PRICE ONE SHILLING

DIVING MAGAZINE

Vol. 1. No. 1. JULY—SEPTEMBER, 1951

H.M.S. VERNON
Portsmouth

26th July, 1951

It gives me great pleasure to introduce the first issue of the "Diving Magazine." There is no doubt that underwater operations generally will take a place of the greatest importance in the future. First and foremost the defence of our country is likely to call for the services of skilled divers in great numbers, not only for such matters as salvage and harbour clearance, but also for the protection of our Merchant Ships and Warships at their anchorages. For this work, the diver will be called upon to undertake hazardous operations of many kinds, for which the training and experience of his normal peace time diving will be invaluable.

In this age we seek immunity from the Atomic Weapons of the present and of the future. It may well be that this can best be obtained underwater. We may see underwater troops as the spearhead of a future invasion, reaching their landing place undetected and unmolested.

Underwater activity is also of ever increasing importance during normal times of peace. Already oceanographic surveys of the sea bed are being undertaken with a view to locating the mineral wealth which lies beneath it—such as coal, oil and valuable metals. Here again there is vast scope for the skilled and determined diver.

It is therefore most appropriate that the "Diving Magazine" comes into being at this time when it should prove of great assistance in keeping divers, both inside and outside the Royal Navy, in touch with the advances in techniques and materials in a branch which becomes daily of more importance.

The work of the diver attracts men of individuality, spirit and determination, and I wish this magazine and all who read it the good fortune which their calling deserves.

Diving Magazine

EDITORIAL STAFF

Editor	P.O. ALLEN
Secretary	P.O. COLGRAVE
Treasurer	P.O. SMEE
Sports Editor	A.B. WAGSTAFF
Technical Adviser	Mr. E. W. GORDON
Employment Bureau	Mr. W. DODD

Vol. 1. No. 1. JULY – SEPTEMBER, 1951

Notice

The Editorial Staff is subject to changes, possibly with each issue. This is due to the fact that, being volunteers does not bring them under a stop-draft heading and in addition duties in VERNON come before editing this magazine. So, if you see or notice a change, you will know that another member of the staff has had a draft-chit.

SECRETARY

EDITORIAL

Dear Readers,

The delay in publication of this, our first issue, has been caused by the need to obtain official permission to go ahead; however, with all obstacles now behind us, we can forge ahead, with, we hope, a successful magazine.

We regret that it has been found impossible to publish monthly, instead, this magazine will be brought out quarterly.

The success of this magazine depends upon your co-operation, for it is from you that we hope to receive the material for future editions. Send in your sketches, cartoons, verses, articles on any aspect of diving.

Correspondence should be addressed to:—
Diving Section,
H.M.S. VERNON,
Portsmouth.

It is with cordial invitation that we invite all divers of other depots to join in the membership of the "Divers' Magazine," also those divers in independent units. All applications should be made to the above address, stating name, rating and your present address. A copy of the magazine will be forwarded on receipt of the above publication and every current quarter at the published price.

Support us, send material, substantiate success.

BY THE TECHNICAL ADVISER

It is not our intention to make this magazine a text-book but most divers like to be abreast of their subject, and with long periods spent away from the Diving Schools this is not always easy, so this section is going to devote its energies in keeping our readers up-to-date on new developments and new lines of thought. There is nothing more disconcerting than returning to civilization after two years or so abroad to find that our previous ideas are no longer accepted and that there is a heap of new material we have not even heard of.

Our aim therefore will be to keep our readers informed as things develop, not in text book form, but briefly and as clearly as possible.

Suggestions, articles, criticisms, are welcome and we hope to be able to answer any queries you send us.

The subject chosen for our first issue is "Mixture Breathing."

This problem has caused many a headache for a number of years, in fact, ever since it was discovered that mixtures were necessary if we were to dive below 33 feet in Self Contained Breathing Apparatus.

Several pamphlets have been written on the subject but these have not been technically correct, neither have they been easy to follow. Recently, however, H.M.S. LOCHINVAR and The Royal Naval Physiological Laboratory at Alverstoke, Gosport, have combined to produce a pamphlet which has clarified the situation.

The following article is a digest of the pamphlet embodying the essential details.

MIXTURE BREATHING, ETC.

Oxygen is the gas which supports life and is therefore our primary consideration when putting a diver under water in self-contained dress.

Here are a few facts about Oxygen:—

(1) There is approximately 21% of oxygen in the air.
(2) There must be at least 14% of oxygen in any mixture, at atmospheric pressure to maintain life.
(3) Pure oxygen can be breathed up to two (2) atmospheres absolute; i.e. 66ft. absolute or 30lbs. per sq. inch, of pressure, absolute.
(4) The percentage of oxygen must be reduced in direct proportion to pressure or depth absolute, if a depth of 66ft. is to be exceeded.
(5) A man at rest consumes about .25 of a litre of oxygen per minute.
(6) A man can consume, for a short period, as much as two litres of oxygen per minute.
(7) A man doing maximum work over a period will consume 1.3 litres of oxygen per minute.

Firstly; let us consider (4).

A diver in 66ft. absolute can breathe 100% oxygen, but if he descends any deeper his percentage of oxygen must be reduced in direct proportion; so, if the diver carries on down, to say, 200ft. absolute, the percentage of oxygen must be reduced to:—

$$\frac{66 \times 100\% \text{ Oxygen}}{200} = 33\%$$

Similarly we can find the depth to which a diver may descend if we know the percentage of oxygen a diver is breathing, by saying;

Breathing 100% Oxygen a diver can descend to 66ft. absolute.

Or breathing (say) 20% Oxygen a diver can descend to $\frac{66 \times 100}{20} = 330$ft. abs.

So providing it is known what percentage of oxygen a diver is actually breathing we can determine how deep he can descend.

Now, let us consider, (1):—

Suppose a diver is breathing from a bag which is filled initially with 60% oxygen and 40% nitrogen. He breathes in, the mixture passes into his body and is eventually returned to the bag. During the cycle some of the oxygen has been absorbed by his body, the nitrogen remains the same and a certain amount of carbon dioxide has been produced. The carbon-dioxide is absorbed by the soda-lime in the canister and the mixture of gases which return to the bag are now minus some of the oxygen. So, in the bag the percentage of oxygen has been decreased and the percentage of nitrogen increased. If the diver continues breathing in and out

from the bag the percentage of oxygen will eventually fall below 14% and the diver will pass out with anoxia. A supply of mixture is therefore necessary to replace the oxygen that the diver is using and, to ensure that he is never breathing a mixture which contains a smaller percentage of oxygen than that contained in air, the supply must be sufficient to maintain the oxygen at about 20%.

It has been stated (6) that over a short period a man can consume two litres of oxygen per minute, so this must be allowed for when calculating the flow to give, and,

$$\frac{\text{The percentage of Oxygen breathed}}{100} = \frac{O_2 \text{ supplied in ltr per min.} - O_2 \text{ used in litres per minute}}{\text{Total flow in ltr per min.} - O_2 \text{ used in litres per minute}}$$

It has been already stated that the oxygen breathed must not fall below 20%, so from the formula it is easy to determine the flow for any given mixture, say 60% oxygen and 40% nitrogen.

Percentage of oxygen must not be less than 20%

Total flow is required, so we can call that x.

Oxygen supplied will be $\frac{60}{100}$ of x

Oxygen used will be the maximum, or, 2 litres per minute.

So, to find the flow:— $\frac{20}{100} = \frac{\frac{60}{100}x-2}{x-2}$ cross multiplying we get:—

$$20x-40 = 60x-200$$
$$20x-60x = 40-200$$
$$-40x = -160$$
$$x = 4$$

So the safe flow for a 60% O_2, 40% N_2, mixtures is four litres per minute.

Knowing the safe flow, the percentage of oxygen being breathed by the diver can be determined and the safe depth to which the diver can descend can be calculated.

It is known that the diver is consuming some oxygen so there must necessarily be less oxygen in the bag from which he is breathing than there is in the mixture being supplied, and the harder the diver works the greater will be the drop. **But,** in this case we must allow for the man who does not work at all otherwise we run the risk of giving him oxygen poisoning.

It is safe to say however that no matter how little work is done he must consume .25 litres of oxygen per minute. So:—

Flow is known to be four litres per minute.

Oxygen supplies is $\frac{60}{100}$ of four litres per minute.

Oxygen used is .25 litres per minute.

Therefore $\frac{\text{oxygen breathed}}{100} = \frac{2.4-.25}{4-.25} = \frac{2.15}{3.75} = 57\%$ oxygen.

It is therefore safe, when calculating the safe depth to which a diver can be sent, to say that he is breathing 57% oxygen.

And, as 100% is safe at 66ft. absolute,

57% oxygen is safe at $\frac{66 \times 100}{57}$ ft. absolute = 115ft. absolute or 82ft. salt-water.

One other problem arises, the question of decompression.

Decompression times are calculated and set out in the Diving Manual in table form to allow for a diver breathing air. It is the nitrogen which makes the stops necessary and if a diver breathes a smaller amount (percentage) than that in the air (i.e. 79%), he will not need as much decompression.

For example:—If a diver descends to 100ft. absolute for one hour breathing air he will need stops for that depth and time as laid down in the Manual, but, if the diver is only breathing 40% nitrogen it is only equivalent to a diver working at:—

$\frac{100 \times 40}{79}$ ft. absolute for that period, or for (50ft. absolute (for 1 hour))

It is now necessary therefore to determine the maximum percentage of nitrogen the diver is likely to be breathing during the period of his dive and as over a long period a diver can breathe a maximum of 1.3 litres per minute, we can by using this figure, calculate the oxygen content in the bag, and from this the nitrogen.

Still using 60% oxygen and 40% nitrogen:—

Flow is 4 litres per minute.

Oxygen supplied is $\frac{60}{100}$ of $4 = 2.4$

Oxygen used is 1.3 litres per minute.

Oxygen breathed is therefore: $\frac{2.4 - 1.3}{4 - 1.3} = \frac{1.1}{2.7} = 41\%$

Nitrogen breathed is therefore: $100 - 41 = 59\%$

Equivalent air depth stops required are:

$$\left(\frac{(\text{depth of dive absolute} \times 59)}{79}\right) - 33$$

CALLING ALL WATERY WELDERS!!

I have been asked by the Editor to compile a note or article for the magazine, that may be of interest to underwater welders.

Since the re-commencement of training of under-water welders in 1949 we have had some 21 candidates through the school who successfully qualified, of these we have also had two of them return to the School for a 14-day refresher course.

The Inspector of Diving (Lt. Cdr. Drummond, R.N.), Mr. Gordon (Cd. Bsn. Q.D.D., R.N.) and the Training Staff, would be very grateful for any information regarding any underwater work carried out using the underwater welding technique with details of the job and any points of interest.

P.O. Foggin, whom most of the 1st's will remember as their Instructor, is now serving in H.M.S. Liverpool, somewhere in the Mediterranean.

Shpt. Harfield—I am sure you will all join me in extending the heartiest congratulations on the occasion of his promotion to the rank of Commissioned Shipwright Officer. Thank you, lads!!!

LIST OF UNDERWATER WELDERS

The following list is comprised of the *known* underwater welders, any more and I shall be very glad to hear from same.

A. Sykes, C.P.O.
E. Foggin, P.O.
A. Williams, P.O.
E. Hallin, L/S
A. Robertson, Shpt.
P. Thomas, Shpt.
E. Ferrari, Shpt.
G. Stevens, Shpt.
P. Hardiman, Shpt.
W. Stanton, Shpt.
L. Harfield, Shpt. (Cd.)
K. Jeffery, Shpt.
L. Radice, Shpt.
K. Lane, Shpt.
R. Brown, Shpt.
D. Moore, Shpt.
F. Smith, Shpt.
D. Miller, Shpt.
P. Hobbs, Shpt.
G. Young, Shpt.
D. Boyle, Shpt.
P. Southcott, Shpt.
P. White, Shpt.
J. Turner, Sapper (R.E., T.A.).
M. Harkett, Corporal (ex-R.E. Parachute Regt.)

This list is open for more names

Concluding my very brief letter and hoping to hear from you in the near future, even it's only to pass the time of the day, but don't forget any interesting items for the magazine will be welcomed with open arms.

Yours fraternally,

A. SYKES, C.P.O.

Feed in that Rod

DIVERS' SPORTS SHEET No. 1

Stop: Search where you are: just for a few minutes, and listen to the first attempt at making the sports section of our magazine a real go. I hope within the next week or so to contact *all* Schools, with a view to finding out who will be interested enough to send me all the available sporting news from their section.

This magazine will be going out to all divers, whether at Home or Abroad, and they are sure to want to know how we are faring and to keep in contact with the Sports Department of the old schools; so, let us have a little co-operation and we shall be able to suit all palates.

Football

The football season has faded out, and what had every prospect of being a successful season for the divers of H.M.S. Vernon (in the Knock-out Competition) ended rather gloomily, owing to the drafting requirements the main stalwarts were unable to finish the season, and although we were far from disgraced the effort was not quite enough. *Better Luck Next Season.*

Cricket

The cricket season is getting under way, and we hope to have quite a few fixtures. Our first is against H.M.S. Pluto, but the date of the match has not yet been decided, so all the 'stars' will be sorted out and in our next issue I hope to be able to give you a Boundary Line account of all the 100's that were made by the divers' team.

Motor-Cycling

We have many keen fans, and through the season we hope to arrange organised trips to Southampton Speedway, Goodwood, and other places of interest, and to eventually form our own Supporters' Club (any comments?). Not on the machines that one sees the divers attempting to ride.

Sailing

We have not had our fingers in this sport yet, but surely we can find someone interested, plenty of Service sailing races are held from time to time, so how about showing the remainder of the R.N. that we can skim along the surface just as well as we can crab along the bottom.

I really think this is worth a try, providing we can get enough to form a crew.

That's all for our opening number, but as we get our teething troubles over it is hoped to fill our Sports column with all Sports that will interest divers, and anyone else who may find our magazine worth reading.

D.W., Sports Ed.

THE EMPLOYMENT BUREAU

"*Has* you may know" or, "*Has* you may not," the Employment Bureau has been running in Vernon now for the past 18 months and has proved quite successful. The outline of its activities is:— That it contacts firms who employ divers, with a view to finding jobs for divers who return to civilian life.

To put the bureau on the map a letter was sent to a number of firms telling them of our intentions and quite a satisfactory flow of replies was received from firms promising their help. This pleased us very much and straight away we were able to send divers for interviews and I am glad to say they were accepted. The jobs were quite good and one firm started to employ divers for the first time—they had previously hired them.

Things went well until the time came when ratings were retained for a further 18 months in the R.N. and we were unable to supply the firms' needs.

However, the waiting list for interviews is still on record and when a diver becomes available we can press on.

The record to date shows that each diver who has been interviewed has been accepted. That, we consider, is a good effort.

The Bureau does NOT assure you of employment, it merely puts you in contact, the rest is up to you.

If you wish to have your name on record complete the following form and post it to *H.M.S. Vernon, Diving Section.*

Name ..... Rating ..... Age .....

Time as Diver ..... Are you willing to serve abroad? .....

Time expires .....

Private Address .....

.....

This record will be filed and when your turn comes, "Who knows?".

The success of this effort is in your hands.

Any queries, let us know.

Cheerio ! W.F.D.

H.M.S. RECLAIM

By ROBBIE

For the past two months we have seen quite a bit of activity. Having quietly settled down to the Easter leave period we were rudely awakened by Subsmash. The recalled lads arriving back by all sorts of craft. We saw the strange sight of a few shore bound natives on the trip with us too. After the first lap was over the routine was governed by the tides, all likely contacts were investigated, using surface decompression to give maximum time on each contact, this was somewhat limited.

One thrill was provided by Nobby Hall when he fouled a derrick on a merchant ship—no doubt you have read the narrative in the Press—he is now known as " All in a days work Hall " The Press have already published all the details to date of finding the "Affray". We are now a " Daily Mirror " ship proper. What price fame? Now the buzz is we will be using helium for the next dive on " Affray " commencing Monday, 25th June. All those lovely bottles to hump around.

The faces are pretty much the same in the old grot. We have had Sopey and Taff Lewis lent to us from Guzz, Jack Cullen has also joined the happy throng, likewise Harry Sims from Chatham in lieu of " Bullet Maker " Scott, although we believe he is to stay until the end of this " Do ". That is about it for the time being — act green keep clean.

R.F.R. NOTES

With the recall of R.F.R.'s many familiar faces are once again going to be seen behind a front glass. It is interesting to note the many expressions of wonder, dare I say amazement, at the many changes in the Diving School from the one where we qualified.

With the occupations of the recalls being wide and varied I suppose that it is only natural that many drips are forthcoming as to the nature of our recall. But one thing remains predominant and that is that the Diving Section of the R.N. is still in all opinions the happiest.

To date P.Os Butler, McSweeney and Scott, Ldg. Seamen J. Meek and young brother A. Meek, Ldg. Seaman Hallin and A.B. Houseley have all reported to H.M.S. Vernon for further duties and since arriving back all have participated in diving operations to get that familiar feel back and to become acquainted with the new types of equipment which have been introduced.

A two-week shallow water course was organised for us with our esteemed D1. P.O. Wardle I/C. but unfortunately on that fateful Tuesday when we were to start our Class, " Subsmash Affray " became number one priority, so our course was temporarily postponed. It was resumed some five weeks later with P.O. Rackett I/C. owing to the fact that P.O. Wardle was recovering in Haslar from " rich living " from a certain Newhaven job in which I am glad to report one of our R.F.R. P.Os played a major part. This was a salvage operation for which our aforesaid P.O. Wardle received a C-in-C's commendation.

With the course finished we resumed our normal occupation of " Part of Ship " giving the Buffer a little more time to organise hands for the hundreds of jobs that crop up. I think everyone agrees in the " Deepwater " that the R.F.Rs, as we are commonly known, do carry a certain amount of weight on their shoulders. As you can imagine a faint but derisive laugh arises as I write this statement of fact. As this goes to press I wonder whose requests for re-signing on in the R.N. are those being typed out by a certain P.O.

BUTS

THE CASE OF THE STOLEN SAFE

Both in war and peace, the diver is called upon to perform all sorts of unique operations, some hazardous, some monotonous, but all having the novelty of originality, as each and every diving project is essentially different. One of the many worth relating took place in the early days of the war.

One evening, having just returned from emergency underwater operations in the Channel, we were enjoying a meal with a zest engendered by hard work above and under water, when the telphone rang. The caller proved to be the Officer Commanding a famous corps who were billeted near the charming little market town of Alresford in Hampshire. An amazing tale was unfolded. A safe containing money and highly secret documents had been stolen from Battalion Headquarters and apparently vanished into thin air. Despite the most rigorous of investigations, no evidence came to light and in consequence Battalion leave was stopped and the inevitable gloom of suspicion enveloped the entire area. However, adjacent to Area Headquarters there was known to be a disused well, exceeding 200 feet in depth, and it was conjectured that the thieves might have jettisoned the stolen safe in the well, after extracting the contents. As soon as the word " well " was mentioned, the link up with our Military friends became obvious and I hastened to assure the Colonel that we would be only too happy to dive in his well.

With the barest of information, we set to and collected the diving gear and equipment considered necessary and in high spirits we set off the next morning by lorry for Alresford. Having telephoned that we were under way, on nearing Alresford, Military despatch riders greeted us and we swept through the little market town with our outriders acting as pilots to Headquarters and the well site. Our arrival was greeted with enthusiasm, so it was evident that high hopes of solving this mystery rested upon our shoulders, and with willing military aid the diving equipment and stores were soon unloaded and I went to inspect the scene of operations. Survey revealed the well, dank and noisome, over 228 feet deep with about 30 feet of water and, surprisingly enough, on testing, the air appeared pure down to water level. The out building housing the well shaft was in a state of great dilapidation, so no reliance could be placed on the structure for sustaining any weights. This involved the necessity for emergency sheers so, calling for axes, we sallied forth into the local woods. One of the divers, one Fowler, a goliath of a man, set to with the axe and we speedily had trees felled and trimmed, with an interesting audience of soldiery looking on. Returning to the site, we erected sheers and fitted the blocks and strops for our work. I decided to lower the diver in an improvised chair, which plan subsequently proved successful.

All working with a will, we connected up air pipe and telephone breastrope, tested through and rigged up the chair and lowering lines through blocks at the head of the sheers. All were keen for this unique dive, so lots were drawn and Diver Bradley dressed for the initial attempt. A company of military had been placed at my disposal and their services were vital to our work, as events proved. With high optimism, the pump was hove round, front glass clanged into place and Bradley, in telephone touch, was swinging in his chair on the sheers. His weight, with diving equipment and chair was over 400lbs. at the surface, and a groan came from the men on the lowering lines as the diver vanished from view. Paying out air pipe, breastrope, lowering line and lifeline for the job if found, proved extremely intricate and unfortunately, the diver capsized in mid-air at 175 feet. Quite imperturbably, Bradley informed me that he was upside down and jammed in the well—" Not too uncomfortable," his remark. With all speed, but albeit with extreme care, we righted the diver and foot by foot hauled him back to the surface, the chair being unsuitable. The willing helpers on the lines were gasping when at last the diver appeared, having had an air dive to 175 feet and never near the water. Bradley was fortunately none the worse for his experience.

During the break for dinner, we decided to modify the chair to allow for the ever diminishing diameter of the well. With hopes still high, we returned to the well after dinner and tested our new chair, which seemed an improvement. Diver Wisedale was dressed and with looks of awe coupled with good wishes, vanished from

sight at 2.20 p.m. The descent seemed endless, but, with a whoop of delight and a gasp of surprise, the diver entered the water at 198 feet. Cries of alarm came from the lowering party as the weight came off their lines, but my laugh reassured them and speedily the diver vanished into black water, arriving at the bottom of the well, very cramped, in 30 feet of water by gauge. In icy cold and dense blackness, alleviated but little by the submarine torch, Wisedale searched and with a cry of exultation, reported that a metal object had been found, in fact, he was half lying upon it. Further search with the torch and the report came through that it was the safe, broken open.

Excitement on the surface was tense on receipt of the news and the diver's report circulated like a flash through to the camp Headquarters, where the Colonel and C.I.D. Officers in charge of investigations awaited results. Calling for quiet in order that my instructions might be heard by the diver, I transmitted details for securing the prize for the long haul to the surface. Silence reigned as Wisedale obeyed, only relieved by the regular rhythm of the pump. After some minutes, the report came through " Safe Secured."

Formulating in my mind were all the alternatives for the safety of the diver and retention of the safe until it could be turned over to the Police. If I called the diver up first and his efforts to secure the safe in the inky waters were to result in the knots slipping, he would have to descend once again. If I hauled up the safe and the lashings slipped, chafed or parted, I should inevitably kill the diver. The most practicable method, which I adopted, was to bring all to the surface together, so, calling for more hands to assist on the ropes, the long haul commenced, with telephone instructions to the diver to retain the safe at knee level throughout the hoist. The report " leaving the bottom " was welcomed and the soldiery, heaving away, had a cruel shock when the call " leaving the water " came through, the strain of the total weight of diver, gear, lines and safe became apparent—over 600lbs. However, all worked with enthusiasm and at 3.20 p.m. the diver and safe appeared at earth level, with eager attendants ready to assist in making fast the safe and undressing the diver. Police Officers were in attendance who assumed charge of the safe and contents, in liaison with Military Officers, our divers and party then being warmly congratulated on solving the mystery and contributing to the re-establishment of leave in the area. It was verified that only public money had been pilfered and no secret documents missing.

Thus concluded a novel war-time diving episode involving happy co-operation with the Police and His Majesty's Army.

PORTSMOUTH FESTIVAL OF BRITAIN WEEK

In the recent Portsmouth Carnival a decorated float entered by H.M.S. Vernon proved to be the outstanding attraction and was awarded the first prize of £10. The float was in two parts. The first was a tableau depicting various types of divers on a sea bed which could only be described as a diver's nightmare. The horror of the scene was relieved by the presence of two beautiful mermaids. The second part of the float displayed various models of mines, torpedoes and other dangerous items peculiar to the T.A.S. world.

The diving team consisted of C.P.O. Styles—standard dress.

A.B. Nixon and A.B. Meakin—Frogmen.

Wren Robinson and Wren Edwards—Mermaids.

We don't know to whom to attribute the sudden rush of volunteers to qualify diver, but we certainly don't think it was the standard diver or frogmen. Chiefy Styles reported that six hours diving at zero feet proved a little tiring in spite of the Pattern X

weights (Balsa wood) back and front, which he was wearing. He appeared in the office next day looking very round shouldered. Some wise guy said the corselet had settled down over his shoulders so that when they removed the helmet they also removed Chiefy Styles from the suit like a cork .... Talking of corks—who was the

Diving Officer who found difficulty in inserting himself in the most recent version of the Iron Man? When he entered the suit he was seen wearing a pair of sturdy looking leather wristbands and there was a certain amount of controversial argument amongst the uninitiated members snooping around as to their purpose.

Exercise completed and the lid of the Iron Man removed they were no longer left in doubt. A 1¼in. wire strop was passed round the wristbands a purchase hooked on and with cries of "Heave Ho My Hearties" the aforesaid Diving Officer was finally extricated from the steel two way stretch . . .

E.G.

CHADDY'S LAMENT

Down in X.P. where they test the Iron Man.
Old Chads proceeded with a carefully laid plan.
All things went well till Chads wanted out
Then all that was seen was his pipe sticking out.

Get me out of this thing he almost pleaded,
But not a soul let on that his voice was heeded.
Till with a roar that made everyone jump,
He ordered a whip, a strop, and a pump.

With tackle and strop they pulled with a plop
Old Chads from out of his armour.
He looked round with a sigh and was heard to reply,
All this for S9's and glamour.
So think carefully all you Divers,
With stomachs like a fruit,
It's so awfully inconvenient,
To wear an iron suit.

BUTS

" CLEARWATER "

By THE SKIPPER

This small tender has come into her own during the past twelve months or so and has been putting in quite a lot of sea-time. Her visits to the other schools have enabled them to get closer together both in play and at work.

She has now made two trips to both Plymouth and Chatham, having returned from Chatham in mid-June..

One of the objects of her visits is to enable the classes from other schools to see and use equipment that at the moment is only available in Pompey. We, living on the doorstep of S. of D., are able to use equipment before it has become available for circulation, so we like to " hand it out " when possible.

So when you see or hear of some new idea etc., you can rest assured that some where round the corner is " Clearwater " waiting to show it to you.

I WAS THERE

WHO :—

1.—Dived to collect a broom?

2.—Said, " It's too much trouble to use a front weight?"

3.—When on course in Reclaim, tapped the clock to check the divers depth?

4.—Was the S.D.C. Attendant who thought that his correct seat in a flooded pot was on the diver's shoulders?

5.—Was the expert who caught a certain shell-fish out of season at Newhaven?

6.—Uses wastepaper baskets as house-shoes in the office?

7.—Has so much pride in his depot that he uses 24 guinea suits for swimming when visiting 'Guz'?

8.—Created the historic phrase :—
" Work-hard," " Play-hard," " Sleep-hard "?

9.—Was the rating who wanted to know the regulations concerning haphazard diving?

EMERGENCY TREATMENT

The re-compression chamber in H.M.S. Vernon was in great demand a few months ago for emergency treatment of civilian divers. Messrs. Chadwick and Gordon received a commendation from the Commander-in-Chief for their work in the first incident and the Portsmouth Temporary Memorandum giving a report of their exploits is re-printed below. The civilian diver was Frank Higgins who is now well on the way to complete recovery.

Not long afterwards another ex-Naval diver, Lofty Yates was successfully treated for a bend in his knee and then on the 8th May, Mr. A. F. Hill, from Gloucester, was rushed to Portsmouth after experiencing severe pains while diving in the River Severn — in about 12 feet of water. He was originally taken to a hospital in Gloucester but as treatment in a re-compression chamber was considered necessary it was arranged for him to be sent to H.M.S. Vernon where Naval diving experts including a doctor specialising in underwater medicine, tended him.

The re-compression proved successful and Mr. Hill was then discharged to St. Mary's Hospital, Portsmouth. It is believed that the cause of the illness was the rupture of some of the air sacs in the lungs which allowed bubbles of air to enter the blood stream, thereby blocking the circulation.

Commander-in-Chief's Commendation

On Saturday, 17th March, 1951, *Senior Commissioned Boatswain (Q.D.D.) C. W. Chadwick, R.N.*, of H.M.S. Vernon, received a report that a civilian diver at Margate had contracted severe compressed air illness involving an ache across the lower chest and complete paralysis of the legs and abdomen. As no recompression chamber was carried in the ship involved and knowing that there would probably be a delay in the provision of the necessary facilities held by the civil authorities, Senior Commissioned Boatswain Chadwick immediately arranged for H.M.S. Vernon's recompression chamber to be at readiness and for the patient to be brought by ambulance to H.M.S. Vernon.

2.—*Commissioned Boatswain (Q.D.D.) E. W. J. Gordon, R.N.*, was then locked into the chamber with the patient and remained there tending to him under pressure in a most cramped and uncomfortable position for a period of over fourteen hours. As a result of these exertions Commissioned Boatswain Gordon himself eventually suffered compressed air illness and had to remain a further twelve hours under pressure, a total time of twenty-six hours. Senior Commissioned Boatswain Chadwick remained in charge of the treatment for the whole twenty-six hours.

3.—The civilian diver is now recovering in hospital and he would undoubtedly have died were it not for the efficient way in which his decompression was carried out. I commend Senior Commissioned Boatswain Chadwick and Commissioned Boatswain Gordon for their devotion to duty.

4.—The conduct of all the officers and ratings concerned in this incident was exemplary and, of them, the names of the following ratings who assisted are particularly deserving of mention :—

W. R. Marsh, P/J.113464, Petty Officer (Diver 1)

C. V. Starley, P/JX.130813, Petty Officer (Diver 1)

A. J. William, P/JX.140902, Petty Officer (Diver 1)

26th April, 1951. A. J. POWER, Admiral

A.E.D.U.

By COMMANDER GOODENOUGH, R.N.

You may sometimes have wondered how a new diving dress or an improved breathing apparatus is introduced into the Service. It is the purpose of this article to tell you how this is done and who is responsible for doing it.

The Torpedo, Anti-Submarine and Minewarfare Division of the Naval Staff of the Admiralty receive information from various sources that a new piece of apparatus is required in order to carry out some specific job. Suppose that in this instance it is a shallow water breathing apparatus. The Division go into the matter very carefully, decide the performance that will be required from the apparatus, investigate whether some existing apparatus can be modified, find out the total number that will be required and whether production can be carried out without interference to production of existing apparatus. When they are finally convinced that the apparatus is necessary they issue a Staff Requirement which lays down the required performance.

The matter is now taken up by the Underwater Warfare Department, whose business it is to produce the "hardware" for all underwater warfare. As it is a diving matter the requirement is turned over to the Superintendent of Diving, who has his headquarters in the Admiralty Experimental Diving Unit, situated in H.M.S. Vernon at Portsmouth.

The requirement is looked into at first purely from the theoretical aspect. Calculations are made as to the amount of gas that will be required for the diver to breathe, whether a reducer will be required and of what sort, the size of the canister, the type of harness and the total weight of the apparatus. If it is then found that the Staff Requirement cannot be met the best answer is worked out and this is returned to the Naval Staff in the Admiralty for their approval. Should they approve of this modified apparatus they will then issue a Staff Acceptance.

As soon as agreement has been reached between the Staff and the production department, the Superintendent of Diving can go ahead and produce a prototype of the apparatus. It may be that some new principle is involved and that the Superintendent of Diving requires advice on the physiological aspect. In this case he consults the Royal Naval Physiological Laboratory at Alverstoke. This laboratory is responsible for all the human and animal experiments which are necessary in order to investigate any naval problem concerned with physiology.

When the theoretical work has been completed a prototype apparatus is built up in the Superintendent of Diving's workshop and is put through stringent laboratory tests. It is probable that

modifications to the theoretical design will be necessary and these are carried out and tested. When it is believed that a good apparatus has been produced diving trials are put in train to see that theory is confirmed by actual underwater practice. Once again modifications will almost certainly be necessary.

When the prototype is working correctly a "development contract" is entered into with a manufacturer. The manufacturer is told to produce a small number of sets for further test. He has to think ahead to the time when he will be told to produce hundreds or thousands of sets and it is therefore necessary that every component part in the apparatus shall be capable of mass production in the quickest and cheapest manner.

Finally a "trial order" of say 100 sets is ordered and these are sent to sea for a six months trial. This trial is for the purpose of ensuring that besides the apparatus working correctly and being comfortable to use, it will stand up to sea conditions and will be simple to maintain. At the successful conclusion of the sea trials a specification is drawn up saying exactly how each component part is made and what it is made of. In addition the performance to be obtained from the apparatus is rigidly laid down.

This specification is then sent round to the various firms that specialise in the production of this form of apparatus and they are asked to tender for a contract. When the tenders are received in the Admiralty they are examined by the Department of Contracts and the most suitable firm selected. Production is then put in hand and the new apparatus is sent to sea.

The procedure may seem inordinately long and cumbersome but it does ensure that real requirements are met and that the gear which is produced to meet them will be satisfactory in service.

RESCUE ATTEMPT COMMENDED

Lieutenant J. Brooks, D.S.C., R.N., serving in H.M.S. Solebay, has been officially commended by the Commander-in-Chief, Home Fleet, Admiral Sir Philip L. Vian, K.C.B., K.B.E., D.S.O., R.N., for his courage and determination in attempting to save the lives of six officers travelling in a car that was driven accidentally over the quayside at Setubal, Portugal, on the 20th October, 1950, and sank in more than four fathoms of water.

"On hearing the alarm," the official citation reads, Lieutenant Brooks "collected a pair of 'frogman's' flippers and without a visor dived into the water in an endeavour to locate the car."

When he reached the bottom of the harbour in his initial dive, he was unable to see the car owing to the darkness. In a subsequent dive he carried a torch, but was unable to locate the vehicle.

The pressure, due to the depth of water, caused a bleeding from the nose and ears, an injury from which Lieutenant Brooks, who put on breathing apparatus and continued the search after the arrival of diving gear, took several days to recover.

A DIVERS' DIVERSION

By CHADS (True Story)

Some years ago, whilst serving in the Mediterranean, the Squadron's divers assembled on board the Flagship for work on the ship's propellers, using the launch and pinnace on either side of the ship.

We were a happy crowd and a reunion in Service hours was a rare event, so work with a diversion was planned. Working on the starboard side, I descended the bottom line, complete with tool bag, and after half-an-hour completed work on the rope guard of the screw. Transgression of the law regarding "crossing the keel" being a fetish of the Officer in Charge, we divers thought a surprise would enliven proceedings.

Slipping off the shaft, with hand on spindle, down the bottom line I went, passing the order, "Pay out my gear" to the surface. A slip might have been fatal. Crossing over to the port shaft and thence to the surface and up the ladder of the port boat, took but a minute or two. Willing accomplices in the port boat whipped off my front glass and weights and I clumped inboard and sat down, to have helmet removed. A cigarette—strange for me—but enjoyable just the same.

The glass was replaced on the helmet and the signal passed, four pulls, "I want to come up," followed by two bells, "Pull me up." The signals being answered, my fellow divers threw the helmet over the side, which vanished below with a trail of bubbles. Within a minute a thin scream of anguish and horror was heard from the starboard boat as the Gunner saw a bodyless diver hauled in. The attendants simulating their anxiety with admirable restraint, rushed the boat to the Quarter-boom, where the officer in charge literally flew inboard gibbering to the officer of the Watch. Whistles blew, bells jangled and the guardrails were groaning under the weight of sightseers.

I decided that things had gone far enough, so we hauled the boat to the port gangway where I clumped inboard to report, "The missing diver come inboard, sir." After being suitably admonished for the prank and apologising to the Gunner, all was forgotten, except among those of us who perpetrated—*A Divers Diversion.*

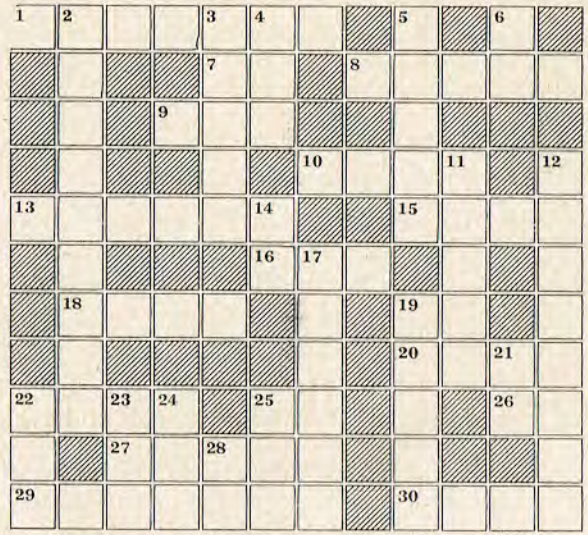
GRAND COMPETITION

We hope that the Diving Magazine will eventually become a registered periodical and it is therefore desirable to have a suitable front cover. Your suggestions and designs are invited.

A prize of £1 will be awarded to the sender of the design accepted for use on future issues. Send your entries to:—

The Editor (Competition Section), The Diving Magazine, Diving Section, H.M.S. Vernon, Portsmouth, England.

CROSSWORD



Clues Across

1. The reverse of depths
7. He repairs divers' telephones.
8. Controls pressure.
9. At —— with the deep.
10. Rope used by divers.
13. Respiration.
15. Dives from this.
16. Type of wood for oars.
18. Often clipped.
19. Pronunciation of 20.
20. Instructors are often this.
22. A long way down.
25. B——ds are painful.
26. Thanking you.
27. The biggest artery.
29. Part of.
30. Fitting for a diver's boot.

Clues Down

2. Life of a self-contained set.
3. A diver's —— must be good.
4. Jolly Jack ——.
5. Name a ladder.
6. Latest diving apparatus.
11. Oxygen may be this at certain depths.
12. Diving dress invented by Siebes.
14. Found in Schaffers.
17. A —— is always answered.
18. Gauges and valves mounted on this.
21. Instructional technique.
22. A monthly ——.
23. The Head separates him from his neighbour.
24. Can be used for 22 Down.
25. Expected time of arrival.
28. Found by using a grid.