

RARE BOOK

QB

296

112

USS

1843

COAST SURVEY

C. & G. SURVEY,
LIBRARY AND ARCHIVES.

APRIL 15, 1842.

Acc. No. 34080

Present: Mr. Cushing, Mr. Ayerigg.

James Ferguson examined.

1. Question. How long have you been employed in the coast survey?

Answer. Since 10th May, 1833.

2. Question. In what capacity?

Answer. As a principal assistant; one of the three principal assistants.

3. Question. What particular part of the duty do you at present perform?

Answer. Making the secondary triangulation.

4. Question. Who makes the primary?

Answer. Mr. Hassler.

5. Question. Is there any essential difference in the scientific principles of the primary and the secondary triangulation; and if so, what?

Answer. The primary requires an instrument of great power, and of nicer graduation; there is no other difference. There is no difference in the mathematical elements.

6. Question. Cannot any scientific person, who is competent in and well practised in the secondary triangulation, perform the primary?

Answer. The primary requires more mathematical knowledge than the secondary, and greater knowledge of practical means; but to the whole question, I answer, yes.

7. Question. If Mr. Hassler should die, must the survey stop, for want of any person in the survey, or in the country, to take it up and carry it on?

Answer. No.

8. Question. Which has proceeded furthest in advance, the primary or the secondary triangulation?

Answer. The secondary. I add, that the secondary is necessarily imperfect, inasmuch as it depends on the primary for its verification.

9. Question. If the primary had preceded the secondary, might not the latter have been verified as it proceeded?

Answer. Certainly.

10. Question. Why has the primary been allowed to remain in arrears of the secondary triangulation?

Answer. I cannot say.

11. Question. Is not the secondary triangulation sufficiently accurate for all practical purposes in the publication of a map of the work so far as it has gone?

Answer. Yes; for all practical purposes.

12. Question. From what point to what point on the coast have the secondary triangulation and the hydrographical survey been completed?

Answer. The secondary triangulation has been completed from Point Judith, including the sound and both sides of Long Island, to Cape May, covering both shores of New Jersey, and including the whole of the Delaware on both sides; and it also crosses the peninsula to the Chesapeake, where it is now in progress, but not yet completed. I refer to the officers engaged in the hydrographical work for answer as to that part of the question.

13. Question. Do you expect that any perceptible error in the secondary triangulation will be detected by the further progress of the primary?

National Oceanic and Atmospheric Administration

Rare Books from 1600-1800

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages

Faded or light ink

Biding intrudes into text

This has been a co-operative project between NOAA central library, the Climate Database Modernization Program, National Climate Data Center (NCDC) and the NOAA 200th Celebration. To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x 124 or at Library.Reference@noaa.gov

HOV Services
Imaging Contractor
12200 Kiln Court
Beltsville, MD 20704-1387
April 8, 2009

Answer. I should think the maximum error would not exceed five feet in the whole distance. This I infer from the work already verified, where the error proved to be no greater than this. I refer in this to my own work; but the other may be, for aught I know, more accurate still.

14. Question. Did you use the main triangulation as the basis of your work (the secondary triangulation) when you commenced?

Answer. Yes.

15. Question. Do you not in fact proceed in the secondary triangulation at present in the same manner as in the primary?

Answer. The only difference is the difference of the instruments.

16. Question. You have exhibited to the committee abstracts of the whole work on the coast, from Point Judith to Cape May; what objection is there to the publication of those abstracts?

Answer. The first objection is, that no base of verification has yet been measured; the second is, that we are uncertain as to the difference in any meridian in this country and any in Europe, to a minute and a half in longitude; and the third is, that we have not yet determined the ellipticity of the earth.

17. Question. Is either of those things necessary to give practical utility to the soundings and distances in particular bays or harbors?

Answer. Perhaps not; but the superintendent will of course take care of his character as a man of science.

18. Question. In your opinion, ought the practical use of the work, by its publication, to mariners, to be deferred indefinitely, for the supposed purpose of allowing the superintendent to take care of his character as a man of science?

Answer. No.

19. Question. Has the character of the superintendent as a man of science suffered by the publication of the charts of New Haven and Bridgeport, and Newark bay?

Answer. No.

20. Question. If not, what injury would it do to his character as a man of science to publish a chart of New York harbor?

Answer. None; such a map is now in the engraver's hands, for publication.

21. Question. What injury, by the publication of charts of the whole coast, from Point Judith to the Delaware?

Answer. If it were practicable, none.

22. Question. Do you furnish the points of observation to the sounding parties yourselves?

Answer. They are ascertained by us, reported to Mr. Hassler, and by him furnished to the sounding parties.

23. Question. Do you reduce your own observations?

Answer. Yes, certainly.

24. Question. Have you been engaged in Maryland in 1835?

Answer. No; I came in Maryland in 1839.

25. Question. Was any body else engaged in Maryland in 1835?

Answer. Only Mr. Hassler, with Mr. James H. Alexander, as a mere reconnaissance.

26. Question. Has there been any difficulty in procuring suitable points for observation as far as the main triangulation has proceeded?

Answer. Yes; since we entered the valley of the Delaware.

27. Question. Where first?

Answer. At Mount Rose, near Princeton, in New Jersey ; some in opening the line from Newtown ; then at Willow Grove and at Stony Hill ; some difficulty in connecting Mount Holly with the point below ; a good deal at Yards. These obstructions could not have occupied more than five months.

28. Question. When is it you propose to measure a base of verification ?

Answer. It is spoken of for this year.

29. Question. Why has it not been done sooner ?

Answer. The work has not been sufficiently advanced. It has been thought desirable to obtain such a line on the Chesapeake.

30. Question. What is the present condition of the place of the original base line ?

Answer. I have not been there since 1836. Then the beach was considerably washed, but the points were undisturbed. Now, I understand, the beach is changed, and the base in danger ; but the elements of it will be preserved by the mountain base, inland from the original base.

31. Question. Will a minute and a half's difference between the European and American meridians show on ordinary maps ?

Answer. Yes ; it would be about a mile.

32. Question. Why has not this difference, in the course of the ten years since the resumption of the survey, been ascertained ?

Answer. I cannot answer that. We have observed eclipses of the sun. We have made no other observations for the longitude.

33. Question. Have the observations thus made been reduced ?

Answer. Yes, and calculated. I add, that, if we had considered it a sine qua non to determine the longitude, the time occupied in this way might have retarded the other work.

34. Question. But you have previously said that the want of the determination of this fact was one of the objections to publishing any part of the work.

Answer. I said it was an objection, but I did not mean to be understood as saying that it was an insuperable objection.

35. Question. Is the absence of a base of verification any insuperable objection to the publication of the work along Long Island sound ?

Answer. I think not. I say no.

36. Question. Is the survey engaged now in measuring an arc of a great circle of the earth, with a view to ascertain its ellipticity ?

Answer. That will be one result of the survey, and a very important one, in a scientific point of view.

37. Question. When will that result be reached ?

Answer. It should await the measurement of the base of verification.

38. Question. Is it necessary to have measured such an arc, and verified the ellipticity of the earth, before it is possible to publish a map, for practical purposes of navigation, of Long Island sound ?

Answer. I think not.

39. Question. Where are the results of the work, so far as completed, now kept ?

Answer. In the depot of the survey, at Washington.

40. Question. Are they in duplicate ?

Answer. Some ; not all. The primary triangulation is all in duplicate. Of the secondary, mine is not. As to the rest, I do not know.

41. Question. Of that which is in duplicate, are both parts kept at the depot ?

Answer. Yes.

42. Question. Several of the public buildings at Washington have from time to time been destroyed by fire; is the depot a fire-proof building?

Answer. No; it is not.

43. Question. If the results and other matters in the depot should be destroyed by fire, must not the work be done over again?

Answer. Yes. Precautions have been taken to enable the speedy removal of the papers, if the building take fire, by their being in cases on the ground floor.

44. Question. Of the work in duplicate, why is not one copy deposited for safe keeping in the Treasury Department?

Answer. I do not know.

45. Question. Is all the work in such a state that, if Mr. Hassler should die suddenly, it may be used, and reduced or calculated immediately by others?

Answer. Yes.

FRIDAY EVENING, *April 15.*

Examination of Mr. Ferguson continued.

Present: Mr. Cushing and Mr. Aycrigg.

[NOTE.—To make the evidence more distinct, from question No. 46 to question No. 74, it must be observed, that the statement after No. 74, (marked A,) the statement marked “to be annexed to Mr. Ferguson’s evidence,” and the statement marked “to be annexed to Mr. Ferguson’s testimony,” together with the chart of Newark bay, referred to in question No. 48, were presented at the beginning of this meeting; the statements having been previously prepared, in writing, by Mr. Ferguson, in answer to questions put to him by the committee at the previous meeting.]

46. Question. Is there any substantial and adequate reason why the mathematical elements of the work should not be published as parts of it are completed?

Answer. No other but that it will require time to put them in order.

47. Question. At what time in each season do you take the field?

Answer. This is stated in the schedule annexed, and marked A.

48. Question. There is shown by you a published chart of Newark bay, purporting to be an extract from the United States coast survey; is there any meridian on the map? (Annexed, and marked B.)

Answer. No.

49. Question. Is the latitude or longitude of any part of it given?

Answer. No.

50. Question. What is the length of Newark bay, as stated in this map, from Shuter’s island to the confluence of the Passaic and Hackensack rivers?

Answer. It is, by the scale of the map, five miles and eighty-two-hundredths. But the scale is an erroneous one, and was not published or verified by the superintendent. The actual distance between the two points specified is five miles and six hundred and twenty-three thousandths, obtained by me by measuring on the original topographical map.

51. Question. Please to inspect the map of Newark bay, which is now shown to you, marked C.

Answer. It appears to be the same map, engraved from the same plate as B; but the scale is different, and is at the same time erroneous. It seems to be written $\frac{1}{20000}$ instead of $\frac{1}{10000}$, or erroneous in the proportion of 2 to 1, or about that.

52. Question. If the chart of New York, or any part of the coast, be

published, do you apprehend any dangerous error would be introduced by map sellers?

Answer. If published without care, there would, undoubtedly.

53. Question. Is it considered judicious to suppress the results of the survey, through fear that, if published, map sellers may make errors in copying the maps for sale?

Answer. No.

54. Question. Is the survey of any practical use, unless published?

Answer. Yes; in the experience acquired by the officers of the navy and others engaged on the survey. I am not aware of any other.

55. Question. Do you understand the proper uses of the survey to be confined to the instruction thus acquired by the officers engaged in it?

Answer. No; the uses are a knowledge of the coast for commerce and navigation, and a communication of it by a publication of the maps.

56. Question. Can the survey be of any practical use to the country at large, without the publication of charts and maps?

Answer. Certainly not.

57. Question. Where are the instruments used by you repaired?

Answer. At different places, but generally at the office of the survey here.

58. Question. Have you had any difficulty in procuring repairs at other places?

Answer. I have scarcely ever had occasion for repairs; I should think not exceeding five dollars in amount since 1833, when I entered the survey. All my instruments are of European manufacture. They are good instruments.

59. Question. What necessity is there of plane-table parties, except near the coast?

Answer. No absolute necessity, except for the secondary triangulation near the coast.

60. Question. How far in from the coast have plane-table parties gone on the survey?

Answer. I cannot say precisely. They are carried on by Mr. Gerdes, Mr. Sands, Mr. Boyd, Mr. Dickens, and Mr. Werner.

61. Question. Do the plane-table parties require much science?

Answer. They require practical skill.

62. Question. When a secondary triangulation precedes the primary, is it not a second without a first?

Answer. Technically, it is.

63. Question. Is it not working wrong end foremost for a secondary to precede a primary triangulation?

Answer. I think not, because the secondary loses none of its accuracy by the primary following it.

64. Question. Can you ascertain what the errors of the secondary are until you have the primary?

Answer. No.

65. Question. How are your distances measured?

Answer. In French metres. It is not the standard of the country, but it is the standard best authenticated, and best known in geodetic operations. Our standard is the English yard. The foot is the most common measure used in this country, both for scientific and practical purposes.

66. Question. Is the metre in common use in this country in any way?

Answer. No.

67. Question. Is it not as easy to convert yard measure into metres as metre measure into yards?

Answer. It is the same thing.

68. Question. In that case, what benefit is there in having the work of the survey in metres?

Answer. None but what I have given before.

69. Question. What is the standard used in the English survey?

Answer. Either the English yard or foot.

70. Question. What is the object of the proposed second base line?

Answer. To verify the work.

71. Question. Cannot the work proceed north and south at the same time?

Answer. Not at present, without a larger appropriation and more persons; at least, that is my opinion.

72. Question. Have you a general knowledge of the configuration of the coast?

Answer. Yes, to Cape Henry.

73. Question. On what part of the coast, north or south, can the work be carried on most easily?

Answer. At the north, by reason of the nature of the coast.

74. Question. Of how many points on the coast has the survey ascertained the latitude and longitude?

Answer. I should think my own points were five hundred; and, altogether, a thousand.

A.

Year.	Time of taking field.	Time of going home.
1833	May 10	December 28.
1834	February 20	December 3.
1835	April 6	January 10, 1836.
1836	May 1	December 9.
1837	April 25	November 25.
1838	May 20	November 19.
1839	April 15	November 29.
1840*	June 16	December 22.
1841	February 15	December 12.

It must be understood that these dates are given from recollection, and can only be relied on as accurate within a day or two.

*This year I was detained longer from field work, to calculate triangles necessary for the map of New York.

Number of stations made in each year.

In 1833	-	-	-	-	-	24
In 1834	-	-	-	-	-	64
In 1835	-	-	-	-	-	26
In 1836	-	-	-	-	-	28
In 1837	-	-	-	-	-	13
In 1838	-	-	-	-	-	10
In 1839	-	-	-	-	-	15
In 1840	-	-	-	-	-	16
In 1841	-	-	-	-	-	7

 203

[To be annexed to Mr. Ferguson's evidence.]

To the question of the committee, "What is the distance between Shuter's island and the point at the confluence of the Passaic and Hackensack rivers, and what the mean width of the bay of Newark?" Mr. Ferguson answers:

That the distance between the above points is 5.623 statute miles, and the mean width of the bay of Newark 1.37 mile.

That on a map of the said bay, printed at the request of the collector of Newark, the distance between Shuter's island and the point between the Hackensack and Passaic is 5.82 statute miles; but that this map has an erroneous scale attached to it, and was not published or verified by the superintendent of the survey. The map appears conformable to the original of the survey, but the scale given for it is incorrect.

To the question of the committee, "How many points were determined in 1833 in the main triangulation, and what distance were they apart; what extent of country did they cover; what number in 1834, 1835, 1836, 1837, 1838, 1839, 1840, and 1841; and what extent of country do they cover?" Mr. Ferguson answers:

That the part of the question *as to the distances "apart"* is answered by giving, in the following schedule, the length of the longest and shortest lines of the survey each year; that it is difficult to divide the works of successive years from each other; and that the computations are given in gross in square statute miles, presuming that the committee merely wished an approximate and comparable estimate.

In 1833, length of longest line, miles	-	41.3	} Square miles covered, 1,350
length of shortest line, miles	-	7.2	

In 1834, 1835, and 1836, though other stations were occupied, the primary triangulation did not cover any additional space.

In 1837, length of longest line, miles	-	20.69	} Square miles, 318
length of shortest line, miles	-	8.73	
In 1838, length of longest line, miles	-	38.41	} Square miles, 300
length of shortest line, miles	-	23.29	
In 1839, length of longest line, miles	-	31.00	} Square miles, 1,070
length of shortest line, miles	-	10.93	
In 1840, length of longest line, miles	-	18.51	} Square miles, 209
length of shortest line, miles	-	12.30	

In 1841, length of longest line, miles	- 31.02	} Square miles, 330
length of shortest line, miles	- 17.07	
Square miles covered by whole primary triangulation		<u>3,577</u>

It is but fair, and perhaps also necessary, to state to the committee that the effect of the primary triangulation, in the progress of the survey, is not properly estimated by the number of square miles within the polygon which it makes, but by the quantity of secondary triangulation for which it afforded the bases. In this view of the subject, the number of square miles covered in each year would be much increased.

[To be annexed to Mr. Ferguson's testimony.]

1833—Buttermilk.	Harrow.
Round.	1838—Weasel.
Bald.	Springfield.
Tashua.	1839—Bear on Hill.
Mount Carmel.	Disborough.
Ruland.	Stony Hill.
West Hills.	Mount Rose.
1834—Base measured.	Newtown.
1835—Reconnoissance in Maryland.	Willow Grove.
1836—West Hills.	1840—Willow Grove.*
1837—Ruland.	Mount Holly.
East base.	1841—Yard.
West base.	

Upon the examination of Mr. Ferguson.

The captious questions 5 till 10, inclusive, could of course not elicit any thing; the answers prove it.

Answer to question 11. Mr. Ferguson mistakes.

The answer to 13 would be best calculated over again, as the result indicated needs verification.

Answer to question 15 enters under the same predicament as from 5 to 10.

Answer to question 16 is very right; but answer to 17 subjects it to a personal modification, which it ought not to do, as the principle in itself is fully decisive; the question itself is badly styled.

Question 18 is grounded upon the bad turn in which question 17 had been placed; thence the 19th and 20th are of no value.

Questions 21 and 33. It is well known: that not all can be done at once; the work has always been carried on with the full celerity which the disposable means allowed.

From all the questions 22 till 27, the committee could in no way expect any valuable information.

Answer to 28. I thought Mr. Ferguson knew better.

Question 30. The care of the base-line monuments is given into special instruction to the light-house keeper of Fire Island beach, by the collector

* The station of Willow Grove was occupied both in 1839 and 1840.

of New York ; when I was there last, only in one place, near two-thirds of the line, the water had washed in, as far as to go across the measured line, at high water, but the line is fully secure.

Answer to 35 is not sufficiently reflected and cleared up, because, for a part of the district in question, work is actually in doing, while it is proper, in good principle, to go on only gradually to further distances.

Question 36 shows again great anxiety, lest the coast survey might lead to an *honorable scientific result* ; after this, the questions until up to 42 are evidently useless.

To question 42 an answer might be given, speaking very much for the safety of the coast survey office against fire, which I told to a member of the committee.

The rest of that 1st examination is trashing straw.

Question 46 to 52, inclusive, are void in all possible respects.

Question 53 must be discussed again here, as it seems it is insisted upon by the committee: that the money of the nation shall be spent for the benefit of chart sellers, and the public confidence in the work, therefore the *security of the utility of its results*, be thrown in the wind.

A proper organization of this subject will be proposed in due time, when the state of the work will dictate the regular series of publications, it is of no use to speak now nearer upon it, than to state : that if no regular order and arrangement is made in this respect, the maps which may be given out will be *vilified*.

The questions 54 to 56, inclusive, are miscarried catches.

Questions 57 and 58 appear to have been dictated by an instrument maker out of work, for they cannot serve the work in any way.

Questions 59, 60, 61, 62, 63, 64, 65, 66, and 67, prove that the committee was fatigued in inventing questions, and had thrown itself into a vicious circle, which Mr. Ferguson ultimately solved, in the answer to question 68, by referring back to what he had said before.

The answers to questions 69 till 74 must have been highly instructive for the committee, as they offer much field for speculation without bottom. The discussion upon the Newark bay map, requested so minutely from Mr. Ferguson, shows evidently a high degree of research upon mathematical accuracy, and similar subjects, which exceeds itself again, when it comes to determine the square miles covered by triangles who have but three corners, as well explained at the end of the article.

F. R. HASSLER.

WASHINGTON CITY, *January*, 1843.

FRIDAY EVENING, *April* 15, 1842.

Present : Mr. Cushing, Mr. Aycrigg.

Examination of Mr. Blunt.

1. Question. Do you know any sufficient reason why maps and other results of the survey should be withheld from the public knowledge ?

Answer. None, when they are in sufficiently complete state to be useful to navigators.

2. Question. Is any part of the survey sufficiently complete for that now?

Answer. Yes.

3. Question. How much?

Answer. New York harbor is being reduced for the engravers. Long Island sound is capable of being reduced from Point Judith to New York. The outer coast is already complete, so far as expressed, from Montauk point to Great Egg Harbor, I believe, with exception of off-shore soundings.

4. Question. How far inland from the coast has any part of the work been carried?

Answer. I am unable to say, except in regard to the secondary triangulation, which I have in part conducted. I am one of the principal assistants.

5. Question. Are you acquainted with hydrographical surveys in England?

Answer. Yes.

6. Question. Do they publish results as soon as ascertained?

Answer. They are published in sheets so soon as completed, to be useful to navigation.

7. Question. Can copies or information be obtained by individuals?

Answer. Yes; I have known copies to be obtained repeatedly for my brother, who is a chart seller; as from the Thunder and from the Blossom.

8. Question. Does the hydrographical office in England derive any profit from the sale of the charts?

Answer. I think £200 or £300 per annum. The charts are published under the direction of the Admiralty, with the seal of the Admiralty to authenticate them.

9. Question. Have you applied at any time, as an individual, to the hydrographic office?

Answer. Captain Beaufort offered to give me personally any information I desired. This was when I was a private individual, before being connected with the survey.

10. Question. In your opinion, could the work be extended north and south at the same time?

Answer. It might, with more force; and with the present force, if the line of verification were not to be measured. We can proceed more rapidly at the north than at the south with the triangulation.

11. Question. In going south, do you apprehend any difficulty in the hydrographical part of the work, as distinct from the topographical? Cannot the mere coast survey be prosecuted without leaving the coast and going inland?

Answer. No.

12. Question. How do you propose to survey the coast of Virginia?

Answer. By carrying a series of triangles down the Chesapeake bay, and by extending them up or down the valleys of the rivers, as circumstances will allow.

13. Question. What natural elevations have you in lower Virginia?

Answer. None of any consequence.

14. Question. What do you propose to use as a substitute?

Answer. Artificial elevations and signals.

15. Question. In what way do you propose to triangulate the region of Dismal Swamp, and similar regions of country?

Answer. I have no knowledge in regard to that region.

16. Question. Are we not greatly deficient in knowledge of soundings in Buzzard's bay, Nantucket shoals, Cape Cod, and Massachusetts bay?

Answer. Yes.

17. Question. Is not a knowledge of those soundings of the greatest importance to navigation?

Answer. Yes; it is more wanted there than any where else. More tonnage passes. Most vessels from Europe, for New York and Philadelphia, come between the Gulf stream and Nantucket shoals, in addition to the navigation north of Cape Cod. Most of the coasting trade comes through the Vineyard.

18. Question. What amount of work or repairs have you had done in the office here to instruments?

Answer. Nothing but the mounting of one telescope, which came from Europe without a stand. I have had no difficulty in obtaining repairs elsewhere, if needed.

19. Question. Should you think it necessary to have a mechanic with you in the field?

Answer. To measure the base line it might be desirable; not otherwise.

20. Question. Was any copper imported for the engraving from Vienna?

Answer. Yes.

21. Question. Was it used?

Answer. No.

22. Question. Why not?

Answer. It was not considered suitable.

23. Question. Can good copper for engraving be procured in this country?

Answer. Yes.

24. Question. Have you had any practice as an engraver?

Answer. Yes.

25. Question. Can impressions be taken from a plate in an unfinished state, to show the progress of the work?

Answer. Yes.

26. Question. Can impressions be taken from the plates now engraving in the survey?

Answer. Yes, without injury to them.

27. Question. How long will it take to furnish the eight plates of the harbor of New York, with the present force, at the rate it now goes on?

Answer. I cannot state by conjecture. I should think about three years.

28. Question. Is it not possible to have the work done accurately and more rapidly than at present, if more hands were put on the work?

Answer. Yes.

29. Question. Is it necessary to have a workshop for the repair of instruments at the office?

Answer. I am not able to say. There are some instruments for which it is convenient.

30. Question. In what time could the New York map be finished?

Answer. There might be an engraver for each plate.

31. Question. Of what use are the plane tables, so far as regards navigation?

Answer. I do not consider it of any use to extend the survey any further back than the slope of the hills at the head of navigation.

32. Question. Are the plane tables further back?

Answer. I do not know how far back. I presume they are.

33. Question. What is the signification of the words "primary triangulation?"

Answer. They signify the main series of triangles on which any work to be surveyed is based, extending as far as possible throughout the work.

34. Question. What is a secondary triangulation ?

Answer. It is a series commenced within the primary triangles, extending in whole or in part through the same, and dependent on the primary series.

35. Question. Is it possible for a series of secondary triangles to exist where there are no primary ones ?

Answer. No.

36. Question. Is not the use of secondary triangles for plane-table parties to furnish detailed points ?

Answer. Yes.

37. Question. If in any work there be but one series of triangles, does any such fact exist as primary and secondary ?

Answer. No.

38. Question. When you commenced, was not the secondary triangulation intended to be, as the name imports, secondary to and within a primary triangulation ?

Answer. Yes.

39. Question. Is it so now ?

Answer. East of New Haven I have extended a main triangulation to Newport, and filled up the same with a secondary series of triangles.

40. Question. Is the main triangulation determined by Mr. Hassler, and ending at Yards and Mount Holly, of the same nature as the main or as the secondary triangulation by you, east of New Haven ?

Answer. The same as the main triangulation by me, east of New Haven.

Remarks upon the testimony of Mr. Blunt.

Answer to third question. I should have expected Mr. Blunt better informed upon the scientific requisites, to admit fairly publications of maps of an extent of coast, than he shows, by this answer. The extent of coast cannot *honestly* be published before the system of primary triangulation is positively enclosed between two bases, filled with the main triangulation between them, because this is *absolute requisite of the proper location*.

The individual maps of bays &c., are all that can be given to the public with propriety, upon special call, as has always been done hitherto, in any of the parts of the country actually enclosed in a finished system.

Answer to sixth question. In England they have the *main triangulation before them fully executed, since before the end of last century*; they can therefore work in any place, grounding upon that part which is near to any harbor, bay, &c., and are enabled by that to give it to the public by piecemeal, which is not allowable, where the *triangulation is not made beforehand*. It will, besides, be found: that this piecemeal communication is all, and the full coast map *I wish yet to see!*

Answer to questions seventh and eighth. These show evidently that in England, *as properly due*, the authentic maps of the survey are not delivered over to *chart sellers*, but that they must, *as proper, purchase them from the office*, and that is the only *honest way* of doing. Mr. Blunt, who gives the answer, is the head of the firm of *Edmund & G. W. Blunt*,

chart sellers, in New York. Why he does ^{hide} ~~deny~~ his partnership is for him to answer.

Answer to eleventh question. Is properly answered by a flat: no.

Questions twelve, thirteen, fourteen, fifteen, sixteen, and seventeen, are useless, being, as prospective, without any principles, and ill placed, as proves all this.

Answer to questions eighteen and twenty-nine. It is evidently not to be asked the partner of a seamen's instruments repairing shop *any question* about a part of the coast survey establishment, so indispensable for a work of the extent of the coast survey, as the establishment to keep the instruments in constant good order, and make such works as I must require for my own use. *No man* can judge upon the full extent of the value of that establishment *but myself*. From a rival who expected to have these works as an accessory, *of right*, to his share, there could be no expectation of an appropriated answer.

Question nineteen. Shows the ignorance of the questioner and answer.

Answer to question twenty-three. It is well known to the person answering, that the copperplates can be *procured in this country*, but that they are *imported from abroad*, the importers often putting their own names upon the plates, as *he offered it to me himself*. The actual state of things I have explained elsewhere; the full truth is withheld.

Answer to question thirty. Shows the ignorance of the man who can say that there could be an engraver to each plate. If he knew the very first principles of the organization of an engraving establishment, he would state that the work must be distributed according to its *kind*, as done in the survey, and each kind of work, of *each plate*, to pass through the competent hand purposely engaged for it, and *not each plate a man*, as little as the same assistant makes the secondary triangulation, the plane table, and the soundings, in the same quarter. How the plates are distributed I have stated elsewhere.

Answer to questions thirty-one and thirty-two. It is expected that, upon such subjects, the direction of the superintendent, who oversees the whole extent of the work, deserves more attention than that of an assistant, who sees, *of course, distinctly only* within his limits.

Answer to question thirty-five. The simple *no* says nothing. Mr. Blunt ought to have been suffered to explain, as I doubt not he would be able, that the secondary triangulations are allowable to be extended as well *within* as *without* the main triangulation, to a *certain limit*, with the same certainty, and that, therefore, in both cases, the main triangulation is equally the guide of the secondary.

Answer to questions thirty-six, thirty-seven, thirty-eight, thirty-nine, and forty. All this is so asked, and so answered, as to bring out no proper information; it stands slant; as it refers to the further prosecution and organization of the work, it is entirely out of place to enter into any explanation prospectively.

F. R. HASSLER.

WASHINGTON CITY, January 1843.

.. APRIL 30, 1842.

Present: Mr. Cushing, Mr. Aycrigg.

Examination of Captain Swift.

1. Question. Are you employed in the coast survey; and if so, in what capacity, and since what time?

Answer. As an assistant, since 4th April, 1833. I am also the disbursing agent, since about 2d July, in the same year.

2. Question. Will you furnish to the committee an exhibit of the expenditure on the survey for the years 1841 and 1842; say of the appropriation of March, 1841, classifying the same so as to show the amount expended on the maritime, and the amount on the land part of the work; the amount on the primary and secondary triangulation, and on the plane tables; the amount for salaries, and for expenditure at the bureau; and in the same way of any and all other conveniently specified classes of expenditure?

Answer. The answer is annexed in the papers marked A 1 and A 2.

3. Question. Will you furnish to the committee a copy of a printed pamphlet on the coast survey, distributed among the members of the House in February last?

Answer. The pamphlet is annexed, (marked B.)

4. Question. Is there any sufficient reason for suppressing or omitting to publish the results of the survey as thus far ascertained, and as the same may continue to be obtained?

Answer. No, I think not.

5. Question. May not maps of specific completed parts of the survey be published, while the work is in progress on other parts of the coast?

Answer. Yes.

6. Question. Of how large a part of the coast is the survey now so far completed that such maps might be published?

Answer. The whole of Long Island sound, including both sides of Long Island, New York harbor, and a portion of the northern part of New Jersey, coast and interior.

7. Question. Might not the soundings, position of headlands, and the like, of all so much of the coast, be now published?

Answer. Yes.

8. Question. Is there any sufficient reason for withholding from Congress the mathematical elements of the survey, so far as completed?

Answer. No.

9. Question. In whose possession are those facts and *data* at this time?

Answer. They are at the office in Washington, so far as completed, and except so far as parts of the work now in progress are in the hands of the assistants.

10. Question. Are there duplicates of the observations, measurements, and other unpublished elements of the survey?

Answer. There are of parts, but I think not of the whole.

11. Question. Are the elements of the base line, and of other primary and essential parts of the work, in such form and situation as to be secure from loss by fire or otherwise, and be capable of being handed over to and understood by any competent successor of Mr. Hassler?

Answer. All this is in duplicate in the office, accessible to the assistants, and susceptible of being understood and used by them. No part of this has been published except the final result of the base measurement. The details have not been published. The papers are subject to the hazard of fire ; but not more so, and perhaps less, than in some other buildings in Washington.

12. Question. Is there any objection to depositing one of the duplicates in each case in the safes of the Treasury Department ?

Answer. No.

13. Question. Would not this be proper, to guard against accidents ?

Answer. It certainly would add to the security.

14. Question. In what way are the principal duties of the survey subdivided between the superintendent and his assistants ?

Answer. The duties of Mr. Hassler, in addition to the general supervision of the work, are the main triangulation, while the assistants are employed in the secondary triangulation and detailed surveys.

15. Question. Is the main triangulation in arrears of the secondary ; and if so, why ?

Answer. It is. I am not aware of the reason, except the illness of Mr. Hassler, and his inability to do it, caused thereby.

16. Question. Cannot that work be performed by one of his assistants ?

Answer. Yes.

17. Question. How long has Mr. Hassler been so ill as not to be able to attend to that work ?

Answer. It was in October of last year that he became ill. He was also ill the preceding year, in September.

18. Question. What prevented his taking the field and performing the work in the spring and summer of those two years ?

Answer. I am unable to say.

19. Question. What sum is allowed to Mr. Hassler, annually, for expenses, exclusive of compensation ?

Answer. Salary \$3,000, and expenses \$3,000.

20. Question. For what expenses is this \$3,000 designed ? Is it for personal expenses ?

Answer. I suppose it is the expenses of living.

21. Question. Is he paid for other expenses when he goes into the field ?

Answer. He is furnished with an instrument carriage and horses for the instruments and himself, and a baggage wagon besides, for instruments, at the public expense.

22. Question. Is it the same carriage which he is accustomed to use in Washington ?

Answer. Yes.

23. Question. Are horses and men paid at the public expense for the carriage and wagon through the year ?

Answer. Yes ; four horses, one permanent driver, and one other man, who also assists about the office.

24. Question. Please to specify, in the answer to the 2d question, the whole of the expenditures on these carriages, horses, and men, as are of the classes of expenditures therein referred to.

Answer. It is contained in the paper annexed, and marked A.

25. Question. What are the precise duties performed by Mr. Hassler during the chief part of the year, in which he remains at Washington ?

Answer. The weights and measures, and the computation of his own field work, and occasional general computation.

26. Question. Do not the assistants reduce and compute their own work?

Answer. Yes.

SATURDAY, May 13.

Present: Mr. Mallory, Mr. Cushing.

Continuation of the examination of Captain Swift.

27. Question. Do you wish to add any explanation to the papers now produced in answer to the 1st question, and marked A 1 and A 2?

Answer. In comparing the accounts in the papers marked A 1 and A 2, and in the printed sheet B, there is a discrepancy in the sums, assigned to the secondary triangulation and plane-table parties, respectively: The manuscript (marked A 1 and A 2) is the later and correct statement, the statement in B being an approximate estimate, made up before the complete settlement of the accounts.

28. Question. Does the whole amount expended pass through your hands, and how is it drawn from the Treasury, and on what vouchers paid?

Answer. All the expenditure for work on shore passes through my hands, also the per diem allowance of the officers on board the vessels, and the extra compensation of the lieutenant commandant; but the other payments, in the hydrographical part of the work, do not pass through my hands, being made by the commander of the vessels. The money expended by me is received by me from the Treasury, on requisition made by me on the Department. All the disbursements, except for salaries, &c., fixed at the Treasury Department, are made under the authority of Mr. Hassler.

29. Question. Who prescribes the number of subordinate persons to be employed, and the amount of miscellaneous expenses to be incurred?

Answer. The assistant in charge of each party, subject to the control of the disbursing officer.

30. Question. Who appoints the persons employed in the survey?

Answer. Mr. Hassler.

31. Question. Who fixes their compensation?

Answer. If below \$1,000, Mr. Hassler; if more, it is referred to the Department. Such is the practice, so far as I know.

32. Question. Is it necessary to have an instrument maker's shop in the survey?

Answer. I think it is both economical and convenient. An amount of work was done there the last year fully equal to the cost of maintaining the shop.

33. Question. Cannot some portion of the topography of the survey be dispensed with without detriment to the hydrographic part of the work?

Answer. I conceive that the plane-table survey is useful, but it may not be necessary for any hydrographical object that it should be so far extended.

34. Question. What, then, is it useful for?

Answer. I do not know any thing, except that it contributes to a more exact knowledge of the topography of the country adjacent to the coast.

A 1.

Statement of the expenditures made for the survey of the coast of the United States, and for engraving the chart of the harbor of New York, during the year 1841 and a part of 1842.

Amount expended by Captain W. H. Swift, from 1st January, 1841, to 31st December, 1841	\$80,639 13	
Amount expended by Commander Thomas R. Gedney, 17th May, 1841, to 31st March, 1842	9,162 42	
Amount expended by Lieut. Commandant Geo. S. Blake, 11th March, 1841, to 28th February, 1842	4,766 77	
	<hr/>	<u>\$94,568 32</u>

Details of the expenditures.

For the main triangulation, including the compensation of the superintendent, the heliotroppers, and hands employed therein, and all incidental expenses, except horses, wagons, and harness, and repairs of same, and pay and subsistence of driver	\$9,289 87	
For horse keeping, (4 horses,) repairs of one instrument carriage, one wagon, harness, and pay and subsistence of driver	1,445 98	
	<hr/>	\$10,735 85
For the secondary triangulation, including the compensation of the assistants, heliotroppers, and hands employed therein, and all incidental expenses, except horses and wagons, harness, and repairs of ditto	20,656 14	
For horses, horse keeping, repairs of wagons, and harness, pay and subsistence of 2 drivers, (3 wagons and 5 horses)	2,160 74	
	<hr/>	22,816 88
For the plane-table surveys, including the compensation of the assistants and the hands employed therein, and all incidental expenses	-	17,212 29
For the hydrographic surveys: Amount paid by Capt. Swift to the naval assistants, for the authorized allowance of \$627 per annum to the lieut. commandants, and of \$1 per day to the lieutenants and passed midshipmen	8,644 94	
For amount paid by Commander T. R. Gedney, from 17th May, 1841, to 31st March, 1842, for repairs of 2 vessels, sails, boats, pilotage, and incidental expenses, (Washington and Jersey)	9,162 42	
For amount paid by Lieut. Com't G. S. Blake, for same from 11th March, 1841, to February 28, 1842, (schooners Gallatin and Nautilus)	4,766 77	
	<hr/>	22,574 13

For expenses of the coast survey office, including rent, fuel, lights, and attendance - - - - -	1,999 17
For expenses of the instrument maker's shop, including the compensation of the persons employed therein, and the cost of tools and materials purchased for same - - - - -	2,318 11
For compensation and expenses of the persons employed in engraving the chart of the harbor of New York - - - - -	2,011 14
For the <i>general expenses</i> of the work, including the compensation of all assistants and others not embraced in the preceding schedule, and all purchases and expenditures not specified in same - - - - -	14,900 75
	<u>94,568 92</u>

W. H. SWIFT,

Disbursing Officer Coast Survey.

WASHINGTON, May 4, 1842.

To Captain Swift's examination.

To questions 4 and 5, the answer does not enough distinguish between the different state of the different parts of the work. Bays, harbors, &c., single detached parts may be given out, like detailed plans of country, disconnected with the general work of the map; but it is positive destruction of the work to publish extents of the coast before a full system between two bases, and two astronomical main stations, at considerable distance, is completed and joined by the main triangulation.

Questions 6, 7, and 8, are entirely erroneous in their application. The reports contain all that is proper to be published; nothing proper to publish is withheld.

Questions 12 and 13. There is so much of economy spoken, and still in this an expense is proposed, entirely useless, and in many respects improper, on account of bad consequences, that might come from it, without giving means to increase the work.

Answer to 14. Forgets entirely that there is a scientific part in the work, which cannot be made without work, and which I attend to; that it is found valuable by men of science, is published by them, and even can be witnessed.

Answer to 15 and 16. Notwithstanding I was sick at yards, *I never missed a single observation possible*; Captain Swift was not then present at the station, (Yards.)

Answer to 18. I was the two years kept from going out by reports asked, standards finishing, &c.

Answer to 33. The question being made only as a catch, it ought to have been remarked: that, without the topography to a certain distance, it would, in many cases, not be possible to determine upon which side of the lines there lies water or land; the distance to which the topography must go cannot otherwise but be left to the operator. It is positive nonsense only to treat that subject; in modern science and surveys it is well known what is meant; only *the sea-charts of the lowest grade* of former times are without topography.

NOTE.—The publication questions should also be answered from the side that all persons engaged in the coast survey are actually employed, and that if more should be published, more men would have to be appointed, or other actual survey work must be neglected for it, as the appropriation is a determined quantity, within which the work is to be done.

It is well known that of all the coast-survey and weight and measure works, *not even the slightest means existed*, and that when attempted in any other way, but *by me*, it always signally *failed*. Now where is the justice and reason to disbelieve my organization, and statements, and to suffer to be guided by imperfect knowledge, but can really any good come out of such a course?

F. R. HASSLER.

WASHINGTON CITY, *January, 1843.*

MAY 2, 1842.

Present: Mr. Cushing, Mr. Aycrigg.

Examination of Captain Thomas R. Gedney.

1. Question. Are you an officer of the navy?

Answer. Yes.

2. Question. Are you now employed in the coast survey; and if so, since what time and in what capacity?

Answer. I have been employed in it since October, 1834, in charge of one of the hydrographical parties.

3. Question. How many of such parties are there?

Answer. Two. The other is commanded by Lieutenant Blake.

4. Question. How many persons, and what vessel or vessels, are employed in your party?

Answer. Last year I had two vessels, the schooner Jersey and the brig Washington, with, I think, fourteen officers, all told; and, I believe, thirty-two seamen and forty-four boys. This amount of force was necessary.

5. Question. What surveys have you made since October, 1834?

Answer. I have been engaged in making soundings. I commenced in Fire Island bay in 1834; then the outer coast of Long Island, in 1835, from Fire island to near New York; then the harbor and bay of New York, and to Montauk point, along the outer coast of Long Island, in part of 1835 and in 1836 and 1837; in 1838 and 1839, from Fisher's island to Block island and Point Judith; in 1840 and 1841, on the coast of New Jersey, as far as Egg Harbor. These soundings include also all the inland navigation from Fire island to Egg Harbor. In addition to this, in 1841, I performed a piece of detached work between Cape Henlopen and Cape May.

6. Question. Have you completed the soundings along the whole extent of coast from Point Judith to Egg Harbor?

Answer. Yes.

7. Question. Are those soundings, as verified by you, in a condition to be published?

Answer. Yes.

8. Question. Do you make any astronomical or other observations on the coast?

Answer. No, except so far as may be needful to keep my own time.

9. Question. Have any views of the coast been taken by you or from your vessels?

Answer. Yes. Mr. Farley has taken a panoramic view of the whole of Long Island and of all the light-houses wherever I have sounded. We have taken no other views, except of the entrance of the new channel in New York harbor.

10. Question. Is the coast of Long Island an easy or a difficult one?

Answer. I think it an easy one myself.

11. Question. What is the chief occasion of wrecks on Long Island?

Answer. When vessels are running in, and are caught by a heavy southerly, it is difficult to get out, from the trending of the two coasts of Long Island and of New Jersey, and the current setting from New Jersey coast, by reason of which vessels, being thus embayed, are apt to be driven on shore.

12. Question. Have you sounded Jamaica bay?

Answer. Yes, in 1835.

13. Question. What depth of water did you carry into that bay?

Answer. Six feet at low water, eleven and a half at high water, in common tides. At the present time, the depth at low water is seventeen feet.

14. Question. Would not the knowledge of the actual depth of the water in the channel leading into Jamaica bay be useful to a vessel which was unable to claw off the coast?

Answer. Yes; it might preserve a vessel from being stranded.

15. Question. What amount of repairs of instruments have you had done at the office of the coast survey?

Answer. I cannot say.

16. Question. Have you had other repairs done elsewhere; and if so, by whom, and to what amount?

Answer. I have had repairs done for our, or my, party, the last year, to the amount of forty or fifty dollars, by Mr. Montandon, and by George Blunt, of New York, it having been convenient to have this done on the spot there.

17. Question. How far inland do any of the points extend which you have used, as furnished you by any of the triangulating parties?

Answer. Some of them have been from ten to twelve miles inland. They were used for measuring angles from the vessel and from different points. The points which I occupied for measuring were generally on the coast, within a quarter of a mile of the beach.

18. Question. Please to describe your mode of proceeding in this respect.

Answer. I have three officers on shore, at three different stations, with a sextant and a watch each, and a boy with a spyglass also to each station. I then am anchored or lying to off shore in my vessel. I make a signal in the morning, when I get under way, to commence work, I knowing that the men are at their stations by their hoisting a signal flag for that purpose. I commence by running up a signal; so soon as the signal starts from the mast head, the officers on the shore measure the angle between the brig and one of the stations, and the officers on board the brig, two of them, then measure each of them an angle between the stations on shore,

so as to give in all five angles; each officer, as well on shore as on board, marking the time, to see that they agree. Meanwhile I am taking my soundings, on the change of which the signals are repeated and new angles taken as before. In these observations I consider the vessel as a fixed point. This system of operation I have been able to carry out as far as twelve or fourteen miles seawards, which is the greatest distance I have gone. I can see the land inland about ten or twelve miles from the shore, along that part of the coast sounded by me; but if the land were higher the distance seen would be much greater.

19. Question. Did you sound the new channel, commonly called Gedney's channel?

Answer. Yes.

20. Question. Would you have been able, with the ordinary facilities for sounding, to ascertain that channel, without the previous triangulation of the coast?

Answer. Yes; I could have buoyed it out so far as to make it equally useful to navigation.

21. Question. Is the knowledge of that channel of great importance to the shipping of New York?

Answer. I think it is.

22. Question. Could not a master of a vessel, when employed off the harbor of New York, with such information as a good chart of the harbor would furnish, run his vessel in with tolerable safety by that channel?

Answer. Yes.

23. Question. Do you know any reason why a chart of that channel has not been published?

Answer. I do not know any, unless it be that it was not ready. Mr. Hassler has charge of that; I have not.

24. Question. When did you sound out that channel?

Answer. In 1835.

25. Question. Is not the channel as good now as when you first sounded it?

Answer. Yes; I sounded it again last year, for the purpose of ascertaining the fact, and found it so.

26. Question. Is the line of the coast, where examined by you, fixed or subject to change?

Answer. The beach itself, at the mouth of small inlets, is subject to change, with severe gales of wind.

27. Question. Is the topography of the country within the coast of any importance to navigators?

Answer. It is not, except for four or five miles, or where there is any remarkable eminence or other object inland.

28. Question. Is it customary to lay down the topography of the country on the charts of navigators?

Answer. I have never seen it in any charts except of islands. In charts of the West India and other islands it is sometimes given; but in those cases it is not necessary for purposes of navigation.

29. How long do you continue sounding, one year with another?

Answer. I generally commence in May, and leave off early in November.

30. Question. Are you able to keep up with the triangulation?

Answer. Yes; and I have been in advance of the plane-table parties.

31. Question. Are the plane-table parties necessary to the soundings?

Answer. Yes.

32. Question. If you had occasion to sound at a greater distance from the shore than 12 or 14 miles, how would you proceed?

Answer. I should employ small vessels, anchoring them to serve as fixed points; or it might be done by means of chronometers, starting from some given or known point.

33. Question. What proportion of the year, and of the day in each year, have you been able to make your observations, and carry on the work?

Answer. The answer to this question is annexed in paper marked A.

34. Question. Have not your operations along the coast either corrected errors in printed charts or added many new and more complete soundings to those heretofore published in any chart?

Answer. I believe they have.

35. Question. Do you know any reason why the soundings taken by you should not be published?

Answer. I do not.

Commander Gedney's examination.

To questions 7 and 20, 35. How can soundings be published, without their locations being determined? This location is done by the land operation, therefore the question is captious and futile.

Question 11. These currents are complicated, and variable; they require therefore probably still more investigation.

Question 16. The often-repeated question about the instrument maker's room or shop, in the coast survey office, which is so evidently indispensable, for the daily wants of keeping all instruments in order, and where all the plane table instruments, and similar, are made new, shows rather a propensity to delay, than to advance, the work, which by it gets independent from all waiting for the convenience of extraneous artists, and which so often already has saved importation from Europe.

Questions 23, 24, and 25, are well answered, but it is known publicly that the general map was engraving when the questions were asked, and that two special maps for special purposes had been delivered for the use of public offices.

Questions 27 and 28. Commander Gedney mistakes his answer, as the French atlas in the office proves the contrary, and the works of the coast survey must not be governed by the bad precedent of charts made only for sale.

Question 30. The keeping together of the topographical and hydrographical parties is kept up as much as localities admit, at all events always sufficiently to advance the work; the hydrographer can never go, with any advantage, much ahead of the topography; nor is it proper that he should adventure himself to work without it, to any extent, as it duplicates the labor.

F. R. HASSLER.

WASHINGTON CITY, *January*, 1843.

MONDAY, May 2, 1842.

Present: Mr. Cushing, Mr. Aycrigg.

Examination of Lieutenant George Blake.

1. Question. Are you an officer of the navy, employed in the coast survey; and if so, in what capacity, and since what time, and on what part of the coast?

Answer. I am a lieutenant in the navy, and have had charge of a hydrographical party from 1835 to the present time; I have been in Long Island sound and Fisher's Island sound, and in Delaware river and bay.

2. Question. What vessel or vessels, and what number of officers and men, have you under your command?

Answer. My force has varied very much; I had last year the schooners Gallatin and Nautilus, with nine officers and forty-one men.

3. Question. Have you been engaged in the outer or the inner waters?

Answer. The inner altogether.

4. Question. What proportion of instruments have you had made or repaired at the office in Washington?

Answer. I have seldom had any sextants or glasses repaired there; but a large part of the drawing instruments have been made there, to the value or cost of say \$500 at any private establishment, that is, during the whole time I have been in the survey.

5. Question. Have any views of rocks, shoals, or other dangerous places, been taken from your vessels?

Answer. No; views have been taken of all the light-houses.

6. Question. Have you, in the examination of Delaware bay, discovered any great errors in the supposed location of any shoals?

Answer. Yes; very great.

7. Question. In what cases?

Answer. In that of Cross ledge, especially; but there is no proper chart of Delaware bay; the only one extant is a mere rude sketch. The error in the case of Cross ledge was four miles, I think.

8. Question. Is it not important that these errors should immediately be made known, and a correct chart of the bay published?

Answer. Yes, undoubtedly.

9. Question. Do you know of any reason for withholding from the public a knowledge of the soundings of Delaware bay, as far as verified by you?

Answer. I know of none.

10. Question. Can a topographical map, so constructed as to give in detail a full and self-explaining picture of the country, that, with the map before the eye, the military operations may be properly judged and guided in the cabinet, be obtained, in carrying on the coast survey, without adding greatly to the expense, and materially delaying the execution of the work?

Answer. No, it cannot.

Upon the examination of Lieutenant Blake.

Question 4. The account asking of the instrument shop occurs again;

these questions together have taken more time than it would have cost the committee to see its propriety by a full visit of it.

Questions 8 and 9. Lead no farther than all such, the under-water part of the work can, of course, not be presented to the public, without the land part to which it belongs, who would without it know where it lies.

By question 10, (the last,) the select committee appears to constitute itself into a council of war.

F. R. HASSLER.

WASHINGTON CITY, *January*, 1843.

MONDAY, *May* 30, 1842.

Present : Mr. Mallory, Mr. Aycrigg.

Mr. W. J. Stone's examination.

1. Question. Map marked exhibit C being shown, witness is asked if he recollects the map.

Answer. Yes.

2. Question. Who engraved the map?

Answer. I did.

3. Question. Is that an exact copy of the original sent to you from the House of Representatives?

Answer. It is.

4. Question. How long did it take you to engrave and print this map?

Answer. In from seven to ten days it was fully executed and delivered to the House.

5. Question. With what person connected with the coast survey did you communicate at the time you engraved this map?

Answer. Mr. Hassler. I called on him, and had a conversation on the subject.

6. Question. Exhibit B being shown and examined, he is asked if that in an impression from the same plate.

Answer. Yes.

7. Question. Will you please to examine exhibit B, and see if there is any difference between this and exhibit C?

Answer. The only difference that I can perceive is, that another scale has been put in the place of the one engraved by myself, which was copied from the original.

8. Question. In what manner was that alteration made?

Answer. By cutting out the engraved scale and inserting one with the pen. The engraved scale on exhibit C is 3 inches to the mile; while the scale inserted with the pen is $\frac{1}{10}$ th, being, in fact, 6 inches to the mile, instead of 3.

9. Question. Have you the original extract sent to you from the office of the coast survey?

Answer. I have.

10. Question. Are there engravers in the United States competent to execute, faithfully and correctly, any work like that required for the coast survey?

Answer. Yes; as well as it can be done in any part of the world.

11. Question. What is considered a liberal salary for a good workman?

Answer. About \$1,200 per annum.

12. Question. Is there any difficulty in getting good copper in the United States for engraving purposes?

Answer. No difficulty whatever.

13. Question. How long will it take to engrave the map of the harbor of New York, and what will it cost?

Answer. I cannot answer without examining the chart.

The chairman then gave Mr. Stone a note to Mr. Hassler, of the following tenor, as near as remembered, viz: requesting Mr. Hassler to permit Mr. Stone to examine the manuscript chart of the harbor of New York.

The committee then adjourned.

THURSDAY, June 2, 1842.

Present: Mr. Mallory, Mr. Cushing, Mr. Aycrigg.

William J. Stone in examination.

1. Question. What is your business and residence?

Answer. I reside in Washington, and I am an engraver.

2. Question. How long have you followed that business here?

Answer. From twenty-three to twenty-four years.

3. Question. Have you been accustomed to engrave maps and charts?

Answer. Yes; that has been my chief, and is, at present, my only business; I having abandoned other branches of engraving, to devote myself to that.

4. Question. Is there any difficulty in procuring competent map engravers in the United States?

Answer. None.

5. Question. Do you know of any special superiority of German engravers over those of the United States?

Answer. No; I consider the American workmen better, cleaner, and more rapid.

6. Question. Please to look at the map hereto annexed, and marked A. William J. Stone, and state whether it is the original map sent from the House to you, and from which you engraved the map of Newark bay, as mentioned in the first part of your testimony.

Answer. It is.

7. Question. What is the scale on that manuscript map?

Answer. Of three inches to the mile, as on the map I engraved.

8. Question. Annexed is a map of Cape Cod, (marked B, William J. Stone:) did you engrave that?

Answer. Yes.

9. Question. How long does it take, in your establishment, to engrave such a map?

Answer. About two months.

10. Question. What are the dimensions of that map?

Answer. Thirty inches by thirty-six inches.

11. Question. When were you summoned by the committee to attend and be examined?

Answer. I received Mr. Mallory's letter on Monday, the 30th May, and attended that morning.

12. Question. Was that the first intimation you received on the subject ?

Answer. Yes.

13. Question. Have you had previously any conversation with any member of the committee on the subject of the examination ?

Answer. Never, of any kind whatever.

14. Question. Had you any knowledge of the purpose for which you were summoned ?

Answer. No.

15. Question. Did you, as requested by the committee, call on Mr. Hassler, and present the note of the chairman ?

Answer. I did.

16. Question. What occurred ?

Answer. The interview was so disagreeable, that I would rather not describe it, unless it be insisted on by the committee.

The chairman therefore propounded to the committee the following question : Shall Mr. Stone be required to state what occurred in his interview with Mr. Hassler ? and it was determined in the affirmative—Mr. Mallory, Mr. Aycrigg, and Mr. Cushing, present, and voting.

The question being again propounded to Mr. Stone, he answered as follows :

I went to Mr. Hassler's office, and knocked at the door. A servant showed me into his room, and asked me to sit down, and in a minute or two Mr. Hassler came in. I then handed him Mr. Mallory's letter: Mr. H. read it, and immediately fell into a violent rage, and swore that I should not see the map, neither should the committee have it. After much rudeness and violent language, both towards the committee and me, Mr. Farley came in, and Mr. H. handed him the letter. After some further conversation, Lieutenant Page came in, and Mr. H. showed him the letter, and further conversation ensued. At length Mr. H. permitted me to examine the map, which I did ; and on my departure, he handed me a letter for the chairman of the committee, which I delivered to Mr. Aycrigg. This letter is annexed, and marked C, F. Mallory.

17. Question. How long would it take to engrave such a map, and what would it cost ?

Answer. It would require about a year, I think. There are eight plates, each of $22\frac{1}{2}$ by $32\frac{1}{2}$ inches, making 5,912 superficial inches, which, at 3 cents per inch, would be \$177 36, for the *copper* ; the engraving, the sum of \$4,132. This estimate is given for the execution of the work in the best and most accurate manner, understanding that the parallels of latitude and longitude, with their subdivisions, are marked in by an officer of the survey, and the engraving is to exactly correspond with the same, which must ensure an accurate chart. I have made a liberal estimate, to enable the engraver to enter minutely into detail, and to do justice to himself and to the Government.

Remarks upon Mr. Stone's examination.

Answer to question 2. Is not the fact ; Stone did not engrave it himself, another person did it, in his pay.

Answer to question 4. The time indicated for the work appears very doubtful, unless done coarsely.

Answer to question 5. Is entirely incorrect; Stone came with a map, (perhaps the one quoted,) wanting to show it to me, saying: it is not a fine work, but it will be a good solid work. I refused minding it, and directed him off with it; this was all the conversation, for I had then, as always, the same opinion of him.

Question 6, 7, 8, and 9. Are sufficiently refuted by Commander Gedney, and other facts.

Answer to question 10. The topographical drawing, as used in good style of maps in Europe, has never yet been done in this country. *I challenge positively* the exhibition of one. To make the coast survey maps in the same way as the sea charts, and the work shown under Stone's name, would be a positive disgrace to the work, and the state of the art and science in this country, thence it is not admissible for the work. Stone can only engrave cards, and such like, as I have a man in the weight and measure, works to mark the standards.

Answer to question 11. Mr. Stone is no judge of what is a liberal pay for good work, because, 1st, he never intends to pay work liberally; 2d, he is not able to distinguish between the qualification of the actual art of the topographical work.

Answer to question 12. Upon the getting copper, Mr. Stone's statement is not very close; the difficulty of getting copper ought rather to be referring to the *quality* and *und whence it comes originally from*. He knows as well as I: that he gets his plates from the importers of them, and that there are no other good, large plates in the country; he hides this truth.

Answer to question 13. Whether examined or not examined, Stone cannot give a fair estimate of the work of the map of New York, when he was shown it, he could only measure it with a foot rule, and said, "we do not mind these mountains," that is, in other words, acknowledging incapacity for the work.

Stone's 2d interrogatory.

Answer to question 4. To ask a man, so ignorant in his pretended art, as Stone is, an opinion about other country's artists, can of course *not produce* an answer worth any thing.

Questions 6 and 7 are old exploded repetitions.

Answers to 8 and 9 will need certificate; beside, the work is bad.

Question 10. The size of the map is the smaller determining element; the quantity of fine work upon it is the principal criterion. Stone *cannot even have it done*.

Questions and answers 11, 12, 13, 14, 15, are evidently an agreed upon farce between Q. and A.

Answer to question 16. It is positively FALSE that I ever swore he should not see the map, or *touched any thing about the committee*. I received and treated him *in words*, as he knew that he deserved it of me; but to the committee I wrote frankly and open what I found, and still find, wrong in the transaction. I told him at the first, *you are not able to put this map upon copper*; he acknowledged instantly "*I know that very well*." This, for him, unavoidable acknowledgement is the only fair part of this whole transaction of the attack upon me, which I, with full right, declared to ex-

ceed entirely the limits of propriety. The inimicality of Stone to me was well known to the members. I gave direction to show Stone into the upper room, where the map was, which he, in real undertaker's way, measured with a foot rule, in hope to have to order the coffin for it.

Answer to question 17. *Is completely incorrect* in every individual part. Stone is as little able to judge upon the case as to execute it; neither numbers nor statements are *true*.

F. R. HASSLER.

WASHINGTON CITY, *January, 1843.*

BUREAU OF TOPOGRAPHICAL ENGINEERS,

Washington, May 17, 1842.

SIR: I have the honor to acknowledge your direction to report upon certain queries from the select committee on the coast survey. Of the queries on the paper A, the 4th is the only one applicable to the War Department.

The following is the list of army officers who have been employed in this duty:

Major John J. Abert, corps topographical engineers, in 1816.

Major John J. Abert, corps topographical engineers, in 1817.

Major John J. Abert, corps topographical engineers, in 1818.

Lieutenant W. G. McNeill, of the artillery, in 1818.

Lieutenant J. A. Adams, of the artillery, in 1818.

Lieutenant J. R. Vinton, of the artillery, in 1818.

Captain W. H. Swift, corps topographical engineers, in 1832, 1833, 1836, 1837, 1838, 1839, 1840, 1841, and 1842.

Major Abert and Captain Swift were, while so employed, also the disbursing agents of the Treasury Department.

It is not in my power to state either the "army pay and emoluments" or any "additional pay" which these officers received while on this duty, as the accounts in the case do not pass through this office. The Second Auditor will be able to furnish the information in reference to army pay and emoluments, and the First Auditor that in reference to additional pay.

The queries of the paper B are the following:

1st. Whether a part of the topographical corps of the army can be detached for the purpose of the coast survey.

Answer. This can undoubtedly be done; probably from four to six could be detached during the present season; and more, as the various surveys upon which the corps is now engaged are completed, if other duties are not in the mean time assigned to it.

2d. Whether the expense of the service of the coast survey will probably be reduced by detaching a part of the topographical corps.

Answer. There would certainly be a reduction, to the extent of the civil agents, and the amounts of compensations paid to them, who would have their places supplied by officers of the corps.

3d. Whether the expenses of the survey of the coast will probably be reduced by employing other persons than officers of the army and navy to perform the duties they are now employed to perform in the coast survey.

Answer. This is a question of compensations, supposing qualifications to

be equal in each. As officers of the army and navy draw their pay from the army and navy appropriations, it is clear, that, if some of these are employed in the coast survey, the appropriation for that survey will be relieved to the amount of their pay; and equally clear, that, if these officers are not so employed, but others in their places, these others must derive their compensations from the appropriation for the coast survey, and the appropriation be taxed to that extent.

Very respectfully, sir, your obedient servant,

J. J. ABERT,

Col. Corps Topographical Engineers.

HON. J. C. SPENCER,
Secretary of War.

Remarks upon the letter of Colonel Abert.

The enumeration of the military officers is incomplete, I am obliged by it to enter into a historical statement, why the relation between the coast survey and the army is such as it is.

Two officers are omitted in the statement—*Lieut. A. D. Mackay* and *Lieut. J. V. Bomford*. The latter was present only in 1833. But, in relation to Mr. Mackay, I must state the fact which broke off the employment of military officers, except Captain Swift.

Lieut. Mackay had been, in 1832, with me in the first reconnoitering for the coast survey in Connecticut. He liked it, and I wished very much to retain him; but, during the winter, he was ordered off, to quell the insurrection of the laborers upon the Chesapeake and Ohio canal. When this duty had an end, I applied again for him. Speaking to that effect with the Secretary of War, I was directed to Major General McComb. When I entered his room with him, he pretty loudly said: "No sooner have I ordered an officer somewhere, that there comes a reclamation for another disposition. Can you not get other people to your work?" I answered: "Yes, sir; I can get plenty English, French, Poles, Swiss, &c." To this, he answered immediately: "Then take your d——d Poles, Swiss, Germans, &c., and let my officers alone." At this interview General Wool was present, who, it seemed to me, partook of my propensity to laugh upon the scene. Then I related the circumstance to Colonel Abert, who was rather displeased with the result of my application, as were also several other gentlemen in office.

Lieut. Mackay was ordered to Florida. I attempted again a written application for him, alleging, that any officer without the qualifications which Lieut. Mackay had, could do equally well the service in Florida; but he had left within the proper time of his order, and, on his voyage to Florida, *was drowned*, by the misfortune of the steamboat.

That, upon such a reception from the Commander General of the army, it would have been highly improper: to make any further application for officers, is *palpable*.

The work could not stop for that; and I got very soon opportunity to get able assistants from the civil rank, which, as my contract shows, were, *with most undoubted propriety*; considered as equally appropriated to be appointed to the work; so that very soon all the places in the coast survey were well and ably filled with men, engaged satisfactorily in it till to this day.

More persons than are now employed in the coast survey, it would be *improper to appoint* now, in any way whatever. To change those now employed, would be a great loss to the work in which they are now initiated, and which goes on very well and quietly with them; while introducing any new ones *now* would of course break up the unity in the work, delay and deteriorate it very materially, as it cannot be expected otherwise with new men. The *flagrant injustice* which would be done by such a mutation, would *unavoidably discredit* the employment in this work, as it would show a complete *disregard* to services rendered, to justice and merit in this work; and, in the consequent *disgust*, the officers now engaged would share as much as any other man.

This moment is peculiarly inadequate to make any change in the personal employed, or in any other part. *Results are asked* impertunely, *overhastily*; and the men, who could alone help in their acceleration, to be dismissed for new ones, implies the *most direct contradiction*.

It must be observed, that the officers of the Topographical Bureau might be ever so well informed, in the different branches in which they served, still the coast survey work is very different from it. Instead of a work of experienced men, it would again be made a work of beginners. That this would be contrary to all economy, is too evident.

I may be allowed to observe, that the pay of officers and civilians in this case would be *about equal*, and, *to the nation, it is of course equal, whether the money comes out of one appropriation, or out of another*. The result obtained by it is the only important part; and the advantage in this respect lies evidently in the continuance of all the arrangements just as they now are, in the present momentaneous state of the work especially.

Therefore, there is not one consideration in favor of any change at this time, *while delay and danger, even of destruction, is evident in any alteration whatever*.

F. R. HASSLER.

WASHINGTON CITY, January, 1843.