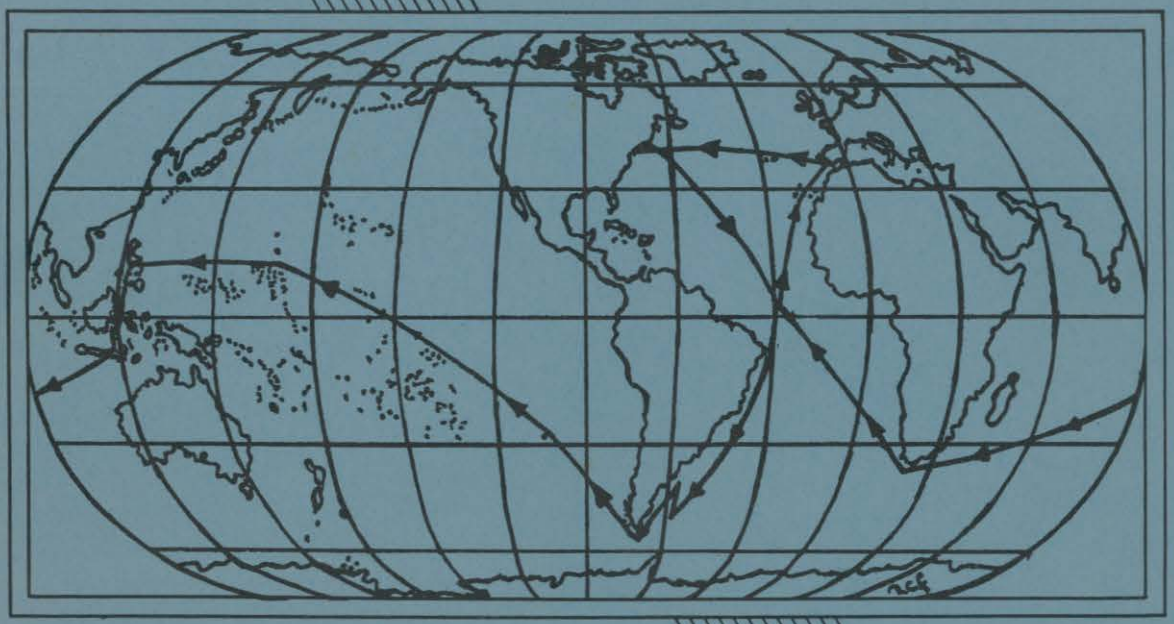
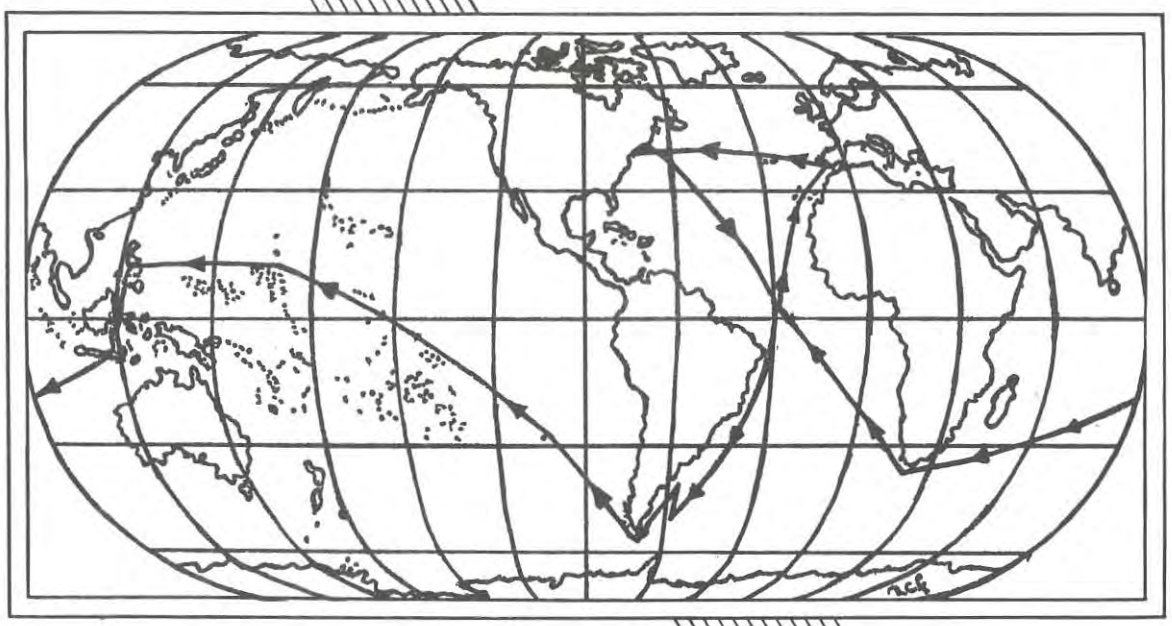
USS TRITON
SSRN 586



FIRST SUBMERGED CIRCUMNAVIGATION

★ 1960 ★

USS TRITON
SSRN 586



FIRST SUBMERGED CIRCUMNAVIGATION

★ 1960 ★

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. - Price 45 cents

PROLOGUE

TRITON's launching day, 19 August 1958, was a typically warm and beautiful New England summer day. A crowd of 35,000 guests, by General Dynamics' estimate the largest crowd ever to witness a submarine launching, commenced to congregate several hours prior to the scheduled time of 1230. Cleaned of all building paraphernalia, gleaming in fresh paint with bright orange superstructure surmounting dark green hull, the ship looked unusually majestic. The partially complete crew, in fresh whites, stood at attention on the forecastle. The Prospective Commanding Officer was on the bridge. The national colors flew from improvised staffs, and gay signal flags fluttered from bow to stern.

The principal address was delivered by the honored Admiral Jerauld Wright, Supreme Allied Commander, Atlantic, and Commander-in-Chief, U.S. Atlantic Fleet. Following this, TRITON was christened with a hearty swing and a froth of champagne by Mrs. Louise Will, wife of Admiral John M. Will, U.S.N. (ret.) himself a distinguished submariner. Service wives, who seldom have the opportunity, always do a good job.

TRITON's massive bulk hardly vibrated as she sped stern-first into the Thames River and entered the element for which she was designed. Within a short time tugs had warped her alongside the fitting-out dock at Electric Boat.

Now the preliminary readying period really began for the crew. In construction of a nuclear ship, a vast number of tests are required to insure correctness of design and fabrication. Economy of training time dictated that the Navy crews should have the priority; as a result, even though TRITON was not yet in commission, a heel-and-toe watch below decks and in engineering spaces was required. From launching until delivery to the Navy, TRITON always had a duty officer and a duty section on board. At times there were two or more officers required, and occasionally the entire engineering force had to go watch-and-watch. During normal testing, however, a watch-in-three was the rule.

In the meantime, of course, the normal organizing and training duties attendant to puting a ship into commission were also carried out. One result of the double load upon the personnel was that with the exception of a few last-minute arrivals they thoroughly knew their ship. TRITON's crew had full confidence in handling her machinery long before she went to sea for the first time.

At 0400 on 2 October 1958, an incident occurred which, but for the quick action of the Engineer Officer, might have had tragic consequences. During steam testing of #2 reactor, a steam valve blew out with violent force, narrowly missing the man operating it. The compartment filled rapidly with steam from the opening in the line, making it immediately impossible to see. A dozen or so enlisted men and civilian workers were present, among them Lieutenant Commander Kelly, TRITON's Prospective Engineer Officer who happened to be the engineering watch officer at the time. He energetically took proper action to protect the machinery and ordered the compartment evacuated. Thinking himself the last man out, he instituted a muster and found one enlisted man missing. Instantly he plunged back into the now steam-filled space, located the missing person and led him to safety. The Prospective Commanding Officer recommended a suitable award for this exploit and, months later, saw Lieutenant Commander Kelly receive the Navy and Marine Corps Medal for personal heroism.

On 1 February TRITON was provisionally accepted for service in the Navy. My official title, "Prospective Commanding Officer," changed to "Officer-in-Charge."

Initial criticality was achieved in Reactor #2 on 8 February 1959, and power-range testing began immediately. Reactor #1 followed on 3 April 1959. By the end of May, TRITON's engineering spaces were essentially ready to go to sea. Electric Boat was humming with activity; but the cause of it, our urgent Polaris program, left few workers, it seemed, for TRITON.

This we had to accept, though our slowed progress made complacency impossible and a broad outlook at times difficult to maintain.

During this period, an illustration of the benefits of having maintained a watch during the construction period took place when, at about 0250 on the morning of 7 April 1959, fire broke out in TRITON's galley. An improperly wired deep fat fryer was turned on by a member of the yard test force, and after a few moments the cooking oil ignited. Dense smoke immediately filled the area, through which leaping flames were visible. The "below-decks watch", D.R. Quick, EN2(SS) and G.W. McDaniel, SO1(SS), elbowed their way past retreating workers and began to fight the conflagration. The duty officer, LT George A. Sawyer, just turned in after completing an early morning inspection, mobilized the off-watch duty section and led the augmented force into action. By the time the Electric Boat fire department arrived our duty section had brought the situation entirely under control. (One Electric Boat employee also distinguished himself by remaining in the threatened area and pitching in. The fire had moved into the ventilation piping in the galley and mess area overhead, and it was not until holes had been chopped in the ventilation and Carbon-Dioxide extinguishers discharged into them that it was possible completely to extinguish it. The immediate and effective action by our own crew caused the actual damage received from the blaze to be insignificant. Some paint was burned, a few partitions slightly buckled, and some electric wiring possibly damaged by heat. Repairs occasioned no delay in completion of the ship. Had the fire burned unchecked until arrival of the fire department, the damage would have been many times greater.

Placing commendations upon the records of the men involved was a pleasure, as was the composition of a letter to the Electric Boat Division General Manager calling attention to the performance of Mr. J. Egan, of the graveyard shift.

On Sunday, 27 September 1959, all was finally in readiness. Vice Admiral Rickover came aboard at 0630 and at 0700, having been hauled clear of the dock by her capstans, TRITON got underway for Initial Sea Trials.

Nothing can quite equal the deep satisfaction of seeing the ship which you and your crew have toiled over for so long come to life. The initial sea trials, strenuous though they were on body and mind, were eminently successful. Despite her size, the maneuvering and handling qualities of the ship were superb, and so smoothly did everything run that the ship and crew might have been at sea together for months. This happy case must be laid to the special credit of Lieutenant Commander Will M. Adams, Executive Officer, Lieutenant Commander Leslie D. Kelly, Engineer, Lieutenant Commander Robert W. Bulmer, Operations Officer, and Chief Torpedoman's Mate Chester R. Fitzjarrald, Chief of the Ship. The entire crew, of course, is as a whole deserving of high praise for an inspired performance.

The sea trials were followed by successive in-port and at-sea periods involving various tests and operations, and on 20 October 1959 Preliminary Acceptance Trials were begun. These trials were completed successfully on 23 October, and ceremonious delivery and commissioning of TRITON was set for 10 November 1959.

Vice Admiral Bernard L. Austin, USN, delivered the principal address of the commissioning ceremony, during which he cited TRITON's precedent-making size and her mission to support surface task forces as carving a new area for submarine operations. Mrs. Will presented the ship with a prized painting depicting the sea god, TRITON, standing guard over TRITON the ship; and Mrs. W. A. Lent, recent widow of the first commanding officer of the previous TRITON, presented the old ship's bell to her new namesake. Bell and painting were permanently mounted in prepared places in order to bind the traditions of the past indissolubly with TRITON's future, as her honored name returns again to the active Navy list.

At 1156 on 10 November 1959, as the largest possible set of colors were hoisted to the highest periscope and the crew and guests sang aloud the National Anthem, U.S.S. TRITON was placed in commission.

Within a short time after commissioning, changes in the ship's company began to occur as several promotions and transfer orders were received. In January 1960 Machinist George S. LAW was promoted from warrant officer to ensign. This represented the third rapid advancement for George since he had joined TRITON. He had reported on board as a nuclear trained first class engineman; in July 1959 he was advanced to Chief engineman; in September 1959, he was commissioned a warrant machinist; and now four months later he was an ensign. Anyone advancing this fast deserves assignment to a position of greater responsibility and George soon received orders for transfer to officer duties on board the USS GUNSTON HALL (LSD-5).

Promotions and transfers in the wardroom were heavy during January and February. At the same time George LAW made ensign, four more of our top, nuclear trained enginemen were commissioned. On 9 January 1960 I had the rare privilege of swearing in five new ensigns. Besides George LAW, these were: John B. THOMAS, Thomas W. TAYLOR and Frank R. DARLING, all formerly Chief enginemen; and Arthur P. MURRAY, formerly engineman first class. These new officers were a pleasant and welcomed addition to our wardroom, even if it was to be for only a short period.

On 22 January 1960, Lieutenant James C. HAY, USN reported on board for permanent duty from West Milton, New York. Jim was the first officer we had received from our prototype propulsion plant in over a year. He was warmly received, for he would be urgently needed to replace one of the many officer losses we were scheduled to suffer within the following two weeks.

The same day Jim HAY reported on board, Ensign George LAW and Machinist Donald E. PENNINGTON were transferred: George to the GUNSTON HALL in San Diego; and Don, to Mare Island. Don too had been one of our nuclear trained enginemen before he was commissioned warrant in October 1959.

Another loss from the wardroom occurred on 25 January as Lieutenant Ray Stewart HUGHES, our very capable Electrical Division Officer, was transferred to the Reactor Development Division, AEC, for duty under instruction at the AEC's Bettis Laboratory, Pittsburgh, Pa. "Stu" is slated to become the Engineer Officer of the polaris submarine ABRAHAM LINCOLN, now under construction at Portsmouth Naval Shipyard, Portsmouth, N.H.

On 2 February 1960 LCDR Leslie D. KELLY, Jr., the ship's Engineer Officer, left the ship for duty with Vice Admiral RICKOVER's Naval Reactor Group in Washington, D.C. With a wealth of knowledge and experience from his NAUTILUS years, Les had been TRITON's guiding light in making our huge twin reactor propulsion plant run. He is slated to get his nuclear submarine command shortly.

A welcome offset to our officer losses was Phillip B. KINNIE, Jr. Phil had been an engineman first class in our nuclear trained group. On 11 February he received his appointment to warrant machinist and shifted to the wardroom. When our cruise is completed, Phil is due to report to the USS MACON (CA-132), a ship about which we will have a great deal more to say later.

The next day the great exodus from the TRITON wardroom ended as Ensign THOMAS was transferred to ComFltTraGru, Guantanamo; Ensign TAYLOR to Submarine Base, New London; Ensign MURRAY to USS PROTEUS (AS-19); and Ensign DARLING to ComFltTraGru, San Diego.

One more thing needs to be noted. U.S. Submariners have called their vessels "boats" ever since 1900, when our Navy's first submarine, USS HOLLAND, was indeed a boat, only 54 feet long (20 feet shorter than the "sail" supporting our periscopes and radar). Since then the name has stuck, despite great changes in the craft themselves. Before World War II, they were officially designated as "major war vessels"; progress since then has dwarfed even their

war-time significance. TRITON, with cruiser size and horsepower, with unmatched operational versatility, speed and endurance, is on the threshold of a long, useful career in the Navy. It may be hard to eradicate long and affectionate tradition, but it is time it is recognized that ship of this size and importance, is no "boat". We, her crew, have resolved always to refer to TRITON as a "ship", a title submarines have long since earned.

Addendum

In issuing instructions for TRITON's shakedown cruise, it was recognized by the Navy Department that the special nature of the operation rendered probable a greater degree of interest in the narrative section of our report thereof than is contemplated in the extant standard instructions. This is reflected in pertinent sections of ComSubLant Operation Order 5-60, under which the cruise was conducted.

This narrative section of TRITON's Report of Shakedown Cruise accordingly attempts to describe the incidents of the cruise in non-restricted and non-technical language. When a standard but somewhat technical evolution is mentioned, care is taken that it has -- then or previously -- briefly been described. There has also been an effort to include description, passages and conversation pertinent to events. For these reasons the normal naval style will have been expanded in the narrative section to follow.

TRITON had been scheduled for shakedown cruise in northern European waters. Having suffered from frustrating delays during the building period, largely due to the over-riding Polaris priority, now that the ship was in commission there appeared, at any rate to TRITON people, to be some urgency in getting on with operations. Despite the concurrence of COMSUBLANT with this ambition, however, other considerations interfered.

TRITON consequently remained at Electric Boat from 7 December 1959 until 20 January, and the new installation looked more extensive with every passing day. Lay-over during Christmas was welcome, but with January we began chafing with the lengthening inactivity. On 20 January, finally, the ship got underway for tests at sea, determined to make up lost time to the best of our ability. A 24-hour per day schedule was set up.

1 February 1960, returned New London, tests completed. Received orders for the Commanding Officer to be in Washington on 4 February for an important conference.

In company with the Commander, Submarine Squadron Ten, the C.O. called at Headquarters, Commander Submarine Force, U.S. Atlantic Fleet. There, under the strictest secrecy, it was learned that a submerged world circumnavigation might be ordered.

At the appointed time, the conference met in the office of Vice Admiral Wallace M. Beakley, Deputy Chief of Naval Operations for Fleet Operations and Readiness. Also present was the Navy Hydrographer, Captain H.G. Munson; Rear Admiral L.P. Ramage, Director, Undersea Warfare Division; plus the head of OPNAV's Atomic Defense section, representatives from CINCLANTFLT and COMSUBLANT, and others. For purposes of geophysical and oceanographic research and to determine habitability, endurance and psychological stress - all extremely important to the Polaris program - it had been decided that a rapid round-the-world trip, touching the areas of interest, should be conducted. Maximum stability of the observing platform and unbroken continuity around the world were important. Additionally, for reasons of the national interest, it had been decided that the voyage should be made entirely submerged, undetected by our own or other forces, and completed as soon as possible. TRITON, because of her size, speed and the extra dependability of her two-reactor plant, had been chosen for the mission.

I declared that TRITON could sail as soon as additional stores were loaded and the special equipment required for the voyage installed. The conference then resolved itself into smaller groups concerned with the several projects and problems.

Upon the Commanding Officer's return to New London, a period of strenuous activity ensued for all hands in the ship, but in view of the high classification imposed, only TRITON's officers could be made aware of the change in our shakedown cruise. The rest of the crew were told nothing. To account for the arrival of various unusual instruments from the Navy Department, it was let out that this was needed to coordinate operations with other U.S. fleet units in the North Atlantic. Our extra-heavy provisions load was tossed off as being in accordance with standard COMSUBLANT policy that all submarines deploying for long trips load for a 90 day cruise. The Commissary Officer had been privately directed however to load to absolute capacity, which was estimated as 120 days. No one related the mountains of food stuffs arriving to the number of persons aboard, the expected duration of shakedown or the arbitrary standard of 90 days.

A ticklish administrative difficulty was how to advise as to the duration of financial arrangements for families left behind. The crew, of course, expected to be home, or at least to have access to the mails, by the end of March, whereas we knew not only that the voyage would actually last into May but also that there could be no mail either sent or received. This was solved by letting it become known that our northern cruise might be followed immediately by a series of Bureau of Ships trials in Caribbean waters, possibly without return to New London.

And a completed check-off list prescribing personal preparations lasting until mid-May was required of all hands. To the credit of the crew, not even this fictitious confidence was leaked.

Soon a great number of extra chart portfolios were delivered, followed by crates of special equipment. Much of the latter, dismantled and in boxes, was not to be set up until we were finally clear of land. There were a few curious looks, but no one asked embarrassing questions.

The following passengers, reported on board Tuesday morning:

Frank E. McConnell, Electric Boat guaranty representative
Eldon C. Good, Sperry Gyroscope Company
Dr. Benjamin B. Weybrew, Navy Medical Research Laboratory
Michael Smalet)
Gordon E. Wilkes) All of the Navy Hydrographic Office
Nicholas R. Mabry)
CDR Joe Roberts, USNR, National Geographic Society (Also designated as representative of Navy Information Office).

Tuesday, 16 February 1960 All times Romeo (Zone +5 or EST)

1416R Underway from New London in accordance with COMSUBLANT OpOrd 5-60, proceeding surfaced until clear of Block Island Sound.

1543R With Long Island abeam to starboard, entered International waters. Set course due south. In this area the Continental Shelf runs far out to sea and deepens very gradually. Our fathometer registers about 30 feet of water under the keel as we cross Endeavor Shoals bar.

1737R With soundings increasing to 30 fathoms, dived. Continuing on course 180^{O} to clear submarine operating areas. We will be coming to periscope depth occasionally, but we shall not surface until May. Our running depth gradually increases as the ocean bottom slowly drops away.

2240R Changed course to 134^{O} T, on the first leg of our voyage. We will follow this course for 3250 miles to St. Peter and St. Paul Rocks, a lonely spot a few miles north of the equator, lying off the bulge of Brazil. The "Rocks" will mark the beginning and completion of our circumnavigation of the world; but while we're at it, we intend to make the entire voyage in the submerged condition. The necessity of rounding the tips of Africa and South America and twice traversing virtually the length of Atlantic Ocean makes the total length of the trip some 34,000 miles.

Wednesday, 17 February. All times R(+5)

0540R Periscope depth for morning star sights and to ventilate the ship. Our #1 periscope, a brand-new design by the Kollmorgen Optical Company, features a device by which observations of celestial bodies can be made nearly as accurately as with the time-honored sextant. Until recent years submarines navigated in exactly the same way as any other ship, by using a navigator's sextant during periods when on the surface. Required to remain surfaced for long periods for transit or battery charging, earlier submarine navigators experienced only those difficulties inherent in working from their tiny exposed bridges. The snorkel, while not emancipating the submarine from the surface, enabled it to stay under while running engines and thus focused attention upon the need to make observations through a periscope. Many were the stratagems tried, and many the special periscopes built (mainly by Kollmorgen) for the purpose.

Our first checks with our new periscope are very pleasing, its only apparent drawbacks being that the submarine must be at periscope depth, with sun, moon or stars visible.

Coming to periscope depth takes time, for one must first listen cautiously at slow speed. The entire procedure of slowing, listening, then coming up and staying at periscope depth to navigate and for other purposes takes a lot of time. We make good use of it, of course, by raising our air induction mast and pumping in good fresh air (thus conserving our precious oxygen supply), setting a radio watch for news and messages, pumping out garbage through our garbage ejector, blowing overboard human waste and wash water from our sanitary tanks, and in general carrying out all functions more easily accomplished while at slow speed or shallow depth.

With the high SOA (Speed of Advance) required to complete our trip within the time allotted, every minute spent at a reduced speed requires many times that minute for recovery of the distance thus lost. One of our objectives is to determine which are the limiting factors for TRITON and to minimize their effect as far as possible.

Two things now under development will help greatly in the future and are now almost operationally ready: a really effective oxygen generating system - which no submarine has as yet and on which major research effort is being expended - and a means of

550280 O - 60 - 2


CANADA
UNITED STATES OF AMERICA
TO
ST. PAUL ROCKS
NORTH
ATLANTIC
OCEAN
1445R FEB. 1960 LAT. 41°-18' N. LONG. 72°-04' W. SUBMERGED 16 FEB. 1960
UNITED STATES OF AMERICA
171200Z LAT. 37°-23' N. LONG. 69°-19' W.
181200Z LAT. 32°-56' N. LONG. 63°-54' W.
191200Z LAT. 28°-02' N. LONG. 58°-30' W.
201200Z LAT. 22°-08' N LONG. 51°-20' W
211200Z LAT. 15°-55' N. LONG. 44°-50' W.
221200Z LAT. 10°-56' N. LONG. 39°-58' W.
231200Z LAT. 06°-20' N. LONG. 34°-47' W.
START OF SUBMERGED CIRCUMNAVIGATION
241900Z LAT. 00°-55' N. LONG. 29°-23' W. ST. PAUL ROCKS.
251200Z LAT. 03°-58' S. LONG. 30°-19' W.
261200Z LAT. 11°-01' S. LONG. 31°-22' W.
271200Z LAT. 18°-42' S. LONG. 32°-49' W.
BRAZIL

determining position by instruments, without celestial observations of any kind. Deep in TRITON's belly we carry a complicated machine on which the Navy, MIT and the Sperry Gyroscope Company have worked for years. Called "Ship Inertial Navigation System", SINS for short, it measures earth rotation and other undetectable forces by means of extraordinarily precise gyroscopes; and from these measurements automatically calculates our latitude and longitude. Similar computers, taken from discontinued ballistic missiles, helped guide NAUTILUS and SKATE on their polar explorations. Our SINS is the first production model for ship navigation. Another of our missions is to give it a thorough check-out on a long sea voyage. With SINS aboard, the only reason for observing heavenly bodies will be to run an occasional check to see how it is behaving, and to keep one of the unique arts of the sailor alive. Even so, I venture the prediction that this device will one day spell the end of that time-honored professional - the Navigator of the Ocean Sea.

0640R On securing ventilation, the inboard induction valve would not close. Both the hydraulic outboard valve and the electric head valve had shut properly, however, and, the ship being tight, we went on down anyway. A check of the pipe through a removable inspection plate rewarded us with a smashed and rusted flashlight which had lodged across the induction valve seat, a legacy from some careless workman. In 1939, with a known defective inboard air-induction valve, the brand-new submarine SQUALUS dived on trials depending for her safety on the proper functioning of the outboard valve. It had worked properly on previous occasions, but this time, in some unaccountable fashion, the outboard valve also failed (some say it shut and then opened). With the other valve in the huge 36 inch pipe also open, SQUALUS sank instantly. Half of her crew was drowned in the flooded after compartments. This costly lesson we have well learned.

1200R Noon position - - 36-33N, 68-04W. Course 134^{O} T. After some thought - - now is the time to notify the crew as to our objective. As I reveal our intention over the general announcing system, there is a most attentive audience. The southerly course we have been making good, instead of the expected northeasterly course, has caused a lot of speculation. Some, accurately enough, suspect we might be heading for the Pacific. But now with the full knowledge of our final objective, the tremendous tasks ahead of us evokes much discussion. As we had anticipated, every man aboard is thrilled with the prospect, yet soberly mindful of the effort required.

Thursday, 18 February 1960. All times R(+5)

1200R Position: 32-31N 62-32W.

1345R Exercised the crew at general drills. Our routine for the trip will be to exercise daily at one or more of the many drills which we, like all naval vessels, must have letter-perfect.

1500R Advanced clocks one hour to 1600 Quebec (zone +4).

1649Q Dispatch from COMSUBLANT informs us that Richard W. Steeley, Engineman Third Class, is the father of a baby girl. First babygram of the trip - Mother and baby doing well.

Friday, 19 February 1960 (All times Q, +4)

0015Q To periscope depth for ventilation and celestial observations.

0235Q The "fix" just computed shows us to have fallen behind our PIM (Position of Intended Movement). In preparation for the voyage, a detailed track chart with our exact routing and times to pass through each point had been left with COMSUBLANT, so that at

all times he will know exactly where we are. The somewhat reduced speed necessary for recent repairs has caused us to fall farther behind than seems proper, and it is obviously time we drew upon some of TRITON's tremendous reserve. With speed increased to flank, our submarine cruiser begins to tear through the water at a speed few ships can match on the surface. And yet, there is no sensation of speed at all.

1200Q Position: 26-36N 56-44W.

1300Q Released our first hydrographic bottle. This appears to be a good time to start one of the projects of the cruise, which is to release a bright orange-colored bottle once or twice a day, containing a printed Hydrographic Office form requesting the finder, in several languages, to note the time and place found in the blanks provided and forward the paper to the nearest U. S. Government authority. Concern over possible premature discovery of one of these bottles has prompted circumspection regarding the information we ourselves place in the blanks, and they are therefore made out in a simple code and serially numbered (see sample insert). The "master - - myself - - is simply "CAPTAIN", (or sometimes "CAPTAIN, USN). "Vessel" is filled in with the letter "T". The serial number, for which there is no provision, is hand-written in a convenient place and prefixed by the letters "MT" signifying "Magellan - TRITON". On the back we have written a short statement of the bottle's importance to U. S. research. Carbon copies of each bottle-paper, with all blanks filled, are retained.

The Magellan idea arose when it was noted that with the exception of his famous Strait our track very closely approximated his. Minor adjustments of the routing occasioned no difficulty, and will add measurably to our sense of accomplishment after a long and tedious journey.

Putting a sealed bottle into the water has turned out to be no problem at all. A standard medical bottle answers the purpose admirably, fitting easily into our submerged signal ejector. It is apparently impervious to maximum submergence pressure and floats neatly out on its own buoyancy when the muzzle cap of the ejector is lifted.

Saturday, 20 February 1960 (All times Q, +4)

0336Q Periscope depth for celestial observations, to listen on the radio for any possible message, to ventilate the ship, and to tune around for a news broadcast. This will be our procedure once a night, for approximately one hour.

We carry a large supply of stored oxygen and have the latest equipment to remove waste products from the atmosphere inside the ship. All nuclear submarines are fitted with a ventilation tube, identical in nearly every respect to a snorkel pipe except as to size, by which outside air can be drawn in and used air can, in effect, be exhaled. We intend to ventilate as necessary during the first part of the cruise and carry out an extensive "sealed-ship" test toward its conclusion.

While near the surface, of course, a radio antenna can also be raised clear of the water into reception position. We would stay at periscope depth longer, were it not necessary to make such a large reduction in speed at the same time, for already we are feeling out of touch with the rest of the world. For morale purposes alone, during the extremely long submergences now practicable, it appears desirable that daily digests of general news be transmitted over official circuits. We have started a ship's newspaper, but so far the editor has had to write almost everything in it himself. Even so, nearly everyone reads it from cover to cover.

1200Q Noon position 20-51N 49-51W.

PRNC-NHO 84 (REV. 11-54)

BOTTLE PAPER

U.S. NAVY
HYDROGRAPHIC OFFICE
WASHINGTON 25, D.C.
U. S. A.

(PLEASE USE LEAD PENCIL)

Thrown overboard by (Give name of master and observer):

Master, CAPTAIN

Officer,

Vessel, T-

Date,

Latitude,

Longitude,

INSTRUCTIONS TO FINDER

Trouve par (indiquer le mon, date et lieu).
Gefunden von (man gebe Namen, Datum und Ort an).
Gevonden door (men geve naam, dagteekening en plaats op).
Trovato da (dare il nome, data e luogo).
Hallado por (dar el nombre, fecha y paraje).
Achado por (dar o nome, date e paragem).
Trovita de (skribu nomon, daton, k, lokon).

Finder, MT 102

Date,

Locality,

Post-office address of finder,

The finder of this will please send it to any United States Consul, or forward it direct to the U.S. Navy Hydrographic Office, Washington 25, D.C.

La personne qui trouvera ce papier est priee de l'envoyer a un consul quelconque des Etats-Unis, ou de le faire parvenir directement a la section d'hydrographie du ministere de la marine a Washington 25, D.C.

Der Finder Dieses wird ersucht es irgend einem Konsul der Vereinigten Staaten zuzusenden, oder es dem hydrographischen Amte des Marineministeriums in Washington 25, D. C., direkt zugehen zu lassen.

De vinder van dit papier wordt verzocht, het naar een Consul van de Vereenigde Staten, of rechtstreeks naar het Departement van Marine afdeling Hydrografie te Washington 25, D. C., te zenden.

Chiunque trovi questo e pregato d'inviarlo a qualche Console degli Stati Uniti d'America, o di farlo pervenire direttamente alla Sezione d'Idrografia del Ministero della Marina a Washington 25, D. C.

Se suplica a la persona que hallar esto que lo envie a algun Consul de los Estados Unidos de America, o que lo remita directamente a la Seccion de Hidrografia del Departamento de Marina en Washington 25, D. C.

Roga-se a pessoa que achar isto o favor de o enviar a um dos Consules dos Estados Unidos da America, ou de o encaminhar directamente a Seccao de Hydrographia da Reparticao da Marinha em Washington 25, D. C.

Oni petas ka la trovanto sendu la paperon al iu Amerika Konsulo, au rekte al U.S. Navy Hydrographic Office, Washington 25, D. C., U. S. A.

This form should be placed in a strong bottle. The cork should be driven in flush with the rim and covered, preferably with sealing wax.

AVE NOBILIS DUX
ITERUM SACTUM EST

HAIL NOBLE CAPTAIN
IT IS DONE AGAIN

1519-1960

If the finder of this paper will return it to the U.S. Navy Hydrographic Office, Washington 25, D. C., direct, or through any United States Consul, he will thereby assist in the verification of the circulation of ocean currents. His services will be very much appreciated by all mariners.

There are no funds available for paying rewards to the finders.

FRONT AND BACK OF HYDROGRAPHIC "BOTTLE PAPER"

1340Q Slowed to half power, our normal cruising speed, which is still much faster than most ships can go.

Sunday, 21 February 1960 (Times Quebec, Zone +4)

1200Q Position 14-59N 43-55W. Course 134°T.

1300Q Held Protestant Divine Services.

1415Q Held Catholic Divine Services.

Both were held in the crew's mess hall, which is the only suitable compartment in the ship. 46 persons may be accommodated for meals at one time; considering the table occupied by our portable alter and space requirements for persons officiating, 24 is probably a reasonable chapel capacity. Attendance at neither service approached this number, but these two modest services mark a beginning, and we shall keep up the practice.

1500Q Advanced clocks one hour to Papa time (zone +3)

Monday, 22 February 1960 (All times Papa, zone +3).

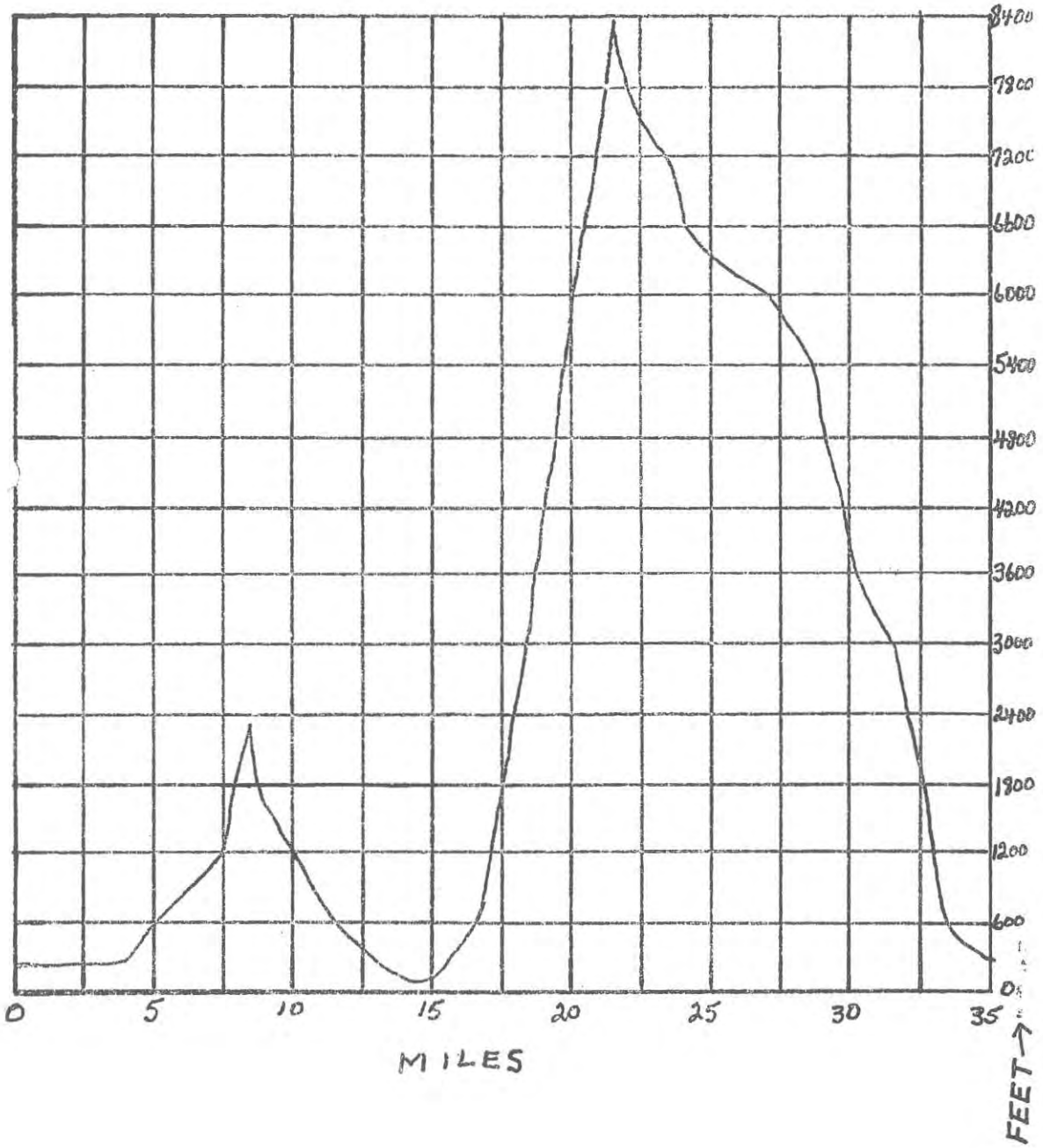
0034P Garbage ejector out of commission with a jammed outer door. This prosaic gadget is a large potential hazard because of the frequency of its use and the low experience level of the individuals customarily handling trash and garbage. But getting rid of garbage is an extremely important morale and health measure. Like all submarines, we insure against mal-operation of the ejector by having a qualified auxiliaryman actually operate the mechanism. If we cannot clear the jam we may be without ours for the remainder of the trip, and one is reminded of stories of submarines during WWI and even in WWII which brought the entire noisome mess back home. Fortunately, we have an empty torpedo tube to eject from, if we have to; but LT George Sawyer, torpedo officer, has already begun an earnest campaign to rid me of this idea. In the meantime, with only the breech door shut and full sea-pressure on the other side of it, it is desirable temporarily to restrict our submergence depth.

0126P Ejector door is shut, jam cleared. At least, we now have both muzzle and breech doors between us and the Atlantic Ocean and can resume normal cruising depth. The jam was most likely due to over-greasing the external mechanism, an excess of enthusiasm against which we shall hereafter guard ourselves.

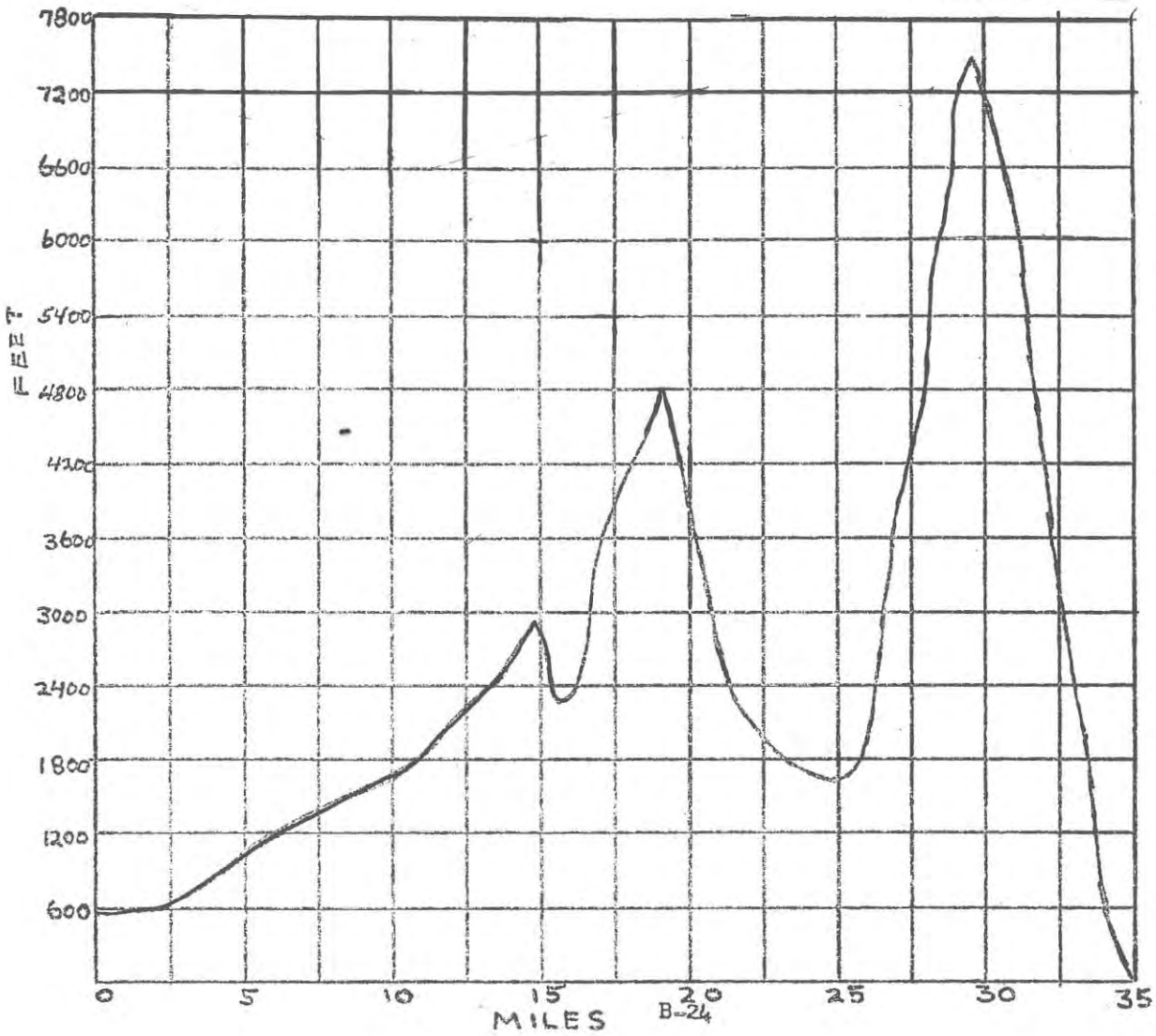
Tuesday, 23 February 1960 (All times Papa, Zone +3)

During early morning, sudden and very rapid shoaling was recorded on the Precision Depth Recorder. Normal soundings have been more than 2,000 fathoms in this area. For fear the shoal might reach a depth dangerous to us, the Officer of the Deck immediately slowed to creeping speed. We passed very slowly over the area, recording a minimum sounding of 930 fathoms, then executed a Williamson turn in order to retrace exactly our track and passed again over the spot on the reverse course. Sounding, 1,011 fathoms. Passing over it again on a southerly heading, the reading was 1,061 fathoms. The profile of this sea mount shows nearly precipitous sides. Its height above the ocean floor is nearly 9,000 feet. Sketches on the next two pages show two of the highest sea mounts which TRITON unexpectedly encountered during this cruise.

Seamount discovered by
USS TRITON (SSR(N)586)
World Cruise Submerged
February – May ★ 1960



Seamount on Atlantic Ridge
Discovered by USS TRITON (SSR(N)586)
World Cruise Submerged
February – May ★ 1960



Wednesday, 24 February 1960 (All times Papa, Time Zone Plus 3)

Today we expect to make our first landfall. This also will be the spot to which we shall return upon completion of our circumnavigation of the globe. Though the Sailing Directions describe St. Peter and St. Paul Rocks as bare and useless, interest has run high anyway.

0404 Periscope depth for morning stars to insure our position - no luck - completely overcast.

0853 (Sonar contact #12, estimated as merchant vessel).

Had reduced running depth for an observation of the sun. As we passed up through a temperature layer, the sound of propellers came in loud and clear.

0845 At periscope depth, contact in sight. It is a motor-ship of about 8,000 tons. She has a white hull, buff stack, nice looking clipper bow, large deck house, many kingposts and apparently much deck machinery. Very modern in appearance. Nationality not determined. The ship was tracked on course 023°T at a speed of 18 knots, apparently on a normal shipping route between South America and Europe. Minimum range: 7,000 yards.

0931 Unable to get a sun-line; the sky is completely overcast. We have now been on Dead Reckoning for 36 hours. If there has been an unexpected current, or an error in our D. R., we could easily miss this tiny island by a few miles and not see it.

1136 St. Peter and St. Paul Rocks should be about 10 miles ahead. Periscope depth for search.

1203 Radar contact 136°T, 21,600 yards

1206 Rocks in sight bearing 134°T. For the "The Rocks" to show up so precisely on schedule and so precisely as predicted is a feather in the Navigator's cap. Everyone on board shares in appreciation of an unusually precise navigational accomplishment under sub-average conditions.

1243 Stationed photographic reconnaissance party. LT Richard Harris in charge with Chief William R. Hadley assisting. This is the first opportunity we have had to try periscope photography, and we plan to make the most of it. For the next three and one-half hours TRITON cruises slowly around the rocky island at various ranges, avoiding shallow spots and generally conforming to the bottom topography. Our fathometer and pinging sonar are both extremely valuable in detecting the shallow areas.

St. Paul Rocks (more properly known as St. Peter and St. Paul Rocks) is merely a spot where the Atlantic Ridge happens to come above the surface in the form of a group of jagged peaks. This sub-surface ridge runs generally north and south and is the source of most of the shallow spots or "sea-mounts" in the Atlantic basin. An abandoned and deteriorated light house is on one of the larger of St. Paul Rocks, and the Sailing Directions state that at one time there was a dock used by vessels collecting guano. No signs of the dock remain, and the only living inhabitants are a large number of birds. Indications are that the guano trade may soon find it profitable to build another dock.

The day is quite calm. There is not much of a swell visible, but breakers and heavy surf foam among the jagged rocks. The whole islet, but a few hundred feet long, can with a little imagination be made to resemble a damaged ship laboriously proceeding at slow speed.

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1605 Photo Reconnaissance completed. Enroute Cape Horn.

2004 TRITON crosses the equator for the first time.

2005 Something unusual is going on in the After Torpedo Room. A confused report comes over the ship's announcing system, is broken off unfinished. Some of the younger members of the crew, aided and abetted by an anonymous character calling himself The Little Grey Fox, have been dreading this moment (notes signed "LGF" have appeared posted here and there, and various rebellious or subversive enterprises have been formented, until finally Davy Jones, King Neptune's official emissary, has had to take forthright action).

Following is the actual entry in the Official Log of USS TRITON:

> "2003 Their Majesties, NEPTUNUS, Rex, and his Queen, accompanied by Davy Jones, the Royal Baby and the entire Royal Entourage, ascended from the depths and entered the ship through the After Torpedo Room escape trunk to greet all Loyal Shellbacks and to visit their wrath upon the lowly pollywogs who had dared to enter his realm. 2010. H. M. NEPTUNUS assumed operational control of this ship. 2015. With the Royal Court assembled, and with the hearty concurrence of the Commanding Officer, said lowly pollywogs were summoned into the ROYAL PRESENCE to be confronted with the evidence of their crimes. After a fair and impartial trial in each case, they were all sentenced to penance for their lubberly ways and duly subjected to various cruel and unusual punishments as appeared fitting to their loathsome crimes (against which the very souls of all worthy SHELLBACKS rebel). 2359. Upon completion of due process and conversion of all pollywogs found worthy of acceptance into that ancient, most honorable, and mysterious Order of Loyal SHELLBACKS, His Majesty presented his final respects to the command and took departure to the depths, where his reign is vigilant and eternal, and gratefully acknowledged by all true sailors."

During the entire initiation ceremony, the identity of the Little Grey Fox remained unrevealed. He and some of his adherents had stolen King Neptune's crown, all the Royal Barbers' Equipment, and the shillelaghs painstakingly made by naive and loyal SHELLBACKS. There were claims that he had been recognized as he made his way painfully through the trying ordeal, but the identification was never sure. Whoever he may have been, this Little Grey Fox is no longer a pollywog and future pollywogs had better beware.

The ceremonies themselves were mainly concentrated in the Crew's Mess Hall, which for the occasion had been converted into a Court Room. NEPTUNUS and his buxom cigar-smoking queen (with curly mop-like tresses, bright red lips and matched apples slung before) were seated at a long table. There, with impartiality, they decreed maximum punishment for all pollywogs. The clean-cut, well combed accused had to kneel in supplication before the Court, consisting of Neptunus and The Queen, and present his plea as to the charges. He was legally assisted in his defense by the Royal Defender, who however lost every case. Occasionally the Queen punctuated the strict dispensation of justice by unlimbering a water pistol hidden in her ample (apple) bosom and squirting the accused in the eye. She was beaten to the draw, however, by Lt. Sawyer, our youngest officer (and ex-Yale crewman). When asked how he pled to the charge of causing loyal SHELLBACKS to handle lines in freezing weather when the ship got underway, instead of a meek "Guilty" or a glum "Not Guilty", this insignificant character shouted "Banzai!", drew a water-pistol of his own, and shot the King, the Queen, and the Royal Prosecutor before being overwhelmed by the Attorney for the Defense and a number of other Shellbacks, who delightedly hurled themselves upon him.

To the right of the Queen sat the hefty Royal Baby on a stool, suitably garbed and babbling playfully between puffs on a large black cigar which he had bummed from his

mother, the Queen. His large round tummy was completely bare, and he had contrived to convert the cigar into a slowly shortening pacifier, complete with holder and ring to slip his thumb into. All pollywogs, after being found guilty, were required to kiss the Royal Baby's tummy, which was made to look more than normally repulsive by the heavy coating of black, sticky grease smeared all over it. Their reluctance was quickly overcome with the able assistance of the Royal Defender who conscientiously made sure that ex-clients pressed their faces firmly into the Royal Baby's wide and greasy middle. (It must be admitted that the Commanding Officer, always having the welfare of his men in mind, also occasionally administered a gentle shove to encourage a more hearty embrace).

The greasy-faced pollywog's next stop was the shop of the Royal Barbers (Lt Tom Thamm and Chief Engineman Alfred Abel), where his hair was properly trimmed in accordance with his new honor - and since the Royal Barber is at other times in charge of TRITON's Auxiliary Division, all pollywogs of the Auxiliary Division came away with a large "A" in their thatches. When a nearly bald pollywog came by, a haircut did not afford enough scope for the Barbers' talents; but this did not stop them, for they held that in such cases the most effective way to improve a pollywog's appearance was to add hair instead of removing it. This was easy to do, there being plenty of extra hair lying about and grease with which to make it stick.

In the next compartment, the Royal Dentist squirted unmentionable "wiggly" substances into the shorn pollywog's ear and vile tasting concoctions into his mouth, accompanied all the while by an insane giggling as though the persons administering the treatment were actually enjoying it, instead of being engrossed in a most serious and important duty.

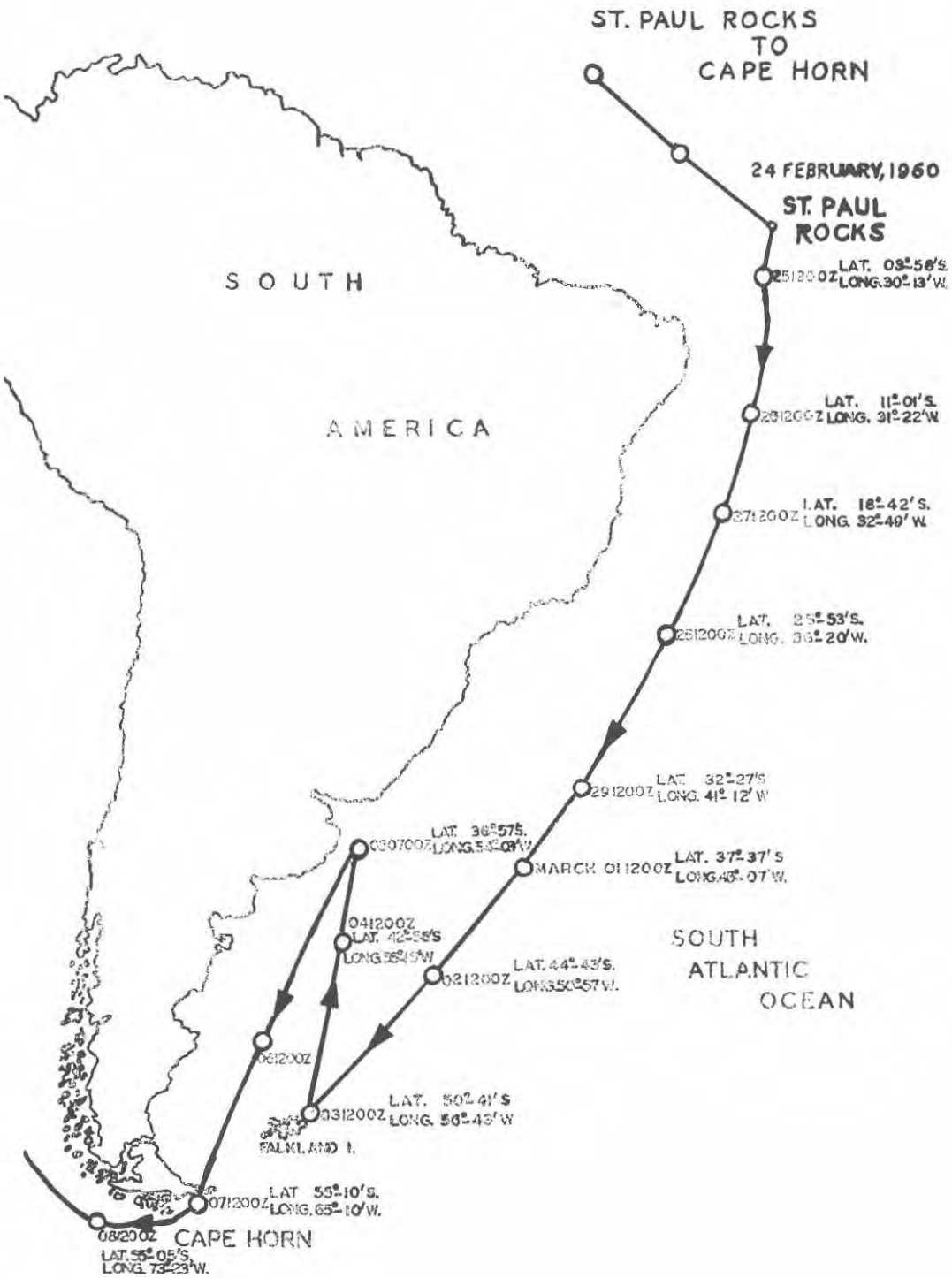
The next stop for the bedraggled pollywogs was up a deck in the Officer's Wardroom, where a lusty gang of shillelagh swinging SHELLBACKS with new shillelaghs (the old ones having permanently disappeared) speeded their passage. They then painfully shambled aft (guided of course by a SHELLBACK) to the Royal Bathroom, a canvas enclosed space beneath a hatch in the deck of the Forward Engine Room. There a bucket of cold saltwater, poised above, cascaded downward over the man, thus ceremoniously removing the last vestiges of the erstwhile pollywog.

With all pollywogs properly initiated, King NEPTUNE and his Royal Party expressed themselves as being much cheered by the high caliber of the crew that they had just inducted into their august society. Promising at all times to be ready to assist Loyal SHELLBACKS against any and all dangers of the Deep, especially pollywogs, they bade TRITON a fond farewell and departed into their watery realm.

Chief Electrician's Mate Herbert Hardman, perched on the edge of the Royal Bathtub, covered with grease, dripping water, and minus half his hair, grinned at me as I approached. "I've waited thirteen years for this!" said he. And John Moulton, Fireman Apprentice, seventeen years old and only three months out of Boot Camp is grinning too, for today he also is a SHELLBACK.

25 February - 1 March

The psychologist assigned for the voyage from the Medical Research Laboratory in the Submarine Base, Dr. Benjamin Weybrew, is supposed to test our over-all reactions during the entire period of the trip. He has already assembled a group of volunteer guinea pigs and is commencing to chart such things as sleeping hours, smoking and coffee-drinking habits, general feeling of lassitude and the like. After he has studied the results and compared them with similar investigations conducted in Operation Hideout and in SEAWOLF, as well as elsewhere, he hopes to make a contribution toward solution of the problems to be faced by Polaris Missile submarines in a succession of


ST. PAUL ROCKS
TO
CAPE HORN
24 FEBRUARY, 1960
ST. PAUL ROCKS
251200Z LAT. 0°-56'S. LONG. 30°-13'W.
SOUTH
AMERICA
261200Z LAT. 11°-01'S. LONG. 31°-22'W.
271200Z LAT. 18°-42'S. LONG. 32°-49'W.
281200Z LAT. 25°-53'S. LONG. 36°-20'W.
291200Z LAT. 32°-27'S. LONG. 41°-12'W.
301200Z LAT. 36°-57'S. LONG. 54°-09'W.
MARCH 011200Z LAT. 37°-37'S LONG. 46°-07'W.
041200Z LAT. 42°-58'S LONG. 58°-15'W.
021200Z LAT. 44°-43'S. LONG. 50°-57'W.
SOUTH ATLANTIC OCEAN
061200Z
031200Z LAT. 50°-41'S LONG. 56°-43'W.
FALKLAND I.
071200Z LAT. 55°-10'S. LONG. 65°-10'W.
081200Z CAPE HORN
LAT. 55°-05'S. LONG. 73°-23'W.

similar long submergences. This data is also expected to provide basic information for future space travel.

Not all of the effects are psychological, of course, for the interrelationship of physical environment to mental reaction, and the reverse, is well known, if as yet imperfectly understood. Concurrently, we are carefully recording the levels of carbon dioxide, carbon monoxide, oil vapor concentrations, air pressure within the ship, and similar phenomena. One test we will carry out toward the end of the cruise, total prohibition of smoking for several days, has already caused a great deal of divergent comment. Suppose it is provable that elimination of tobacco smoke has beneficial effects of great importance. What about the psychological results? How much effort should be expanded for a device to make such a prohibition unnecessary - or would extended prohibition of smoking be more feasible?

Morale is high as we enter into our run for Cape Horn, but at the same time an appreciation of the extent of the trip we are embarking upon has commenced to sink home. It was our Crossing The Line ceremony which unexpectedly put this into focus. During a previous such observation (in USS TRIGGER in 1952) I had prohibited unusual haircuts by the Royal Barbers for the reason that we would shortly arrive in Rio de Janeiro where, I felt, strange hair styles might reduce the pleasure of our few days visit. In TRITON, on this crossing, the circumstances were different. "This time", I announced, when Chief Loyd L. Garlock, who has a long memory, brought up the subject; "there'll be plenty of time for hair to grow back to normal. Have at it!" All over the ship, the short bristles standing in dead white skin, where but lately had been a handsome head of hair, constitute an instantaneous measure of the duration of our undertaking.

If all goes as we hope, we shall see St. Paul Rocks again on the 26th of April. We have already traveled 3,000 nautical miles, with 31,000 to go. Our trip is considerably longer than the straight-line distance around the world, for both Suez and Panama Canals are to be avoided; our total submerged voyage will cover 34,000 miles.

It is our "shakedown cruise", of course, in addition to all the rest, and the Executive Officer has evolved a daily program of drills and instruction lasting from 1300 to 1600. This, added to 8 hours of watch per day and necessary division work, makes for better than a 12 hour working day. We have, however neither reveille nor taps. Despite their latterday size, submarines are still so crammed full of equipment that a man not on watch is less bother (and more comfortable) in his bunk than up and about -- and more people asleep means less oxygen consumed, less food eaten, more room for watchstanders and men repairing or working on equipment.

A number of men, as a matter of fact, skip meals by sleeping through them. To have all hands ready for the daily drill period, we need some kind of reveille, though it is carefully not referred to by this name. Therefore, we make it our custom to test all our alarm signals - the General Alarm, the Diving Alarm, the Collision Alarm - every day at 1245, just prior to the beginning of the day's schedule of drills and lectures. It is an effective alarm clock.

A number of semi-extracurricular activities have also begun. Under the leadership of Lt R. P. McDonald, Assistant Engineer, Reactor Control Officer and our Protestant Lay Leader, a TRITON Lecture Association, known as TLA, has been formed for the purpose of mutual assistance in public speaking. Meetings are approximately held weekly, instruction is given and assignments reported upon. The initial benefits of the program will be realized when individual members, introduced by other members, deliver lectures to their shipmates on subjects of their own choosing. The final test will be to deliver a polished lecture before an audience from other ships or stations in the presence of myself as Commanding Officer or a formally designated representative. A

lecturer considered to have done this well becomes qualified to lecture on this subject to any suitable audience, and we will seek opportunities for him to do so.

A large number of "course books" for study leading to examination for advancement in rating have also been brought aboard, and it is gratifying to see well worn copies appear in the hands of ambitious sailors. As a matter of fact, just before departing on the cruise a number of candidates from TRITON were given promotion examinations in a navy-wide competition. The results, however, won't be forthcoming for sometime.

There is a series of evolutions relating to the ship's own operational development which, because of her newness, we shall have to perform. We must know, for instance, for how many minutes we must suck air through our ventilation pipe in order completely to change the atmosphere of the ship. And naturally we have to know how long we can go before we need to do it again. Simultaneously with ventilating we can carry out numerous other processes, such as taking celestial observations through the periscopes, sending or receiving radio messages, ejecting the hydrographic bottles, blowing sanitary tanks and the like. Some of these evolutions can be carried out below periscope depth, sometimes at greater cost of a valuable commodity such as high pressure air. High pressure air itself must be conserved, and another of our problems is to see how well we can manage it. As SEAWOLF found during her long submergence, one cannot afford to expell it from the ship. If it must be used, it should be released within the ship after use and recharged back into the air banks via the air compressors.

The ship's newspaper has already been mentioned and there is a program afoot to put out a cruise book. There are a number of photographers aboard. Premier among them is Commander Joe Roberts, USNR, regularly employed by the National Geographic Society but currently on active duty for the Navy Information Office; and there is First Class Photographer's Mate Ray Meadows, loaned to us for the trip by Commander Naval Air Forces, Atlantic Fleet, in Norfolk. In addition, Chief Communications Technician William R. Hadley has been assigned additional duty as ship's official photographer under our Photographic Officer, Lt. Dick Harris. Despite lack of experience, Hadley has already made himself ubiquitous everywhere in the ship with his borrowed and official-looking paraphernalia. And then there are, of course, the amateur photographers to whom permission to bring along cameras was granted with the understanding that all pictures are to be turned over to the ship for review in case of inadvertent inclusion of classified material.

As for private hobbies, not nearly as many have turned up as reports from other submarines had led us to expect. Perhaps the heavy watch and training schedule is responsible.

Our weekly routine is as follows:

Monday and Tuesday are regular days, with drills, lectures, school of the ship and classes during the noon to 1600 watch.

Wednesday is a "Rope Yarn Sunday" - Navy traditional surcease from drills while at sea. During the sailing days this was the opportunity, if weather was good, to get up one's kit for mending or washing, generally to do odd jobs of one's own volition, or just to relax in the sun.

Thursday is a regular drill day.

Friday is "Field Day", and is the only day when reveille is held in the morning. After Field Day there is a formal inspection by the Commanding Officer. If you had the 4 to 8 watch in the morning, you also have the 16 to 20 watch that same evening with Field Day and Inspection in between. This makes a long day; but every two weeks we equalize things by shifting the watches.

Saturday is a regular work day with drills in the afternoon. As much as possible Sunday is observed as a day of rest, the only scheduled activities being Church and normal watches.

Friday, 26 February 1960 (All times Papa, Zone Time Plus 3)

Field day all day long. An amazing amount of trash and garbage has been collected out of the various recesses in the ship. She looks clean superficially, but deep in the corners there is a great deal of shipyard dirt. It is obvious that a single field day will not even come close to getting the ship into the condition we want her.

1600 Began Commanding Officer's below decks inspection. The ship looked pretty good, all in all, but after a thorough inspection a number of discrepancies were found. We shall do better next time.

At the conclusion of the inspection, despite the Gunnery Officer's protests, I directed that some of the trash be loaded into number six torpedo tube and ejected that way. Our garbage ejector will handle about ten bags at a time, and we had accumulated over one hundred. As an emergency garbage ejector, a torpedo tube looks like a practicable alternative. During the war this was so - but our torpedo tubes nowadays eject torpedoes by water instead of air, and the problems are different.

The experiment was successful in that a large amount of garbage was ejected; however, rags and other material were apparently sucked into the torpedo tube mechanism, fouling it. "Guns" has won his point, but I can be stubborn too and we have now evolved a system to prevent this from happening. Nevertheless, the sight of TM3 A. W. Steele crawling into the clammy interior of the torpedo tube to push the garbage down toward the end, with water squirting in under pressure all the while from a fouled valve, has convinced me we should not use the tubes for garbage ejection unless it is an absolute necessity.

Sunday, 28 February 1960

The sermon today is given by Chief Hugh M. Bennett, assistant lay leader. It is entitled "Vanities". Bennett has put a lot of work into it; his sincerity is from deep inside and the service is most successful.

Monday, 29 February 1960 (All times Papa, Zone Time Plus 3)

1 March 1960 (All times Papa, Zone Time Plus 3)

This morning Commander James E. Stark, Medical Corps, U.S. Navy, our Atmosphere Control Analyst as well as our ship's Medical Officer in charge of the health of the crew, asked to see me about a serious problem which has arisen. J. R. Poole, Chief Radarman, has been having excruciating abdominal pains for several hours and it is Jim Stark's conviction that he has a kidney stone. Apparently Poole had been suffering a milder ache for several days and had not reported it, hoping it would go away. This has not been the case, and he is now in serious pain.

My profession as an officer of the United States Navy has not heretofore required me to know much about kidney stones, but insistent questioning of Jim Stark and a few moments of quick research in an encyclopedia give me a pretty good idea of the problem. Poole may have had an unsuspected kidney stone for some time and never known it; but once it starts to pass it must either pass all the way through or else serious complications will result. The passage of the stone is usually accompanied by severe pains of exactly the type Poole is experiencing now, and the only thing to do is to ease his discomfort as much as possible, and wait.

In the meantime I am faced with the problem of what to do in case Poole does not pass the stone. The equipment required is standard in any hospital but we do not have it on board ship. Where can we take Poole if he needs more attention than Jim Stark is equipped to give? And - will we have to surface to get him there? Will our submerged record be ruined on this account?

1015 Troubles come in pairs. Our fathometer, which has been operating continuously since departure from the States, is suddenly out of commission. This equipment, perfected many years ago by our Navy, has been so dependable for so long as to be taken almost for granted by all ships. Our normal practice in making a transit (except when attempting to avoid sonar detection) is to take and record a sounding every 15 minutes. For this particular cruise a precision depth recorder, or "PDR", has been installed which takes a sounding approximately 30 times a minute and records the same on a piece of specially prepared paper, thus producing a continuous record of the bottom profile along our course-line. It is the PDR which found the previously uncharted submerged sea mounts along our track.

Now, however, the fathometer is out of commission and my anxiety about Poole is compounded by worry over it. Fortunately at the present time we are in an area where the water is deeper than normal for the Atlantic and for a number of hours there is worry about unexpectedly scraping the top of some unsuspected submerged peak. But we will want that fathometer badly as we approach Cape Horn. It is also apparent that submarines need fathometers more than other ships. The biggest surface ship will rarely worry much about water known to be deeper than 100 feet; but our modern deep diving submarine ships need many times that much.

1500 Progress report on Poole indicates no improvement yet. The trouble with the fathometer, however, has been localized as a transformer and two crystals blown in the receiver, most probably because of insufficient cooling.

1900 Poole has been "asymptomatic" for several hours now, and may have passed the stone. We won't know for some little time but it does look hopeful.

1915 We have been running in gradually shoaling water all day long, searching ahead and both bows with our echo ranging sonar, due partially to our anxiety regarding the fathometer and partially to unfamiliarity with effects to be expected. A great number of possible contacts upon close investigation are evaluated as schools of fish, temperature anomalies in the water, or possible pinnacles well below our actual depth. In the meantime, what had started out as a rather quick replacement of parts has become a

lengthy repair. The water has commenced to shoal rapidly according to the chart and navigational worries are commencing to assume greater proportions when compared to medical or nuclear worries than they had a few hours ago.

At this time good news is reported. Our fathometer is at last back in commission. It may be lacking a little in power because of the deterioration of the transducer, but it works very well. The precision depth recorder also is back in commission and we lay on a rigorous program, it is probably needless to say, to watch both carefully from now on.

2200 The good news as well as the bad comes in batches it seems. All indications are that Poole has passed his kidney stone and will be restored to duty and full vigor in a matter of hours.

2 March 1960 (All times Papa, Zone Time plus 3)

0100 Poole is having another attack; more severe than the last one. Maybe he did not pass the stone a few hours ago despite all indications to the contrary; or as Dr. Stark points out, there may be more than one kidney stone involved.

0232 Possible submarine contact. We are in fact within about 300 miles of Golfo Nuevo, where the press has recently reported unknown submarines under attack by the Argentine Navy. In their present state of mind the last thing we want to do is to make contact with a vessel of the Argentine Navy. Even though TRITON would most likely be able to show them her heels, the repercussions could not fail to create public notice. But, of course, there is always the possibility that this is indeed a submarine contact. Maybe the Argentines had something; we decide to investigate.

0235 Slowed and reversed course to investigate the contact. It looks pretty real.

0258 Periscope depth for further investigation. So far as we can tell, this is not a surface ship; and our contact definitely has movement. It is not on the bottom. As we slowly and cautiously draw closer, however, it commences to fade and change shape. Final evaluation; a close pack of fish moving around and feeding, and probably wishing this huge intruder would leave them alone.

0420 Another large school of fish. Classification is easier this time. It looks just like the last.

Poole's second attack has progressed to an extremely painful and apparently serious condition. I visited him in his bunk but he is unable to talk coherently with me because of the severe cramping pains. Jim Stark explains that he has received the maximum amount of morphine. First class hospitalman Richard R. Fickel is in attendance, standing on a ladder in order to be close to Poole's high bunk.

There is nothing to do but to wait and see. In the meantime however I am wondering even more strenuously what to do. If this is a second stone that can be passed, and if Poole is then symptom-free for as much as a day or so, the chances of his having no further attacks may be pretty good. As a matter of fact, according to Jim Stark, many kidney stone attacks, when finally checked by X-ray and other special examinations, actually require no additional attention.

1200 (Posit 45-40 south, 51-45 west)

1500 Poole appears much better after having slept soundly for several hours. He feels so well that he has gotten up and gone back to work in the Radar Department where there has been a little difficulty in one of the pieces of equipment with which he is particularly

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familiar. I am actually surprised to see him up and on his feet but Jim says it's better to let him carry on at a moderate rate if he desires. Poole is cheerful and seems completely himself again. He is completely symptom free.

2200 Periscope depth for navigation. We expect to make landfall on the Falkland Islands tomorrow and we will need an accurate position. No luck. The sky is completely overcast.

2230 Second "babygram" - Chief Electrician James John DeGange had a 7 lb girl on 1 March. Both well.

3 March 1960: (All times Queen, Zone time plus 4)

0428 Periscope depth for navigation - again no luck, the sky is completely overcast. We are having a repetition of our experience in approaching St. Peter and St. Paul Rocks.

0722 Hurray for the fathometer! It indicates that we have crossed the 100 fathom curve exactly on time.

0733 Periscope depth in attempt to obtain a sight of the sun. This combination with the fathometer indication might give us a fairly good position. No luck however. It is still overcast.

0800 Estimate we are 35 miles from the Falkland Islands. Will conduct a photo reconnaissance as before, on Port Stanley.

0937 Periscope depth for contact on Falklands.

0950 Radar contact on the Falkland Islands - another landfall on schedule. The photo reconnaissance party under Lt. Harris is standing by with their instruments at the ready. Although the pictures of St. Peter and St. Paul Rocks turned out fairly well, our prints look too much like HIJMS MIKUMA shortly before she sank during the Battle of Midway. We hope to do better on the Falklands.

At this point Jim Stark reappears, his recent good cheer notably absent. Poole has suffered a third and by far the most violent attack of the entire series. In this instance, in Jim's opinion, there is no doubt that either he is seriously in difficulty with the original stone, which may not have been passed after all, or else he is passing a series of them. In either case, there is no telling how long this will continue and to what condition he will ultimately be reduced. Nobody wants to turn back. Poole himself begs that we go on, says he is sure this will be the last time. Everyone in the ship seems to be staring at me. Their eyes are eloquent. It is reassuring to have a doctor on board to fall back on in these serious matters.

It isn't as though I have not had plenty of opportunity to think the situation over. We certainly cannot go on like this. It is my duty to get our shipmate to a place where he can receive x-rays and special studies, and as soon as possible. We dare not go farther. Since we were informed by dispatch several days ago that the USS MACON was in Montevideo Harbor, I made the decision to go in there.

1020 The decision made, it is simply done. I pick up the telephone, call the Officer of the Deck, order him to change course to head for Montevideo Harbor, increase speed to maximum, and secure the Photo Reconnaissance Party. In the meantime Will Adams, Bob Bulmer, Jim and I sit down to compose a message.

The MACON is the flagship of the Commander, U.S. Forces, Southern Atlantic. I look him up. He is Rear Admiral E. C. Stephan who in 1949 was my squadron commander

in Key West. A fine submariner and a good friend. A turn of the page of the Atlantic Fleet Organization brings us to the MACON. Her skipper is Reuben T. Whitaker, one of the most renouned submariners of the war and also a good friend. Not that friendship, per se, cuts any ice one way or another, but the old tie certainly feels good when you're looking for help. If the thing can be done, Reuben Whitaker and Admiral Ed Stephan will do it for us.

1248 Periscope depth to transmit our message requesting assistance from the MACON. There is just one way in which there may be a reasonable possibility of not aborting our unprecedented submerged voyage, and it is really entirely out of our hands. After a terse statement of the situation, we simply announce that we are heading at maximum speed to a point off Montevideo where we will arrive about midnight on the night of the 4th of March. "Can the MACON meet us there, receive Poole, and take him to where he can get the help he needs?" is the plea we compress into brief naval phraseology.

This is a bad time to transmit messages, it being well known that you get much greater range at night. But we don't have that kind of time. We have no idea what sort of schedule the MACON is on.

1415 Our message has been delivered, not to the nearest U. S. Radio Station, but to Guam, 8300 miles away as the crow flies - straight across the South Pole and into the Pacific - if a crow could stand the temperature.

In the meantime, Poole is having an extremely bad time. "J" "C" Meaders, hospitalman first class is perched on a ladder alongside his high bunk on watch over him. There is no sick bay in TRITON, but here is one thing I can do for Poole. There is one place in the ship where a sick man can have room for an attendant and equipment, not to mention being out of the gaze of his worried shipmates. Everyone feels better after we move him into my bunk. And now that he has the space to lay it out, Jim moves in oxygen gear and covers the desk with medical gadgetry of all kinds.

Since turning back, except for the time spent transmitting our call for help, TRITON has been racing northward, deep beneath the sea, at the maximum speed that her two great propellers can drive her. There is no noticeable motion in the ship, not even vibration. All we note is a slight drumming of the superstructure from her swift passage through the water. Forward she is as steady as a church, as solid, and as quiet.

In the control and living spaces, the ship has quieted down, too. Orders are given in low voices; the men speak to each other, carry out their normal duties, in a repressed atmosphere. A regular pall has descended upon us. I know that all hands are aware of the decision and recognize the need for it. Perhaps they are relieved that they did not have to make it. But it is apparent that this unexpected illness, something that could neither have been foreseen nor prevented, may ruin our submergence record. If the MACON cannot meet us, if we have to go into the port of Montevideo to transfer Poole to medical authorities, we shall have to surface. We shall still, in that event, continue the cruise, for this would affect only our incentive factor. But that would be a big loss.

2300 Periscope depth. Maybe there will be a message for us - there could be, though it is probably too soon -

2325 There is, indeed, a message for us from Admiral Daspit. Admiral Stephan is getting underway in the MACON and will meet us at the time and place we have requested.

The Navy can sure come through any place in the world! The news is immediately announced to the entire ship and at the same time we can now announce how we shall handle the rendezvous and transfer. We will not surface, at least, not fully. With Poole and the "topside party" in the conning tower, we will seal it off from the rest of

the ship by dogging down the lower hatch. Then we'll "broach", that is to say, get the upper part of our sail out of water high enough to open the upper conning tower hatch. The broached condition will in fact make the transfer easier, since we'll not be so high above MACON's boat. Poole will be all ready, all necessary papers strapped to his belt, and once he's in the boat we'll simply ease back down and be on our way.

4 March 1960 (All times Queen, zone plus 4)

Flank speed all day. One can almost become lyrical thinking of the tremendous drive of the dual power plant of this grand ship. Except in calm water, there are probably not more than a few dozen ships in the world which can go as fast as we are right now, and we are doing it deep beneath the surface where they can't go. Lt. Curt Shellman, Main Propulsion Officer, reports with delight that the engines seem to be running smoother and quieter at flank speed than they were at our normal cruising speed, in itself pretty fast. Everything feels the same as it did in the prototype at West Milton; everything that is, except the speed indicator instrument above the throttleman's station. Almost with disbelief, we note what speed we are registering. And, looking at the various gages of the propulsion equipment, we realize we have but scratched the surface of TRITON's real potential. If we were really to let her out, as we might have to in war, she has even more under her belt.

5 March 1960 (All times Queen, zone plus 4)

Our rendezvous with MACON is for 2 A. M. At 0100 we slowed and came to periscope depth. MACON is out there waiting for us.

The rendezvous is perfect. She is heading south, we north, and the two ships meet at the designated position.

0245 Approximately in position for the transfer.

0250 Broached on safety tank. Ship's draft reduces to 40 feet, indicating that the top of the conning tower is five feet out of water. All hands are ready; the lower conning tower hatch is shut. I hastily don a jacket and a cap and then direct Curtis K. Beacham, QM1(SS), to crack open the conning tower upper hatch very cautiously in case there is an inch or two of water above it - which indeed there is. A small cascade pours down through the barely opened hatch, and we jam it shut again. This is remedied by a short blast of high pressure air into our most forward tank, thus lifting the bow a foot or two above the swells and giving a better drainage angle to the bridge.

A second time I direct Beacham to open the hatch, and this time no water comes in. We are out of water. He holds it at a quarter-inch opening for a minute or two to be sure that water is not sweeping over it. None does. We are definitely out. "Open the hatch!" I tell him. He flips it open, jumps out. I am right behind him. As I swing up the ladder to the bridge, one deck above, by pre-arrangement Beacham jumps below again and slams the hatch nearly closed, ready to shut it instantly the rest of the way should it swamp.

It is a bit of a lonely feeling to be the only man topside in an 8000 ton ship which is 99% under water. We have been very careful with our computations, but there's always the possibility that some miscalculation somewhere, or a sudden change in water density, might send the whole thing back down again. There is however not much time to dwell upon this, and besides there's very little chance it will happen. TRITON's crew is too well trained, too intent on doing this thing correctly. Will Adams, Bob Bulmer and Tom Thamm are down below watching over this operation like old mother hens, and

nearly everyone else is standing by his station just in case. There won't be any mistakes down there.

All looks well on the bridge, though I notice that one of the hand rails has been broken loose by the force of the water and will undoubtedly be a source of rattles in the future if it is not already. Otherwise, everything looks about the same as it did three weeks ago when we submerged. It is pretty dark but there seems to be fair visibility, despite a drizzle of rain. I fumble for the bridge command speaker, find the knob just where it is supposed to be. Pressing upon it, I call the conning tower and, to our mutual and infinite pleasure, Will Adams immediately answers from down below. We had pretty well expected this instrument to be grounded out from its prolonged submergence and it is a boon to find it in working order.

With communication once established, things are a great deal easier. I pick up the binoculars, scan the MACON and the water between us. We are lying to, stern into the wind, about five hundred yards downwind from her. She is broadside to us, her decks amidships ablaze with lights where her deck crew is hoisting out a motor whaleboat. All we have to do is receive their boat, when it comes, and keep a careful watch on the other ship to ensure that she does not drift down upon us. This will be easy, since our radar is constantly reporting ranges.

I reach forward, press the 7MC command communication button and call into it, just to make sure: "Control, Bridge, keep and log ranges to the MACON and report immediately when she commences to close".

The return from Bob Bulmer in the Control Room is immediate; "Range 600 yards, Bridge, and steady". - Then a minute later, Bridge, - From the MACON, their boat is in the water heading toward us".

I acknowledge over the 7MC and direct my next order to Will Adams in the conning tower. "CONN, Bridge - send George Sawyer and the topside line handling party to the bridge, through the conning tower hatch". We had already arranged that this group of people under our first lieutenant and gunnery officer would be standing by with all necessary equipment. Upon the order they would proceed up one by one to the bridge and prepare to receive the lines from the MACON's boat when it comes alongside.

Will Adams' answer from Conning tower comes back immediately "Line handlers are standing by. We will open the lower conning tower hatch as soon as ready."

A few minutes later, "Bridge, Conn - request permission to open the bridge hatch and send line handling party topside." I press the speaker button and respond, "Bridge, aye, permission granted."

In a moment George Sawyer's determined voice resounds from the bridge, "Line handlers on the lower bridge, sir, Sawyer and three men."

I have been looking over the side and making up my mind as to which is the better angle for the boat to approach from; the starboard side looks a bit better; besides, the access door from our sail is on that side. "Standby to take them along the starboard side, George," I call down to him, "I'll signal the boat to make our starboard side."

"Starboard side, aye aye", from Sawyer. The four people with him are Peter P. J. Kollar, Gunner's Mate first class; Wilmot A. Jones, Torpedoman's mate second class; Thomas J. Schwartz, torpedoman's mate third class; and David F. Boe, seaman.

The noises emanating from the lower bridge indicate that Lt. Sawyer and his men are breaking out the necessary gear, stored there in a watertight tank, to receive the boat

alongside. Each man has on an inflatable life jacket with attached flashlight, and a safety belt with traveler.

The latter device is the result of an accident several years ago in northern latitudes, when the U. S. Submarine TUSK rescued the crew of the sinking submarine, COCHINO. In preparation for the rescue, TUSK rigged life lines on deck forward. Nevertheless, a huge sea came aboard, swept the people on deck off their feet against the lifeline and broke it, plunging them all into the sea. Herculean efforts on the part of the TUSK got most of them back aboard, but a number lost their lives in the freezing water.

As a result of this accident, a safety track similar to a railroad rail was installed on the decks of all submarines. Anyone going topside in bad weather or under hazardous conditions wears a strong canvas belt, with chain and traveler attached. The traveler clamps over and slides along the safety track, and may only be put on or removed from the track at certain places. This arrangement permits a man to move back and forth on deck and still remain firmly attached to the ship by a short length of very strong chain (with a "quick release" hook in case of need).

When two people want to pass each other, the technique is to seek a safe moment and quickly exchange travelers by unsnapping the chains from one's own belt and snapping the other man's into it.

I am well aware of all of these historical matters as I look over the side and ponder the advisability of letting George and his people go down on deck. Seas are sweeping freely across our deck aft but that is of no particular importance at the moment. Our bow is staying about a foot out of water, but aft around the conning tower, where I am looking over the side, the deck is occasionally inundated with water. The night is cold and dark, completely overcast, and a light drizzle is falling. The sea feels warm.

With a little luck, George and his men will very likely have no difficulty under conditions as they are. But the risk looks a little too great. With a low freeboard the transfer is aided, provided it isn't so low that there is risk to your deck crew. Besides, even though Poole is at the moment having a remission, partly with the help of morphine, transferring him under any but the best conditions for his health and safety is out of the question.

Again, there is really no decision to be made at all. Technicalities about staying submerged have got to give way to the realities of the situation; the safety of the people involved in this operation is more important than anything else. We will have to come up a little higher. I push the button energizing the microphone to the Control Room, "Control, Bridge, blow forward group for one second".

"Forward group, one second, aye aye", from Control. Almost simultaneously, I hear air whistling into the tanks forward. It blows for a long second, stops abruptly.

The effect is most apparent. The ship having previously been carefully brought to perfect trim, addition of a thousand pounds or so of buoyancy in the forward section lifts her until the displacement (not weight) of TRITON's above-water volume equals that of the water displaced by the air in the tank. The superstructure, being entirely free to flood, displaces very little water, except for the conning tower itself, and the forward section rises about two feet. The main deck in the area of conning tower and sail is now fairly clear, only an occasional wave slapping over it.

Sawyer's voice from below, "Permission to open the access door and go out on deck, Captain?"

"Open the door, but do not go out on deck until I give you permission". This is just to keep control to the last before letting him go. I can hear the sound of the fastenings being opened up and the door swinging wide.

George again: "Looks all clear topside, Captain, permission to go out on deck?"

"Affirmative!" I yell back. In the distance, the lights of the approaching motor-boat are visible coming around our stern. Down below in the flickering semi-light cast by their flashlights, the men of the deck force reach through the open access door, affix their travelers to the track and then, holding their safety chains taut, step swiftly forward on the main deck. Two men quickly turn to on a collapsible cleat just forward of the sail and rotate it upward. This is the point from which we plan to take the boat's bow line.

Possibly some unknown vagary in water density or wave action has commenced to effect us as MACON's boat approaches. Two or three seas roll over the foredeck. George has his men by this time arranged alongside the sail gripping the hand hold bars and of course holding on to their safety belts. As I watch them anxiously, a larger than average sea mounts up the side, and all of them are momentarily buried up to the neck. George shouts "hang on" as the water rises about them. All were already pretty well soaked and the danger is more apparent than real, but we can't let this continue, "Blow the forward group for one second", I again order the Control Room, and again there is the welcome blast of high pressure air into the tanks. This brings the deck up again and we motion the boat alongside.

In the meantime Jim Stark and John Poole have been waiting in the conning tower. We have used the last few hours, during which he has been free from discomfort to brief Poole thoroughly on what he can say and not say once departed from TRITON. His transfer papers and other official documents are made up in waterproof bags and attached firmly to his person. He himself is so bundled up and swathed with protective clothing and life jackets that he can hardly get through the hatch. At the word from Stark that all is ready, I order the two men to the lower bridge. Our good-byes have already been said. There is no time for more than a last hasty "good luck" to Poole.

The boat is alongside, bow painter around the cleat and held by Wilmot Jones. Two men in the boat hold her off from our side with reversed boat hooks. Chief Fitzjarrald and Sawyer steady Poole and a couple of the men in the boat standby to catch him. Seizing a moment when the gunwale of the boat is level with the edge of our deck, Poole steps easily and quickly into it. It is a standard navy motor-whaleboat, evidently MACON's lifeboat, manned with a crew of about 5 people. It is a pleasure to watch the boat's coxswain maneuver his frail craft alongside. There is no doubt that he knows his business. Poole hasn't even got wet, and the boat's gunwale has only once touched our side.

In a moment the riding line is cast off. The men with boat hooks push hard, the coxswain guns the engine, and they are away. Another moment suffices to get George and company back on the lower bridge. Then they are below, hatch shut behind them.

While waiting for further word from the MACON, Machinist's Mate Bob Carter is busy with a hack-saw taking off the loose bridge guard rail we had noticed. In a few minutes the welcome word comes from our Communications Officer, Lt. Bob Brodie, in Radio: "Bridge, Radio - from the MACON - Poole safely on board".

Among the papers Poole has with him are personal letters of appreciation to Admiral Stephan and Captain Reuben Whitaker. More than our thanks for their help, there is little information we can give them about our trip. They must be bursting with curiosity. We sent a final message of thanks and then, with topside clear and hatch shut, I order Dick Harris, Diving Officer of the Watch, to return to periscope depth. The

air bubble in our tanks is released, and gently TRITON eases her sail into the warm sea. The total time with the bridge above water has been less than an hour. With a deep feeling of gratitude for the way the Navy has come through, we shape our course at maximum speed southward.

Now that we have successfully solved the difficult problem about Poole, the atmosphere in our ship lightens considerably. With everything wide open, TRITON is again heading for Cape Horn. This time we will pass to the west of the Falkland Islands and head for Estrecho de LeMaire, a small strait between Staten Island (familiar name) and the main part of Tierra del Fuego.

We calculate that we will have gone 2,000 miles out of our way on this mercy mission, and it has cost several days. The distance is almost equal to an Atlantic transit.

Sunday, 6 March 1960 (All times Queen, Zone Plus 4)

1330 Protestant Service today is "Faith, Hope and Love", delivered by Richard L. Brown, electrician's mate first class. The deep wells of Brown's devotion are evident.

1400 Catholic Mass is held by our lay leaders, Lcdr Bob Fisher and Storekeeper first class Raymond J. O'Brien.

1500 (Set all clocks back one hour to Romeo Zone, Plus 5)

1610 The pinging sonar detects what appears to be a shoal area - so evaluated by all who see it. As we pass over the spot, the fathometer confirms it. This is most comforting, for it indicates that even should we lose our fathometer, our active sonar can give us indication of shoaling bottom - is, in effect, an excellent back-up.

7 March 1960 (All times Romeo, Zone Time Plus 5)

0440 Approaching Estrecho de Le Maire. Periscope depth.

0446 Sighted Le Maire light bearing 185°T, right on schedule. After obtaining a visual and radar fix on land, went deep and completed passage through the strait at deep depth.

0934 Exited from Estrecho de Le Maire, changed course to 244°T to head for Cape Horn.

1149 Periscope depth. Sighted Cape Horn, bearing 249°T.

1200 Noon posit - 55°-48' South, 66°-33' West. Approaching Cape Horn.

1408 Upon reaching longitude 67°-00' west we have officially passed from the Atlantic to the Pacific Ocean and from the control of ComSubLant to ComSubPac. We will, at last, carry out the photo reconnaissance practice which had been denied us at the Falkland Islands. Our photographers on photo reconnaissance party, Lt. Harris and CTC W. R. Hadley, are on the job and complete their assignment in good order. Photos of this famous Cape will shortly be posted.

It has additionally been announced that any sailor rounding Cape Horn must, if possible, get a look at it. This was considered bad luck in the days of sail, when the sight of Cape Horn was usually the result of either bad navigation or bad weather conditions and generally portended a serious accident. But deliberately sighting the Cape is a privilege - in fact, a duty - devolving on any seaman fortunate enough to round it under conditions permitting him to do so. It has consequently been directed that all men aboard, one by one, file up into the conning tower and take a look at this Cape which has figured so in the history of our country. With Joe Roberts and his cameras also present in the

conning tower it can be appreciated that there was at times a rather heavy traffic load in that tiny space.

Parenthetically, our observations of the conditions make it quite clear why it was such a tremendously difficult thing for old-time seafarers to weather this famous Cape. In the first place, though we are safely submerged and comfortable, TRITON is rolling rather heavily. There is an unusually rough sea topside. Lt. James C. Hay, recently reported aboard from West Milton, has already established himself as a most competent diving officer - but he is having difficulty in maintaining ordered depth today. Good practice for young officers - and planesmen too. We estimate the waves as 10 to 12 feet high and the wind about 25 knots from the west.

There are occasional rain squalls and the cloud coverage is rather low to the water. It is also noticed, after a few navigational cuts that we are being set backwards, to the east, by a current of some 3 knots. Under such conditions it is easy to see how an old wind-jammer, trying to beat her way around The Cape, might find it almost impossible with heavy winds and a strong current both dead against her. Even a power ship would have her troubles at a time like this.

Although the conditions we have observed could hardly be called a storm, there is no doubt that any ship riding around Cape Horn on the surface today would be having a rough and uncomfortable trip. We are comfortable and snug, our only problem being that the ship has only two periscopes and not many people can see out at one time. This is compensated for by the observation that not many people on any kind of vessel doubling The Cape on this day would be interested in seeing anything.

1705 We have had to go by The Cape twice in order to permit everyone to get a look at it. Technically speaking we have crossed from the Atlantic to the Pacific, back to the Atlantic, and then back to the Pacific. Now we set forth on the next leg of our journey. Our next stop is Easter Island. Magellan passed by just over the horizon and failed to see it. We have selected it, however, because it is on our track, and because it is about the only point of interest in the immediate vicinity. From Cape Horn to Easter Island the distance is 2,500 miles.

8 March 1960 (All times Romeo, Zone Plus 5)

1111 Passed over a sea mount registering minimum depth 350 fathoms. Total height of sea mount 7,000 feet above the ocean floor. The Pacific seems to have fewer of these than the Atlantic, probably because there is no sharply discernible mid-Pacific ridge corresponding to the mid-Atlantic ridge.

1200 Noon posit - 53-42 South, 75-53 West.

1325 For the drill today, emergency shutdown of both reactors and loss of all power was simulated. In reality this double casualty is most unlikely; nevertheless it is one we should practice. The drill went very well, and we carried out the procedures laid down in the instructions on operation of nuclear reactors. Our difficulty, however, was not in this area, but in the simple submarining problem of trimming the ship. When a submarine travels for many hours at high speed, it gradually and unconsciously loses its fine degree of trimming. There is no way of telling from the action of the ship at these high speeds whether she is heavy or light. Trim, of course, is affected by many things inside the ship - and if she travels any distance there is always the additional likelihood of changes in the density of sea water. Battery driven submarines normally operate at minimum speed, when possible, to conserve the battery; therefore when submerged they are almost automatically maintained in perfect trim. This, in fact, was practically a reflex action, since any condition of being out of trim would cause difficulty in maintaining depth. Our situation in suddenly slowing from high speed to

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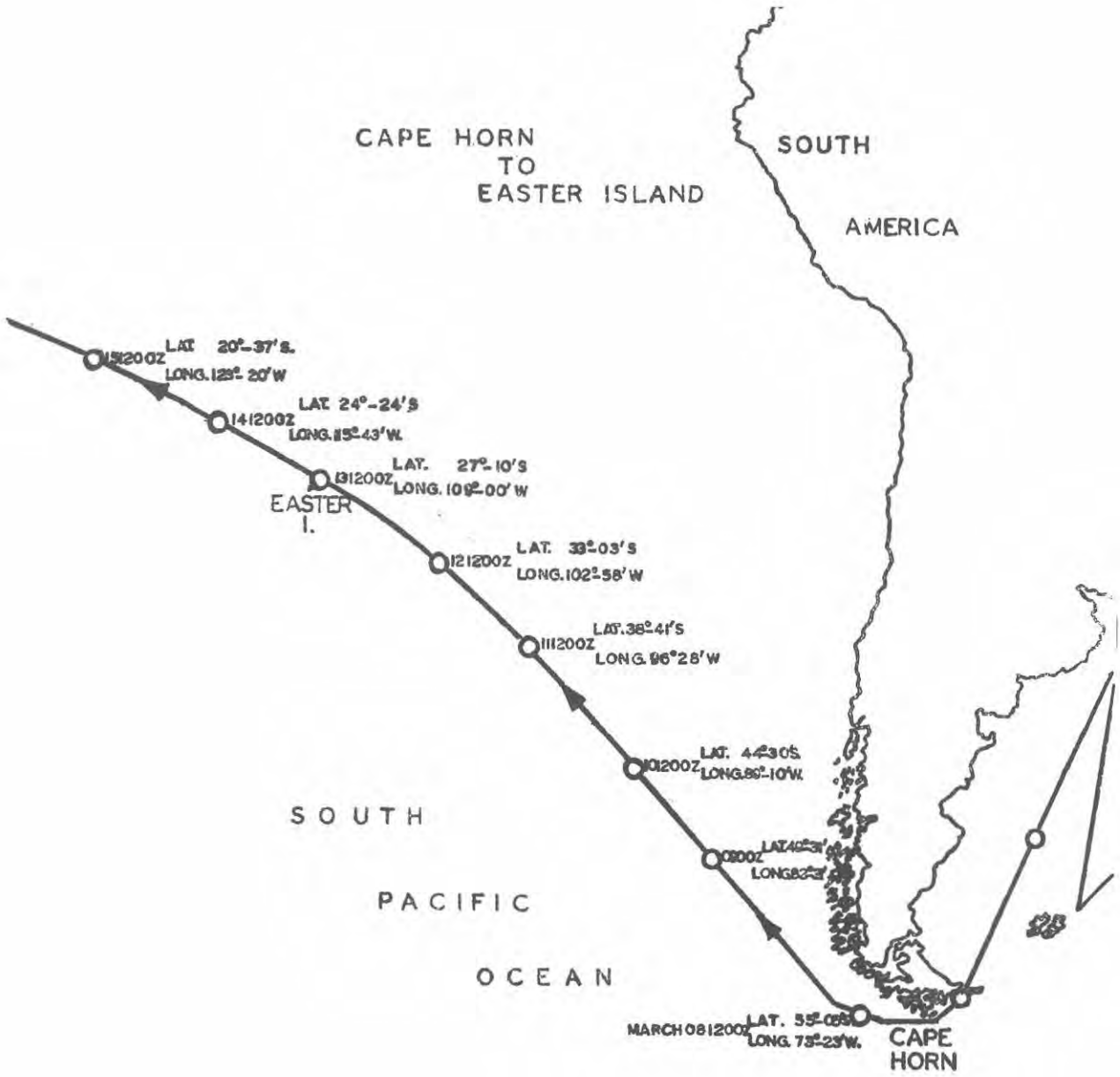

CAPE HORN
TO
EASTER ISLAND
SOUTH
AMERICA
LAT 20°-37' S.
LONG. 129°-20' W
1412002
LAT. 24°-24' S
LONG. 115°-43' W.
1312002
LAT. 27°-10' S
LONG. 109°-00' W
EASTER
I.
1212002
LAT. 33°-03' S
LONG. 102°-58' W
1112002
LAT. 38°-41' S
LONG. 96°-28' W
1012002
LAT. 44°-30' S.
LONG. 86°-10' W.
SOUTH
PACIFIC
OCEAN
LONG 82°-3
MARCH 0812002
LAT. 55°-0
LONG. 73°-23' W.
CAPE
HORN

minimum speed is worse than diving from a high speed surface run - where, at least, you have submerged power if you need it. Submariners are well aware of the need to maintain close watch on the trim while running on the surface, but they have not been so accustomed while submerged and it is a lesson we needed to learn.

9 March 1960 (All times Sierra, Zone Plus 6)

10 March 1960 (All times Sierra, Zone Plus 6)

12 March 1960 (All times Sierra, Zone Plus 6)

1500 Set all clocks back one hour to Tango (Time Zone Plus 7)

2000 We are informed by dispatch that my old skipper in the first TRIGGER, Rear Admiral Roy S. Benson, has relieved Rear Admiral William S. Ferrall, as Commander Submarine Force, U.S. Pacific Fleet. This is a surprise, since I had not heard that he might receive this assignment. My acquaintance with him began when, as a midshipman second class at the Naval Academy, I had him for instructor in seamanship and navigation. Later I was his communications officer and engineer during four war patrols in the TRIGGER, and we have been in contact off and on ever since. A very human and friendly person, Admiral Benson.

Tomorrow we should reach Easter Island where we intend to conduct another photographic reconnaissance drill. Nick Mabry, who is aboard from the Hydrographic Office, happens to have a copy of "Aku, Aku" by Thor Heyerdahl, with him. This we should have thought of while planning our cruise. At any rate, Nick is having trouble reading his own book. It has had such a sudden vogue of popularity that we have to issue instructions that no one may take it from the Air Control Center. It must be left there so that all those attempting to read it simultaneously will at least have a chance to look at it for a few minutes now and then.

One of our objectives at Easter is to identify and perhaps photograph one of the huge monolithic statues which some ancient tribe built there. Heyerdahl's expedition records the spot where they replaced one on its pedestal. Maybe we can spot it.

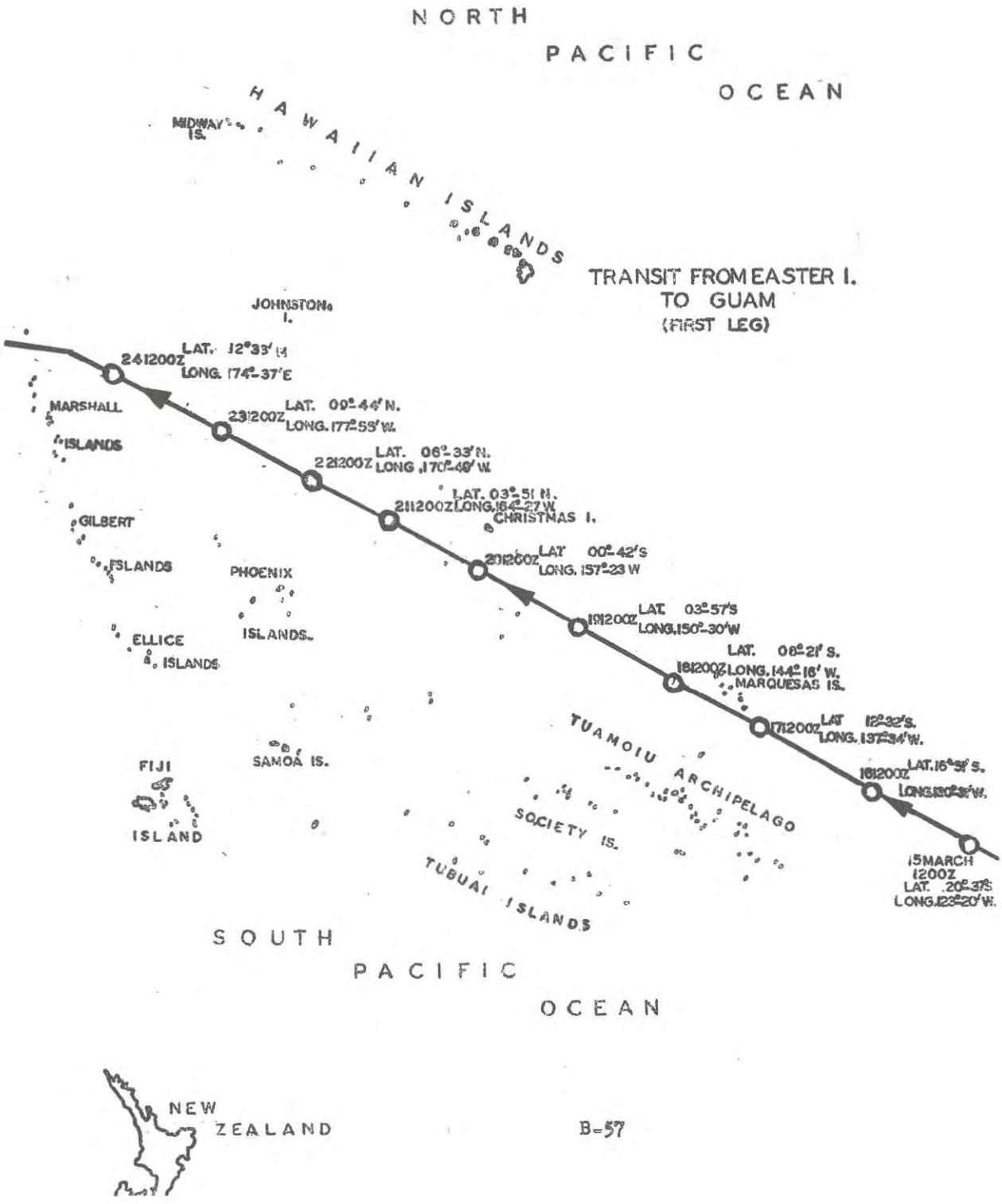
13 March 1960 (All times Tango, Time Zone Plus 7)

0105 Sonar contact on active sonar; quickly classified as a submerged peak. There is really very little fear that the top of the peak can possibly be up to the depth at which we are running, in view of the other soundings in the area; but it is also noteworthy that these soundings are rather spotty, and it is not impossible for a shallow water spot to exist between a couple. Avoiding what is almost certainly no more than an imagined danger is a nuisance; but caution dictates that we do. The incident, however, has increased our confidence in our ability to detect and avoid shallow water.

0456 Periscope depth for morning star sights and possible landfall on Easter Island. No luck with stars; and at 0510 commenced radar search.

0512 Radar contact on Easter Island at bearing and range predicted.

0706 Commenced photographic reconnaissance of northeastern coast of Easter Island. About 0930, after careful search of the area, Thor Heyerdahl's statue is located, right where he said it was. Several other old stone heads have been sighted, none clearly identifiable from a distance, but there is no doubt about this one. The word is passed through-


NORTH
PACIFIC
OCEAN
HAWAIIAN ISLANDS
MIDWAY IS.
TRANSIT FROM EASTER I.
TO GUAM
(FIRST LEG)
JOHNSTON I.
241200Z LAT. 12°33' N
LONG. 174°-37'E
MARSHALL
ISLANDS
231200Z LAT. 09°-44' N.
LONG. 177°-59' W.
221200Z LAT. 06°-33' N.
LONG. 170°-49' W.
LAT. 03°-51' N.
211200Z LONG. 164°-27 W.
CHRISTMAS I.
GILBERT
ISLANDS
PHOENIX
201200Z LAT 00°-42' S
LONG. 157°-23 W
ELLICE
ISLANDS
ISLANDS
191200Z LAT. 03°-57' S
LONG. 150°-30' W
LAT. 08°-21' S.
181200Z LONG. 144°-16' W.
MARQUESAS IS.
TUAMOIU ARCHIPELAGO
171200Z LAT 12°-32' S.
LONG. 137°-34' W.
FIJI
SAMOA IS.
161200Z LAT. 16°-51' S.
LONG. 130°-32' W.
ISLAND
SOCIETY IS.
TUBUAI ISLANDS
15 MARCH
1200Z
LAT. 20°-37' S
LONG. 123°-20' W.
SOUTH
PACIFIC
OCEAN
NEW
ZEALAND

B-57

out the ship that anyone wishing to see a stone statue had better come to the conning tower.

In no time at all there is a regular procession of men coming up for periscope liberty, as was the case off Cape Horn. The statue faces inland and not much can be made out of its features, but the morning sun glints in orange and crimson upon the angular granite - and many details are filled in by our imaginations, reinforced by Heyerdahl's book.

In the meantime we have been carefully searching the shore and slopes of Easter Island to detect any movement of personnel or any possibility of our periscope being spotted. The possibilities are remote; not many people spend much time gazing at the unchanging landscape of the South Pacific ocean. Nevertheless it is a possibility - but search as we may, not a single moving creature is seen on the island. A number of habitations are seen, one, not far from the statue, consisting of a small but attractive pink stucco house surrounded by well-tended foliage and on apparently nicely graded dirt road.

1116 Took departure from Easter Island enroute Guam, 6734 miles distant.

1200 Noon posit 26-53 South, 109-42 West.

1300 It is my turn to be the leader at Protestant Church Services today. I have never led any type of religious meeting before this and put in a fair amount of preparation. My talk is entitled "Shipmate Means Sharing", and appears to be well received. It is gratifying also to note a moderate increase in the congregation. Perhaps this is due to the fact that the skipper is conducting the service, but at any rate it was nice to see them.

14 to 16 March 1960

As we slowly approach the equator for the second time, we notice a continual rise in water injection temperature. Main condenser vacuum naturally reduces under these conditions and as we had expected there is a slight reduction in speed by consequence of the reduced thermal efficiency of the condensers. At 1500T on 14 March, we turned clocks back one hour to conform with zone time Uniform, plus 8; and at this time on 16 March we again turned clocks back one hour to conform to Victor (plus 9) zone time.

17 March 1960

18 March 1960

1500V Set all ship's clocks back one hour to 1400W to correspond with William Zone time, plus 10.

19 March 1960 (All times William, Zone time plus 10)

As we approach the equator from Easter Island, on course approximately west by north, our track leads us clear of all land; but in some cases we pass not too many miles distant. There are indeed variations in depths of the water, according to the charts, though not as severe as those in the Atlantic. But should we be seriously off our course, we might find ourselves in rapidly shoaling water, perhaps on the approach to a coral atoll or even more possibly, an uncharted growing atoll.

1200 Noon posit, 01-52 South, 153-26 West.

1210 Our sonar has detected a submerged peak with an estimated height above the ocean floor of some 12,000 feet. The highest point, as nearly as we can determine, may be in the neighborhood of 300 fathoms.

2230 Crossed the equator, entered northern hemisphere. King Neptune had apparently passed the word along the line; for none of his minions delayed our passage, and TRITON was suffered to cross the boundary in peace.

Sunday - 20 March 1960 (All times William, Zone Time plus 10)

0805 Another submerged ridge, dead ahead. Instead of changing course to go around as has been our practice to date, this time we watch carefully as TRITON approached the submerged ridge and noted all indications confirming its existence. Minimum depth was estimated at about 500 fathoms; and at the appropriate time as we approached and passed over it, indication was received on the gravity meter.

1330 Chief Steward William L. Green, leads the service and delivers the lesson: "The Comfort of the Scriptures". He knows what is in the Bible - and he knows more hymns than anyone else.

1800 We are now at our closest point of approach to Pearl Harbor. In honor of the occasion a ship's party has been planned for this moment. Bob Fisher's commissary department, led by First Class Cook William ("Jim", naturally) Crow, has really outdone itself in preparing the traditional fixings for a fancy Hawaiian Luau. Even Poi makes its appearance (largely due to the efforts of the Executive Officer who, having recently left command of USS PICKEREL at Pearl Harbor, feels that no Luau can possibly be complete without Poi. Why he feels this way I will never know, because Poi to me is so much paste with neither taste nor consistency; but as has been said upon other occasions, there is not always need for a reason. If tradition demands that we shall have Poi at a Luau, we shall have it. Besides, Adams made it himself).

Many aloha shirts are in evidence, and a number of beachcomber outfits. Several of the crew have either found or in some manner manufactured straw hats, and despite the crowded conditions existing just before we shoved off from New London, to my amazement a King-size guitar and a set of bongo drums suddenly appear.

One or two hula dancers also have showed up, but somehow, it seems, our party goers would rather have their illusions than face the reality (i.e., the hairy-legged hula dancers which are the only ones we can provide).

Monday, 21 March 1960 (All times William, Zone Time Plus 10)

Shortly after midnight, as we came to periscope depth for celestial observations, it was discovered that the sextant built into our new periscope has gone out of order. This will be a serious blow if we can't fix it, ameliorated only by the fact that running submerged as we are we find that our dead-reckoning is most phenomenally accurate. Rarely has our estimated position deviated from our actual observed position by more than a mile or two. It appears that currents and other forces affecting surface ships during transits are much less a factor during submerged runs. To paraphrase an aphorism, "deep waters run still".

0531 Periscope sextant is back in commission as the result of some rather inspired work by L. D. Garlock, FTCA(SS) and W. E. Constantine, FT1(SS).

1500 Set all clocks back one hour to Zone Xray, (Zone time Plus 11).

Good news in one way: a double baby-gram: an 8 pound 7 ounce girl for Leonard F. Lehman, Electrician's Mate First Class, and a 6 pound girl for Richard Brown, also Electrician's Mate First Class. Birthdates respectively 15th and 18th. Our ship's unofficial cartoonist, Seaman Jim Smith, has drawn up special "Baby gram" forms, in two versions. "Mother's copy" has cupids and hearts, but "Father's copy" shows nothing but a bunch of pot-bellied old men. Fathers are given both copies, but they are honor-bound to give the one with the cupids to their wives.

Tuesday, 22 March 1960 (All times Xray, Zone Time Plus 11)

Wednesday, 23 March 1960 (All times Xray, Zone Time Plus 11)

0834 Crossed Internation Date Line from west longitude to east longitude at latitude 10^{o}-36' North. As this significant milestone was achieved, a message arrived from King Neptune informing us that because of our highly satisfactory conduct on 24 February, when we first crossed the Equator, all hands were automatically, without further examination, taken into The Royal Order of Golden Dragons and so recorded in his log. There will, however, be a severe price.

1500 Set all clocks back one hour to Zone Yankee (Zone Time plus 12).

Friday, 25 March 1960 (All times Mike, Zone Time minus 12)

In accordance with instructions from King Neptune, 24 March has been dropped from our calendar. This day - a full day from the lives of all hands - has this date been extracted in tribute for crossing the date-line (technically speaking we have advanced all clocks to Mike zone (Zone Time minus 12). We shall also have to do penance by working the ship for 24 full 25-hour days before we get home again, some of which has already been done.

1930 Fifth Baby-gram of the cruise. A boy this time, 5-1/2 pounds, for Donald R. Quick, Engineman first class.

Saturday, 26 March 1960 (All times Mike, Zone Time Minus 12)

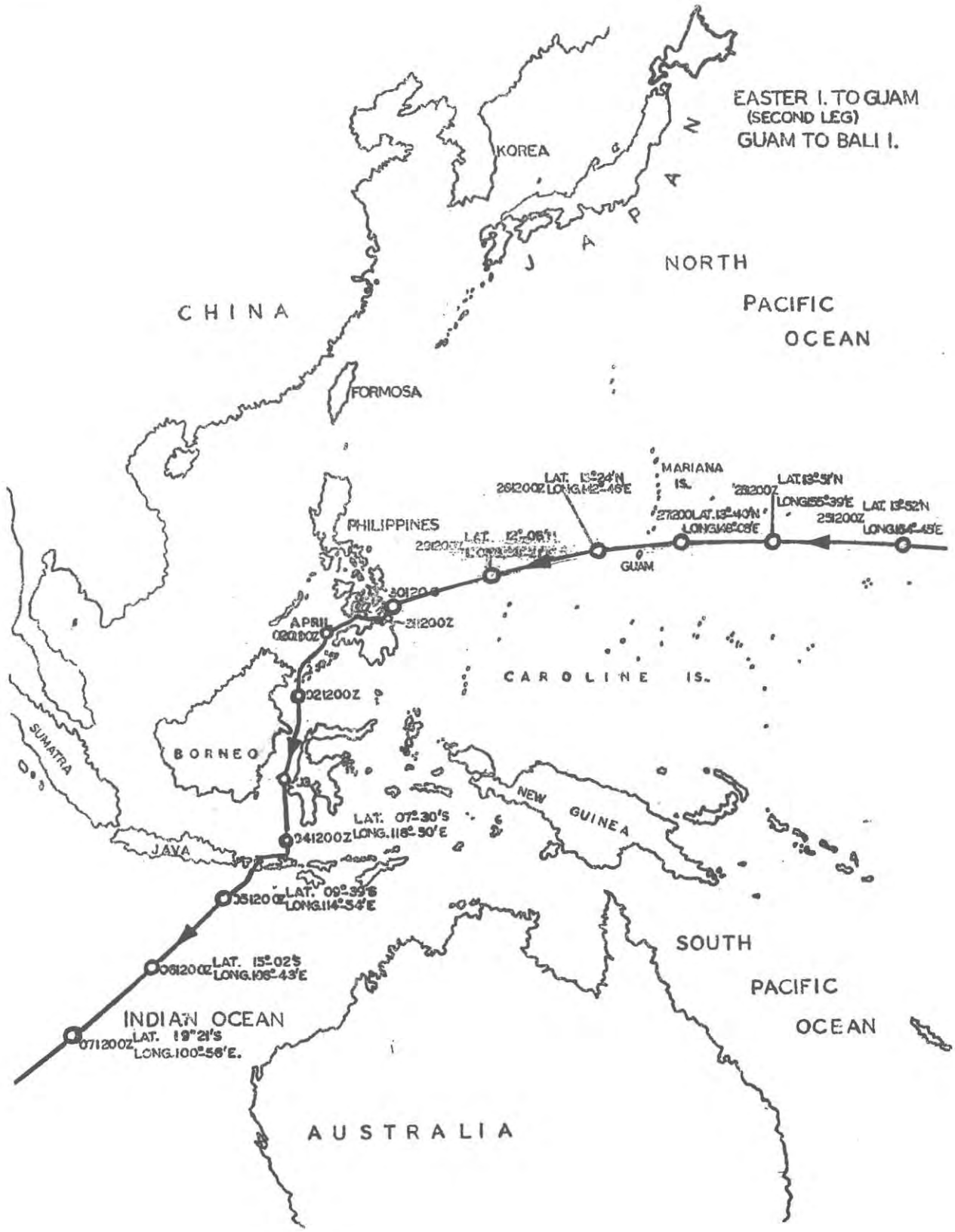
0747 Sonar indicates another rise in the ocean floor. There is no indication on the chart of any ridge or sea mount and we log at this location a depth of 350 fathoms.

1500 Set all clocks back one hour to Zone Lima (Zone Time Minus 11)

Sunday, 27 March 1960 (All times Lima, Zone Time Minus 11)

0840 Sonar reports an apparent distant echo ranging signal: 6 to 7 pings; then there is an interval of silence followed by another set of transmissions. This will bear a little investigation so the ship is slowed and maneuvered in an attempt to obtain better information on its characteristics. It seems to change from long scale to short scale and possibly very slightly in frequency.

0934 We deduce that a fishing vessel is using sonar in an attempt to locate or maintain contact on a school of fish. This is a known technique employed by the Japanese and others, and would explain the apparent erratic movements of the echo-ranging ship. Whoever it is, it is distant and obviously has no relation to us. Resumed course and speed.


EASTER I. TO GUAM
(SECOND LEG)
GUAM TO BALI I.
KOREA
JAPAN
NORTH
PACIFIC
OCEAN
CHINA
FORMOSA
PHILIPPINES
MARIANA
IS.
LAT. 15°24'N
261200Z LONG.142°-46'E
LAT.13°51'N
281200Z
LONG155°39'E
LAT. 13°52'N
291200Z
LONG164°-45'E
271200 LAT. 13°40'N
LONG148°08'E
GUAM
301200
APRIL
011200Z
021200Z
CAROLINE IS.
BORNEO
SUMATRA
JAVA
NEW GUINEA
LAT. 07°30'S
LONG. 118°-50'E
041200Z
051200Z LAT. 09°-39'S
LONG.114°-54'E
061200Z LAT. 15°-02'S
LONG.108°-43'E
SOUTH
PACIFIC
OCEAN
INDIAN OCEAN
071200Z LAT. 19°21'S
LONG.100°-56'E.
AUSTRALIA

1349 We will soon be passing through our nearest point of approach to the presumed location at which the first TRITON (SS-201) was lost in action during World War II. As a matter of interest, this took place almost exactly seventeen years ago, and by a strange coincidence the first TRITON departed on her last patrol from Brisbane, Australia, on the same day (16 February) as we, her namesake, departed from New London on this voyage. TRITON I is presumed to have been lost as a result of depth charge attack by three Japanese destroyers on 15 March 1943, in a position almost exactly 800 miles due south of where we are now.

At that time I was engineer officer of TRIGGER I, likewise lost in action later in the war, and then LCDR R. S. Benson, USN, was skipper. On 15 March 1943, as it happened, we were on patrol in the same general vicinity as TRITON I. Correlation between the known facts of TRITON's loss and TRIGGER's report of the events of that date indicates that the two ships, unknown one to the other, may have attacked two convoys very near to each other, or even separate segments of the same convoy. TRIGGER believed she had sunk one ship and damaged a second, and TRITON's results of course were unknown. We were depth charged, though not severely this time, but afterwards we heard distant depth charges for approximately an hour. Japanese records indicate that the depth charging heard by TRIGGER most probably accounted for the loss of the old TRITON. Their report of the action contains the notation that a large amount of oil came to the surface in the center of which floating objects were found bearing labels "Made in USA".

It was TRITON's sixth patrol, but the first for her new commander, LCDR George K. McKenzie, Jr. Despite her skipper's inexperience she carried an unusual array of talent in LCDR John Eichmann, Executive Officer, and LCDR Jack R. Crutchfield, who was, I believe, Engineer. Eichmann, in particular, had been with the TRITON since she was commissioned in 1940. His name is engraved upon TRITON's old commissioning plaque, presented to us by Mrs. Lent, widow of the late Rear Admiral Lent who was the first Commanding Officer of TRITON I, last November 10. The plaque is now mounted in the passageway outside our wardroom.

Without too much fact on which to base my supposition, I have always assumed that John Eichmann had been slated for transfer to his own command, possibly to be brought back to the States for a new construction submarine as was the custom for people who had spent a good long time in the war zone, and that he had either been pursuaded to remain for one additional patrol, or very likely had volunteered to do so in order to provide some kind of continuity for the new skipper. I had met Eichmann in 1939 when, as an Ensign, I spent a day at sea with the S-25 to which he was attached, and without conscious intention I had kept track of his whereabouts ever since. A year after the loss of TRITON, after I had been Executive Officer of the TRIGGER for some time, this almost identical situation occurred to me, except that TRIGGER survived her most serious depth-charging, and returned triumphantly to Pearl Harbor. But all during the ordeal, I kept hearing the parting words of the chap who left TRIGGER in my place: "You'll be sorry you didn't go, Ned - you'll be sorry - you'll be sorry". The Japanese depth charges' "click - WHAM - swish" said the same, and I kept thinking of Jack Eichmann. My name was also the last one on the commissioning plaque.

Lt. McDonald and I put considerable thought into preparation of the most appropriate type of services. We decided that a version of the committal service would be most appropriate, although we could find no reference or description of exactly what we wanted. Improvisation is the order of the day in submarines at sea anyway.

The services were announced at 1340, with directions that all hands not on watch assemble in the Crew's Mess, the Air Control Center or the Officer's Wardroom. At 1345 the services were broadcast throughout the ship, begun by rendition of Tattoo. This was followed by the National Anthem and a scripture reading from Psalms 107.

Following the scripture reading a short prayer similar to the committal service was read, followed by reading of the tribute, which could hardly be called an eulogy but which was an attempt to put the significance of the occasion into words for our own better inspiration and understanding: The sacrifice made by the first TRITON and all the sacrifices by all the people lost in all the wars of our country, sanctify the service of those who follow in their footsteps.

Rendering of proper honors gave considerable occasion for thought, and it finally was decided that the only salute a submarine can fire is actually the most appropriate one anyway. Upon command, TRITON's course was changed to due south and the officer of the deck was directed to stop all engines. The entire ship's company, was then brought to attention by order of the officer of the deck, all directed to face forward. This was, of course, possible even at their regular watch stations. Then, with the entire crew silently at attention, the forward torpedo tubes were fired three times in rapid succession.

We could hear the resounding echo of the water ram and feel the fluctuation of air pressure on our ear drums. Three times the harsh war-like note traveled through the ship; and as the last air-fluctuation died away, the clear notes of Taps sounded in the distance.

The bell of the old TRITON, normally located on an overhead hangar in the Crew's Mess Hall, was taken down from its regular place and set on a table in front of the assembled crew and officers. Flanking it to the left were the National Colors, supported by Floyd W. Honeysette, QM2(SS). Alongside him stood Max L. Rose, SN, Color Guard.

The moment of reverence was a real one, truly caught. Everyone on board felt it; and though their response was by command, their personal participation sprang from deep within themselves and was given willingly.

1404 Memorial Services completed. Resumed base course and Speed.

1800 Set all clocks back one hour to Kilo time (Zone Time Minus 10)

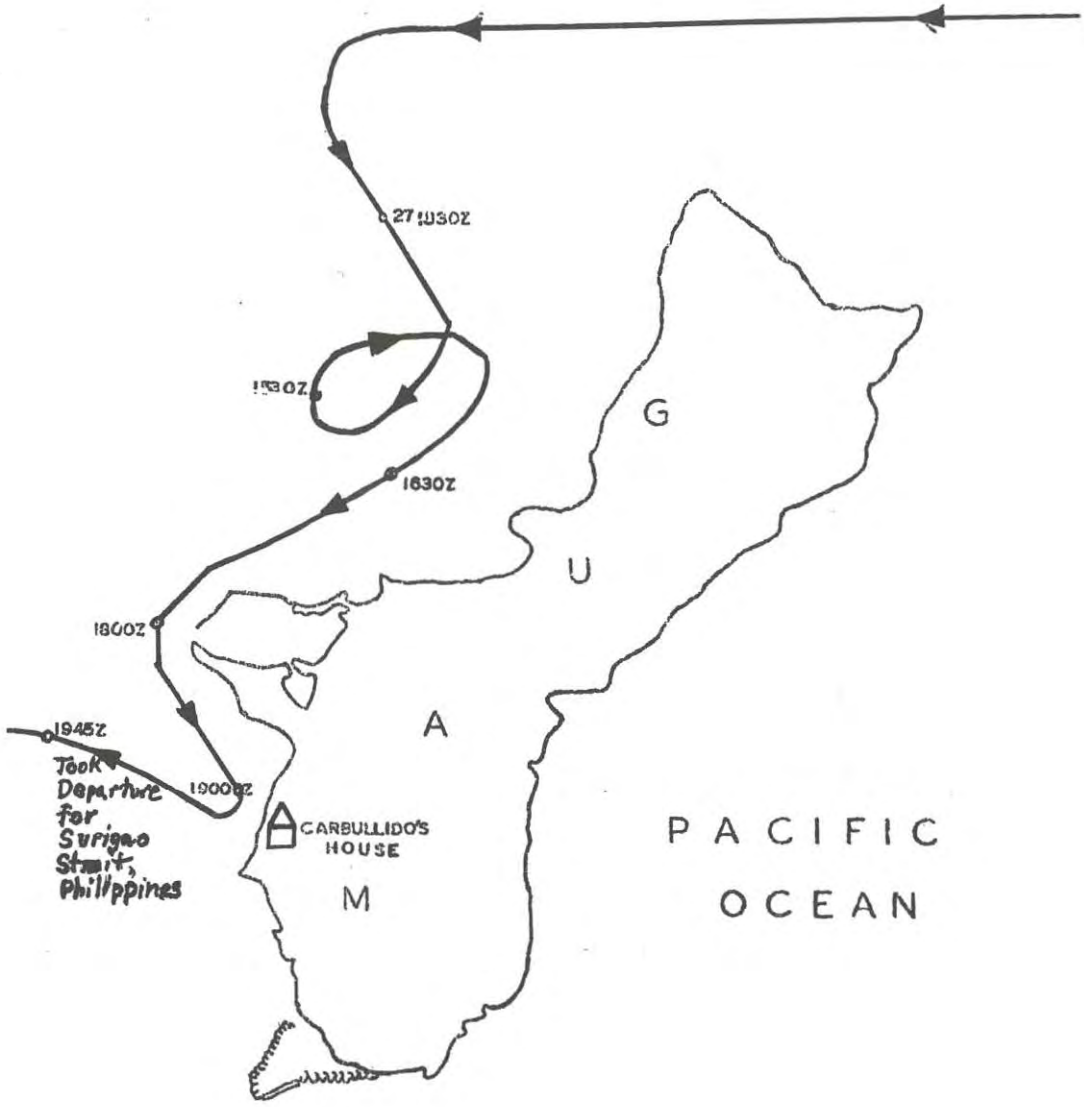
Monday, 28 March 1960 (All times Kilo, Zone Minus 10)

0725 We should be within sight of both Guam and Rota, according to our calculations. Periscope depth to see.

0726 At periscope depth. Guam, bearing 268° True, is nearly dead ahead. Rota bears due north. Another perfect landfall to the credit of our Navigators, Will Adams and Bob Bulmer, and their very able assistants, Chief Quartermaster William J. Marshall and Curtis K. Beacham, QM1(SS).

We intend to make another photographic reconnaissance of the island of Guam. It is good training, furnishes a welcome break in the monotony of the trip, and provides us with a record of what we have seen.

During these photographic efforts Joe Roberts of National Geographic, who has been all over the ship every day taking pictures of our activities, is in the conning tower, too, using his camera on our periscopes alternately with Dick Harris and Chief W. R. Hadley. Photographer's mate first class Ray Meadows has attached himself to Joe Roberts. The two make an excellent pair and we have in effect two complete photographic teams.


1630Z
1800Z
1945Z
Took Departure for Surigao Strait, Philippines
1900Z
CARBULLIDO'S HOUSE
G
U
A
M
PACIFIC OCEAN

During the approach to Guam, we have remained at periscope depth and have observed considerable activity on shore. Several aircraft are landing or taking off and a helicopter can be seen hovering over the airfield. We can see the planes being hauled in and out of the hangar and we can see people walking on the roads, cars driving back and forth, and other signs of activity. There is one housing area which is very clear indeed on top of a near hill with slope toward sea. We can see the green grass plots, and brown areas where walkways and driveways have been carved out. The houses are white or creamed stucco, surrounded in most cases by flowers and shrubs.

As we prepare for our reconnaissance our vision is occasionally obscured by a succession of torrential downpours which come marching in from the north. At times the rain is so heavy that it is impossible to see more than a few hundred yards in any direction. Our photographic efforts therefore are under an unusual difficulty - - that of timing the showers so that the part of the island we wish to photograph is for the time being clear. During one period there were as many as three localized thunderstorms on different bearings, with clear visibility between.

Today is a big day, too, for Edward S. Carbullido, SD2(SS), USN. Carbullido was born on Guam and has youthful memories of the period of Japanese occupation during the war. Subsequently, when old enough, he enlisted in the U. S. Navy and has been in the Navy for 14 years during which he has never returned to his home island. Today is, in fact, the closest he has ever been. We wish it were possible to let him go ashore for a few days, and we shall do as much as we can for him.

Carbullido's father is a Chief Quartermaster in the Navy, now retired and living here. He has recently built a new home in the town of Agat, just to the southward of Orote peninsula, around the point of land from Apra Harbor and the main city in Guam, Agana.

Many a father would like to have a son like our Carbullido. During the Japanese Occupation, the father was away. This was good luck, of a sort, but during this period there was no support for his family. Edward Carbullido, the oldest, worked for the Japanese to support his mother and the younger children. After the war, as soon as old enough, he joined the Navy, and during the subsequent 14 years he has sent home every cent he could spare, a total of several thousand dollars, to help pay for the new house and the education of his brothers and sisters. Carbullido's ambition is to return to Guam after completing 20 years of service, 6 years from now. One can hardly believe that he is actually well into his 30's; he looks 10 years younger.

We spread a map of Guam on the Wardroom table and require of Carbullido that he pinpoint, as accurately as he can, exactly the spot where his parents' house is. In "The Skipper's Corner", a column which I write occasionally for the ship's newspaper, I have explained that today, after we have carried out our scheduled drill photographing the Island of Guam, we shall expend a few hours giving Carbullido the best possible look we can through the periscope at his home town. This seems to suit everyone.

After we finish photographing the town of Agana, we go through the same procedure at Apra Harbor. Behind the breakwater we can see a floating drydock, a Navy barracks ship or barge, and what looks like a small seaplane tender. We then pass close around the tip of Orote peninsula, periscope raised, looking up very carefully into the signal station out on the end of the point. We don't want to be detected; therefore it receives a searching investigation. The place is deserted.

1445 We have rounded Orote Point and changed course to Agat. The water is deep and the sea calm, although large rollers are sweeping down past Orote Point. They do not affect us in the lee of the land.

Carbullido is ready a full hour ahead in the Conning Tower, wearing a clean suit of dungarees and grinning self-consciously. As we approach Agat, he gets his turn with

the periscope alternately with the Executive Officer and myself. His eagerness is evident as we approach closer and closer, and the objects on shore become clearer to him.

During our times at the periscope Will Adams takes navigational cuts, and I am constantly sweeping the near shore against any possibility that someone might be there by chance looking out to seaward. People ashore rarely look to sea, however, and I doubt, even if there were anyone, that there would be much chance of their seeing our periscope. Nevertheless, we are cautious with it, leaving it out only a foot or so at a time and never for very long.

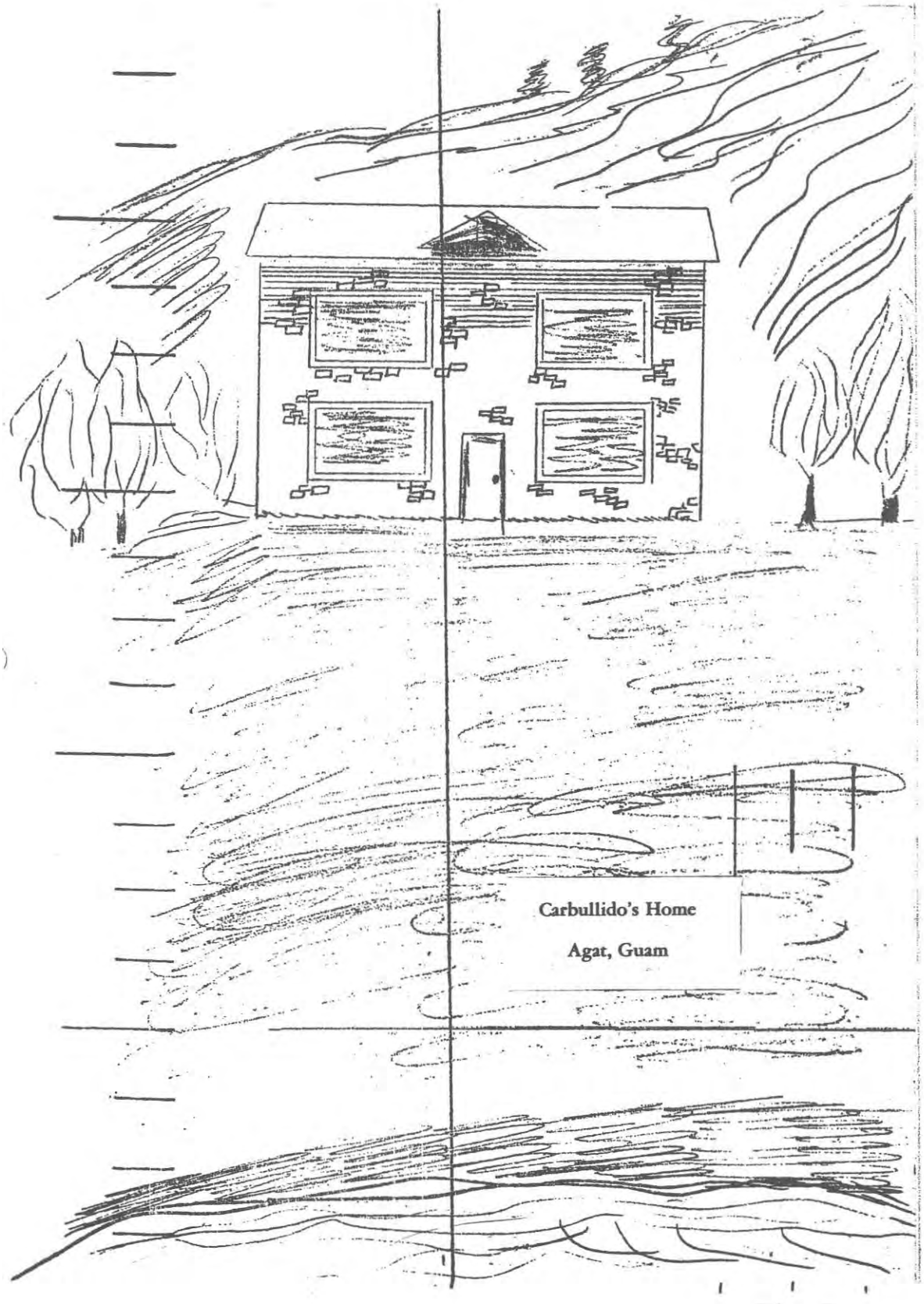
It is touching to see the intense eagerness with which Carbullido peers through the periscope, looking for the house he has helped so much to buy but has never seen. With a big grin, he announces that Agat is very different from the way he remembers it. "Many more people," he says, "Many more houses." It is, indeed, an attractive modern-looking town. As we draw closer, we insist upon Carbullido identifying his father's house, which he feels he can do from the descriptions and pictures he has received by mail. Finally, with a wide smile, he has it spotted, and we all eagerly take turns to look it over. Even with the periscope at high power and the ship as close to shore as we can bring her, the house Carbullido has selected is only a tiny spot in the distance. It is situated as he had described it, on a fairly high piece of ground, near the water but high enough to be free of any danger of flooding.

We stay a long time at slow speed in Agat Bay in order to give Carbullido the maximum periscope liberty possible. Occasionally Will Adams or I take sweeps to ensure against our being detected by people on shore or possibly in a boat of some kind. There is no sign of activity in any way directed toward us. We do see cars driving along roads near the water, and once or twice we think we see people walking on the streets of the town. At one time I draw Carbullido to the periscope with the idea that I can see a person or people near his house. After a long look Carbullido confirms this, but still I am not sure. It would be nice to say that he actually did see some members of his family, but we are too far away to be positive. Whatever it is I saw, it was motionless much too long.

1630 We have been in Agat Bay an hour and ten minutes; it is time to go. Regretfully I tell Carbullido that we must put the periscope down and get underway for the Philippine Islands. Carbullido's eyes are shining as he thanks everyone in the Conning tower and starts down the ladder into the Control Room.

One of the things which has impressed me from the beginning of this episode is the consideration and kindness of the rest of the crew and the conning tower personnel for their shipmate. So far, at every landfall we have made, there has always been a number of men wanting to come up for a look; off Cape Horn and Easter Island there had been a determined effort to get as many people as possible to the periscopes so that they could say that they had seen them. In this instance, not a soul has asked for permission to come up and take any of Carbullido's periscope time; and if he had been the Captain of the ship himself, he could not have received more attention or assistance from the quartermasters with regard to focusing the periscope, aiming it in the right direction, setting his bearings, etc. As Carbullido's grateful face vanishes below the conning tower hatch to the Control Room, Chief Quartermaster Bill Marshall puts into words the thought which has occurred to all of us; "Wouldn't it be great if we could figure out someway to get him to Guam for a real leave? Fourteen years away from home is a long time." We have already been gone a long time too; a month and a half. To Marshall's words there is general nodding assent.

2155 While at periscope depth, having just finished ventilating and making celestial observations, detected an aircraft bearing 064°T, flashing red and green lights and apparently closing, since his bearing is steady. Went deep immediately to avoid detection.



Carbullido's Home

Agat, Guam

Tuesday, 29 March 1960 (All times India, Zone Minus 9)

1943 Coming to periscope depth for routine night evolutions including ventilating and celestial observations.

1946 Aircraft contact bearing 070°T. Flashing red and green lights. Two nights in succession; maybe we have been detected. Who could be so persistent? Has he figured out our routine? Only a submariner could do that - - maybe ComSubPac, my ex-skipper, is playing games with us; or maybe the fliers in Guam have some extra gasoline to expend. Possibly they suspect a non-U.S. submarine.

1953 We are being very cautious with our periscopes, taking only short observations and spacing them fairly far apart, in case the plane has a hot radar. Again it is noted that the bearing of the aircraft is approximately constant. A few observations and we realize the range does not seem to have changed. "Let's check the star charts," someone mutters, and all at once I feel like a fool. I run the periscope all the way up and leave it there.

In a moment, sure enough, from Chief Quartermaster Marshall in the Chart Room below: "Arcturus bears 070 at this time of night and approximately the altitude we have sighted our aircraft." Furthermore Arcturus is known to have a red glow upon occasion. Our red and green lights are simply refraction through the spray and dampness on the lens at the top of the periscope - not at all an unusual occurrence. Undoubtedly, last night's "aircraft contact" was also our friend Arcturus.

Thursday, 31 March 1960 (All times Hotel, Zone Minus 8)

0213 Periscope depth to see if the Philippine Islands are in the location they should be. We are so confident now of our submerged navigation that failure to find Suluan Island where expected would put more doubt in our minds as to the precise charted location of the islands than in our navigation. Almost, that is.

0215 Sighted Suluan Island light bearing 285, exactly where expected.

0545 As we cross the Philippine trench, the bottom rises precipitously to the 100 fathom curve. Our echo-ranging sonar picks it out like a brick wall as we come up on it, and once again the gravity meter indicates a rapidly shoaling bottom.

0743 Passed Desolation Point on Dinagat Island, Philippines, abeam to port, distance 3 miles. Entered Surigao Strait.

We have been taking water samples of the various bodies of water through which we have passed during this voyage. One of the things for which the water samples can be used is the Naval Academy's annual Ring Dance. Part of the ceremony for the Ring Dance is to christen the class rings of the new senior midshipmen in the waters of the seven seas. As can be appreciated, getting an authentic sample of water from a remote spot of the world is sometimes difficult. We may, at least, help them out. Additionally, the class of 1945, less than a year ago, donated a small-boat navigational light to the Academy and named it the TRITON Light, without realizing, apparently, that their light and our ship have something very much in common. So we shall also send USS TRITON's own unique tribute to the TRITON Light.

Here in Surigao Strait there is a special reason for collecting water, and a special sample of it is going to be sent to Admiral Jesse P. Oldendorf, USN, retired. Admiral Oldendorf had command of a squadron of cruisers, destroyers, and old U.S. battleships, which, it will be remembered, crossed-the-T at the Battle of Surigao Strait. It was here that the repaired and regenerated CALIFORNIA, TENNESSEE, WEST

VIRGINIA, MARYLAND, MISSISSIPPI and PENNSYLVANIA gave back the wounds they had received at Pearl Harbor on the day the war began. It was probably the last time the T will be crossed in battle.

Whitey Rubb (additional duty as water collector) assures me that there are indeed great streaks of rust to be found in the Surigao Strait water - - and that, upon close inspection, it is indubitably identified as rust from old and long-sunk Japanese warship hulls. We think Admiral Oldendorf will appreciate a sample of this body of water and though he may not have the precise instruments Whitey and I do for detection of the rust streaks, I am sure he can devise an adequate test of his own.

We have been alternating between periscope depth for observation and deeper depths to make more speed.

1105 Came to periscope depth for an observation and sighted a small fishing boat under sail on our port bow. We watched with interest as the fishing craft passed along our port side about a mile away and disappeared astern. No indication that anyone on board saw us, though we took a number of photographs with the consequent necessity of leaving the periscope up too long.

1300 Have passed through Surigao Strait and entered Mindanao Sea. As we enter Mindanao Sea, we pick up a sonar contact bearing 345°T which upon careful checking is classified as a medium-to-heavy single screw ship.

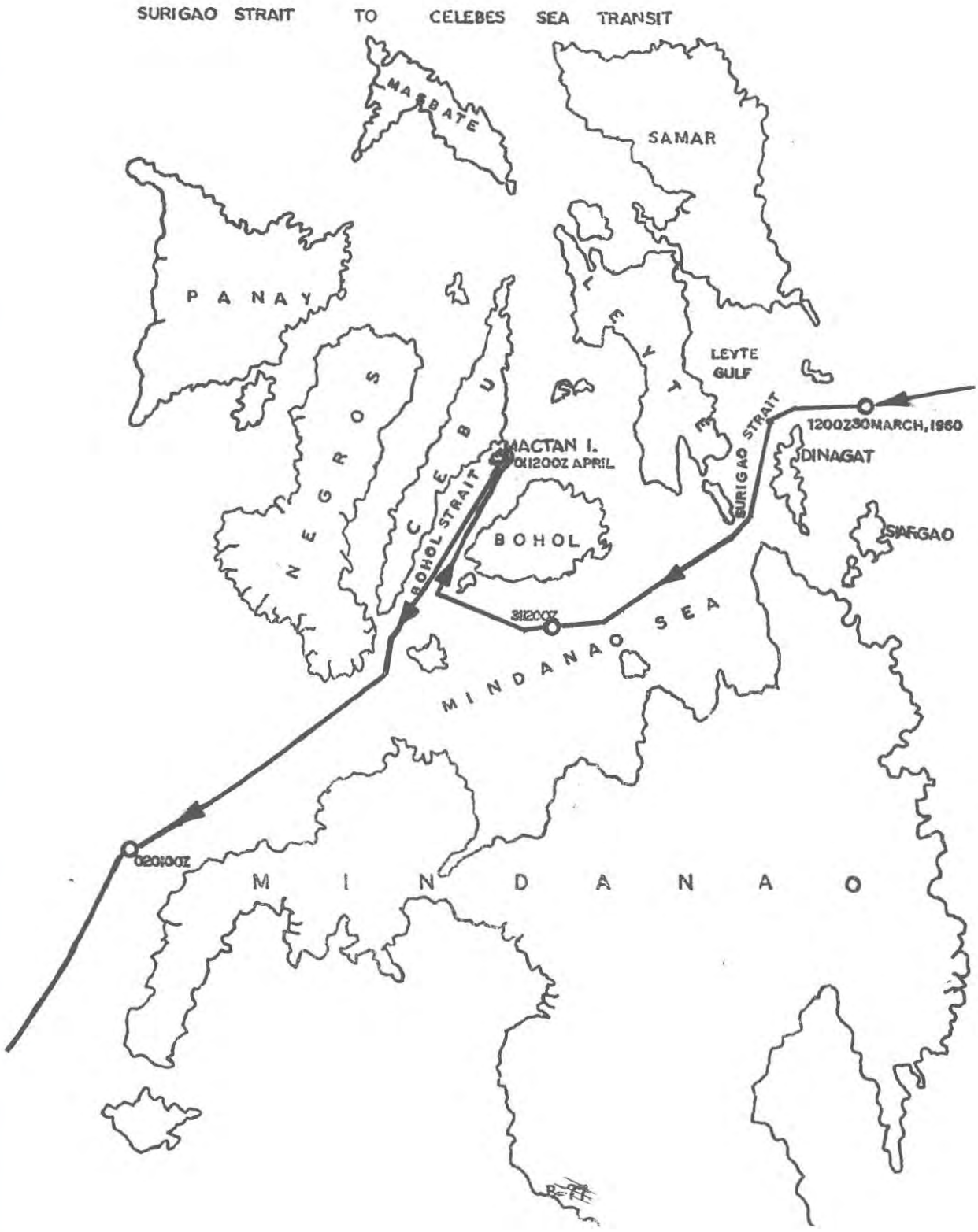
1307 Sonar contact in sight bearing 347°T - a moderate size freighter, single stack, two masts. This is an opportunity we have been looking for. We have been drilling our approach party but have not had a moving ship to actually work with. As a matter of fact even if we had, we would not have been able to play with any ship, until today, long enough to get much good out of the exercise. Now the situation is different. We are not in so much hurry, and here is a nice big ship heading our way.

1308 Manned tracking stations. We need not approach the target very closely, and we shall be particularly careful to give no indication that we are present. Submerged submarines are always the burdened vessel in such cases. They must never annoy other ships, and they must never forget that no one can identify the nationality of a periscope at sea.

1332 We have had an excellent drill. The ship has gone by at a good range, identified as a World War II Liberty ship in excellent condition. She is nicely painted with black hull, white stripe and white superstructure. No colors visible, and we were much too far to read the name. But she gave us a fine work-out; and we are much the better for it.

One unusual thing developed in that the ship's actual course never did check with my observations. My angles were not that far off, and as a matter of fact, when they were exactly 90° - - which is easy to tell because the front and rear sides of the bridge line up exactly - - it did not check at all with our plot on his track. We think we know the reason for this phenomenon, and at 1417, obtaining an accurate position from bearings and ranges on land, our suspicions are confirmed. We have been subject to a rather strong current, apparently well over 2 knots. Our friend has been steering a course deliberately calculated to allow for the drift.

Our track leads us down Surigao Strait, across the Mindanao Sea and around Bohol Island to the west and into Bohol Strait; thence northward to Mactan Island. This is not the same track followed by Magellan, who went east of Bohol Island to the Camotes Sea and thence southward to Cebu. This route is much too shallow for us. Mactan is a very small island lying close to the much larger Cebu and terminating Bohol Strait. On the western side of Mactan is Cebu Harbor, with north and south approaches through the


SURIGAO STRAIT TO CELEBES SEA TRANSIT
MASBATE
SAMAR
PANAY
LEYTE
LEYTE GULF
NEGROS
CEBU
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011200Z APRIL
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channel between Cebu and Mactan. To the east of Mactan lies deep and straight Hilutangan Channel, joining Bohol Strait and the Camotes Sea.

The place we have come to see is Magellan Bay, on the north shore of Mactan Island. We shall pass through Hilutangan Channel to get there.

Magellan spent several weeks at Cebu, where he and the local king, or Raja, became "blood brothers." There the atmosphere was so hospitable that in spite of all his efforts his men abandoned themselves to revelry and debauchery. But Magellan was himself affected in a very different way.

Having survived countless dangers and the most extreme privation, Magellan had successfully brought his ships through unknown and uncharted waters to an area recognized as being part of the Far East. There was positive confirmation in the chance encounter with a Malay trading vessel, with whose type Magellan was well acquainted. Here Portugal had until this time held the monopoly of trade by concealing all navigational information and waging war against all ships and traders belonging to anyone else.

Recognizing the triumphant success of his voyage, Magellan conceived - - not unnaturally, for this was in accordance with the temper of the times - - that divine assistance alone could have brought him through. Ergo, he was obviously sent by God, and for what other reason than to spread the word of Christianity throughout the heathen lands he might encounter? No longer the explorer nor master navigator, Magellan had become the amateur emissary of God; in short, a religious zealot, inspired by almost fanatic fervor and absolutely convinced of success in whatever he undertook.

We have only three books about Magellan aboard: FERDINAND MAGELLAN by Edward F. Benson (pub. 1929, by Badley Head, Ltd. London) a volume of the "Golden Hind Series")

THE STORY OF MAGELLAN by Stefan Zweig (pub. 1938, the Viking Press, New York)

SO NOBLE A CAPTAIN by Charles McKew Parr (pub. 1953, Thomas Y. Crowell Co., New York)

There had not been adequate time to study them thoroughly until after getting underway, last February. And only today, perusing the last listed and by far the most impressive of these histories, I make the startling discovery of an entirely unsuspected section of Parr's book, buried behind a voluminous bibliography and index. It is a short biography of Mr. Parr, noting that he has spent a great portion of his life in assembling and studying material on Ferdinand Magellan, and that he lives in Connecticut. It is not hard to form the opinion from a study of these three volumes and the authorities they cite, plus what we can find in our encyclopedias, that Charles Parr knows more about Magellan than any man of the present era.

All three books mention Magellan's religious fanaticism and the culminating disaster thus brought about, but it is Parr who delves deepest into the decisions made and the processes of Magellan's mind which led to them. There could have been but a single end, had he continued, but even this was fated not to last.

Conversion of the natives of Cebu to Christianity was not difficult. The Raja of Cebu, whom Magellan dubbed "The Christian King" was most willing to set the example, particularly since in so doing he received the support of the three great ships with their wonderful cannon.

For a few weeks in his life, Magellan had an idyllic existence. Everything he said or did was looked upon as miraculous. His every wish was immediately attended to by the anxiously submissive natives. His crew likewise must have looked back upon the

period as one of uninhibited pleasure. Magellan strove in vain to restrain the saturnalia, but their licentiousness progressed beyond all bounds and was to a large extent concealed from him.

Tragedy stepped in when a neighboring tribe on the island of Mactan refused to acknowledge the new God. Although the Raja of Cebu, by far the stronger of the two, offered to administer a military chastisement, Magellan took the stand that since he was on the Lord's mission he needed no other protection than God Himself. He preemptorily refused the Raja's repeated suggestions of assistance, made only minimal preparation, and trusting in a miracle, proudly landed on the north shore of Mactan Island with a volunteer group of 48 men. Opposing him were over a thousand Filipinos, a fact Magellan well knew.

Ordinarily a leader given to the most meticulous preparations for any important undertaking, one who personally checked every item and left no stone unturned in his effort to eliminate any possible cause of failure, Magellan's every action during this entire episode, according to Parr, might almost have been calculated with the intention of seeking defeat. Such was the height of his religious fervor that divine intervention was expected as a matter of course. God, having brought him this far, would not forsake him now. So must have thought Magellan in the height of his exaltation, forgetting entirely that God is not bound by the conventions of man's thoughts.

With several thousand friendly warriors and a number of his own troops looking on, all explicity forbidden to assist him in any way, Magellan landed at dawn. His attack was overwhelmed almost immediately by his underestimated opponent, whose warriors were armed with fire-hardened spears dipped in poison. Even so, the Spaniards' armor protected them so that about half of them escaped. But such was their intrinsic faithlessness and lack of morality that few of the landing party, and none of the others, made any attempt to come to the assistance of their valiant leader. Magellan, with a few faithful adherents died fighting a rear guard action to protect them.

The Sailing Directions and the chart of the area show a spot on the north shore of Mactan Island, in a small indentation labelled "Magellan Bay", which is marked "Magellan Monument". To traverse these historic waters and sight this monument constitutes a high point in our cruise, already 19,700 miles long.

Tonight we receive our sixth Baby-gram: a girl for Clarence M. Hathaway, Chief Engineman. Baby born 25 March. Mother and child well.

Friday, 1 April 1960 (All times Hotel, Zone Minus 8)

We have been slowly working up Bohol Strait toward Mactan Island all night long, occasionally coming to periscope depth where radar and the periscope observations have assured us as to our safe navigation. We have likewise seen, or heard on sonar, numerous small fishing vessels and a few coastal type freighters or passenger ships. All are brightly lighted.

0428 Periscope depth. Sighted a small coastal freighter to the eastward about 4,000 yards away. Had held him previously on sonar.

0430 Sighted Lauis Ledge Light on the southern shore of Mactan Island. Commenced maneuvering in the approaches to Hilutangan Channel to the eastward of Mactan.

0608 Ejected hydrographic bottle number MT-71. Like the others the paper inside is filled out in our code, except that now on the back is written in English, "Hail Nobel Captain, It is Done Again", for which Mr. Charles Parr can take most of the credit, if he desires it, though my guess is that he would want this to go to Don Antonio Pigafette, Magellan's scribe. It is, of course, the translation of the Latin inscription on the plaque Tom Thamm designed to commemorate our submerged circumnavigation. We have left the pattern with our Squadron organization in New London to be cast, and have requested permission to terminate our cruise at Cadiz. Maybe the finished plaque can be brought to us there. We should like to see it delivered to the starting point of Magellan's epochal voyage.

There is much sonar activity, ships on all bearings, all classified as small light vessels.

0623 Sighted two small merchant ships at range of about 1 mile steaming in close contact and apparently headed for Cebu. As we cautiously dunked the periscope, they passed within about 1,000 yards and proceeded on their way.

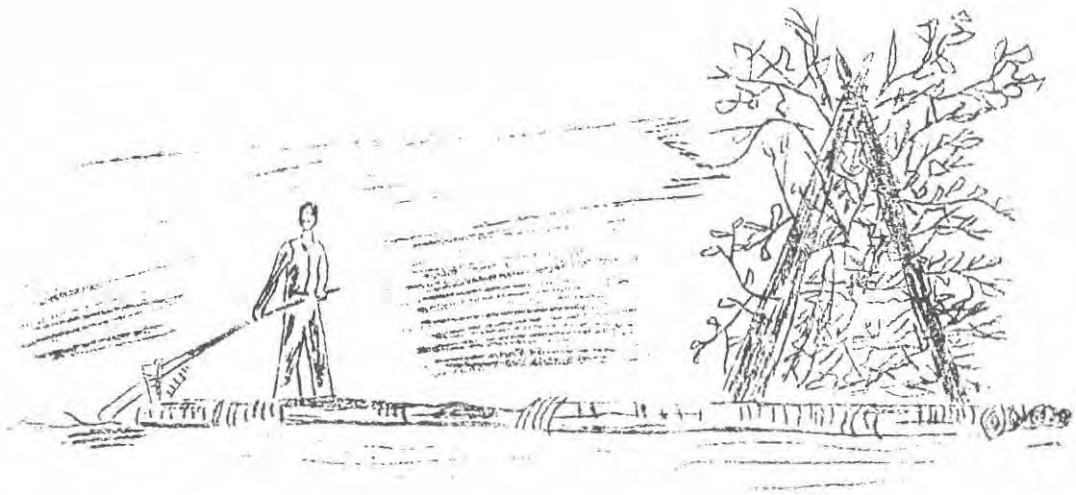
0722 Heard the first of a series of explosions - 7 in all during the forenoon - apparently coming from the vicinity of Mactan Island. No visual dust or smoke cloud to confirm the source of the explosions, but we assume it is blasting in connection with some harbor work.

As we approach Hilutangan Channel, we are much interested in some of the fishing boats and other small craft which are all about. One of the first sighted is nothing more than a small raft with a sort of wooden tripod built on one end upon which branches of trees have been placed, apparently haphazardly. Usually these crude crafts have only a single passenger, who appears to be steering them. Our impression is that they are simply blown across the channel by the sail effect of the branches and twigs on the tripod (all were going east). Possibly this is merely the easy way to get logs from one side of the channel across to the other.

A number of other types of craft, many of them old and decrepit, are around also. As we approach Hilutangan Channel, the number of boats decreases. Most of them are concentrated in the approaches to Cebu.

0800 Entering Hilutangan Channel. Speed, 4 knots, at periscope depth. Tide and current tables indicate that we should receive a pretty strong set to the northward, in the direction we want to go. This indeed proves to be the case, since our speed over the ground is about 3 knots faster than our speed through the water.

As we enter the channel, we are much interested in the picture presented by our echo-ranging sonar. The sonar-repeater in the conning tower gives an actual picture of the shape of the channel. The depth of water is in many places greater than one-hundred



SAILING RAFT

Seen in northern part of Bohol Strait

FERRY

Crossing Hilutangan Channel

fathoms and the shore is steep-to. As a result, the area of shallow water near the shore is very clearly outlined on the face of our conning tower repeater. With this kind of gear we could easily go deep and proceed at high speed. Not knowing, however, exactly what we will find at the other end, we shall go through at periscope depth; perhaps on the return trip we can transit the channel at deep depth.

During the passage through Hilutangan Channel, numerous small boat contacts are made. In one case a very decrepit boat with an outrigger on both sides and a large canvas awning, propelled by an ancient one-lung engine, came across our bow, distance a few hundred yards. It looks like a ferry probably plying back and forth between Mactan and one of the islands on the eastern side of Hilutangan Channel. Numerous passengers can be seen, and none give the slightest evidence of seeing us. After all, who would expect a periscope here?

One of the passengers is a rather attractive Filipino woman dressed in a faded pink print dress of some sort and holding, I thought quickly, a small child on her lap. Her face is placid and emotionless. She is looking in our general direction but thinking of something else. To her left stands the steersman of this strange craft, paying attention to his business. Most of the other passengers are faced ahead or toward Mactan, on the other side of the ferry.

From here on, as we proceed up Hilutangan Channel there are increasing numbers of boats, most of them pleasure craft. In the distance in the Camotes Sea far beyond Magellan Bay, more fishing boats may be seen. The pleasure boats, out-rigger canoe types with a large and very colorful sail, I would judge to be anywhere from 12 to 20 feet long, narrow of hull and mostly white or gray in color. They have a single mast with a cross arm on which a triangular shaped sail is mounted with the point at the bottom. There are usually one or two occupants lolling around comfortably, perhaps fishing, although few fish poles or lines are in evidence. Most likely they are simply out enjoying themselves. Some sun helmets are in evidence on both men and women. The sails are by far the most colorful part, being geometric designs such as half circles, half moons, triangles, diagonals, and so forth. None appear to take the slightest notice of us, although at times our curiosity and desire to get a good photograph causes us to leave the periscope up longer than I should have liked.

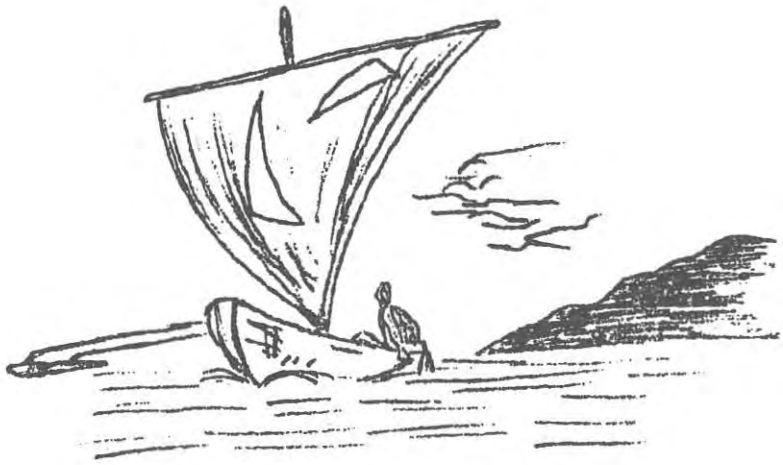
To ensure that all craft are avoided by a safe distance, our periscope observations are frequent and carefully timed.

Upon one occasion as I raised the periscope (invariably first dead ahead) and swung it around, I caught a glimpse of a canoe with neither mast nor sail. It had two occupants; a small and elderly woman with her back to us, and at the other end of the boat, facing me as I looked at him with my solitary eye, a rather portly gentleman, bare to the waist and heavily tanned, even for a Filipino. As I looked, he lifted his hand and waved at me in a manner almost as if he were saying, to his companion, "Now as I was saying, that could almost be a periscope. It looks just like that and sticks up out of the water just like that thing over there." - - at which point I quickly swung the periscope around for a swift check ahead and lowered it again.

The portly gentleman did not appear particularly disturbed at our periscope and in fact probably did not recognize what it was - unless, indeed, he is a retired U.S. Navy Steward.

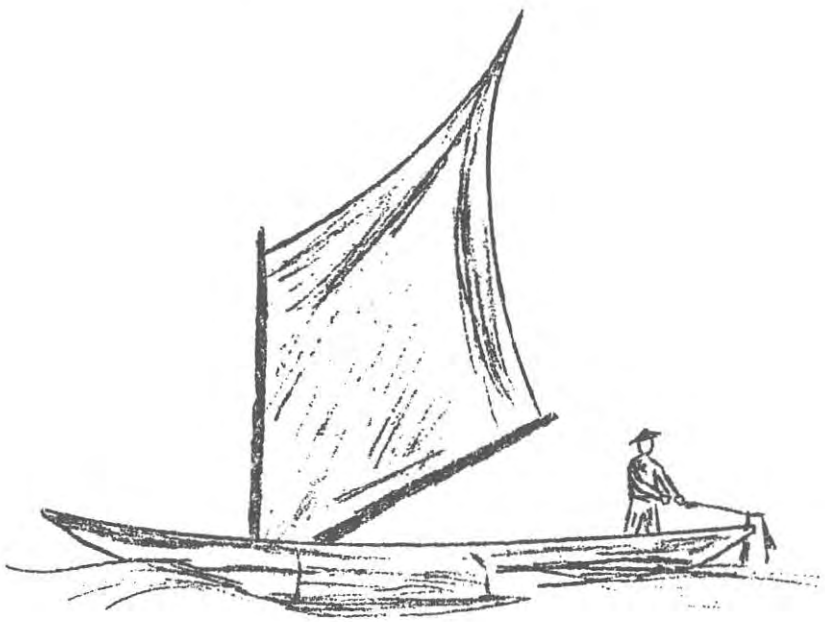
1057 With the help of a strong current, we have made a remarkably fast passage through Hilutangan Channel.

1100 We are past the north end of Mactan Island and enter Magellan's Bay. This bay also has very deep water extending well inside the points of land which form its two extrem-



PLEASURE BOAT

Brilliant colored sails are the predominant feature. Many of these, all exactly alike so far as we could see, appeared in the waters of Magellan Bay. Note outrigger, very narrow hull.



FISHING BOAT

Various versions of this were seen, and various rigs. This sketch is representative only.

ities, though it is very shallow close inshore. (Magellan was killed here fighting in water up to his knees.)

The picture our sonar gives us of the bottom contour corresponds closely to the chart. TRITON is, however, a pretty big ship to take into this tiny bay, and our navigation is rapid. There are fortunately several clearly defined landmarks as well as a couple of lighthouses upon which to take bearings. In the distance, over the end of Mactan Island, can be seen the buildings of Cebu marching up into the hillside, with the dome of the Provincial Capitol, etched white against the verdant hillside. Near the waterfront several large modern structures can be described; one in particular, which would not be out of place in any modern city, is three to five stories high and approximately three hundred feet long.

Our foray into Magellan Bay is complicated somewhat by the discovery of three tall tree-trunks sticking out of the water. Apparently they are long timbers planted on some sort of bottom structures, since they have no supporting wires of any kind. Maybe they delimit fishing areas. At all events, we carefully avoid them and the rock piles they may mark.

1120 We have been carefully, without much luck, searching the south shores of the bay to determine for sure whether the Magellan Monument can be seen. About this time, as I scrutinize the shore, it finally bursts into full view. Without any doubt whatever, I announce to the conning tower party, "there it is!". The water is too shallow for us to approach close enough to get a really good photograph, but we take many pictures of what we can see of it from as many angles as it is possible to get them. It can be seen clearly from only one bearing, probably straight front where trees and foliage have been cut away.

The sketch shows the general appearance of the Monument as we saw it. Apparently made of masonry, probably recently whitewashed, it gleams white in the sun. There are dark objects in its center which might be one or more bronze tablets or possibly openings into the interior. It is a rectangular pedestal with long dimension vertical, straight sides and a slightly curved top, standing on a set of steps or a base. The impression is that it may at one time have supported a statue or been intended to, but what we see consists in that case only of the statue base. We shall make it our business, after we are again in position to send and receive mail, to obtain a photograph of this place to keep with our records of the voyage.

1125 Sighted aircraft resembling a twin engine DC-3 making a landing approach near the city.

There are numerous small craft in Magellan Bay, and would not be surprised to find they are the makings of a sailboat race. Most of them are of the brightly colored pleasure variety.

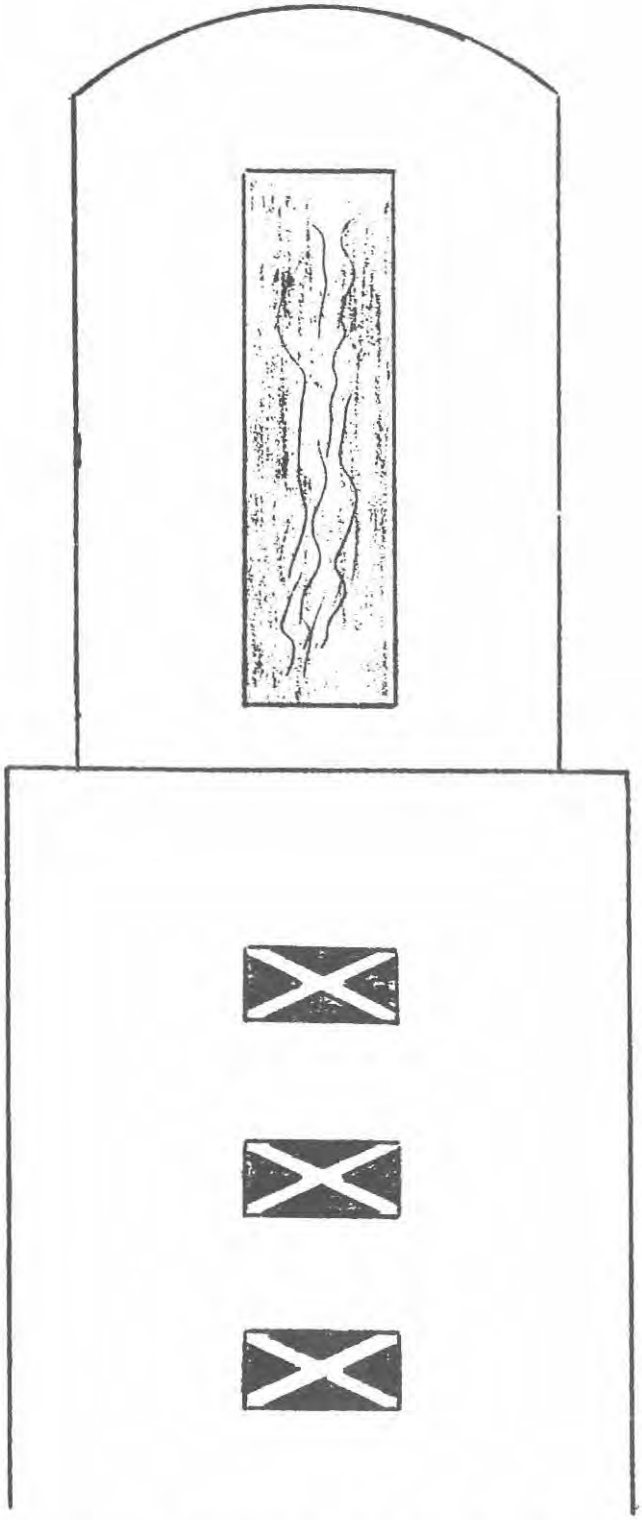
1146 Upon raising the periscope I am looking right into the eyes of a young man in a small dugout, close alongside. Perhaps he has detected the dark bulk of our hull in the relatively clear waters of the bay, or he may have sighted our periscope earlier. He and I study each other gravely. His boat is a small dugout, perhaps 12 feet long, innocent of any paint and without mast or sail (which is why he got so close in on us). He has a paddle with which he easily maintains a position abeam of us at our present slow speed. He looks ahead and looks behind, looks down in the water and maintains position about 50 yards abeam with occasional muscular sweeps of his paddle.

Our friend is a dark complectioned moon-faced young man with a well-fed physique. His clothing is tattered and he wears some kind of a battered hat for protection from the sun. Our photographic party obtains several pictures of him which will be interesting to look over at greater leisure.

Magellan Monument

Mactan Island

Philippines



Sketch from memory of the Monument in Magellan Bay, Mactan Island, Philippine Republic. No explanation is offered for the symbols on the base. At our closest approach it was still so far and so small that details were most difficult to see, and there is danger that imagination may commence to fill some of them in. The heavy base may be a steep walk leading up to the monument (it is situated on a rise of ground) or a flight of steps.

"Down periscope!" The steel tube slithers down into its well as I describe the scene above to the people in the conning tower. They would all like to get a look at him but that isn't too practicable.

I motion for the scope to slide up once more. Sure enough, there is our friend impassively leaning on his gunwales and staring right at the periscope as we raise it barely two inches out of the water. "We've played with this gent long enough", I mumble inaudibly. Spinning the periscope around for one last cut on the now-familiar landmarks and to say aloha to Magellan and his intrepid spirit, I sight a fair course between the nearest set of poles, take a final look at our friend in the dugout canoe, and snap up the periscope handles as a signal for it to start down.

"All ahead two-thirds ... Right full rudder!" This is something our swarthy friend won't be able to handle. TRITON slips neatly ahead of him and away to the right. Upon slowing for a look a few minutes later I spot the dugout many hundreds of yards away, paddling rather strongly in the wrong direction.

In the conning tower, the irrepressible Bill Marshall says aloud, "Wonder what he is going to tell his friends in Cebu tonight". Quartermaster second class Russell K. Savage probably has the right answer: "They won't believe a word he says".

As TRITON eases slowly out of the bay checking her position every two minutes or so because of the swift currents we have encountered, we are all aware that today will go down as one of the high points of our trip. Poetically speaking, we have come more than half way around the world to see this spot.

While a Midshipman at Annapolis, I had a classmate named Carlos J. Albert, a Philippine National, who has had quite a career since our Naval Academy days. He went back to the Philippines upon graduation in 1939 and was commissioned in the Philippine Navy. During the war he was a thorn in the side of the Japanese, narrowly escaping death on several occasions, and more recently, with the rank of Commodore in the Philippine Navy, he was assigned to the post of Armed Forces Attache at the Philippine Embassy in Washington, D.C. There I came to know also his lovely wife, Mila, a charming, willowy Filipino girl with a beautiful and expressive face. Carlos is now in Manila -- or was. Lately I have not heard what Carlos is doing, and the temptation is strong to write him a note for transmission by hydro bottle, possibly on the hydro paper itself, requesting the finder to communicate with Carlos and receive a reward. I even have the absolute authentication so far as Carlos is concerned, for all I need to do is write "What About '39?" and he will know that it is genuine.

With a sigh, I am forced to the conclusion that this is one of those ideas the results of which will have to be enjoyed in the imagination. I can write Carlos a letter later on. When well clear of Magellan Bay we release our second hydro bottle of the day, bearing a paper in no way different from the earlier one except for the number.

1320 Entered Hilutangan Channel headed south. This time we will proceed well below periscope depth at higher speeds than before.

1324 With the outline of the channel clear as print on our sonar visual repeater, changed depth to 150 feet and ran down the channel at 10 knots.

1407 More blasting in the distance.

1434 Clear of Hilutangan Channel, set course down Bohol Strait, increased speed to 15 knots, increased depth to 200 feet.

1504 Increased depth to 300 feet, increased speed to 20 knots.

During our trip down Bohol Strait we came to periscope depth several times in order to obtain a fix and in each case our DR position was so close to our cut by radar and visual bearings that we realized we might have navigated the entire distance without ever once checking it visually.

2035 Entered Sulu Sea. Will spend the rest of the night and tomorrow morning crossing the Sulu Sea enroute to the Celebes Sea and departure from the waters of the Philippine Republic.

I have in a way also fulfilled a personal mission in this trip to the waters of the Philippine Republic. In 1898, my father was a Lieutenant in the BALTIMORE when Admiral Dewey defeated the Spanish Fleet at the Battle of Manila Bay. Subsequently Dad spent several years campaigning against the Filipinos in their hopeless and heroic insurrection. From their point of view they were fighting an American imperialistic scheme to take over where the Spanish had been forced to leave off, and although he fought against them, Father's personal sympathies were always with the embattled Filipino farmers and their high-minded leaders. He became, in fact, acquainted with the head of the Philippine insurrection, Emilio Aguinaldo. As a boy I remember the arrival of occasional letters to Father from this quondam national hero.

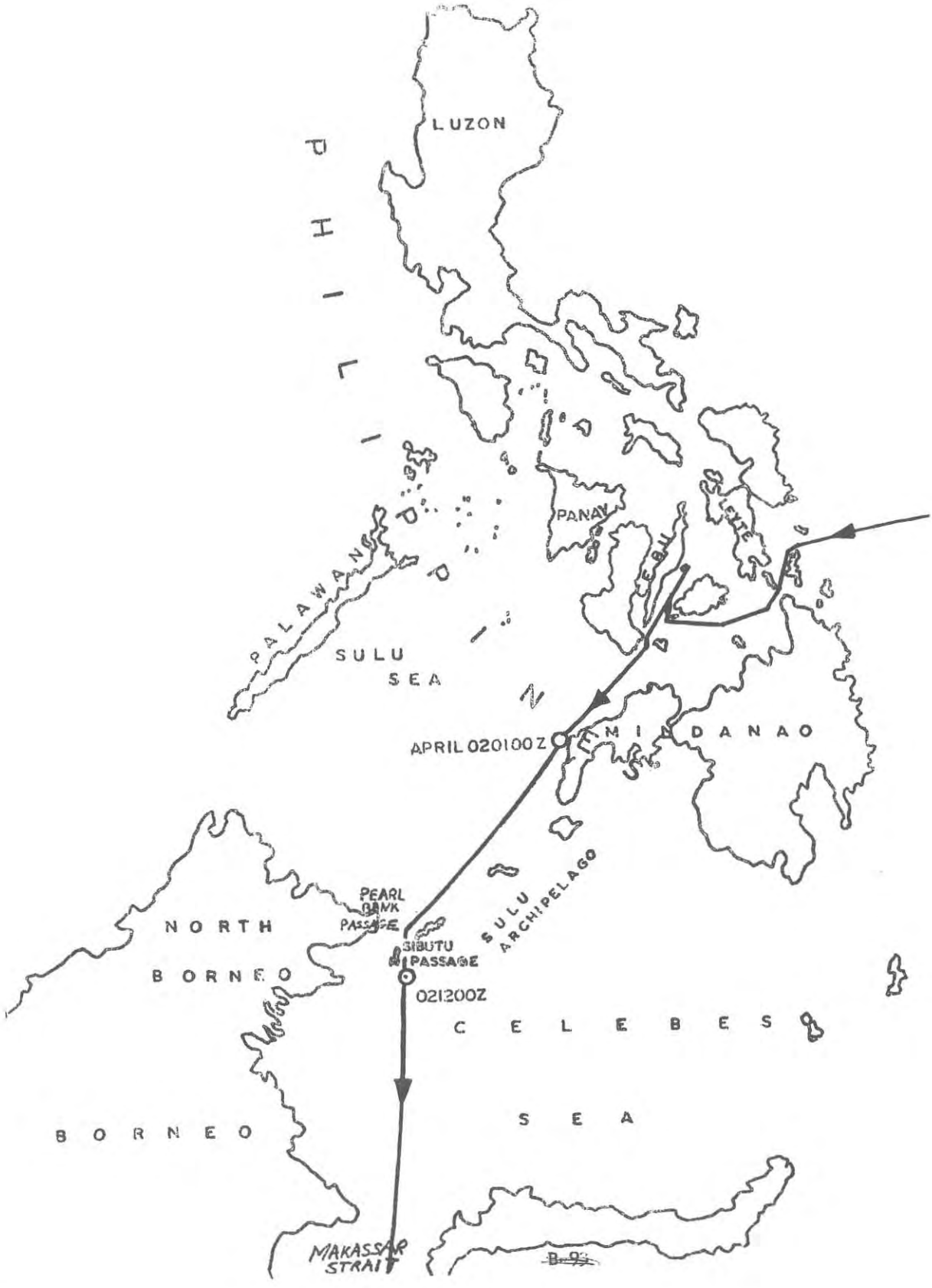
Although I am not very sure of the details, my recollection of the story is that during the initial confused stages of the insurrection Father in some manner had arrested or captured a party of Filipinos among whom was a young Filipino who turned out to be the wife of Emilio Aguinaldo. The rest of the party were apparently, her protectors and servants. I am sure the American government has long since forgiven Father (if indeed it ever knew of it) for the manner in which he handled this gratuitous "Prize-of-war". He escorted the entire party to the nearest Filipino post and bade Senora Aguinaldo a sweeping and courtly goodby. Sometime later, Father was captured by Filipino guerrillas and detained for several hours until peremptory orders arrived from some highly placed official that he be restored immediately to the American lines, which was done.

It should not be inferred from these stories that the Filipino insurrection was a comic-opera war, for it was not. The Filipinos had been fighting the Spanish colonial government (a direct relic of Magellan's landing) for several years before we got into the fight. They welcomed us with great joy, thinking our plans were the same for them as for Cuba, and that their independence was but a short time away. When they discovered that this was not our intention, at least, not at this time, with grief by some and fanatic fury by others, they commenced to fight against their erstwhile comrades. And yet, the Filipinos - most of their educated leaders anyway -- knew that they were fighting the best friend their country ever had. If either war was a comic-opera, it was the Spanish War with its fake "assault" on the fortifications of Manila, not the Philippine Insurrection, which was in deadly earnest.

Saturday, 2 April 1960 (All times Hotel, Zone Minus 8)

0047 There is severe oscillation in our gyro repeaters probably caused by something wrong with one or more synchro amplifiers. Shifted to direct gyro input to the helmsman and began to check-out the synchro amplifiers. After some moments the oscillations ceased and the situation reverted to normal. This may be a warning of trouble to come. With the trouble gone, we are for the moment unable to determine what is the precise cause of the difficulty.

0135 Sonar contact on the starboard bow. Lost contact after tracking him for some thirty minutes. He faded out as though a thermal sound layer had come between us.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0859 At periscope depth to fix our position prior to passing through the Pearl Bank Passage and then through Sibutu Passage into the Celebes Sea. Locating and passing through Pearl Bank Passage is somewhat like threading a needle. There is a difference, however. Should we miss the deep water hole between reefs, we have an excellent chance of digging a groove in the coral with our bow. The land is very low-lying hereabouts and it is difficult to detect by periscope or radar. A complication develops when a ship is sighted hull down on bearing 076°T, approximately 8 miles away. From course and speed it is quite possible that this fellow may be the one we detected on sonar seven hours ago. If so, we have run right past him. Very likely TRITON and he are trying to thread the same needle. Proximity of the ship prevents us from raising our periscope as high as we might like or using our retractable radar to fix our position accurately. The sea is nearly glassy; any unusual activity in the water would attract notice. Went deep, increased speed and headed for the presumed position of the Pearl Bank Passage.

1130 Periscope depth again, land in sight more clearly, and we are now obtaining a rough position. Changed course to head for the presumed location of Pearl Bank Passage when again we sight the same ship, range now only seven miles, bearing 030°T.

1245 This ship is going to give us trouble. He is much higher out of the water than we, therefore can see better, and very likely knows this area thoroughly. Although we have the speed on him, we must proceed slowly at periscope depth and with extreme caution to be sure of our position before we try to run through the narrow Pearl Bank Passage. With no such problems, he has been overhauling us for the past several hours.

We believe we have Pearl Bank Passage pretty well defined, now, bearing due south; and we have been steering south for about 45 minutes. We should, however, remain at periscope depth as we pass through the channel because of variable currents expected according to the Sailing Directions. Besides, Will says he still is not fully satisfied with the accuracy of our position. After thinking things over, it is apparent that our best bet is to let the ship precede us.

We reverse course to the north to let him go first, therefore, exercising extreme caution with our periscope and swinging wide. Commander Joe Roberts and photographer Ray Meadows are, of course, in the conning tower ready to take pictures should any opportunities develop. The merchantman, a victory type freighter of World War II with black hull, white superstructure and a black and red shape on his funnel goes by at range 3,300 yards. We are able to take a few pictures as she passes.

1310 Changed course to 180°T to follow behind the freighter. This makes it easy.

1417 Sighted Pearl Bank Light bearing 234°T and obtained the first really good fix of the day.

1436 Commenced transit of Pearl Bank Passage.

1517 Cleared Pearl Bank Passage heading for Sibutu Passage and entry into Celebes Sea.

1856 Entered Sibutu Passage.

2036 Passed Sibutu Island abeam to starboard at about 7 miles.

2200 Passed into Celebes Sea, departed from waters of the Republic of the Philippines.

Sunday, 3 April 1960 (All times Hotel, Zone Minus 8)

1147 Entered Makassar Strait. Departed Celebes Sea.

1330 Sunday Service on schedule, led by Will Adams. Our attendance has increased somewhat - an encouraging sign. Will's talk, "Have Made Passive Search, Hold No Contacts" refers to the sonarman's report made just before we bring the ship to periscope depth. He uses it to illustrate the point that life demands more than a passive search, and the lesson sinks home.

1422 Crossed Equator for the third time this voyage at longitude 119^{o} - 05.1' E. We are old hands now, and King Neptune just waves us by as we speed through his domain.

Monday, 4 April 1960 (All times Hotel, Zone Minus 8)

0613 Sighted a sailing vessel to westward. Joe Roberts' eyes glisten as he evaluates the report. This is the kind of sailboat he has been hoping to photograph, a Makassar inter-island merchantman. As he passes nearby, Joe obtains what should prove to be excellent pictures.

0930 Completed photographing the Makassar merchantman. The vessel in many ways resembles a Chesapeake Bay schooner of the type I had seen many times from my room in Bancroft Hall at Annapolis. It is about 50 feet long, painted white, low in the water with a cargo resembling deck lumber. She has two masts with heavy booms and gaffs. There was also a rather heavy bowsprit and good sized jib; a topsail was rigged between mast and gaff on both fore and main masts. At the stern of the ship was a rather strange outrigger affair, a sort of structure built well out from the stern to which the main-mast back-stays are secured and from which the ship is steered. Two men could be seen aboard - one man standing aft on the outrigger, apparently steering the ship, and the other, evidently a deck hand, up forward. Neither one seemed to be aware of our presence; although during our photographic interlude they had passed rather closely and we were able to inspect them carefully.

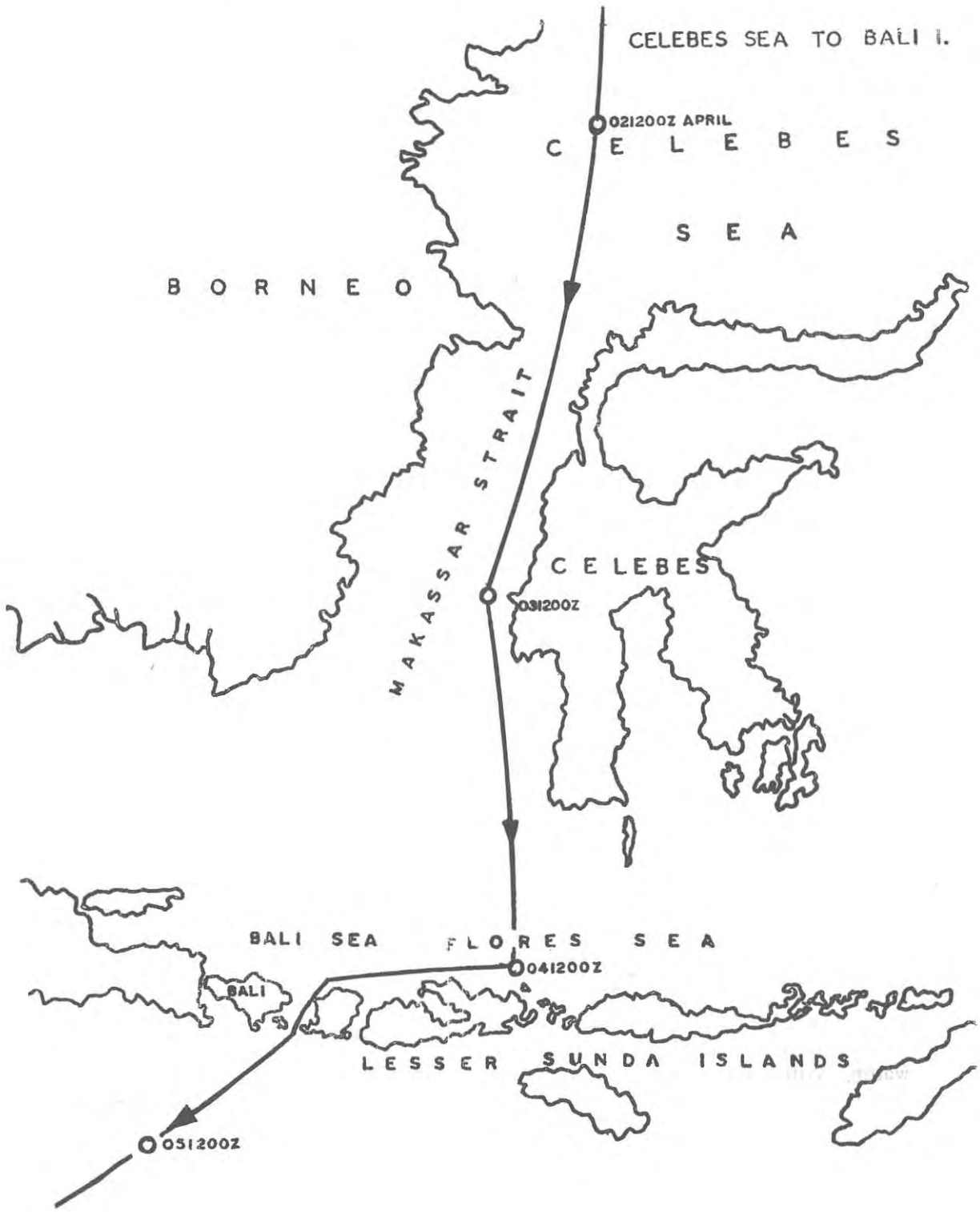
1700 Having come to periscope depth to get a fix on Balalohong Island Light, observed up ahead a great deal of splashing and frothing around in the water; thought for a moment that we might have found the mythical sea serpent. It next appears to be a tide rip similar to one observed earlier today, but upon closer inspection it is evident that these are big fish and little fish, and that the little fish are having a hard time. Maneuvering to close and take pictures of the operation.

There are evidently at least three kinds of fish present. Nearest to us is a lazy group of porpoises swinging along and gamboling among themselves. Up ahead it is evident that the predatory fish are probably porpoises also, and we cannot understand why the band close aboard is so unconcerned with the battle-royal going on just ahead. Perhaps this is a different tribe. Try as we can to approach close enough to get a look at either group, however, we are unable to do so. Apparently they consider us an unwanted witness to whatever is going on. The lazy band of frisky porpoises avoids us by adroit maneuvers at the right time, while up ahead the fighting fish move steadily away and even the ones being eaten seem to cooperate in keeping us at a distance. It is a thrilling sight to see the sleek black bodies of the porpoises flashing around in the water. With their tremendously powerful tails working back and forth like pistons, they dash about at speeds reportedly between 20 and 30 knots. No telling how fast these lads are going but they certainly seem to have a lot in reserve.

1749 Resumed base course and speed. Now transiting Flores Sea.

Tuesday, 5 April 1960 (All times Hotel, Zone Minus 8)

0650 Approaching Lombok Strait to enter the Indian Ocean. Lombok Strait was one of the principle submerged highways for submarines based in Australia. Situated between


CELEBES SEA TO BALI I.
021200Z APRIL
C E L E B E S
S E A
B O R N E O
MAKASSAR STRAIT
C E L E B E S
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BALI SEA
F L O R E S S E A
041200Z
BALI
LESSER SUNDA ISLANDS
051200Z

the islands of Bali and Lombok, it is one of the widest straits through the Malay Archipelago and is spectacular in that it has precipitous volcanic peaks on both sides. The water in the Strait is deep, but treacherous because of strong currents. During the war there were reported cases of submarines spending hours at maximum sustained submerged speed only to surface at night to find that they had been going backwards. The Japanese knew that Lombok Strait was "Submarine Highway" and made efforts to close it. Generally you could depend upon at least two patrol vessels being somewhere in the area and frequently there were more than that. Toward the end of the war, before the Japanese were pushed out of this area, they took to flying patrol planes back and forth also.

The last submarine sunk in the war, USS BULLHEAD, commanded by my Naval Academy and Submarine School classmate and good friend E. R. (Skillet) Holt, Jr., was most likely destroyed here on 6 August 1945. This was "Skillet's" first patrol as skipper, after a number in lesser capacity. He had been ordered into the Java Sea, just north of Java, and was due to transit Lombok Strait and enter his assigned area on the 6th of August 1945. On that day, in position 8^{O} - 20' S, 115^{O} - 40' E, a Japanese patrol plane attacked a submarine, claiming two direct hits. The report further went on to say that for ten minutes or more there was a great deal of bubbling of air and gushing of oil in that position.

1030 Our position is exactly 8^{O} - 20' south, 115^{O} - 40' east.

The last time I saw Skillet was when we both graduated from Submarine School on 20 December 1941. We paralleled each other, career-wise, by simultaneous arrival at the Submarine School and by achievement of our first commands at approximately the same time. We departed for our respective first patrols within a few days of each other, both of us were due to arrive on station on the 6th of August, and on that very day both patrols were terminated by bombs; in my case it was the bomb on Hiroshima.

While transiting Lombok Strait we sighted several ships of various types. One was a small sailing ship similar to the one seen two days before in Makassar Strait except it had only a single mast. Later, at 0950, sighted 3 ships, apparently small Naval or Coast Guard craft, heading north up Lombok Strait.

In attempting to determine the course and speed of these last sighted vessels we experienced considerable difficulty in fixing an accurate angle on the bow. Every time the periscope was raised for an observation they seemed to be heading in a different direction. There was no indication of a search pattern or deliberately erratic steering, but no two of them ever got together on a course, and they were never seen twice heading in the same direction. Finally, after some time, they steadied out and proceeded past us up Lombok Strait on a steady course and speed. We forgot the problem until later.

During a period while relatively free from near contacts, the opportunity was seized to inspect Bali carefully. Bali is a spectacular volcanic mountain, now extinct. Viewed from Lombok Strait it is perfectly symmetrical, in many ways similar to Mt. Fuji in Japan, the only difference being lack of a snow-cap. According to the chart, however, Bali Peak is not quite as symmetrical as Fuji for the northwestern side was blown off by an eruption a long time ago.

On the eastern side of Lombok Strait there is another mountain, even higher than Mt. Bali: Mt. Rindjani. Both shores could be seen clearly. A village was visible at the foot of Mt. Rindjani on Lombok, but none on Bali, which only had terraced hill-sides up a goodly portion of the steep sides of the volcano.

Although there were also many bare spots, Bali was bright with green verdure and held promise of many lovely valleys tucked away here and there amid the crags and outcroppings, now worn by centuries of weather and covered (in most places) with a

skin of fertile soil. One could well believe the many stories told of the delightful living conditions and handsome, friendly inhabitants. It looks like a good life.

1029 In connection with our hydrographic and oceanographic work, of which very little can be told in this report, we seized the opportunity while in Lombok Strait to obtain deep water samples, measure the general density, and observe temperature and other characteristics of the water. One of the simplest ways of measuring density is by behavior of the ship herself, since she will be considerably lighter in denser water and heavier in less dense water. Correlation with known constants can give us a very good measure of the actual water conditions. To this is added the careful analysis of the sample itself.

Upon going deep in Lombok Strait there were two distinct layers found where the temperature changed rather rapidly, and at maximum submergence TRITON was some 20 tons lighter than at periscope depth. This was easily understood, for directly to the south were the waters of the Indian Ocean, while due north were the warmer waters of the Sunda Sea and Flores Sea.

The heavy currents reported as existing here at various depths we can also well believe, and we have measured them. The existence of these currents bears out theories regarding the meeting of the Indian Ocean and the Flores Sea, and the resulting water density changes.

1215 Sighted ship bearing 205^{o}T, at 7,000 yards. Once again, in tracking the vessel it proved difficult at first to determine his angle on the bow because he was continually changing course. Finally he straightened out as the others did earlier today, and came by us at a reasonable range, steady course and speed. The vessel was a small but beautifully maintained trawler type. Probably a fisherman, possibly a government vessel or even a small yacht.

1300 Through the periscope sighted ahead a ridge of water several feet high, apparently caused by the confluence of the waters sweeping down from the north through Lombok Strait and those of the Indian Ocean coming up from the south. About this time the Diving Officer commenced to have difficulty in maintaining periscope depth at 1/3 speed, 2/3 speed was ordered to give him a little more control. In spite of this, and with a slight up-angle, the ship slowly drifted downward, thinking all the time this would shortly stop, when suddenly the depth gauges began to spin; depth increased to 125 feet in the space of 40 seconds. Standard speed was ordered to pull out of the involuntary dive, and we steadied out at 125 feet, shortly thereafter regaining periscope depth with an entirely new set of trim readings.

In reconstructing the incident, it would appear that a strong northerly current from the Indian Ocean had been setting in to Lombok Strait for some time, but that a current from the north had also commenced to make up. This would account for the apparent ridge or wall of water which we had seen ahead, for the variations of the water density as we went deep not long before, and for the erratic courses of the ships we had been watching.

At the point where we experienced the sudden change in depth it would appear that there must have been a swirling, perhaps a downward current of water, as the Indian Ocean current met Lombok Strait current.

Nick Mabry, the Hydrographic Office representative for oceanography, confirms our hypothesis as being a probable one. It was as though we had hit a hole in the water - similar to an "air-pocket" in an aircraft - and had commenced to fall. Under the circumstances, TRITON's size, tremendously strong hull and great power pretty well eliminated any danger, especially since we had tight control of the ship at all times;

but, the situation of a wartime submarine with a weaker hull and only battery power is less comfortable.

I had experienced changes in water density many times before, but never one of this magnitude. There had been war-time reports of British submarines in the Mediterranean having somewhat the same experience, and some of the hard to believe stories of the period laid heavy losses in "the Med" to this phenomenon.

1313 Sighted an out-rigger canoe with a sail bearing 144°T. Approached and photographed same. It appeared to have a whole family aboard.

1400 With all contacts pretty well out of sight, periscope liberty was announced for those who might be interested. Approximately 75 crew members came into the conning tower to say a fond hello and sad farewell to Bali of the beauteous damsels. They will at least be able to say they have seen it - and incidentally, despite all argument, the song Bali Hi was not written about Bali.

1630 Entered the Indian Ocean. Next Stop - Cape of Good Hope.

Wednesday, 6 April 1960 (All times Hotel, Zone Minus 8)

Thursday, 7 April 1960 (All times Hotel, Zone Minus 8)

Sunday, 10 April 1960 (All times Foxtrot, Zone Minus 6)

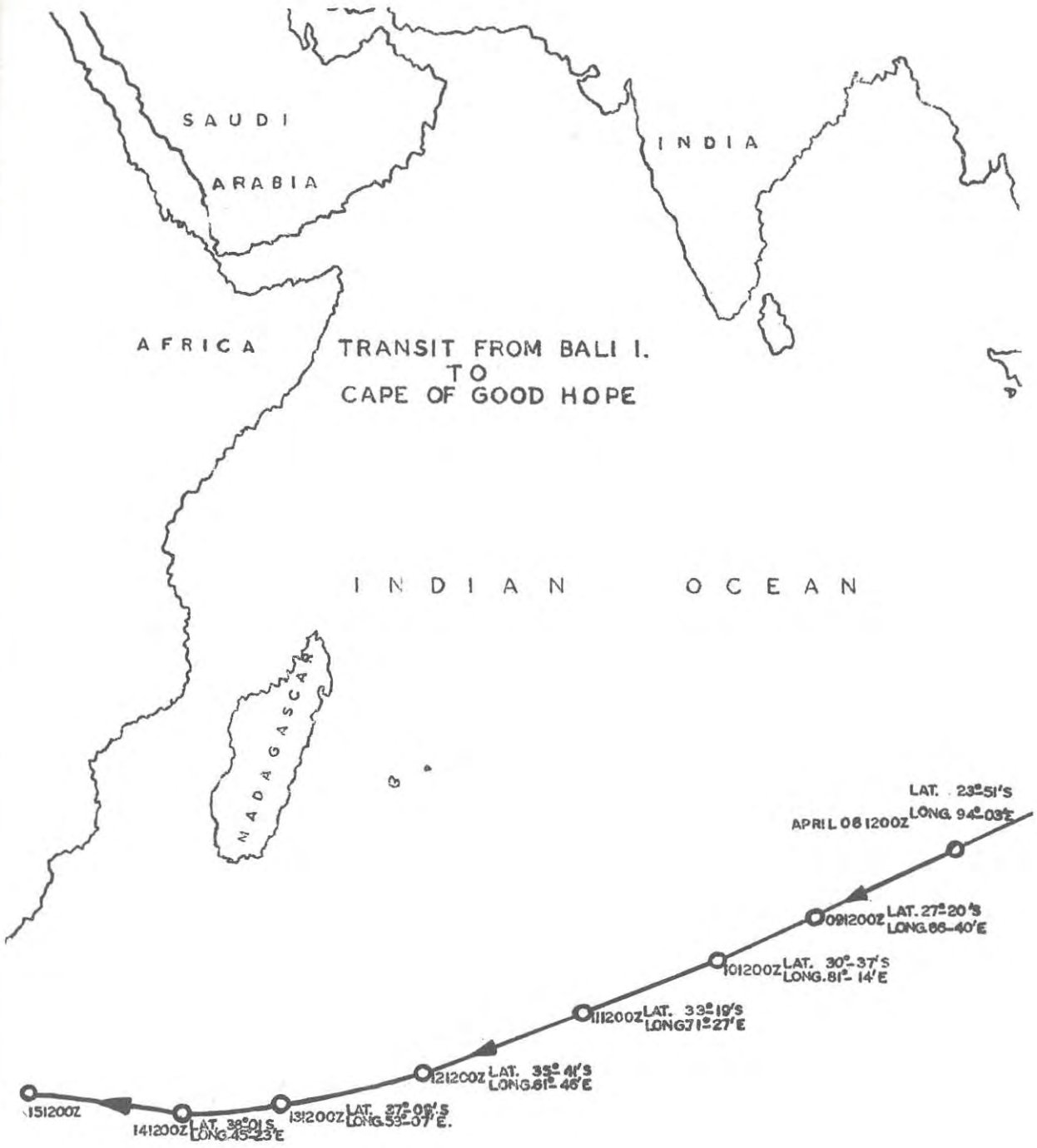
0000 Ventilation secured after a thorough sweep-out of the atmosphere of the ship. One of the requirements of the cruise is to conduct a sealed-ship test under controlled conditions for observation of certain phenomena. Our time with a sealed atmosphere will not approach that of SEAWOLF in 1958, mainly because of the expense of all that oxygen, nor does it need to, so far as this test is concerned. But since we are a brand new ship, this is one of the things we need to accomplish merely to develop our own techniques and limiting factors.

The Medical Research Laboratory in New London has been pursuing this particular project for a long time, the first announced test being Operation Hideout in the moth-balled submarine HADDOCK in 1953. In our case, probably the forerunner of a number of associated tests which will be required from time to time from various submarines, there are particular things that the Medical Research Laboratory wishes to investigate. Doctors Ben Weybrew and Jim Stark have been putting their heads together for several days and finally have come up with a proposed procedure. We will remain sealed for approximately 2 weeks, running various physical and psychological tests among selected volunteers from the crew. Somewhere during the mid-point of this period we will put out the smoking lamp for an extended time. Careful checking of all factors will continue for several more days before terminating the study.

The non-smokers among our crew are lording it over the others, but there is a definite apprehension among the heavy smokers and I tell Dr. Weybrew, "The psychological reaction has already started". A quizzical grin is his only response (later I learned that in anticipation of this period he had placed his only pipe, purchased just before he came aboard, in the garbage ejection chute).

1330 An excellent church service by Chief Hugh Bennett, and a good try with a most difficult subject - the ancient custom of sacrifice to propitiate the wrath of God.

1500 Set all clocks back one hour to Echo time (Zone Minus 5). We all realize that upon completion of the trip we will have counted one less day than our friends who remain behind, but we will not, as did Magellan's mariners and Phineas Phogg from Jules Verne's story, find ourselves at variance in reckoning the date. When we have girdled


SAUDI
ARABIA
INDIA
AFRICA
TRANSIT FROM BALI I.
TO
CAPE OF GOOD HOPE
INDIAN OCEAN
MADAGASCAR
LAT. 23°-51'S
APRIL 08 1200Z LONG. 94°-03'E
0912002 LAT. 27°-20'S LONG. 86°-40'E
101200Z LAT. 30°-37'S LONG. 81°-14'E
111200Z LAT. 33°-19'S LONG 71°-27'E
121200Z LAT. 35°-41'S LONG. 61°-46'E
131200Z LAT. 37°-09'S LONG. 53°-07'E.
141200Z LAT. 38°-01'S LONG. 45°-23'E
151200Z

the globe at St. Peter and St. Paul Rocks on the 25th of April, it will be exactly 60 of our days since we last saw these same "Rocks". We will, however, have logged a number of 25-hour days as we followed the sun westward - a net total of twenty-four, to be exact.

Monday, 11 April 1960 (All times Echo, Zone Minus 5)

A message from ComSubPac relays information from ComSubLant announcing prospective promotion of Chief Petty Officers, Bennett, Blair, Hampson, Hardman and Loveland to the rank of Ensign, and of the following first-class petty officers to the rate of Chief Petty Officer: Hoke, Meaders, Lehman, Mather, Pion, Stott, Bloomingdale, Flasco, Fickel and Tambling. There is jubilation among the lucky advancement winners and good sportsmanship among the others. But this can't be the entire promotion list, since examinations were held before departure for all rates down to third class. More information should be forthcoming soon. Five ensigns and ten chief petty officers is a tremendous haul for any single ship, particularly one with a crew of only 159. It is a tribute to the overall capability of our crew, and to the hard effort of the men themselves. The fact that it was done with an extremely heavy watchstanding schedule during strenuous overtime preparation for an unusual cruise adds to their accomplishment.

The opportunity for hazing some of the lucky ones is too good to be missed. One by one they are called before me to be asked, in a grave voice, "What have you done to cause ComSubLant to send a message to us about your actions?" The look of incredulity on the faces of the first ones to arrive is real enough, but all ships have a sort of extra sensory communication among the crew, and I doubt if the last few were particularly perturbed by my feigned severity.

Tuesday, 12 April 1960 (All times Delta, Zone Minus 4)

Seventh Baby Gram - sixth girl, 9 lbs., born 8 April; father, Bruce F. Gaudet, IC3. Both mother and baby fine. Poor Gaudet had been getting a little worried, but he feels fine now.

Friday, 15 April 1960 (All times Charlie, Zone Minus 3)

0000 Out goes the smoking lamp, eliciting many unfavorable comments by the smokers, a great air of superiority on the part of the non-smokers.

All hands have been carefully briefed for some time as to the purpose of the test and how it is supposed to be run, but we have avoided giving any indication as to the intended length, stating only that the operation order prescribes it shall not exceed 10 days. Ben Weybrew tells me privately that it will not have to be nearly that long, but that he wishes to avoid any complications from anticipation of an early "relight". In preparation for it LCDR Bob Fisher (SC), USN, (the only supply corps officer attached to and serving on board a submarine) has laid in a stock of candy and chewing gum. It is shortly discovered that some of the men had apparently also brought along a supply of chewing tobacco, which introduces an unforeseen variable into Jim Stark's and Ben Weybrew's test. Some of their volunteer subjects had neglected to mention their intentions to chew tobacco in place of smoking during this period. It was noted too that cigars are at a premium since they can be cut into short lengths and chewed also.

The smoking lamp is still out and the psychological reaction building up is surprising. Although I had not felt repressed by the atmosphere in any way previously, there is to me, an indefineable but definite improvement to it. It feels cleaner, somehow better, and so do I. Will Adams agrees, being also a non-smoker, but nobody else does. Tom Thamm announces that the limits of human endurance had been reached in the first 3 hours, so far as the smokers of the ship were concerned, and the remaining time of the test is purely a sadistic torture invented by Weybrew and Stark.

Thamm is a tall very blond type whose meticulous and precise approach to everything conceals a highly developed artistic nature. He is Auxiliary Division Officer and as such works for Don Fears, Engineer Officer. Tom is in charge of most of the auxiliary systems and appliances throughout the ship, bearing responsibility for hydraulics, air conditioning, carbon dioxide removal equipment, auxiliary diesel engine, main vent mechanisms and the like. It was he who designed the bronze plaque we hope to deliver to the statue of Magellan in Cadiz.

We have nearly crossed the Indian Ocean. Tomorrow we expect to arrive at the Cape of Good Hope. It has been a pleasant trip, unmarred by submerged peaks or other alarms. The water is as uniformly deep as anywhere we have seen, not too cold, but cool and beautiful through the periscope. It is one of the least known oceans, bounded on the north by the sub-continent of India, on the west by Africa and on the east by the Malay Archipeligo and Australia. Its southern boundry is Antarctica. One of its noticeable characteristics, at least so far as we have observed, is a consistently heavy sea condition, and in this it resembles the Atlantic. Every time we are at periscope depth for observations it appears that a state 3 to 4 sea is running (corresponding to wave heights from 5 to 10 feet), enough to make surface ships uncomfortable.

A matter of note: LCDR Adams, now relieved from navigational chores, is concentrating full time on administrative matters with intent of having desks cleared for the avalanche of paper work we expect upon arrival in the United States. There has been a steady flow coming out of his desk anyway, but since Lombok Strait it has tripled. And all of us dread the blizzard of paper awaiting us in New London.

So far as the no-smoking test is concerned, Weybrew and Stark contend that they have enough now to fulfill the requirement laid upon them by Medical Research Laboratory. It is also apparent, according to them, and I must confess having noticed something of the same myself; that the test has gone on just about long enough. Overt feelings of hostility are coming to the fore, expressed in a number of small ways, and there have been instances of increasing irritability. Deprived of a normal intake of mild stimulant there obviously have been withdrawal symptoms among the heavier smokers in the crew.

The same is evident in the officers, whom I see more frequently and on informal terms. Most noticeable, to me, are signs of forced gaiety, frequently with a sharp edge to it. Jim Stark, himself a heavy smoker, enjoys egging his wardroom buddies on - and this, in my opinion, is his compensation.

These were expected manifestations of adjustment and are cause for no particular notice, but there are also one or two cases where evidence of heightened nervous reaction is accompanied with relatively poor adjustment. In a ship's company of 183 people, something of this sort is bound to turn up. But answering my question as to what the ultimate results might be in the most severe cases if the smoking lamp could not be relighted, the savants spread their hands expressively, "Who knows?" they say. Most likely, if the man recognizes that it is impossible to smoke he will psychologically adjust to it with relative ease. Symptoms will withdraw or maladjustments will work themselves out".

The point is that here in TRITON the only reason for prohibiting smoking is for a test. Everyone knows it requires but one word, and the smoking lamp will be lighted. Were we in a dangerous situation where safety of the ship or life of personnel were involved, as for example in an explosive atmosphere, the entire situation would be different.

Easter Sunday, 17 April 1960 (All times Bravo, Zone minus 2)

We are commencing to approach the Cape of Good Hope. Many people will be surprised to learn that the Cape of Good Hope is not actually at the southernmost tip of Africa at all. This honor is reserved for Agulhas Point, but Agulhas is not a prominent landmark like the Cape of Good Hope. When Bartholmew Diaz was blown around the southern end of Africa in a storm, he actually went quite some distance northward on the east side of that continent. On his return voyage he bestowed the name "Stormy Cape" on the most distinctive point of land he saw; it was King John of Portugal who thought of "Cape of Good Hope".

Between Cape of Good Hope and the main part of Africa is a Bay called "False Bay", possibly so-named for some early maritime mishap, and a few miles to the east and south is Agulhas Point. The chart also indicates another reason why few ships are anxious to make landfall on Agulhas Point. Agulhas Bank is shallow and extends a good many miles to sea. There is also a strong prevailing current setting the sailor in toward land. In the old days, anyone sighting Agulhas Point was already in trouble.

0600 Periscope depth to fix position with regard to Cape of Good Hope. The sky is overcast and weather not too favorable for the photo reconnaissance which we had planned. Went deep and continued running.

1136 At periscope depth with contact on Hangklip Point, South Africa. Resumed base course and speed heading for Cape of Good Hope. As we enter the Atlantic Ocean again, we observe a noticeable drop in the water temperature. At the same time we are most anxious to notice whether there is any definable current. Charts and Sailing Directions indicate that this is the case, probably setting us to the northeast. Without a fathometer we are staying well clear of possible shoal water in anticipation of this effect.

1330 Held Easter Sunday services. Pat McDonald brings new life to the Easter Story. The little Mess Hall Chapel is nearly full.

1400 At periscope depth. Cape of Good Hope is in sight through the periscope, bearing 348°T about 10-1/2 miles. It was named thus to be a good omen for men, and we take it as such.

1408 Sighted a ship bearing 308°T about 8 miles away. Stationed the tracking party. The ship is a 6,000 to 8,000 ton tanker with a nice clipper bow, but her counter stern, tall stack and large rabbit-ear ventilators belong to a vessel of older vintage. She may pass close enough for us to obtain periscope photographs, provided she remains on her present track. Joe Roberts is standing by, itching to get a picture, and I am beginning to worry over the fact that the ship, evidently making for the Indian Ocean may change course toward us in rounding the Cape. We will embarrass the other ship if he detects us near his intended track. In such a case, it is quite possible he might precipitantly turn in such a way as to endanger himself or us. We must remain doubly alert where probability of a course change exists, to detect the change and go deep in good time.

I always worry myself through all these difficult possibilities almost by reflex; and in the meantime, as the ship passes safely by, Joe Roberts has an ideal opportunity to get a picture. The ship has a black hull, clipper bow, counter stern, a white stripe below the gunwale. (The third ship we have sighted this voyage with this distinctive

feature.) Her superstructure and upper works are white with black and red trim. Her foremast is painted all white and her mainmast is white for the lower one third and black above. Both masts are stick masts. We are almost, but not quite, able to read the name on the stern.

She has no colors visible and therefore we have no knowledge as to her nationality.

1540 Weather conditions near the Cape are going to prevent our photo reconnaissance from being as successful as we would like, but we shall close in a bit and get what we can. Mt. Vasco de Gama on the Cape of Good Hope reminds me of Diamond Head, having somewhat the same shape and dimensions, though not quite the same rugged characteristics. Possibly Good Hope is a considerably older formation. Little foliage or natural growth is visible, something of a surprise for this temperate latitude (33^{o}S).

1618 Periscope depth once more for photographic reconnaissance. There seems to be a haze in the distance and we are unable to focus clearly upon the Cape of Good Hope. After a careful sweep panorama, we call it a day.

1721 With Cape of Good Hope bearing 117^{o}T, distance 8 miles, took departure for St. Peter and St. Paul Rocks in the mid-Atlantic. We will arrive there on the 25th of April.

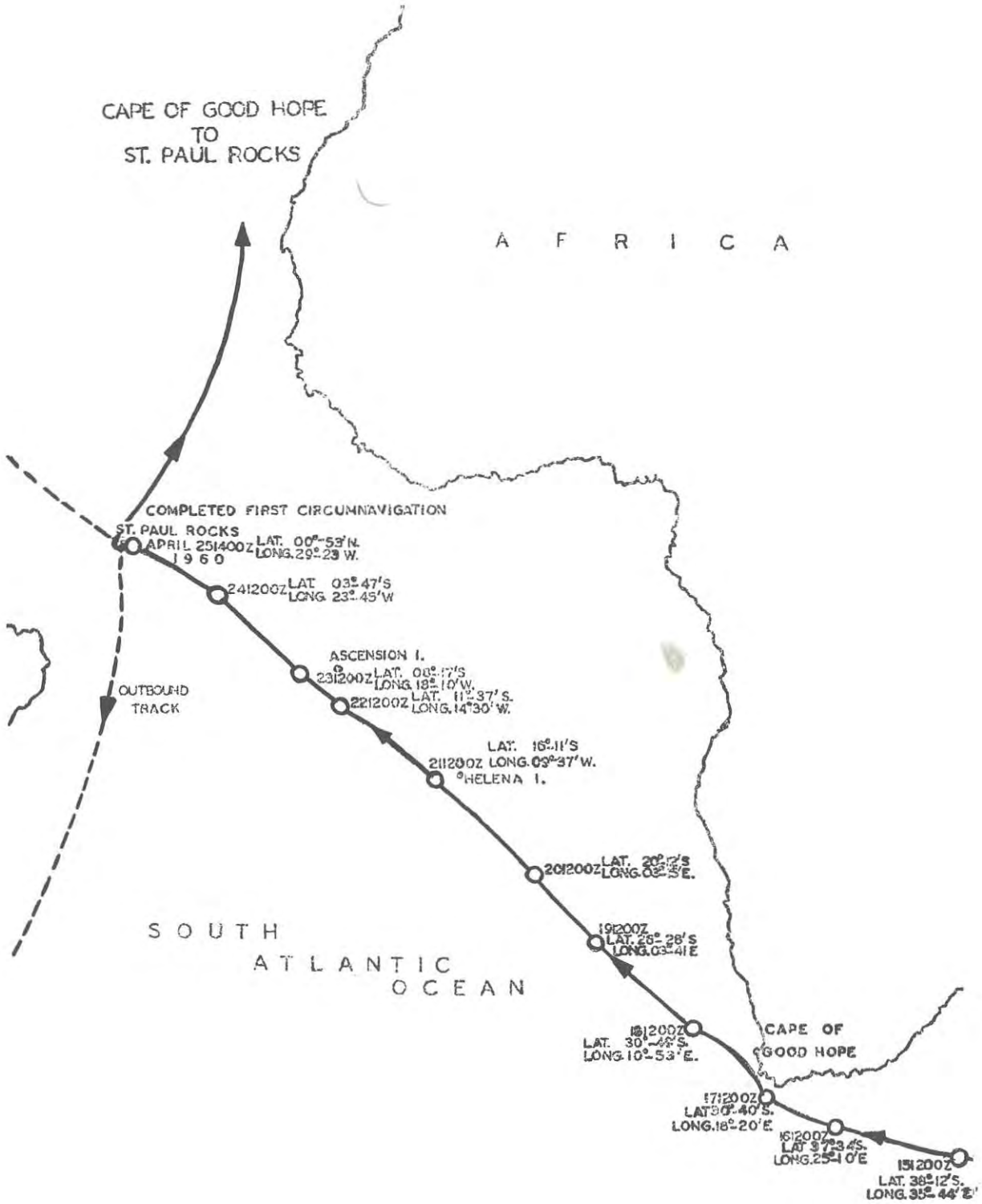
Monday, 18 April 1960 (All times Bravo, Zone minus 2)

0000 Smoking lamp is relighted. Maybe I am a bit sadistic: no one was expecting it; so instead of directing that the word be passed to relight the smoking lamp, I strolled about the ship smoking a cigar, blowing smoke in the faces of various people and inquiring in a pleasant conversational tone, "don't you wish you could do this?" It took some 37 seconds for the word to get around.

As in any group there were probably a few of our people who secretly welcomed the no-smoking edict as a crutch to help them make the break. By far the majority had no intention of stopping; and it is noticeable that few, if any, have continued their abstinence after the smoking lamp was once lighted. An exception is Tom Thamm, who had entered into a no-swearing pact with his two friends, Chiefs Loveland and Blair. Terms were that the first man to breach the rules will continue to abstain for another day after the smoking lamp is relighted. There may have been some collusion in this case, for shortly after the terms had been agreed upon Jim Stark appeared on the scene and while the others engaged Tom's attention he performed a "hairectomy" by forcibly extracting a long yellow hair out of the middle of the Thamm chest.

Thamm's resulting malediction toward the good doctor received howls of glee by all three plotters; and now Thamm sits grimly in the wardroom inhaling second hand smoke, mumbling at the faithlessness of all shipmates, vowing that he will carry out his term of the wager, come what may, and swearing by the few remaining hairs on his chest that Messrs. Stark, Blair and Loveland will regret this episode.

1105 We are passing near a charted sea mount and sure enough, the echo-ranging sonar detects it. We are becoming expert at this operation and it is a reassuring one.


CAPE OF GOOD HOPE
TO
ST. PAUL ROCKS
A F R I C A
COMPLETED FIRST CIRCUMNAVIGATION
ST. PAUL ROCKS
APRIL 251400Z LAT. 00°-53'N.
1960 LONG. 29°-23 W.
2412002 LAT. 03°-47'S
LONG. 23°-45'W
ASCENSION I.
2312002 LAT. 08°-17'S
LONG. 18°-10'W.
2212002 LAT. 11°-37'S.
LONG. 14°30'W.
OUTBOUND
TRACK
LAT. 16°-11'S
211200Z LONG. 09°-37'W.
°HELENA I.
201200Z LAT. 20°-12'S
LONG. 08°-5'E.
191200Z
LAT. 26°-28'S
LONG. 03°-41 E
SOUTH
ATLANTIC
OCEAN
181200Z
LAT. 30°-48'S.
LONG. 10°-53'E.
CAPE OF
GOOD HOPE
171200Z
LAT. 34°-40'S.
LONG. 18°-20'E.
161200Z
LAT. 37°-34'S.
LONG. 25°-10'E
151200Z
LAT. 38°-12'S.
LONG. 35°-44'E

Wednesday, 20 April 1960 (All times Alfa, Zone minus 1)

0100 Crossed from east to west longitude.

Today is my birthday and also, incidentally, Lt Sawyer's. After dinner I repaired to my cabin to work this report.

2100 Chief of the Ship Fitzjarrald came knocking on my door saying "Something is wrong down in the Mess Hall, Captain; we need you down there right away". This is a strange message for the skipper of a ship to receive.

"What's the matter, is there a fight?" I asked, starting up from my desk. It was only a jump down the ladder to the lower deck and forward one compartment into the Crew's Mess Hall where I was greeted by popping flash bulbs, a raucous rendition of "Happy Birthday to You" and a tremendous birthday cake. The cake, prepared by Ramon D. Baney, CS2(SS), was about 2 feet square and 2 inches thick, with great extravagant gobs of frosting all over it. Ray Meadows, Joe Roberts and William R. Hadley were there too, of course, with cameras en echelon.

Earlier that afternoon there had been a cake and coffee ceremony for George Sawyer in the wardroom; and consequently, it has been a very pleasant day with much good cake eaten by all.

A third birthday for which April 20th used to be remembered in certain quarters went unnoticed: one Adolf Hitler, now deceased.

Friday, 22 April 1960 (All times Zulu, Greenwich Zone time zero)

Our 8th babygram arrived today for Gerald W. Gallagher, IC1(SS), who has an 8 lb. boy born on the 20th. Gallagher, all smiles, informs me delightedly that the child, if a boy, was to be named Timothy Edward. With Edward in his name and April 20th for his birth certificate, this lad will go far; and in testimony thereof, this calls for a cigar in reverse. Timothy Edward Gallagher's Old Man gets this cigar.

Saturday, 23 April 1960 (All times Zulu, Greenwich Zone time zero)

Tonight we are advised by a message that twenty-five more of our ship's company have successfully passed the examinations for advancement in rate and are to be promoted soon. The news causes excited talk and waves of mutual congratulations throughout the ship. Our statisticians are immediately busy and come up with the following rather remarkable set of figures: excluding the 5 Chief Petty Officers who are designated for commissioned rank, but including the first class promoted to Chief Petty Officer and the 25 just named, a total of 60% of our men who took the exam have made the next higher rate. Counting only those listed in tonight's dispatch, the percentage is 69%; and if one adds in the 5 new Ensigns, a total of 40 men or 25% of a crew of 159 are to be promoted. Few ships in the U. S. Navy will equal this performance.

Sunday, 24 April 1960 (All times Zulu)

0436 Completed sealed ship test, having run sealed for exactly two weeks. Remaining sealed is considerably less strenuous than ventilating once a day, and we are sorry to go back to the earlier routine. When you ventilate, you are attempting to conserve oxygen and at the same time trying to minimize time at periscope depth. It naturally develops that just before you ventilate the ship her internal atmosphere is at its lowest in oxygen, its highest in carbon monoxide and carbon dioxide. At this time cigarettes are difficult to

light, a little exertion sets one to panting, and generally one does not feel in the best of form. On the other hand, with the ship sealed you maintain a steady atmosphere and set your equipment to keep it that way.

We have learned a lot about TRITON during two weeks of sealed ship operations and are extremely gratified with the results. Among other things, we have had no difficulty at all in retaining our precious air inside the ship. But it was a good thing that we recognized the problem, or we might have.

1330 Sunday services again, Bob Fisher, who is Catholic Lay Leader, reports that attendance at this service has been the best yet. He also tells me something I had not realized - his assistant in the Catholic Services, Raymond J. O'Brien, Storekeeper First Class, comes of a very religious family. He has a brother who is a priest and a sister who has become a nun. He himself has never felt this call, but his upbringing and earliest religious indoctrination are helpful to us now.

The Protestant services are also at a high point for the cruise. Attendance is almost capacity, and Pat McDonald leads a most effective meeting.

2001 Casualty in the After Torpedo Room. The manner in which this develops is illustrative of a point many Naval Officers are fond of making - there is no sudden alarm, no quick scurry of many people carrying out an expected drill. By the time anyone in authority even knew what had happened, the need for alarm was past. There was left only the correction of the trouble and cleanup of the mess, which took some time. What took place is instructive:

The torpedoman on Watch in the After Torpedo Room (Allen W. Steele, TM3(SS) who had only last night been notified of his prospective advancement to second class) heard a loud report, as he later described it nearly like an explosion, followed by a heavy spraying noise. Turning, he saw clouds of oil vapor issuing from beneath the deck plates on the starboard side. Instantly realizing that this was trouble, Steele called the control room and reported a heavy hydraulic oil leak in the stern plane mechanism; then he plunged into the stream of oil hoping to find the leak and isolate it.

In the control room, LCDR Bulmer had just relieved LT Rubb of the Conn, preparatory to bringing the ship to periscope depth. Rubb's first indication of trouble came when Raymond J. Comeau, Electrician's Mate second class at the stern plane controls, called out, "The stern planes are not working right, sir!" He had noticed a failure to respond to his control arm movement. At nearly the same moment, the report of a large hydraulic leak in the After Torpedo Room was received from Steele.

Whitey Rubb's action was the one for which we have trained many times: "Shift to Emergency!" Comeau threw a single switch, tested controls and reported them satisfactory. This restored control of the ship, but it did not solve the basic difficulty.

In the After Torpedo Room, Steele determined the leak to be in the stern planes normal power hydraulic system, and diagnosed it as a hydraulic failure. His third immediate decision was also a correct one. Diving into the midst of the high pressure spray he reached the two quick-closing valves to the supply and return pipes and shut them. One came shut easily but the other, was very difficult to move. Desperately struggling with the valve, with assistance by Arlan F. Martin, Engineman third class, who ran to his aid, Steele finally got it also shut. By this time, fifteen to thirty seconds after the onset of the leak, the entire after part of the compartment was filled with oil vapor and visibility was reduced to only a few feet.

With the closing of the isolation valves, the oil flow stopped immediately. Steele's action was instantaneous and precisely correct.

Personnel who behaved with credit were Arlan F. Martin, Engineman third class who ran to Steele's assistance and participated with him in shutting the last and most difficult of the two hydraulic cutoff valves, and Ronald Dale Kettlehake, who had just entered the compartment in process of tracing some system required for submarine qualification. Realizing the possible danger, he showed presence of mind by waking the dozen or more sleepers and routing them forward into the after engine room.

2002 Things had been happening so swiftly that the first anyone other than those dealing with it knew of the casualty was when the OOD ordered "Smoking Lamp is out!", "Rig After Torpedo Room for Emergency Ventilation". There had been no confusion, no warning, not even any raised voices. Tom Thamm - our damage control officer - quickly got to his feet and strode purposefully aft, followed by Jim Hay, his assistant.

2030 Steele has been recommended for award of a Secretary of the Navy Letter of Commendation with Commendation Ribbon for meritorious service. We are preparing the papers now.

2130 Everything is pretty much back to normal so far as the After Torpedo Room and the hydraulic system is concerned, except that we are still in emergency on the planes and shall have to remain so until a replacement is found for a fractured valve.

Monday, 25 April 1960 (All times Zulu, GMT Zero)

0754 Crossed equator for the fourth and final time this cruise at longitude 28°-03' West.

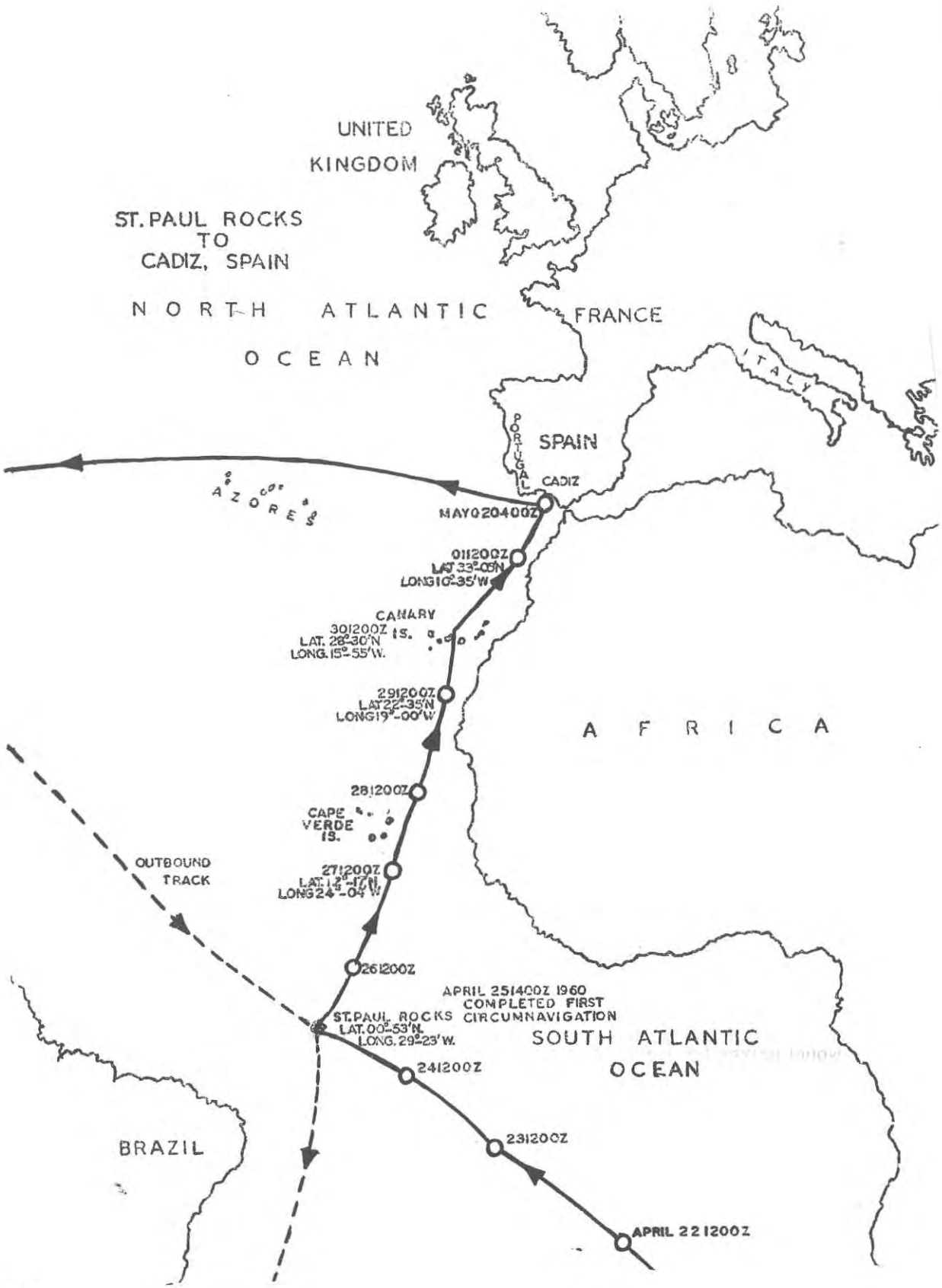
1200 Position 00°-53' North, 29°-01' West. We are within a few miles of St. Peter and St. Paul Rocks, at which point we will have completed the first submerged circumnavigation of the world. It has taken us exactly 60 days by our reckoning, though as previously stated a person marooned here would have counted 61. But the number of hours would have been the same.

1330 St. Peter and St. Paul Rocks in sight, bearing due west.

1500 First submerged circumnavigation of the world is now complete. We are circling and photographing the islet again, as we did just two months ago. The weather is nice and the sun is shining brightly. Our mileage (Rock to Rock) is 26,723 nautical miles and it has taken us 60 days and 21 hours (days calculated as 24 hours each). Dividing gives an average overall speed of just over 18 knots. No other ship - and no other crew could have done better. We are proud to have been selected to accomplish this undertaking for our Nation.

Our total mileage for the trip will be a little more than 36,000 nautical miles (including the 2,000-mile mercy mission for our ill crewman) and it now looks as though our overall time since departure from New London will be 85 days (New London computation). We have been instructed to proceed to a rendezvous point off Cadiz, Spain where the destroyer WEEKS is to meet us. WEEKS will send aboard the completed bronze plaque we designed in tribute to Magellan, but it is our understanding it is to be presented at a later date, possibly by the U. S. Ambassador. For the time being we are still to avoid detection, making our rendezvous off Cadiz beyond sight of curious onlookers.

We earnestly hope WEEKS will bring mail for us, in addition to the plaque. Even though we can depend upon our Squadron organization in New London doing everything in its power to insure our families are all right, and that it stands ready to assist them in problems large or small, there's nothing which can substitute for a letter from your loved ones (except seeing them). More than this we neither need nor want. Our provisions are still adequate, though non-scrambled eggs would certainly taste good, and our personal tobacco stocks have lasted surprisingly well despite demands placed upon them by people like Curtis Beacham, Quartermaster first class, who brought a dozen


UNITED
KINGDOM
ST. PAUL ROCKS
TO
CADIZ, SPAIN
NORTH ATLANTIC
OCEAN
FRANCE
ITALY
PORTUGAL
SPAIN
CADIZ
AZORES
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LAT 33°-05'N
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301200Z
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COMPLETED FIRST
CIRCUMNAVIGATION
ST. PAUL ROCKS
LAT. 00°-53'N.
LONG. 29°-23'W.
SOUTH ATLANTIC
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231200Z
APRIL 221200Z
BRAZIL

and a half boxes of cigars with him; then early in the cruise gave most of them away in an effort to break clean; and for weeks now has been abjectly relying on the occasional generosity of the friends to whom he gave them.

We still do not know when or whether - knowledge of our submerged voyage will be made public. We therefore shall not surface, will only bring our high conning tower hatch clear of the sea to pass the plaque and its custodian through as we did our sick shipmate nearly two months before.

1645 A congratulatory message has arrived from our Force Commander. It is read to the crew as soon as decoded and everyone aboard very much appreciates his kind and encouraging words.

1700 Preparation of a suitable message on our part recommending Steele for official recognition, thanking Admiral Daspit for his thoughtful message and announcing a successful mission is not always so easy as the few words employed might indicate. Lt. Robert Brodie III our nearly professional communication officer, and I draft, encode, and destroy five different versions before we are finally satisfied. Whatever Bob may have thought at the extra work, he need not fear, for the time being anyway, that the expression on his face may give him away. It can't possibly. He has the most villainous-looking crop of steel wool on his face I have ever seen. Through this no "expression" could ever reach the surface.

1700 Set course for Tenerife in the Canary Islands. The city of Santa Cruz, which Parr describes as having in Magellan's day a cliff-sheltered harbor entered through a "cleft in the rocky wall" of the island of Tenerife, was the last city of the old world seen by Magellan. Provisions and supplies were cheaper there than in Spain, and it was therefore customary for voyagers of Castile to "top-off" there before making their final departure. We shall be coming at it from the other direction, but it nevertheless will make a good final "port of call". If we have time, we shall make our final photographic reconnaissance there.

2125 William Roy Welch, Machinist's Mate first class is reenlisted in the service of the United States Navy for a period of six years. Since the Manual of the Bureau of Naval Personnel specifically prohibits reenlistments at sea, to reenlist Welch it was necessary to obtain permission in advance from the Assistant Secretary of the Navy for Personnel and Reserve Affairs and the Bureau of Naval Personnel. Welch's reenlistment is a mile-stone of sorts, inasmuch as it is done at deep depths, at high speed and at the culmination of history's first submerged circumnavigation of the world. All these things we carefully record in Welch's service record and in the ship's log.

2145 We are not quite home, but we may be considered to have taken a long lead off third base. So tonight, to celebrate completion of the first submerged circumnavigation and our looked-for homecoming, we hold a "third base party" for the crew and officers. There are even several acts of pretty good entertainment. The first is by Fireman Rudolph Kuhn, who has manufactured an instrument resembling a French Horn from a piece of battered copper tubing and an old funnel; to everyone's amazement it works, and he plays us several bugle calls on it. None of Kuhn's tunes will win any Nobel prizes for music, but the fact that he can play that thing at all is astonishing. He gets cheers of appreciation from his shipmates, and we may use him on the bridge for rendering passing honors to other naval vessels.

Another skit is a barbershop quartette, consisting of Herb Zeller, EM1(SS); Chief Steward William "Joe" Green, Richard Brown, EM1(SS); and Wilmot Adair Jones, TM2(SS). The quartette know only one song and are taken aback by their audience's wild insistence upon an encore. It gets as many cheers the second time.

The hit of the evening, from my point of view, a skit put on by Jim Flaherty, RM1(SS), and Wilmot A. Jones, TM2(SS). Flaherty plays a TV announcer and Jones acts the part of "Mother Fletcher", the cooking instructor, who continually samples her sherri-herri in front of the TV camera and slowly drinks herself into a simulated stupor. Mother Fletcher's delighted audience was particularly convulsed because someone had doctored up the "sherri-herri" bottle with chili sauce and Jones had to go through his act with another one labeled "Vinegar".

0230 Finally wrote finis to the World's First Submerged Circumnavigation celebration. All hands turned in with the feeling of satisfaction that comes from a big job well done.

A special well done should go to Lcdr. Bob Fisher, our supply officer, whose cooks kept the party goers well supplied with a steady flow of pizza, popcorn and punch. Bob also serves as the officer representative on the Ship's Recreation Council, whose members did the planning for the party.

Tuesday, 26 April 1960 (All times Zulu, Greenwich Zone Time, zero)

Wednesday, 27 April 1960 (All times Zulu, Greenwich Zone Time, zero)

Thursday and Friday, 28-29 April 1960 (All times Zulu, Greenwich Zone Time, zero)

With a comfortable SOA (Speed of Advance) requirement and our circumnavigation complete, these two days were devoted to engineering drills. Like all nuclear ships, we have rigid qualification requirements for officers and men before they may stand certain main propulsion plant watches.

Saturday, 30 April 1960 (All times Zulu, Greenwich Zone Time, zero)

This is Will Adams' birthday. He has announced everybody else's birthday in his daily "Plan of the Day" but had hoped to avoid mentioning his own. I out-foxed him, however, and wrote it in just before the Plan of the Day went to press.

As an added birthday present, this morning a message arrived with notification that Will Adams is a Commander, U. S. Navy with a date of rank from 1 February (that is, he will be as soon as he finishes some correspondence courses which are still dogging him). The same message states that Don Fears is a Lieutenant Commander, also with a 1 February date, and goes on to mention that the Biblical cities of Sodom and Gomorrah have been found buried under the Dead Sea. We knew both promotions were due, but it is certainly fine to get the news at last; Will and Don have been congratulated all day long. We are sure, too, that there was no comparison intended with the two cities which have been so long underwater?

0430 Periscope depth for approach on Tenerife, Canary Islands. The spectacle on raising the periscope is remarkable. Although we are still quite distant from land, the lights of the city of Santa Cruz are so high above the horizon as to give the appearance of stars, or would have were they not spaced in certain orderly patterns. Tenerife, according to the Sailing Directions, is an extremely high and mountainous island. The highest peak, Pico de Teyde, is more than 12,000 feet.

We shall make a photo reconnaissance and then proceed to our rendezvous point off Cadiz, Spain, where we are due on the 2nd of May. As stated elsewhere in this report, Tenerife was Magellan's last European port of call before he set forth on his round the world cruise, and the site of the first attempted mutiny by his captains. According to

Parr, Santa Cruz harbor lay between nearly precipitous clefts in the hillside. The chart shows that modern Santa Cruz has a large and efficient-looking artificial harbor formed by a long breakwater. Try as we may, we are unable to locate where Magellan's precipitous cliff walled harbor could have been.

Another historical episode in which Santa Cruz figured was the 1798 attack on the city by an English squadron under Horatio Nelson. Nelson was then 39 years old and had held the rank of rear-admiral in the British Navy for a year.

The attack on Tenerife miscarried in the initial stages, mainly because of indecision among the commanders of the assault troops, and Nelson determined to lead the second attack in person. As he landed, a grape-shot shattered his right elbow, and with their leader out of action this attack also failed. Nelson's arm was amputated and he was invalided home for several months.

A sketch of the defenses of Santa Cruz and the shore configuration, drawn by Nelson for this campaign, is easily recognized on our chart. The changes wrought by the recent century and a half are not so great, evidently, as those of the previous three.

Apropos of Nelson's arm, shortly before landfall this morning, two of the senior Electrician's Mates ganged up on the two most junior ones, Franklin D. Caldwell and Ronald D. Kettlehake, to the effect that all ships approaching the Island of Tenerife were required to set a watch for Horatio Nelson's arm, and that they had been so designated. Having been forewarned by Chiefs Hugh Bennett and Robert L. Jordan of what was expected of me, I sent for Caldwell and Kettlehake in order to brief them on their duties.

They appeared separately, somewhat non-plused at this unusual summons! I carefully explained to each that Nelson's arm had enlarged and become petrified after being tossed over the side from his flagship THESEUS, and that now, standing vertically in the mud of the channel off Tenerife, it had become a danger to navigation.

Caldwell slowly produced a sheepish grin as I went on with the gag, finally departed to fetch Kettlehake. This engaging young character swallowed my long dissertation about the petrified arm, and seemed willing to believe that it could have become an object able to menace navigation in water many hundreds of fathoms deep. He was, in fact, very interested in all the details of my yarn and finally blurted out, "It sounds like a grand tradition, Sir. How long has it been going on?"

"About an hour", I told him.

But Kettlehake continued with questions about Nelson, and when he departed he carried off my precious copy of Mahan's "Life of Nelson". Now that the fun is over, I am wondering just who was hazing who, and whether there was a bet involved.

0830 We are now near enough to begin our "photo-recon" of the outskirts of the city of Santa Cruz on Tenerife Island. It is indeed an imposing skyline, though search as we may, we still find no evidence of the harbor supposedly used by Magellan. The scenery is most spectacular, however, far and away the most breathtaking of this cruise.

Tenerife, like the other Canary Islands, is a huge mountain with many peaks and comes nearly vertically out of the sea. The water between islands is extremely deep until very close to shore.

Behind Santa Cruz, towering peaks stretch in both directions. Though vegetation is visible in many places, generally speaking the brown hill-sides are similar to Cape of Good Hope.

The city of Santa Cruz extends back against the hillside in such a way that the whole is laid out before us and presents an extremely imposing view. Many roads can be seen stretching along the hill-sides, with automobiles moving back and forth on them. Many new modern buildings, evidently apartments, line the roads and, as at Cebu, march steadily up the hill-side and back from the sea. Nearly 300,000 people live on this island. From the size of Santa Cruz it can be well believed that about 200,000 of them must live here.

The breakwater is visible and construction work is going forward to lengthen it and extend the harbor even farther. Sheltered behind are a number of large ships, including some cruise ships. Indeed, Santa Cruz looks like an ideal spot for a vacation.

In what appears to be the central part of the city, various towers can be seen which we use for navigational cuts. Two or three monuments are also visible. One, at least, ought to be dedicated to Magellan. We hope this is the case.

0933 Departed Tenerife for rendezvous off Cadiz the early morning of Monday, 2 May.

Sunday, 1 May 1960, (All times Zulu, Greenwich Zone Time, zero).

1330 Our next-to-last Church Services. Chief Electrician's Mate Hugh Bennett leads. His talk is titled "Success", and it has much food for thought.

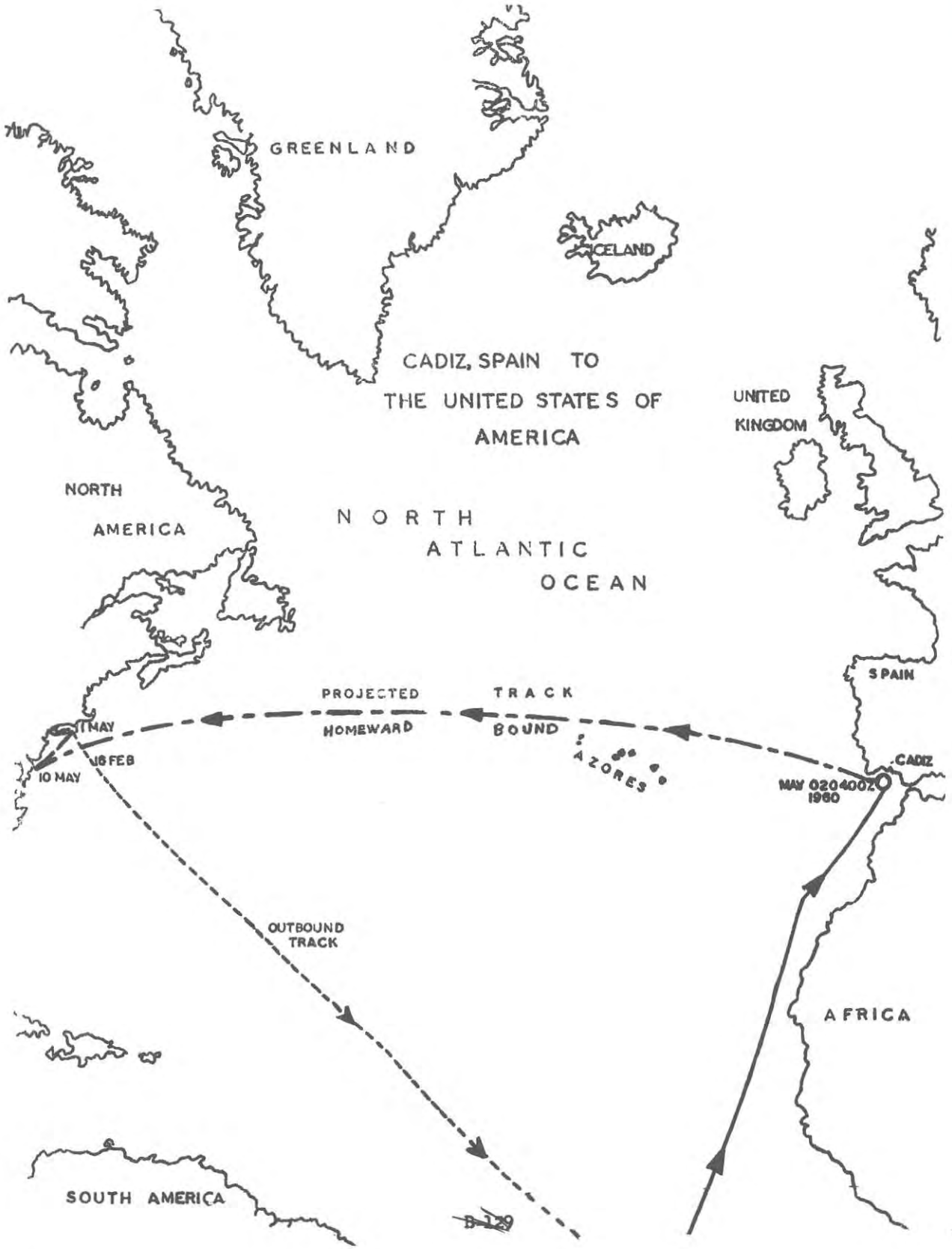
The TRITON EAGLE has formally ceased publication, though we shall probably put out one more issue prior to arrival in the United States. The ostensible (and real) reason is that mail from home will fill the void it has been filling these several months. The entire staff, consisting of Editor (reporter, composer, typist and printer) Radioman First Class Harold J. Marley, and Art Director (cartoonist, copiest, distribution and janitor) Radarman First Class Audley R. Wilson, deserve much credit for daily extra duty faithfully performed for the benefit of their shipmates.

Monday, 2 May 1960

Our waking hours for the past several weeks have been devoted almost exclusively to drills, conferences, and the preparation of this report. It is finished at last, a few hours before we rendezvous WEEKS. Only a short homeward-bound voyage across the Atlantic Ocean remains - a mere 3,000 miles.

It must be appreciated that more of the personal has been related in these pages than a regular naval voyage report requires. There have been several reasons for this, among them the belief that TRITON's undersea voyage has accomplished something of value for our country. The sea may yet hold the key to the salvation of man and his civilization. That the world may better understand this, the Navy directed a submerged retrace of Ferdinand Magellan's historic circumnavigation.

The honor of doing it fell to TRITON, but it has been a national accomplishment; for the sinews and the power which make up our ship, the genius which designed her, the thousands and hundred of thousands who labored, each at his own metier, in all parts of the country, to build her safe, strong, self-reliant, are America. TRITON, a unit of their Navy, pridefully and respectfully dedicates this voyage to the people of the United States.



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