 64 | 159 | 5 |
| No. 7 | 63 | 159 | 5 |
| No. 8 | 63 | 159 | 4, 5 |
| No. 9 | 62 | 153 | 4 |
| No. 10 | 62 | 157 | 4 |
| Bank (Ga.) | 31 | 110 | 5 |
| Baptist Church (Negro), Allendale, spire | 65 | 100 | 5 |
| Baptist Church (White), Allendale, spire | 64 | 100 | 5 |
| Barney (Ga.) | 6 | 76 | 4 |
| Barnum | 51 | 141 | 9, 10 |
| Bascom (Ga.) | 44 | 130 | 4 |
| Base: | | | |
| Allendale northeast | 63 | 159 | 5 |
| Allendale southwest | 63 | 159 | 5 |
| Augusta northwest (Beech Island) | 7 | 76 | 4 |
| Augusta southeast | 7 | 77 | 4 |
| Charleston east | 19 | 84 | 6 |
| Charleston west | 19 | 84 | 6 |
| Columbia west | 48 | 136 | 9 |
| Edisto Island east | 18 | 82 | 6 |
| Edisto Island west | 18 | 83 | 6 |
| Savannah south | 30 | 109 | 5 |
| West | 61 | 157 | 6 |
| West (U. S. E.) (Ga.) | 31 | 111 | 5 |
| Batesburg, white tank | 43 | 129 | 9 |
| Beacon, Oakley, revolving | 24 | 103 | 8 |
| Beacon (<i>see also</i> Air beacon and Aviation beacon) | | | |
| Beaufort, black stack | 28 | 108 | 5 |
| Beaufort Church | 28 | 108 | 5 |
| Beaufort Church, reference mark No. 2 | 27 | 107 | 6 |
| Beech Island (Augusta northwest base) | 7 | 76 | 4 |
| Beech Island: | | | |
| Hammond house, west chimney | 13 | 86 | 4 |
| Hammond windmill | 13 | 86 | 4 |
| Beldoc | 63 | 158 | 4, 5 |
| Ben | 63 | 143 | 5 |
| Bench mark (U. S. G. S.) (<i>see</i> Bench mark 1918 (U. S. G. S.)) | | | |
| Bench mark 1918 (U. S. G. S.) | 20 | 108 | 5 |
| Bench mark (U. S. G. S.) (Ga.) | 47 | 135 | 4, 5 |
| Bench mark D 37 (Ga.) | 30 | 109 | 5 |
| Bench mark No. B 2 | 41 | 128 | 9 |
| Bench mark No. M 37 (U. S. G. S.) (Ga.) | 46 | 134 | 5 |
| Bench mark No. 40 (U. S. G. S.) | 39 | 124 | 6 |
| Berryville (Ga.) | 40 | 133 | 6 |
| Best | 8 | 79 | 4, 5 |
| Bird | 42 | 129 | 9 |
| Black (Marine) | 28 | 108 | 5 |
| Bolen | 9 | 83 | 5 |
| Bon Air Hotel, Augusta, flagstaff (Ga.) | 12 | 86 | 4 |
| Bond | 23 | 102 | 6 |
| Bridge (Berkeley County) | 23 | 102 | 8 |
| Bridge (Charleston County)* | 60 | 155 | 6 |
| Bridge eccentric | 23 | 102 | 8 |
| Brook | 60 | 154 | 5 |
| Brown (Ga.) | 27 | 107 | 5 |
| Brunson | 8 | 80 | 5 |
| Brunson | 64 | 159 | 5 |
| Brunson Azimuth No. 6 | 18 | 93 | 6 |
| Bula | 6 | 74 | 4 |
| Bunch | 21 | 99 | 7 |
| Burgess | 32 | 111 | 5 |
| Burke (Ga.) | 7 | 77 | 4, 9 |
| Bush | 11 | 85 | 4 |
| Butler | 13 | 86 | 4 |
| Butler House, North Augusta, cupola | | | |
| Canton | 52 | 143 | 5 |
| Cape Romain Lighthouse | 25 | 104 | 7 |
| Cape Romaine Lighthouse (<i>see</i> Cape Romain Lighthouse) | | | |
| Capwell | 17 | 91 | 6 |
| Carmel | 9 | 82 | 5 |
| Carolina | 53 | 143 | 5 |
| Cayce | 56 | 147 | 11 |
| Cayce A. | 56 | 147 | 11 |

*This station has been plotted erroneously on figure 6 where it is shown in Colleton county instead of Charleston county.

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|---|---------------------|--------------------------------------|--------|
| | Page | Page | Figure |
| Cayce B..... | 55 | 147 | 11 |
| Cayce C..... | 55 | 147 | 11 |
| Cayce D..... | 55 | 147 | 11 |
| Central (Ga.)..... | 54 | 145 | 5 |
| Central A (Ga.)..... | 54 | 145 | 5 |
| Charleston: | | | |
| Airport, aviation beacon..... | 23 | 103 | 6 |
| Black water tank..... | 24 | 103 | 6 |
| East base..... | 19 | 94 | 6 |
| Episcopal Church, spire..... | 24 | 103 | 6 |
| St. Matthews Lutheran Church, spire..... | 24 | 103 | 6 |
| Stack, bell shaped top..... | 24 | 103 | 6 |
| United States Navy Yard, aviation beacon..... | 23 | 103 | 6 |
| United States Navy Yard, stack..... | 24 | 103 | 6 |
| Water tank, black with white circle..... | 23 | 103 | 6 |
| West base..... | 19 | 94 | 6 |
| Charlie..... | 37 | 119 | 8 |
| Chatham (Ga.)..... | 54 | 145 | 5 |
| Cherokee (Ga.)..... | 27 | 106 | 5 |
| Chimney: | | | |
| Augusta, Sibley Powder Company, obelisk (Ga.)..... | 12 | 80 | 4 |
| Beech Island, Hammond house, west..... | 13 | 86 | 4 |
| Chisolm..... | 16 | 89 | 5, 6 |
| Christian Church, Augusta, spire (Ga.)..... | 11 | 84 | 4 |
| Citadel..... | 19 | 95 | 6 |
| Citadel eccentric..... | 23 | 101 | 6 |
| Clark Mill Company, Augusta, water tank (Ga.)..... | 12 | 85 | 4 |
| Cleveland (Ga.)..... | 53 | 144 | 5 |
| Cloud (Ga.)..... | 27 | 106 | 5 |
| Clyo (Ga.)..... | 53 | 144 | 5 |
| Cocock..... | 9 | 82 | 5 |
| Colleton..... | 27 | 107 | 5 |
| Columbia..... | 50 | 138 | 11 |
| Columbia A..... | 55 | 146 | 11 |
| Columbia B..... | 55 | 146 | 11 |
| Columbia C..... | 55 | 146 | 11 |
| Columbia D..... | 55 | 146 | 11 |
| Columbia E..... | 55 | 146 | 11 |
| Columbia: | | | |
| Large steel water tank..... | 49 | 138 | 9 |
| Melton Memorial Observatory, astronomical instrument, center..... | 49 | 138 | 9 |
| Meridian mark (U. S. G. S.)..... | 49 | 138 | 9 |
| State Capitol, dome, base of flagstaff..... | 49 | 138 | 9 |
| United States Veterans' Hospital, dome..... | 49 | 138 | 9 |
| United States Veterans' Hospital, stack..... | 49 | 138 | 9 |
| United States Veterans' Hospital, tank..... | 49 | 138 | 9 |
| West base..... | 48 | 136 | 9 |
| Congaree..... | 55 | 147 | 11 |
| Congaree A..... | 55 | 147 | 11 |
| Congaree B..... | 55 | 146 | 11 |
| Cotton Mill, Augusta, cupola (Ga.)..... | 13 | 86 | 4 |
| Courthouse, Augusta, Richmond County, dome (Ga.)..... | 13 | 86 | 4 |
| Creco..... | 51 | 140 | 10 |
| Cross..... | 61 | 165 | 6 |
| Culler..... | 35 | 115 | 8, 9 |
| Cummings..... | 8 | 81 | 5 |
| Cummings Azimuth No. 4..... | 64 | 159 | 5 |
| Cupola: | | | |
| Augusta, cotton mill (Ga.)..... | 13 | 80 | 4 |
| Augusta, Enterprise Mills, south (Ga.)..... | 13 | 86 | 4 |
| North Augusta, Butler House..... | 13 | 86 | 4 |
| Curve..... | 61 | 156 | 6 |
| Curve A..... | 63 | 159 | 4, 5 |
| Curve B..... | 14 | 86 | 4, 5 |
| Curve C..... | 63 | 158 | 4, 5 |
| Curve D..... | 63 | 158 | 4, 5 |
| Curve E..... | 62 | 158 | 4, 5 |
| Curve F..... | 62 | 158 | 4, 5 |
| Curve G..... | 62 | 158 | 4 |
| Curve H..... | 62 | 158 | 4 |
| Curve I..... | 14 | 87 | 4 |
| D C 100 (S. C. Geod. S.)..... | 38 | 122 | 8 |
| D C 100 (S. C. Geod. S.) eccentric..... | 38 | 122 | 8 |
| D C 103 (S. C. Geod. S.)..... | 39 | 124 | 8 |
| Dale..... | 60 | 154 | 5 |
| Davidson Azimuth No. 2..... | 64 | 160 | 5 |
| Deloach..... | 8 | 81 | 5 |
| Denmark..... | 51 | 140 | 10 |

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|---|---------------------|--------------------------------------|---------|
| | Page | Page | Figure |
| Dickson..... | 20 | 96 | 6, 7, 8 |
| Dixiana..... | 56 | 148 | 11 |
| Dock (U. S. E.) (Ga.)..... | 31 | 110 | 5 |
| Dome: | | | |
| Augusta, Linwood Hospital, final (Ga.)..... | 10 | 84 | 4 |
| Augusta, Richmond County Courthouse (Ga.)..... | 13 | 86 | 4 |
| Columbia, State Capitol, base of flagstaff..... | 49 | 138 | 9 |
| Columbia, United States Veterans' Hospital..... | 49 | 138 | 9 |
| Douglas..... | 50 | 139 | 10 |
| Early Branch Azimuth No. 3..... | 64 | 159 | 5 |
| East base, Charleston..... | 19 | 94 | 6 |
| East base, Edisto Island..... | 18 | 92 | 6 |
| Ebenezer (U. S. E.) (Ga.)..... | 47 | 135 | 5 |
| Ebenezer (U. S. E.) eccentric (Ga.)..... | 47 | 134 | 5 |
| Echaw..... | 48 | 136 | 7 |
| Edisto Island east base..... | 18 | 92 | 6 |
| Edisto Island west base..... | 18 | 93 | 6 |
| Elmwood..... | 55 | 146 | 11 |
| Elmwood A..... | 55 | 146 | 11 |
| Elmwood B..... | 54 | 146 | 11 |
| Elmwood C..... | 54 | 145 | 11 |
| Enfinger..... | 36 | 118 | 8 |
| Enterprise Mills, Augusta, south cupola (Ga.)..... | 13 | 86 | 4 |
| Episcopal Church, Charleston, spire..... | 24 | 103 | 6 |
| Estill..... | 52 | 143 | 5 |
| Eureka..... | 17 | 90 | 0 |
| Exley (Ga.)..... | 54 | 144 | 5 |
| Extension..... | 52 | 142 | 5 |
| Fairfax..... | 52 | 142 | 5 |
| Farm..... | 19 | 95 | 6 |
| Fifer (Ga.)..... | 44 | 120 | 4 |
| Final: | | | |
| Augusta: | | | |
| International Vegetable Oil Corporation, silver water tank (Ga.)..... | 70 | 84 | 4 |
| Linwood Hospital, dome (Ga.)..... | 10 | 84 | 4 |
| Ridgeland, tank..... | 15 | 88 | 5 |
| First Presbyterian Church, Augusta, spire (Ga.)..... | 13 | 86 | 4 |
| Flagpole, Augusta, Southern Finance Corporation, building (Ga.)..... | 11 | 84 | 4 |
| Flagstaff: | | | |
| Augusta, Bon Air Hotel (Ga.)..... | 12 | 86 | 4 |
| Augusta, United States Arsenal (Ga.)..... | 12 | 85 | 4 |
| Columbia, State Capitol, dome, base of..... | 49 | 138 | 9 |
| Flanders..... | 50 | 138 | 11 |
| Forrest Hills Hotel, Augusta, air beacon (Ga.)..... | 9 | 84 | 4 |
| Fort Screven, water tank (Ga.)..... | 31 | 111 | 5 |
| Francis Marlon..... | 22 | 101 | 6 |
| Free Clinic, Augusta, spire (Ga.)..... | 11 | 85 | 4 |
| Gardner..... | 16 | 88 | 5 |
| Garner (Ga.)..... | 53 | 144 | 5 |
| Garnett..... | 53 | 144 | 5 |
| Gaston..... | 50 | 138 | 11 |
| Georgia Power Co., Augusta, stack (Ga.)..... | 10 | 84 | 4 |
| Girard (Ga.)..... | 7 | 78 | 4 |
| Goose Creek..... | 22 | 101 | 6 |
| Govan..... | 51 | 141 | 0 |
| Gramling..... | 35 | 116 | 8 |
| Gray..... | 16 | 88 | 5 |
| Green Pond..... | 16 | 89 | 5, 6 |
| Hamlin..... | 19 | 95 | 6 |
| Hammond house, Beech Island, west chimney..... | 13 | 80 | 4 |
| Hammond windmill, Beech Island..... | 13 | 80 | 4 |
| Hancock (Ga.)..... | 7 | 78 | 4 |
| Hardee..... | 26 | 105 | 5 |
| Harding..... | 51 | 141 | 5 |
| Hattleville..... | 02 | 158 | 4 |
| Heape..... | 38 | 121 | 6, 8 |
| Hill..... | 60 | 154 | 5 |
| Honey..... | 21 | 98 | 7 |
| Hudson..... | 27 | 106 | 5 |
| Huff..... | 37 | 119 | 8 |
| Huggins (Ga.)..... | 45 | 131 | 4 |
| Hump (Ga.)..... | 44 | 130 | 4 |
| International Vegetable Oil Corporation, Augusta, silver water tank, final (Ga.)..... | 10 | 84 | 4 |

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|---|---------------------|--------------------------------------|--------|
| | Page | Page | Figure |
| J. B. White, Augusta, tank (Ga.) | 11 | 85 | 4 |
| Jackson 2 | 48 | 137 | 9 |
| Jacksonville-Richmond air beacon: | | | |
| No. 12 | 29 | 109 | 5 |
| No. 13 | 29 | 108 | 5 |
| No. 16 | 28 | 108 | 6 |
| No. 17 | 22 | 100 | 6 |
| No. 18 | 22 | 101 | 6 |
| Jamestown | 48 | 135 | 7 |
| Jedburg | 38 | 122 | 8 |
| Jeremy 2 | 25 | 104 | 7 |
| Jeremy 2 eccentric | 25 | 103 | 7 |
| Jewels (Ga.) | 46 | 133 | 5 |
| Johns | 18 | 94 | 6 |
| Johnson | 8 | 80 | 5 |
| Joint | 52 | 142 | 5 |
| Key | 7 | 78 | 4, 0 |
| Kid | 56 | 148 | 11 |
| Kinner | 6 | 76 | 4 |
| L X 663 (S. C. Geod. S.) | 41 | 128 | 9 |
| L X 1002 (S. C. Geod. S.) | 41 | 128 | 9 |
| L X 1002 (S. C. Geod. S.) eccentric | 33 | 112 | 9 |
| L X 1054 (S. C. Geod. S.) | 41 | 127 | 9, 11 |
| Lambs | 22 | 100 | 6 |
| Latitude station, Allendale | 63 | 159 | 5 |
| Leesville: | | | |
| Smaller of two tanks | 43 | 129 | 9 |
| Taller of two tanks | 43 | 129 | 9 |
| Lighthouse: | | | |
| Cape Romano | 25 | 104 | 7 |
| Tybee (Ga.) | 31 | 111 | 5 |
| Limo | 37 | 120 | 6, 8 |
| Linwood Hospital, Augusta, dome, finial (Ga.) | 10 | 84 | 4 |
| Little Rock | 9 | 82 | 5 |
| Livingston | 50 | 139 | 10 |
| Livingston A | 58 | 152 | 10 |
| Livingston B | 58 | 152 | 10 |
| Livingston C | 58 | 152 | 10 |
| Logan | 56 | 148 | 11 |
| Long | 60 | 154 | 5 |
| Longitude station, Augusta (Ga.) | 10 | 84 | 4 |
| Luray | 52 | 143 | 5 |
| Luther | 51 | 140 | 10 |
| McClellanville | 21 | 98 | 7 |
| McKnight (Ga.) | 11 | 85 | 4 |
| Marine (Black) | 28 | 108 | 5 |
| Mart | 37 | 120 | 6, 8 |
| Martin | 62 | 158 | 4 |
| Masonic (Ga.) | 30 | 109 | 5 |
| Meg | 22 | 100 | 6 |
| Meg eccentric | 22 | 100 | 6 |
| Melnhard (Ga.) | 54 | 145 | 5 |
| Melton Memorial Observatory, astronomical instrument, center, | | | |
| Columbia | 49 | 138 | 9 |
| Meridian mark (U. S. G. S.), Columbia | 49 | 138 | 9 |
| Methodist Church, Allendale, spire | 64 | 160 | 5 |
| Meyers | 36 | 117 | 8 |
| Miller | 50 | 139 | 10, 11 |
| Miller A | 58 | 152 | 11 |
| Millhaven (Ga.) | 7 | 79 | 4 |
| Millpond | 62 | 157 | 4 |
| Mitchell | 20 | 97 | 7 |
| Municipal standpipe: | | | |
| North Augusta | 10 | 84 | 4 |
| West Augusta (Ga.) | 9 | 84 | 4 |
| Municipal watertank, Allendale | 14 | 88 | 5 |
| Murray | 36 | 117 | 8 |
| Neece | 41 | 127 | 9, 10 |
| Neece A | 58 | 152 | 10 |
| Neece B | 58 | 152 | 10 |
| Neece eccentric | 35 | 115 | 9, 10 |
| New Cut | 17 | 91 | 6 |
| Nob | 48 | 136 | 9 |
| North | 50 | 139 | 10 |
| North Augusta: | | | |
| Butler House, cupola | 13 | 86 | 4 |
| Municipal standpipe | 10 | 84 | 4 |

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|---|---------------------|--------------------------------------|--------|
| | Page | Page | Figure |
| North, water tank | 43 | 129 | 9 |
| Northampton | 20 | 97 | 7 |
| Northampton. (See Northampton.) | | | |
| Northeast base, Allendale | 63 | 159 | 5 |
| Northwest base, Augusta (Beech Island) | 7 | 76 | 4 |
| Norway | 50 | 140 | 10 |
| Norway A | 59 | 153 | 10 |
| Norway B | 59 | 153 | 10 |
| Norway C | 59 | 153 | 10 |
| Norway D | 59 | 153 | 10 |
| Norway E | 59 | 153 | 10 |
| Norway F | 59 | 153 | 10 |
| Norway G | 59 | 153 | 10 |
| O R 56 (S. C. Geod. S.) | 34 | 114 | 9, 10 |
| O R 123 (S. C. Geod. S.) | 40 | 126 | 8 |
| O R 123 (S. C. Geod. S.) eccentric | 40 | 126 | 8 |
| O R 317 (S. C. Geod. S.) | 40 | 126 | 8 |
| O R 334 (S. C. Geod. S.) | 40 | 127 | 8, 9 |
| O R 354 (S. C. Geod. S.) | 41 | 127 | 9, 10 |
| O R 354 (S. C. Geod. S.) eccentric | 35 | 114 | 9, 10 |
| O R 540 (S. C. Geod. S.) | 40 | 127 | 8 |
| O R 540 (S. C. Geod. S.) eccentric | 35 | 116 | 8 |
| Onk | 61 | 156 | 6 |
| Oak Grove | 34 | 113 | 9 |
| Oakley, revolving beacon | 24 | 103 | 8 |
| Observatory | 49 | 137 | 9 |
| Olar | 51 | 141 | 9 |
| Omar | 14 | 88 | 5 |
| Omar eccentric | 14 | 87 | 5 |
| Orangeburg: | | | |
| Southwest of, silver water tank | 42 | 129 | 8 |
| Water tank | 43 | 129 | 8 |
| Outside | 51 | 140 | 10 |
| Pack | 61 | 156 | 6 |
| Padgett | 16 | 90 | 6 |
| Paine Negro College, Augusta, spire (Ga.) | 10 | 84 | 4 |
| Paris Island. (See Parris Island.) | | | |
| Parris Island: | | | |
| High brick stack | 28 | 108 | 5 |
| High, yellow and black tank | 29 | 108 | 5 |
| Highest of twins, stack | 28 | 108 | 5 |
| Low white stack | 28 | 108 | 5 |
| Silver water tank | 29 | 108 | 5 |
| White with black top water tank | 29 | 108 | 5 |
| Pete | 51 | 140 | 10 |
| Picardy | 56 | 149 | 11 |
| Picardy A | 56 | 149 | 11 |
| Picardy B | 56 | 148 | 11 |
| Picardy C | 56 | 148 | 11 |
| Pinckney | 26 | 104 | 5 |
| Pip | 61 | 155 | 6 |
| Piston | 61 | 156 | 6 |
| Plaza | 51 | 140 | 10 |
| Port Wentworth: | | | |
| Center of three, stack (Ga.) | 29 | 109 | 5 |
| Northerly and highest of three, stack (Ga.) | 29 | 109 | 5 |
| Westerly of three, stack (Ga.) | 29 | 109 | 5 |
| Porter (Ga.) | 45 | 132 | 4, 5 |
| Post office, Augusta (Ga.) | 12 | 85 | 4 |
| Presbyterian Church, Allendale, spire | 65 | 160 | 5 |
| Primary traverse station: | | | |
| No. 6, 1917 Mac (U. S. G. S.) | 21 | 100 | 5, 6 |
| No. 47 Mac (U. S. G. S.) | 17 | 92 | 6 |
| No. 54 (U. S. G. S.) | 39 | 123 | 6, 8 |
| No. 54 (U. S. G. S.) eccentric | 38 | 123 | 6, 8 |
| No. 56 (U. S. G. S.) | 39 | 123 | 6, 8 |
| No. 56 (U. S. G. S.) eccentric | 39 | 123 | 6, 8 |
| No. 59 (U. S. G. S.) | 39 | 124 | 8 |
| No. 59 (U. S. G. S.) eccentric | 39 | 124 | 8 |
| No. 64 (U. S. G. S.) | 40 | 125 | 8 |
| No. 64 (U. S. G. S.) eccentric | 39 | 125 | 8 |
| No. 66 (U. S. G. S.) | 40 | 126 | 8 |
| No. 66 (U. S. G. S.) eccentric | 40 | 125 | 8 |
| No. 67 (U. S. G. S.) | 39 | 124 | 8 |
| No. 111 Mac (U. S. G. S.) (Ga.) | 47 | 135 | 4 |
| No. 111 Mac (U. S. G. S.) eccentric (Ga.) | 45 | 130 | 4 |
| No. 113 (U. S. G. S.) (Ga.) | 47 | 135 | 4, 5 |
| No. 124 Mac (U. S. G. S.) (Ga.) | 13 | 86 | 4 |

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|--|---------------------|--------------------------------------|--------|
| | Page | Page | Figure |
| Pritchard..... | 26 | 105 | 5 |
| Pryor (Ga.)..... | 45 | 131 | 4 |
| Purry..... | 26 | 105 | 5 |
| Quarantine (U. S. E.)..... | 31 | 111 | 5 |
| Reeves..... | 36 | 118 | 8 |
| Reservoir (Ga.)..... | 12 | 85 | 4 |
| Rhodes..... | 37 | 119 | 8 |
| Richmond County Courthouse, Augusta, dome (Ga.)..... | 13 | 86 | 4 |
| Ridgeland..... | 9 | 83 | 5 |
| Ridgeland, tank, final..... | 15 | 88 | 5 |
| Rincon (Ga.)..... | 54 | 144 | 5 |
| Ritter, W. M., Lumber Co., Tillman, black stack..... | 47 | 135 | 5 |
| Road..... | 61 | 157 | 6 |
| Robbins..... | 62 | 168 | 4, 9 |
| Roosevelt (Ga.)..... | 54 | 144 | 5 |
| Rouse..... | 8 | 80 | 4, 5 |
| Rudd..... | 37 | 121 | 8 |
| St. George, silver water tank..... | 42 | 129 | 8 |
| St. Matthews Lutheran Church, Charleston, spire..... | 24 | 103 | 6 |
| St. Patricks Church, Augusta, spire (Ga.)..... | 11 | 84 | 4 |
| St. Paul's Episcopal Church, Augusta, spire (Ga.)..... | 13 | 86 | 4 |
| Salt Bridge..... | 60 | 154 | 5 |
| Santee..... | 21 | 99 | 7 |
| Savannah..... | 53 | 144 | 5 |
| Savannah (Ga.)..... | 27 | 106 | 5 |
| Savannah: | | | |
| Airport, aviation beacon (Ga.)..... | 31 | 110 | 5 |
| Black water tank (Ga.)..... | 30 | 109 | 5 |
| South base..... | 30 | 109 | 5 |
| Sugar refinery, water tank (Ga.)..... | 30 | 109 | 5 |
| Tall structure, aluminum water tank (Ga.)..... | 30 | 109 | 5 |
| Wesley Memorial Church, spire (Ga.)..... | 30 | 110 | 5 |
| Saw..... | 60 | 154 | 5 |
| Schofield..... | 51 | 141 | 5, 9 |
| Schuler..... | 20 | 97 | 7 |
| Scotia..... | 53 | 143 | 5 |
| Sea..... | 60 | 154 | 5 |
| Seaboard Oil Mill, Allendale, stack..... | 65 | 160 | 5 |
| Sewee..... | 19 | 96 | 6, 7 |
| Sheldon..... | 9 | 83 | 5 |
| Sheldon Azimuth No. 1..... | 64 | 160 | 5 |
| Short..... | 60 | 155 | 5, 6 |
| Sibley Powder Co., Augusta, obelisk chimney (Ga.)..... | 12 | 86 | 4 |
| Smith (Alkon County)..... | 6 | 75 | 4 |
| Smith (Orangeburg County)..... | 36 | 118 | 8 |
| Snooks (Ga.)..... | 46 | 133 | 5 |
| South base, Savannah..... | 30 | 109 | 5 |
| South end (U. S. E.) (Ga.)..... | 31 | 110 | 5 |
| Southeast base, Augusta..... | 7 | 77 | 4 |
| Southern Finance Corporation, Augusta, building, flagpole (Ga.)..... | 11 | 84 | 4 |
| Southwest base, Allendale..... | 63 | 159 | 5 |
| Spire: | | | |
| Allendale, Baptist Church (Negro)..... | 65 | 160 | 5 |
| Allendale, Baptist Church (White)..... | 64 | 160 | 5 |
| Allendale, Methodist Church..... | 64 | 160 | 5 |
| Allendale, Presbyterian Church..... | 65 | 160 | 5 |
| Augusta, Christian Church (Ga.)..... | 11 | 84 | 4 |
| Augusta, First Presbyterian Church (Ga.)..... | 13 | 86 | 4 |
| Augusta, Free clinic (Ga.)..... | 11 | 85 | 4 |
| Augusta, Paine Negro College (Ga.)..... | 10 | 84 | 4 |
| Augusta, St. Patricks Church (Ga.)..... | 11 | 84 | 4 |
| Augusta, St. Paul's Episcopal Church (Ga.)..... | 13 | 86 | 4 |
| Charleston, Episcopal Church..... | 24 | 103 | 6 |
| Charleston, St. Matthews Lutheran Church..... | 24 | 103 | 6 |
| Savannah, Wesley Memorial Church (Ga.)..... | 30 | 110 | 5 |
| Spring..... | 52 | 142 | 5 |
| Stack: | | | |
| Allendale, Seaboard Oil Mill..... | 65 | 160 | 5 |
| Augusta, Georgia Power Co. (Ga.)..... | 10 | 84 | 4 |
| Beaufort, black..... | 28 | 178 | 5 |
| Charleston, bell-shaped top..... | 24 | 103 | 6 |
| Charleston, United States Navy Yard..... | 24 | 103 | 6 |
| Columbia, United States Veterans' Hospital..... | 49 | 138 | 9 |
| Parris Island, high brick..... | 28 | 108 | 5 |
| Parris Island, highest of twins..... | 28 | 108 | 5 |
| Parris Island, low white..... | 28 | 108 | 5 |
| Port Wentworth, center of three (Ga.)..... | 29 | 109 | 5 |

| Station | Geographic position | Description and/or plane coordinates | Sketch |
|--|---------------------|--------------------------------------|----------|
| Stack—Continued. | | | |
| Port Wentworth, northerly and highest of three (Ga.) | Page 29 | Page 109 | Figure 5 |
| Port Wentworth, westerly of three (Ga.) | 29 | 109 | 5 |
| Tillman, W. M. Ritter Lumber Company, black | 47 | 135 | 5 |
| Varnville, northeast of four | 14 | 88 | 5 |
| Standpipe: | | | |
| North Augusta, municipal | 10 | 84 | 4 |
| West Augusta, municipal (Ga.) | 9 | 84 | 4 |
| State Capitol, Columbia, dome, base of flagstaff | 49 | 138 | 9 |
| Stillwell (Ga.) | 47 | 134 | 5 |
| Stono | 61 | 163 | 6 |
| Street | 63 | 159 | 5 |
| Sugar refinery, Savannah, water tank (Ga.) | 30 | 109 | 5 |
| Sumerau (Ga.) | 0 | 74 | 4 |
| Summerville: | | | |
| Aluminum water tank | 42 | 129 | 0, 8 |
| Black water tank | 42 | 129 | 0, 8 |
| West part of, aluminum water tank | 42 | 129 | 8 |
| Swansea | 50 | 139 | 11 |
| Swansea A | 58 | 152 | 11 |
| Swansea B | 58 | 151 | 11 |
| Swansea C | 58 | 151 | 11 |
| Swansea D | 58 | 151 | 11 |
| Swansea E | 57 | 151 | 11 |
| Swansea F | 57 | 151 | 11 |
| Swansea G | 57 | 151 | 11 |
| Swansea H | 57 | 150 | 11 |
| Swansea I | 57 | 150 | 11 |
| Switzerland | 23 | 104 | 5 |
| Sycamore | 52 | 142 | 5 |
| Tank | 61 | 155 | 0 |
| Tank. (See also water tank.) | | | |
| Tank: | | | |
| Augusta, Augusta Warehouse and Compress Company, tall slim (Ga.) | 11 | 85 | 4 |
| Augusta, J. B. White (Ga.) | 11 | 85 | 4 |
| Batesburg, white | 43 | 129 | 9 |
| Columbia, United States Veterans' Hospital | 49 | 138 | 9 |
| Leesville, smaller of two | 43 | 129 | 9 |
| Leesville, taller of two | 43 | 129 | 9 |
| Parris Island, high, yellow and black | 29 | 108 | 5 |
| Ridgeland, final | 15 | 88 | 5 |
| Taylor | 38 | 121 | 8 |
| Tees | 23 | 102 | 8 |
| Tillman | 46 | 134 | 5 |
| Tillman, W. M. Ritter Lumber Company, black stack | 47 | 135 | 5 |
| Top (Charleston County) | 61 | 167 | 6 |
| Top (Lexington County) | 50 | 138 | 11 |
| Top A | 57 | 150 | 11 |
| Top B | 57 | 150 | 11 |
| Top C | 57 | 150 | 11 |
| Top D | 57 | 150 | 11 |
| Top E | 57 | 149 | 11 |
| Top F | 57 | 149 | 11 |
| Top G | 57 | 149 | 11 |
| Top H | 57 | 149 | 11 |
| Top I | 56 | 149 | 11 |
| Tower, old, north corner | 32 | 111 | 5 |
| Track | 61 | 157 | 0 |
| Transit traverse station: | | | |
| No. 11 R (U. S. G. S.) | 41 | 128 | 9 |
| No. 11 R (U. S. G. S.) eccentric | 33 | 111 | 9 |
| Turkey (Ga.) | 45 | 132 | 4, 5 |
| Turp. | 20 | 97 | 7 |
| Tybee Lighthouse (Ga.) | 31 | 111 | 5 |
| Tylor | 34 | 113 | 9 |
| Ulmers | 51 | 141 | 5 |
| United States Arsenal, Augusta, flagstaff (Ga.) | 12 | 85 | 4 |
| United States Navy Yard, Charleston: | | | |
| Aviation beacon | 23 | 103 | 0 |
| Stack | 24 | 103 | 0 |
| United States Veterans' Hospital, Columbia: | | | |
| Dome | 49 | 138 | 9 |
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