Form 504
U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey
Topographic

Field No. 2270
Office No. 2274

LOCALITY

State

General locality Puerto Island
Locality Bering Sea

1892
194

CHIEF OF PARTY
Will Ward Huffman

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DATE
U. S. COAST AND GEODETIC SURVEY.

Henry S. Pritchett, Superintendent.

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 Sea (Sheets Nos. 2287a and 2287b) and topographical sheets of No. 7 of the seal rookery on the Pribilof Islands (Nos. 2270 to 2274).

General sheets of St. George Island (Nos. 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 1 3/4 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 holes 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 geographical 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 27th part, uniform in all directions, as shown by the 10,000 metre distances all measuring about 1984 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 positions of the triangulation points. The calcdoid 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 Fare adore Point to South Hill, thence to the Cairn, north of Lavuncuna Lake, thence north to the shore, excepting a strip near the bluff line and the summits of the hills, was done by Assistant during on a separate sheet, the positions of the signals having been transferred from the plane table triangulation. This is filed as an original sheet (No. 2270) 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 (Nos. 2270 to 2274 on a scale of 1/2,000) were left blank on the general sheet during the field work, but have been reduced and transferred to the general sheet (Sec. 1897). Two or more points in common for each rockery were located on the general and the rockery 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 triangle, and one point on each rockery is designated by a letter both on the general and corresponding rockery sheet, as follows: A on Easteau Artit Rockery, B on Earth Rockery, C on little East Rockery, D at junction of little East and East Rockery, E on East Rockery, F on Zapacani 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 stereolite 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 "Barrabok" at Zapadni, Braden Cove and East Rockery, are native rod houses. The trails running from the village to Zapadni, Garden Cove, and East Rockery are merely foot paths, on portion of which some work has been done.

The great central ridges of the island, extending from
bull hill to near Gajadrie Rockery, and from Ullakiya to the base
of High Bluff, and the ridge running obliquely across the western
end of the island, and the extensive slope south of Ullakiya,
are mostly covered with broken volcanic rock, peoria and
sindes, intermingled with growths of moss, short grass and
wild flowers. The hill summits are usually covered with sercoia
and sindes 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 bordering 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 (Ggamita) 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 in Gajadrie, these are moss bogs, springy 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
northeast 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 the cascade here is only prominent during the spring
tides. One of the most striking features of this island is the
bold bluff line, from a few feet to 10 or 20 feet in elevation, extending
around the island, with short breaks at Garden Cove and Gajadrie,
and at intervals along the north shore between Staraya Arul and
East Rockeries. The High Bluff (Ggamita) extending for several
miles west from Staraya Arul 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, in 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 Other Islands. On the shore west of high Bluff and northeast of Fox Grotto is a remarkable cagae called by the natives the "Cayak," 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 Japadri Rockery. Only a few rocks off the shore could be discerned, principally in the vicinity of Garden Grove. The greater part of the island is surrounded by kelp growing near the shore, as shown. The only sand beaches are at Garden Grove and at Japadri Saltpit, with small beaches at several points on the north shore. For a good shore if the bluff line it is impossible or dangerous to descend from the plateau to the shore. From Kanaya Point to Japadri Point and around to Rush Point there is only one place at which the shore can be reached, at Gogumyonga 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 Grove and Japadri.

There is no harbor about the island, and vessels anchor off the village on the north shore, or off Garden Grove, or off Japadri, 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 bluffs, the kelp 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 Gard landing 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 out a short distance off this landing. With southerly winds landings may usually be made at Garden Grove on the sand beach, or at Japadri on the bluffs at the north end of the
rockery. From these points trails lead across the island to the village, the distance from Garden Bay being about 2½ miles, and from Zapadniu 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. In an average they are probably in error not more than a foot.

<table>
<thead>
<tr>
<th>Location</th>
<th>Elevation at ground (in feet)</th>
<th>Elevation at hill (in feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull Hill</td>
<td>509</td>
<td>509</td>
</tr>
<tr>
<td>First Bluff (boundary of Zaykyn Artik)</td>
<td>568</td>
<td>570</td>
</tr>
<tr>
<td>Ghost Base</td>
<td>119</td>
<td>-</td>
</tr>
<tr>
<td>Northeast</td>
<td>119</td>
<td>-</td>
</tr>
<tr>
<td>South Hill</td>
<td>668</td>
<td>668</td>
</tr>
<tr>
<td>Red Bluff</td>
<td>391</td>
<td>393</td>
</tr>
<tr>
<td>Cascade</td>
<td>357</td>
<td>353</td>
</tr>
<tr>
<td>Gardens</td>
<td>434</td>
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<td>South Sakulin Hill</td>
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<tr>
<td>North Sakulin Hill</td>
<td>645</td>
<td>645</td>
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<tr>
<td>Arigolik (Zaykyn Bluff)</td>
<td>428</td>
<td>-</td>
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<tr>
<td>Fox Bayette</td>
<td>671</td>
<td>671</td>
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<tr>
<td>High Bluff (Zaykyn)</td>
<td>1008</td>
<td>1012</td>
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<tr>
<td>Southwest</td>
<td>845</td>
<td>843</td>
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<td>Zapadniu Bluff</td>
<td>290</td>
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<tr>
<td>Bugundy's Hill</td>
<td>380</td>
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<tr>
<td>Southwest Bluff</td>
<td>86</td>
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<tr>
<td>West Base</td>
<td>237</td>
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<tr>
<td>Illukiya</td>
<td>944</td>
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</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, 1895, by the party under charge of Assistant U. S. A. M. G. J. Goddard. The theodolite triangulation, eastern part of interior topography and astronomical observations at the base stations.
(Unalaska) were made by Assistant Fremont Iverson, and the base measurement, plane table triangulation, shore line topography, western part of interior topography, topography of the five seal rookeries, astronomical and magnetic observations (at St. George) were by the winter.

Topographical sheets of the seal rookeries.

This memorandum relates to the following sheets: (celluloid)
Sheet No. 2270  St. George 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 2/000. A base line was measured with steel tape on each rookery, and a plane table triangulation carried from this base for the control of the sheet. Elevations (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):

Tolstoi Rockery  544.00 metres
East Rockery  210.00 "
North Rockery  462.15 "
St. George Arti Rockery  130.38 "
Little East Rockery  125.42 "
Zapadni Rockery  107.34 "

No projection 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 traversely. Measurements at Washington in Dec. 1877 showed a fairly uniform linear shrinkage of about 3/00 the part, on all these 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 main lines through these points on the rockery sheets, are derived from
azimuths measured from the general sheet. The contours are at ten-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 sheet 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. On 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 sheet.

C. S. Tutman

Feb. 3, 1878.