

A Look Back at NOAA Corps History

Captain Albert E. Theberge
NOAA Corps (Ret.)
NOAA Central Library





Father of the Commissioned Corps

Ernest Lester Jones,
Director of the Coast and
Geodetic Survey 1915-
1929, and daughter at
patriotic event. This
picture was undated but
Jones can be imagined to
have dressed in this
manner prior to the U.S.
entry into WW I.

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Serial No. 37

DEPARTMENT OF COMMERCE

MILITARY AND NAVAL SERVICE

OF THE

UNITED STATES COAST SURVEY

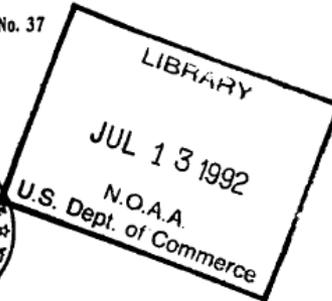
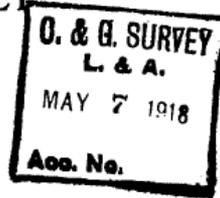
1861-1865

COMPILED FROM OFFICIAL RECORDS
AND PUBLISHED BY THE
U. S. COAST AND GEODETIC SURVEY
E. LESTER JONES, Superintendent

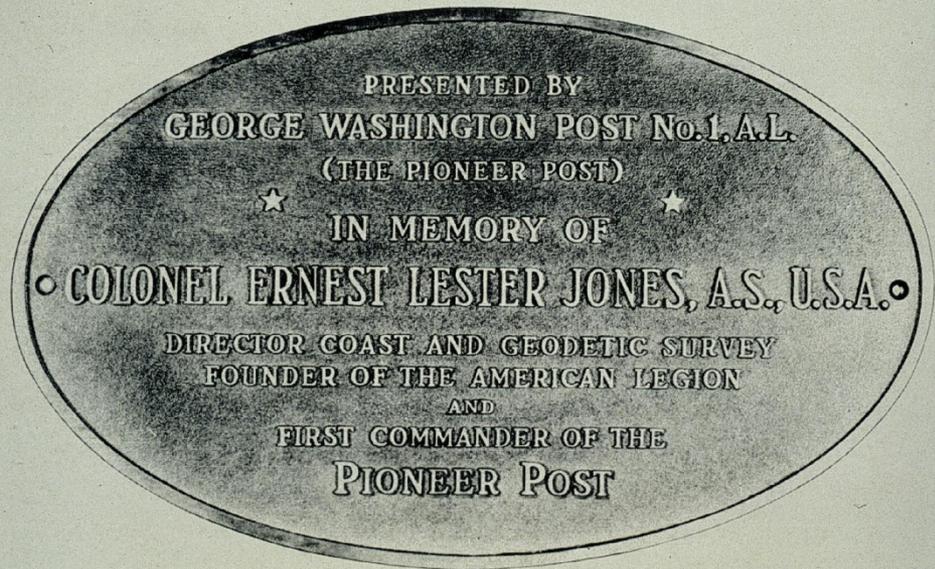
SPECIAL PUBLICATION No. 37



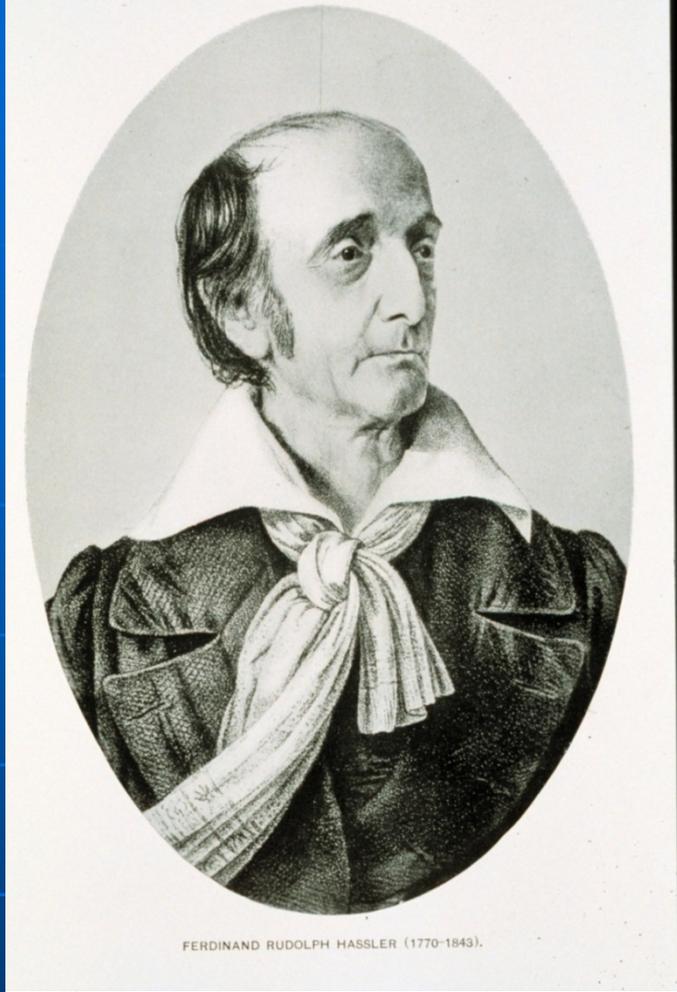
WASHINGTON
GOVERNMENT PRINTING OFFICE
1918



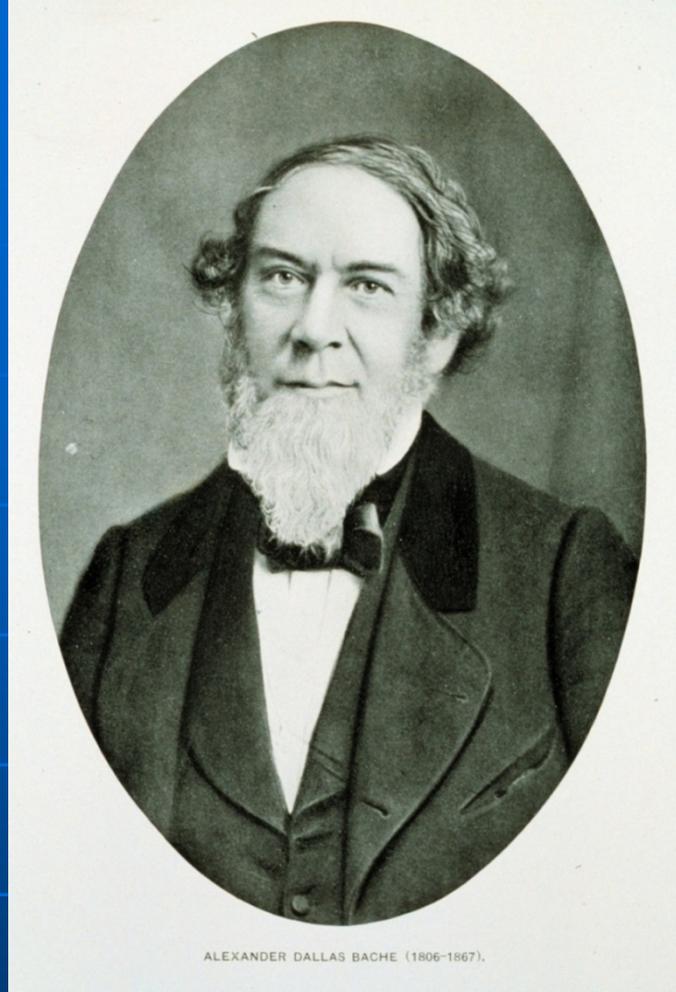
"There is no question of the need of its [Coast Survey] work in safeguarding life and property at all times, but the fact that it is in a constant state of preparedness and available for instant efficient service in defense of the country is not so apparent." Jones directed that this history be produced. Although no record of his thinking exists, it is probable that this was prepared in order to convince Congress and the President of the necessity of converting Coast and Geodetic Survey civilian field assistants to commissioned status in the event of war. This happened on May 22, 1917, as Section 16, a rider to a manpower bill following the declaration of war on Germany.



Ernest Lester Jones – Director of the Coast and Geodetic Survey. Put his money where his mouth was. Took leave of absence and served in Europe. Developed photogrammetric techniques which he brought back to C&GS. A founder of the American Legion. Died as result of lingering effects of WWI gassing.



FERDINAND RUDOLPH HASSLER (1770-1843).



ALEXANDER DALLAS BACHE (1806-1867).

Ferdinand Hassler (1770-1843) founded Coast Survey and imbued it with the precepts of accuracy, precision and scientific integrity. Bache, a great-grandson of Benjamin Franklin, was a graduate of West Point with strong Union sympathies and directed the Coast Survey to assist the Union efforts through topographic and hydrographic mapping and charting, production of information relevant to tactical operations, and development of Union "information" products such as "The Slavery Map."



Hassler's Foundation; Bache's House

- Prior to the Civil War, the Coast Survey was the giant of American physical science
- An organization of geodesists, topographers, hydrographers, cartographers, engravers, artists, geophysicists, oceanographers, and mathematicians
- The first integrated science agency in the Federal Government

Civil War Mapping by the United States Coast Survey began before the War



The Southern coastline and many of its major cities were charted in the years before the Civil War oftentimes leaving Union commanders with better information regarding the Southern coastal region than their Confederate counterparts.

No. 158
See V
1849

to go on scale of 20000



U.S.C.S. Sect. V.
SKETCH
of the
Sec. Δⁿ
CHARLESTON
HARBOR.
by Chas. Boutelle, apt.

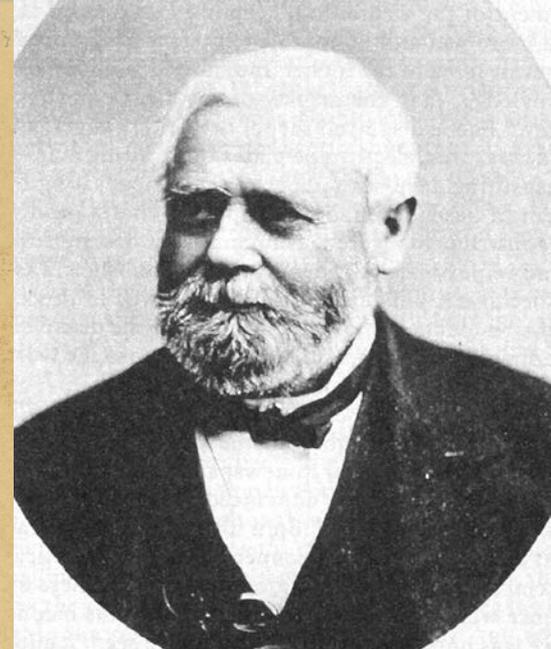
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National Ocean Survey
PERMANENT FILE
RETURN TO
PHYSICAL SCIENCE SERVICES BRANCH

Sec 5 1849

Acc. No. 154

866
1849



Charles Boutelle
—
Chief Hydrographer of South Atlantic Blockading Squadron and confidant of Admirals Du Pont and Dahlgren

PRELIMINARY CHART OF
CHARLESTON HARBOR
AND ITS APPROACHES

From a Trigonometrical Survey
under the direction of A.D. BACHE, Superintendent of the
SURVEY OF THE COAST OF THE UNITED STATES

Triangulation by C. O. BOUTELLE, Assistant

Topography by S. A. GILBERT, Sub-Asst.

Hydrography by the Party

under the command of Lieutenant J. N. MAFFITT, U. S. N. Assistant

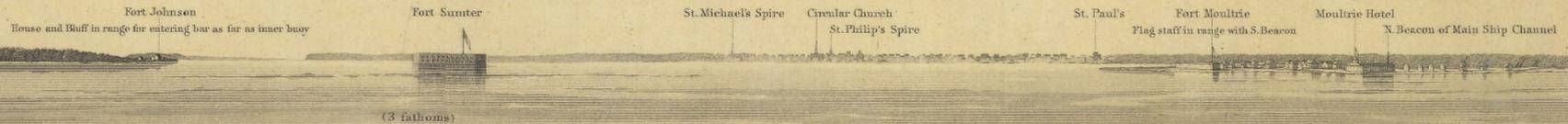
Published in 1856

Scale 30,000



Price 60 cents

Verified
M. L. Smith, Capt. Topl. Engrs.
Asst. in charge of Office.



(3 fathoms)

View off North Channel. Fort Sumter 3 1/4 miles distant, bearing W. 2 N. (by compass)

City of Charleston

Sullivan's I.

Title block of Charleston Harbor chart, published in 1856. Inset below is the view of Charleston Harbor entrance as seen from sea. Many Union Naval vessels would become familiar with this view before the end of the war.

SCOTT'S GREAT SNAKE.

Passed according to act of Congress in the year 1861 by J. B. Elliott of Connecticut in the Clerk's Office of the District Court of the Southern District of Ohio.

Contemporary cartoon map of General Winfield Scott's strategy to encircle the South with a blockade and strangle it to death.



The Strategy- Blockade the South and cut off its lifelines

Existing Coast Survey information was instrumental in developing this strategy while contemporary surveys by Coast Survey topographers and hydrographers helped implement it during the Civil War.

Coast Survey helped formulate Blockade Strategy. Alexander Dallas Bache sat on the Blockade Strategy Board with Captain Samuel Du Pont, General John G. Barnard, with Bache favorite Charles Henry Davis as secretary.

Coast Survey information was disseminated to Union blockading forces in "Notes on the Coast...." which included charts of Confederate coastline and harbors, tide and current predictions, sailing directions and other information allowing execution of the blockade.

2036.)

8
Notes on the Coast of the
United States

by A. D. Bache, Sup't: U. S. C. Survey.



Section V. Coast of South Carolina.

(With 8 Maps)

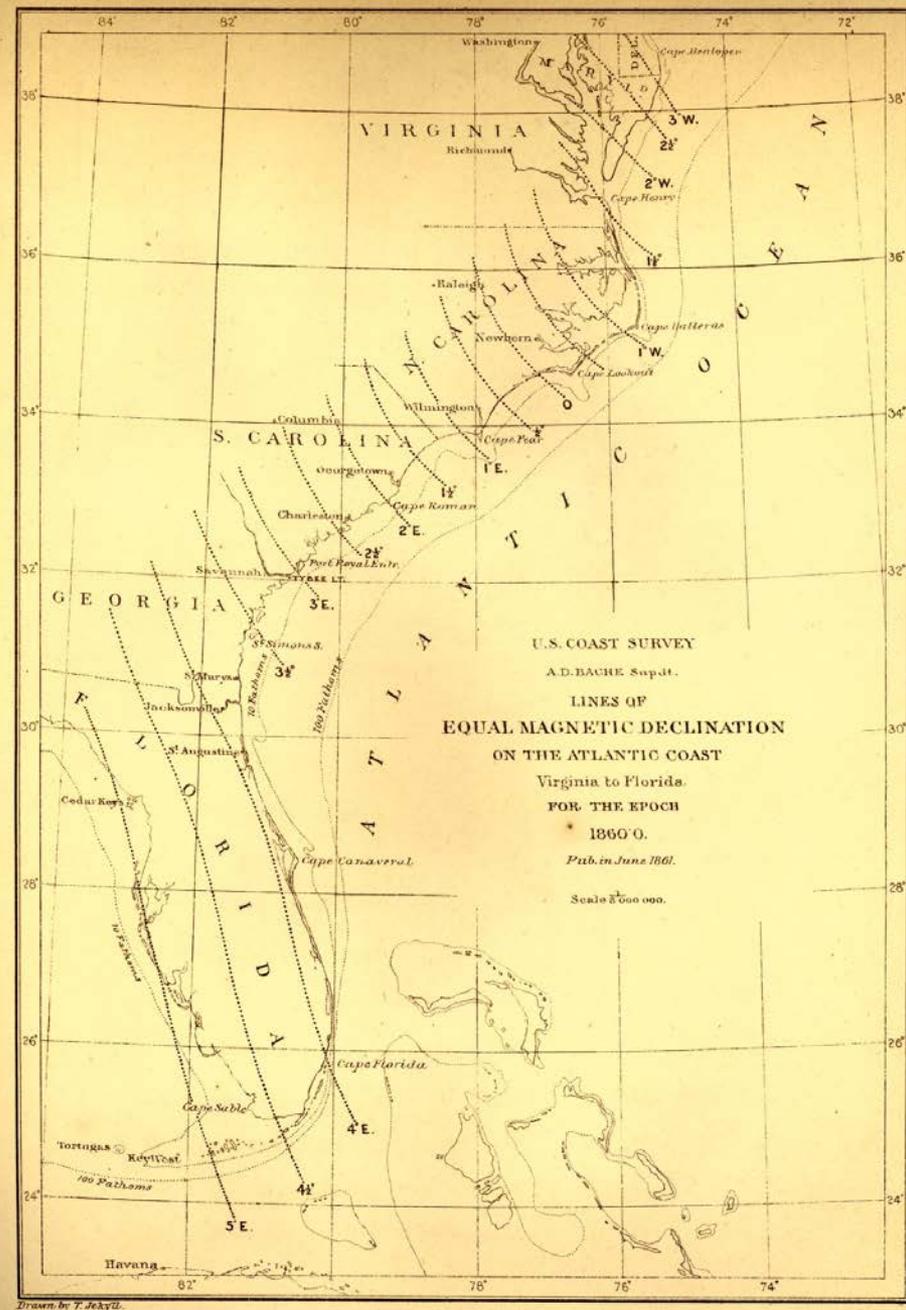
June. 1861.

Rare Book
VK
982
.56
B3
1861

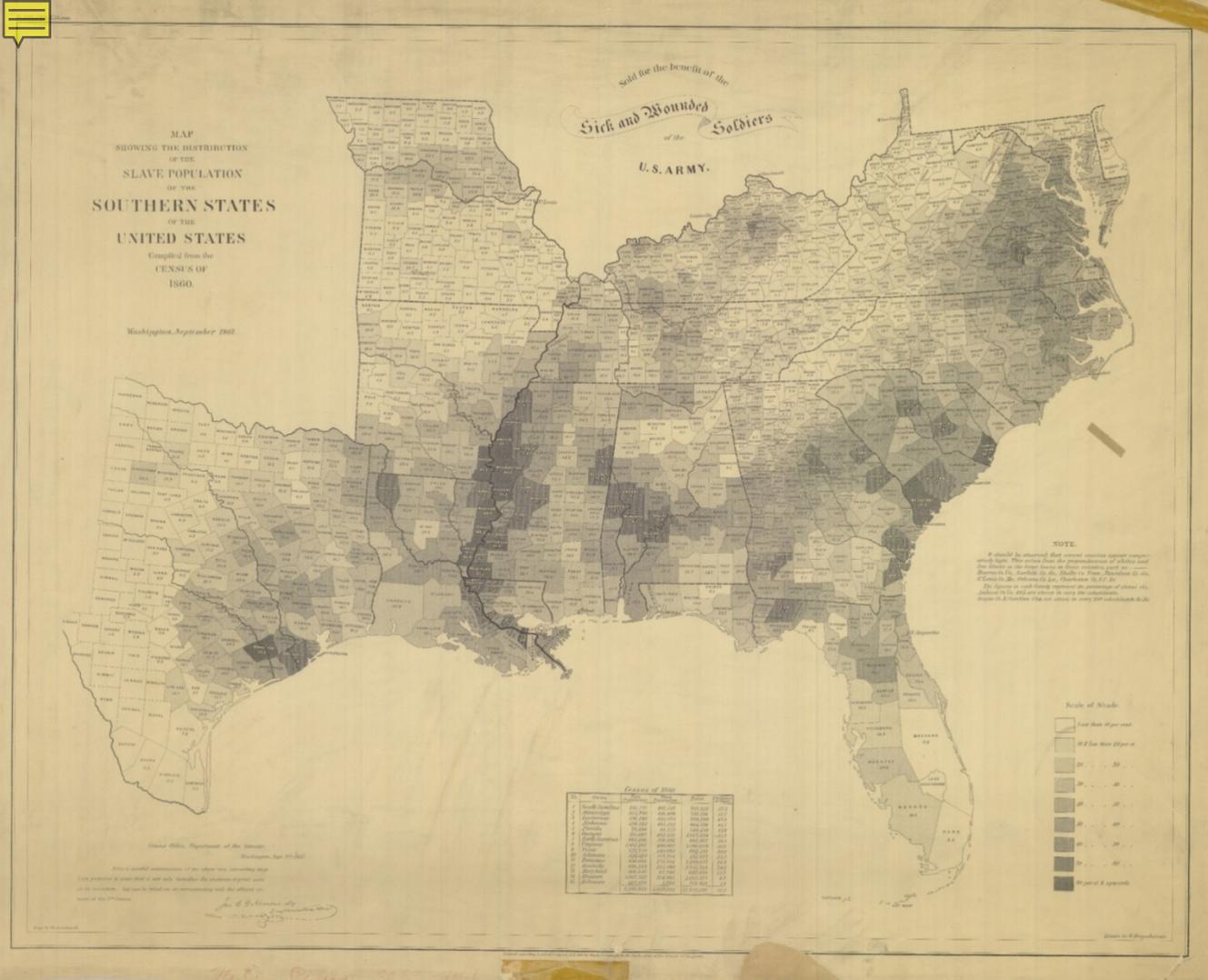
Note. This Memoir was prepared by C. O. Boutelle Esq. Assistant U. S. C. Survey, and revised by Prof. A. D. Bache, Sup't, assisted by Capt: C. P. Patterson, Hydrog. Inspector, and Prof. W. P. Trowbridge, Assist: U. S. C. Survey

The Coast Survey was the first Federal geophysical agency.

Magnetic Declination chart for Epoch 1860.0 included in "Notes on the Coast...." Later expanded into Gravity and Seismological observations and studies. These maps were included in "Notes on the Coast of the United States" and used to make compass corrections. The Coast Survey also studied magnetic deviation, the effect of iron hulls on magnetic compasses.



Drawn by T. Sekyū.



This map is known as "The Slavery Map", a powerful propaganda tool of the Union. It was produced by Edward Hergesheimer of the Coast Survey and sold for the "benefit of sick and wounded soldiers of the U.S. Army", a touch probably added by Alexander Dallas Bache, a Vice-President of the U.S. Sanitary Commission, a forerunner of the Red Cross.

Lincoln is reported to have kept this map by his side for months prior to the Emancipation Proclamation and also to have formulated strategy based on density of slave population.



Painting of signing of the Emancipation Proclamation by Francis Bicknell Carpenter. Note the two maps on the right, both produced by the Coast Survey – the bottom known as the “Slavery Map” and the other of Virginia, with range circles around both Richmond and Washington – displayed in Senate wing of Capitol Building.

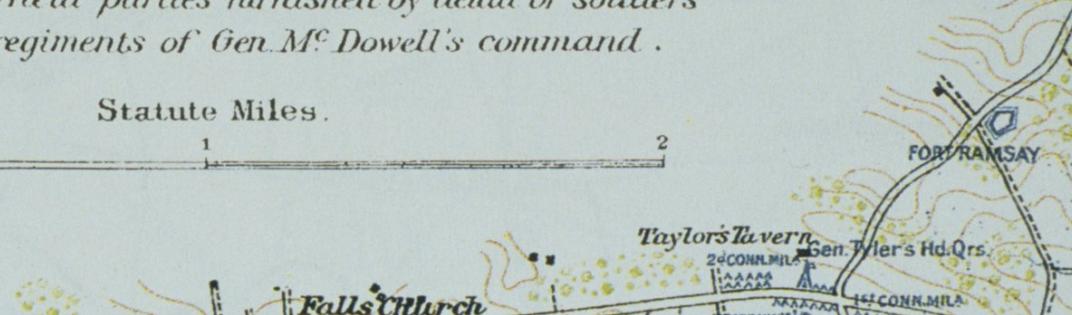
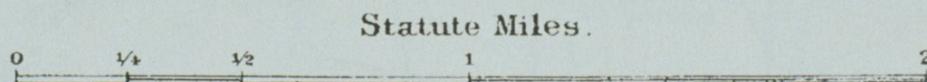
U. S. COAST SURVEY
A. D. BACHE SUPDT
MAP
OF THE
GROUND OF OCCUPATION AND DEFENSE
OF THE
DIVISION OF THE U. S. ARMY IN VIRGINIA
in Command of
BRIG. GEN. IRVIN M^c DOWELL.

Topographical Survey by the Party in charge of
H. L. WHITING, Asst. U. S. C. S.

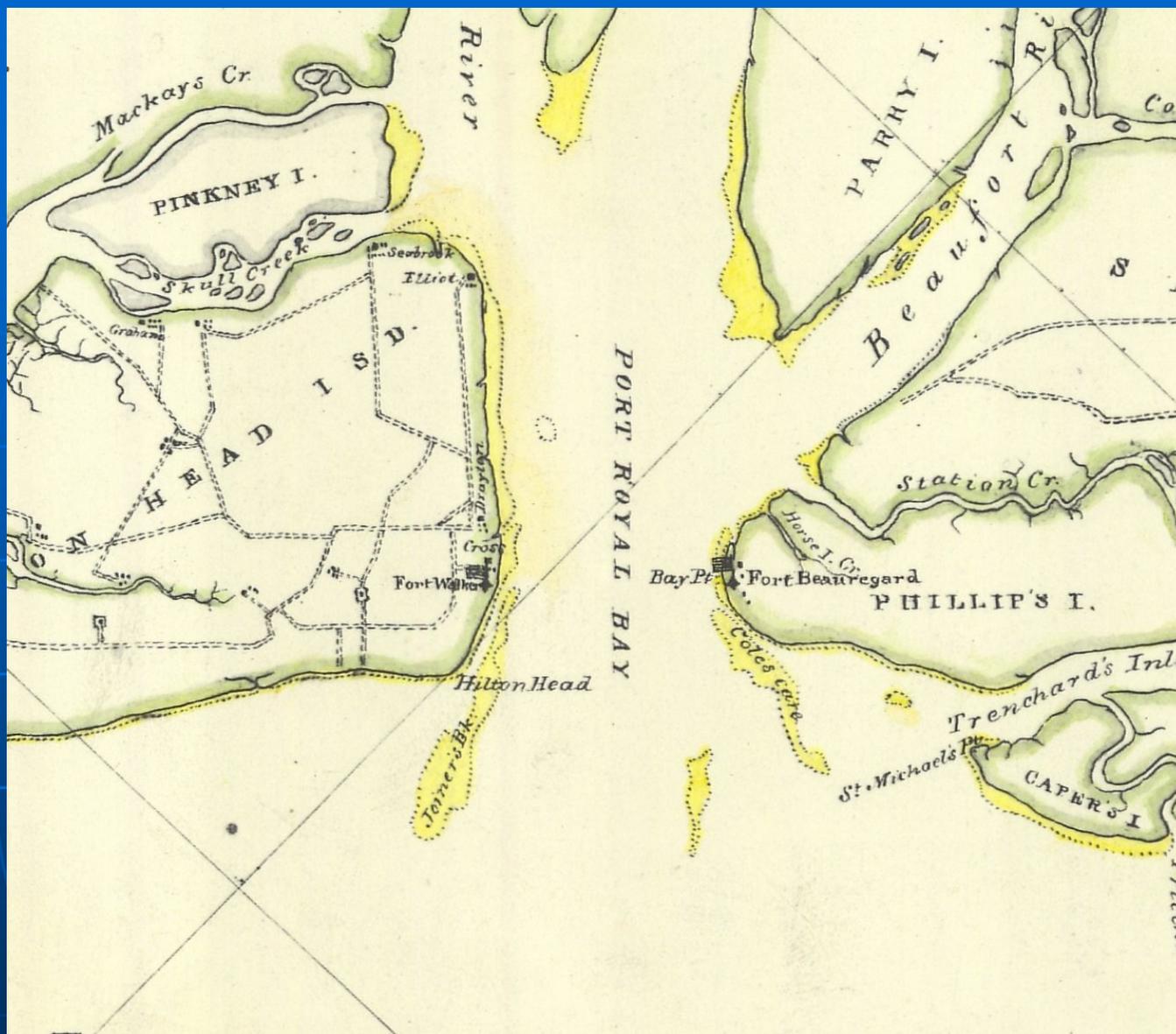
Field work executed during parts of June and July 1861.

By F. W. DORR AND C. ROCKWELL U. S. C. S.

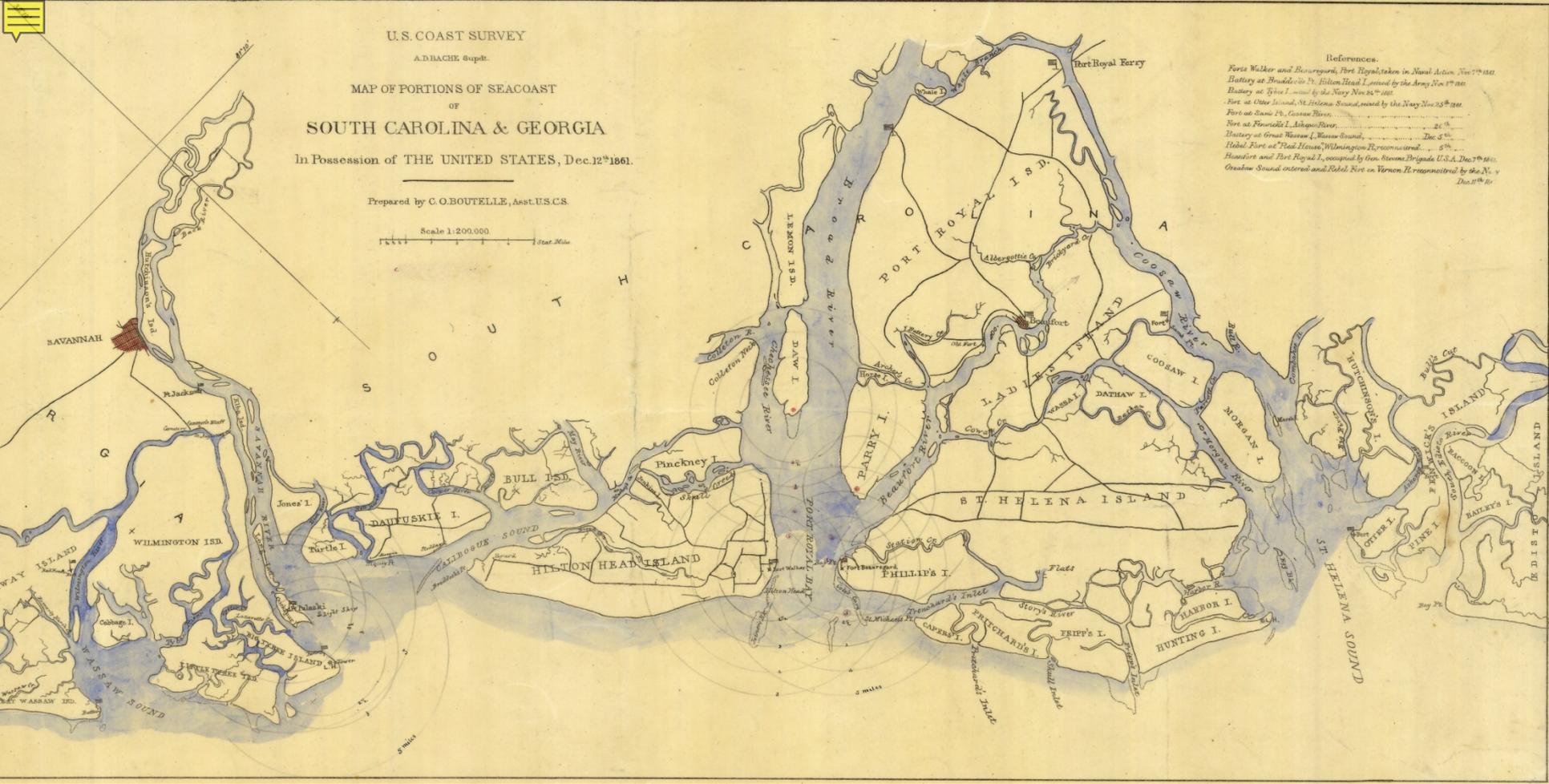
*Working force of field parties furnished by detail of soldiers
from different regiments of Gen. M^c Dowell's command.*



1861- Early Civil War topographic mapping by Coast Survey. Washington was the "front lines." Map was produced under direction of Henry Whiting and executed by Coast Surveyors Frederick Dorr and Cleveland Rockwell, each of whom were among the most illustrious of Union topographers during the Civil War.



November 1861 - Tactical planning map by Coast Survey showing locations of Forts Walker and Beauregard guarding entrance to Port Royal

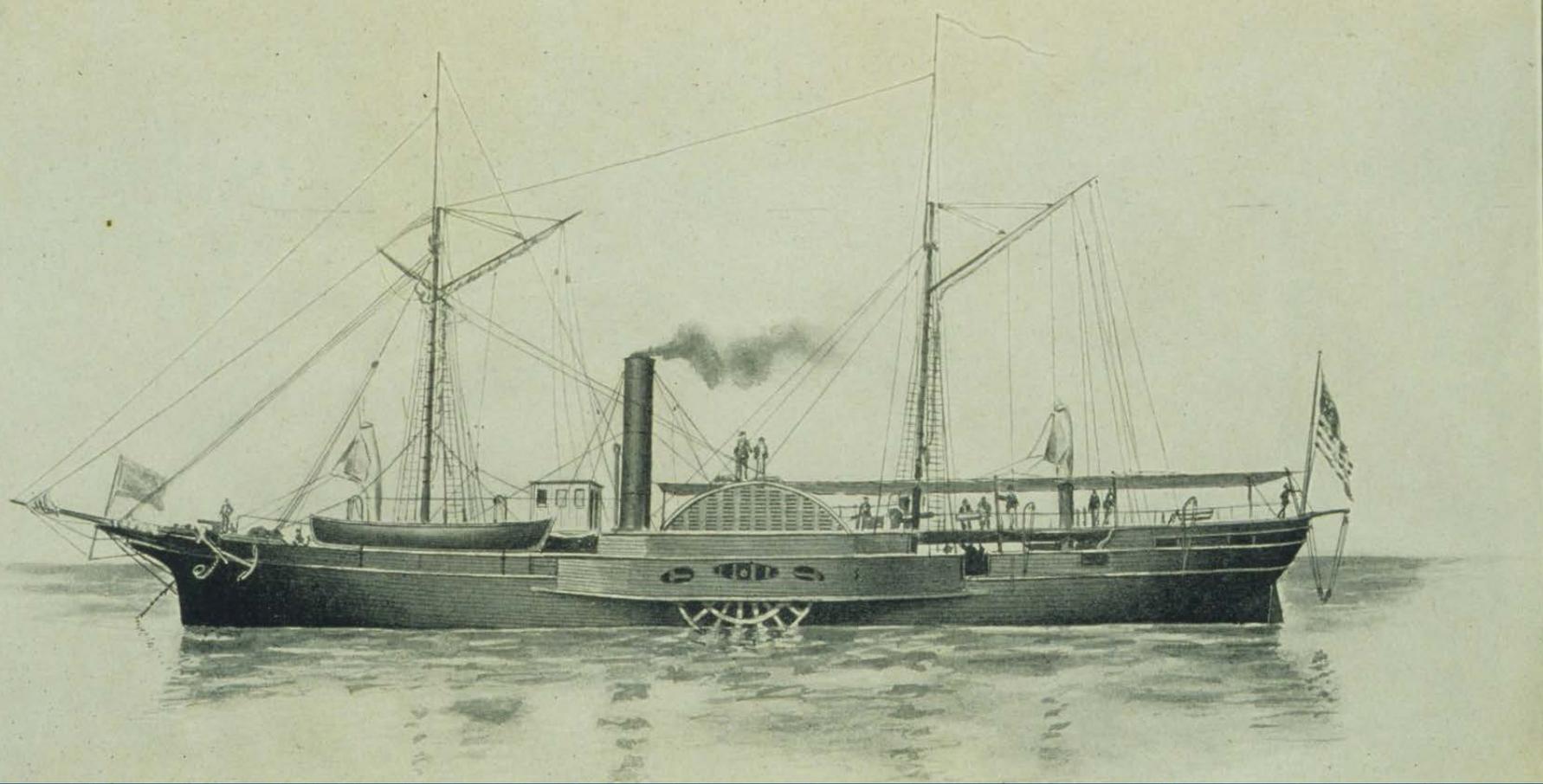


“Map of Portions of Seacoast of South Carolina and Georgia In Possession of The United States, Dec. 12th 1861.” This map was prepared by Charles Boutelle of the Coast Survey and produced in the month following the taking of Port Royal. The circles are believed to be indicative of firing ranges.



The 1863 chart of Charleston harbor showing the positions of both rebel and Union batteries , as well as the positioning of the ironclads during the final attack on Fort Wagner.

The attack on Fort Wagner was commemorated by the film "Glory", the story of the 54th Massachusetts Volunteer Infantry, made up primarily of free African Americans.



The Coast Survey Steamer BIBB – primary hydrographic survey vessel of the South Atlantic Blockading Squadron. Performed many reconnaissance missions, provided pilotage for Union vessels engaged in combat operations, etc. Representative of Coast Survey hydrographic crews on the Southeast and Gulf Coasts and along the Mississippi River. Charles O. Boutelle, confidant of Admirals Du Pont and Dahlgren, was commanding officer of this vessel for most of its time on station.



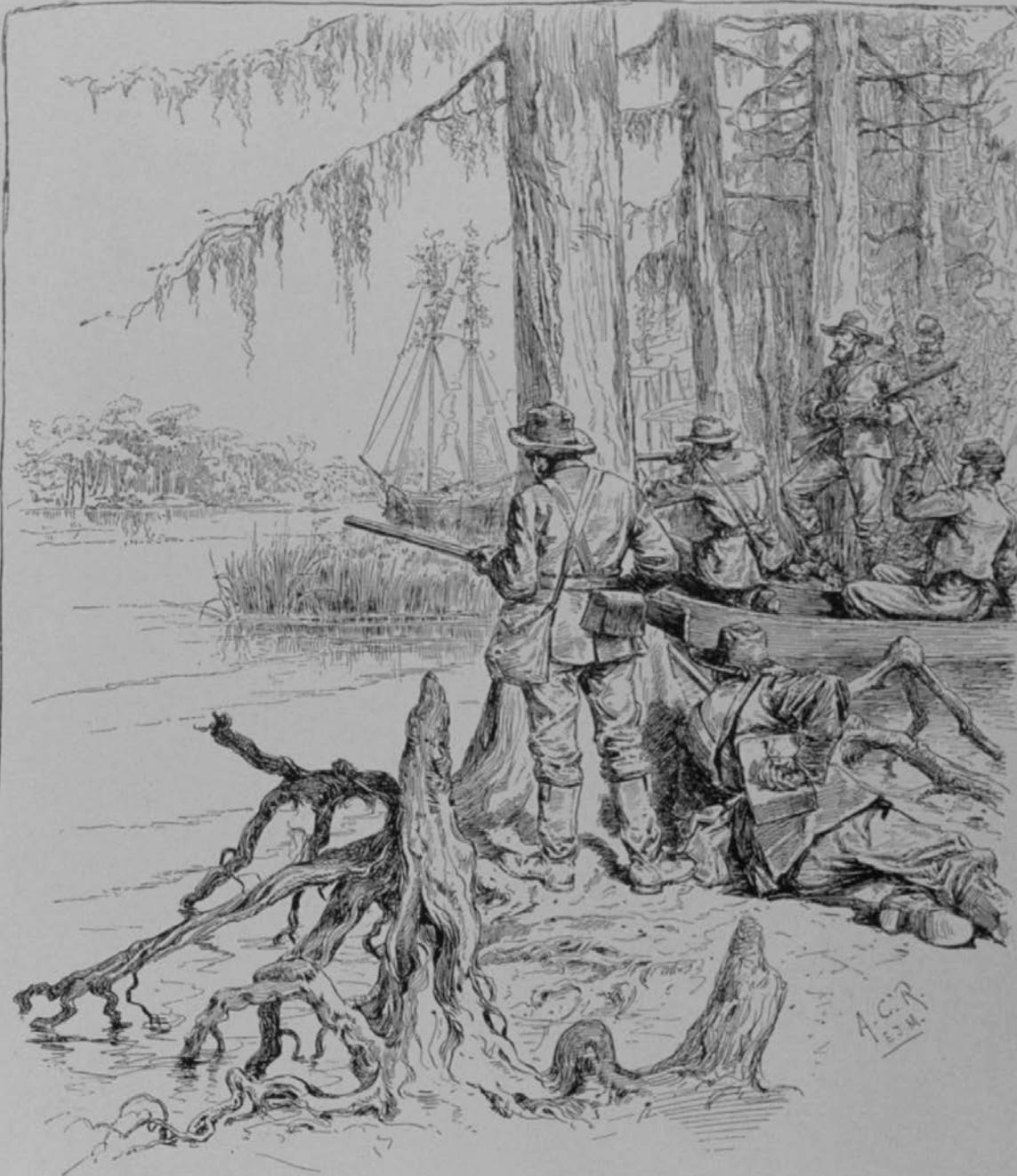
UNITED STATES MORTAR SCHOONER No. 7.

Indirect artillery fire based on geodetic surveying invented by David Dixon Porter during siege of Fort Jackson and Fort St. Philip prior to taking New Orleans. Made use of Coast Survey crews and pre-existing Survey work to position mortar boats and lob shells into Fort Jackson. April 1862. The vegetation was placed on the ships to camouflage them from southern guns firing from Fort Jackson.



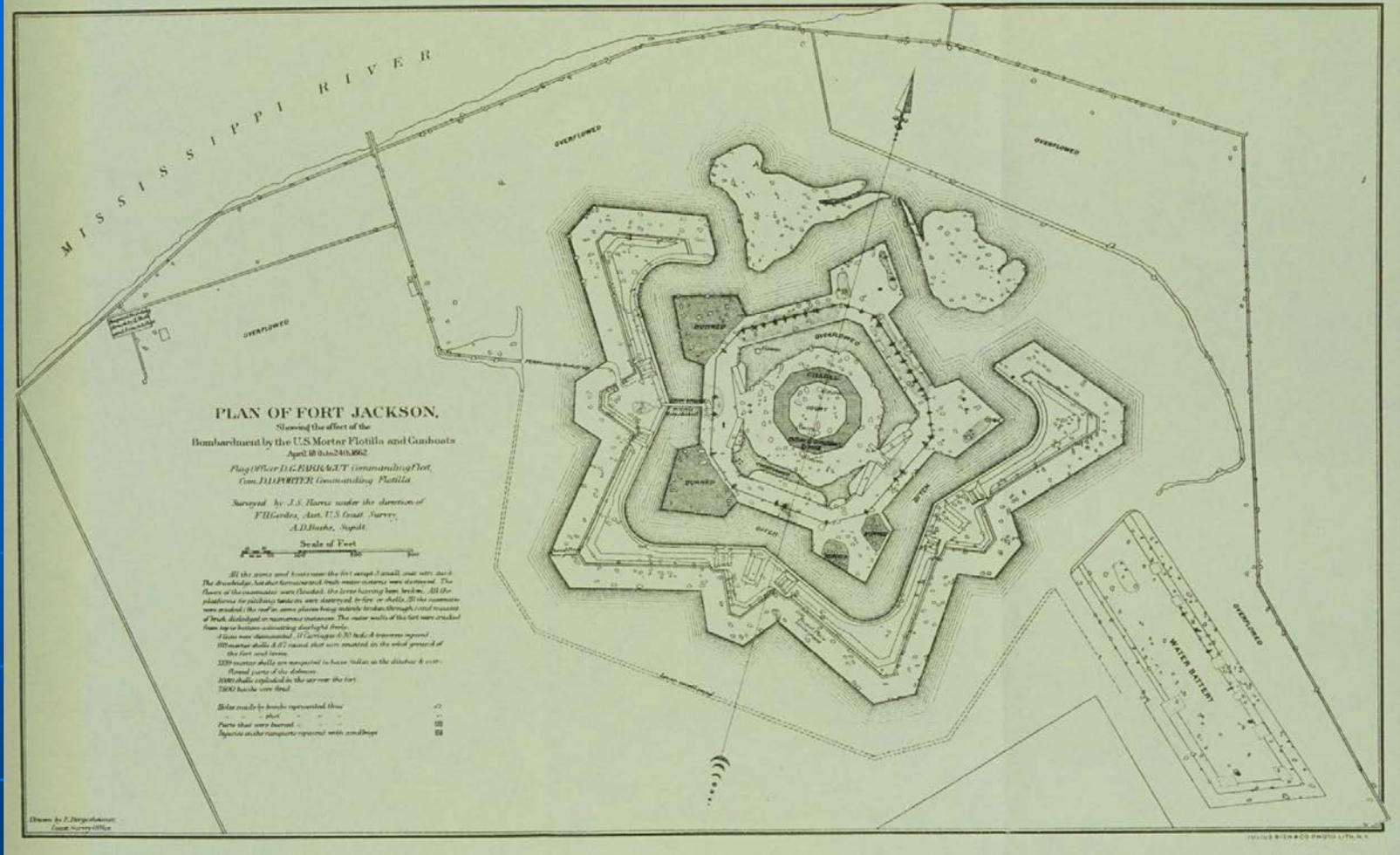
One of Porter's mortar schooners firing into Fort Jackson prior to Farragut's fleet passing the forts and taking New Orleans. April 1862.

MORTAR-SCHOONERS ENGAGED AGAINST FORT JACKSON.



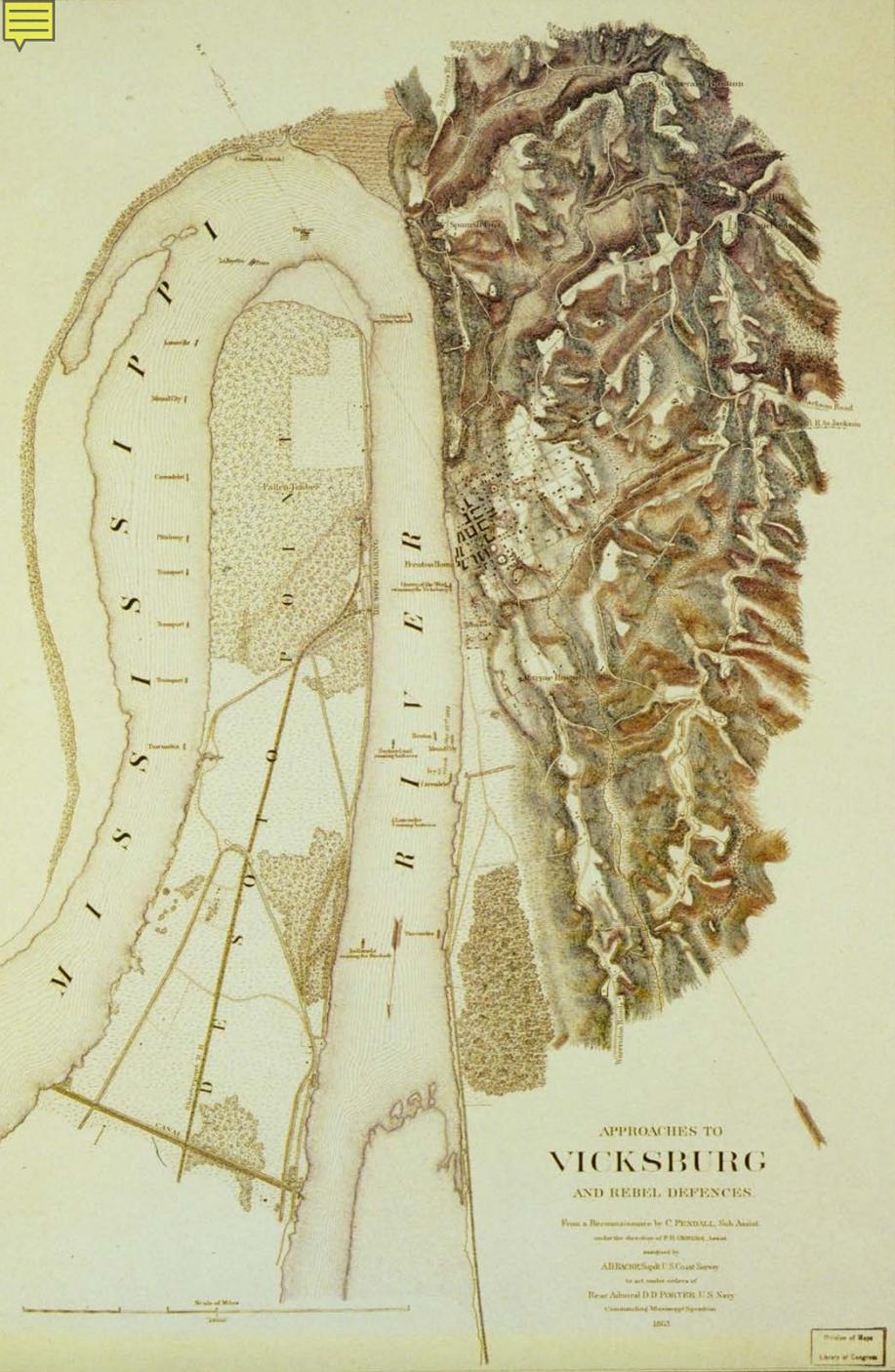
Confederate
sharpshooters
on the lower
Mississippi
River attacking
the mortar
schooners.

CONFEDERATE SHARP-SHOOTERS AND SWAMP HUNTERS ATTACKING MORTAR-BOATS.



Fort Jackson, guarding the approach to New Orleans, shows the effects of what might be the first use of geodetic principles to aim artillery in blind fire. David Dixon Porter developed the concept of indirect fire. Thousands of shells rained into Fort Jackson from the Union mortar schooners over a week prior to Farragut's fleet passing this fort and Fort St. Philip during the week of April 17-24, 1862.

Commander Porter wrote to Bache concerning the battle of Forts St. Philip and Jackson: "... The results of our mortar practice here have exceeded anything I ever dreamed of; and for my success I am mainly indebted to the accuracy of positions marked down, under Mr. Gerdes' direction, by Mr. Harris and Mr. Oltmanns. They made a minute and complete survey ... most of the time exposed to fire from shot and shell, and from sharpshooters from the bushes.... The position that every vessel was to occupy was marked by a white flag, and we knew to a yard the exact distance of the hole in the mortar from the forts....



APPROACHES TO VICKSBURG AND REBEL DEFENCES.

From a Reconnaissance by C. FENDALL, Sub Assist.
under the direction of F.H. GERRITS, Assist.
assigned by
ADBACHE, Supdt. U.S. Coast Survey
to act under orders of
Rear Admiral D.D. PORTER, U.S. Navy
Commanding Mississippi Squadron.

1863.

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1863.

Division of Maps
Library of Congress

Map of Vicksburg and De Soto Bend produced during the siege of Vicksburg by Sub-Assistant Clarence Fendall of the Coast Survey. Fendall was so indispensable to Porter that he was assigned quarters on flag ship next to Porter's.



"Yesterday, I was three miles beyond our pickets and within 600 yds of the enemy's batteries. I did not stop work till the cannon balls plowed up the ground within 20 feet of us. One of my men had his hat blown off by the wind of a ball and one struck the levee just under my plane table. I reckon about all of the inhabitants of Vicksburg were out after me. We (our pickets) captured one captain who was heading off my retreat and I had a conversation with a boat which approached within 100 yards of my table. Tomorrow the Admiral will send a large force with me...."

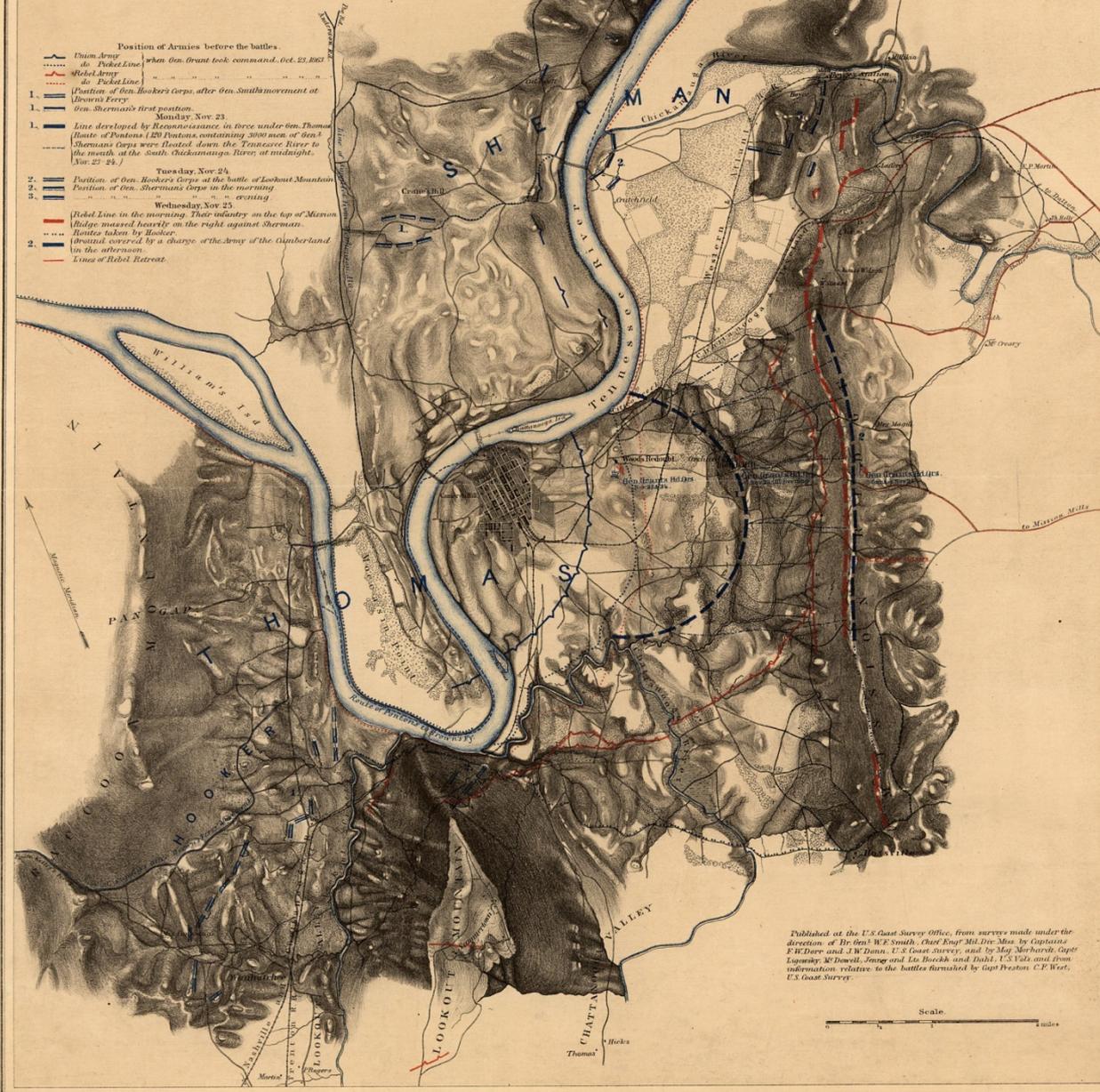
Clarence Fendall to
Ferdinand Gerdes, February 1, 1863.



Union Topographers on the Peninsula 1862. I believe John Donn is sitting middle and Frederick Dorr is sitting right although these men are not identified. To the left is John Donn circa 1880. Perhaps William R. Palmer is the caped officer sitting to left. A former Asst in charge of Coast Survey office, he commanded topographers on Peninsula until his death by disease. Dorr contracted disease that killed him after war.

Battlefield of CHATTANOOGA

with the operations of the National Forces
under the command of
MAJ. GEN. U. S. GRANT
during the battles of Nov. 23, 24, & 25, 1863.



Position of Armies before the battles.

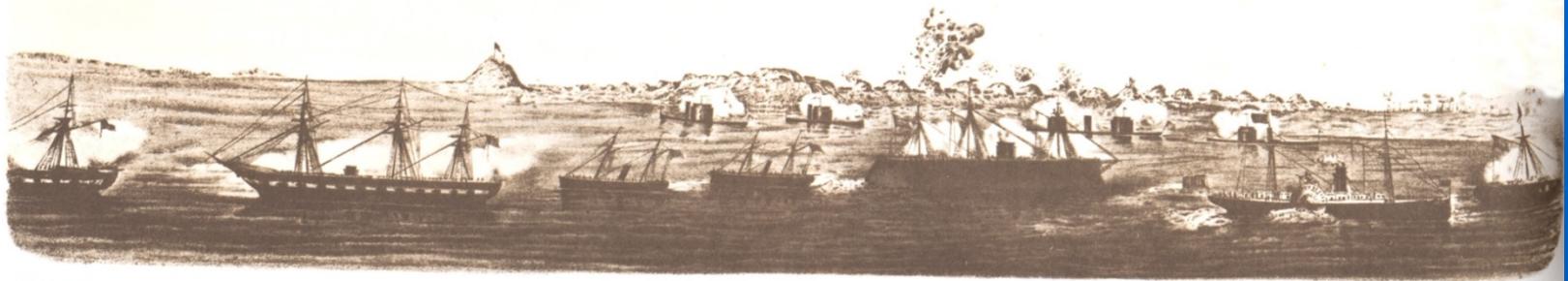
- Union Army
- do. Picket Line
- Rebel Army
- do. Picket Line
- 1. Position of Gen. Hooker's Corps, after Gen. Smith's movement at Union's Ferry
- 2. Gen. Sherman's first position
- Monday, Nov. 23
- 1. Line developed by Reconnaissance in force under Gen. Thomas (Route of Postons) (29 Batteries containing 3000 men) of Gen's Sherman's Corps were floated down the Tennessee River to the mouth, at the South Chickamauga River at midnight, Nov. 23, 24.
- 2. Position of Gen. Sherman's Corps in the morning
- 3. Position of Gen. Sherman's Corps in the evening
- Tuesday, Nov. 24
- 1. Rebel Line in the morning. Their infantry on the top of Mission Ridge massed heavily on the right against Sherman.
- 2. Position taken by Hooker (brought covered by a charge of the Army of the Cumberland in the afternoon)
- 3. Line of Rebel Retreat

Published at the U.S. Coast Survey Office, from surveys made under the direction of Dr. Genl. W.F. Smith, Chief Eng'r. Mr. Dir. Min. by Captains F. B. Dyer and J. W. Tamm, U.S. Coast Survey, and by Maj. Nicholas, Capt. Eganovsky, M. Dowell, Surge and Lieut. Brock and Dalb. U.S. Vets. and from information relative to the battles furnished by Capt. Preston, C.F. West, U.S. Coast Survey.

Scale
0 1 2 3 4 5 6 7 8 9 10 Miles

Grant's victory at Chattanooga sounded the "death knell of the Confederacy." Chattanooga was a battle fought based on topography and the Coast Survey was instrumental in producing much of this map under combat conditions. C&GS officers Frederick Dorr, John Donn, and P.C.F. West were the primary surveyors.

“Before, during, and after this battle, Coast Survey Sub-Assistant F. W. Dorr, under the direction of the Union’s Engineering Brigadier General William F. Smith, made a detailed field survey of the area and produced this accurate tactical map. The accuracy of terrain representation and the correctness of the location of the cultured features are excellent attributes of this map, which was useful to the Union forces; but the clarity and correctness of the location of both Union and Confederate fortifications, entrenchments, and troop deployment gives it a unique place among military maps of the period.” In: Civil War Maps, Map 399.5.



MINNESOTA.

WABASH.

[MAHOPAC]

[CANONICUS.]

IRON SIDES.

[MONADNOCK]

[SAUGUS]

MALVERN, FLAG SHIP

BROOKLYN.

POSITION OF IRON CLADS,
January 15th 1865.

From original on file in the archives of the U.S. Coast Survey
SERIES I VOL. XIII



MINNESOTA.

SUSQUEHANNA

WABASH.

MAHOPAC.

CANONICUS.

IRONCLAD.

MONADNOCK.

MALVERN, FLAG SHIP.

SAUGUS.

FOWLER.

BOMBARDMENT OF FORT FISHER N. C.
by the Squadron of Rear Admiral D. D. Porter U.S.N.
January 24th & 25th 1865.

LINK BY A. WOOD & CO. BALTIMORE

No. 3014^x



Top: Army Atlas of the Civil War. Below: Original produced by C&GS officer John Bradford on RADM Porter's flagship.

The Best and the Brightest -

Luminaries in the Coast Survey- Civilian, Navy, and Army

The Coast Survey served as a technical school for Army and Navy Officers providing training in topography, geodesy, hydrography, and cartography. It also provided early career opportunities for command and management for military and naval officers.



John G. Oltmanns
– Wounded at New Orleans, served with Franklin in Louisiana, with Sheridan in Shenandoah Valley – died of wound complications

Samuel A. Gilbert – Known as “Iron Sam”, served in West Virginia, Kentucky, and Tennessee- BVT BG
Died of TB contracted during war

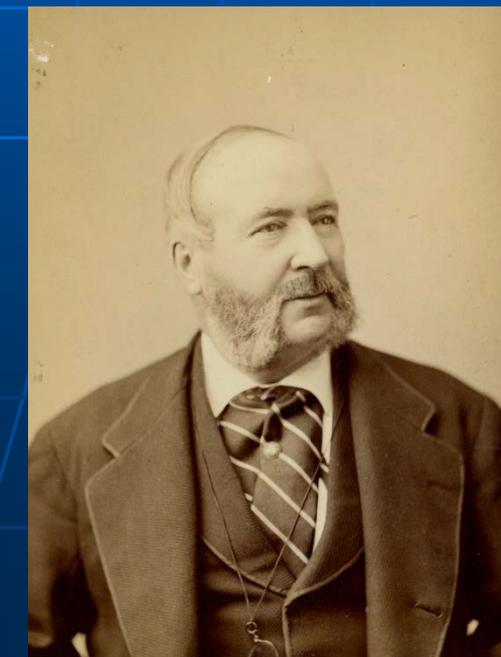


Coast Surveyors in Union Blue



George D. Wise, Union QM Corps on Mississippi River procuring vessels, ultimately in charge all Union marine transportation—over 400 vessels – BVT BG

Richard D. Cutts, on staff to General Halleck. Entered Richmond after it fell, saved 10 tons of Confederate records. Basis of much history - BVT BG



Overview of Coast Survey Contributions to Mapping the Civil War

The Coast Survey was a major force in mapping the campaigns, battles and skirmishes of the Civil War. It was present on the ground from the opening volleys to the final surrender. It served on land and sea helping determine tactics; it served in the Nation's capital helping formulate strategy. Coast Survey cartographers also were strongly anti-slavery and produced many Union propaganda products. In summation, Coast Surveyors served the Union Cause and did their duty for the Nation.



President Lincoln signing the charter of the National Academy of Sciences. This was a Coast Survey and its allies party. From left to right in the image – Benjamin Peirce, Alexander Dallas Bache, Joseph Henry, Louis Agassiz, Lincoln, Senator Henry Wilson, Commander Charles Henry Davis, and Benjamin Apthorpe Gould. March 3, 1863. Bache had been one of the first to call for a National Academy as early as 1850.



Role of Honor

Alexander Dallas Bache

Frederick W. Dorr

John W. Donn

Clarence Fendall

Preston C. F. West

John G. Oltmanns

Charles O. Boutelle

Robert S. Platt

Cleveland Rockwell

Ferdinand Gerdes

Henry Laurens Whiting

Edwin Hergesheimer

The United States Coast Survey

(Sheet No. 1)

U. S. COAST SURVEY

A. D. Bache Supdt.

PART OF

ARLINGTON

VIRGINIA

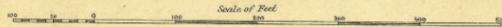
Surveyed for Gen. M. C. Meigs Q. M. G. U. S. A.

Scale $\frac{1}{1200}$

1864

Assisted by *R. E. M^c Math*
U. S. Coast Survey

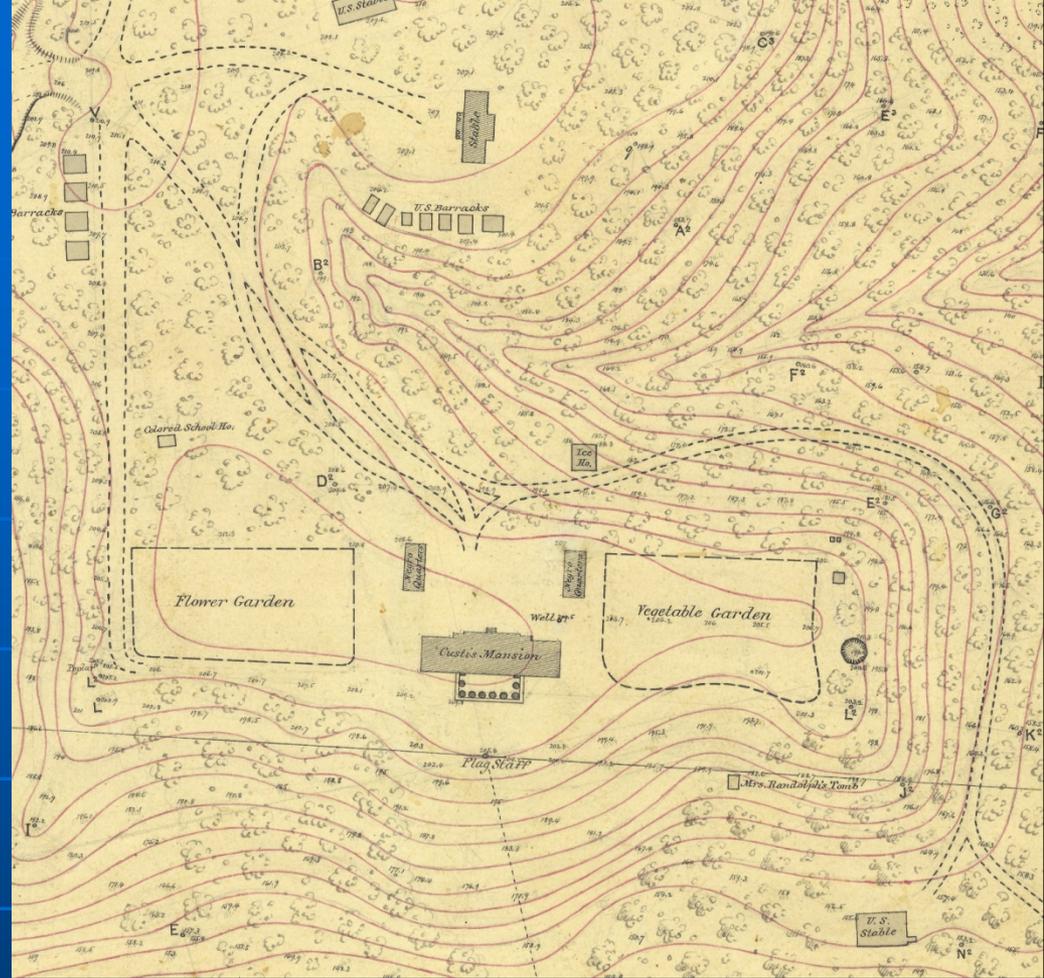
By *E. Hergesheimer*
U. S. Coast Survey



Register No. 1025.

The elevations are given in feet, the Plane of Reference being the Mean Level of the Potomac R. at Washington Water Yard.

Area in sq. miles	0.001
General contour	0.001
Shoreline and water courses	0.001
Boundaries	0.001
Roads	0.001



The Lee-Custis plantation mapped by the Coast Survey prior to its becoming Arlington National Cemetery. Mapped at the request of Quartermaster-General Montgomery Meigs. Edwin Hergesheimer, who had produced the slavery map, was the topographer in charge of this survey. This is among the first of major memorials and monuments surveyed by the Coast Survey and its descendant organizations.

(Sheet No. 1)

U. S. COAST SURVEY

A. D. Bache Supdt.

PART OF

ARLINGTON

VIRGINIA

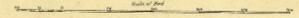
Surveyed for Gen. M. C. Meigs Q. M. G. U. S. A.

Scale 1250

1864

Assisted by H. E. Atchafalaya
U. S. Coast Survey

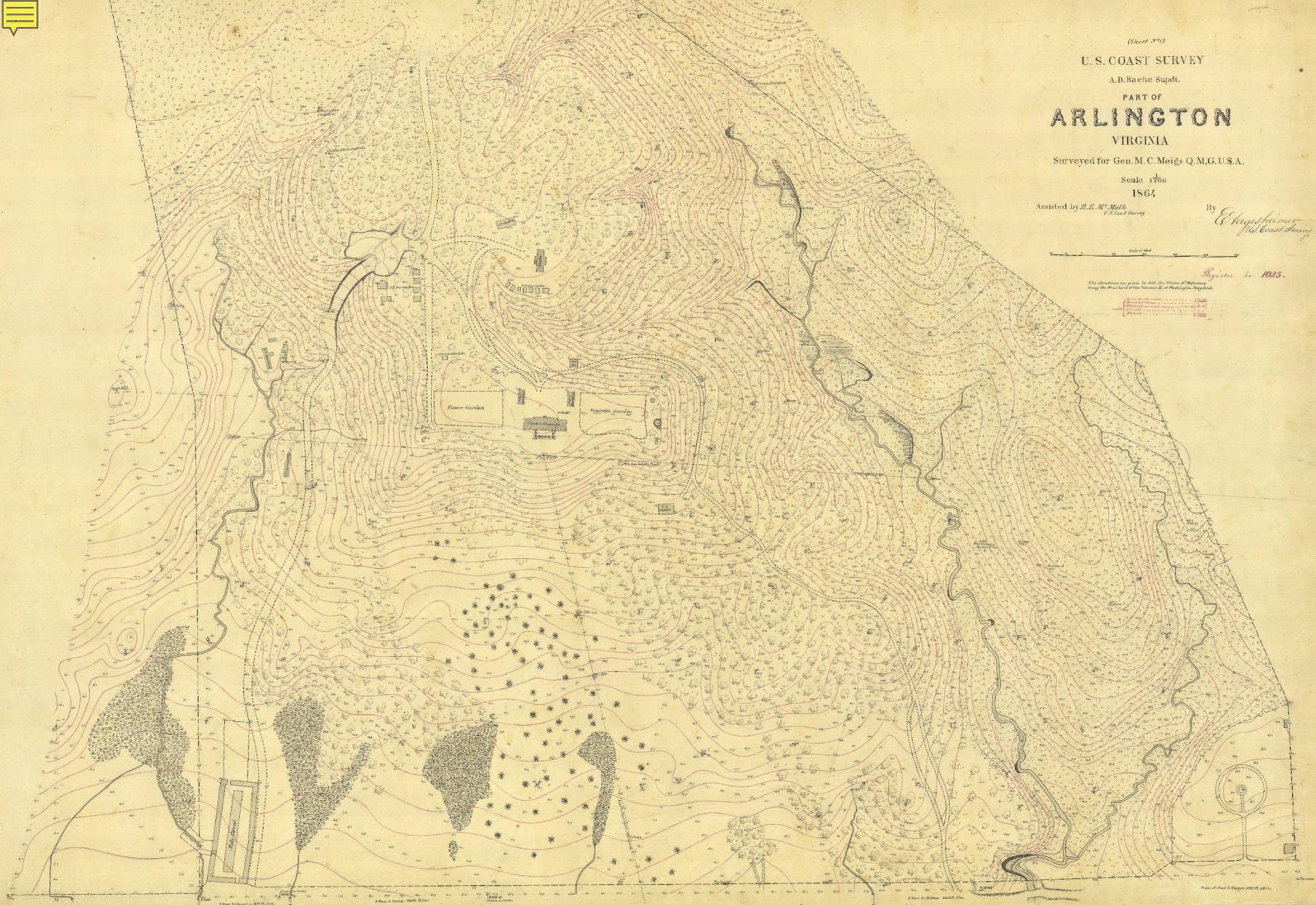
By *Chapman*
U. S. Coast Survey



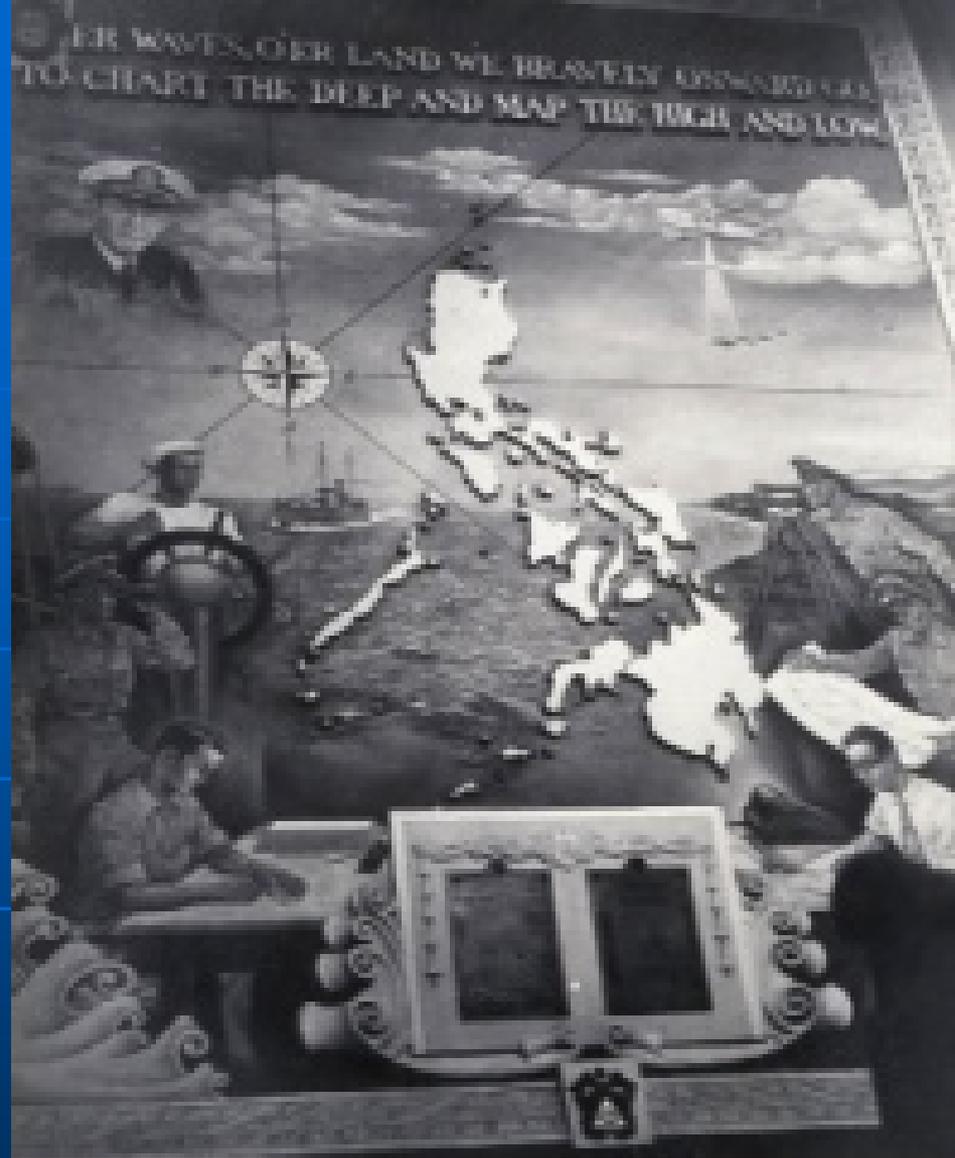
Revised in 1925.

The elevations are given in feet. The names of places are given in italics. The names of streets are given in small letters.

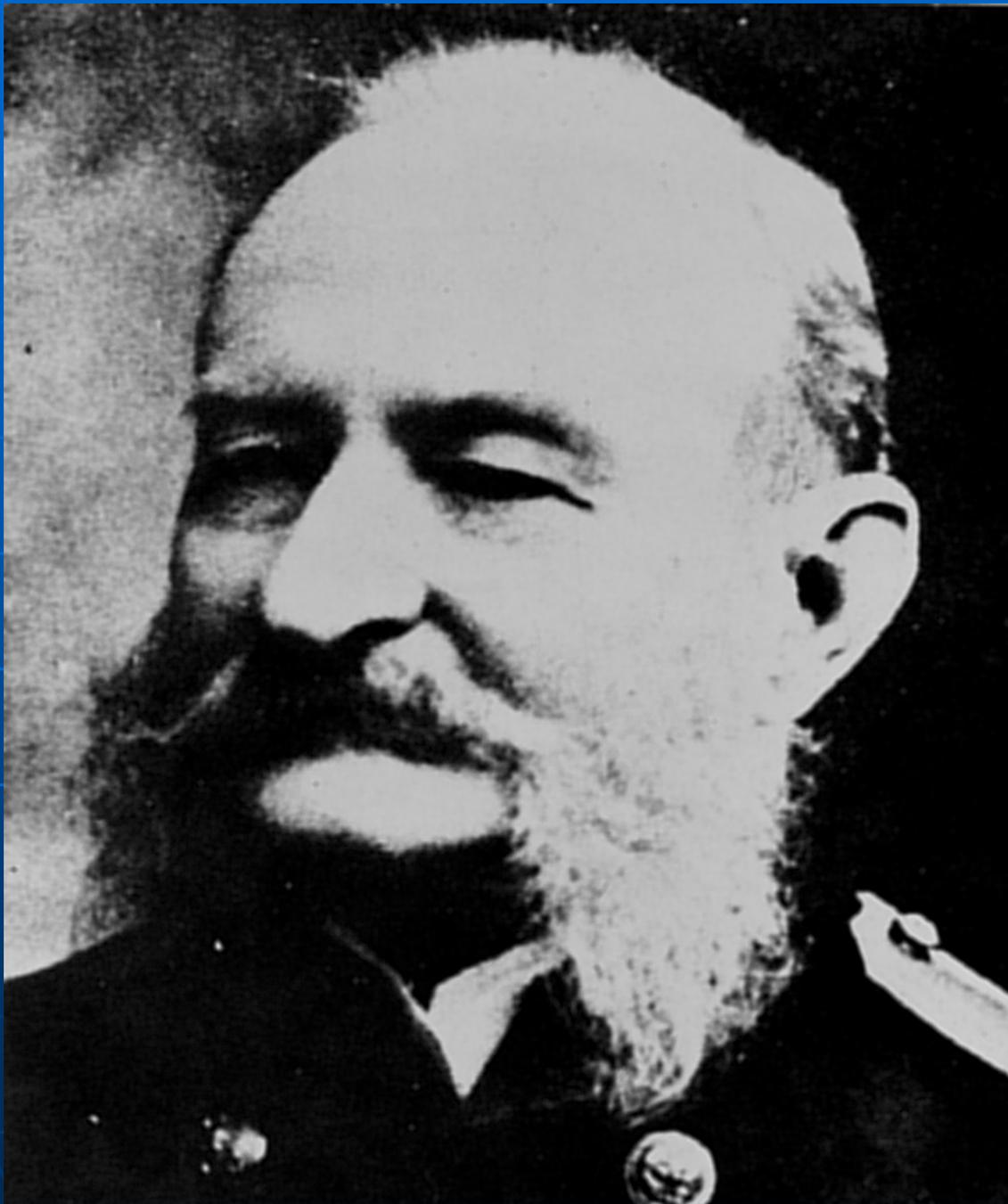
Published by the U. S. Coast Survey, Washington, D. C.



The full topographic sheet of the future Arlington Cemetery. 1864.



The Spanish-American War – Coast Survey Steamer BACHE at the beginning. Result – the Philippines and Puerto Rico become U.S. Protectorates. Navy officers detached forever. Poem apparently inspired by an obscure verse called *Willy Bland*, published in 1889.



Although Navy officers were detached permanently from the Survey, they remained associated with the larger ships of the Fish Commission. This is Commander Zera Luther Tanner, USN, who was first commanding officer of the Fish Commission Steamer FISH HAWK and then the ALBATROSS from 1882-1894. Tanner Bank off Southern California and Tanner crabs have been named for Tanner among other things. Admiral William S. Benson, CNO during WWI served on the Fish Commission.



Civilian Ship Uniform – 1898-1917.

Assistant O. W.
Ferguson on the
Schooner
MATCHLESS.

Ferguson went to
the Lighthouse
Service and became
a District Supervisor.
Note U.S. on collar
and Corps device.

[PUBLIC—NO. 17—65TH CONGRESS.]

[H.R. 3330]

An Act To temporarily increase the commissioned and warrant and enlisted strength of the Navy and Marine Corps, and for other purposes.

SEC. 16. That the president is hereby authorized, whenever in his judgment a sufficient national emergency exists, to transfer to the service and jurisdiction of the War Department, or of the Navy Department, such vessels, equipment, stations, and personnel of the Coast and Geodetic Survey as he may deem to the best interest of the country....



World War I

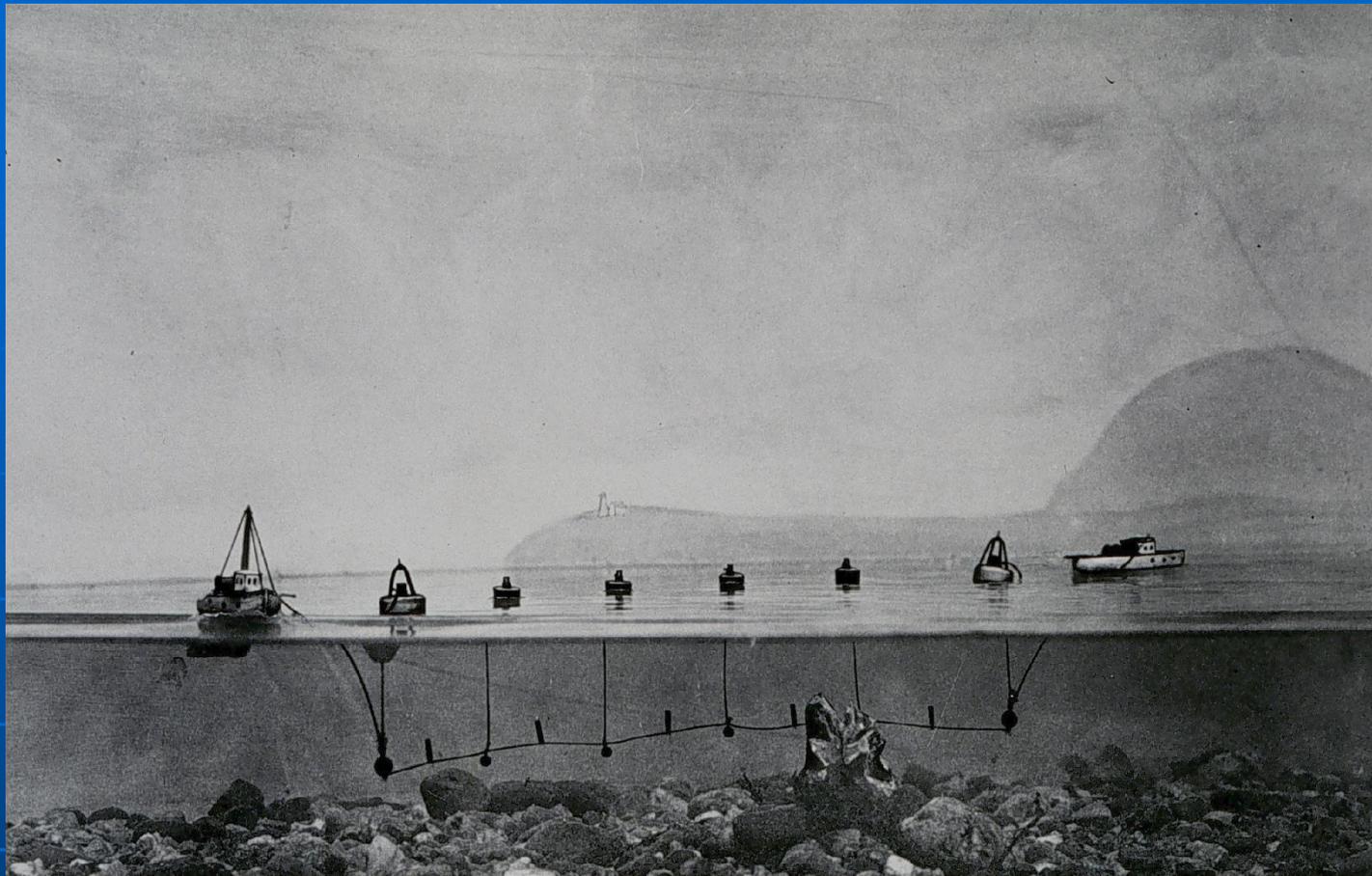
Convoy Escort Duty Transport Navigators
Artillery Orienteering Officers Minesweeping
Officers Ocean Acoustics Research
Photogrammetry Military Grid Developed



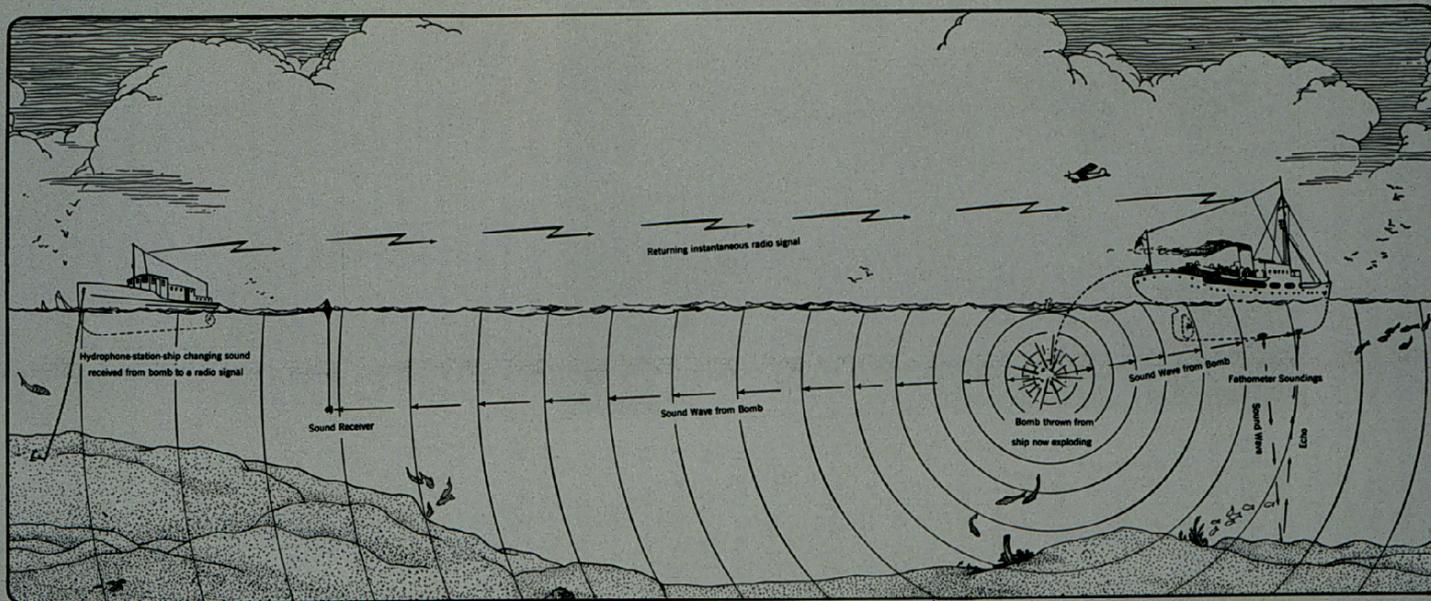
Captain William Bowie, Chief of Geodesy, First President of the International Union of Geodesy and Geophysics, a founder of the American Geophysical Union – namesake of its most prestigious medal – the Bowie Medal. Associated with proof of the concept of Isostasy – tireless advocate for more and better maps of U.S. – expanded geodetic operations throughout U.S. – etc., etc.



Captain Nicholas Heck – Developed wiresweep system from earlier wiredrag as result of WW I minesweeping research experience – conceived idea of Radio-Acoustic Ranging from WW I acoustic research – developed first oceanic sound velocity tables – as chief of Division of Seismology and Terrestrial Magnetism developed earthquake mechanisms laboratory, generated concepts helping lead to theory of plate tectonics, etc.



**Wire Sweep – Up to three miles across.
Heck modified older wiredrag system
based on mine-sweeping experience in
North Sea.**

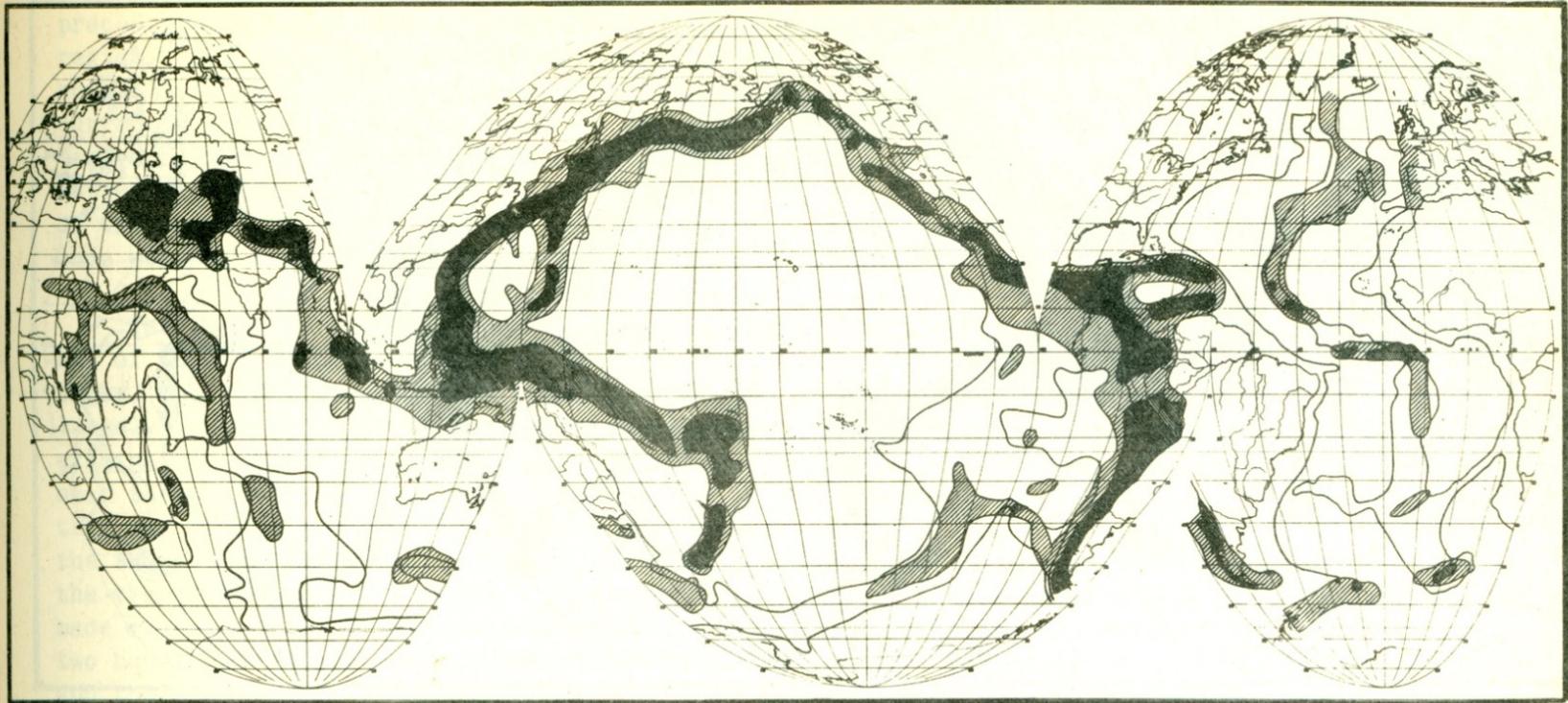


Fathometer Soundings and Radio Acoustic Ranging.

Showing two of the scientific methods employed by the Coast and Geodetic Survey of the Department of Commerce to insure on nautical charts (1) correct water depths and (2) the precise positions of such depths, many of which are given for water areas far out of sight of land. Depths are determined with a fathometer, which measures the time required for a sound to travel to the sea bottom and return to the ship as an echo. They are made at the rate of 4 per second, while the survey ship proceeds back and forth over the area at her regular speed. The positions of these depths are fixed by radio acoustic ranging, from two previously determined positions, such as two station ships (of which one is shown). The time elapsed between the sound from the bomb as received on the survey vessel, and the radio wave from the station ships, is measured on the surveying ship to one one-hundredth of a second. Knowing the velocity of sound in water, the distance between the survey ship and each of the two station ships can be calculated accurately, even when separated by as much as 100 miles.

First Non-Visual Survey Quality Navigation System

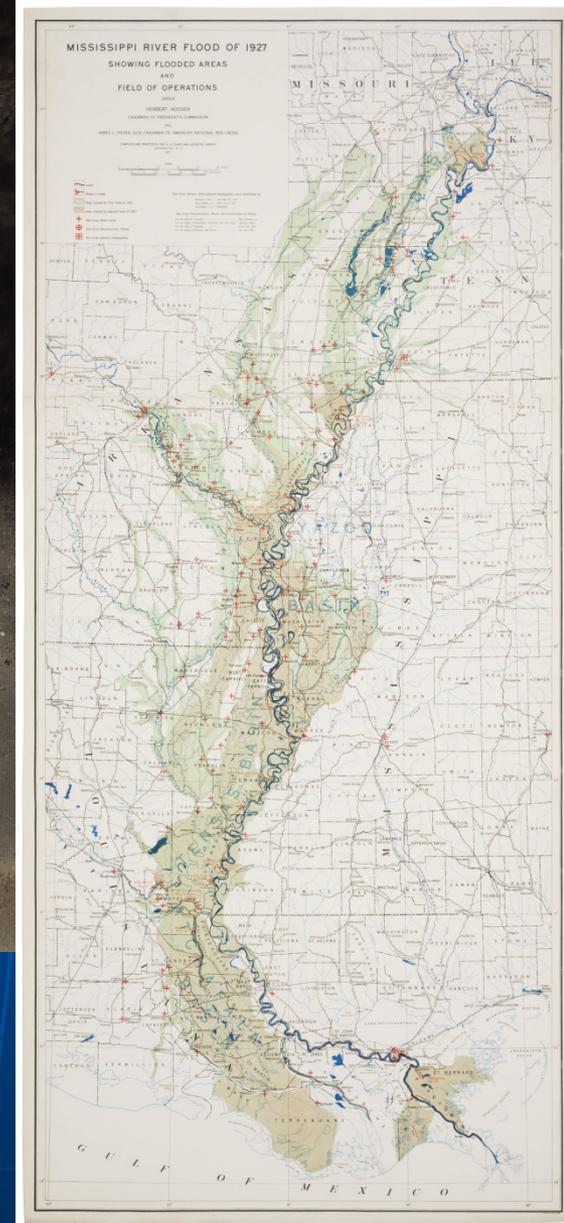
Heck conceived idea of using timing of sound waves from explosion to reception at radio-equipped hydrophone to develop Radio-Acoustic Ranging, first survey quality non-visual navigation system. Based on WW I acoustic research.



DISTRIBUTION OF EARTHQUAKES

[HEAVY CROSS-HATCHING INDICATES MAJOR EARTHQUAKES RECORDED THROUGHOUT THE EARTH; LIGHT CROSS-HATCHING INDICATES ALL OTHER EARTHQUAKES WIDELY RECORDED ON INSTRUMENTS; CONTINUOUS LINE BOUNDS AREAS WITH DEPTH LESS THAN 4000 METERS]

As Chief of Seismology and Terrestrial Magnetism, Heck was first to correlate worldwide oceanic ridges with earthquakes – a step on the road to plate tectonics.



Disaster Assistance – Mississippi River Flood of 1927. C&GS rescue boats, provided radio communications, and mapping of extent of flooding. Unloading railroad transported Coast Survey boats at Greenville, Mississippi.

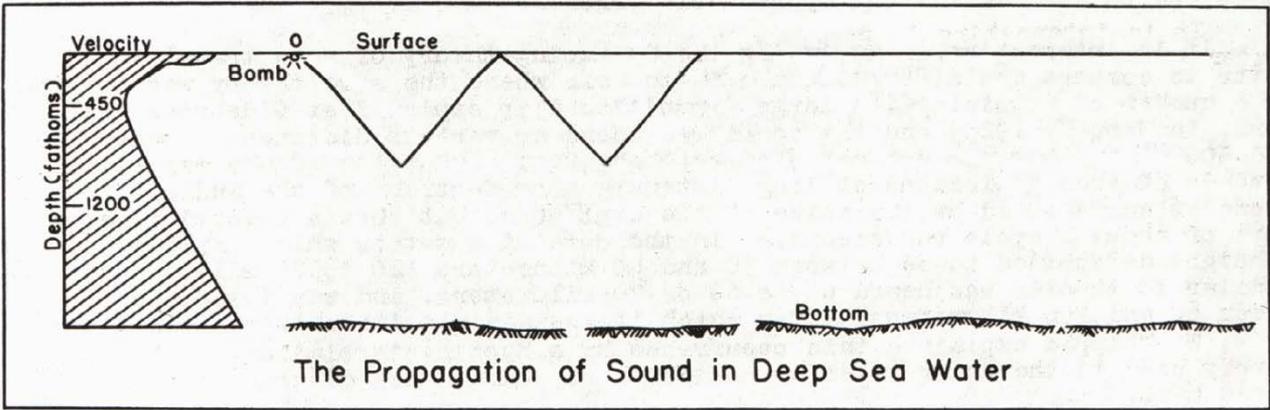
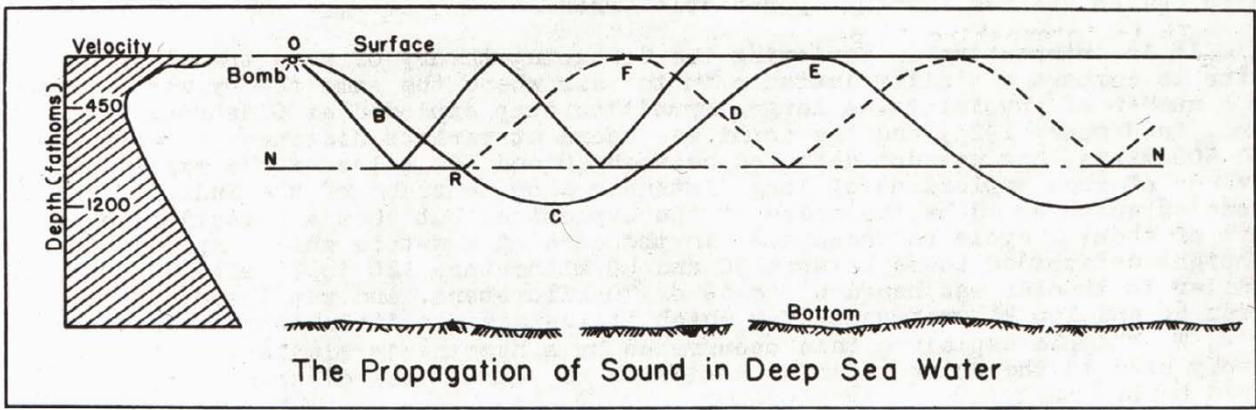


Figure 6

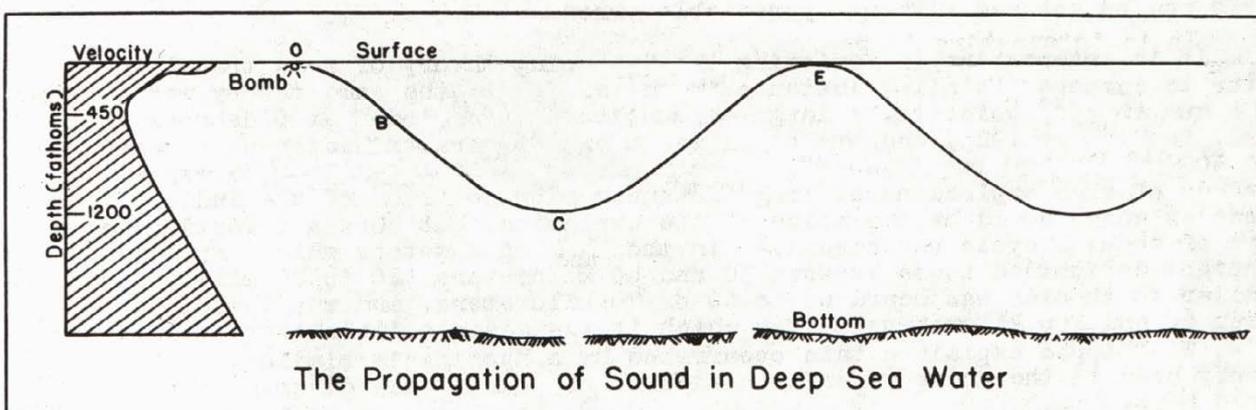


Figure 6

1930's
Acoustic
Studies
related to
Radio-
Acoustic
Ranging
helped lead to
ultimate
discovery of
deep sound
channel.

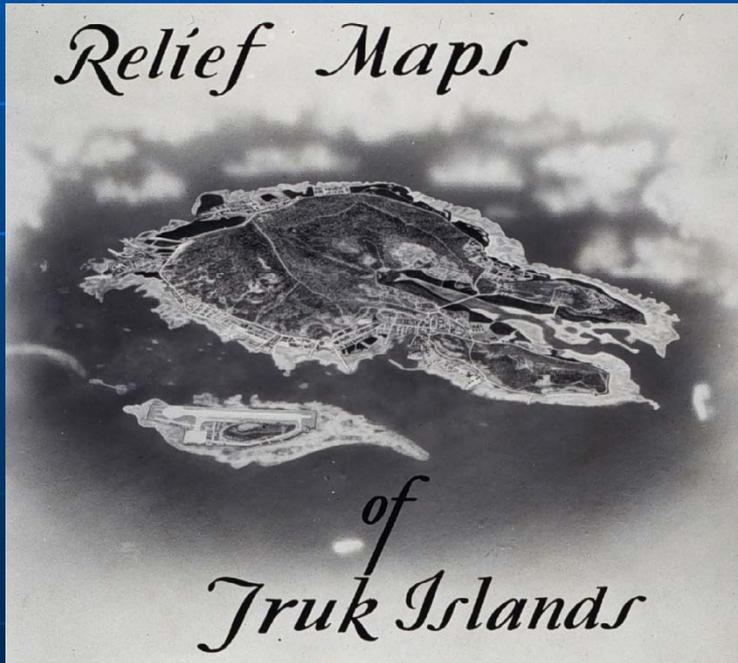


**"Oh to be in Colbert's Division on the old NORTHERN PACIFIC...."
Sailor's memoir of WW I experience under Colbert.
Rear Admiral Leo Otis Colbert, Director of the C&GS in WW II, a life
trustee of the National Geographic Society, an honorary trustee of
Woods Hole Oceanographic Institution, etc., etc.**

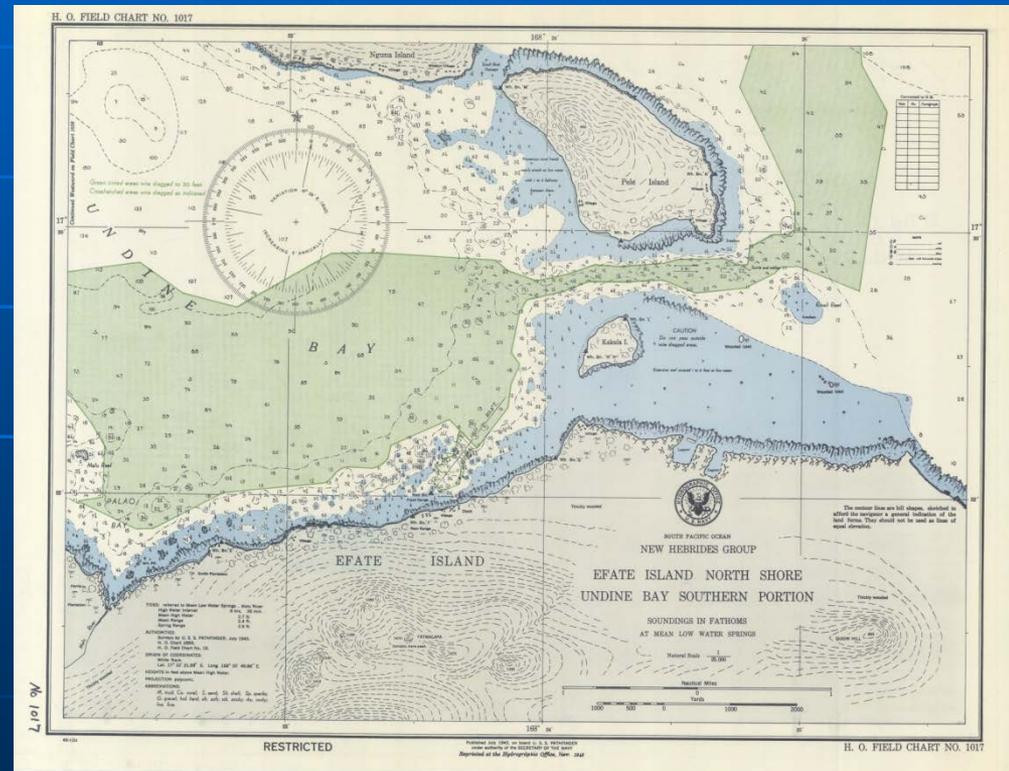


Army and Marine
Artillery Surveyors –
Responsible for destruction
Of 1000's of enemy
artillery pieces

Relief Maps

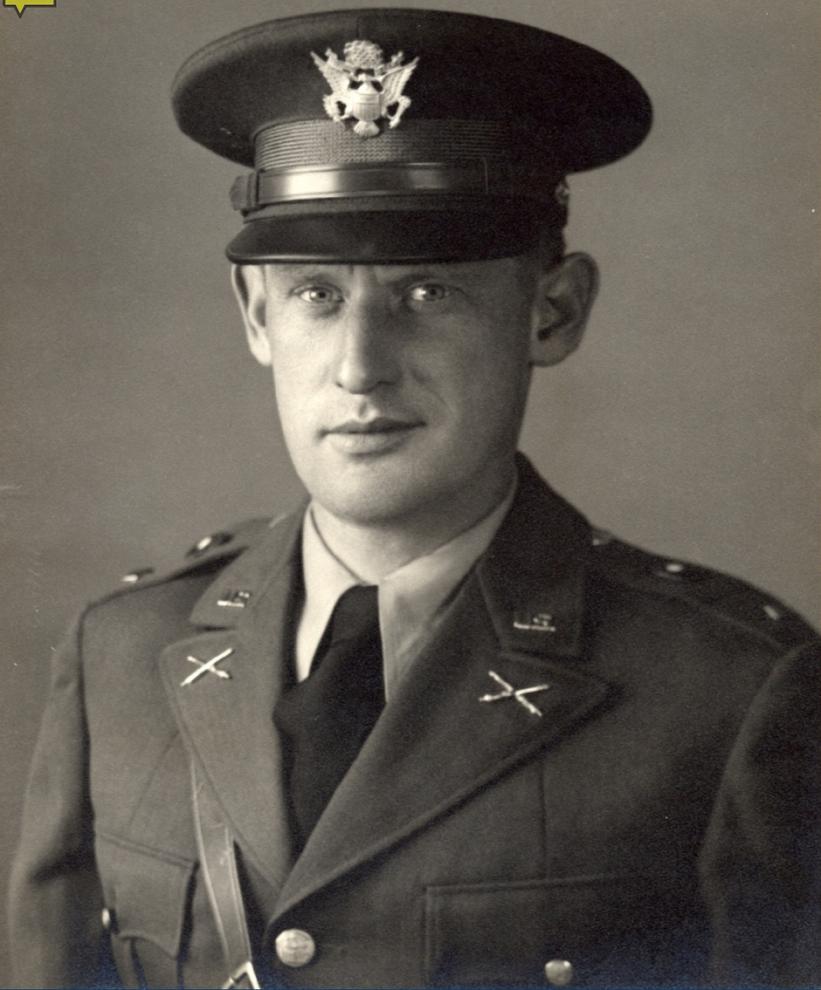


*of
Truk Islands*



Navy Hydrographers – Chart
produced on PATHFINDER

Marine Intelligence Officers



Captain David Whipp, the most decorated C&GS officer of World War II. He was the survey officer of the First Field Artillery Observation Battalion (FAOB) and served throughout North Africa, Sicily, Italy, and France. His unit was the longest in line of any unit of WW II. He was considered the "Prince of the Artillery Surveyors" and was called upon throughout various Army commands to solve difficult survey problems. His awards included the Silver Star for gallantry in action, the Legion of Merit, and the French Croix de Guerre as well as numerous theater ribbons.

“The battlefield at Falaise was unquestionably one of the greatest "killing fields" of any of the war areas. Forty-eight hours after the closing of the gap I was conducted through it on foot, to encounter scenes that could be described only by Dante. It was literally possible to walk for hundreds of yards at a time, stepping on nothing but dead and decaying flesh.” General Dwight D. Eisenhower.



Lt. Colonel Earle Deily, an officer transferred from the C&GS, was survey officer for the 17th Field Artillery Observation Battalion. This image shows the closing of the Falaise Gap, a horrendous defeat for the retreating German Army. Allied aircraft and artillery pounded the German Army and resulted in the destruction of the bulk of Germany's army west of the Seine River. The fact that Deily as part of an FAOB made first contact with British forces upon the closing of the gap gives an idea of the proximity of FAOB's to the front lines. Often they were in advance of the front lines.

THE ROAD TO TOKYO WAS PAVED WITH PATHFINDER CHARTS

*Survivor of over 50 bombing raids!
Declared sunk 5 times!*

U.S.S. PATHFINDER

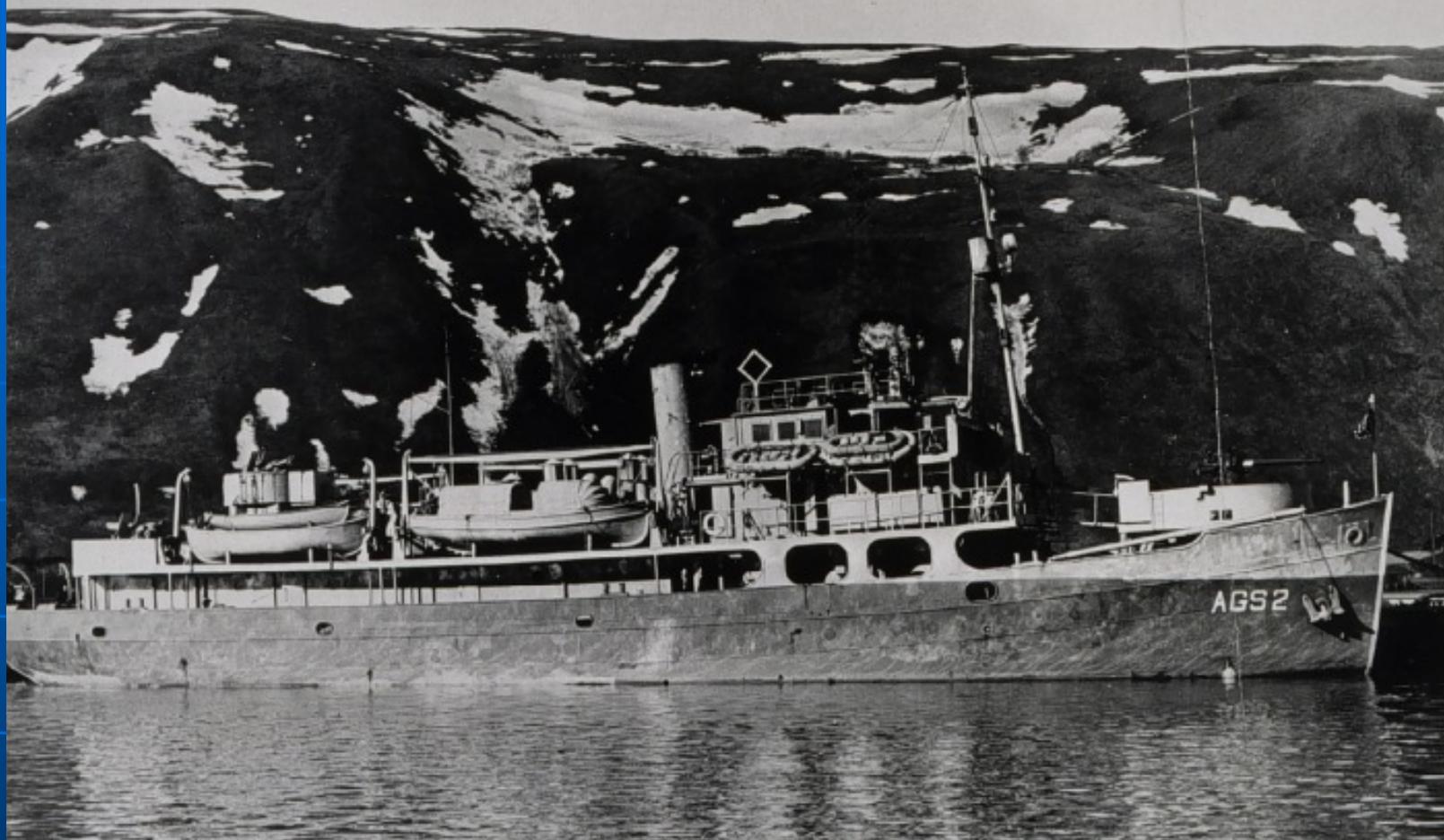
Originally constructed for Coast Survey duty in Alaska, the PATHFINDER would prove to be a very valuable asset to the United States during World War II. Outfitted with guns, depth-charges, and a printing press for printing charts on the spot, the PATHFINDER and a complement of men from the Coast Survey and the U.S. Navy performed often perilous survey work in the Pacific.

"The men and officers are to be commended on their precision work... Their efforts have been most helpful to ships required to operate in waters previously so inadequately charted."
Admiral William F. "Bull" Halsey

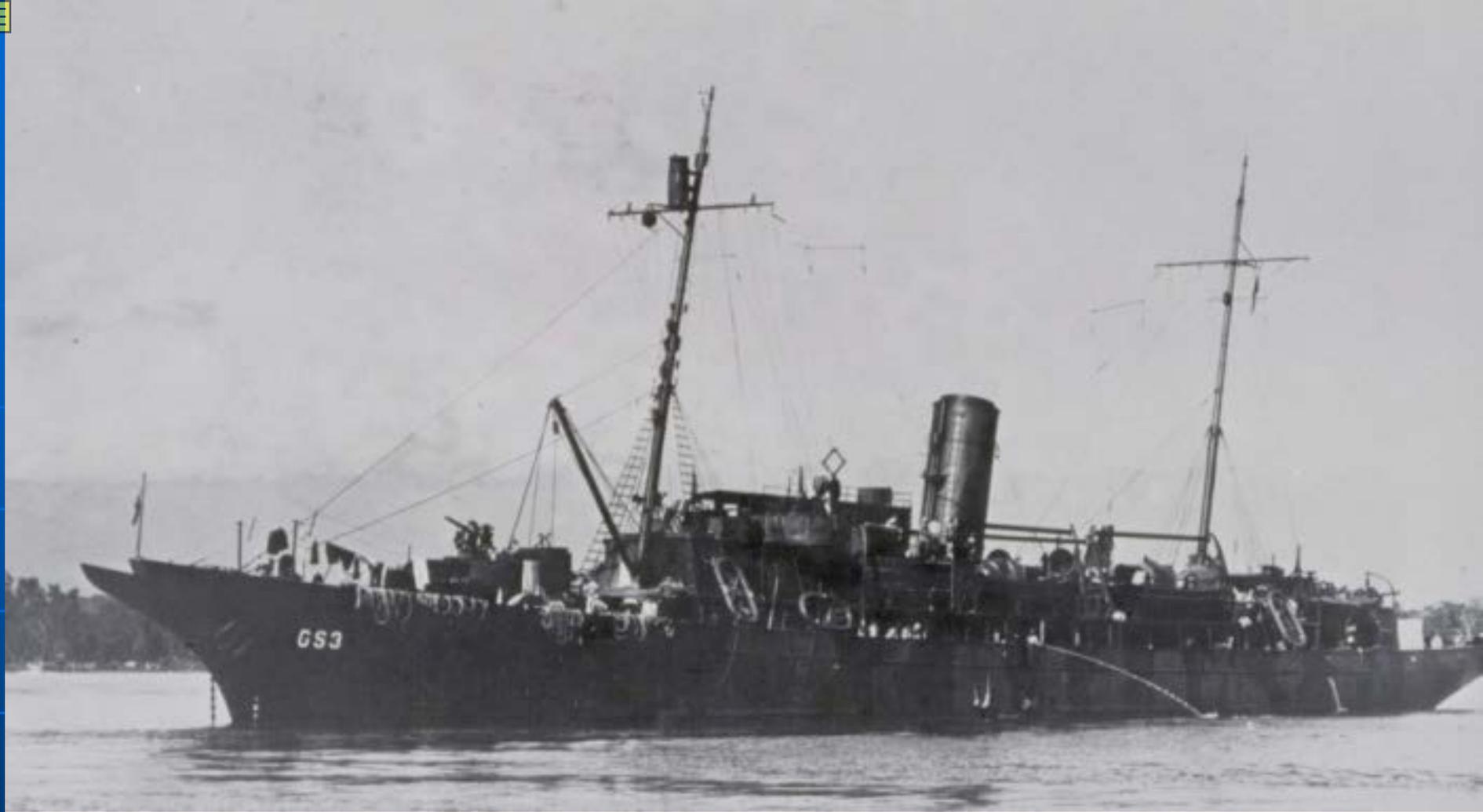


Celebrating 200 Years of America's Science & Service - NOAA Legacy 1807 - 2007

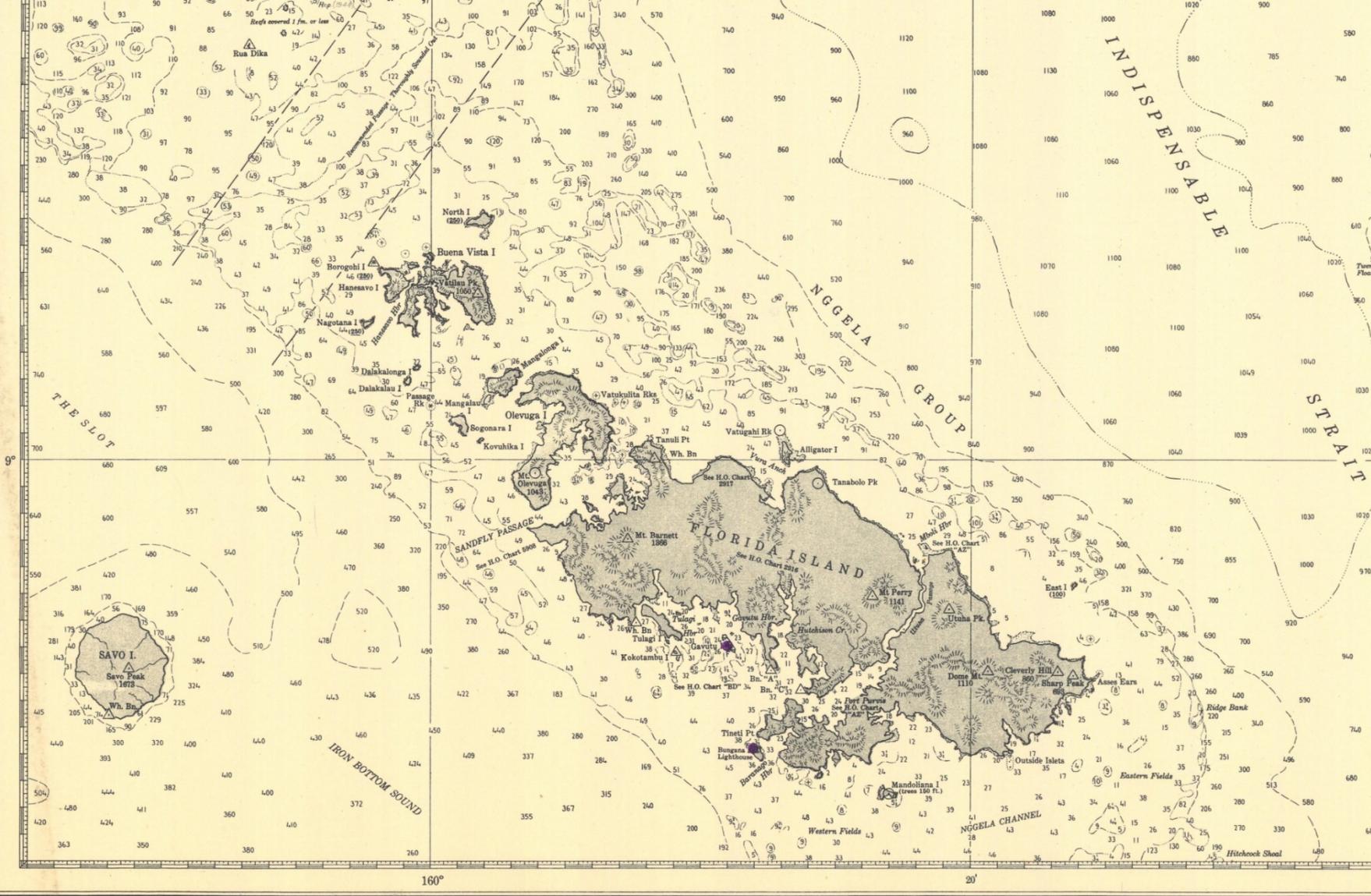
The PATHFINDER was the most illustrious of C&GS ships assigned to the Navy, serving from Guadalcanal to Tokyo Bay. Subjected to over 50 bombing raids, shot down two Japanese aircraft, survivor of a kamikaze attack at Okinawa, name sake of Pathfinder Reef in the Mariana Islands where it was the closest U.S. surface vessel to Japan when it conducted a survey there – the ship was one of the greatest of combat hydrography ships of the Second World War.



The HYDROGRAPHER, the second C&GS ship transferred to the Navy during WWII. This ship stayed under C&GS command during the war, first Commander William Scaife and then Commander William Gibson. Here the ship is shown in the Aleutians where it conducted many surveys including the retaking of Attu from the Japanese, for which Commander William Scaife received the Legion of Merit.



The C&GS ship OCEANOGRAPHER in the Solomon Islands. The OCEANOGRAPHER was known as the Green Gremlin because of its camouflage paint.



Small corrections | Printed: Oct. '44 | Nov. '44
 from Notice to Mariners | '44 - RIB
 from other sources: | X '44 | XI '44

Published May, 1944 on board U. S. S. OCEANOGRAPHER
 under authority of the SECRETARY OF THE NAVY
 Reprinted at the HYDROGRAPHIC OFFICE, July 1944

The Indispensable Strait chart showing Florida Island, Tulagi Harbor, Savo Island, The Slot, and Iron Bottom Sound, a name coined by C&GS hydrographers on the OCEANOGRAPHER.



McArthur's Navy - First Lieutenant Francis Popper, transferred C&GS officer, and regimental navigator of an Army Engineer Shore and Boat Regiment, plotting a hydrographic survey in New Guinea.



Marine intelligence officers transferred from C&GS – Front row L) Joseph Partington, R) Horace Conerly. Rear row L) Edmund Jones, R) Norman Porter. Somewhere in Solomon Islands.



Probably July 8, 1944. Major Robert Earle, USMC, C&GS artillery surveyor, was in charge of a Marine artillery survey platoon on Saipan on the morning of July 7, 1944, the day of the greatest Japanese banzai charge of World War II. His unit captured three Japanese battle flags during this engagement. Earle was awarded the Legion of Merit as he served in the Solomon Islands, Tarawa, and on both Saipan and Tinian as first a Marine defense battalion commander of a battery, and since August, 1943 as survey officer in a Marine artillery regiment. Earle is in front row center.



Hydrographic signal next to American flag on Mt. Suribachi, Iwo Jima. Hydrographic party from USS SUMNER placed this signal. The signal was erected shortly after the flag was raised. Hydrographic operations at Iwo Jima under command of C&GS officer Ira Sanders, who was fleet hydrographer to Admiral Richmond Kelly Turner. Sanders received Bronze Star for reconnoitering Iwo Jima in USS LITTLEHALES prior to landings. He was assigned to Admiral Turner's staff shortly after the tides problems at Tarawa. Sanders also directed hydrographic operations at Saipan and Tinian.



Also a family affair - Rear Admiral Leo Otis Colbert, Director C&GS, pinning aviator wings on his daughter, Mary Lou Colbert, who had just qualified as a pilot for the Army Women's Ferry Command at Ellington Field, Houston, Texas.

HOUSTON, TEX.—FATHER TO DAUGHTER—Rear Admiral L. O. Colbert is shown pinning the cherished wings of a graduate flyer on his daughter Mary Lou, after she had been given her diploma as a member of the Army Women's Ferry Command at Ellington Field.
—A. P. Wirephoto.



Women operating the projection ruling machine, an in-house designed instrument. Thousands of latitude/longitude graticules were made for virtually every region of the world, but particularly for the European and Pacific theaters of operations.



To Rear Admiral H. Arnold Karo, USN+GS - with best wishes and great appreciation of the assistance of the U.S. Coast and Geodetic Survey in making possible the above scene. C.W. Nimitz, Fleet Admiral, U.S. N

A note from Admiral Chester Nimitz to Rear Admiral Arnold Karo, Director of C&GS, expressing appreciation for the WW II role of C&GS officers.

INDIVIDUAL PROTECTION
ACTION -- ATOMIC ATTACK

1. TRY TO GET SHIELDED

Should you unexpectedly be caught out-of-doors, seek shelter alongside a building, or jump in any handy ditch or gutter.

2. DROP FLAT ON GROUND OR FLOOR

To keep from being tossed about, flatten out at the base of a wall, or at the bottom of a bank.

3. BURY YOUR FACE IN YOUR ARMS

When you drop flat, hide your eyes in the crook of your elbow. Avoid exposure of bare skin.

4. DON'T RUSH OUTSIDE RIGHT AFTER A BOMBING

After an air burst, wait a few minutes then render aid to others. After other kinds of bursts, wait at least 1 hour.

5. DON'T TAKE CHANCES WITH FOOD OR WATER IN OPEN CONTAINERS

To prevent radioactive poisoning or disease select your food and water with care; stick to canned and bottled things, if possible.

6. DON'T START RUMORS

In the confusion that follows a bombing, a single rumor might touch off a panic that would cost you your life.

KEEP THIS CARD WITH YOU AT ALL TIMES

NAME	(LAST)	(FIRST)	(MIDDLE)
	Howerter	Arthur	K.
CURRENT POSITION TITLE	Carto. Draftsman		CODE-GRADE GS-816-5
SECONDARY SKILL	Mechanical Engineering		CODE-GRADE
AGENCY	Dept. of Commerce	MAIN SUBUNIT OR BUREAU C&GS 521	
OTHER ORGANIZATIONAL UNIT	Chts, Geog. Br.		
SEX	DATE OF BIRTH	PERMANENT DISABILITIES	
M	8-2-94		

MAIL TO: U. S. CIVIL SERVICE COMMISSION
EMERGENCY REGISTRATION CENTER
c/o POSTMASTER, WASHINGTON, D. C.

OFFICIAL BUSINESS
WASHINGTON 25, D. C.
U. S. CIVIL SERVICE COMMISSION

Penalty for private use to avoid payment of postage, \$300 (GPO)

ALWAYS HAVE THIS CARD SET WITH YOU

INSTRUCTIONS TO EMPLOYEES

After an attack, when you know where you will be staying for a few days—

1. In the spaces for emergency addresses (one on each card of the set) write the address at which you can be reached.
2. Indicate in the space on the registration card any injury sustained in the attack and the time you will be available for work. List any local civil defense work you are doing.
3. Make sure that the card set is complete and up to date.
4. Mail the card set in one piece at any mail box. Fasten it together, or put it in an envelope only if the set would otherwise be separated.
5. Wait for the return of the acknowledgment card.
6. You will finally receive a notice of assignment telling you when and where to report for further work.

16-67876-1

DO NOT MAIL BEFORE AN ATTACK

Cold War Years - Instructions in case of nuclear attack

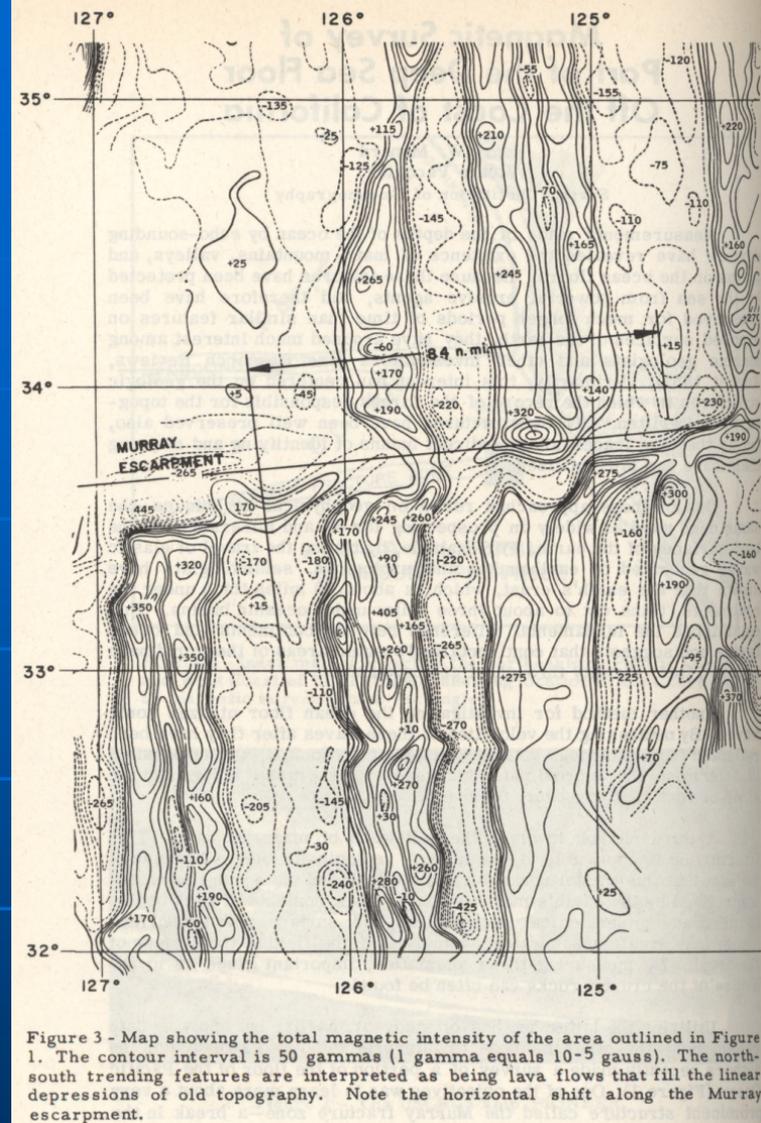


Clarence Burmister, retired as honorary Rear Admiral because of combat experience in WW I, an electronic genius. Converted GEE, a WW II bombing system to SHORAN, first pure electronic survey quality navigation system. Line of sight system. Invented EPI, a forerunner of LORAN-C. Used out to 300 miles with 75-meter accuracy.



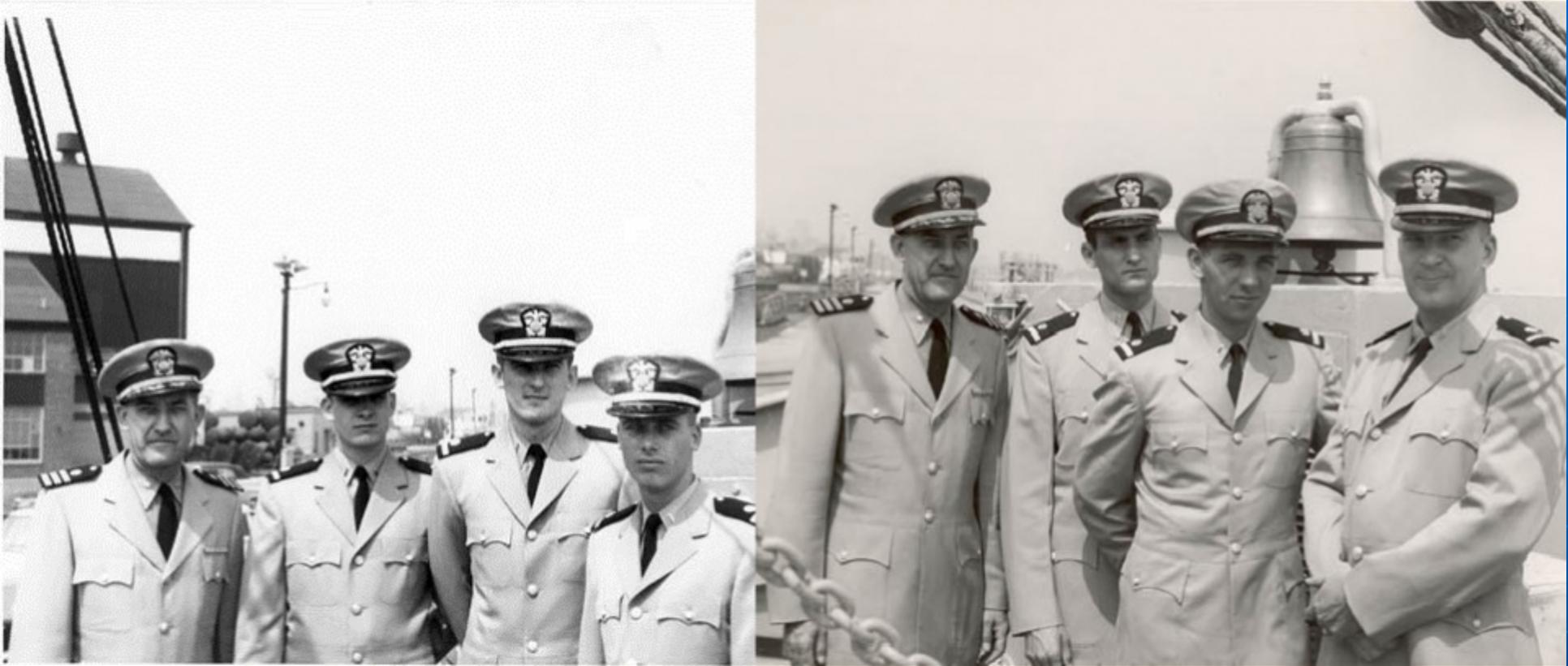
August 4, 1955,
Vacquier's
magnetometer
installed on C&GS
Ship PIONEER

The Pioneer Survey called "one of the most significant geophysical surveys ever made" by the great marine geologist Henry Menard. This survey discovered magnetic striping on seafloor, a key to plate tectonics.





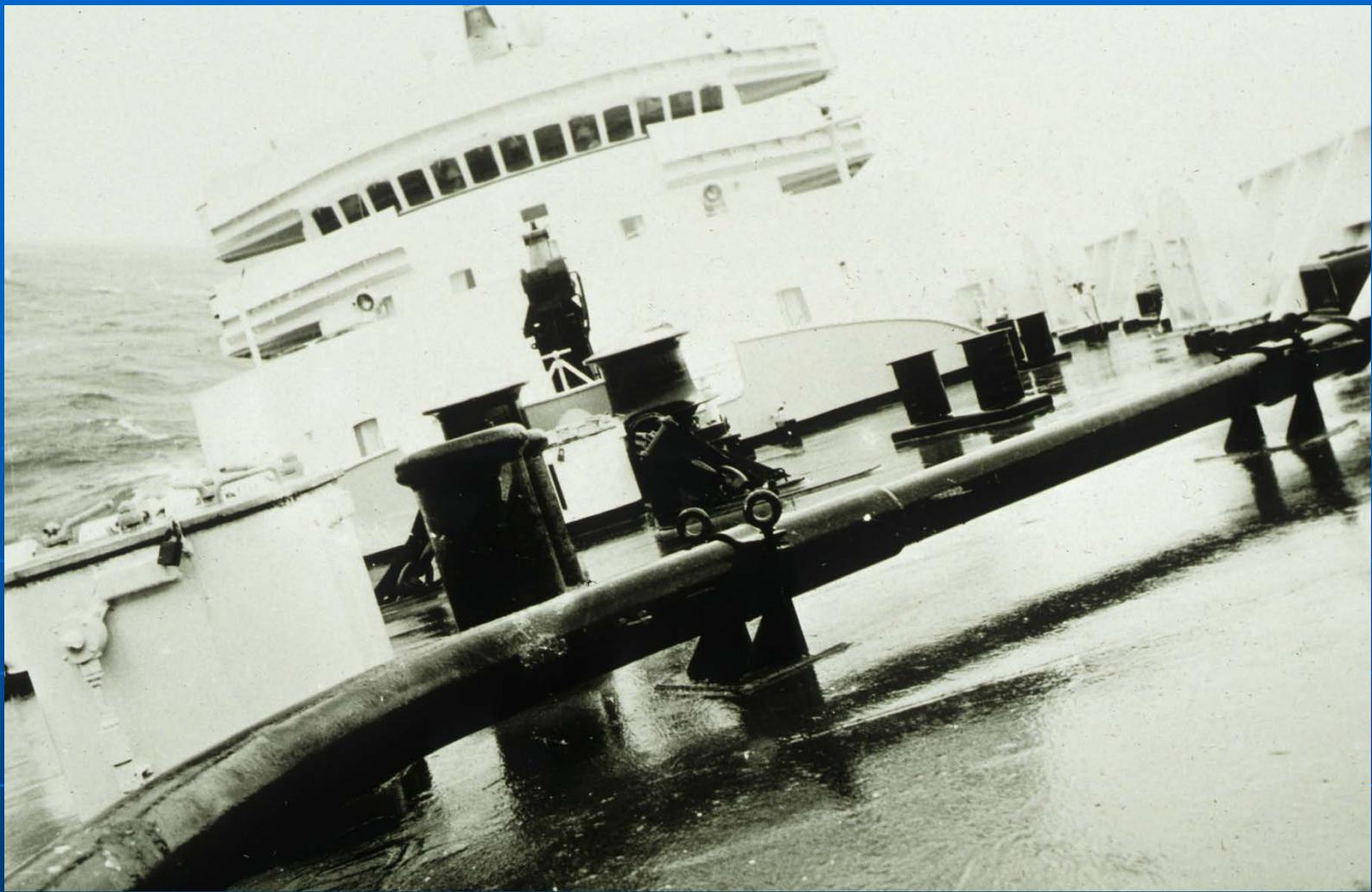
1959 - Scientific diving introduced by Dr. Harris B. Stewart (L), first and only Oceanographer of the Coast and Geodetic Survey. Went on to direct Institute of Earth Sciences under ESSA and then founded AOML under NOAA.



BOTC 1. 8/31/1960. (L to R) CDR Ray Stone, R. Lawrence Swanson, Thomas E. Krakowski, Paul W. Hund, Jr., CDR Stone, George A. Maul, James Collins, Bernard F. Karwisch. Dr. Larry Swanson, retired as Captain, presently Dean of Stony Brook University's School of Marine and Atmospheric Sciences (SoMAS). Dr. George Maul, resigned as Lieutenant Commander to pursue career in research first at AOML, then as Professor of Oceanography and Ocean Engineering and Sciences at FIT. Jim Collins, retired as Commander, started own survey company after retirement.



**The next time you use GPS, think of this -- Late 1960's early 1970's
– C&GS Transcontinental Traverse. 1:1,000,000 survey accuracy led
to computation of NAD83 and WGS84, model of earth used by GPS.
Led by Rear Admiral John Bossler, NOAA Corps.**



OCEANOGRAPHER south of Australia on around-the-world cruise 1967-68. The Queen of the Fleet showing the U.S. Flag and the ESSA Flag.



VADM H. Arnold Karo, cruise director, Deputy Administrator of ESSA, former Director of C&GS. Father of the 70's modern fleet. RAINIER and FAIRWEATHER still sailing.



President Dwight David Eisenhower at the 150th Anniversary Celebration of the founding of the United States Coast and Geodetic Survey

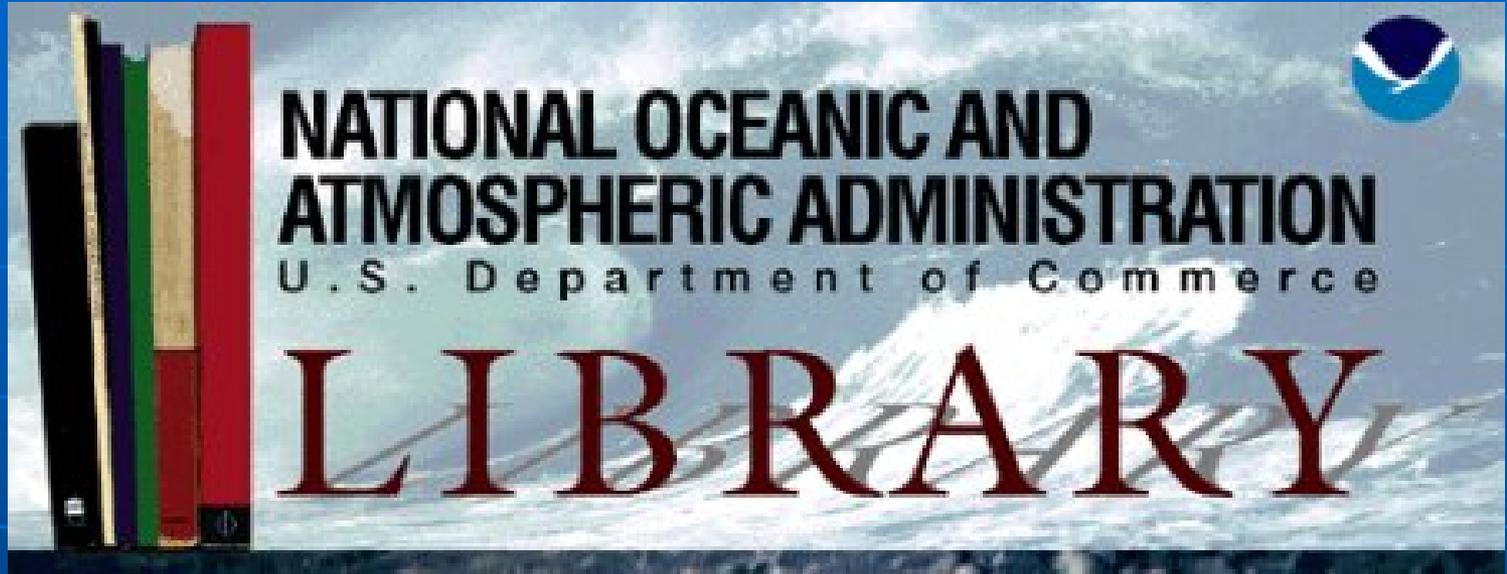
President Dwight David Eisenhower 1957 at the 150th Anniversary of the C&GS

“So, when a whole group - the Coast and Geodetic Survey, can look back over 150 years and have this feeling - and the conviction: we have done our duty, I submit to you there are no words that anyone can bring to you - the most brilliant adjectives ever invented by man - that can say to you more. We shall feel, as I am sure America feels - and as I know I do - that *the Coast and Geodetic Survey has done its duty for 150 years to the United States of America.*”

Thank You!!!

albert.e.theberge.jr@noaa.gov

NOAA Central Library



<http://www.lib.noaa.gov>

albert.e.theberge.jr@noaa.gov

NOAA History Resources



NOAA HISTORY

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Odyssey*

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<http://www.lib.noaa.gov/noainfo/heritage/heritage.html>

<http://oceanexplorer.noaa.gov/history/history.html>