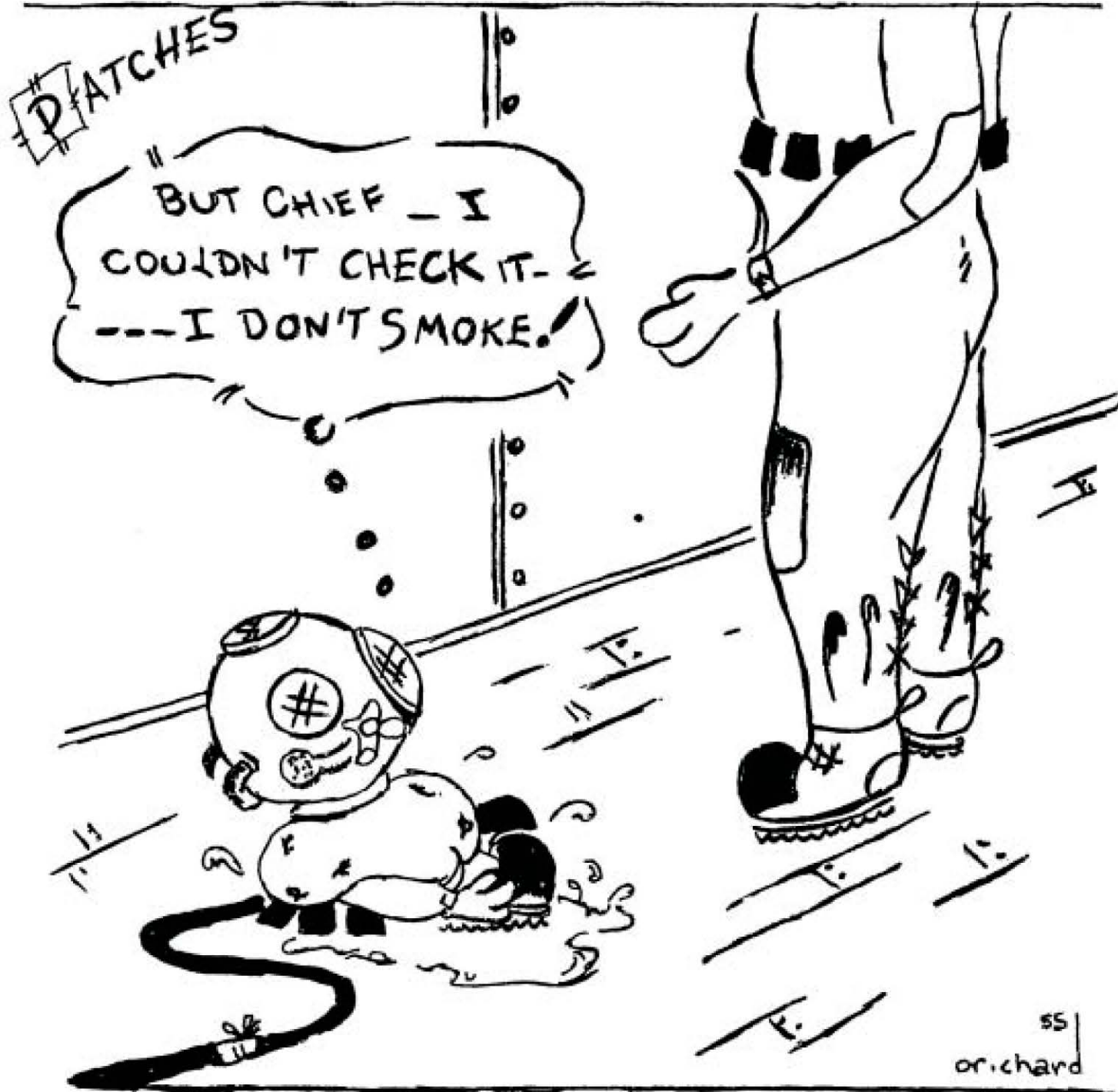


the FACEPLATE

MAY 1956



EXPERIMENTAL DIVING UNIT
and DEEP SEA DIVING SCHOOL

Representatives from Key West, Pearl Harbor, San Diego, New London, Bayonne, Norfolk and Charleston are at EDU preparing the scuba portion of the new manual. It was a surprised group that found nine days of a ten day "Washington conference" devoted to individual effort. The first day was spent getting acquainted with the problems, establishing the final outline and distributing the writing work load. Since then, the amount of writing produced has been very heartening.

Without exception, the members of the group have adopted an extremely constructive attitude. Everyone appreciates that a satisfactory manual written now with provisions for improvement is of much more value than a "perfect" manual that might be finished and approved two years from now. The first provides guidance and support where needed now and permits better dissemination of improvements as they occur. A "perfect" manual later means a continuation of any and all present weaknesses.

A resume and report of the group's efforts will be printed in the next issue of the "Faceplate". We should be able to report compliance with the CNO directive which indicated publication of the scuba volume by October '56. Credit for all progress will be due these representatives of the fleet.

Concerning Safety Precautions

LT K. PLOOF

In our November issue of FACEPLATE we asked for comments concerning "United States Navy Safety Precautions, OPNAV 34P1", Chapter 5, Section 3. This section pertains to diving. Inasmuch as none have been received, we would naturally assume that these CNO directives are being complied with to the letter. However, conversation with divers from various diving activities indicates that there may be some disagreement concerning safety precautions in mask diving. For instance, article 05325, paragraph 3, subparagraphs 2 and 3 specify the manner in which the weight belt and lifeline will be worn. Some divers apparently feel that these directives are improper and they proceed to use their own systems. It should be borne in mind that failure to comply with these safety directives can lead to serious repercussions. On the other hand, if the directives are considered improper or inadequate, attention should be called to the areas in question. Progress can be made only with the help of constructive criticism from the operating forces. The present directives do not mean that we must blindly follow them for the rest of our lives. They merely represent the best information that the writer had at the time they were written. Unified effort by all divers is the only assurance of improvement.

Master Diver Promoted

Congratulations to Albert W. Foster Jr. on the promotion to Warrant Machinist. It is expected that Mr. Foster will be assigned to the U.S.S. KITEWAKE (ASR-13).

A Request for News Items

A group of officers and men from various diving and underwater swimming activities are now at EDU and hard at work preparing a section of the new diving manual. Conversation with a number of them indicates that many activities have noteworthy items of news but are in doubt as to how they would be received. EDU will be more than happy to publish interesting and informative items from all diving activities. Some 150 activities receive this newsletter, and if you have something of interest, by all means, send it along. You might drop it in the envelope with your monthly report of dives.

Its possible that we'll be swamped with news as a result of this article, and if such is the case we may be unable to publish everything received in one issue. However, please don't let that thought discourage anyone. Actually we like being swamped - it's the only situation to which we are accustomed.

Casualty Occurring in Civilian Scuba Divers

Dr. WORKMAN

Due to the increased use of scuba gear by civilians, more frequent reports of treatment of decompression sickness occurring in civilian divers are being received by the Experimental Diving Unit. A recent report of a civilian scuba diver treated aboard the U.S.S. Howard W. GILMORE is abstracted here.

"A 38 year old civilian scuba diver was brought aboard five hours after surfacing from a dive while spearfishing with a one bottle aqualung to a depth of 165-200 feet for 30 to 45 minutes. He recalled becoming dizzy and starting for the surface. Observers stated he swam to the boat and became unconscious while climbing into the boat. He was rushed to a civilian hospital where he was given supportive treatment for shock and then flown to Key West at 3000 feet, during which time he lapsed into complete unconsciousness. He was in shock and semi-conscious before being recompressed to 165 feet equivalent of water pressure in the chamber. Examination showed paralysis of his right arm and leg with inability to coordinate the movements of his left arm and leg. He was treated on table 4, given fluids and nourishment intravenously, and antibiotics to prevent infection. He improved gradually and steadily, and after 20 hours of treatment was able to sit up and take nourishment. After completion of table 4, he was able to leave the chamber under his own power with support. He was hospitalized in a U. S. Naval Hospital for 4 days during which time he showed gradual improvement of his ability to balance and coordinate movements of his extremities. Complete recovery may eventually follow. Certainly this man owes his life to the thorough efforts of the highly trained U.S. Navy divers and medical officers treating him.

Several aspects of this case should be considered. First, decompression was completely disregarded with the resulting serious symptoms presented. Secondly, without a tender or "buddy diver" it was a fortunate circumstance that he was able to return to the surface at all. Thirdly, no decompression chamber was available in the area for treatment of possible casualties. Fourthly, this man greatly exceeded the U. S. Navy's accepted depth and duration for a "no decompression dive" (130 feet for a bottom time of 15 min.).

For the vast majority a stringent limit of 60 feet is more appropriate. The fact that this diver was able to extend the duration of dive beyond a normal 9 minutes at 160 feet on a single bottle suggests saving of air by controlled breathing. The reduced lung ventilation almost assured carbon dioxide build up. This may have been the initiating factor in this chain of events. Even with controlled rate of ascent this diver would have been a candidate for decompression sickness. Increased rate of ascent as a result of panic or unclear thinking from carbon dioxide toxicity would have increased this possibility.

Certainly this case is a good example of the risks encountered in scuba diving which are greatly multiplied for inadequately trained and assisted personnel.

DSDS

LCDR ULLRICH

Class 3-56 graduated on 11 May 1956, and are on their way to diving billets in the fleet. During the past 18 months all graduates, with the exception of three (3), were assigned to diving billets. Student input continues to improve. Indications are that the class convening 4 June 1956 will be comprised of two and possibly three large sections. Eight (8) hospitalmen are scheduled to attend the 28 week course of instruction for Medical Deep Sea Diving Technicians convening on 2 July 1956. This should aid materially in reducing the acute shortage of diving technicians on the ASR's.

Five (5) student officers will complete the course of instruction on 2 July 1956, and have been assigned to the following ASR's:

LTJG W. E. HANSON	USS GREENLET (ASR-10)
LTJG R. T. FLEMING	USS FLORIKAN (ASR-9)
LTJG M. COLLINS	USS COUCAL (ASR-8)
LTJG J. A. JONES	USS PETREL (ASR-14)
LTJG R. P. STEFKOVICH	USS PENGUIN (ASR-12)

In addition to the officers listed above, four (4) other officers are taking the PCO course. LTJG W. E. WISE will report to the U. S. S. GREENLET (ASR-10) upon completion, LTJG R. E. LANPHEAR, ENS W. H. CRANDALL, and CWO W. A. MOLNAR are as yet unassigned.

All activities conducting O₂ tolerance runs for candidates for deep sea diving training, are requested to insure that the O₂ is administered at the 60 foot pressure equivalent in accordance with Article 15-30(1)(p), Manual of the Medical Department, USN.

The revised curriculum for Diver Second Class (NAVPERS 91833-A), has been approved and is being distributed to all activities authorized to train Diver Second Class.

Pass the Word

YN R. W. WILTERDINK

Congratulations to the following divers who recently added a newcomer to the family. Orlin A. KOHL, ME1 who is the father of a baby girl, Robert D. JUDAY, MR3 who is the father of a baby girl, and Thomas A. SUGLIA, HM1 who is the father of a baby boy. An addition of a baby boy to the Quannah C. HANES, EN1 family has recently occurred.

EDU welcomes aboard the following personnel:

<u>NAME/RATE</u>	<u>RECEIVED FROM</u>
FISCHER, William C., BM1	NAS, Patuxent River, Md.
HASLIP, George (n), GM1	USS TRINCA (ASR-16)
LARRY, Gilbert, DM2	BUORD
MUNGER, Frank H., RC	USS RECOVERY (ARS-43)
WHEAT, Jack L., MEC	USS BUSHNELL (AS-15)

We hope your tour of duty here at the Unit will be an enjoyable one.

Project News

(Proof pick-hitting for DWYER)

Our project officer is devoting about half of each day (12 hours) to work on the new diving manual. However, project work has been progressing very favorably under the guidance of our able assistant project engineers.

In keeping with our system for disseminating project news, we are including the FOREWORD and ABSTRACT of one of our recent projects. This report has been used with a slightly new concept of acceptable tissue ratios to develop decompression for a few specific dives. In anticipation of a complete set of tables computed by the David Taylor Model Basin Univac, several test dives have been made. We should be able to report progress in the next issue of "Faceplate".

RESEARCH REPORT 4-56

"Calculation of Air Decompression Tables"

Project NS185-005 SUBTASK 5 TEST 3

The Abstract and Foreword are contained on the following page.

ABSTRACT

This report presents the theory of air decompression in didactic form, including definitions, theory of exponential saturation, and theory of tissue ratios. The report provides a procedure for step-by-step calculation of decompression schedules, together with the necessary tables and worksheets. The discussion touches on other methods of calculation, on one use of this method, and on the probable validity of this method. The recommendations are for programming a computer and for using the report as a text.

FOREWORD

This project was originally established by the Bureau of Ships to provide decompression tables for repetitive dives. The original project outline is dated 16 December 1954.

Incidental to the programming of a computer to calculate repetitive diving decompression tables, it has become necessary to provide a step-by-step procedure for such calculations. Such a programming procedure can also serve as a text for instruction of students, if amplified by an exposition of the basic theories.

The procedure given in this report is not new. It is based primarily on a method outlined by Farbrough in 1937, and ultimately on the method developed by Boycott, Damant, and Maldare in 1908.

Work on this report commenced in January of 1955. The manuscript was submitted 29 November 1955. This report is part of the Research Report series.

This is the first report for the project. It is an interim report. Future reports will cover the computer results and test dive results.