Basso 5 Sheet No. 1

SAILING DIRECTIONS.

To enter the Bay from the Eastward through the main ship channel, *The Light Boat near 5 fathom Bank bearing North, distant ½ mile, steer for Henlopen Light House W. by S., the soundings on the line varying from 7 to 9 fathoms. When they deepen to 10 fathoms or over, Henlopen Light House 3½ miles distant, steer N.W. to bring Henlopen Light House and the Beacon on the Cape in range, being careful, particularly in light winds, and on the flood, which sets to the Wd., not to cross much to the West of the range,* the Shears being near. *Steer up the Bay on this range, which passes to the Eastward of the Buoy of the Brown, soundings shoaling gradually from 15 to 8 fathoms, until the Light House on Brandywine Shoal, bears N.N.W. when steer for it, passing ¼ mile to the westward.*

Bound into Breakwater Harbor, *from the Southward. Pass the Hen and Chickens at a safe distance (2 miles from the shore), then haul in to the shore, keeping as close to Cape Henlopen, which is bold, as convenient.– From the Eastward. Bring Henlopen Light House to bear W. by S. and stand in. Enter the harbor at either end or between the Breakwater and Ice Breaker, according to the wind and tide, and to the berth selected. Do not anchor in the Gap; the best anchorage is close to the main work, Breakwater Light House bearing N. by W. The holding ground is excellent in every part of the harbor.*

Chains and anchors can be procured on the Breakwater, and ship's stores generally at the town of Lewes.

To enter the Bay by the Coaster's or Cape May Channel. *Run along the land in about 5 fathoms, or 1½ miles from the shore, passing outside of Eph's Shoal; when Congress Hall bears North, bring the Buoy off Cape May (No. 1) ahead, and steer for it (W. by N ¼ N.), leaving it close on starboard hand in passing;* If wishing to pass through Ricord's Channel, *from Buoy No. 1 steer N.W. ¾ W. for Buoy No. 4 (on the Southern Spit of Crow Shoal) leaving it on starboard hand at a short distance; then steer N.N.W. Westerly for Buoy No. 5 (in the middle of Ricord's Channel), which pass on either hand, and haul up N.W. ¼ W. Westerly for Buoy No. 6 (in Western entrance of Ricord's Channel), which pass on either hand, and steer W. ¼ N. entering the main ship channel between the Buoy of the Brown and the Light House on Brandywine Shoal.*

To pass through the Through Channel to Breakwater. *When abreast of Buoy No. 1, stand W. ¾ N. towards Buoy No. 3 (on S.E. Spit of Mummy Shoal) keeping it open on the port bow a point, and gradually hauling up for it; when up with No. 3 leave it on the starboard hand, and steer S.W. by S. for No. 2 (on Southern edge of the Round or E.N.E. Shoal), which leave close on board on starboard hand and continue on S.W. by S. for Breakwater.*

If intending to cross the Flats, *after passing Buoy No. 1 on the starboard hand, haul along the land (North) until abreast of Town Bank, when steer N.W. by W. ¼ W. on the Flood, and N.W. ¼ W. on the Ebb, which crosses in 9 feet and brings out near Light Boat No. 2 in main ship channel.*

Dangers outside of the Capes.

Five Fathom Bank *lies E. by S. 15¾ miles from Cape May Light House; least water upon shoal 13 feet.*

Mc. Cries' Shoal *lies S.E. ¼ S. 7 miles from Cape May Light House, least water upon shoal 17 feet.*

Eph's Shoal *lies E.S.E. ¼ E. 3 miles from Cape May Light House, S.E. ¼ S. 1½ miles from Congress Hall, least water upon shoal 5 feet.*

Over Falls. *Southern edge N.E. ¼ E. 6¼ miles from Cape Henlopen Light House; S. by W. ¼ W. 5½ miles from Cape May Light House; broken ground to within a mile of Cape May, and 4½ miles of Henlopen Light House, with shoals of 4 and 6 feet water scattered over it; in many places, breakers and strong tide rips.*

Hen and Chickens Shoal *lies in a S.E. direction from Cape Henlopen Light House, is 3 miles in length North & South, least water upon shoal 5 feet. Southern point lies S.E. ¾ S.; Northern point N.N.E. from Henlopen Light H.*

Dangers inside of the Capes.

Round or E.N.E. Shoal *lies W. by S. ¼ S. 2¼ miles from Cape May Light House, least water upon shoal 3 feet.*

Crow Shoal. *South point lies W. ¼ N. 1½ miles from Cape May Light House and extends 4 miles North, near-[illegible] set to the shore [illegible] feet.*

The Shears. *Eastern Pt. lies N. by W. ¼ W. 3 miles from Henlopen Light House, least water upon shoal 6 feet.*

Brown Shoal. *Southern edge lies W. by N. 7¼ miles from Cape May Light House, least water upon shoal 8 feet.*

Brandywine Shoal. *Southern edge lies W.N.W. ¾ W. 7 miles from Cape May Lt. H., least water upon shoal 1 ft.*

Buoys.

No.	Where situated	Shape	Color of buoys
1	Entrance to Coaster's Channel	Spar	Red
2	Through Channel to Breakwater	do.	* do.
3	Mummy's Shoal Spit	do.	Cross stripes red & black
4	Crow Shoal Spit	do.	‡ do.
5	Ricord's Channel	do.	Perpendicular stripes white & black
6	do.	do.	do.
7	Tail of Shears	Can	† Black
8	Buoy of the Brown		Black
9	North Point Brandywine Shoal		Red

* *Cross arm of wood with upper part of plate 1 foot wide & 1½ inches long, letters B.W.*
† *Copper vane 12 inches wide, letters T.S.*
‡ *One fluke of an anchor fast to head of buoy.*
Vessels entering keep to Larboard of Red buoys to Starboard of black & either side of Cross Striped Red & Black. Black & White perpendicular stripes mark a Channel, buoy in best water.

The Courses and Bearings are Magnetic and the Distances in Nautical miles. The Soundings are expressed in feet to 18 feet, or within the dotted surfaces, beyond them in fathoms, and show the depths at mean low water of Spring tides, the plane of reference. The dotted surfaces beyond low water mark represent the bottom within the respective depths of 6, 12 and 18 feet. The characteristic soundings only are given on the map; they are selected from numerous soundings on the original maps so as to represent exactly the depth of water and shape of the bottom; the depth between any two soundings changes uniformly from one to the other.

Light Houses.

Name and Locality	Latitude	Longitude West from Greenwich Observatory: Degrees &c.	Longitude: Time	Fixed or Revolving	Time of Revolution	Height above level of Sea	Distance visible in Naut. miles
Cape May Light House (of 1847)	38° 55' 48"	74° 57' 57"	4h 59m 51s.8	Revolving	0m 30s	152 Ft.	18.5
Cape Henlopen Light House	38° 46' 36"	75° 05' 25"	5h 00m 21s.7	Fixed		180 "	19.8
Beacon Lt. on Cape Henlopen	38° 47' 22"	75° 05' 31"	5h 00m 22s	Fixed		33 "	10.9
Beacon Light on Breakwater (150 ft. from West end of work)	38° 47' 51"	75° 06' 50"	5h 00m 27s.3	Fixed varied by flashes	0m 45s	47 "	12.2
Brandywine Shoal Light Ho.	38° 59' 05"	75° 07' 10"	5h 00m 28s.7	Fixed		46 "	12.1

Light Boat.

Light Boat near Five Fathom Bank *bears E.S.E. ¼ E. from Cape May Light Ho. distant 16 miles, bears S.E. ½ S. from the shoal part of the Bank, distant 2½ miles, has 2 Lights on separate masts (after one the higher), elevation from 40 to 45 feet, visible from 7 to 10 miles.*

CURRENTS.

Table of the direction and force of Currents off Delaware Bay, from observations in 1847, by Lieut. Com. J.R. Goldsborough U.S.N. A.D. Bache Superintendent of U.S. Coast Survey.

No.	Names of Current Stations	1st. Quarter Direction	1st. Quarter Rate	2d. Quarter Direction	2d. Quarter Rate	3d. Quarter Direction	3d. Quarter Rate	4th. Quarter Direction	4th. Quarter Rate	Flood or Ebb
1	Abreast of Brandywine Shoal, (1 mile W. of centre)	N. 30° 30' W. S. 60° 00' E.	0.70 0.88	N. 24° 30' W. S. 38° 00' E.	1.25 1.45	N. 24° 30' W. S. 32° 15' E.	1.05 1.25	North S. 16° 00' E.	0.47 0.82	Flood Ebb
2	1 mile East of Buoy of the Brown	N. 18° 00' W. S. 54° 00' E.	0.75 0.47	N. 18° 00' W. S. 24° 00' E.	1.15 1.08	N. 13° 00' W. S. 18° 00' E.	1.50 1.50	N. 10° 15' E. S. 04° 30' W.	0.75 0.80	Flood Ebb
3	In the Main Ship Channel	N. 87° 15' W. S. 18° 00' W.	0.67 1.02	N. 69° 45' W. S. 24° 00' E.	1.75 1.95	N. 73° 00' W. S. 41° 15' E.	1.90 2.00	N. 81° 00' W. S. 09° 00' W.	1.02 0.90	Flood Ebb
4	Outside of Cape Henlopen	N. 44° 00' W. S. 45° 00' E.	0.60 0.50	N. 53° 15' W. S. 02° 30' W.	1.00 0.94	N. 60° 30' W. S. 30° 00' E.	1.05 1.00	N. 45° 00' W. S. 30° 00' E.	0.75 0.60	Flood Ebb
5	3½ miles S.E. of Spit of Hen & Chickens Shoal	N. 37° 30' W. S. 69° 30' W.	0.50 0.60	N. 15° 00' W. S. 41° 30' W.	1.05 1.00	N. 18° 00' W. S. 09° 30' E.	1.00 1.20	N. 21° 00' W. S. 18° 00' E.	0.60 0.55	Flood Ebb
6	3½ miles South of Mc. Cries' Shoal	N. 32° 00' W. S. 78° 00' E.	0.50 0.50	N. 85° 15' W. S. 77° 00' E.	0.90 1.00	N. 85° 15' W. S. 82° 30' E.	0.90 0.75	N. 87° 30' W. N. 58° 30' E.	0.25 0.60	Flood Ebb
7	3 miles North of Mc. Cries' Shoal	S. 86° 15' W. East	0.60 0.50	S. 88° 30' W. N. 85° 15' E.	0.80 1.00	N. 85° 30' W. N. 85° 30' E.	0.75 0.85	N. 62° 30' W. S. 88° 30' E.	0.25 0.40	Flood Ebb
8	Southern Channel through the Over Falls	N. 59° 30' W. S. 65° 00' E.	1.30 0.84	N. 65° 15' W. S. 85° 15' E.	1.50 1.85	N. 64° 45' W. S. 85° 15' E.	1.00 1.60	N. 64° 45' W. N. 77° 45' E.	0.70 0.52	Flood Ebb
9	Southern Channel through the Over Falls	N. 82° 30' W. S. 17° 00' E.	1.30 1.10	N. 58° 30' W. S. 34° 00' E.	2.31 1.65	N. 58° 30' W. S. 25° 30' E.	2.05 1.80	N. 64° 00' W. S. 25° 30' E.	1.05 0.75	Flood Ebb
10	Northern Channel through the Over Falls	N. 82° 15' W. S. 57° 00' E.	1.30 1.30	N. 76° 30' W. S. 62° 00' E.	2.03 2.01	N. 76° 30' W. S. 62° 00' E.	1.80 1.65	N. 80° 15' W. S. 62° 00' E.	0.80 0.70	Flood Ebb
11	Northern Channel through the Over Falls	N. 02° 30' W. S. 61° 00' E.	1.70 1.45	N. 35° 00' W. S. 58° 00' E.	2.82 2.85	N. 41° 00' W. S. 56° 30' E.	2.86 2.25	N. 38° 30' W. S. 63° 00' E.	1.70 1.05	Flood Ebb
12	Northern Channel through the Over Falls	N. 42° 00' W. S. 23° 00' E.	1.07 1.10	N. 44° 00' W. S. 31° 30' E.	1.50 1.65	N. 44° 30' W. S. 33° 30' E.	1.22 1.35	N. 51° 45' W. S. 31° 00' E.	0.70 0.82	Flood Ebb
13	In the Coaster's Channel around Cape May	N. 82° 60' W. S. 74° 15' E.	0.43 0.90	N. 83° 45' W. S. 79° 00' E.	1.75 1.90	N. 83° 45' W. S. 80° 15' E.	1.90 1.70	N. 89° 42' W. S. 79° 00' E.	1.15 0.63	Flood Ebb
14	In the Channel over the Ridges of Cape May	N. 63° 30' W. S. 23° 45' E.	1.02 0.93	N. 33° 30' W. S. 18° 00' E.	1.85 1.75	N. 33° 00' W. S. 06° 45' E.	1.81 1.35	N. 82° 15' W. S. 64° 15' E.	0.85 0.75	Flood Ebb
15	In the Channel over the Ridges of Cape May	N. 06° 30' W. S. 26° 45' E.	1.00 1.00	N. 16° 00' E. S. 21° 45' E.	1.25 1.21	N. 10° 30' E. South	1.05 1.30	N. 37° 00' E. S. 33° 45' W.	0.57 1.15	Flood Ebb
16	In Cape May Roads	N. 51° 30' E. S. 05° 30' W.	1.05 0.78	N. 51° 30' E. S. 05° 30' W.	1.40 1.95	N. 46° 00' E. S. 05° 00' W.	0.95 1.17	N. 33° 00' E. S. 11° 00' W.	0.50 0.70	Flood Ebb
17	Entrance to New England Channel	N. 23° 30' W. S. 13° 45' E.	0.75 1.00	N. 06° 30' E. S. 02° 00' W.	1.00 1.72	N. 06° 30' E. S. 02° 00' W.	1.00 1.45	N. 06° 30' E. S. 02° 00' W.	1.00 0.80	Flood Ebb
18	1½ miles West of Buoy of the Brown	N. 36° 45' W. S. 49° 00' E.	1.00 0.95	N. 36° 45' W. S. 13° 00' E.	1.25 1.00	N. 33° 45' W. S. 08° 30' E.	1.10 1.35	N. 20° 00' W. S. 24° 00' E.	0.60 0.95	Flood Ebb
19	Near the Tail of the Shears	N. 83° 45' W. S. 64° 00' E.	0.40 0.65	N. 59° 15' W. S. 52° 15' E.	1.15 0.91	N. 49° 15' W. S. 48° 30' E.	0.80 0.70	N. 49° 15' W. S. 45° 30' E.	0.52 0.25	Flood Ebb

The observations were made as far as practicable when the influence of the wind was small. The Directions are true. The Rates are in Nautical miles per hour, and are shown on the Chart by the small figures on the ——→ of the current marks.

Sailing Directions by Lieut. Com. R. Bache U.S. Navy.

The Shoal off Cape May Light H. on which Buoy No. 1 is placed and part of Cape May Roads are from a resurvey in 1847, by Lieut. Com. R. Bache U.S. Navy.

TIDES.

	Delaware Breakwater (From 456 tides in 1840 & 41)	Cold Spring Inlet (From 742 tides in 1843 & 44)	Cape May Landing (From 200 tides in 1847)
Corrected Establishment of	VIIIh.	VIIh. XXXIVm.	VIIIh. XIXm.
Rise of Highest Tide *above the plane of reference*	6ft. 3	7ft. 6	6ft. 8
Fall of Lowest Tide *below the plane of reference*	1ft. 0	1ft. 4	1ft. 4
Height of Mean High Water *above* do.	3ft. 8	5ft. 0	5ft. 0
Height of Mean Low Water *above* do.	0ft. 3	0ft. 5	0ft. 1
Mean Rise and Fall of Tides	3ft. 5	4ft. 5	4ft. 9
Mean Rise and Fall of Spring Tides	4ft. 5	5ft. 1	6ft. 0
Mean Rise and Fall of Neap Tides	3ft. 0	3ft. 9	4ft. 3
Mean Duration of Rise *(from the middle of one stand*	6h. 15m.	6h. 11m.	6h. 12m.
Mean Duration of Fall *to the middle of the next)*	6h. 06m.	6h. 24m.	6h. 24m.
Mean Duration of Stand	0h. 26m.	0h. 19m.	0h. 20m.

Variations of the Magnetic Needle

At Cape May Light House *in June 1846, observed by John Locke LL.D.* 3° 03'. 3 West.
At Cape Henlopen Light House *in Oct. and Nov. 1843, observed by Lt. S.P. Lee U.S. Navy.* 2° 26'. 0 West.
At Lewes Landing *in July 1846, observed by John Locke LL.D.* 2° 47'. 7 West.

Abbreviations used in the bottoms of the Maps of Delaware Bay & River.

S. for Sand	bu. for blue
M. for Mud	gy. for grey
P. for Pebbles	yl. for yellow
Sh. for Shells	br. for brown
Sp. for Specks	dk. for dark
G. for Gravel	rd. for red
wh. for white	lt. for light
bk. for black	brk. for broken

Statute Miles

Scale of Yards

Nautical Miles

Cape May Light H. Congress Hall

No. 1. View of approach to Delaware Bay from the N.E. in 6 fathoms, Cape May Light bearing N. 49° W.

Cape May Light H. Cape Town

No. 2 View of approach to Delaware Bay from the E. in 11 fathoms, Cape May Light bearing N. 1½ E., Cape Henlopen Light W. ¼ S.

Cape Henlopen Light H. Beacon & Breakwater in range

No. 3. View of approach to Cape Henlopen from the S.E. in 14 fathoms, with the Light bearing W. by N. ¼ N. and the Beacon and Breakwater in range

Final reduction for Engraving of Topography by W.M.C. Fairfax Assist. & of Hydrography by Lt. J.B. Dale U.S.N.

Upper sheet electrotyped by S. Siebert & G. Mathiot U.S.C.S.
Middle do. do. by S. Siebert do.
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Engraved by F. Dankworth, assisted by O.A. Lawson. Views Engraved by O.A. Lawson. Lettering by J. Knight & W. Smith.

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