

Maps, Weather, War and the NOAA Central Library



A Presentation of the NOAA Central Library

Prologue

Today's presentation and display are meant to honor America's Veterans through the collections of the NOAA Central Library.

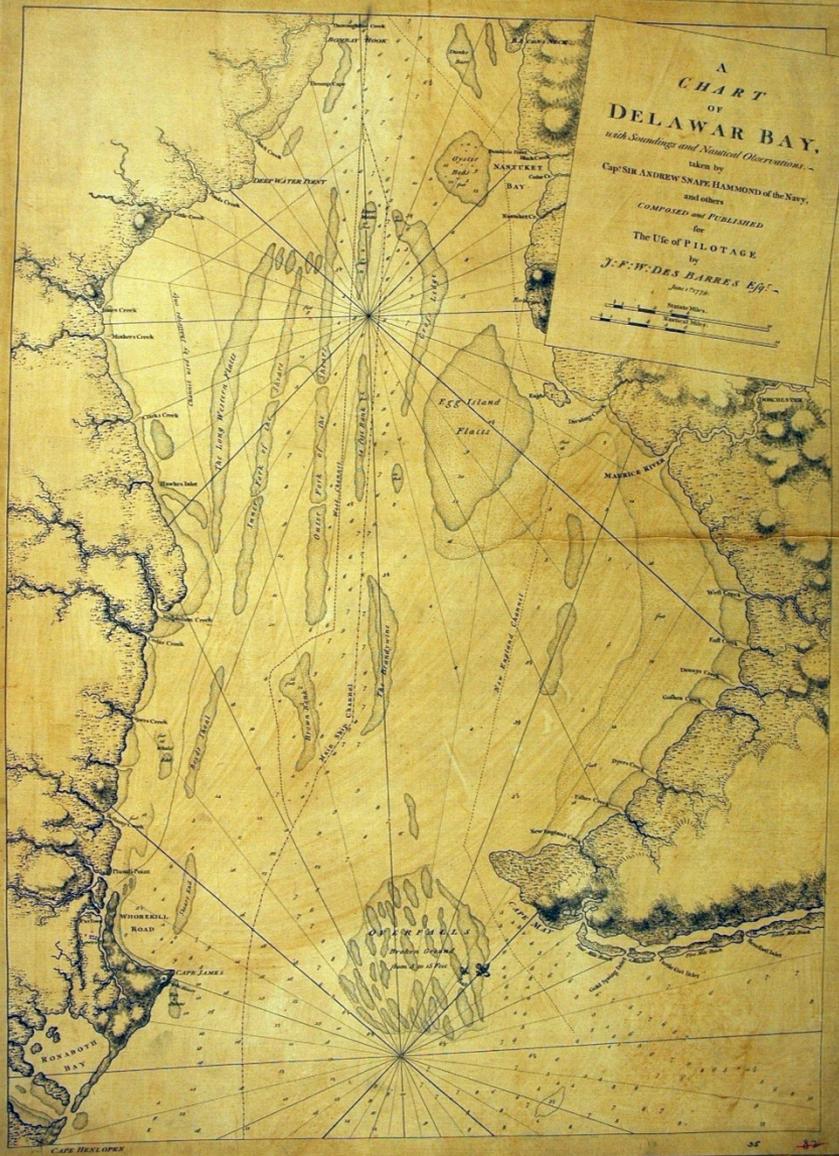
NOAA Central Library collections shed light on the role of environmental science in many of our national conflicts.

Tracking of NOAA Central Library collections through time, leads to the conclusion that the genesis of NOAA lies in the necessities of our ancestor agencies' wartime involvement. The need to have an integrated understanding of our total environment arose hand-in-hand with the evolution of mechanized war fighting capabilities.

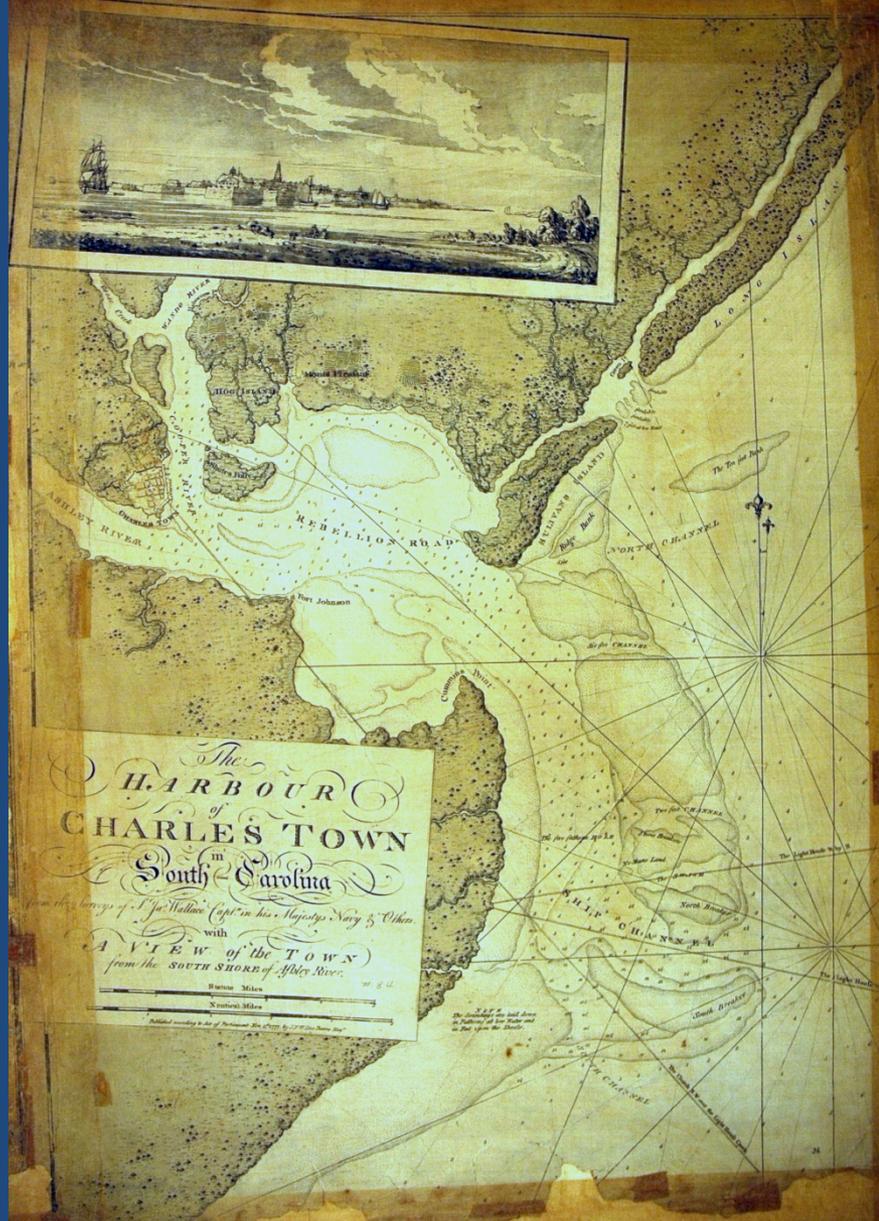
The Revolutionary War

The Atlantic Neptune - British Charts of the East Coast of the Future United States





A
 CHART
 OF
DELAWARE BAY,
 with Soundings and Nautical Observations -
 taken by
 Cap^t SIR ANDREW SNAPE HAMMOND of the Navy,
 and others
 COMPOSED and PUBLISHED
 for
 The Use of PILOTAGE
 by
J. F. W. DES BARRES Esq^r
 Jan^y 1776.



The
HARBOUR
 of
CHARLES TOWN
South Carolina
 from the Survey of J. G. Wallace Captⁿ in his Majesty's Navy & Others
 with
 A VIEW of the TOWN
 from the SOUTH SHORE of Ashley River.
 Nautical Miles
 Statute Miles



Coastal View of Charleston Harbor



Coastal View of Entrance to Boston Harbor

The Civil War 1861-1865

Maps

Hand-Written Reminiscences

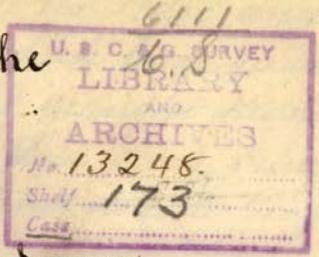
Official Publications

Photo Library

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.

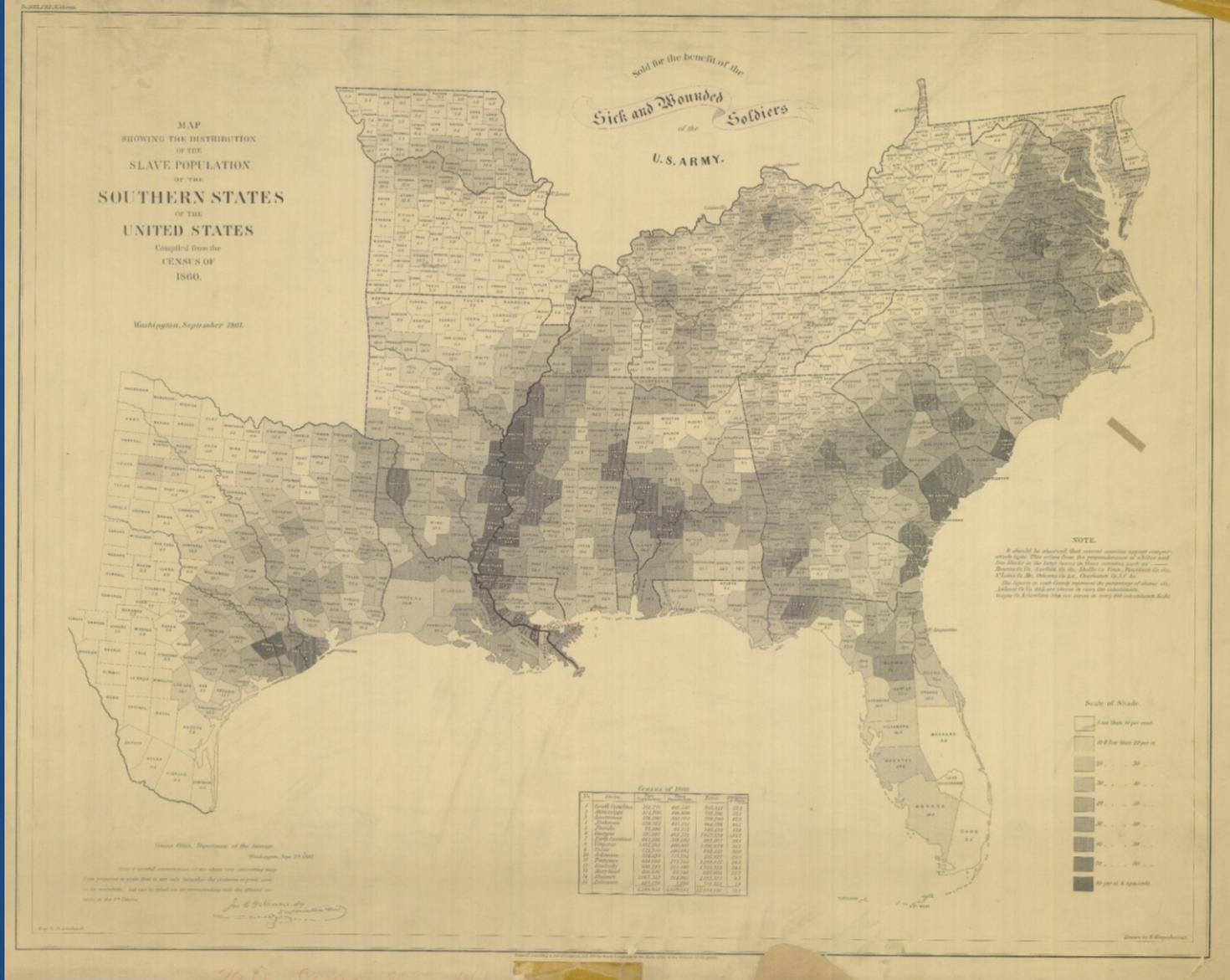
(With 8 Maps)

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

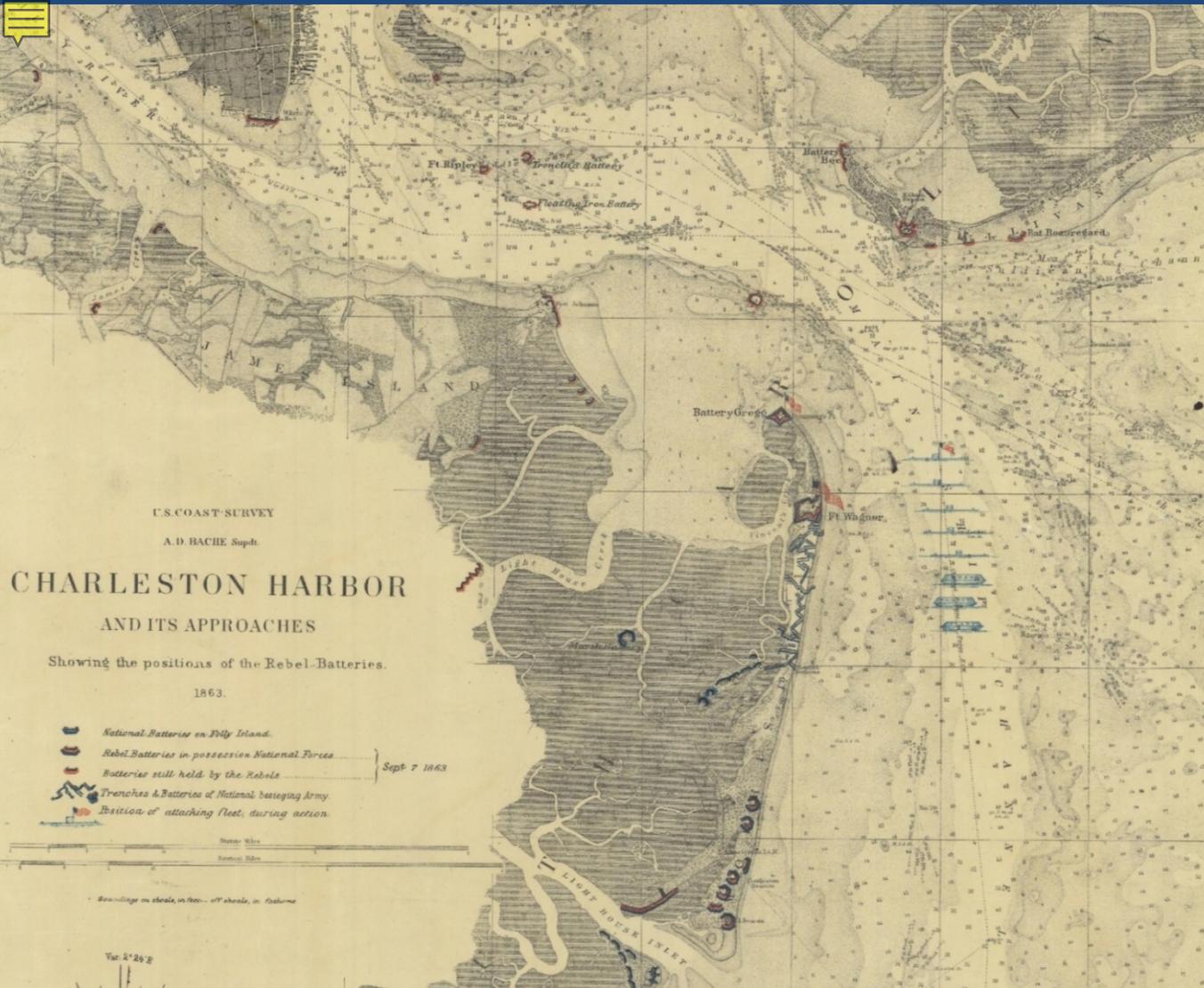
Coast Survey helped formulate Blockade Strategy. Tides, currents, depths, sailing directions, anchoring characteristics, magnetic variation, fresh water sources, vegetation, crops, and more found in these memoirs.



This map, known as “The Slavery Map”, was produced by the Coast Survey, a powerful propaganda tool of the Union and one of the most influential maps in American history. The population density shading technique was borrowed from shading of topographic features as a means to display slope angles.



The signing of the Emancipation Proclamation by Francis Bicknell Carpenter. Note the two maps on the right, both produced by the Coast Survey – “The Slavery Map” and a map of The State of Virginia. Painting resides in Senate wing of Capitol Building.



1863 chart of Charleston harbor used as tactical map showing the positions of both rebel and Union batteries and the ironclads during the final attack on Fort Wagner, Morris Island.

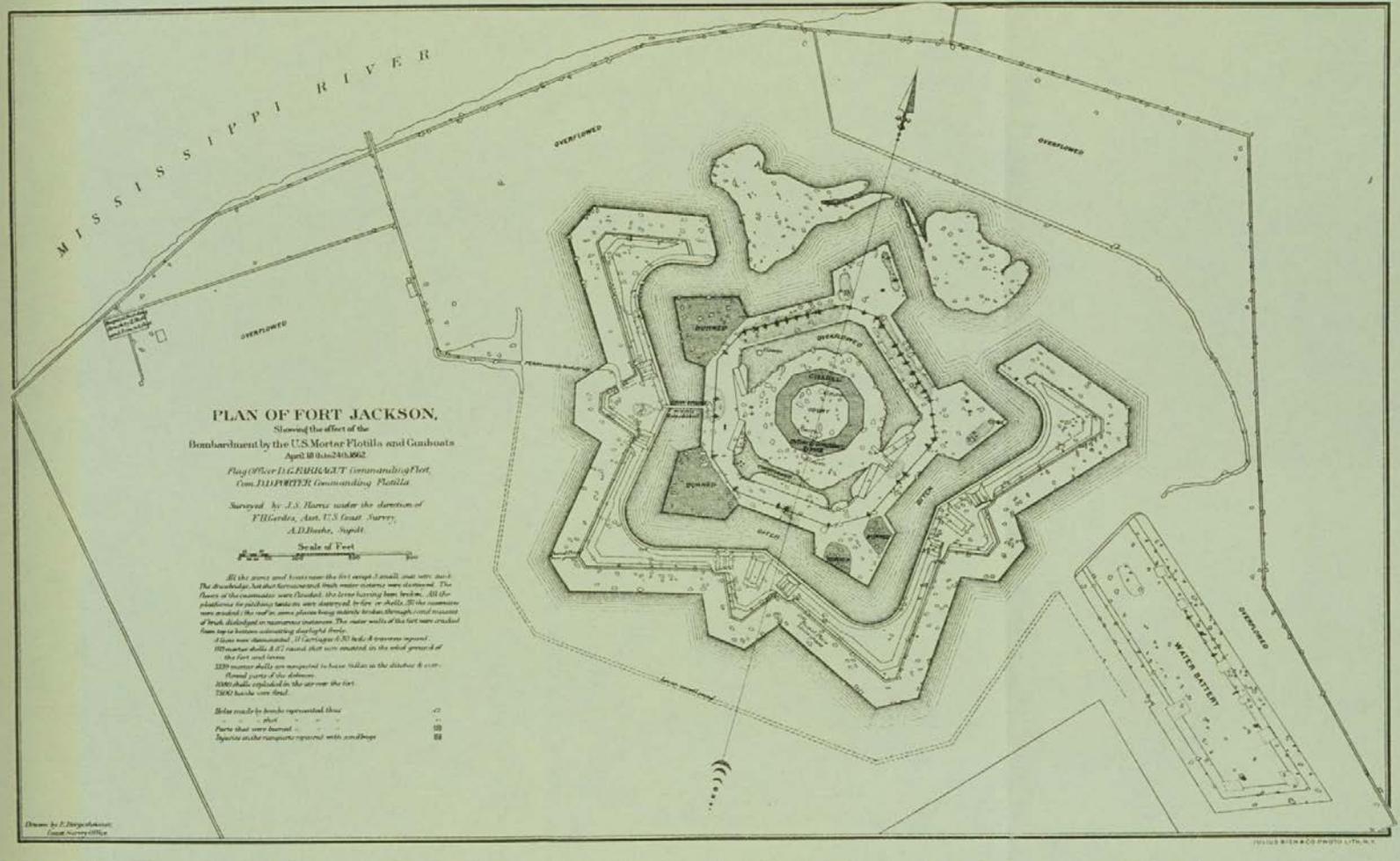
The attack on Fort Wagner was commemorated by the film “Glory”, the story of the 54th Massachusetts Volunteer Infantry, made up primarily of free African Americans.



The Battle of New Orleans – Reducing the Forts

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

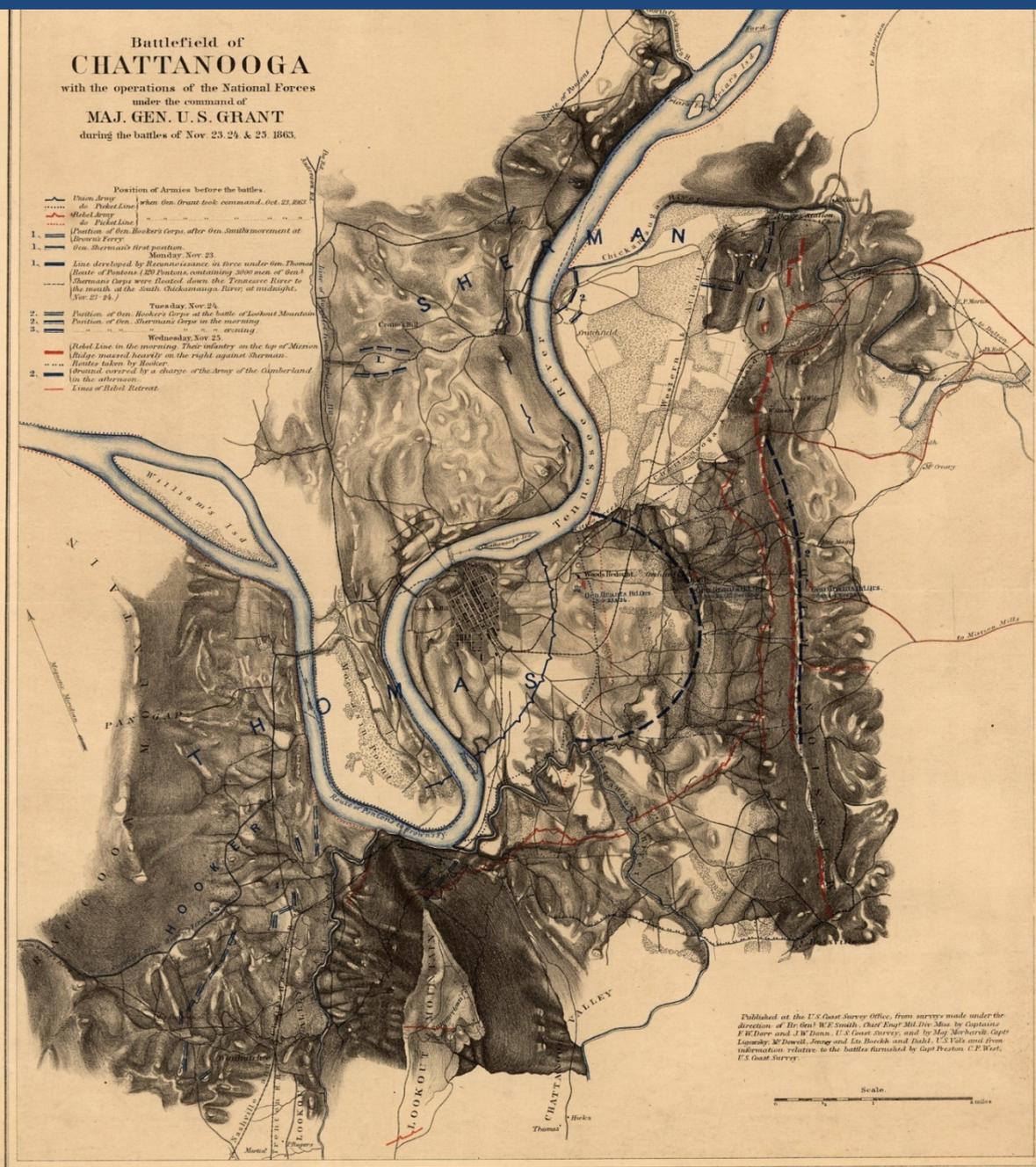
MORTAR-SCHOONERS ENGAGED AGAINST FORT JACKSON.



Fort Jackson, guarding the approach to New Orleans, shows the effects of one of the first uses of geodetic principles to aim artillery in blind fire. Then Commander David Dixon Porter developed the concept of indirect fire using Coast Survey crews to position the mortar schooners.

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.



Chattanooga was a battle fought based on topography. The Coast Survey produced much of this map under combat conditions. This particular map has been touted as one of the most accurate of the war. The Coast Survey produced hundreds of battle maps during the war.

(Sheet No. 1)

U. S. COAST SURVEY

A. D. Bache Supdt.

PART OF

ARLINGTON

VIRGINIA

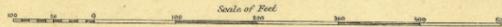
Surveyed for Gen. M. C. Meigs Q. M. G. U. S. A.

Scale $\frac{1}{1200}$

1864

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

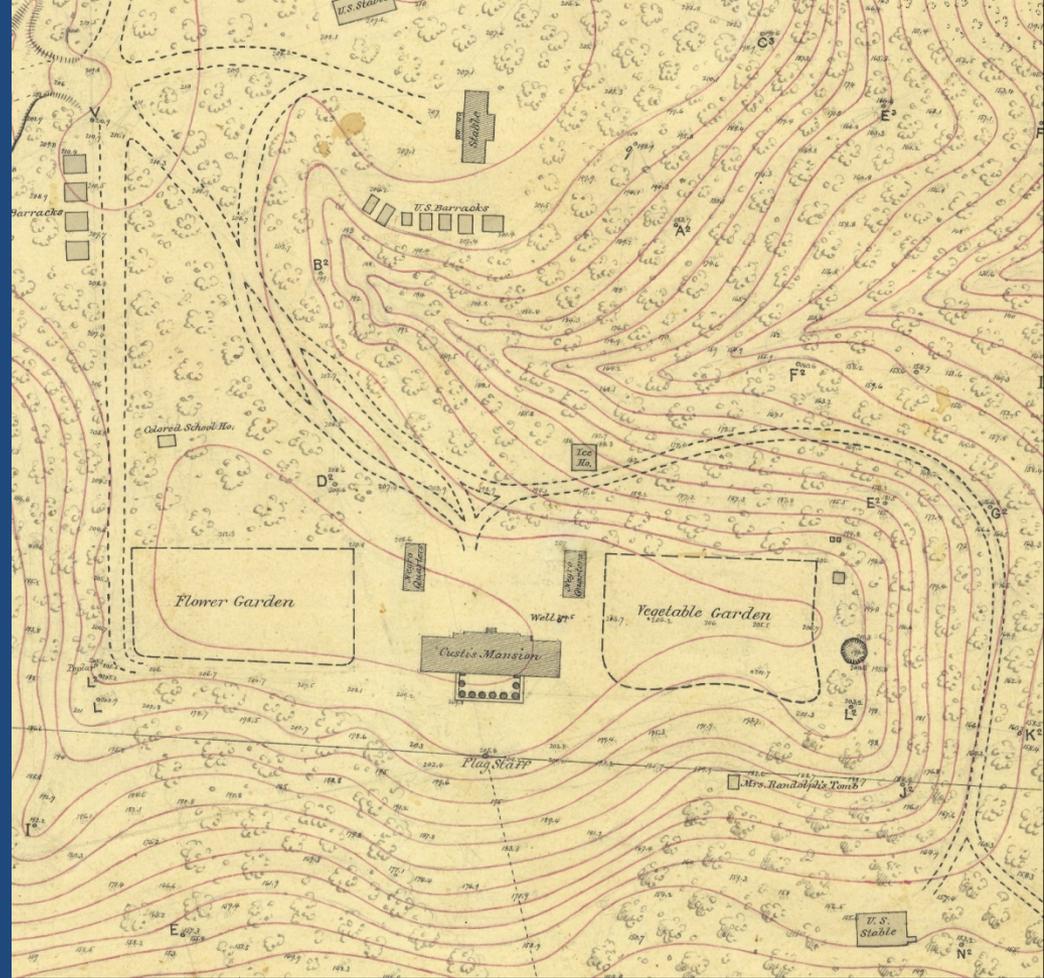
By *E. Hergesheimer*
U. S. Coast Survey



Register No. 1025.

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

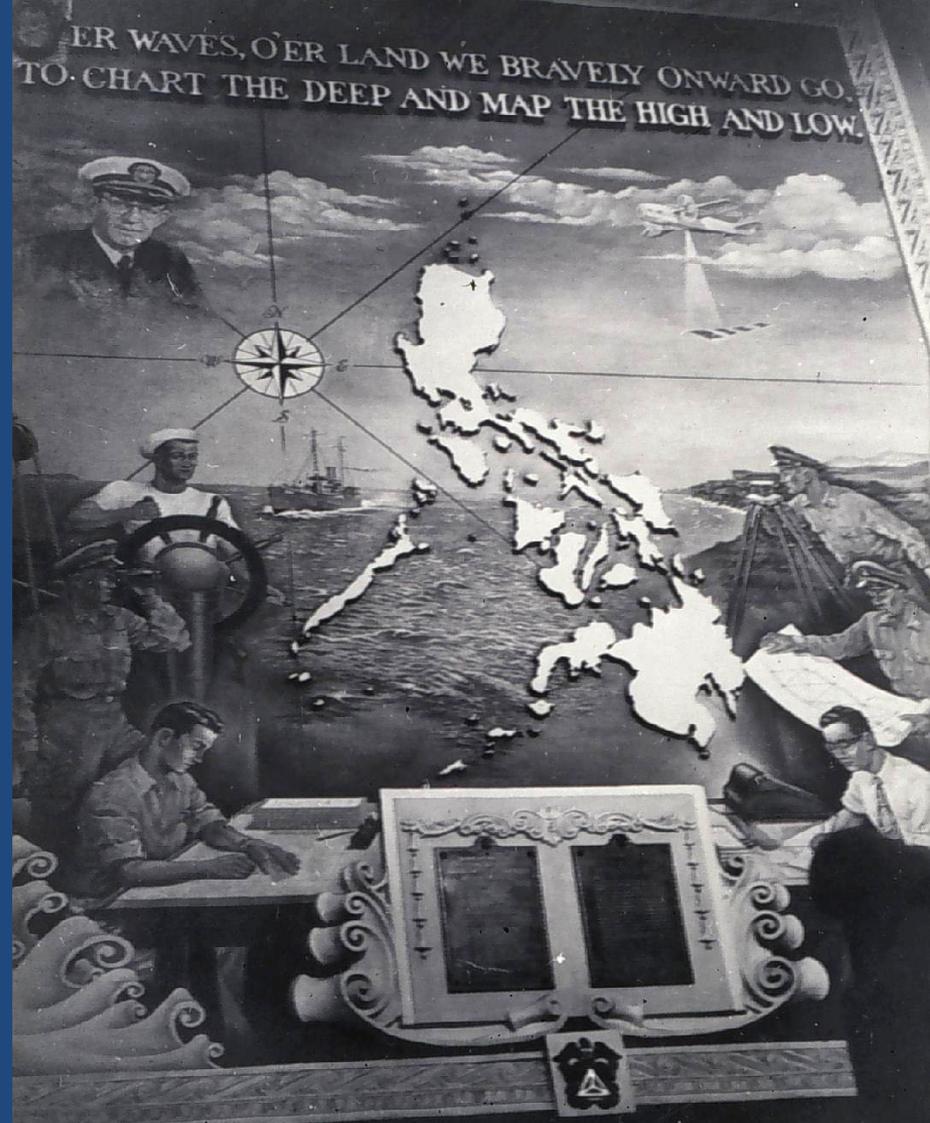
Area in sq. miles	0.001
General contour	0.001
Shoreline and water courses	0.001
Boundaries	0.001
Roads	0.001



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. <http://www.photolib.noaa.gov/cgs/hmaps13.html>

The Spanish American War 1898

No Direct Involvement - But



The view from the stern of the Coast Survey Steamer BACHE the morning after the USS MAINE blew up in Havana Harbor. The BACHE served as a dispatch boat following this incident. The Spanish-American War led directly to the C&GS surveying the Philippine Islands, of great tactical and strategic value in the Second World War.

World War I

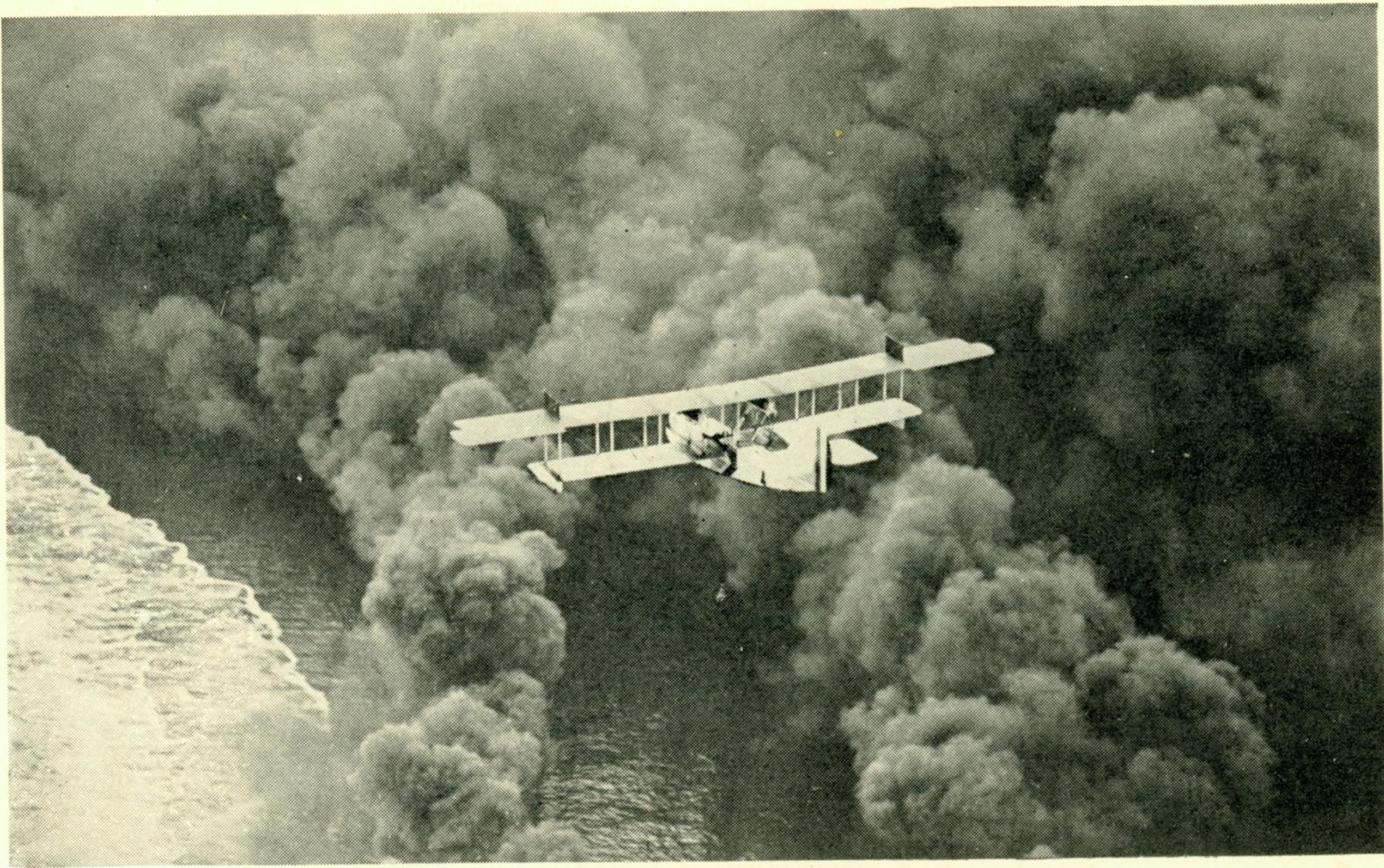
The beginnings of significant use of meteorological data and forecasting by the armed forces. The use of “aeroplanes”, dirigibles , and captive balloons, long range artillery, chemical warfare, and other factors made this imperative.

WEATHER BUREAU TOPICS AND PERSONNEL

AUGUST, 1917.

THE WEATHER BUREAU AND THE WAR.

Never in the history of conflicts of the world has the weather proved such a potent factor as in the war that is now in progress in Europe. This is largely due to the use of aeroplanes, dirigibles, and captive balloons, to the highly perfected and powerful artillery, and to the modern methods of warfare first brought into practise in this conflict. Foreknowledge of existing and expected weather conditions, both in the air and on the surface, has therefore become of the utmost importance. When active preparations for the military preparedness of this country were begun, when the declaration was made by the United States that a state of war existed with the German Government, it was apparent that the Weather Bureau had an important part to play.



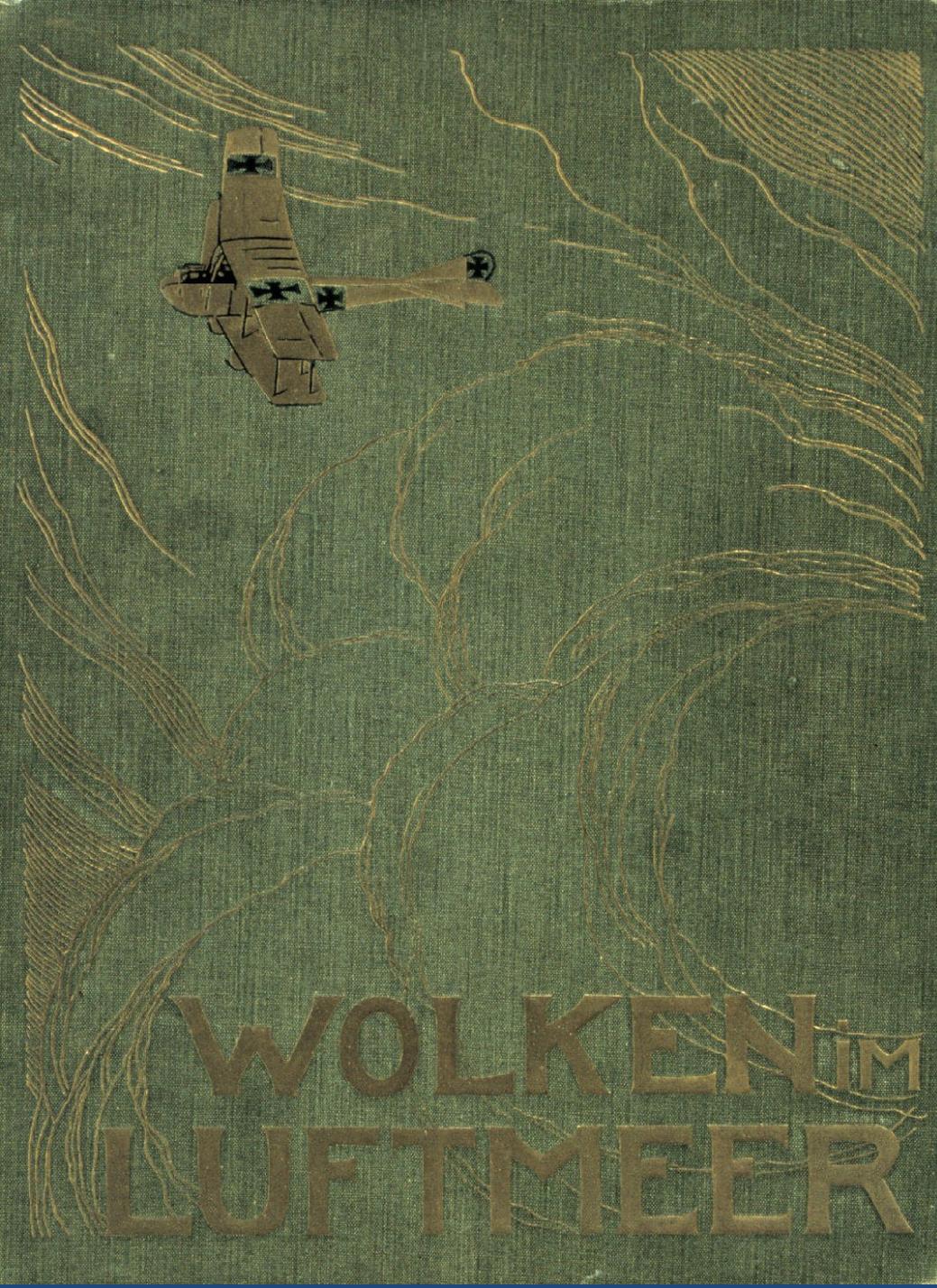
Official Photograph U. S. Navy

F 5 L IN A SMOKE SCREEN

**US Navy reconnaissance Felixstowe Flying Boat flying
over a smokescreen**



**Army Meteorologists in Training at Texas A&M.
Trained by Oliver Fassig of the Weather Bureau**



German World War I Cloud Atlas for Aviators

The other side also
knew the necessity of
understanding the
environment.



Nr. 103.
Dunstfeld mit Haufenwolken
S. und Cu.

Haze and cumulus. A typical illustration -



Nr. 140.

Abendstimmung im heiligen Lande

**Translation: “Evening mood in the Holy Land.”
A Wagnerian vision**

PAST 24 HOURS—Rainfall, Weather and Cloud.

Place	RAINFALL		LOW CLOUD—Scale 0-10					LOCAL WEATHER.
	34 hours for last 24 hours	Now	10 h.	15 h.	1 h.	7 h.	2 h.	
2 nd Army	Trace	30.2						Wind light or moderate between South and S.E. Weather Generally cloudless with some mist, but overcast in places early this morning. Frost at night.
G.H.Q.	Nil	36.9						
1 st Army	Nil	46.0						
3 rd "	Nil	41.0						
4 th "	Nil	52.1						

Scale	BARIUMETER											
	0 h.	3 h.	6 h.	9 h.	12 h.	3 h.	6 h.	9 h.	12 h.	3 h.	6 h.	9 h.
1000												
900												
800												
700												
600												
500												
400												
300												
200												
100												
0												

TO-MORROW

Sun rises 0718 h. at 1st Army

" sets 1554 h. "

Moon rises 2353 h. "

" sets 12.12 h. "

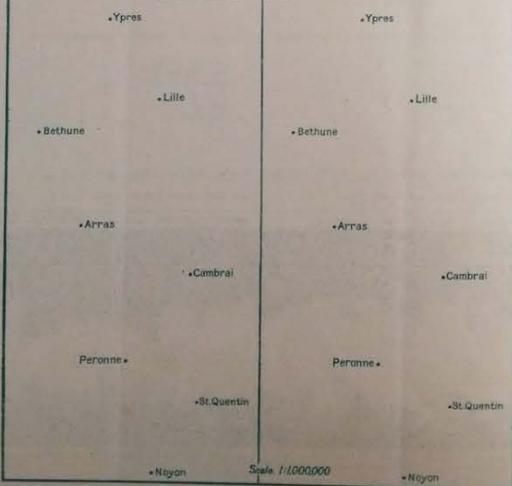
" souths h. "

" south altitude 15 "

" phase (1st Qr) 25 "

WIND, TEMPERATURE AND VISIBILITY ON THE BRITISH FRONT.

YESTERDAY AFTERNOON.	Temperatures.		This Morning.	This Morning.	Red, 1 h.	Black, 7 h.	Brown, 9 h.	visibility.
	Height in feet.	Upper Air.						
Red, 13 h.								
Black, 18 h.								



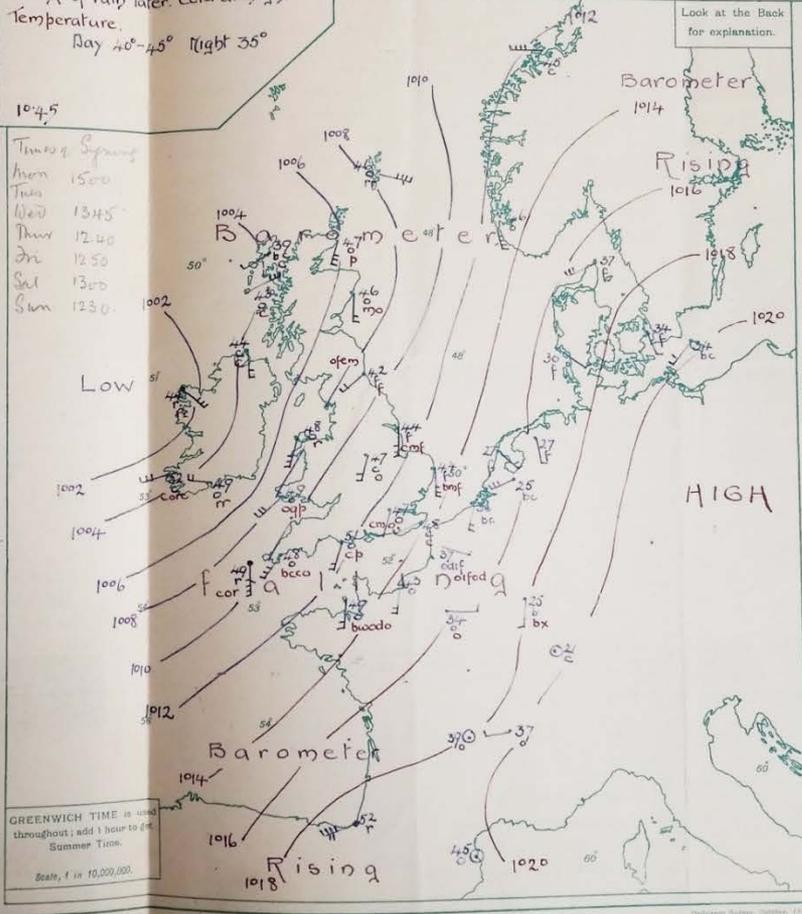
FORECAST OF WEATHER.—FROM TODAY TO NOON TO-MORROW.

Wind Southerly 10 to 15 mpb increasing later to 20-25 mpb. and changing towards S.W.

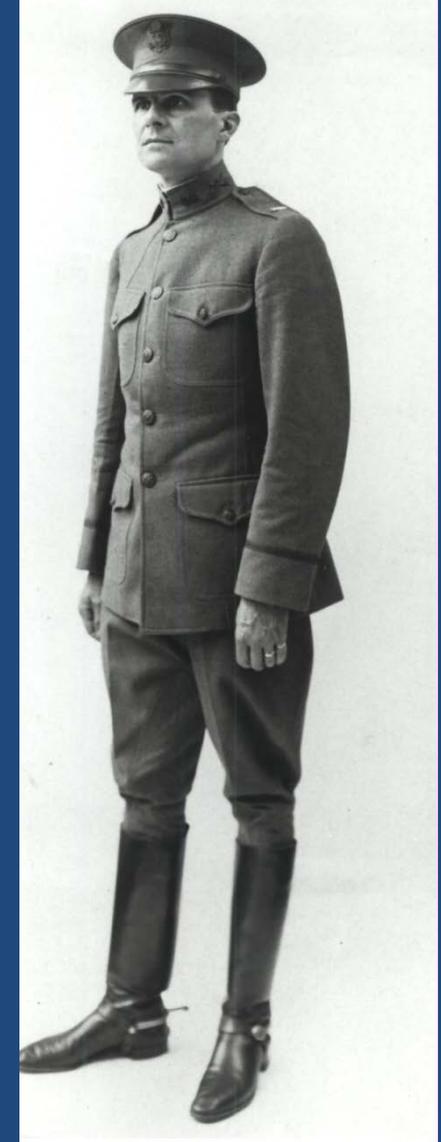
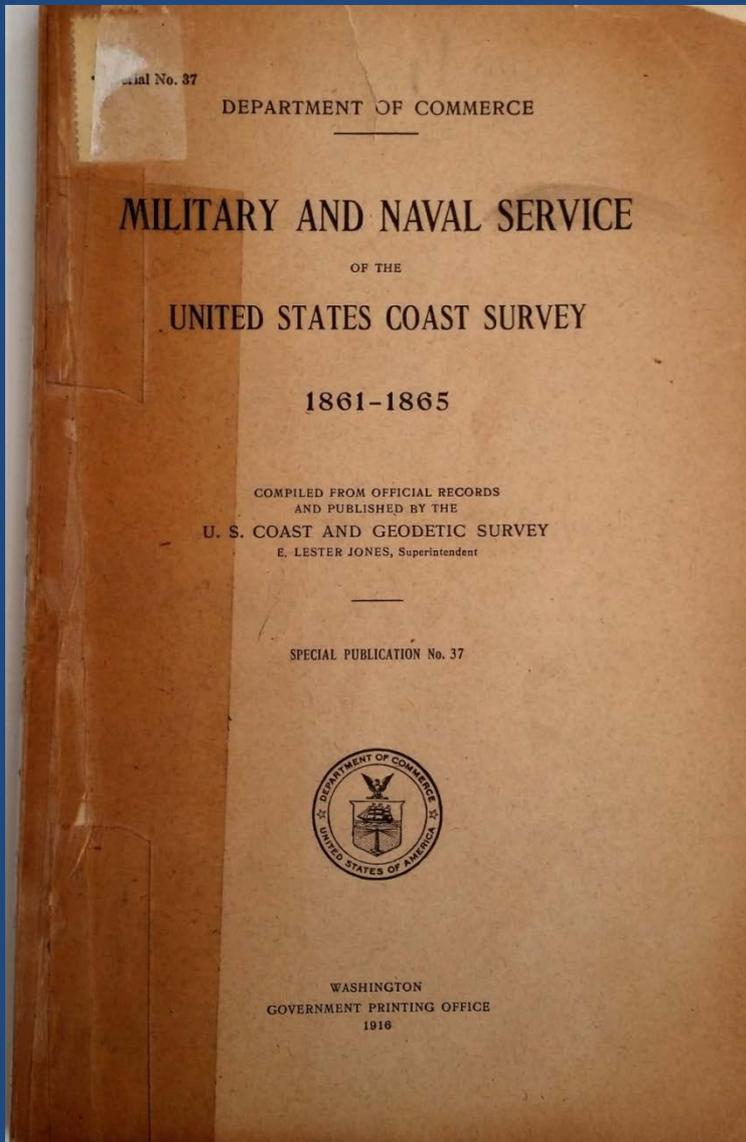
Weather Mainly dull and misty with occasional slight drizzle at first and a risk of rain later. Cold at night.

Temperature. Day 40-45° Night 35°

General Outlook. The Atlantic depression is spreading Eastwards and the barometer is rising in S.W. France. The weather will be mainly dull with some drizzle and probably rain later. The wind will change towards S.W. and fresh.



Example British Meteorological Map - Produced two weeks after Armistice Day.



Ernest Lester Jones, Father of the C&GS Commissioned Service, had this compilation of Civil War reminiscences produced upon taking office. It was a step in converting the field officers to commissioned status as a separate service upon entry into WW I.

Coast and Geodetic Survey and World War I

May 22, 1917 - law enacted making field force of Coast Survey commissioned officers and able to be transferred into armed services – ½ transferred to Army, Navy, Marines – some ships transferred to Navy. USC&GS SURVEYOR with deck gun and camouflage below.



Coast and Geodetic Survey personnel served as:

Troop Ship Navigators

Orienteering Officers (Artillery Surveyors)

Mine Sweeping Officers

Intelligence Officers

Acoustic and Geophysical Researchers

World War II

Finest Hour of the Weather Bureau and the Coast and Geodetic Survey



誌第33號

北米合衆國西岸水路誌

サン、ディエゴ灣とホアン、デ、フカ海峡

昭和13年3月刊行



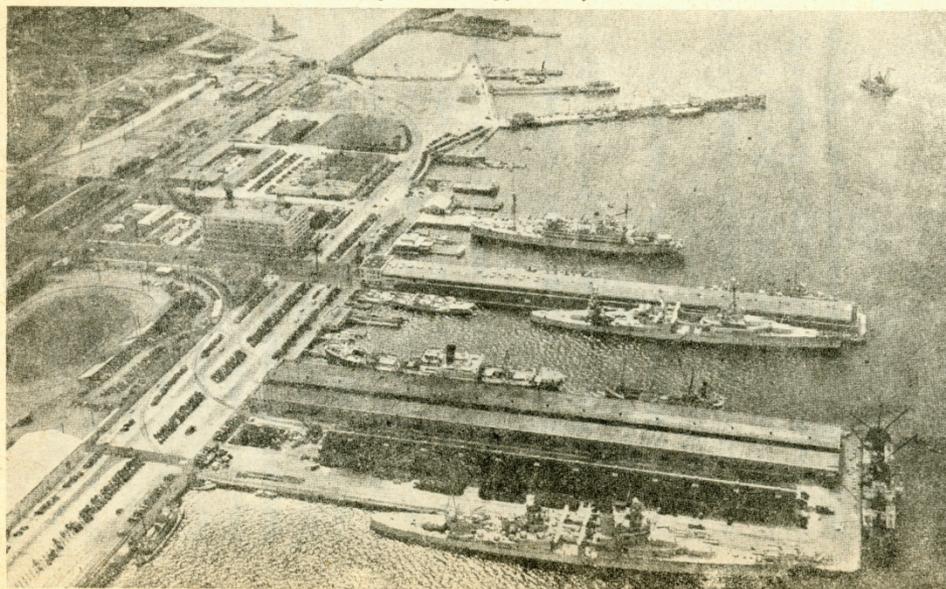
水路部

Pre-World War II Japanese
Coast Pilot

第47頁對面

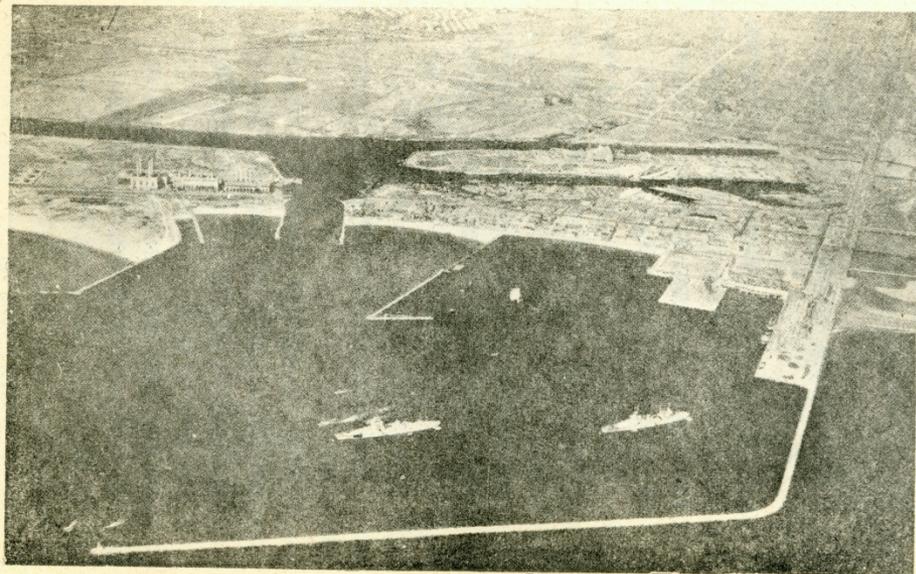
San Diego

Municipal Pier No. 1 及 Broadway Pier



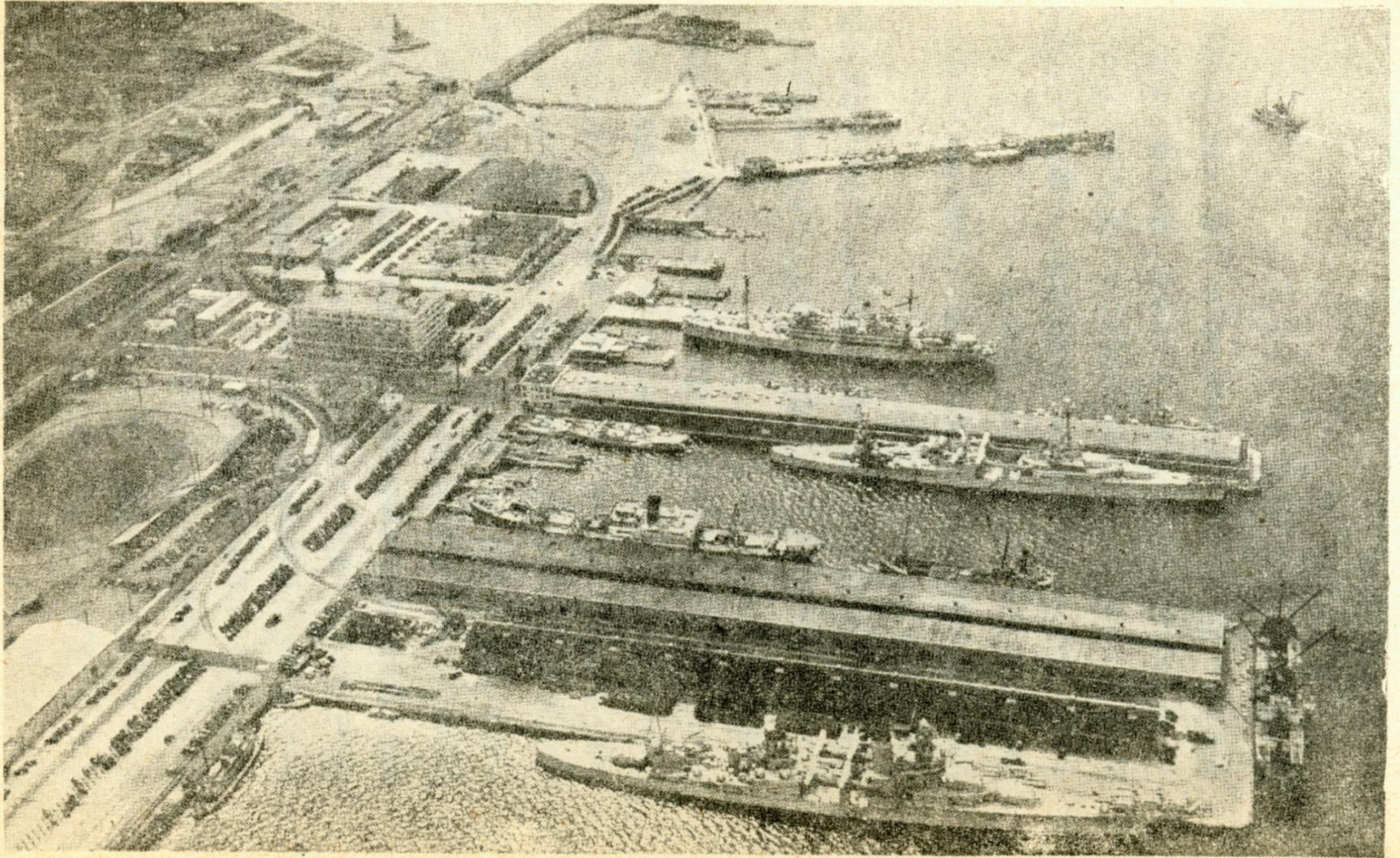
第73頁對面

Port of Long Beach



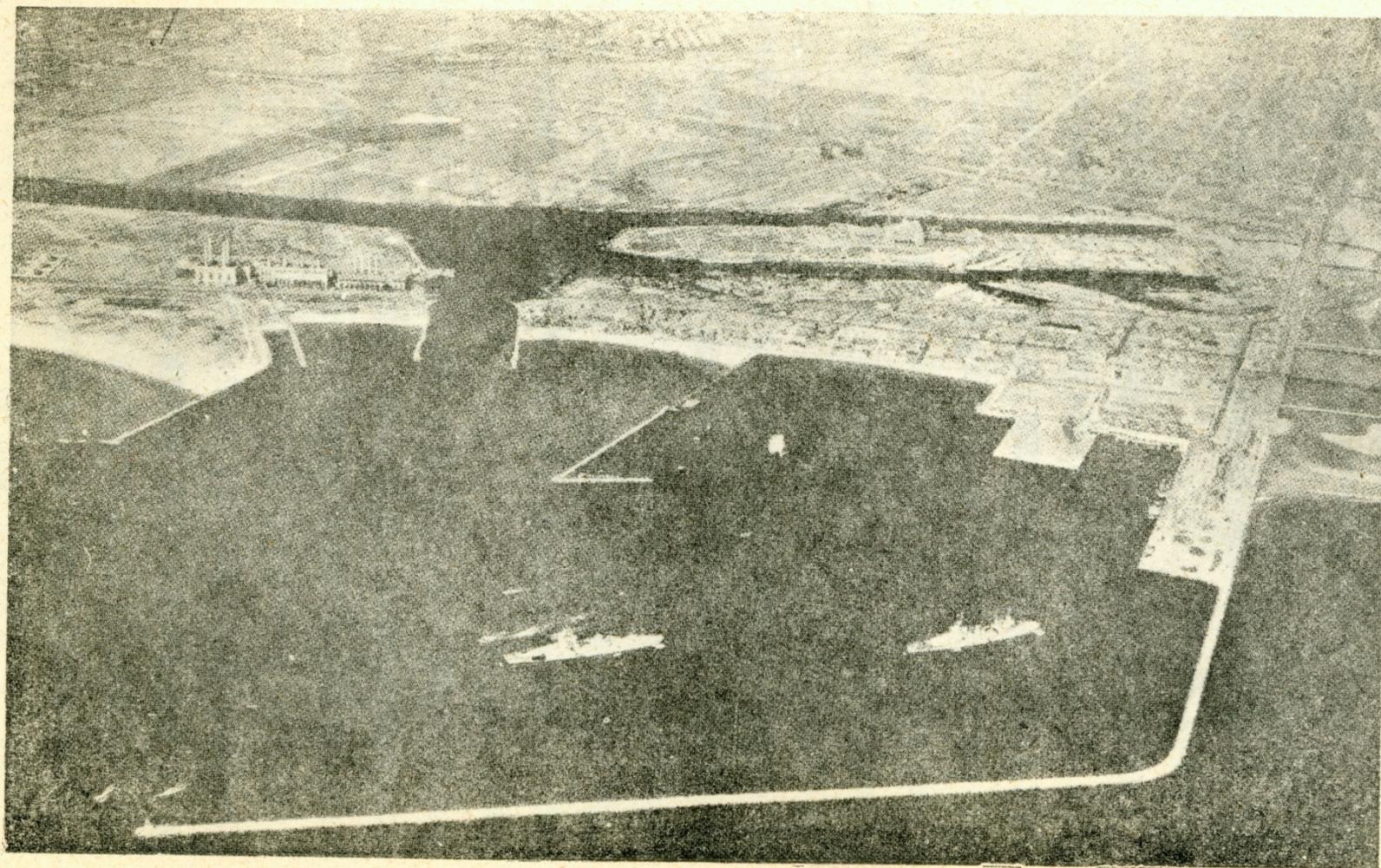
San Diego

Municipal Pier No. 1 及 Broadway Pier



San Diego Harbor – aerial views for ship navigation???

Port of Long Beach



Long Beach Harbor

525.6
:47
Oversize

DEUTSCHE SEEWARTE

ATLAS
DER
GEZEITENSTRÖME
FÜR DAS GEBIET
DER NORDSEE, DES KANALS
UND
DER BRITISCHEN GEWÄSSER

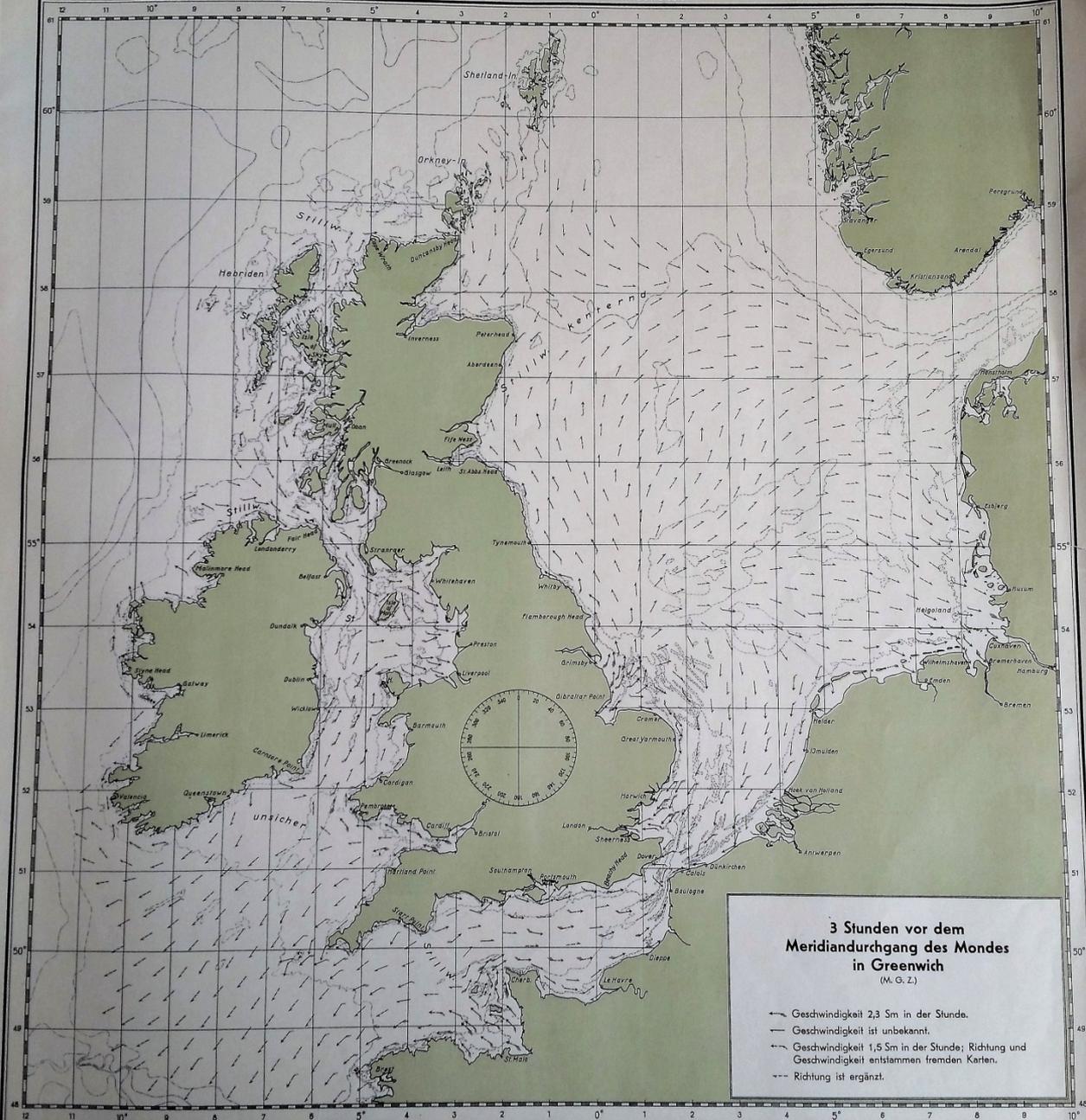


PREIS: RM 6,-

E. S. MITTLER & SOHN
BERLIN SW 68, KOCHSTRASSE 68-71

1936

**Atlas of tidal
currents of the
North Sea and
British waters
dated 1936.**



3 Stunden vor dem Meridiandurchgang des Mondes in Greenwich (M. G. Z.)

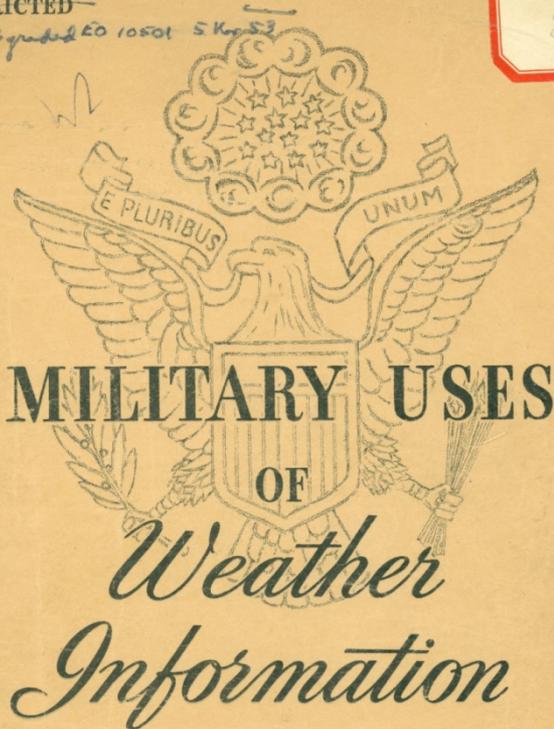
- Geschwindigkeit 2,3 Sm in der Stunde.
- Geschwindigkeit ist unbekannt.
- Geschwindigkeit 1,5 Sm in der Stunde; Richtung und Geschwindigkeit entstammen fremden Karten.
- Richtung ist ergänzt.

Tidal currents three hours after the moon's meridian passage.

WEC-92-1602

RESTRICTED

Not up graded EO 10501 5 Nov 53



PRELIMINARY

M:355
U581m

SEP 20 1951

RESTRICTED

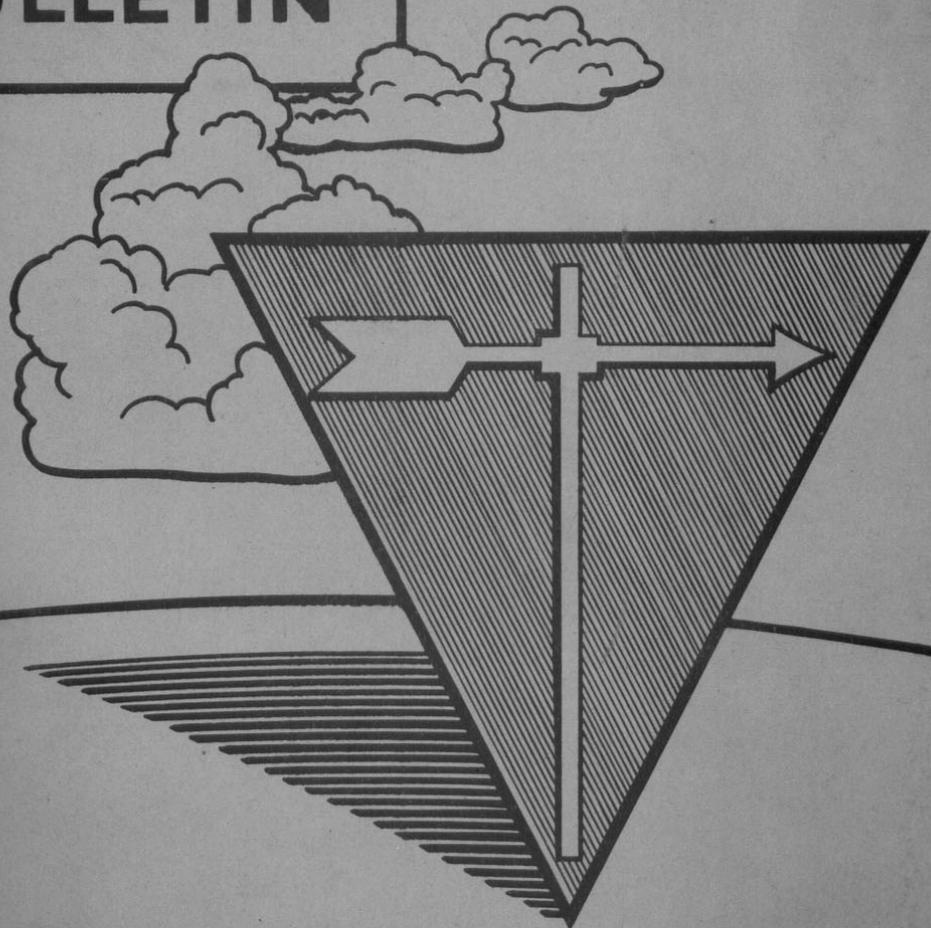
RESTRICTED

TABLE OF CONTENTS

	PARA- GRAPH	PAGE
CHAPTER 1 - GENERAL		
Purpose and Scope	1	1
The Military Value of Weather Information	2	2
Definitions	3	3
b. Climatology		3
c. Long Range Forecasts		4
d. Short Range Forecasts		5
Conclusions	4	5
CHAPTER 2 - WEATHER IS WORLD WIDE - NOT JUST "LOCAL"		
General	5	8
Rain	6	8
Winds	7	8
World Weather	8	10
CHAPTER 3 - ARMY AIR FORCES		
SECTION I - GENERAL		
General	9	12
Mission of the Army Air Forces	10	14
Influence of Weather on Aircraft Operation	11	14
Weather in Strategic Planning	12	14
Table I - Weather Elements Influencing Aircraft Operation		15
Weather in Tactical Planning	13	21
Weather in Operations	14	22
Summary	15	24
SECTION II - BOMBARDMENT		
General	16	26
Mission	17	27
Importance of Weather	18	27
Uses of Weather for Strategic Planning	19	27
Uses of Weather for Tactical Planning	20	31
Uses of Weather for the Execution of a Plan	21	32
b. Weather Conditions at the Target		32
(1) Clouds		32
(2) Winds		33
(3) Temperature		33
c. Weather Conditions En Route		33
(1) Ceiling and Visibility		33
(2) Winds		33
(3) Special Phenomena		34
d. Forecast Checklist		34
e. Weather at Pilot Briefing		35

269 page document, 174 paragraphs discussing specific problems, 19 sections, and 5 chapters - only for Army and Army Air Forces

WEATHER SERVICE BULLETIN



HEADQUARTERS WEATHER WING AAF
ASHEVILLE N.C.

A wonderful newsletter incorporating history of the Air Weather Service, accomplishments, march of technology, war vignettes from service weather observers, and more.

On-line at:

http://docs.lib.noaa.gov/noaa_documents/NOAA_related_docs/US_Air_Forces/Weather_Service_bulletin/

AIR SUPPORT WEATHER: I

by Corporal Irving Ripps

In early April of 1943 during the Tunisian campaign, the American 34th Division was getting ready for a big push. The plan was to drive the Germans past Fondouk and on to the Kairouan Plains. Somebody thought of an idea in connection with air support. Why not send a forward party of weathermen to an observation post on the front lines to get the exact weather conditions over the target area? The reports would be sent back to the Allied fighter base at Thelepte, an advance strip where most of the air support fighter missions would originate. Major David M. Ludlum (then a lieutenant), StAWO at Thelepte and later SWO for General Clark, offered to test the plan. When the offensive was ready to be launched, he and two observers took off for Fondouk. This was the first air support weather party to operate in this war.

An example vignette. Note David Ludlum as first forward air support meteorologist. Went on to become 5th Army staff weather officer.

**Weather Service Bulletin, Volume 3, No. 9.
September-October 1945.**

7h Tuesday 6th June 1944

LONDON OBSERVATIONS For the 24 hours ending morning at Day 24. (See also General Inference on page 2.)

Station	Weather		Temperature				Rainfall		Sunshine		Humidity	
	Morning	Afternoon	Day	Night	Min	Max	Day	Night	hrs	%	24-hr	Day
Exe	bcc	cyc	62	50	43	62	0.4	2.4	1	70	70	
Greenwich	c	cyc	63	48	73	64	1.1	3.2	1	63	63	
Woolwich	c	c	64	49	42	64	1.0	3.4	1	52	47	
Wapping Pier	c	c	65	50	47	65	0.4	0.4	1	58	53	
Canal Square	c	c	63	49	44	63	1.1	1.1	1	56	53	
Newington	cbc	bc	63	50	41	63	0.7	0.7	1	50	50	
Newspaper	cbc	bc	63	46	43	63	0.3	0.3	1	50	50	

Atmosphere: Pressure Millibars of solid mercury per cubic meter. Rain in hours and tenths. Max 24-hr. Min 24-hr. Time of rain of period.

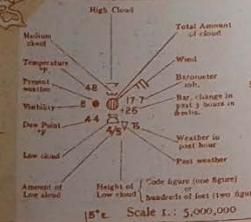
GT. BRITAIN METEOROLOGICAL OFFICE

DAILY WEATHER REPORT BRITISH SECTION

APR. - JUNE 1944

RAREBK QC 989 G7 G7 1944 (Apr.-June)

STATION MODEL



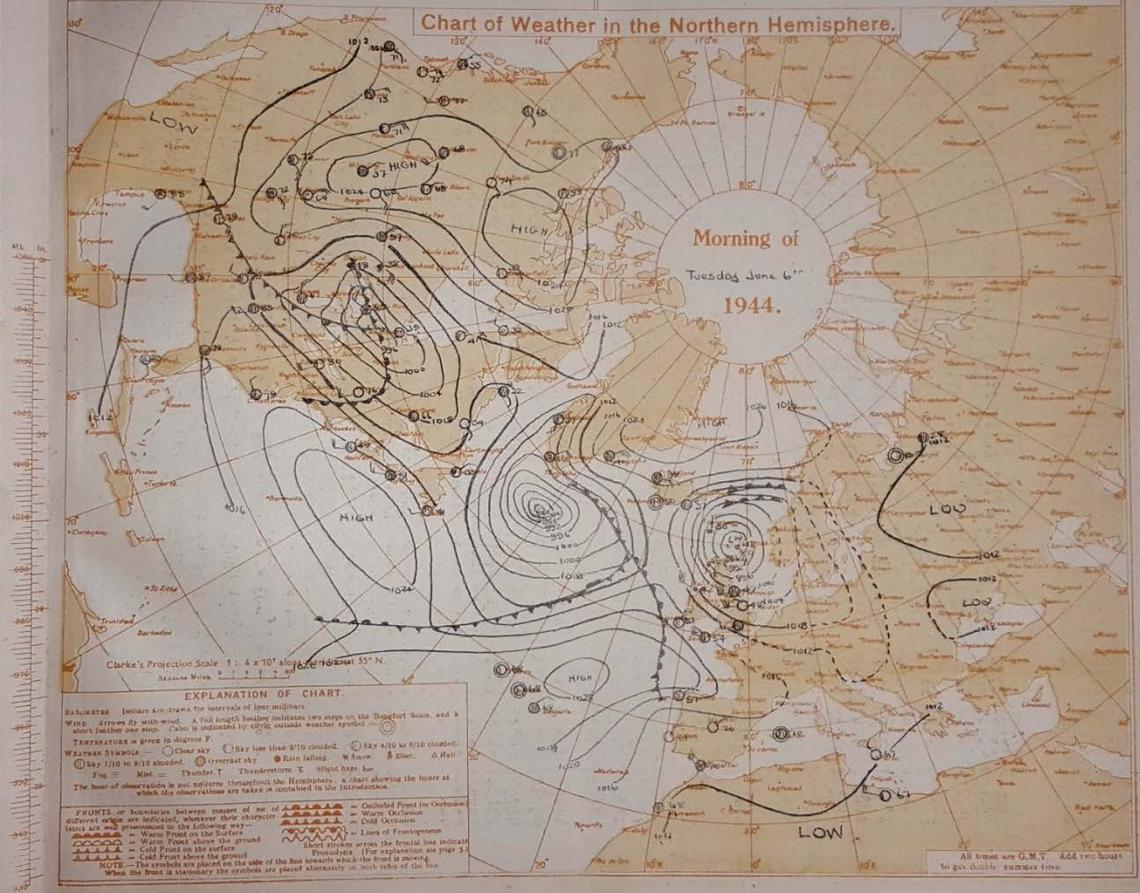
GENERAL INFERENCE

A depression off Northwest Scotland is moving southeast and a trough off West Ireland is moving east. Weather will be mainly cloudy with local rain. Bright intervals will however occur locally. It will be cool.

FURTHER OUTLOOK

Similar.

Chart of Weather in the Northern Hemisphere.



Tuesday, 6 June 1944 . D-Day weather map published in Great Britain Meteorological Office Daily Weather Report British Section.

INVESTIGATION AND PRACTICAL USE OF A METHOD FOR
CONSTRUCTING SIX-HOUR ISALLOBARS ON UPPER LEVEL CHARTS

By Ella Mae Cason and Philip Clapp

I. INTRODUCTION.

The following report contains the results of an investigation of a method for constructing the relative field of six-hour isallobars from successive winds aloft charts spaced six hours apart. Since, as will be pointed out later on, the relative isallobars are obtained from the wind field alone, and since the intermediate six-hourly maps are not accompanied by pressure values, the method should be of great value in the construction of prognostic upper level charts.

The method was suggested by Dr. R. D. Fletcher in a talk given in the Extended Forecast Section on July 9, 1943, and the following portion of this report contains a brief summary of his talk, and further suggestions as to the use of the method in practical routine.

II. TECHNICAL DISCUSSION.

The equation for the geostrophic wind, in vector form, is:

$$(1) \quad 2 A_z \times V_{gs} = -\alpha \nabla_2 P$$

where A_z is the vertical component of the earth's angular velocity, V_{gs} is the geostrophic wind, α is the specific volume of the air, and $-\nabla_2 P$ is the horizontal pressure gradient.

If we differentiate this equation partially with respect to time, we get, approximately¹:

$$(2) \quad 2 A_z \times \frac{\partial V_{gs}}{\partial t} = -\alpha \nabla_2 \left(\frac{\partial P}{\partial t} \right)$$

This last equation is seen to be of exactly the same form as the geostrophic equation except that it relates the local rate of change of the geostrophic wind $\frac{\partial V_{gs}}{\partial t}$ with the gradient of the local rate of change in

pressure $-\nabla_2 \left(\frac{\partial P}{\partial t} \right)$. The use of this equation in determining the isallobaric

field is exactly analogous to the use of the geostrophic wind equation in determining the pressure field. Thus, it is common knowledge that, given the wind field, but not the pressure field, we can determine the approximate pressure field by use of a geostrophic wind scale. However, since the wind scale determines pressure gradients but not pressures themselves, we cannot assign any absolute values to the isobars so constructed. In other

Notice the lead author's name - Ella Mae Cason. This is the oldest scientific paper produced by a woman in the Weather Bureau of which we are aware. It was published in-house as Research Paper No. 13 in January 1944.

On-line at:

http://docs.lib.noaa.gov/rescue/wb_researchpapers/QC852U55no13.pdf

¹Pettterssen "Weather Analysis and Forecasting", p. 210.



447th Bombardment Group Pilots Receiving Weather Briefing from AAF Meteorologist

M(109)
U587r
c.3

RECORD OF WAR ADMINISTRATION
Compiled by Wm. Weber
May 1946.

Unedited version of Weather Bureau Record of War Administration

On-line
transcription of text
of official version
at:

www.history.noaa.gov/stories_tales/bur1.html



“Girls” being trained in instrument reading and map preparation.



A weather patrol vessel on station in rough seas both for air navigation support and naval operations.



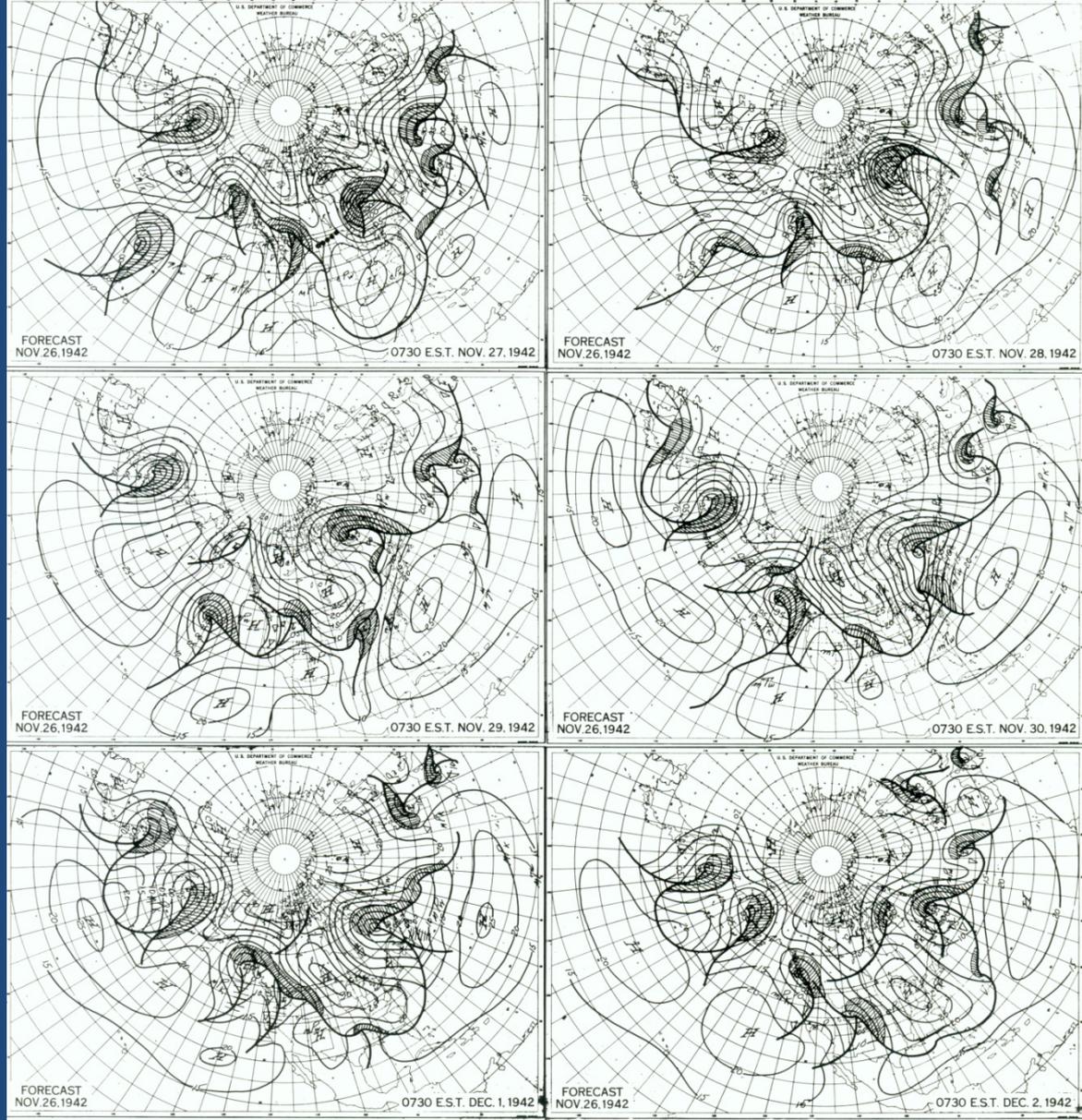
Severe Weather. “Type of thunderstorm dangerous to ammunition plants.” (Actual photo caption.) 17 out of 544 explosive incidents caused by lightning.



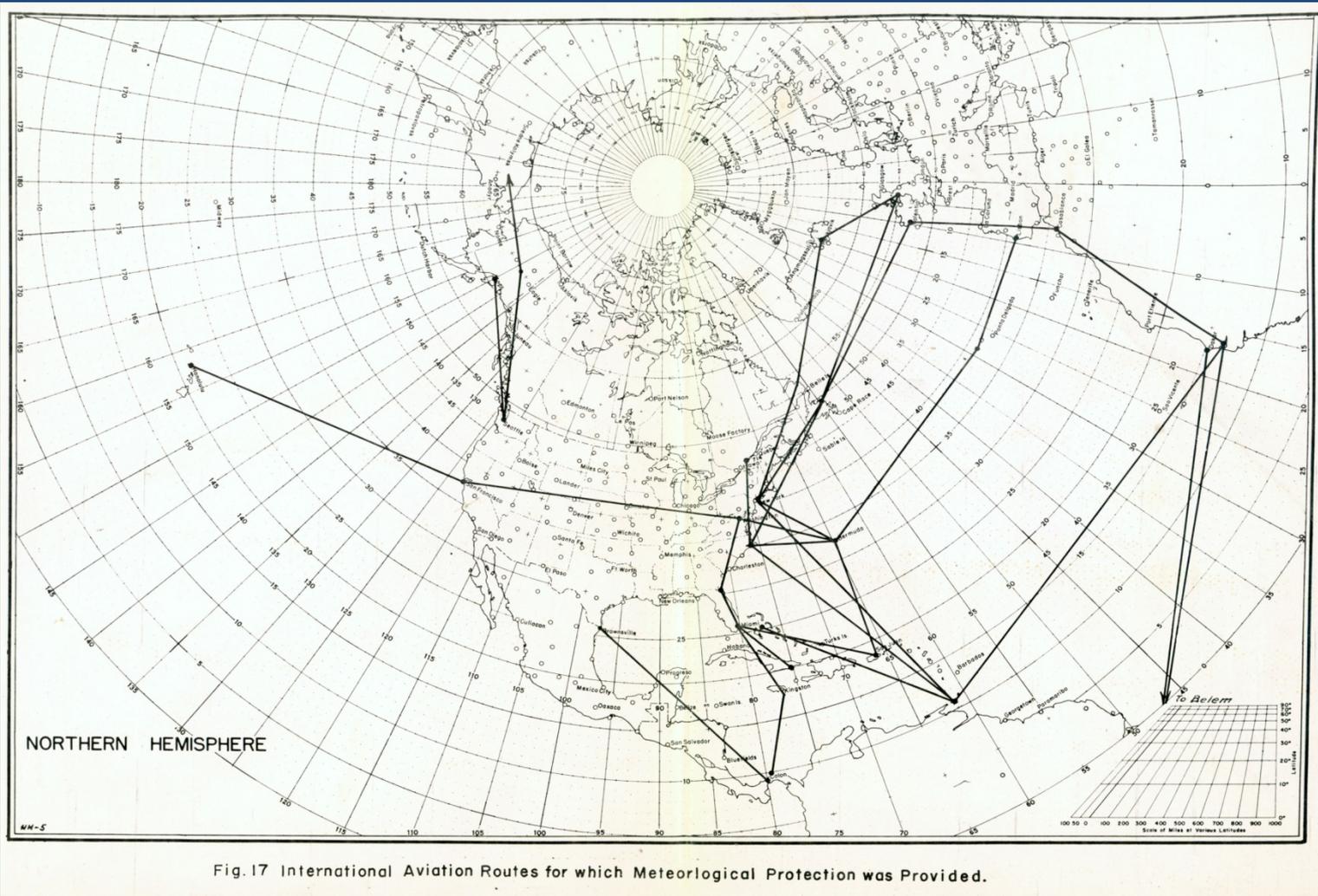
“Preparing and analyzing weather maps on which forecasts and warnings for civilian use are based.”



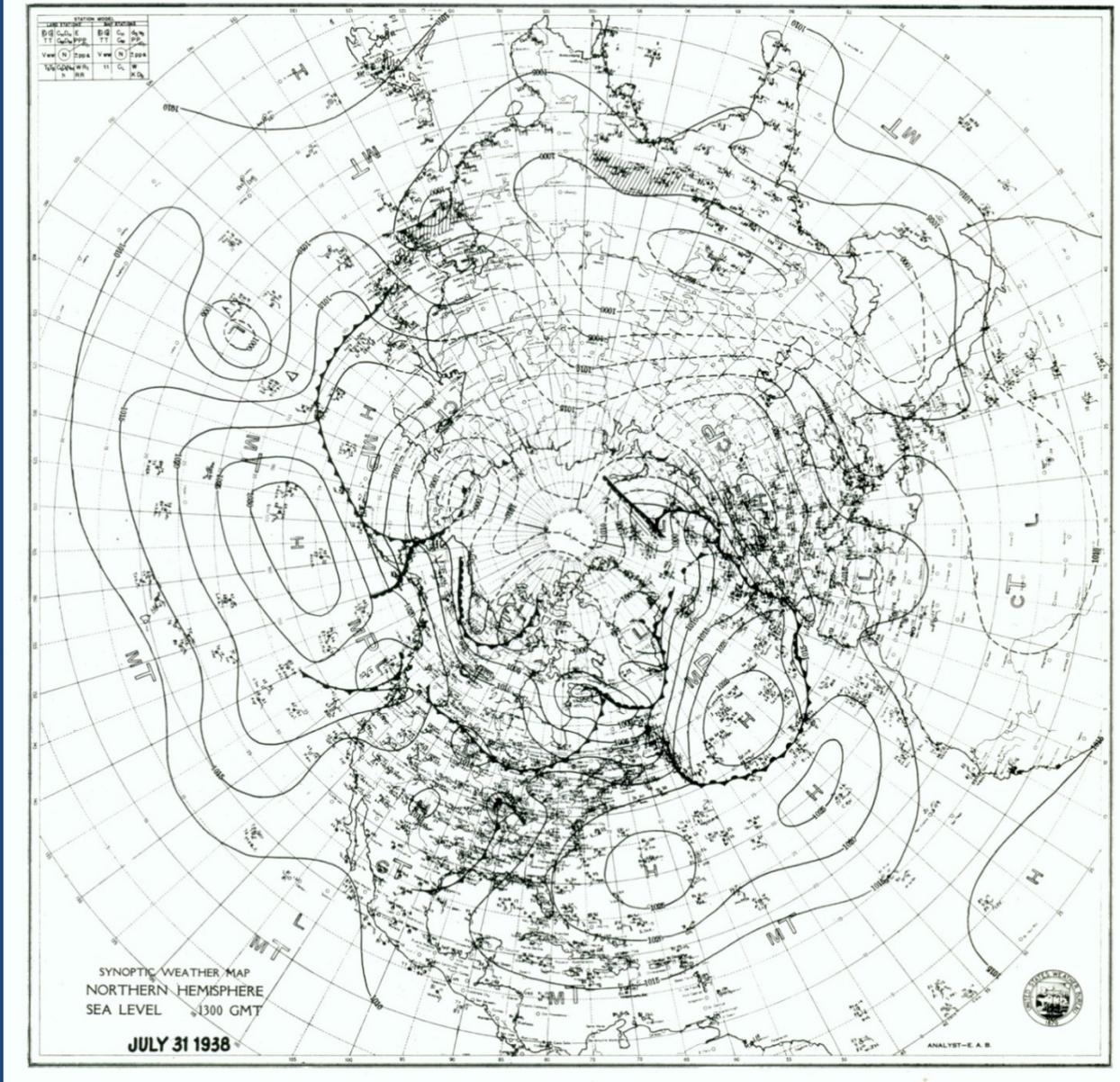
Transmitting weather data by teletype to military and civilian war centers.



Maps of weather forecasts for 6 days following November 26, 1942.



Air routes for which “Meteorological Protection”
was provided.

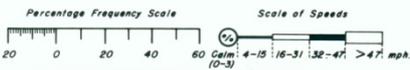
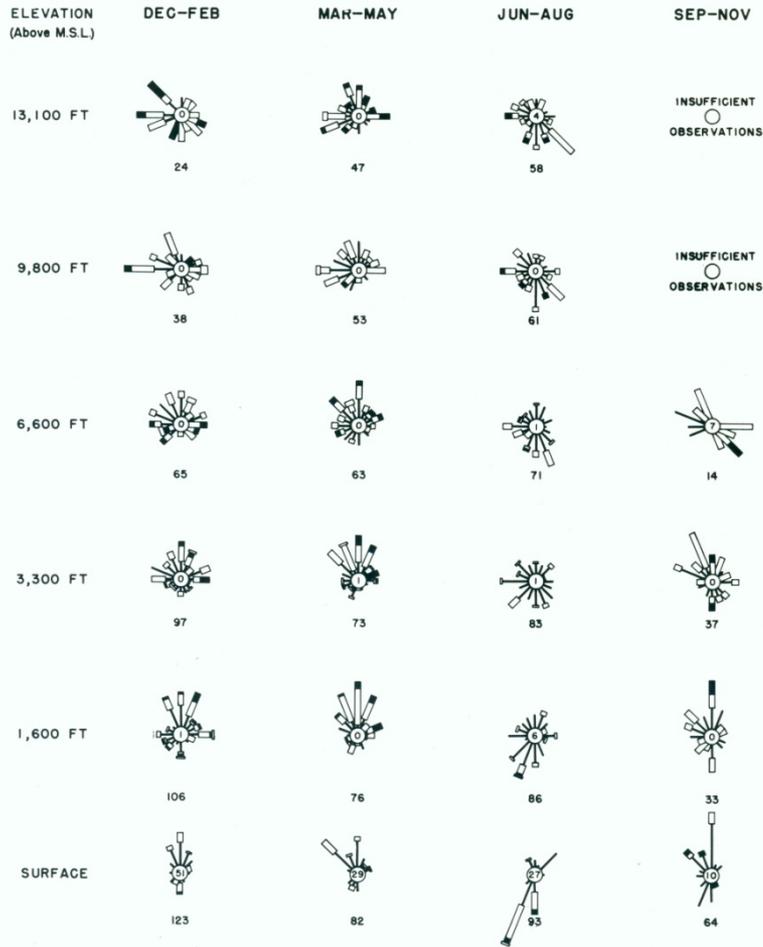


Lookbacks - Historical synoptic weather map for Northern Hemisphere



Remote Operations: An isolated Alaskan weather station at a landing field.

UELEN, U. S. S. R.
ELEVATION 23 FT.
66° 10' N 169° 50' W



Number of Obs.
below each rose

44312

UPPER AIR WIND ROSES

Upper air wind roses for Uelen, northeastern Siberia. Lend-Lease aircraft would be flown from Alaskan air bases at Nome, St. Lawrence Island, and Galena by Red Army pilots across Bering Strait to Uelen, near NE corner of Soviet Union.

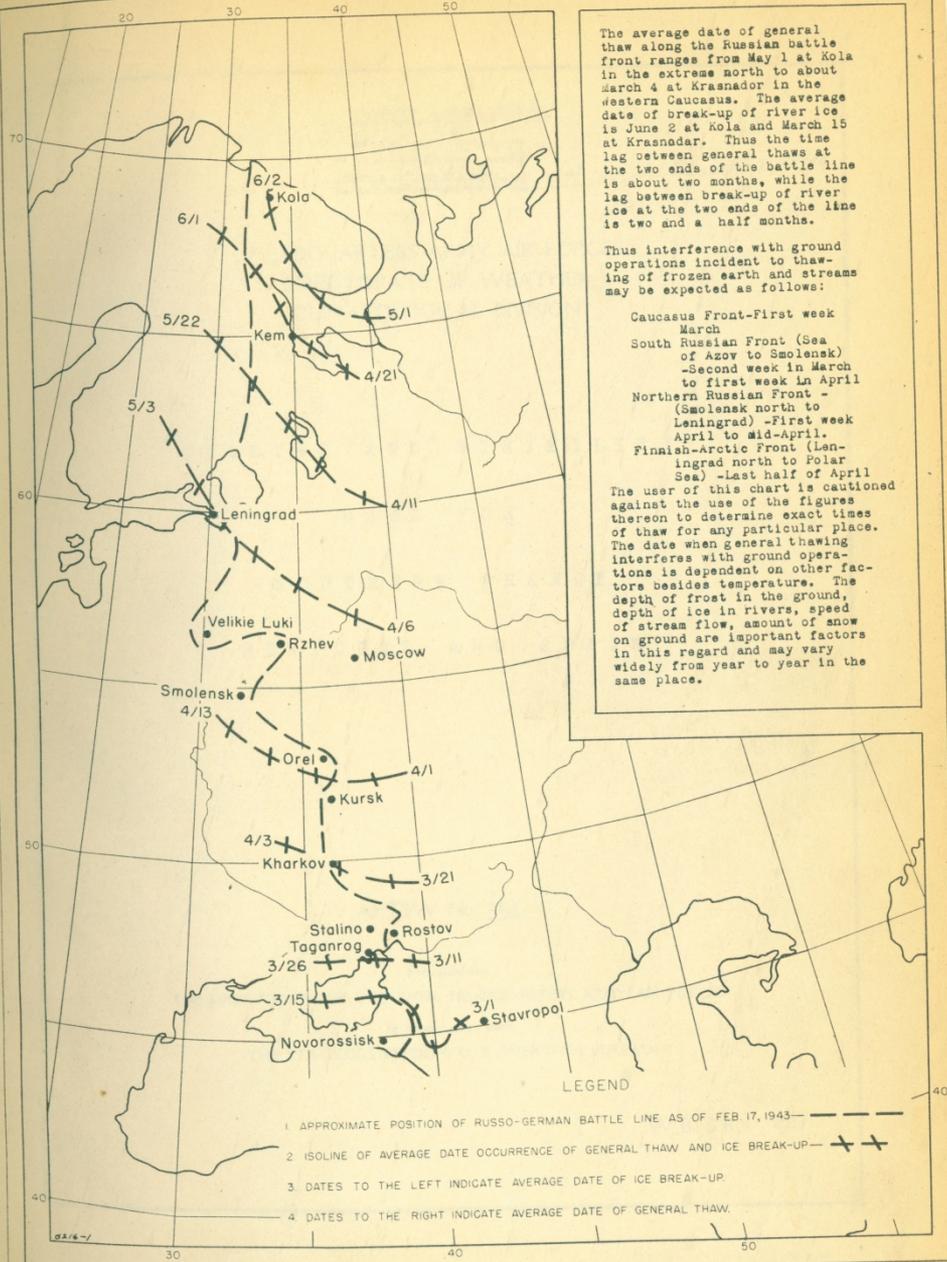
Hundreds of Special Reports written for the Armed Services by the Weather Bureau

U. S. WEATHER BUREAU

SPECIAL REPORT 226-250

M82.2
U587s
226-250

U. S. W. B.



MONTHLY AND SEASONAL DEGREE - DAY DATA

FOR

Illinois

~~CONFIDENTIAL~~

CORPS OF ENGINEERS, U. S. ARMY

(WB-624-48-1M) 000

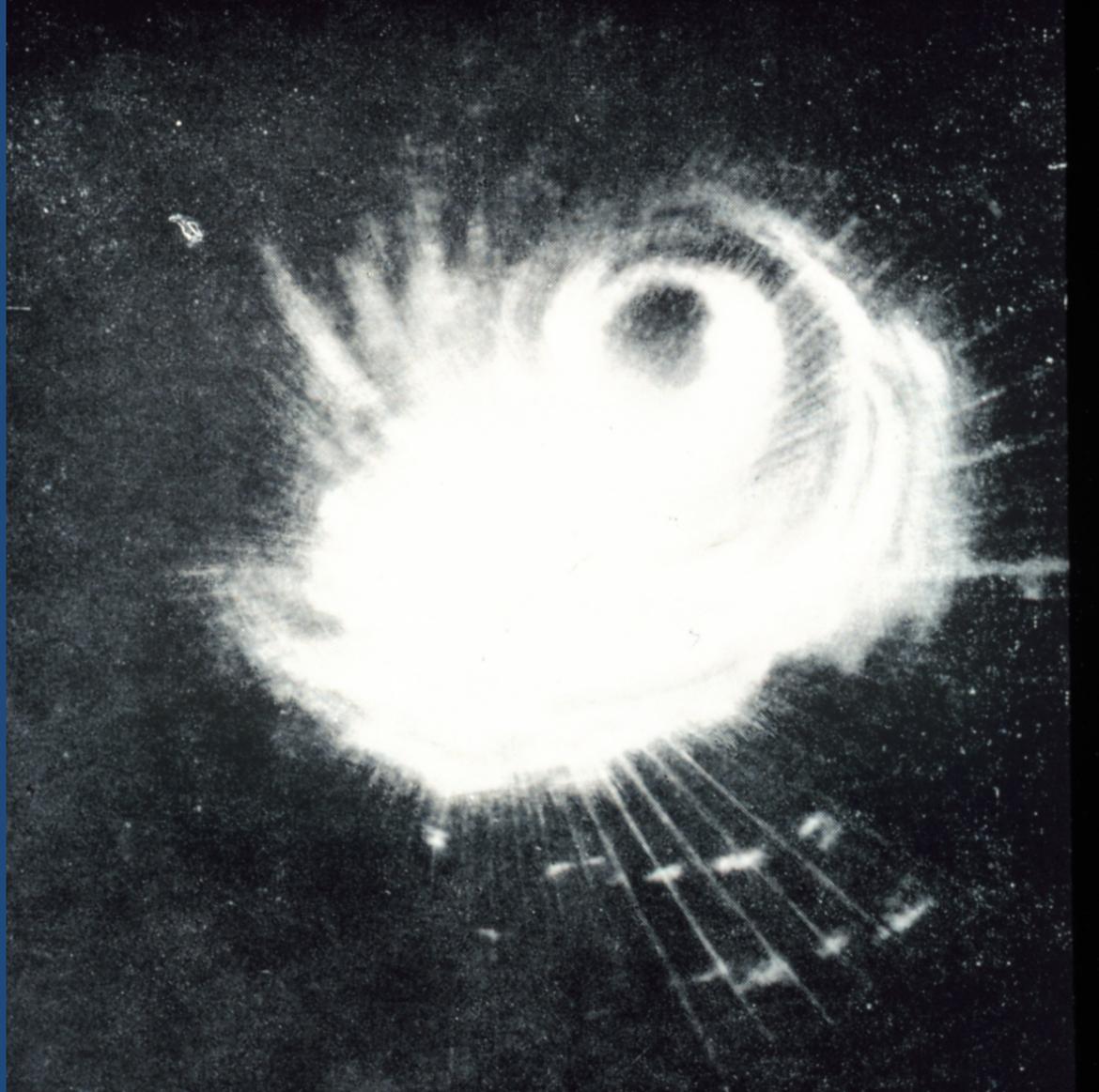
Meteorological station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Dec. Jan. Feb.	Heating season	\times 75	\bar{x}	Δ	$(\frac{\Delta}{\bar{x}})_{100}$
													Winter	TOTAL				
Cairo	0	0	25	184	494	817	878	753	522	239	60	3	2453	3980	4164	3980	184	4.6
Carbondale	0	1	34	214	540	848	939	750	539	257	76	5	2537	4203	4440	4203	237	5.6
Chicago	7	8	84	334	709	1108	1219	1084	871	536	260	67	3411	6287	6635	6287	348	5.5
Dixon	4	12	112	389	773	1202	1319	1138	883	475	188	42	3659	6542	6819	6542	277	4.2
Joliet	6	13	107	377	748	1164	1264	1094	867	484	202	48	3522	6374	6648	6374	274	4.3
Mascoutah	0	2	49	235	583	941	1024	853	603	307	93	7	2818	4697	4943	4697	246	5.2
Mount Vernon	0	2	48	239	588	956	1023	865	621	305	90	8	2844	4745	4992	4745	247	5.2
Peoria	2	6	83	340	721	1118	1226	1061	800	433	163	24	3405	5977	6173	5977	196	3.3
Rockford	5	15	120	409	778	1192	1314	1052	894	494	204	46	3558	6523	6800	6523	277	4.2
Springfield	1	3	64	290	666	1047	1145	988	732	382	130	15	3180	5463	5695	5463	232	4.2
Urbana	3	10	82	330	695	1088	1188	985	766	425	162	27	3261	5761	6025	5761	264	4.6
Waukegan	12	17	118	418	789	1163	1279	1076	938	587	295	80	3518	6772	7053	6772	281	4.1

Monthly and seasonal degree-day data prepared for the Army Corps of Engineers for Illinois. The last four images have traversed 240 degrees of Longitude emphasizing the world-wide nature of Weather Bureau interests in WW II.

New Technologies Evolved

Ceilometer for determining ceiling heights (Scanning Unit).





RADAR - image of typhoon captured off Philippine Islands on December 18, 1944. This was the second tropical storm to ever be imaged on radar.

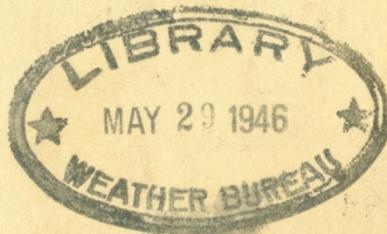


USS BENNINGTON – an example of why typhoon warning service was instituted. June 1945.

U.S. Office of Naval Operations

Typhoon Reconnaissance

June Through September, 1945



M15.23
u 58t
1945(1)



First systematic tropical storm reconnaissance units organized in the U. S. Navy.

In Memory of

**Lt. (jg) Oscar Leon SMITH Jr.—Aerologist
and the flight personnel**

**Lt. (jg) Ralph Frank Cook—Pilot
Ens. Harold Edward Roveche—Copilot
James August Dugan, AOM 1/c
Kenneth Darrell Griffore, AOM 2/c
Darvl Burr Miler, ARM 2/c
Royce Allen Lamb, S 1/c**

**who did not return from a typhoon reconnaissance
flight over the China Sea on 1 October 1945**

Even Poetry

ODE to the WEATHERMAN

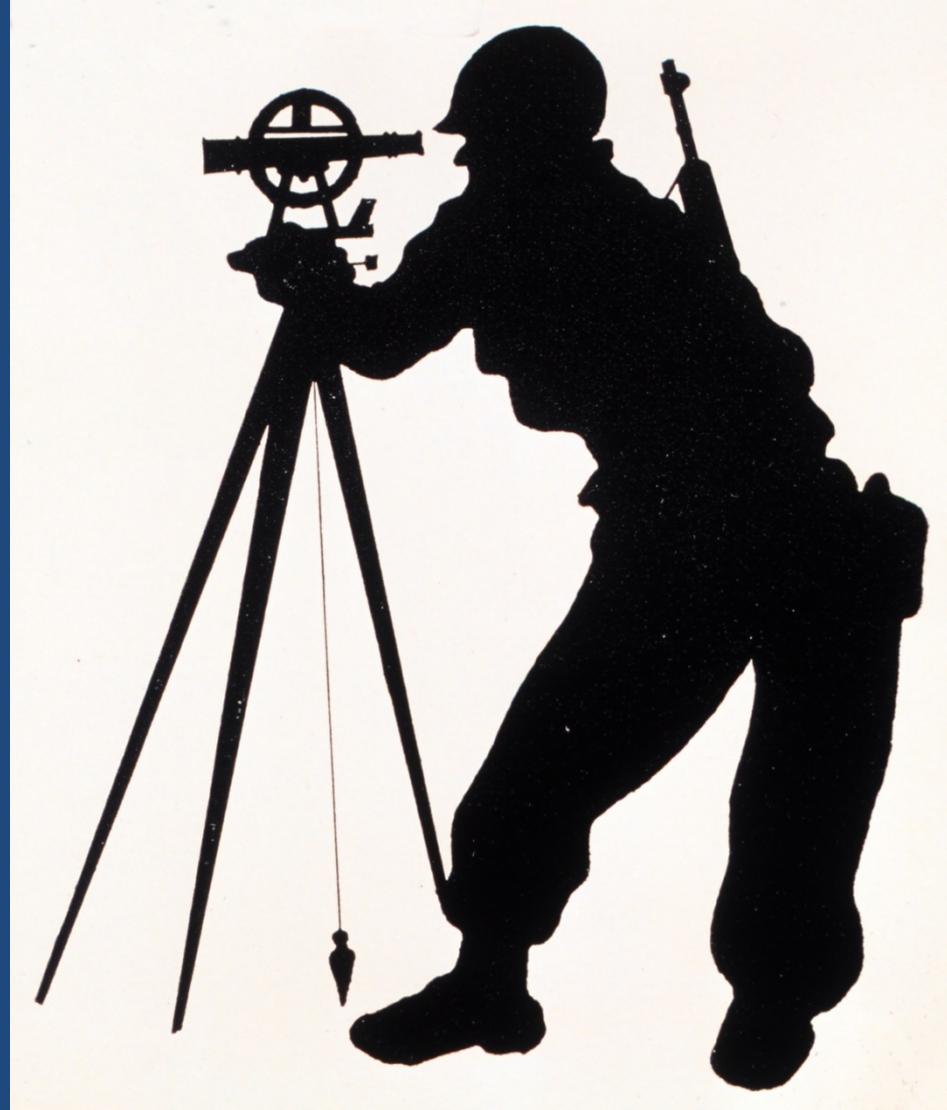
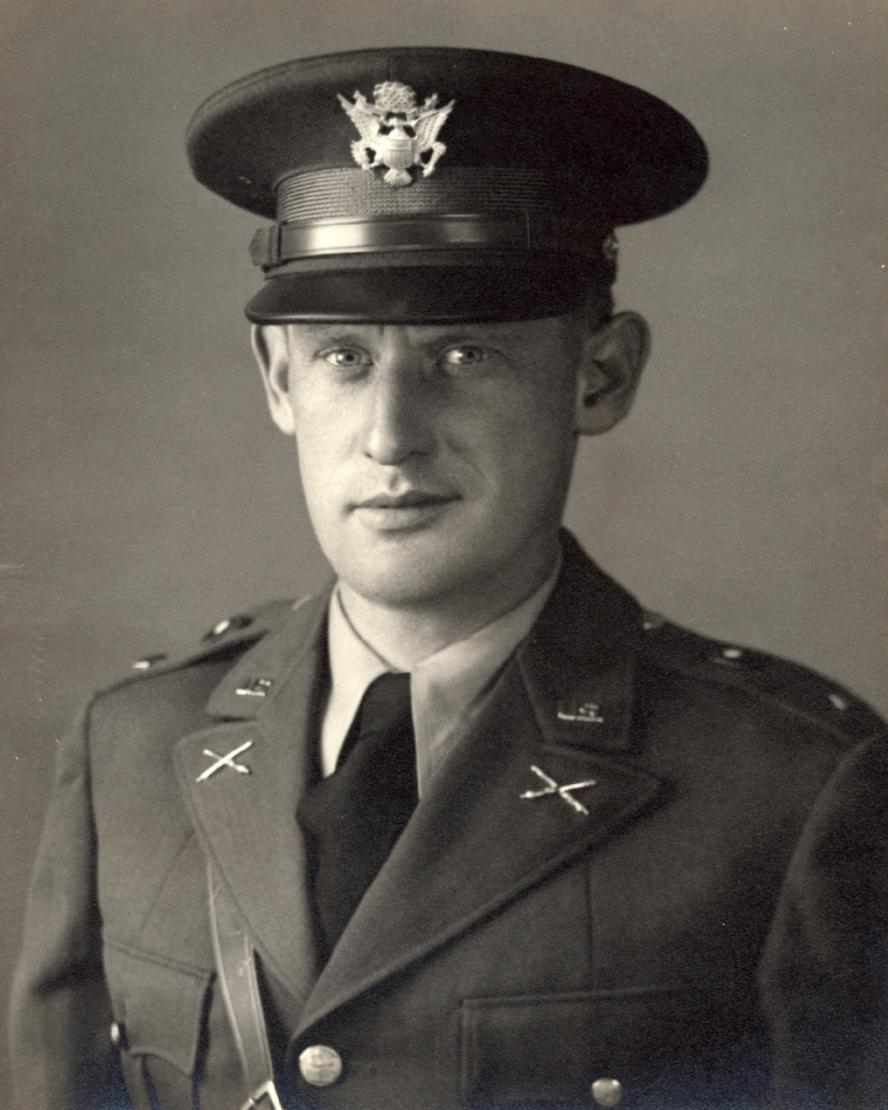
By

Sgt. P. E. Requa

.... And when its CAVU and the sky is clear,
He relaxes a little and smiles with pleasure,
For the pilots can fly – high, wide, and far...
With no fronts or ceilings their paths to bar.

In: The Fourth Weather Vane, a publication of the Fourth Weather Squadron. Vol. 3, No. 3. 4/15/1943

Even the poetry was mission-oriented as it captured the spirit of the WW II Weatherman.



**The Artillery Surveyors – The Smart Bombs of World War II.
C&GS's most decorated officer – Captain David Whipp.**

EIGHTH
FIELD ARTILLERY
OBSERVATION
BATTALION

ETO

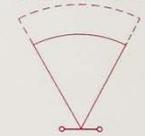


Unit History for Eighth Field Artillery Observation Battalion

SOUND BASES
 INSTALLED 17 APRIL 1945
 BY THE
8TH F A OBSN. BN.

- LEGEND:**
- Sachsenland Base: 4 miles, 4 sec. sub-base
 - Pommelte Base: 5 miles, 4 sec. sub-base
 - Buschof Base: 6 miles, 4 sec. sub-base
 - Hamertig Base: 4 miles, 4 sec. sub-base
 - Waltersburg Base: 5 miles, 4 sec. sub-base
 - Gutergluck Base: 6 miles, 4 sec. sub-base

**SOUND RANGING COVERAGE
 OF CORPS SECTOR**



**FIRE POSSIBILITIES
 XIX CORPS ARTILLERY**



REDUCED FROM MAP P6-SCALE 1:100,000 EUROPE



Sound Base diagram for 8th FAOB showing fire control possibilities for each base. 40 miles SW of Berlin.

SURE WE DID IT!

By
T. HARRY DEALMAN



Accomplishments of the 8th Field Artillery Observation Battalion in cartoon form.

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.

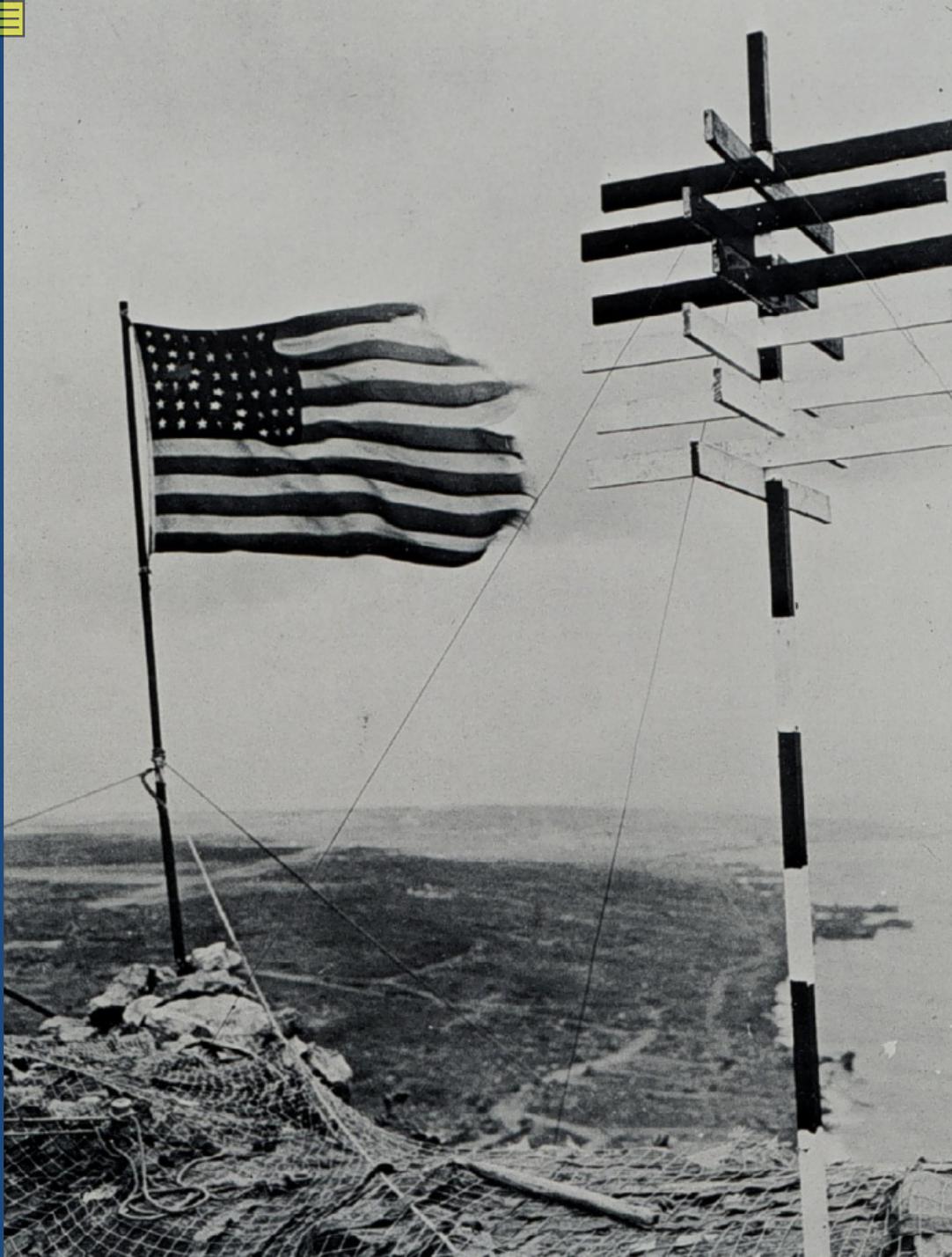
"The men and officers are to be commended on their precision work... Their efforts have been most helpful to ships required to operate in waters previously so inadequately charted."

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.



Hydrographic signal next to American flag on Mt. Suribachi, Iwo Jima. Hydrographic units at Iwo Jima under command of Commander Ira Sanders, a C&GS officer who received a Bronze Medal for conducting hydrographic surveys off Iwo Jima beaches prior to landings.



Probably July 8, 1944. Major Robert Earle, USMC, and transferred C&GS officer, 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.

USC&GS REPORTS
WORLD WAR II
MILITARY ASSIGNMENTS

Vol. 1 Pt. 1.
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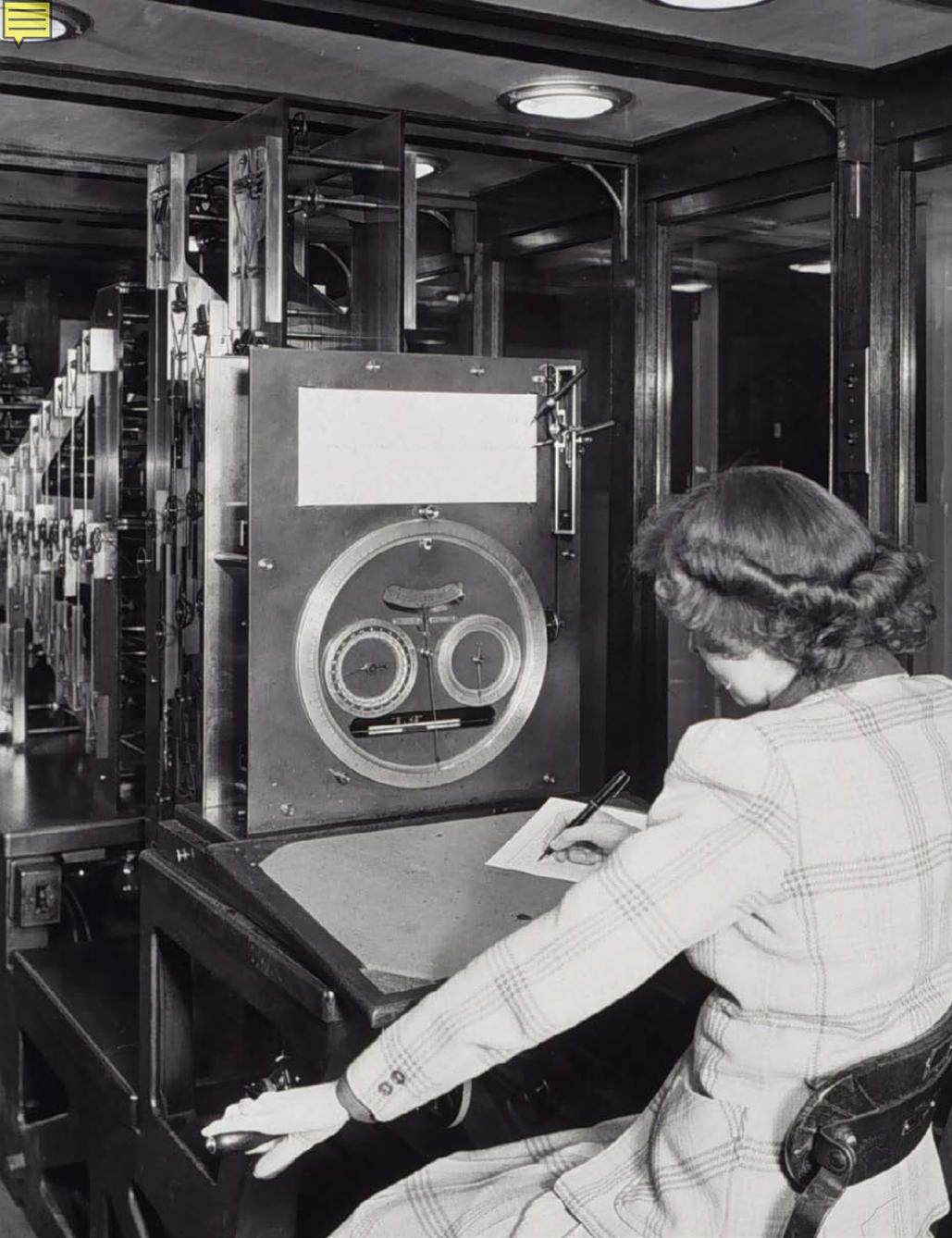
In the landing on Biri Island, intense machine gun and mortar fire was experienced by the assault boats causing several casualties. The ramp cables were shot away so that the ramps could not be lowered and the boats retired. The fire power of the PT's was not heavy enough to counteract the entrenched enemy positions. Meanwhile, some artillery was landed on an unoccupied island and the position shelled. Troops were later landed through a narrow passage on an unoccupied part of Biri Island. The enemy turned out to be a strong detachment of marines, and the last remnant of 25 defenders were observed by the infantry to place themselves on an ammunition dump and detonate it.

During these operations, I was on a mission to investigate the Naranjo Islands for enemy occupation. Two landing barges with a squad of infantrymen on each were used. On rounding the south end of Capul Island, five strange-looking craft were observed three miles offshore. On investigation the craft turned out to be two native canoes and three improvised rafts laden with about 20 Japanese troops. Entrenching shovels were used as paddles. As our boats closed to take them prisoners they went over the side and clung to the rafts. When about 15 yards off, they tossed hand grenades at our LCM's but fortunately the grenades fell short. Our LCM's backed down and the troops opened up with rifle fire. An attempt was made to pick up the few survivors but they destroyed themselves with hand grenades to avoid capture.

A Bronze Star was awarded by the CO of the Americal Division for partici-

Personal Report of Lieutenant Commander Harry Garber from Army assignment to Engineer Boat and Shore Regiment during WW II

Similar personal reports for Navy, Marine Corps, and Army Air Forces



The Tide Prediction Machine-Used to plan Allied amphibious landings. The tide machine, known as, “Old Brass Brains”, was a remarkable mechanical computing machine that produced tide predictions and light diagrams for thousands of locations around the world during WW II.

DIAGRAM OF TIDES, SUNLIGHT AND MOONLIGHT

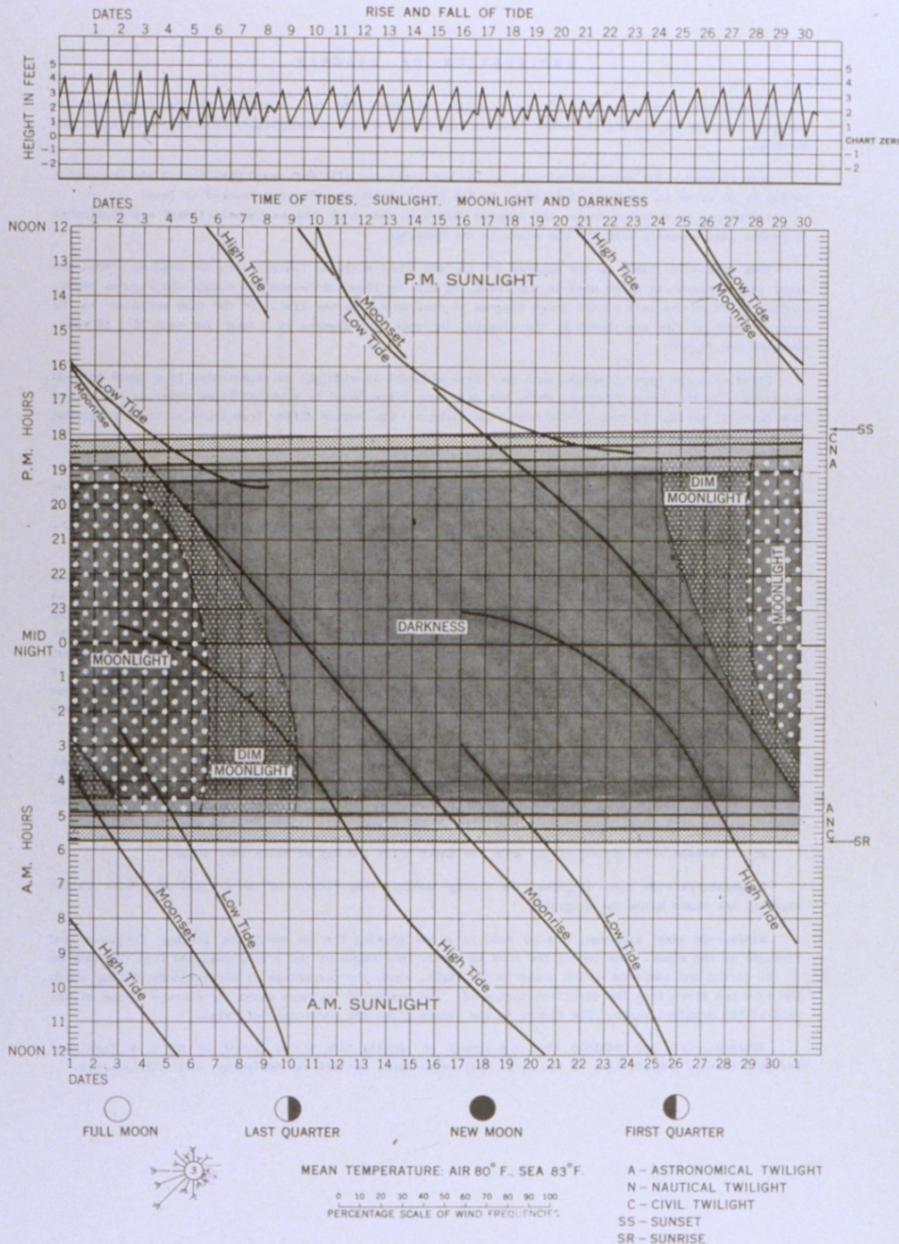
MANILA BAY*

TIME MERIDIAN 120°E.

SEPTEMBER, 1944

LAT. 14°35'N. LONG. 120°58'E.

SUNLIGHT AND MOONLIGHT DATA COMPUTED FOR LAT. 14°35'N. LONG. 120°58'E.



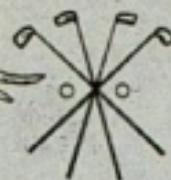
Tide predictions for Manila Bay as well as sunlight and moonlight diagram were generated on “Old Brass Brains”, the remarkable mechanical tide prediction machine.

*This diagram is also applicable, without change, to the coast of Luzon from BALAYAN BAY to SUBIC BAY inclusive and to LUBANG ISLAND.



Girl at work on a detailed target chart of the heart of Tokyo. At the request of the Air Corps the Coast and Geodetic Survey compiled hundreds of target charts of all theaters of war to guide bombing missions.
© National Geographic Society

Note the terminology. “Girl at work” as reported in the National Geographic. “Girls” soon were doing virtually every job that a man had been doing in the male-depleted C&GS.



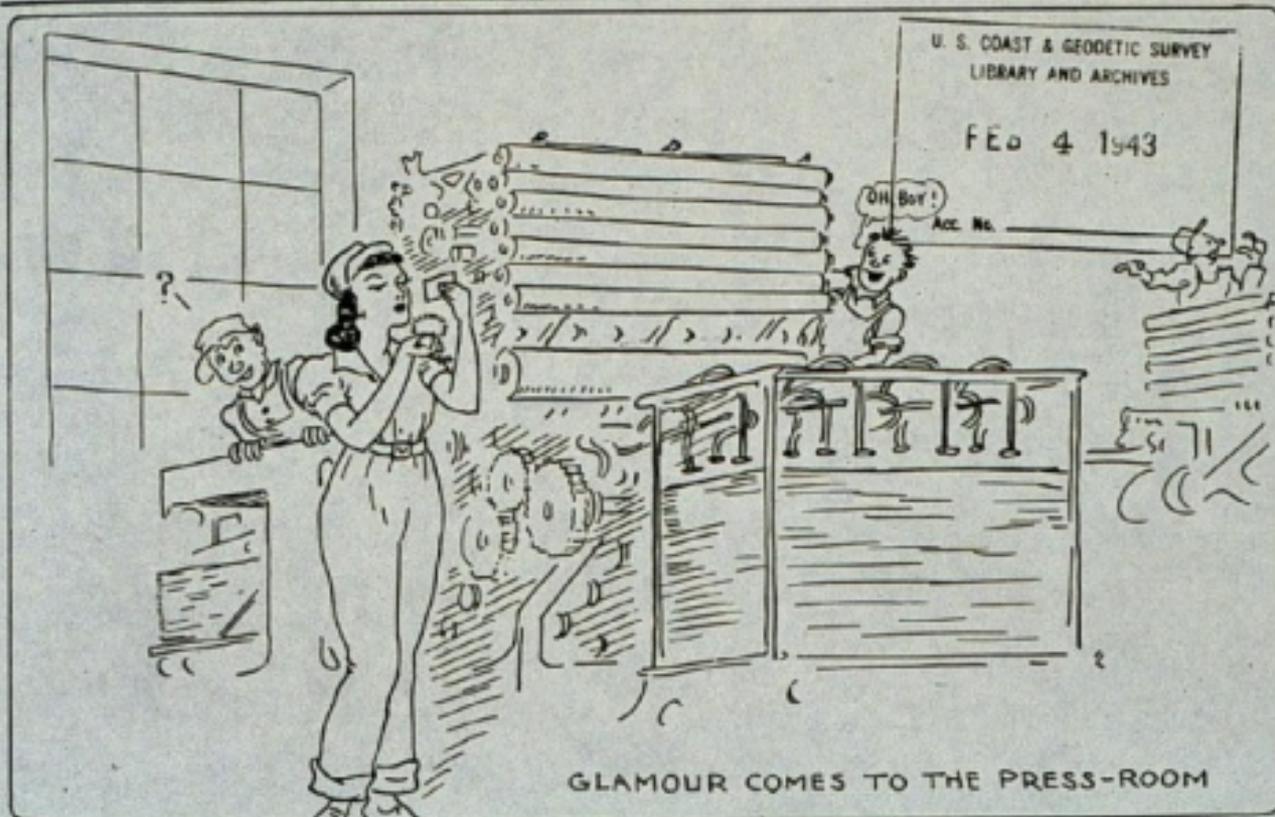
THE BUZZARD

"THE UNBIASED VOICE OF THE PEOPLE"

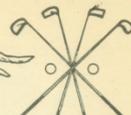
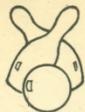
VOL. X

Washington, D. C., February 4, 1943

No. 5



UNITED STATES COAST AND GEODETIC SURVEY



THE BUZZARD

U. S. COAST & GEODETIC SURVEY
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"THE UNBIASED VOICE OF THE PEOPLE"

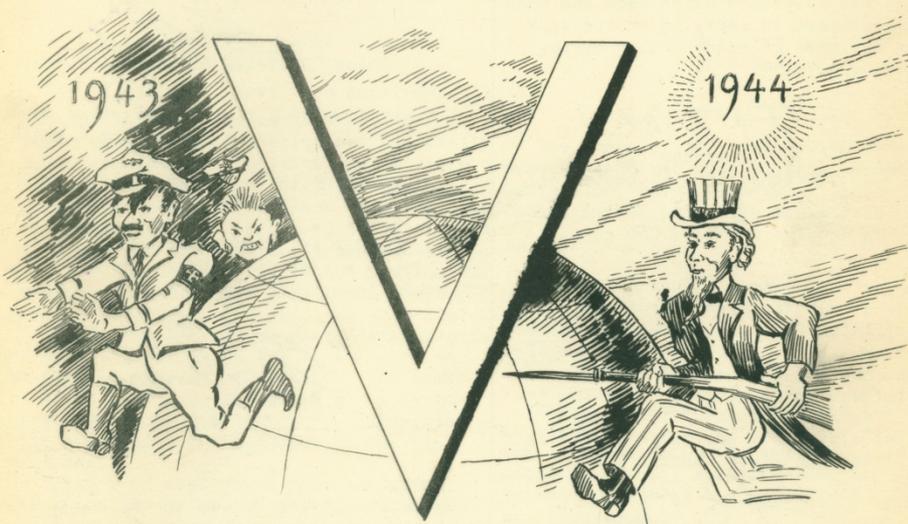
DEC 31 1943

VOL. X

Washington, D. C., December 30, 1943

ACC. No. _____

NO. 52



a VICTORIOUS NEW YEAR

The New Year approaches and with it the hope and determination that it will see the crushing defeat of Germany. In a large measure the speed of our military success depends on us.

It is our duty to supply the tools of victory both directly in our jobs and indirectly through the purchase of War Bonds. Let us see to it that every individual sacrifice is made to insure victory. When the invasion comes and the first landing barges grind ashore on the invasion coast, there can be no turning back.

SUPPORT THE INVASION FOR A VICTORIOUS NEW YEAR!!

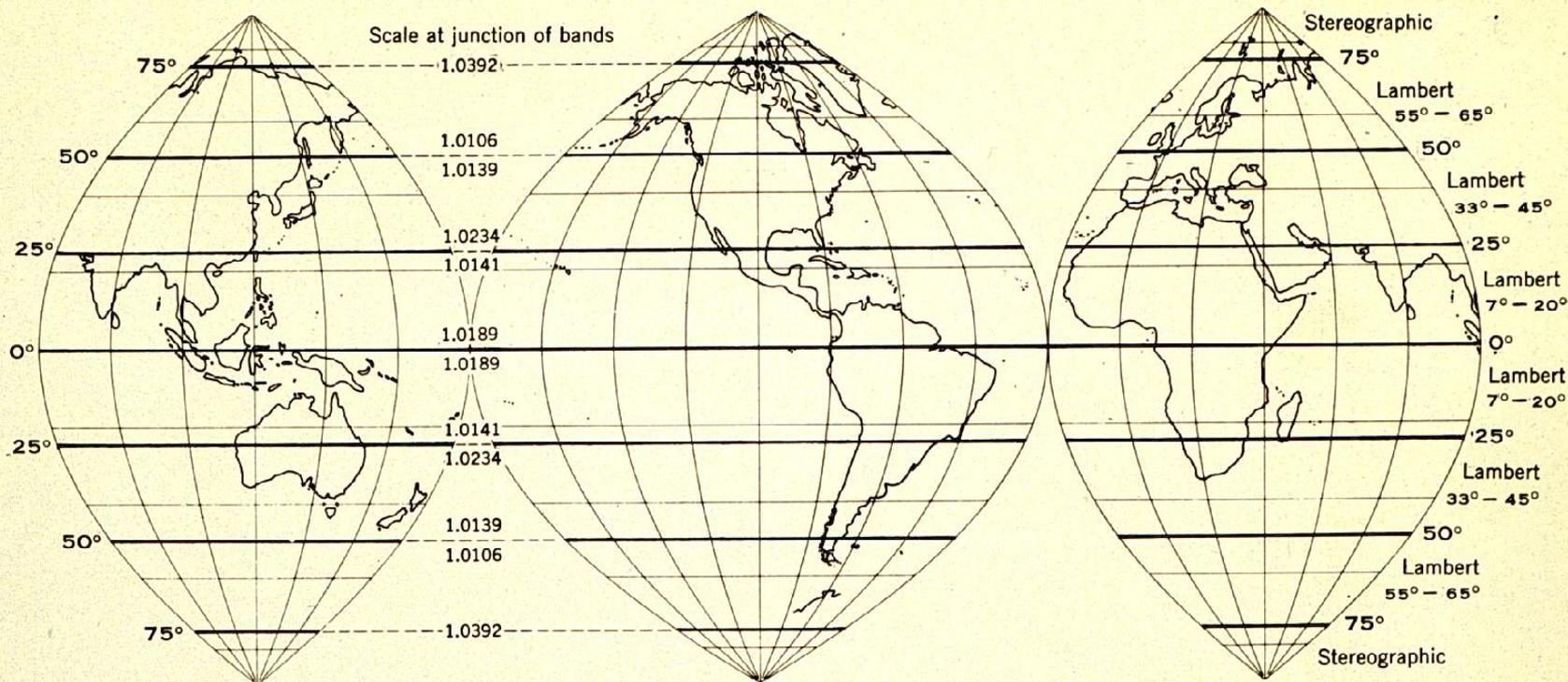
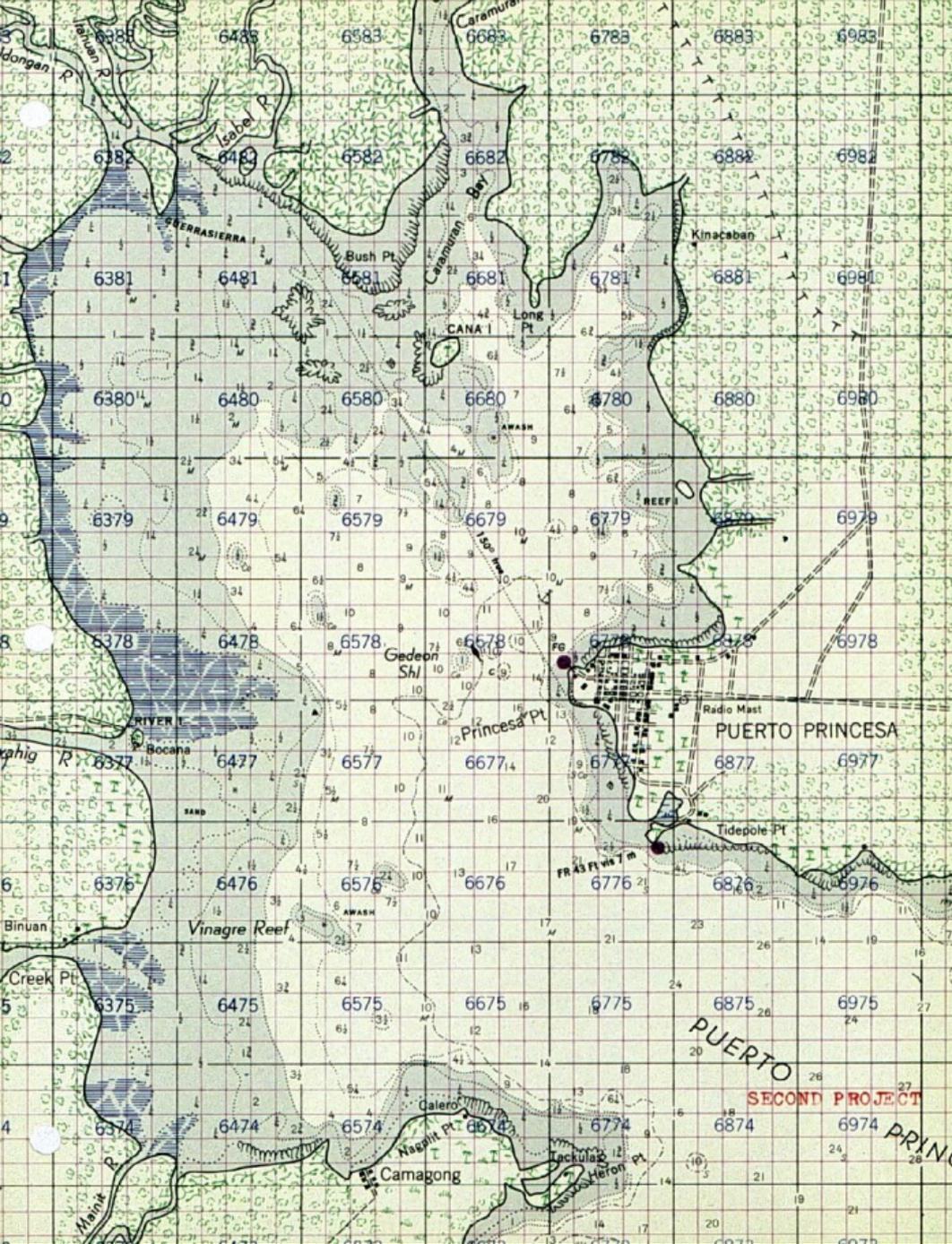


Fig. 25—Projection Scheme for Aeronautical Charts of the U. S. Army Air Forces.

Scale of Series 1:5,000,000

Showing types of projection and notation of standard parallels
for the various latitude bands.

**World-wide aeronautical chart system developed
by the Coast and Geodetic Survey for WW II use**



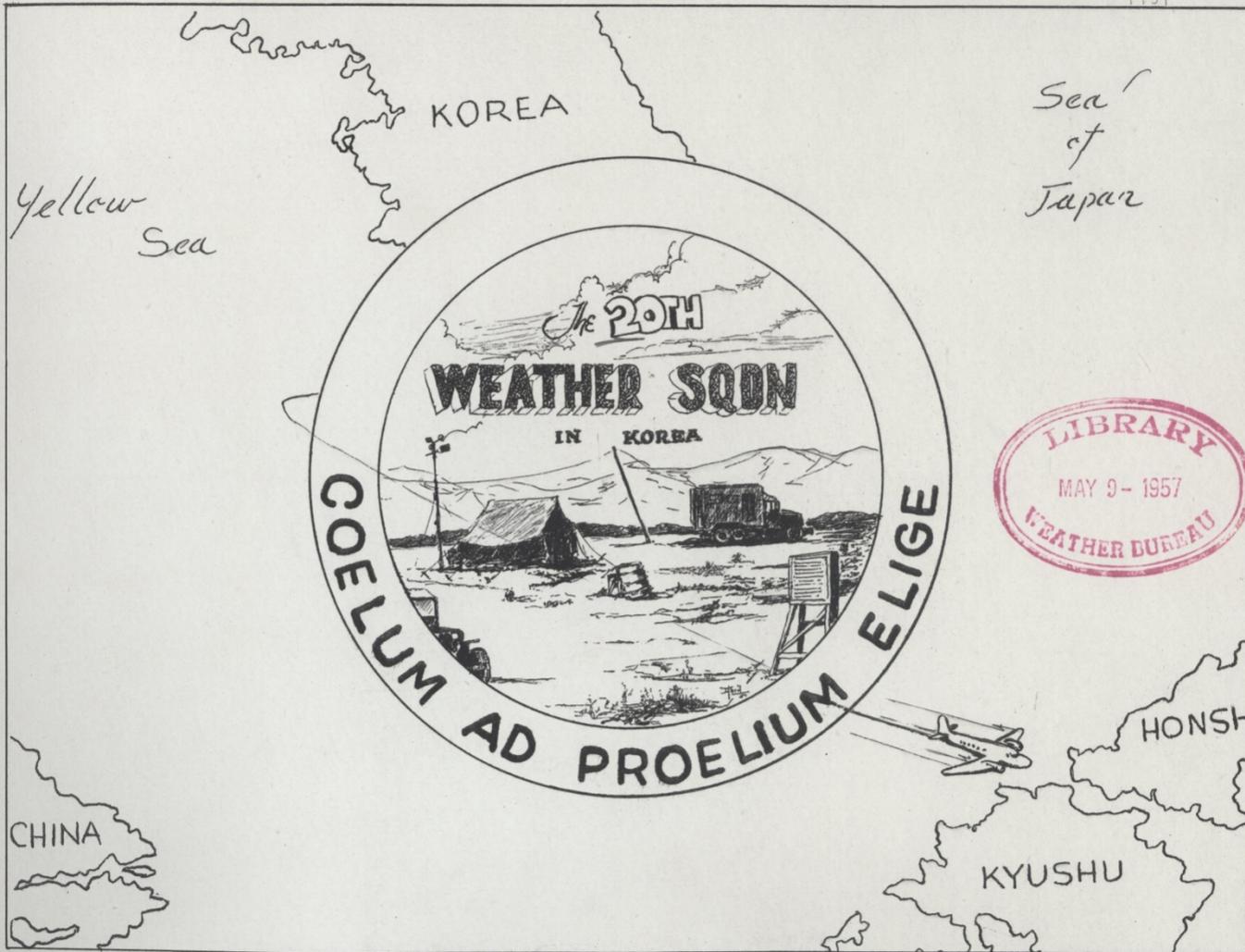
Philippine chart overprinted with military grid. The C&GS had been in the Philippine Islands since 1900 and had charted the whole archipelago prior to WW II. This information was invaluable to Allied forces during the retaking of the Philippines.

SKETCH BOOK
20th Weather Squadron

M:951.9
U584t

The Korean War

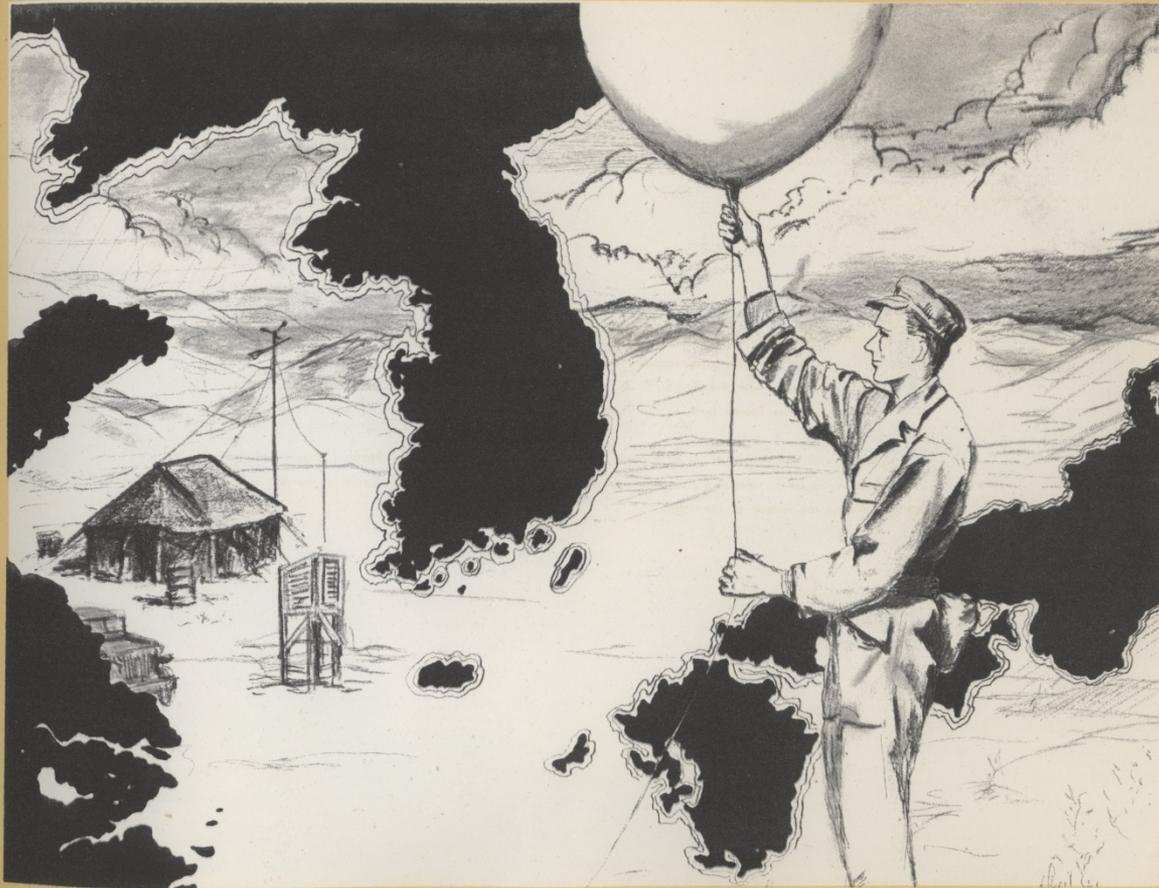
RAREBOOK
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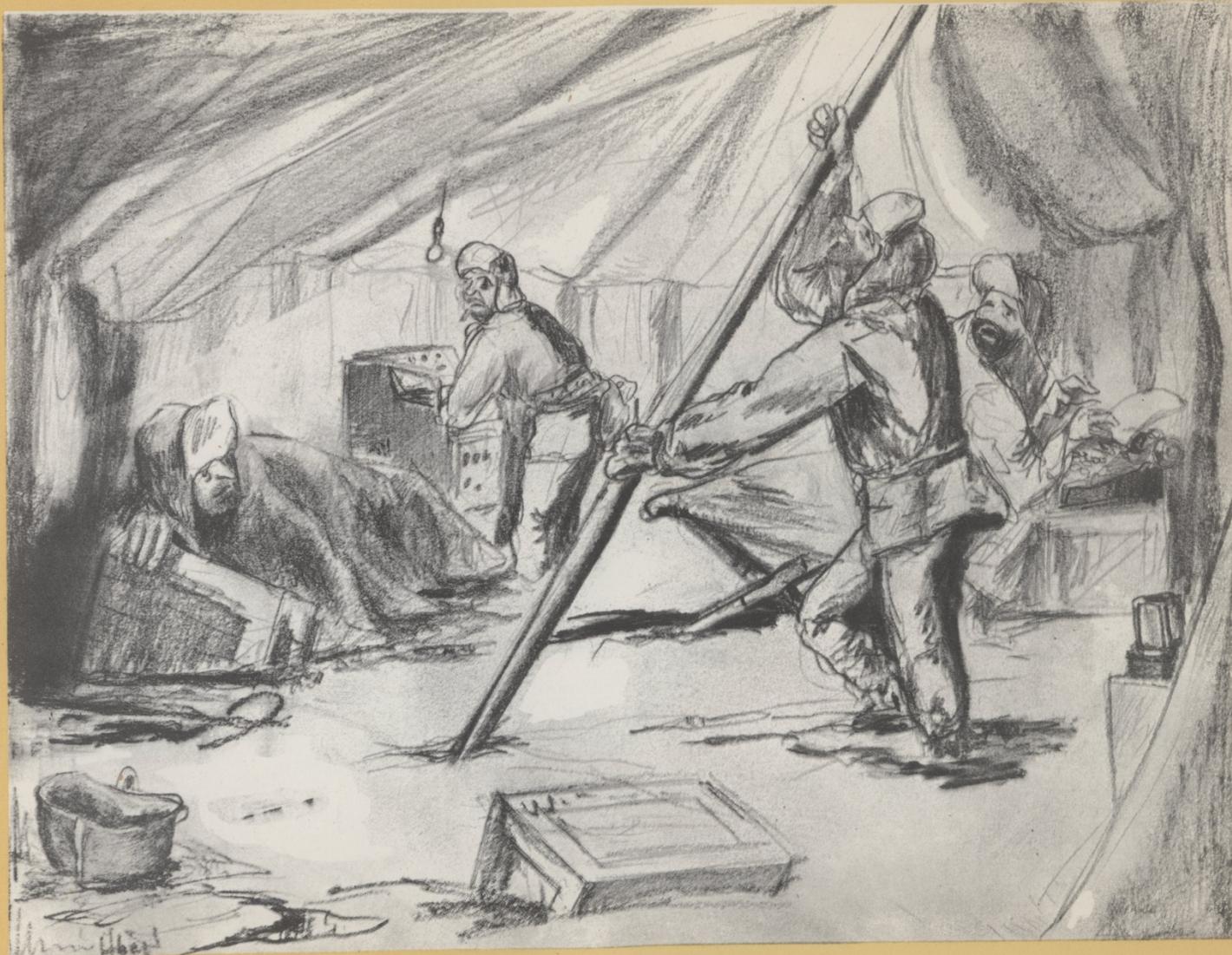
95403

1951-9
U 5847

Motto: I select the weather for battle.



The 20th Weather Squadron came into Korea with the first Air Force contingent and served from Taejon back to the Pusan Perimeter and forward again to within sight of the Yalu River. It furnished weather service to all United Nations forces and operated from one end of Korea to the other, from air bases in the rear to enemy-facing forward positions.



Caption: "Personnel of the 20th find that operating a tent type weather station subject to flooded floors and a roof not too secure during a heavy wind."



ROBERT M. WHITE

2nd Lt., AC

Official Duty: Instructor.

Home: Boston, Massachusetts.

College: Harvard University.

Military Experience: Appointed Aviation Cadet and ordered to M.I.T. for Meteorology training; commissioned 2nd Lt., Air Corps, September, 1943; then attached to M.I.T. staff.

Robert M. White, Director of Weather Bureau 1963-1965; Administrator of ESSA 1965 -1970; Administrator of NOAA 1970 -1977. It is fitting that Robert White served as an AAF officer and MIT meteorological instructor during WW II. WWII marked the first time that all aspects of the physical, and to some degree biological environment, were looked at as an integrated whole. Robert White brought that scientific world-view to ESSA and the NOAA of today.



To Rear Admiral H. Arused Karo, USC+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. Navy.

This is also true of the Weather Bureau and all of the meteorologists, surveyors, scientists, observers and other personnel of our ancestor agencies.

Thank You!!!!

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