**U. S. COAST AND GEODETIC SURVEY**  
DEPARTMENT OF COMMERCE

**DESCRIPTIVE REPORT**

<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>Topographic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field No.</td>
<td>2270</td>
</tr>
<tr>
<td>Office No.</td>
<td>2274</td>
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**LOCALITY**

<table>
<thead>
<tr>
<th>State</th>
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</thead>
<tbody>
<tr>
<td>General locality</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>Locality</td>
<td>Caribbean Sea</td>
</tr>
</tbody>
</table>

1892 - 194

**CHIEF OF PARTY**

Willard H. Huffield

**LIBRARY & ARCHIVES**

DATE
U. S. COAST AND GEODETIC SURVEY.

State: Alaska

DESCRIPTIVE REPORT.

Topographic Sheets: NOS. 2270, 2271, 2274, 2275.

Locality: Pribilof Islands, Bering Sea.

1897.

U. S. COAST AND GEODETIC SURVEY.

Henry S. Pritchett

State: Alaska

DESCRIPTIVE REPORT.

Topographic Sheet No. 2270

LOCALITY:

Staraya-Artil and Little East Rockeries, St. George Island.

(See season's report of 1897)

1897.

CHIEF OF PARTY:

W.W. Duffield
Descriptive report to accompany topographical sheets of St. George Island, Bering Straits (Sheets 2287a and 2287b) and topographical sheets of 25 of the first roadway on the Nutilg Islands (Sheets 2270 to 2274).

General sheets of St. George Island (Sheets 2287a and 2287b).

When the work on this island was commenced it was not supposed that it could be completed before it would be necessary to leave the island; in order therefore to accomplish as much as possible in the time available, the work was based on a plane table triangulation starting from a base about 1½ miles long measured with a steel tape, and running west south-west from near the village. At the close of the season, the time being available, a theodolite triangulation was carried out, using the same base and signals as in the plane table triangulation.

At the time the base line distance was plotted on the sheet 10,000 metre distances were laid off around its edge as shown by the pricked holes surrounded by lead pencil squares, the distances between these lines being laid off to scale both horizontally and vertically. The projection was placed on the sheet at the office in Jan. 1898, and is based on the geophysical positions computed from the triangulation. The nearest minutes of latitude and longitude were laid off from each triangulation point, correcting the scale in each direction according to the distances on the sheet as compared with distance given by the triangulation. At the time of drawing the projection Jan. 6, 1898, there had been a general contraction of the sheet of about the 2½ to 1 uniform in all directions, as shown by the 10,000 metre distances all measuring about 1954 metres, both horizontally and vertically. There is some additional distortion due to differences between the plane table and theodolite triangulations. In drawing the projection the lines were slightly bent where necessary to conform to the position of the triangulation points. The celluloid sheet was used for this island.
to save time in foggy and misty weather.

The topography of the interior of the island, east of a line running from Crescent Point to South Hill, thence to the Cairn north of Saumatka Lake, thence north to the shore, excepting a strip near the bluff line and the summits of the hills, was done
by Assistant Quose on a separate sheet, the position of the
signals having been transferred from the plate table triangulation.
This is filed as an original sheet (No. 2276) but has not been
inked in, as all the work on it has been transferred and inked
on the general sheet. The portion of the shore line and
adjacent interior covered by the sheets of the real rockeries
(No. 2270 to 2274 on a scale of 1:2000) were left blank on the
general sheet during the field work, but have been reduced and
transferred to the general sheet (Dec. 1877). Two or more points
in common for each rockery were located on the general and
the rocky sheets, and the reduction and transfer were based
on these points. In the general sheet each of the common points
is indicated by a small square, and one point on each rockery
is designated by a letter both on the general and corresponding
rocky sheets, as follows: A on Bast Rockery, B on North
Rockery, C on Little Bast Rockery, D at junction of Little Bast and
East Rockeries, E on East Rockery, F on Japadari Rockery.

All the points permanently marked and described as
triangulation points in the volume "Measurement of Base Line
and Descriptions of Stations," are shown on this sheet as
triangulation stations (A). Several of these stations were not
used in the theodolite triangulation. Nearly all of the rock
cairns, mostly built by the natives and forming prominent
land marks, are represented on this sheet by small circles and
are designated cairns. The houses marked "Barabara" at
Japadari, Garden Cove, and East Rockery, are native rod houses.
The trails running from the village to Japadari, Garden Cove,
and East Rockery are merely foot paths, on portions of which
some work has been done.

The great central ridges of the island, extending from
Hill Will to near Zapadni Rockery, and from Illakiya to the base
of High Bluff, and the ridge running obliquely across the western
end of the island, and the extensive slope south of Illakiya
are mostly covered with broken volcanic rock, peoria and
cinders, intermingled with growths of moss, short grass and
wild flowers. The hill summits are usually covered with scoria
and cinders and the lower slopes with larger lava rocks, often
quite smooth and flat; but angular and jagged and piled in
great masses at the terminals of the ancient lava flows
which are quite prominent in places. The bounding portion of
the island is almost everywhere covered with a heavy growth
of coarse grass becoming 3 to 4 feet high in places
intermingled with wild flowers. The High Bluff (Ogamita) is
thus covered on the land side to its summit. There are some
booby areas on the island, especially in the vicinity of the
village and of Zapadni; these are mossy bogs, spongy and wet,
but could usually be traversed at the season of this work; probably
in wetter seasons there would be more difficulty in crossing them.
At the time of this work (an unusually dry season) there were
no running streams on the island save the outlet of the lake
northwest of Red Bluffs, and the outlet of the marsh immediately
west of the village. Several other well marked stream beds, in
which water was seen running after rains, are shown on the map.
The stream at Cascade Point was dry nearly all the time. It is
said that this cascade here is only prominent during the spring
months. One of the most striking features of this island is the
gold bluff line, from a few feet to 12 feet in elevation, extending
around the island, with short breaks at Garden Cove and Zapadni,
and at intervals along the north shore between Staraya Artik and
East Rockery. The High Bluff (Ogamita) extending for several
miles west from Staraya Artik Rockery, presents some fine views,
and is a prominent land mark from a considerable distance at
sea, being plainly visible from St. Paul Island on a clear day.
The Castle near the western extremity of the island, is a group of
ledges of rock somewhat crater like in shape, rising abruptly from
the summit of a hill. Although the entire island is of volcanic origin there are no clearly defined craters as on St. Paul and Otter Islands. On the shore west of high Bluff and northeast of Fox Grotto is a remarkable crag called by the natives the "Kanak," standing well out from the bluff and rising 471 feet above the water.

The limit of breakers as seen from the shore, and as indicating the presence of reefs, is shown by the dotted lines off Little East and East Rockeries, and the south end of Japadru Rockery. Only a few rocks off the shore could be discerned, principally in the vicinity of Garden Gove. The greater part of the island is surrounded by kelp growing near the shore, as shown. The only sand beaches are at Garden Gove and at Japadru Salt House, with stony beaches at several points on the north shore. For a good shore of the bluff line it is impossible or dangerous to descend from the plateau to the shore. From Kanaga Atoll to Japadru Point and around to Rush Point there is only one place at which the shore can be reached, at Foxgrotte, just southeast of Fox Grotto; here the natives are said to go up and down to the shore. There is apparently no point at which the shore can be reached from above between Garden Gove and Japadru.

There is no harbor about the island, and vessels anchor off the village on the north shore, or off Garden Gove, or off Japadru, according to the direction of the wind. The main landing near the village is somewhat protected by a ledge of rocks running out north of it, and by kelp growing in the light, the ledge tending to subdue the breakers. A small pocket has been blasted out in the rocks for small boats to come in at high or medium tide. At Japadru Point, just northeast of the village, is another boat landing better protected from northwesterly winds, where a similar pocket has been blasted out. A ledge of rocks awash lies but a short distance off this landing. With northerly winds landings may usually be made at Garden Gove or the sand beach, or at Japadru in the light at the north end of the
rocking. From these points trails lead across the island to the village; the distance from Garden Cove being about 2½ miles, and from Gapaadriv about 5½ miles. Both trails pass over ridges from 400 to 500 feet in elevation and the walking is rather rough.

The following elevations above mean high water were determined with the plane table and were in general checked from two or more sources. On an average they are probably in error not more than a foot.

<table>
<thead>
<tr>
<th>Elevations in feet</th>
<th>Triangulation station at ground</th>
<th>Summit of hill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull Hill</td>
<td>509</td>
<td>509</td>
</tr>
<tr>
<td>First Bluff (base of Atanaya Cutoff)</td>
<td>568</td>
<td>570</td>
</tr>
<tr>
<td>East Base</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>South Hill</td>
<td>448</td>
<td>448</td>
</tr>
<tr>
<td>Red Bluff</td>
<td>391</td>
<td>393</td>
</tr>
<tr>
<td>Cascade</td>
<td>367</td>
<td>363</td>
</tr>
<tr>
<td>Garden</td>
<td>434</td>
<td></td>
</tr>
<tr>
<td>South Incline Hill</td>
<td>679</td>
<td>679</td>
</tr>
<tr>
<td>North Incline Hill</td>
<td>645</td>
<td>645</td>
</tr>
<tr>
<td>Atanaya (Gapaadriv Bluff)</td>
<td>428</td>
<td></td>
</tr>
<tr>
<td>Fox Grotto</td>
<td>671</td>
<td>671</td>
</tr>
<tr>
<td>High Bluff (Gapaadriv)</td>
<td>1008</td>
<td>1012</td>
</tr>
<tr>
<td>Northwest</td>
<td>895</td>
<td>843</td>
</tr>
<tr>
<td>Gapaadriv Bluff</td>
<td>290</td>
<td></td>
</tr>
<tr>
<td>Kaynard's Hill</td>
<td>380</td>
<td>380</td>
</tr>
<tr>
<td>Southwest Bluff</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>West Base</td>
<td>237</td>
<td></td>
</tr>
<tr>
<td>Illakiya</td>
<td>944</td>
<td>946</td>
</tr>
<tr>
<td>Tolstoi</td>
<td>185</td>
<td></td>
</tr>
</tbody>
</table>

The field work on these sheets was executed between Aug. 11 and Sept. 25, 1877, by the party under Charge of Assistant Cull B. W. L. Woofield. The stereoscope triangulation, eastern part of interior topography and astronomical observations at the base stations,
(Unalaska) were made by Assistant U.S. Grant, and the base
measurement, plane table triangulation, shore line topography, western
part of interior topography, topography of the four seal rockeries,
astronomical and magnetic observations (at George) were by the
winter.

Topographical sheets of the seal rockeries.

This memorandum relates to the following sheets: (celluloid)
Sheet No. 2270  Sverers Art Rockery and Little East Rockery, St. George Island,
   "  2271  Zapadni Rockery, St. George Island (celluloid)
   "  2272  North Rockery, "
   "  2273  East Rockery, "
   "  2274  Tolstoi Rockery, St. Paul Island (paper).

The scale of each of these was 2000. A base line was
measured with steel tape on each rockery, and a plane table
triangulation carried from this base for the control of the sheet.
Elevation (above mean high water) were determined with the
plane table and checked at different points. The lengths of
the bases were as follows (each measured twice):

<table>
<thead>
<tr>
<th>Rockery</th>
<th>Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolstoi Rockery</td>
<td>547.00</td>
</tr>
<tr>
<td>East Rockery</td>
<td>210.00</td>
</tr>
<tr>
<td>North Rockery</td>
<td>462.00</td>
</tr>
<tr>
<td>Sverers Art Rockery</td>
<td>130.38</td>
</tr>
<tr>
<td>Little East Rockery</td>
<td>125.42</td>
</tr>
<tr>
<td>Zapadni Rockery</td>
<td>187.34</td>
</tr>
</tbody>
</table>

No projections or other distances save these bases, were plotted
on the sheets, except the East Rockery sheet, on which 1000 metre
distances were laid off along the edge, and thereon, measurements
at Washington in Dec. 1877 showed a fairly uniform linear shrinkage
of about 3½% total; on all the sheets both paper and celluloid.
Points in common on the rockery sheets and the St. George general
sheet (as already referred to) are designated by letters. The meridian
lines through these points on the rockery sheets, are derived from
azimuths measured from the general sheet. The contours are at five-foot intervals, above mean high water. Prominent rocks at intervals along each rookery were numbered with white paint, as landmarks, and are located on the sheet. The limits of the area occupied by the seals could not be shown on the sheets as these surveys could not be made during the breeding season. For the George rookeries and hauling grounds some idea of the area covered by the seals during and after the breeding season, is given by the area of trampled grass which is shown. It must be understood however that the seals wander further back from the water after the breeding season, and also that some of these areas are simply hauling grounds for the bachelor seals. In Scott Rookery each end of the rookery proper was marked by painting a rock entirely white, and these terminal rocks are shown on the sheet. The vegetation shows evidence of the seals having in former times extended far back beyond the present area of the rookeries; the so-called seal grass, where the seals have once been, and late in the summer this vegetation has a yellowish tinge in contrast to the more green vegetation further back. The limits of this area were rather too indefinite however to attempt to show on the topographical sheets.

C. C. Putnam

Feb. 3, 1878.