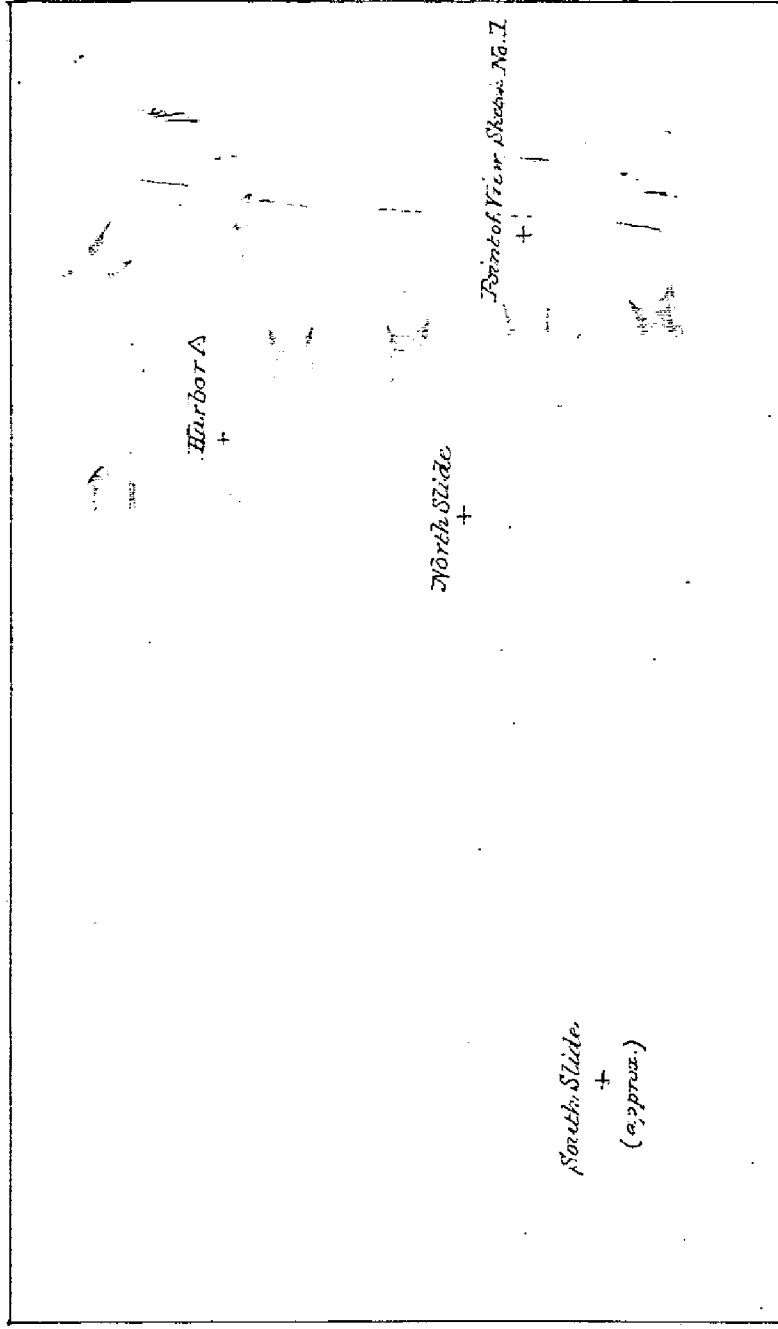


2211

A. J. Koyne
1898

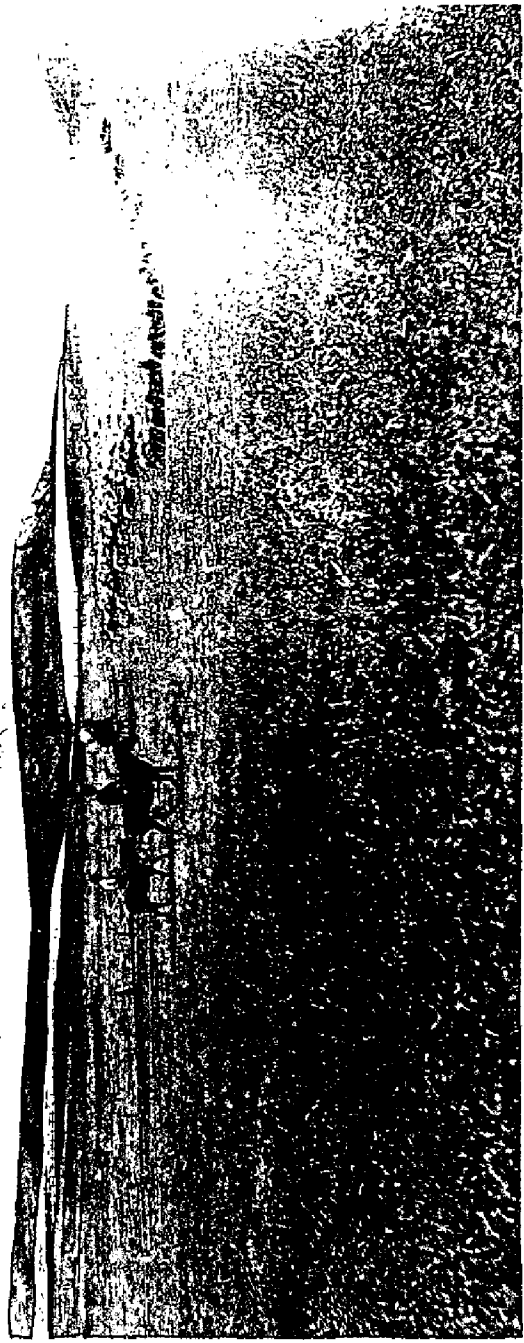
2211

This Photo. was taken about August 1895



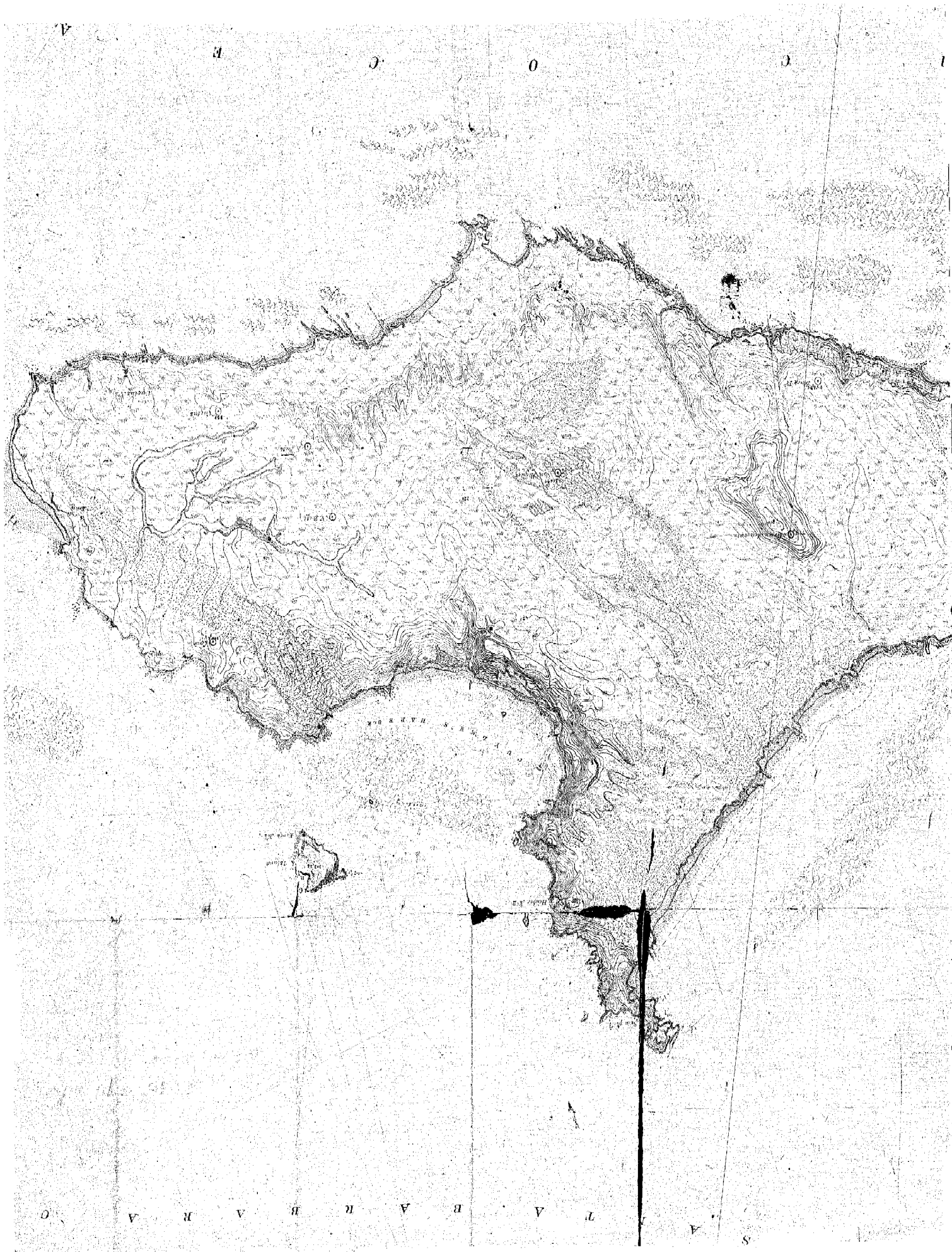
This Photo. was purchased for the purpose of exhibiting the appearance
of the upthrustal several months before my visit, to accompany
descriptive report.
Richard H. Westcott

Handwritten text, possibly a signature or date, located in the upper right corner of the page.





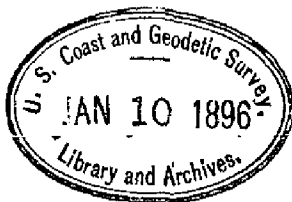
Santa Barbara
Calif.



Harbor 2 A
+ Harbor A

These photos were purchased for the purpose of showing how the land is
opening over the bays with Otago Harbor; to accompany descriptive
report.

Frederick W. H. H. H.



U. S. COAST AND GEODETIC SURVEY.

Gen. W. W. Duffield, Superintendent.

State: *California.*

DESCRIPTIVE REPORT.

Topographic Sheet No. 2211.

LOCALITY:

*Cuyler's Harbor,
San Miguel Is'd,
Santa Barbara Channel.*

1895.

CHIEF OF PARTY:

A. F. Rodgers *Asst.*

W.B. Archives
DEC. 9 - 1895. 023504

United States Coast and Geodetic Survey,

Sub-Office, San Francisco, Cal.,

December 2nd, 1895.

*File this as a
descriptive report
O.H.T.
Asst. Surg.*

Assistant Aug. F. Rodgers,

U. S. Coast and Geodetic Survey,

San Francisco, California.

Sir:

I have the honor to submit herewith a map of Cuylers Harbor, San Miguel Island, with sketches copied thereon, and a volume of horizontal angles, etc. measured while engaged in carrying out your instructions of November 2nd, 1895.

In the accompanying map of Cuylers Harbor the shore line bluff lines, rocks and triangulation points marked in black have been copied from a topographical tracing of San Miguel Island made by Assistant Forney in 1871. The additions in blue ink are the results of a brief examination to determine the extent of an encroachment of the shore-line upon the harbor, said to have occurred prior to March 10th, 1895, the day it was first discovered. This new projection is an upheaval from the bottom of the harbor, and its original extent is marked by the boulders still remaining and showing above water in its front. It was reported to have formed a semicircular ridge 1000 feet long, 350 feet wide, and

70 feet high outside of the ordinary high water mark, and the catastrophe was so sudden as to have confined a large number of surf fish in a small salt water pool formed at the former line of high water.

The length of this projection is now 170 meters, its greatest width at high water beyond the advancing line of drifting sand is but 60 meters, and to the outermost visible boulder about 80 meters. Its greatest height is at present 35 feet above high water, at Station "North Slide". It is composed of large sand-stone boulders imbedded in clay and sand which has the appearance of stratified rock inclining at an angle of about 30° towards the shore but is found to be soft and easily disintegrated. On top of this is a stratum of coarse sand and sediment about five feet in thickness and disposed in thin layers of recent formation. Its harbor front is being continually worn away by the action of the waves and tides, but the liberated sand-stone boulders remain. These are of various dimensions, from estimated weights of six to eight tons to the ordinary water-worn cobblestone. Among this debris I found a part of an Indian mortar and an ordinary brick, and it may be of interest to note that the only bricks known to have been brought to the Island were used by Assistant Tittmann to build the pier for the primary station "New San Miguel" many years ago, and this one may have been dropped over-board by members of his party.

This upheaval has been attributed to a seismic disturbance, and this may be true, although there is no evidence of the shock having been felt on the other Islands, nor on the adjacent

main-land, nor in fact on San Miguel Island itself at the time of its supposed occurrence. On the day the upheaval was discovered it was recalled by one of the two men on the Island that he had felt a shock the day before but had attributed it to the wind. I am of the opinion that the cause of the upheaval is capable of another explanation. Wherever the stratification of the Island is exposed far enough removed from the undermining action of the waves it is seen to be composed of almost horizontal layers of sand-stone, and chalky lime-stone rock through which channels are easily carved by water. Immediately back of this upheaval the topographic survey of 1871 shows a ^{cir}semicircular escarpement of about 250 meters in length and 60 feet or more in height. Below it is a grass covered bench upon which a house was built and thence a comparatively gentle slope towards the water, with another house about half way. There must have been water found where these house were located. In course of time the drifting sand from the weather side of the Island ran over into and filled this hollow below the escarpement and completely obliterated the houses, but the little stream of water continued its action in the sand-stone layers and may have issued below low-water mark in the harbor. (The present dweller on the Island knew nothing about this stream of water, nor of the houses having existed there, but reports that there was always a grassy area just back of the boat house which was located about 20 feet from high-water mark in the center of this upheaval.) I found a small stream of brackish ^{water} issuing just above high-water mark near the present front of the upheaval. Its brackish taste may be accounted for by its forcing its way

through material which for years had been covered and impregnated with salt water and the tilting up of the clayey strata towards the shore may explain its new place of issue. I suggest that the cause of this upheaval was the enormous weight of the drifting sand which filled this hollow about 300 meters back from the shore line suddenly crushing the undermined strata beneath it and tipping their outward, submarine terminations up out of the water. At the same time there must have been a twisting movement because the before mentioned boat-house, which faced east before the catastrophe, was turned to north-east when found, but it was not raised at all.

Part of the above mentioned escarpement is again revealed as shown by Pos. 1, 2, and 3, in this examination and the remaining portion to the northward can be seen almost projecting through the sand. At Pos. 1 and 2 there is an estimated almost perpendicular fall of 100 feet and at Pos. 3 about 80 feet. From the base of it runs a gentle slope of bare sand towards the harbor to Pos. 4, which is about 60 to 80 feet above "North Slide" and 85 meters inside of it. In walking along this sand slope I saw projecting out of it some pieces of lumber, probably remains of the house or fence formerly existing there.

It was reported to me that since the upheaval the depth of water at the mooring shown on the map was found to be one fathom greater than before that event, and that between it and the shore were found numerous bowlders instead of smooth sand. Heavy swell during my stay on the Island prevented a hydrographic examination to verify this report. Both allegations may be true, although the

hydrographic tracing shows uneven bottom in this locality, and still fit into the above theory of the catastrophe. The upheaval may have formed a vacant space to be filled by loose material drawn from its immediate vicinity, but that this deepening would be of a lasting character is in my judgment precluded by the amount of sand continually pouring into the harbor from the north-west side of the Island and which, if no currents exist to carry it off, must eventually fill it up. Standing on the high bluff overlooking the harbor one can readily trace the white, sandy bottom, especially at the time of this visit as the kelp shown on the topographical tracing no longer exists except in small bunches here and there.

It was also reported to me that breakers extended in heavy swell clear across the north entrance to the harbor to Prince Island. Fortunately there was a heavy swell running in on November 11th. and I have indicated by a dotted curve the approximate extent of the breakers seen on that day, which to an untrained eye from the beach or even from the bluff on the south side of the harbor may appear to reach across to the Island but in reality are two distinct patches overlapping each other. The hydrographic tracing shows such depths within these areas that breakers may be expected there in heavy ground swell.

In the record accompanying this map I have retained such names of rocks as were given on the hydrographic tracing with the intention, had weather permitted, to have used them as

signals in a brief hydrographic examination.

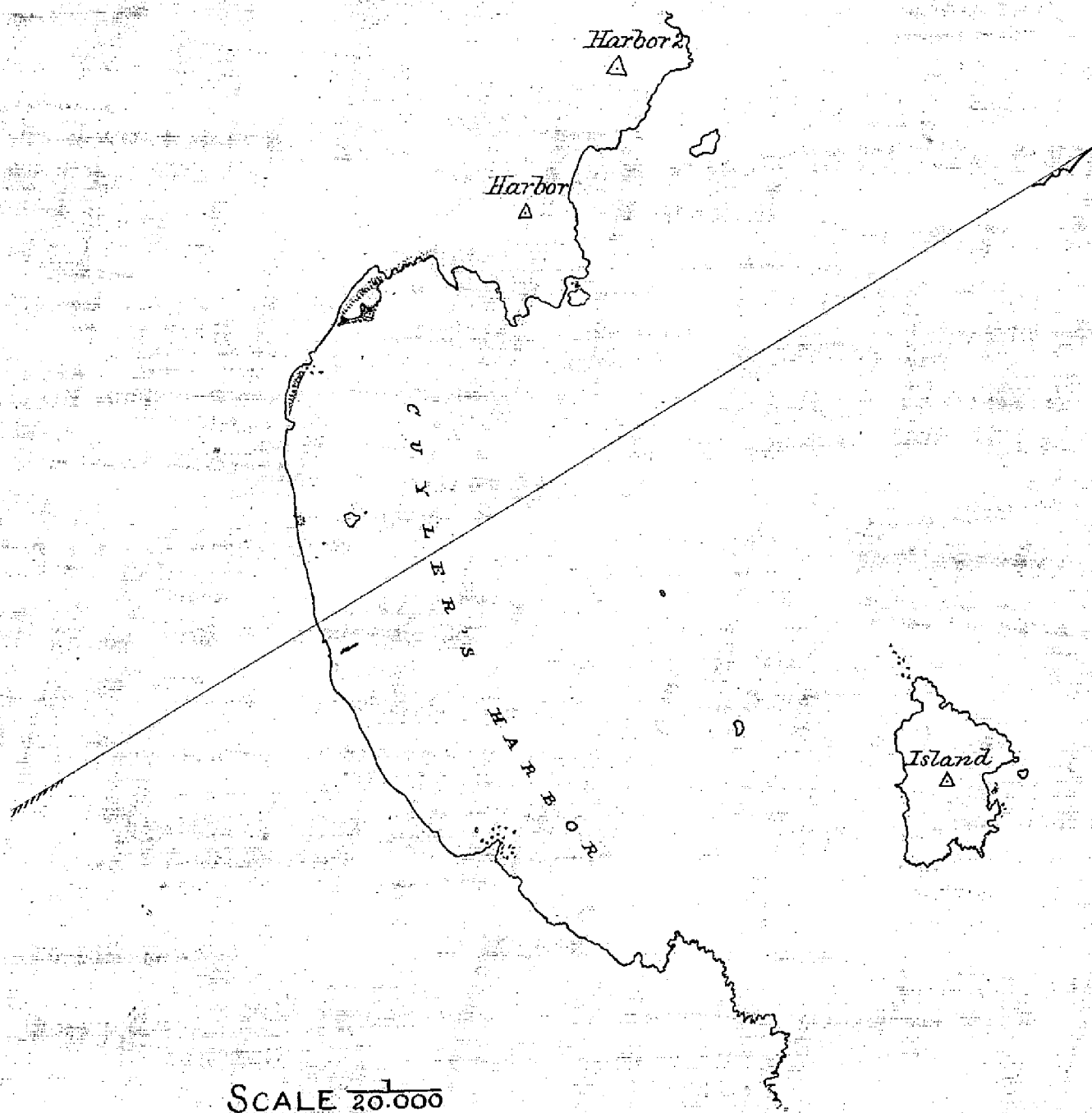
Respectfully yours,

Ferdinand Westdahl,

Draughtsman U. S. C. & G. Survey.

The foregoing report, (with sketches & record
of angles taken by Mr. Westdahl) is
respectfully submitted to the Superintendent.

Alfred H. Rogers
Chief of Party.



SCALE 20,000

*Note: The changes in the shore-line
are shown in red.*

Cape
△