75.

U. S. Coast and Geodetic Survey
U. S. COAST & GEODETIC SURVEY
FEB 4 1889
LIBRARY

U. S. COAST AND GEODETIC SURVEY.

F. M. Thorn, Superintendent.

State: Mass.

DESCRIPTIVE REPORT.

Hydrographic Sheets Nos. 1843, 1844.

LOCALITY:

Martha's Vineyard
&
Muskeget Channel.

1888.

CHIEF OF PARTY:

Lt. J. F. Moser, U.S.N.

Chillin ack

76.

☞ Give here full address to which reply should be sent: Key West, Fla.

U. S. Coast and Geodetic Survey, Str. A. D. Bache

Bahia Honda Harbor, Fla.

Report, A.

Resp. Fond

Wm. Brinton

Hydro Insp.

U. S. COAST & GEODETIC SURVEY, OFFICE OF HYDROGRAPHIC INSPECTOR. JAN 29 1889

January 12th, 1889.

Mr. F. M. Thorn

Supt U. S. C. & G. Survey

Washington, D. C.

Sir:

In obedience to Instructions and Memoranda for Descriptive Reports, 1887, I beg leave to submit the following report, A, of the work performed by the party under my charge on board this vessel during the summer of 1888.

The work covered by this party consisted in the execution of the hydrography of the Approaches to Martha's Vineyard and Nantucket, and a resurvey of Muskeget Channel. This work was a continuation to the eastward of the surveys made by this vessel during the preceeding summer season.

The titles and statistics of the sheets will be found appended.

Three and a quarter fathoms is the best water that can be carried from the sea through Muskeget Channel into Vineyard Sound, and 26 – 27 fathoms is the deepest in the channel.

No vessel should enter without a pilot; practically no vessels enter at all, occasionally some vessel by mistake passes through. The current is so strong and treacherous that Muskeget Channel is not used.

The principal dangers in Muskeget Channel are Skiff's Island with its connecting shoals, the Inner Reef and Fishing Rips, extending to the southward and westward, and Mutton Shoal with its connecting system scattered over a broad band and extending to the eastward to Muskeget Channel and several miles to the southward. The resurvey shows the main channel features about the same, although many minor changes in the shoals exist; it is believed however that many of the apparent changes can be attributed to a more systematic survey in

2/15/89

the present instance.

The strength of the current between Skiffs Island and Mutton Shoal, when running at its full is about seven knots, rather more than less. Two miles North of Mutton Shoal it is four and a half knots. The difference between the turn of the current and the turn of the tide varies very much, a good working average would be $2^h - 40^m$, that is $2^h - 40^m$ after the tide has turned at Skiffs Island the current is slack. The current runs in the axis of the channels.

I have already in my Report B given a description of the operations of the party with everything pertaining to this work and to avoid a repitition here I beg leave to refer to it.

Very respectfully

L. F. Moser.

Lieut. U.S.C. Ass't C. & G. S.

Chief of Party

Soundings. Projection № 9. Approaches to Vineyard Sound & Off Martha's Vineyard. – Summer '88.

Date 1888	Letter	Number of Book	Miles (N)	Soundings	Angles	Name of Vessel	Observers
July 6	A	1	20.00	197	36	Ship	Lieut. Moser, Ens. Swift & Hulme
14	B	2	87.22	451	99	"	" " Bispham, Shindel, Bullard & Strite.
17	C	1	77.15	597	186	"	" " Shindel, Bullard, Strite & Pay Yeo. Dunn.
18	D	2	22.91	149	36	"	" " Bullard, Strite & Pay Yeo. Dunn.
19	E	1	68.96	559	106	"	" " " Shindel, Bullard, Strite & P.Y. Dunn
23	F	2	16.31	122	44	"	Ens. Bispham, " " " "
27	G	1	2.41	34	13	"	Lt. Moser, Ens. Constant, Shindel, Bullard, Strite, P.Y. Dunn
Aug. 2	H	2	59.50	564	212	"	" " " " " " " "
7	I	2	18.00	214	82	"	" " " " " " " "
10	J	1	73.85	485	61	"	" " " " " " " "
11	K	3	83.17	727	263	"	" " " " " " " "
15	L	4	54.50	579	231	"	" " " " " " " "
Oct. 16	M	4	36.00	324	106	"	" " " " Bispham & Shindel
			625.98	5002	1475		
Sept. 6	a	1	18.40	544	135	Launch '24	Ens. Constant & Bullard
July 25	a	1	22.35	434	167	Launch '57	Ens. Shindel & Strite
26	b	2	18.00	382	151	"	" " "
Oct. 11	c	1	14.25	488	90	"	" " Pay Yeo. Dunn
			54.60	1304	408		
July 25	a	1	9.00	402	132	Whale Boat	Ens. Bullard & Pay Yeo. Dunn
26	L	2	16.50	636	208	"	" " "
			25.50	1038	340		

Recapitulation.

	625.98	5002	1475	Ship
	18.40	544	135	Launch '24
	54.60	1304	408	Launch '57
	25.50	1038	340	Whale Boat
Grand aggr.	724.48	7888	2358	

Soundings - Projection № 2 - Muskeget Channel, Summer '88

Date 1888	Letter	Book	Number of Miles(N)	Soundings	Angles	Name of Vessel	Observers
Sept. 15	A	1	25.00	516	160	Ship	Lieut. Moser & Ens. Bispham
" 29	B	1	51.10	863	288	"	" " " "
Oct. 11	C	1&2	51.00	941	332	"	" " " Constant
" 15	D	2	27.50	1029	204	"	" " " " & Shindel
" 22	E	2	1.00	25	8	"	" " " " "
			155.60	3374	992		
Oct. 9	A	1	0.70	44	10	Daisy	Ens Swift & Tisdale
" 11	B	1	42.50	1650	276	"	" " " "
" 15	C	1&2	47.00	1700	318	"	" " " "
" 16	D	2	25.00	820	174	"	" " " "
			115.20	4214	778		
Aug. 20	a	1	9.30	341	102	Launch 23	Ens. Constant & Bullard
" 21	b	2	7.20	212	59	"	" " " "
" 25	c	1	13.60	516	122	"	" Bullard & Pay Yeo. Dunn
" 28	d	2		1	2	Launch 24	" Constant & Bullard
" 29	e	1	22.80	902	171	"	" " " "
" 31	f	2	23.90	527	160	"	" " " "
Sept. 3	g	3	30.20	929	236	"	" " " "
" 11	h	4	7.70	383	62	"	" " " "
" 14	i	3	5.50	286	42	"	" " " "
" 15	k	2	30.10	1383	276	"	" " " "
" 20	l	3	18.10	605	186	"	" " " "
" 21	m	4	14.60	719	151	"	" " " "
" 25	n	5	23.20	924	183	"	" " " "
" 29	o	4	16.50	870	160	"	" " " "
Oct. 1	p	5	8.67	622	80	"	" Bullard & Strite
" 9	q	6	5.75	300	87	"	" " " "
" 11	r	6	31.50	1508	305	"	" " " "
" 15	s	5	14.50	770	194	"	" " " "
" 16	t	7	11.00	523	138	"	" " " "
" 23	u	7	12.00	455	147	"	" " " & Pay Yeo Dunn
" 26	v	7	9.20	543	129	"	" " " & Strite
			315.32	13119	2992		
Aug. 18	a	1	10.67	419	74	Launch 57	Ens. Shindel & Strite
" 20	b	2	19.80	821	136	"	" " " "
" 21	c	1	9.30	448	59	"	" " " "
" 23	d	2	20.30	965	170	"	" " " "
" 26	e	1	12.00	755	154	"	" " " "
" 29	f	3	14.65	585	114	"	" " " "
" 31	g	4	9.10	471	125	"	" " " "
Sept. 3	h	3	20.35	1013	175	"	" Strite & Pay Yeo. Dunn
" 6	i	4	20.00	804	148	"	" " " " "
" 14	k	3	1.40	87	14	"	" Shindel & Strite
" 15	l	2&5	29.40	1368	220	"	" " " "
" 21	m	4	3.50	225	30	"	" " " "
" 22	n	3	3.20	181	30	"	" " " "
" 25	o	5	4.15	289	49	"	" " " "
" 29	p	6	15.15	480	85	"	" " " "
Oct. 1	q	5	11.00	482	132	"	" Bispham & Pay Yeo. Dunn
			203.97	9393	1715		

Soundings – Projection No. 2 – Muskeget Channel, Summer '88 (Continued)

Date 1888	Letter	Number of Book	Miles (N)	Soundings	Angles	Name of Vessel	Observers
Sept. 5	a	1	2.60	272	68	Whale Boat	Ens Shindel & Strite
" 11	b	2	2.30	250	47	"	" " "
" 19	c	1	7.30	602	108	"	" " "
			12.20	1124	223		

Recapitulation

	155.60	3374	992	Ship
	115.20	4214	778	Daisy
	315.32	13119	2992	Launch 24
	203.97	9393	1715	Launch 57
	12.20	1124	223	Whale Boat
Grand aggr	802.29	31,224	6700	
	83 ☐ miles			

802.29
724.48
1526.77

82

☞ Give here full address to which reply should be sent: Key West, Fla.

Reply forwarded
W. H. Emmons
Hydro Insp

U. S. Coast and Geodetic Survey,

Report "B"

Steamer A. D. Bache

January 10th, 1889.

Section I.

Mr. F. M. Thorn,
Sup't U. S. C. & G. Survey
Washington, D.C.

Sir:

In obedience to paragraph 26, Laws and Regulations, Coast and Geodetic Survey, 1887, I beg leave to submit the following report of the operations of the hydrographic party on board this vessel under my charge during the summer season of 1888.

The party, after a very successful season's work on the Coast of Florida, returned North and refitted at New Bedford, Mass. Agreeably to your instructions work was commenced on the approaches to Martha's Vineyard, July 2nd – the 1st falling on Sunday – and prosecuted as vigorously as the very unfavorable and inclement season would permit until October 30th, when in obedience to your

instructions work was closed and the party returned to Baltimore, Md., to refit for work on the West Coast of Florida.

During the Summer of '87 this party closed work on a line 13 miles West (true) from No Man's Land; thence South (true) to the 20 fathom curve. The work this year was a continuation of the off-shore hydrography from the above limits to the eastward, and a resurvey of Muskeget Channel. The seaward limits of the work was the 20 fathom curve, provided this curve connected the deep sea lines of the "Blake"; if they did not connect, then the work was to be continued seaward until a proper connection was made.

The off-shore work was executed on a scale of 1:40,000; the Muskeget Channel work on a scale of 1:20,000.

The system of execution of the off-shore hydrography is similar to that of the previous seasons, viz:— normals half-mile apart from the shore to a distance of six or seven miles, and thence to the limit, a mile apart. This

System is crossed by lines commencing at the shore one-half mile apart, increasing this distance seaward until the outer limit is reached, where the lines are about one and one-half (1½) miles apart. The boat system connecting the ship lines with the shore varies as the coast demands. The vicinity of Squipnocket Point is rocky, or rather has scattered over it great numbers of boulders; here the lines are very close so as to make the development full. From Squipnocket to Muskeget Channel the shore is bold and clear and the system of boat work more open.

The work lies on an exposed coast which is frequently visited by fogs during the summer months, and the prevailing wind during the same season is strong from the S. W. Between the fogs, S. W. winds and the usual course of New England weather, the number of working days on this coast are not very many; but I think I am safe in saying that this season was an unusually bad one. High winds, rains and heavy seas seemed to be the rule;

clear days with smooth sea were the exception. During July and August fog prevented work for several days at a time, though fog seemed to be the least factor opposed to work during this season.

About the middle of August, as the S.W. winds continued to blow very hard preventing outside work, I concluded to go to Edgartown and commence work on the Muskeget Channel sheet. I had previously informed myself as fully as possible on the locality by communicating with people who were considered authorities on the waters of the vicinity, and we were therefore prepared to find the greatest natural difficulties in the execution of the work; from our personal experience since, we can say that their accounts were not exaggerated.

Now that the work is done and the Muskeget sheet is spread out before me I cannot say that I am thoroughly satisfied with the work, and yet I do not believe that it could be improved very much unless at a great sacrifice of time, which the case does not

warrant. It is an easy matter to run straight lines on an unobstructed enclosed body of water, but the obstacles in Muskegat Channel were so great and always accompanied by more or less danger that we found it impossible to keep a regular system of lines. A boat would start on a regular line and before a second position could be plotted she would probably be swept by the current on an adjoining line. A good hydrographer can in a measure anticipate this, but here even the best hydrographers would fail. The current is not the same in direction over all the work; on the same tide it will vary eight points on different parts of the field. The lines could not be carried continuously, the work had to be done according to the conditions of the weather, when the weather was exceptionally good the more dangerous portions of the work ~~was~~ were done, and the remainder at other times as the conditions seemed favorable.

A person unacquainted with this locality can form no conception of the difficulties to

be encountered. Take for example Chart 112, and notice the distance from Muskeget Island to Wasque Bluff (over 5 miles), between which no signal can be erected; notice now the line of shoal water extending between these two points and beyond; now notice the position of Cape Poge, distant from Wasque Pt. about four miles; and note particularly that the time of high and low water between these last two points is more than four hours, more than two-thirds of a tide. Imagine then the current running to the southward not only with the velocity of the Sound current, which is very great, but with the rapidly increasing force as it approaches Skiff's Island gaining its impetus from the difference of water level, further accelerated by the funnels through which it is drawn. And now note the effect of the tremendous current as it courses through the main channel and the minor openings between the rocks and shoals running from the Inner Reef (Wasque Shoal) and Muskeget Island, and then meets the never ceasing swell of the Atlantic, to which

it is broadley exposed, and you can possibly fancy the seething lashing of the waters, now rising in heavy breakers tumbling irregularly in all directions, then changing into whirls or lashing itself into foam. I do not mean to say that this is the constant scene. I saw three days whilst we were here when it was quite smooth, and when the boats could go on any portion of the work, but such days are rare. Frequently when it would appear from the vessel to be perfectly smooth the boats would return half full of water and unable to work. A light wind against the current seemed sufficient cause for the sea to show its crest. I remember one day in going outside, the waters inside and outside were perfectly smooth, there wasn't a ripple, and the waters were glassy for want of a breath of air to disturb them, yet between Skiff's Island and Mutton Shoal, the Great, Big or Channel Rip showed his crested band and as we entered, it seemed like going into a boiling cauldron; the waters with a roaring noise were lashed half-way

up the side of the vessel and I do not believe that any ordinary boat could have lived in it; yet as we emerged we glided into a glassy sea and looked back on the broad band which without apparent cause kept beating into frothing crests.

On our Brook a regular sea, even though it is heavy, is not difficult to overcome, but when it is disturbed by a strong current it becomes a very uncertain element; you do not know where it will break; one moment ahead and the next probably in a spot you have just passed and which looked perfectly safe.

Work like Muskeget Channel should, of course, be done in clear weather with smooth sea, and when the current is running at its minimum, but such days are rare and to wait for such days alone would entail the keeping of an expensive party in the vicinity for a long time. The original work here was done during a portion of four seasons. I suppose the best days were

selected during those seasons

We had just two and one-half days on which we had perfect conditions; a large part of the work was done a few hours at a time as the opportunity presented itself. No doubt the months of July and August contain the most days on which the sea is smooth, but it too frequently happens that at such times a heavy fog is settled over the craters.

The rocks and shoals are always marked by rips or breakers except at slack water, which does not last very long; in fact at many points there does not seem to be a perfect slack, the current decreases in force and then shifts its direction gradually until flowing at its strength from the opposite point. The rips are very deceptive and occur not only over the shoals but also on the deep craters, and are subject to so many apparent vagaries that I could fix no rule for them. The heaviest rip is probably the one called, variously, Big, Great, Channel Rip,

and is found between Mutton Shoal and Skiff's Island, north or south of the line, depending upon wind and tide. As a rule this rip is well marked and extends directly across the channel which has from 20 to 30 fathoms of water, and it (the rip) is from one-quarter to three-quarters of a mile in width. This rip is nearly always visible, yet I have gone through the channel with the current running with such force that this vessel could barely stem it and found no rip in mid-channel.

Permit me to say that I have probably given here the worst features of this work; we have had such a struggle in getting anything accomplished that probably I may have unintentionally magnified the conditions, yet I can only say that any one who simply passes through Muskegat Channel in transit from the Sound to the sea can know nothing of the line of difficulties which stretch many miles from his course. From Mutton Shoal east to Muskegat Island is one great broad

belt of broken ground over which the current boils; from Skiff's Island to the westward we have the Inner Reef and Wasque Shoal, leaving a shallow channel between Skiff's Island and Wasque Pt. For this channel the pilots and fishermen only claim 7 feet; the fact is that pilots and fishermen are so cautious when they get in the vicinity of the shoals that their information is not always reliable. I had occasion to consult and employ these people quite often, and never once could determine any point given by them by their bearings; their bearings seemed to vary with the day. I think our Crork Grill show at least 12 feet between Skiff's Island and Wasque Pt. Skiff's Island seems at times to be a myth; when we first came on the working ground there was nearly an acre out of water at low water — a year ago 20 acres I am told. Twice during our stay it was not visible at low water; and when we left a small patch could be seen large enough to probably gain a footing. We erected three

signals on it at different times, generally short stubs sunk about five feet into the loose sand, but the first heavy gale seemed not only to carry away the signal but the whole island, for each determination gave a slightly different position. Here let me say that some one in criticising the sheet may note that we have one or two lines apparently running across Skiff's Island; this is due to the change of position of the island during the time work was going on. To give additional proof of the changes constantly going on in the vicinity of Skiff's Island I can only say that the whole shore line around Wasque Pt was changed whilst we were at work; signals erected 20 yards from high water mark were cut into the sea. We generally tried to land parties on Skiff's Island to erect signals in moderate weather at slack water, but the current there never seemed to slack; the bow of the boat no sooner touched the island than the force of the current would swing the boat around and

the greatest difficulty seemed to be to get clear of the island.

However rapid these changes are on the West side of the channel they seem to occur in a small compass; what is cut away during one month I believe is filled up during the following, so that there seem to be cycles and everything within a small area reverts to its original condition.

I believe that the foundation for the shoals of Muskeget Channel is rock, or rather that there are lines of massive boulders from Wasque Pt. and the Inner Reef to Muskeget Island. I am told that on a clear calm day rocks can be seen off Wasque Pt. and that the shoal lumps scattered to the northward of Mutton Shoal and the shoals of that system extending to the eastward, are great boulders as large as this vessel. I did not see them and the soundings are for the most part recorded as simply hard; it is quite probable that the rocks have a growth of weed or kelp or mussels over them and thus

do not give the rock foot to the leadsman. I do not see how any foundation other than rock could withstand the force of the current which prevails at all times.

These shoals are probably all a part of the terminal moraine of the great glacier, the large boulders can be seen in many places, grouped in many instances in great numbers; many scattered on the beach and others suspended in the cliffs awaiting the next gale to wash the sand from under them and add them to the numbers already fallen. I think it quite probable that when the ice foot retreated, or when the original cause subsided, that Muskeget Channel consisted of a narrow gut issuing between banks of drift which possibly contained an unusual number of massive boulders; the current in the gut must have been like a mountain torrent and the erosion at first very great, afterwards became more gradual as the conditions of nature were satisfied. As the sand and clay and small rocky particles were washed away the

the massive rocks dropped until they found either a foundation of rock under them or else the sandy bottom on which they rested was not affected by the force of the current. Of course it is possible that this portion of the moraine may from some cause have been composed of massive material and deposited in its present position, but I believe the first theory the more probable. We know the erosion that is going on at all points of these islands, at the present day at Gay Head, Cape Pogue and the whole line of the outer beach.

In comparing this work with that originally done here many differences will be noticed; these differences in many instances are no doubt changes that have arisen during these 40 years, but some I think can be attributed to this work having been done in the same season and more in detail. The main channel, the one which navigators have to deal with, is in the main correctly represented on our published sheet. Skiff's Island and the shoal extending southward from it is generally correct; the

lower part of the shoal is narrow and is called Fishing Rip; that part attached to Cliff's Island and inside of the 12 foot curve is called the Inner Reef. Mutton Shoal and those adjoining to the Eastward should be moved with the buoy about half a mile N.E. thus leaving the channel much wider than at present shown. These shoals consist of a large area of broken ground; Mutton Shoal now instead of being a single shoal consists of a series of lumps. I am told that it was broken up about 30 years ago. The 9 foot shoal, one and one half miles S.W. from Long Shoal, does not now exist. If it should be found necessary in making the comparisons to transfer any rocks from the original sheets I would suggest that such portions be taken from the original records and plotted on our sheets. Before commencing work I had all the shoals enlarged from the published charts to our working scale and transferred to our working sheets, yet in no instance did I find an exact agreement. The changes have no doubt

been very great, but it may also be found that the original work having been carried through four different years and probably executed on different sheets that the joining of the work may not have been exact. Referring to the many changes one need only examine the sea faces of Tuckernuck and Muskeget Islands as they are represented on our published charts and compare them with the topography of the present day to remove any doubt as to the probability of extensive changes.

In executing the work I consulted every one who knew anything of the locality; I employed pilots and fishermen for a few days at different times to point out the dangers, and I noticed that they feared the locality more than we did, and did not care to go out in our launches but preferred their own large double-ended fishing boats built for this work.

Few vessels ever use this channel; none without a pilot unless by accident. I am

told that when the whaling industry was at its height, occasionally under favorable conditions, a whaler could be carried to sea through this channel. We were on the ground two and one half months, and during that time we saw no vessels use it except our own and if I may also except two small fishing smacks of 10 or 15 tons that went out one day with a fair wind and tide. I think however I can say that the channel is safe for a steamer with good power in clear weather, or for a sailing vessel with a leading wind and fair tide.

A buoy between the West end of the outer reef and the S.E. end of the Fishing Rip would not only be an advantage for entering the channel but as the shoals here extend seaward a long distance it would make an excellent guide for the coast. From this buoy a straight course can be steered for Mutton Shoal buoy. The local directions for entering are to get Wasque Bluff to bear N½E. (mag.) in not less than 10 fathoms, run for it until Tuckernuck Hill bears E½N (mag.), then shape course for Mutton

Shoal buoy N.N.E. (mag.). The first course, N.½E., carries over a middle ground with a little more than 3 fathoms on it between the West end of Outer Reef and the S.E. end of Fishing Rip; to avoid this my directions would be to steer for Wasque Bluff either North or N.by E. (mag.) until Tuckernuck Hill bears E.½N., then shape course for Mutton Shoal buoy. These courses carry either side of the middle ground. The directions in the Buoy Book to bring Cape Pogue Lt. Ho. to bear North and run for it, carries a little too close to the West end of Outer Reef for a deep draught vessel. A vessel in ordinary weather, drawing not more than 12 feet, can enter without following any specific directions. The permanent breaker of the entrance is on the Inner Reef; by keeping to the southward of this breaker and following it around, closing up with it as you bring it to bear to the Westward, you can enter without any other guide. The current varies in strength and direction, but on the courses given a vessel runs about in the axis. The greatest velocity

of the current is between Skiff's Island and Mutton Shoal, and in the deep gully (13 to 30 fathoms) that extends between these points in a N.N.E. and S.S.W. direction; here it runs with great strength. This vessel is barely able to stem it when running at its full; we have been half an hour in advancing a hundred yards abreast of Mutton Shoal, and this with all the power we were able to command. In giving directions for entering I gave courses, these are only general guides. In the strength of the current a vessel will be carried from side to side in the channel and therefore it is necessary to watch the vessel closely and note above bearings carefully. My own guide in carrying the vessel in was after getting inside of the Outer Reef, or Fishing Rip, to steer a course so as to sight Skiff's Island, the island itself or the breakers around it can be seen a long distance, then shape the course so as to bring Cape Poge Lt. Ho. mid-way between Mutton Shoal and Skiff's Island and steer for it. Under any conditions great caution

must be exercised. If I were obliged under more than ordinary circumstances to enter at night I should run for Cape Cod Light bearing North (Mag.), and on deepening the water to 15 fathoms would haul a little to the eastward favoring the Mutton Shoal side until I was sure I was through the gully, which would be indicated by the soundings. In my opinion a vessel striking the Inner Reef or Skiff's Island will probably remain there, but if she strikes on Mutton Shoal or the shoals to the Eastward she won't stop very long, the current will force her over the shoals on her side, or possibly bottom up, but she wont stay on the shoal.

There are all kinds of tales told of shipwreck and disaster in the "long ago", magnified by time, but told as if they were of daily occurrence. I have frequently listened impatiently for hours to tales told by fishermen in my cabin, whilst they enjoyed my cigars and ginger ale, in the hopes of gaining a point and then on further investigation to learn that

the information I was receiving was traditionary, and had been handed down from one generation to another and so distorted that the original was no longer visible.

The beach or sand strip between Botany Bay and Wasque Pt and the sea, as before noted, is continually changing; at different periods openings have been formed from the Bay to the sea, and the one now existing, and called West Opening, was cut out by the sea about three years ago. This originally was some distance to the Westward and, as will be seen from our work there, it is travelling to the eastward quite rapidly. It has no commercial importance, but to the local fishermen is of great value. The launches used it in crossing off the Inner Reef, but the Botany Bay end of the channel is so shallow that the large launch drawing 3.5 feet invariably grounded. The seaward end or bar has about six feet at high water, but no dependence can be placed on it as it is subject to changes every day. The channel is very

narrow and winding. The fishermen who ply their vocations outside use the utmost caution; they never go out unless the weather and current promises fair and only remain as long as their retreat is well secured. Their boats are specially designed for this work; they are large whale boat built craft, cat rigged, plenty of free-board, and more or less decked over. There are only a very few engaged in the work. The fishing around the ripps in season is good. Blue-fish are taken in large numbers, the boats keeping inside the ripps. Whilst working in the vicinity of Oyman's Land we were in the midst of the sword-fishing grounds, which fish are there taken in large numbers; we saw many at different times and when one would lie in our course it was a struggle between continuing the line we were on and the desire to plunge the lance into the big fish. They will average 150 lbs in weight, many are caught that will weigh 250 lbs., occasionally as high as 400.; and exceptionally, one in several years is taken

that will weigh 700 lbs. The flesh is excellent, close grained and delicate in flavor, but the fishing this year was carried to such an excess that the market was overstocked; the fish at one time selling in New Bedford for 1¼ cents a pound. If the fish commanded 20 ¢ a pound there would be a great demand for them. They are taken by striking them with a kind of a harpoon or iron. An arrow-shaped iron, about three inches in length having a loop turned in the middle to which the line is attached, is held on the iron-pointed pole by a socket from which it can be readily disengaged. A man holding the iron stands on a railed platform secured to the end of the bowsprit. The look-out at the mast-head directs the helmsman to the fish, which generally is seen lying sluggishly on the water and showing two fins, distinguished from the shark by the movement of the rear fin, the caudal fin; at the proper moment the iron is driven through the fish, the arrow detached from the pole, which is withdrawn, and as the

strain comes on the line the iron turns at right angles at is toggled; about 40 fathoms of line is paid out and the end fastened to a keg is thrown overboard. The fish endowed with great activity drags the keg, but eventually becomes exhausted and is taken on board.

I may briefly mention a little incident of the season's work which shows the power of the sword-fish. In standing for Norman's Land one morning for our work I noticed the fog setting over the island and was on the point of turning to go back when my attention was attracted to a vessel with the ensign flying union down; we stood for the vessel and found a small schooner in a sinking condition; her deck was awash and lashed to her and supporting her with heavy lines were three other schooners. We gave them a line and towed the whole outfit into Recherche Bight. We then found that a sword-fish turned on the vessel and struck her sufficiently hard to start the garboards, from which she was leaking badly. I sent some men ashore

with tackle and at high water beached her; She repaired and hauled off next tide. The sword of the fish was broken off and somewhat shattered; the fish itself did not weigh more than 75 lbs. The Captain of the draft told me that he was about to strike the fish but had not struck him when the fish turned on him.

To return to the subject of the work: in plotting the work it will be found that an unusual number of positions and lines were rejected; this was on account of the extreme difficulty of the work in which the positions were frequently uncertain. The ship work was of such a nature that the signals had to be carried from 12 to 16 miles, and in many instances lines had to be started with objects at that distance. This was very difficult for the new observers, and in many instances wrong objects were taken and the positions rejected.

In Muskegat Channel positions and lines were frequently rejected on account of the boats being swept off their courses so rapidly that the

lines were considered worthless.

Referring to Instructions and Memoranda for Descriptive Reports, I may say that I think the principle questions applicable to the work on which we were engaged are covered by what I have already said.

On approaching the Marthas Vineyard shore the Chillmark Hills are made first, unless coming from the Westward when Romans Land will probably first be seen. The Nashaquitt Cliffs are the next prominent point on the horizon. In the neighborhood of Muskeget Channel, Sampson Hill is a prominent feature, and the Church on the summit, which has a barn-like appearance, can be seen a long distance except from a Southerly direction, when it is shut off by a patch of woods. The Life S. Station on Muskeget Island has an imposing appearance, with a high spire-like cupola, and is a prominent object, useful if the correct positions were given on the chart. The Hill of Tuckernuck with its group of houses is also quite prominent. There are no Government L.S.S.'s on Marthas Vineyard.

The Humane Houses coming in the field of our work are three in number :— one is in Squibnocket Bight and two on the Cape Poge beach marked on my sheets as "Life" and "Cave"

There is no coast light from Sankaty Head Nantucket, to Gay Head, Martha's Vineyard, a distance of 40 miles. The only buoys in the same distance are one on Mutton Shoal, Muskeget Entrance, and three marking the channel between Noman's Land and Martha's Vineyard It is true that there is no commerce which closely skirts this shore, the great ocean highway lies 25 — 30 miles to the southward, still for the occasional straggler a buoy at Muskeget Entrance would be of great service, not only, as before mentioned, as a guide for Muskeget Entrance but also as a coast guide

I have had occasion to pass Gay Head and Noman's Land a great many times and the question always comes to my mind, Why is there not a First Order Light on Noman's Land instead of Gay Head? Here is an island with moderate elevation admirably situated for a sea

Coast light, six miles farther seaward than Gay Head and yet remains in total darkness. A light could be placed on the island that would send its rays over the European steamer track. In my mind there is no question that a First order Light should be placed on Nomans Land and a Fourth order Light on Gay Head. All that is necessary at the latter place is a guide for the entrance of the sound. I believe that any sailor-man that will inspect the chart will at once admit the truth of what I have here stated.

In my opinion there should be a whistling buoy off the Devil's Bridge instead of the 2nd class Can now marking that point. The only fog signal in the locality is the steam whistle on Sow and Pigs Light Ship; vessels shape their course now for that light ship, but with a whistling buoy off Devil's Bridge vessels coming from the southward could run with confidence for it and save some little time. Whilst on the subject of buoys let me call attention to the inordinate use of spar buoys; admitting that the metal

buoys will not stand the ice, is there no way of changing the form of the spar buoys so as to tell port from starboard? I believe that there is. To illustrate my meaning more fully take Chart 350: on this small chart there are 34 buoys and all but three are spar buoys. Now take a position anywhere to the southward of Great Ledge and look to the northward and, on a clear day, you will see a great forest of buoys without being able to distinguish one from the other. The color can never be distinguished except under exceptional conditions. The pilots know them, they recognize different features on shore and in the panorama before them they know where to look for certain buoys which the stranger cannot recognize, but after all, it is for the stranger that our work is done. The pilot does not want our charts, they are driving him out of his business. I met three this summer at different places who were old pilots, now making a living by fishing; they all said since our charts had come into use, and every rock and

shoal buoyed, they could not make a living by piloting. To return to the subject of spar buoys:- If it is absolutely necessary that such great forests of spar buoys should be assembled in one locality, why not change the form? Why is it not possible to put on the end of the spar buoys some shape or form, say a double cross for black and the outlines of a sphere for red? or anything to distinguish one from the other; such shapes could be made of wood or metal and light enough to prevent any top heaviness. Two narrow strips of board- barrel staves - nailed at right angles would be better than nothing. On the top of the Hussell Ledge Buoy there is secured a clump of bushes. We have had occasion to run for this buoy quite often, in all kinds of weather, and it never failed us. The bushy top always stood well up and could be seen twice the distance that the ordinary spar buoys can be seen.

The prevailing winds on our field of work during the summer were from the S.W. The very few days that we had good working weather,

the wind was light and easterly. The heaviest gales and the most dangerous are Easterly.

Fog months are June, July and August, with winds from S.W. to S.E., heaviest with South winds.

The name Katama as referred to the △'n, which is the North tower of the hotel, is spelled as here given and not as given on the sheets. This is the spelling used in the newspapers. Aquitnocket is used by the Post Office and not Aquinnocket as given on the charts.

During the season I received information of the existence of several uncharted rocks, not on my work but on different portions of our charts, which it would be well to note. As a general thing the information is so vague and indefinite that it is impossible to locate the locality within a wide area. At the Northern Entrance to Quick's Hole, on the West side, is a large boulder standing out from the shore and always out of water. I was told that N.N.E. from this boulder, one ship's length, was a 10 foot rock. We searched for it for

several hours but failed to find it. I was also told that the passage between this boulder and Lone Rock was foul. I did not make an Examination of the whole passage but have used it frequently and have never seen any indications of shoals. Capt. Gibbs, of the Lt. Ho. Tender, told me that he thought the Lone Rock Ledge was larger than represented on our charts. I heard that a 10 foot uncharted rock existed about a mile to the northward of Penikese Id. At Cuttyhunk I made inquiry concerning it but could get no definite information. I asked one man, who seemed to know something about it, whether he could put me on the rock. His reply was that he knew as much about it as any one, but upon further inquiry I found that he had never seen the rock and only knew it was there because his grandfather told him! I could not find anyone who had ever seen the rock. I went on board two large fishing smacks for further information, the Capt of one, from New London, told me he had fished around Cuttyhunk

and Denikese for 40 years and had never seen a rock there, and didn't believe there was a rock there. On Eldridge chart the rock is shown as "reported"

A rock reported about a mile to the Eastward of Cape Poge seemed to be involved in as much obscurity. We searched for it for two days on all the ranges that the imagination of the fishermen could suggest, and I believe it to be a myth. I have passed the place many times under all conditions of wind, weather and current and have never seen any indications of it. The Lt. Ho. Keeper of the Edgartown Lt. said he was born and raised at Cape Poge and was the keeper of the light for a number of years, that when he was a boy he saw a schooner strike on the rock but it was only one-fourth of a mile from the beach; that years afterwards when he was engaged in catching lobsters he often tried to find the rock but never saw it. I think it is probably one of many that lie close to the Cape Poge beach.

I beg leave to call attention to the fact

that my outside ship's sheet is unfinished. The work to the Westward of Oman's Land are finished on a line South from that island. This I found necessary on account of the configuration of the 20 fathom curve, and also to finish the East and West lines at some point where they could be definitely located; this we could do with a range and an angle South of Oman's Land. From this same range the East and West lines to the Eastward can be located.

It was my intention to run all the North and South lines to a point on the South eastern side of Nantucket, and then from the above range and angle at Oman's Land, cover the North and South system, but the work at Muskeget occupied us much longer than I expected, and of the two sheets I preferred to close the Muskeget one, because the changes there from year to year are probably very great and the changes in the ship work very slight. The system which I commenced can easily be carried out at any time.

The tidal complications on the Muskeget

Shoal work are very great, and I therefore had resort to a system of blocks which will be found traced on the sheet. Some allowance must be made where one block breaks from another.

Ensign H. A. Bispham had charge of all tidal computations, under my direction, and the following notes from his report will show exactly how the soundings were reduced and the reference gauges used.

"I have the honor to submit the following memoranda in regard to the tidal data for the summer's work.

The principal gauge was established at Cto Mans Land, and day tides taken from July 6th to October 30th, 1888. The P. M. established by Asst. A. Mitchell was recovered, and the results obtained by him for M. L. W. were taken.

A comparison gauge was used at Vasque Bluff, which confirmed the data in the "Tide Table" as published by the Coast Survey Office, i.e., times and heights approximately the same as at Cto

No Mans Land

The records of the gauges at Cape Cod established by party under Lieut. J. E. Paine, U.S.C.S., comdg "Eagle", were copied and used in so far as they referred to this work. Comparison between Cape Cod and No Mans Land showed a difference in tide of 4 hours, with an inappreciable difference in height; the time being 4 hours later at Cape Cod than at No Mans Land.

On Projection No 9 — "Off Martha's Vineyard", but one tide gauge was used, — that at No Mans Land.

On Projection No 2 — "Muskeget Channel" — great complication of the tides occur, owing to the fact that although the heights are the same, the times at Cape Cod and Wasque Bluff, the seaward and sound sides of Muskeget are different; while Wasque Bluff (and No Mans Land) and Muskeget, seaward side, Cape Cod and Muskeget, sound side, are the same respectively, — the former 4 hours earlier than the latter. Owing to this the system of Blocks was employed.

Block No 1 includes all the hydrography south

of a line from the southern of two wrecks on the West shore of Muskeget Island to a point on the east coast of Chappaquidick Island, above Edgartown. The tides are referred directly to the No Mans Land gauge.

Block No 2 includes all the hydrography from the above line to a broken line running from the Northern wreck on the West shore of Muskeget Island in a direction N. 52° W. (true) to cross Meridian 70° 22'; thence West to a point on the shore line of Chappaquidick, 1/3 mile to the northward of Block No. 1.

The tides in this block are the same in height as at No Mans Land and Cape Poge; but differ in time from each by 2 hours. — 2 hours later than No Mans Land and 2 hours earlier than Cape Poge. A tide book was made for all the hydrography in this block (marked Block No. 2) by subtracting (−) two (2) hours from No Mans Land, or by adding (+) two (2) hours to Cape Poge.

Block No. 3 includes all the hydrography between the Northern limit of Block No 2, and a line drawn from where the limit of Block No 2 crosses

meridian 70° 22' to a point on the east shore of Chappaquidick Island near O bot.

The tides in this block are the same in height as at No Mans Land and Cape Poge; but differ in time from each by 3 hours later than No Mans Land, and 1 hour earlier than Cape Poge. A tide book was made for all the hydrography in this block (marked Block No. 3) by subtracting (−) 3 hours from No Mans Land, or by adding (+) 1 hour to Cape Poge.

Block No 4 includes all the hydrography to the eastward of the limits of Blocks 2 & 3, and above Muskeget Island; the tides are referred directly to the Cape Poge gauge.

In some cases owing to strong wind, a slight discrepancy exists between the heights at No Mans Land and Cape Poge, in which cases preference is given in constructing Block No 2 to the Cape Poge gauge.

Owing to the great complicity of times, it was a practical impossibility to introduce a block to grade off by one hour between the Block referred directly to the No Mans Land gauge and Block No 2

In some few instances, lines running from Block No. 1 into Block No 2, and vice-versa, had to be so graded off. Hence a change of one (1) hour is introduced between Block No. 1 and Block No. 2 to grade off the tidal reductions from one block to the other

In every case a note is made in the sounding books with reference to this fact.

The tide observer at No Mans Land was Jakob Jakobsen, Seaman. "

I have gathered a few statistics in reference to the harbor of Edgartown, Mass, which is the nearest port to Muskeget Channel and which I herewith append: —

The principal water trade is whale fishing and an occasional cargo of lumber and coal, is carried by sail, of which there are about thirty vessels, chiefly schooners.

There are three Branch Pilots, who may be found at the office of Walter S. Osborn, and in the vicinity of Cape Poge. Vessels bound

for this port generally take pilots. Rates are compulsory, being $1.25 per foot of draught of vessel whether pilot is taken or not.

Vessels usually anchor and wait for pilot, and may do so anywhere on a line between Sturgeon Flat buoy and harbor buoy.

There are no special Quarantine Regulations. The town officers, three Select Men, who are also the Health officers, regulate such matters when occasion warrants, which is very rare.

The Quarantine grounds are outside a line drawn from Sanchacantacket Pond to Sturgeon Flat buoy.

There are no tow-boats.

The anchorages are regulated by harbor master, and are inside a line drawn from Cape Poge L. H. to Edgartown L. H. The narrows abreast the town are also used as such at the discretion of the harbor master.

There are no special Harbor Regulations, and no Harbor dues. This matter, like the Quarantine Regulations, is controlled by the Town Officers, who are also the sole and only Board on all things pertaining to town and harbor.

There are no regulations in printed form.

The office of Select Men is in Town Hall, Main St.

Shipping Supplies are limited, and there is but one Ship Chandler's store — Wm P. Lahadwick & Son. Coal, Wood, Water and ice may be had at Walter S. Osborn's, and coal & wood at Fisher & Ripley's; said firms being convenient to wharf at the foot of Main St.

Fresh water is pumped on board by steam power.

The Coal supply is both anthracite and bituminous, but limited in quantity. Is put on board by hand from wharf.

The nearest place where repairs to vessels

and machinery may be made in New Bedford.

The nearest hospital available for mariners, and especially for them, is at Vineyard Haven.

There is one Marine Railway, which is capable of hauling only small vessels of light draught, and of not more than forty (40) feet in length. It is operated by large ship windlass, and by hand.

These vessels may be hauled at any stage of the tide.

There are four wharves, which are controlled entirely by the owners and not by the town.

The depths at mean low water across ends are about twenty feet, with an average depth alongside of twelve feet.

There is no Time Ball.

No Branch Hydrographic Office, and no office specially for mariners.

The Signal Building is located on South Water St. Operations discontinued at present.

There are no Special Signals, such as Lee Codes &c used in vicinity.

There is no regular station in the town for reporting vessels. Reports are usually transmitted through Hatch & Co's Express to Vineyard Haven; from thence by telegraph. Formerly transmitted through Signal Office when in operation.

There is but one line of steamers: — New Bedford, Marthas Vineyard & Nantucket Steamboat Co. — which operates from this point during the Winter only; carrying Passengers, Mail and freight; touching at Vineyard Haven and Woods Holl to and from New Bedford.

In Summer Boats make their terminus at Cottage City; from thence, Passengers, Mail, freight &c are transported by rail to Edgartown

The Martha's Vineyard Rail Road is the only one. Is narrow gauge and operates only during the Summer months between South Beach, this port and Cottage City.

The Post Office is small, Fourth Class, having two mails per day from about the 15th of June to the 15th of September; balance of year but once daily, except Sundays when no mail is transmitted or received.

The office is convenient to boat landing.

Although the Signal Service have wires connected through to this place, the nearest point of telegraphic communication at present is through their office at Vineyard Haven to Nantucket and Woods Holl. From the latter place communication is made through the Western Union Telegraph Co. Between Edgartown and Vineyard Haven messages are transmitted through telephone to Signal Office.

One of the four schooners is used as a landing in Winter by the Steamboat &c., and is regulated and controlled by them.

The Custom House is on Main St.

A vessel off Muskegat in clear weather could probably get a pilot by hoisting the proper signal and waiting for a boat to come out. I should however not advise any vessel to stand up for this entrance without a pilot on board.

In conclusion I would call to your attention the officers and crew of the "Bache" who so diligently exerted themselves in the work of the season.

The sketch of locality, showing limits of work, together with the statistics will be found appended.

The following is a list of the officers attached to Party, viz:—

Ensign W. M. Constant, A.Asst.

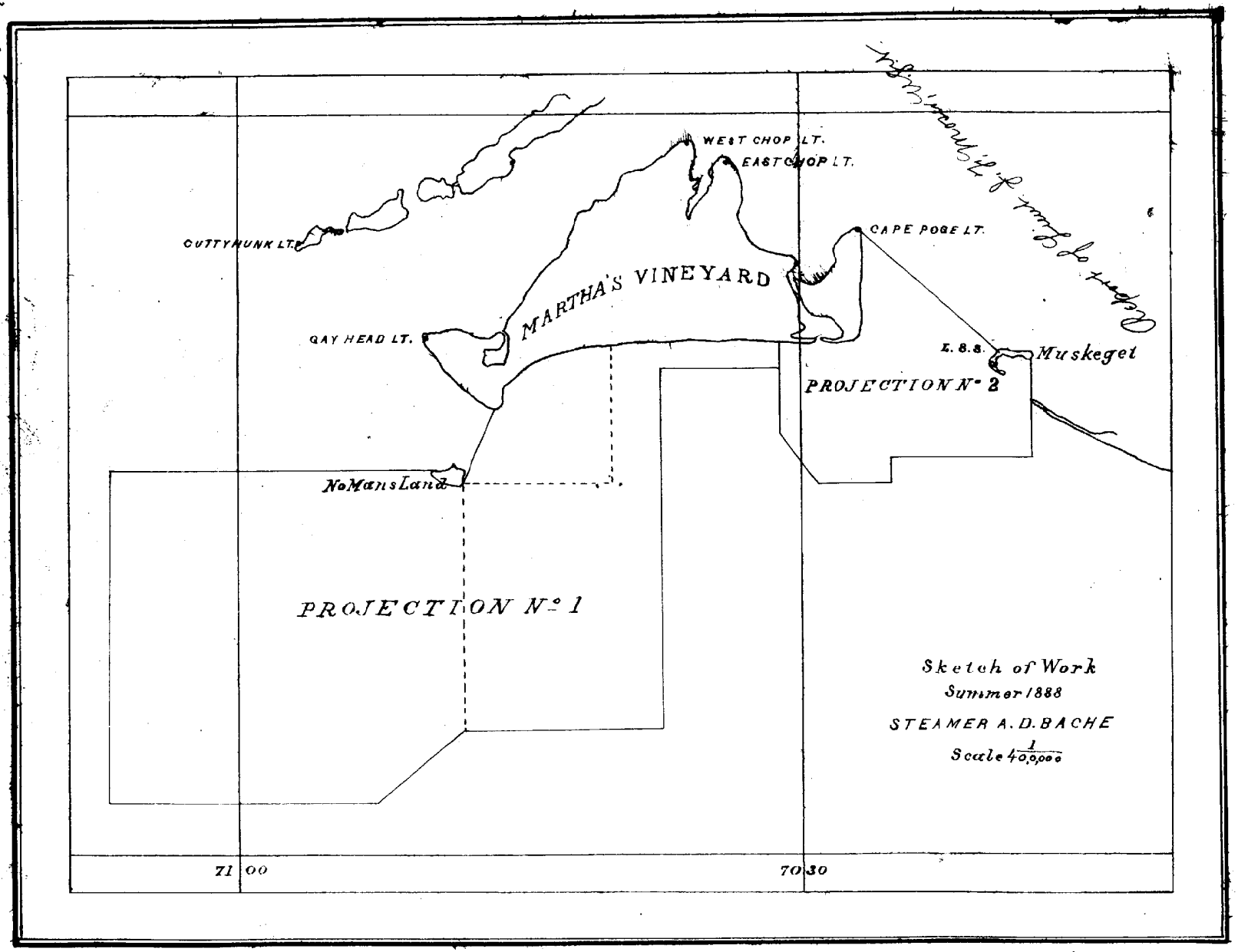
Ensign H. A. Bispham, U.S.N.

2/15/89

Ensign J. E. Shindel, U.S.N.
Ensign W. H. G. Bullard, U.S.N.
Ensign S. M. Stitt, U.S.N.
P. A. Surgeon J. M. Steele, U.S.N.
Asst Engineer S. H. Leonard, U.S.N.
Recorder Geo. R. Jones
Recorder J. L. Dunn

Very respectfully
L. F. Moser.
Lieut. U.S.N., Asst C. & G. S.
Chief of Party.

129.


WEST CHOP LT.
EAST CHOP LT.
CUTTYHUNK LT.
CAPE POGE LT.
MARTHA'S VINEYARD
GAY HEAD LT.
L. S. S.
Muskeget
PROJECTION N° 2
No Mans Land
PROJECTION N° 1
Sketch of Work
Summer 1888
STEAMER A. D. BACHE
Scale 1/40,000
71 00
70 30

U. S. Coast and Geodetic Survey. Steamer A.D. Bache [Form 11.—Statistics of Field Work.]

Statistics of Field Work executed by Lieut. J. F. Moser, U.S.N.

Date of beginning field work	July 2nd, 1888
Date of closing field work	Oct 30th, 1888
RECONNAISSANCE:	
Area of, in square statute miles	
Lines of intervisibility determined as per sketch submitted	
Number of points selected for scheme	
BASE LINES:	
Primary, length of	
Secondary, length of	
Beach measurements, length of	
Number of days employed in measurements of base	
Number of days employed in re-measurements	
TRIANGULATION:	
Area of, in square statute miles	
Signal poles erected, number of	
Observing tripods and scaffolds built, number of	
Observing tripods and scaffolds built, heights of	
Days occupied in opening and verifying lines of sight, number of	
Stations occupied for horizontal measures, number of	
Stations occupied for vertical measures, number of	
Geographical positions determined, number of	
Elevations determined trigonometrically, number of	
GEODESIC LEVELING:	
Elevations determined by spirit-leveling of precision, number of	
Lines of geodesic leveling, length of	
LATITUDE, LONGITUDE, AND AZIMUTH WORK:	
Latitude stations occupied, number of	
Pairs of stars observed for latitude, number of	
Average number of observations on a pair	
Longitude stations, telegraphic, number of	
Longitude stations, telegraphic, number of nights on which signals were exchanged	
Longitude stations, chronometric, etc., number of	
Azimuth stations, number of	
Number of nights of observations for azimuth	
Number of stars observed for azimuth	

GRAVITY DETERMINATIONS:	
Number of pendulum stations occupied	
MAGNETIC WORK:	
Stations occupied for observations of the magnetic declination, number of	
Stations occupied for observations of the magnetic dip, number of	
Stations occupied for observations of the magnetic intensity, number of	
TOPOGRAPHY:	
Area surveyed in square statute miles	
Length of general coast-line in statute miles	
Length of shore-line of rivers in statute miles	
Length of shore-line of creeks in statute miles	
Length of shore-line of ponds in statute miles	
Length of roads in statute miles	
Topographic sheets finished, number of	
Topographic sheets, scales of	

Topographic sheets, limits and localities of:

HYDROGRAPHY:	
Area sounded in square geographical miles	495
Number of miles (geographical) run while sounding	1,758.33
Number of angles measured	9,058
Number of soundings	39,112
Number of tidal stations established	1
Number of specimens of bottom preserved	12
Current stations, number of	
Hydrographic sheets finished & partly finished, number of	2
Hydrographic sheets, scales of	1:40,000 & 1:20,000

Hydrographic sheets, limits and localities of:

Projection No. 9:— Off-shore hydrography from a point 15 miles West of No Man's Land to Muskeget Channel.

Projection No. 2:— Muskeget Channel, from Muskeget Island to Wasque Bluff, to Cape Poge, and Seaward

PHYSICAL HYDROGRAPHY:

Number of soundings on cross-sections	
Current stations, number of	
Deep-sea current stations, number of	
Deep-sea surface current observations, number of	
Deep-sea sub-surface current observations, number of	
Number of observations of density of water	
Number of observations of temperature of water	
Tidal stations established, number of	
Miles (geographical) run in deep-sea sounding	
Number of deep-sea soundings	
Number of specimens of bottom preserved	

Locality of work; results, how shown, etc.:

Soundings. Proj. No. 9. Approaches to Vineyard Sound & Off Martha's Vineyard. — Summer '88.

Date 1888	Letter	Number of Book	Miles (N)	Soundings	Angles	Name of Vessel	Observers
July 6	A	1	26.00	197	36	Ship	Lieut. Moser, Ens. Swift & Hulme
" 14	B	2	87.22	451	99	"	" Moser; Ens. Bispham, Shindel, Bullard, & Strite
" 17	C	1	77.15	597	186	"	" " " Shindel, Bullard, Strite & Pay Y. Dunn
" 18	D	2	22.91	149	36	"	" " " Bullard, Strite & Pay Yeo. Dunn
" 19	E	1	68.96	550	106	"	" " " Shindel, Bullard, Strite & P.Yeo. Dunn
" 23	F	2	10.31	122	44	"	Ens. Bispham, " " " " "
" 27	G	1	2.41	34	13	"	" " Bullard, & Pay Yeo. Dunn
Aug. 2	H	2	59.50	564	212	"	Lieut. Moser; Ens. Constant, Shindel, Bullard, Strite P.Y. Dunn
" 7	I	2	18.00	214	82	"	" " " " " " " " " "
" 10	J	1	73.85	485	61	"	" " " " " " " " " "
" 11	K	3	53.17	727	263	"	" " " " " " " " " "
" 15	L	4	54.30	579	231	"	" " " " " Bispham, & Shindel
Oct. 10	M	4	36.00	324	106	"	
			625.98	5002	1475		
Sept. 6	a	1	18.40	544	135	Launch 24	Ens. Constant, & Bullard
July 25	a	1	22.35	434	167	Launch 57	Ens. Shindel & Strite
" 26	b	2	18.00	382	151	"	" "
Oct. 11	c	1	14.25	488	90	"	" " Pay Yeo. Dunn
			54.60	1304	408		
July 25	a	1	9.00	402	132	Whale Boat	Ens. Bullard & Pay Yeo. Dunn.
" 26	b	2	16.50	636	208	" "	" " " " "
			25.50	1038	340		

Recapitulation

	625.98	5002	1475	Ship
	18.40	544	135	Launch 24
	54.60	1304	408	Launch 57
	25.50	1038	340	Whale Boat
Grandtagy.	724.48	7888	2358	

Report of Lieut. J. F. Moser, U.S.N.
Leaving Mr. A. W. Bache
Summer, 1888

Soundings – Projection No. 2 – Muskeget Channel – Summer '88.

Date 1888	Letter	Number of Book	Miles (M)	Soundings	Angles	Name of Vessel	Observers
Sept. 15	A	1	25.00	516	160	Ship	Lieut. Moser & Bisphum
" 29	B	1	51.10	863	288	"	" " " "
Oct. 11	C	1&2	51.00	941	332	"	" " Constant
" 15	D	2	27.50	1029	204	"	" " " & Shindel
" 22	E	2	1.00	25	8	"	" " " "
			155.60	3374	992		
Oct. 9	A	1	0.70	44	10	Daisy	Ens. Swift & Tisdale
" 11	B	1	42.50	1650	276	"	" " "
" 15	C	1&2	47.00	1700	318	"	" " "
" 16	D	2	25.00	820	174	"	" " "
			115.20	4214	778		
Aug. 20	a	1	9.30	341	102	Launch 23	Ens. Constant & Bullard
" 21	b	2	7.20	212	59	"	" " "
" 25	c	1	13.00	316	122	"	" Bullard & Pay Yeo. Dunn
" 28	d	2		1	2	Launch 24	" Constant & Bullard
" 29	e	1	22.80	902	171	"	" " "
" 31	f	2	23.90	527	160	"	" " "
Sept. 3	g	3	30.20	929	236	"	" " "
" 11	h	4	7.70	383	62	"	" " "
" 14	i	3	5.50	280	42	"	" " "
" 15	k	2	30.10	1383	276	"	" " "
" 20	l	3	18.10	605	186	"	" " "
" 21	m	4	14.60	719	151	"	" " "
" 25	n	5	23.20	924	183	"	" " "
" 29	o	4	16.50	870	160	"	" " "
Oct. 1	p	5	8.67	622	80	"	" Bullard & Strite
" 9	q	6	5.75	300	87	"	" " "
" 11	r	6	31.50	1508	305	"	" " "
" 15	s	5	14.50	770	194	"	" " "
" 16	t	7	11.00	523	138	"	" " "
" 23	u	7	12.00	455	147	"	" " & Pay Yeo. Dunn
" 26	v	7	9.20	543	129	"	" " Strite
			315.32	13,119	2992		
Aug. 18	a	1	10.67	419	74	Launch 57	Ens. Shindel & Strite
20	b	2	19.80	821	136	"	" " "
21	c	1	9.30	448	59	"	" " "
23	d	2	20.30	965	170	"	" " "
25	e	1	12.00	755	154	"	" " "
29	f	3	14.05	585	114	"	" " "
31	g	4	9.10	471	125	"	" " "
Sept. 3	h	3	20.35	1013	175	"	" Strite & Pay Yeo. Dunn
6	i	4	20.00	804	148	"	" " " " "
14	k	3	1.40	87	14	"	" Shindel & Strite
15	l	2&5	29.40	1368	220	"	" " "
21	m	4	3.50	225	30	"	" " "
22	n	3	3.20	181	30	"	" " "
25	o	5	4.15	289	49	"	" " "
29	p	6	15.15	480	85	"	" " "
Oct. 1	q	5	11.00	482	132	"	" Bisphum & Pay Yeo. Dunn
			203.97	9393	1715		

Report of Lieut. J. E. Moser, U.S.N.
Commdg. Sch. "Active"
Boston, Mass. Aug. 1, 1888

Soundings — Projection No 2 (Cont'd)

Date 1888	Letter	Number of Book	Miles N.	Soundings	Angles	Name of Vessel	Observers
Sept 5	a	1	2.60	272	68	Whale Boat	Ens. Shindel & Strite
" 11	b	2	2.30	250	47	"	" " "
19	c	1	7.30	602	108	"	" " "
			12.20	1124	223		

Recapitulation				
	155.60	3374	992	Ship
	115.20	4214	778	Daisy
	315.32	13119	2992	Launch 24
	203.97	9393	1715	Launch 57
	12.20	1124	223	Whale Boat
Grand agg.	802.29	31,224	6700	

Report of Lieut. J. F. Moser, U.S.N.
Com'd'g Str. A. D. Bache
Summer, 1888.

Soundings :— Grand Recapitulation

Name of Vessel	Number of —		
	Miles, Naut.	Soundings	Angles
Ship	781.58	8376	2467
Daisy	115.20	4214	778
Stm launch No 24	333.72	13663	3127
" " No 57	258.57	10697	2123
Whale boat.	37.70	2162	563
Grand agg. (Season)	1526.77	39,112	9058

Report of Lieut. J. F. Moser, U.S.N.
Leaving Ats. A.S. Bache
Summer, 1888.

Signals

Erected	Occupied	Determined
42	36	51

Report of Lieut. J. F. Moser, U.S.A.
Comdg Str. A.D. Bache
Summer, 1888

Number of days on Station, and how employed.

Number of days on Station	121
" " " " which hydrographic work was done	42
" " " prevented from " " by bad weather	52
" " " " " " " " other causes	1
" " " on which signals were built & cut in	9
" " Sundays	17

Report of Lieut. J. F. Moser, U.S.N.
Com'd'g Str. A. D. Bache
Summer, 1888

List of officers and men attached to Party

Lieutenants	1
Ensigns	5
P.A. Surgeons	1
Ass't Engineers	1
Master-at-Arms	1
Paymaster's Yeomen	1
Machinists	4
Ship's Writer	1
Carpenter's Mate	1
Boatswain's "	1
Quartermasters	4
Ship's Cook	1
Cabin "	1
" Steward	1
2nd Class Firemen	4
Seamen	15
Landsmen	3

Report of Lieut J. H. Moser U.S.N.
leaving Str. A.D. Bache
Summer, 1888