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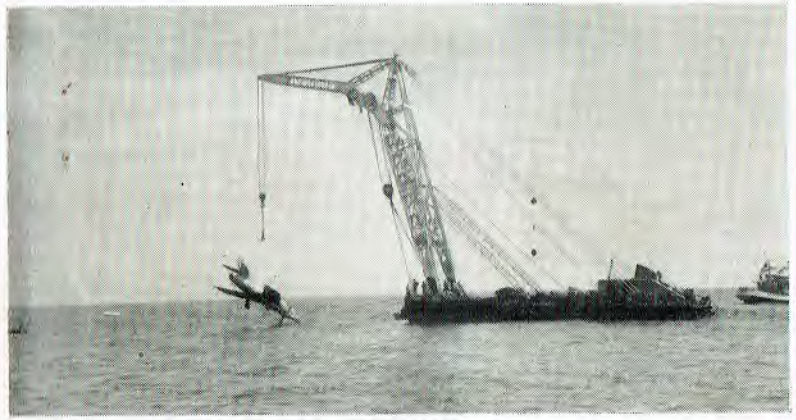
ROYAL NAVAL

DIVING MAGAZINE



The Anglo-French Sink-Rate Trials
See page 43

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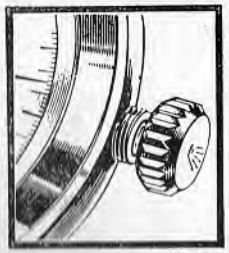

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Postal Address:

The Editor, *R.N. Diving Magazine*,
H.M.S. 'Vernon', Portsmouth, Hants,
England

R.N. Diving Magazine

Vol. 10 Summer 1963 No. 2

Editorial

IN the last issue the Editor, P.O. Dickie Radford, thanked his predecessor for his first class turnover, but obviously the powers that be think that Editors shouldn't get too comfortable in their chairs. For I now have to thank him for his excellent turnover, he having sustained a draft chit to the Naval equivilant of the Siberian salt mines as Cox'n of H.M.S. *Flockton* in the Persian Gulf!

For the last few weeks I've had nightmare's, visualising the Mag. being published with blank pages interspersed with adverts, but just before printing time things picked up and material came in. Many thanks to those who have contributed to this edition.

Of course you'd think I'd be able to rest on my laurels for a while, but already I'm wondering where on earth articles will be coming from for the Christmas edition!

The Magazine is always open to new ideas or suggestions, for instance it has been suggested that we have a 'Personality Page' where 'characters' of the branch would have their history laid out much the same as 'This is Your Life' accompanied with a photograph of the person. It would seem a good way of putting things on record as would team photographs: when you write about the team send a 'photo of them, then you'll be able to look back and say 'There's old so and so'.

With the exception of H.M.S. *Keppel*, with her unique rescue by her divers of a sinking French tralwer, we have no ship news and nearly every ship has a diving team of a sort, so let's be hearing from you.

Due to the increased cost of production the price of blazer badges has now gone up to 30/-, ties are still 12/6 plus 6d. postage which is good value as the ties are Terylene.

We are unable to get the Siebe Gorman Manual *Deep Diving and Submarine Operations* at a reduced price, but on request we can obtain them at £3 3s. 0d. each EDITOR.

St. Paul's Anglican Cathedral, Malta

OVER a hundred years ago, Queen Adelaide built at her own expense a very fine church, now called St. Paul's Cathedral, to provide a worthy place of worship for British families working and living in Malta. Many thousands of civilians and Servicemen have since used and come to love this Cathedral.

During the last World War Malta survived a long siege by a relentless enemy. The Cathedral was damaged, though not seriously. Today it has been attacked by another equally relentless enemy — a beetle — which has so seriously damaged the roof timbers that they became dangerous. The Cathedral has been closed and the roof demolished. Services are being held in the crypt.

A Fund is now being raised to repair, maintain and endow the Cathedral so that both its fabric and its ministry may be preserved and established. A total of at least £30,000 is required. Of this £12,000 has already been committed to the reconstruction of the entire roof which is already in progress. These sums are far beyond the resources of the British people in Malta, most of whom are only on the Island for a comparatively short time. They have already done magnificently in raising the substantial sum of nearly £5,000, but we must now appeal to a far wider public.

The Cathedral enshrines memorials to all those who died in defence of Malta during the last World War. There must be many who would wish to see such memorials preserved. There are others who have regularly worshipped there or who have family connections with the Cathedral. There are also those who value and profit from the British connection with Malta.

The Duke of Edinburgh and Sir Winston Churchill have taken the lead in contributing to the Fund. We hope that many others will follow their lead by giving generously.

Contributions may be sent by ordinary 3d. letter either to the Treasurer, HAFMED, Floriana, Malta, G.C., or to Lady Dorman, The Palace, San Anton, Malta, G.C., and marked 'For the Cathedral Appeal Fund'.

Yours,

MICHAEL CANTUAR
STANLEY GIBRALTAR
WALTER CHESHIRE
MAURICE DORMAN
GUY GRANTHAM
DERIC HOLLAND-MARTIN
HARRY LUKE
THURLOW.

Letters to the Editor

From C.P.O. Jim Henderickx of the Belgian Navy, whose name has become quite familiar to us in the Magazine. Thank you Jim we are always glad to hear from you.

—

It all started on a very cold day in April, a man on a bicycle was passing a lake called Robertville in Belguim when he noticed car tracks in the snow leading down a hill through some broken bushes and disappearing into the lake, he reported the matter to the local constabulary and it was later found that a woman who owned a cafe in a nearby village was missing; she had been seen earlier in the evening of the previous day, being given a lift in a van by a friend, so the identity of the van and missing couple was established.

The water of the lake was used for drinking purposes so when there was no sign of the bodies the Mayor of Robertville asked for the assistance of a civilian diver to see if he could find the van. The diver had no luck in his search, so the Belgian Army were asked to send their diving team to see if they could locate it.

The Army team are equipped with Siebe Gorman Standard diving suits, but because of regulations are not allowed to dive to depths greater than 25 metres (82 feet) and they had no luck either.

By this time the situation was becoming pretty serious and the locals were refusing to drink the water. In the end the Mayor asked for the assistance of the Naval diving team.

On receiving the signal we loaded all our equipment into two three tonners, taking all our Standard gear, this being English and German 'Drager', two air compressor's, a portable one man decompression tank and miles of rope and sinkers, in fact everything except the kitchen sink. When the loading was completed we left Ostend, this was early morning, arriving at Robertville at twenty-three hundred the same day.

The Army had built a diving pontoon for us so we dumped all our gear on this then drove to the barracks which was another 30 miles onward, arriving about 2 o'clock in the morning. Being typically Army there were no beds or tea or anything organised at all; after a long drive this went down very well with the team.

Next morning work commenced at 7 o'clock and it was freezing cold, it took us about an hour to drive to the lake, then diving started.

Four shot ropes were lowered and we started working down a gradient in 15 metres of water working about five to ten metres a time moving the pontoon towards the centre of the lake. A boat hook 30 feet long was used in a circular motion to see if anything could be felt as the visability was nil, the temperature of the water was about three degrees centigrade, we had no gloves and I can assure you it was cold, really cold. There are other words of course but one never knows who is reading the Magazine.

Our Diving Officer was the first to dive and diving continued for two weeks, Saturdays and Sundays included, we even dived on the 1st of May which is a big national holiday in Belgium. On this particular day we had thousands of spectators, and I thought to myself at the time, 'Jimmy my boy' if you take the hat round now we will be millionaires'.

The search continued taking the width of the diving pontoon, from 15 to 52 metres each time towards

the centre of the lake. After 28 days diving, even the local water diviner was called in. With the help of a Belgian Naval Lt.-Cdr. who does this for a hobby he took a cross fix, and he was later found about ten yards out with his fix.

On the 29th day I went down to do a search where a metal detector had given a very strong reading, working at 52 metres and using decompression table No. 2, I stayed down for 20 minutes searching but all I found was some old blacksmiths tools; to ascend it took me two-and-a-half hours. The diver who followed me, when he touched bottom, yelled through the 'phone, I'm right on top of the car'. The D.O. took the 'phone and told him he was crazy, back came the reply — ! * ? ! * and up he came, so on the 29th day the car was located.

Next morning another pontoon was made by the Army with a winch on it and a cable was secured to the car and it was lifted under the pontoon, both pontoons were moved to the shore and a mobile crane lifted the van onto the shore.

It was identified as the missing van. Later in the day we went to see the bodies, the intense cold and pressure had kept them in perfect condition, that is apart from being dead. The doctor said they had died from drowning as there was no sign of damage to the bodies, it was obvious also from their position that they had tried very hard to escape.

All our work was now done so we downed tools for the day and went on the beer, this lasted till the following morning when we loaded our gear back onto the lorries and drove back to Ostend.

The total diving time was 305 dives for the Navy, and over 100 by the Army. The team was given a Commendation by the Minister of Defence for their work and the story was published in the forces magazine of our country as well as daily and weekly newspapers.

The team consists of the following divers (I'll mention the names just in case anyone has met them):— D.O. Le Vincent, 1st C.D. Marcel De Beck, 1st C.D. Ciril Vanderkoeck, 1st C.D. Louis Vangeffelen, 1st C.D. Jimmy Henderickx and C.D. Gilbert D'hondt, C.D. being the abbreviation for Chief Diver.

* * *

Dear Sir,

As an ex-D2 I do thoroughly enjoy going to the annual Divers' Dinner and having a natter with old-ships, ex-instructors, Diving Officers and other runashore oppo's . . . whoops!

But seeing as 80% of the participants at the dinner are from 'the trade' (lofty term meaning anybody with connections), the chance of running up against one's old oppo's is becoming increasingly difficult. If only those in the fleet realise how much people like myself, recently out of the branch, do appreciate having a wet with those still in, not only to go over old exploits, dirty weekends, green rubs, etc., but for a general discussion on the merits of staying in or out, what's happening outside, etc.

Similarly, explanation of some of the newer types of equipment of which people speak so glibly and write so nonchalantly in the magazine . . . like S.D.D.E. Only a letter in the *Daily Telegraph* explained what the letters meant and some idea of the principle of the new equipment. Perhaps the magazine could perform this service, i.e., an article in each edition, written perhaps by the Editor's staff or the Diving Officer in the chair, on the new outfits proposed by A.E.D.U., their functions and how it works for us souls who like to keep up with everything.

Three Eternal Questions:

Query 1. Did Shan Tuck get his pub?

Query 2. Did Johnny Bull become a fairground 'Bingo' barker Southend?

Query 3. Did Knobby Hall ever get his car to go?

Yours sincerely,

BRIAN G. OWERS.

* * *

Dear Sir,

Once away from U.K. these magazines are one of the few reliable sources of information on new methods and techniques in use with the diving world of today. This, together with the rich humour in each publication is very good value for my money.

On this island (Tasmania) there are three major marine construction projects in hand that involve divers. The North West coasts new port of Burnie, with Sam Deenus of Rosyth leading a team of six divers. In Hobart the Tasman Bridge now nearing completion, still have their four Hookah divers, one Aussie C.D. and three local makie learners. Then there is the Marine Board of Launcestons five year project of widening and deepening the main channel through rock in the River Tamar. Until test drilling is completed to establish the depth of rock to be blasted, it wont be possible to forecast how many divers will be required. Deep holes drilled from craft will require not less than two Steamers. Shallow blasting, charges placed to a pattern on the rock will involve a team of six swimmers using S.D.B.A. This time there should be no need to call for Lt. Rea, Willie Wyvall and team to clear dumped ammo as we did on a similar job in Mombasa, Kenya.

As time goes by and we get more organised we should be able to dig up a few bits and pieces to help the magazine out.

Yours faithfully,

HARRY PROCTOR.

Divers' Annual Reunion Dinner

THIS year the newly styled Diver's Dinner will be held on Thursday 12th December 1963 at Kimbells Osborne Road, Southsea.

The running and organisation of the dinner has been transferred from the Superintendent of Diving to the Head of the Diving Section; and with the retirement of Lt-Cdr. Filer, the Secretary for this year's dinner will be Lt. Parry.

Individual letters will be circulated in due course to all diver's and ex-diver's for whom this function is primarily held,

The Look Ahead

by LT.-CDR. S. A. WARNER, D.S.C., Royal Navy.

IN my last article I tried to cover the problems of man's efforts to increase his ability to dive deeper and why.

In this article I propose to go a little further and put forward some questions and ideas which I hope will at least provide a basis for discussion and thought.

Constantly I am asked— Why do we want to go underwater? What is the attraction? Is there any end project?

From the purely sport side the answer is easy. It is not terribly difficult to explain how almost every science has an underwater application and the Military problem is shrouded in security anyway but I feel that we should look ahead much further than the apparently obvious reasons for submerging. Time after time we hear that old cliche about 'Two thirds of the earths surface is covered by water and remains almost totally unexplored'. Rarely do we hear that within and below that vast expanse of sea there is deposited every form of energy or material that man has ever employed and probably much more that has not yet been discovered

To capitalise on this vast repository of wealth a considerable amount of effort would have to be invested but at least we know that there could be a goal with some very real end products.

Man has talked about harnessing the tides for generations but has this problem been really tackled in a large way?

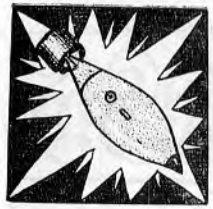
We know that with every increase of one foot in depth there is a corresponding increase in pressure of about $\frac{1}{2}$lb. Have we ever made any real effort to harness this vast reservior of energy?

We know that temperature gradients are always present in the sea. Has anybody ever made an effort to turn this into usuable energy?

The actual sea alone contains many materials in solution which man requires for his existence but the large land areas which are submerged are almost entirely virgin in all aspects of development.

Britain has a great historical background based almost entirely on the sea and yet we appear to have failed to exploit the immense possibilities which it has to offer. Of course the research and exploration necessary, before economical exploitation of this type of venture would pay, would be tremendous, but this has not deterred us in the past. Whilst I appreciate that Britain is not by herself a competition in the 'Man in Space Race' I cannot help comparing the untold millions which are being spent in this field, yet the space programme appears to offer very little material gain.

Is it not time that we looked into the resources and possibilities of our own heritage and took up the challenge of the sea? Should we not expand our thinking to way beyond ship salvage, and maximum depths with which the human frame can compete and think of the entire oceans as a treasure chest which is available to man?



Portsmouth Command Bomb and Mine Disposal Notes

and Mac's Lament and Adieu

DURING the Summer Term, administration of the Portsmouth Command Bomb and Mine Disposal Team within *Vernon* has been passed or perhaps slipped is a better word, from the Superintendent of Diving to the Commander of *Vernon*. This has resulted in an increased lightness an jauntiness in the step of the Superintendent of Diving, and more weight possibly 'deadweight' on the already overburdened shoulders of the Commander.

Probably this will be the last straw that will break the Camel's back. However, despite these historic changes the team have been kept fairly busy on diving tasks, mainly ships husbandry jobs, such as dome, propeller and window changing. On the disposal side our most interesting jobs have been a search in the Thames at Staines for a mythical G.D. mine, assistance to the police in successfully locating a murder weapon and a 500lb. British G.P. bomb at Hastings. Unfortunately for me but fortunately for the Admiratly and the taxpayer, I am due to retire after Summer leave.

My relief is that well known or should I say infamous character Jackie Rea recently returned from sorting things out in Brunei.

I was hoping to become a civil servant, but after taking the exam. this week, I fear it's the dole queue for me, perhaps I might achieve a long cherished ambition of becoming 'Dressing room sweeper at the Windmill'.

May I take this opportunity of thanking all Divers, Officers, Ratings and civilians for their help, co-operation and comradeship, during my time in the Portsmouth command and throughout my career as a Clearance Diving Officer.

As I am hoping that their Lordships may be kind enough to give their tolerant and benign approval to my joining the Reserve (a fortnight's training once per annum), I will not wish you good-bye but conclude by hoping that 'I'm no awa tae bide awa'.

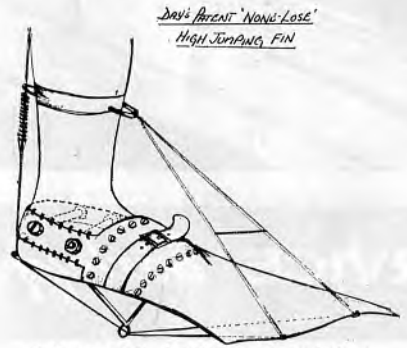
Yours aye, MAC.

Search for mine in the River Thames at Staines, 6th May 1963

Retirement of 'Mr. Mac'

IT is always sad to say farewell to a diver but particularly so when he has been in the business as long, and served it so well as Lt.Cdr. W. Y. McLanachan, M.B.E., B.E.M., R.N. I am sure that he would object if I went into every detail of his career. Suffice to say that he has served continuously in Clearance Diving longer than any other C.D.O. and nobody has served the Royal Navy and the branch more conscientiously than he. Almost everybody in the C.D. Branch has operated with Mr. 'Mac' at some time or other and few can say that they did not learn a tremendous amount during that time. Most of us have also had the pleasure of listening to Mac when he is in recitation or singing form 'rendering some fine old Scottish Ballads'.

In saying farewell I know that the coastguard and police from Lands End to John O'Groats would like to be included in our best wishes for health, wealth and happiness in his retirement to 'Mr. Mac'. J.W.



'It hurts a bit—but it saves running up the !?*!!...! ladder.'

The *Daily Telegraph*—June 13th:

Two Navy Divers Fight to Save French Trawler

Frigate Receives 'Holed by Iceberg' Signal

TWO Royal Navy Divers last night worked in sub-zero conditions underwater to try to keep the damaged and flooded French deep-water trawler *Alex Pleven* afloat after she struck an iceberg off the North Cape off Iceland.

The trawler, 1,763 tons, registered at St. Malo, rammed the iceberg in poor visibility. She was badly holed. Her forward hold flooded rapidly. The divers, from the fishery protection frigate *Keppel*, 1,180 tons, worked throughout the half light of the short Artic night in an attempt to carry out emergency repairs on the spot.

The *Keppel* was 100 miles away when the first distress signal reached her. When she arrived on the scene the *Alex Plevin* was well down by the bow. But there were no casualties

A series of signals relayed to the Admiralty through Port Edgar, the frigate's Firth of Forth base, told of the struggle in the far northern waters. Intercepted messages from a nearby Icelandic gunboat, *Maria Julia*, 138 tons, and the German inspection ship *Meerkatze* indicated that they, too, had turned towards the crippled trawler.

Watertight Mat

HOLD TO BE PUMPED:

Reports from Reykjavik last night that the big trawler was already steaming towards the Icelandic port were discounted by the Admiralty.

'Despite the freezing cold the divers will work until they exactly estimate the damage and report back. Then a watertight mat will be rigged and the hold pumped out', a Naval spokesman said.

'This will take a long time, but until this is done it will be dangerous to raise steam again in the damaged ship.'

The *Keppel* is commanded by Lt.-Cdr. N. A. B. Anson. It is one of four Blackwood class former anti-submarine frigates which have been given strengthened hulls to stand up to the severe weather conditions in Icelandic waters.

Freeing Trawls

MANY-NATION WORK:

The *Keppel*'s divers, like the petty officers in the other three ships, *Duncan*, *Malcom* and *Palliser*, have had considerable experience in working in below zero water conditions freeing the trawls and fouled propeller shafts of ships of many nations.

But this is the first time they have been called to aid a ship which rammed an iceberg.

The *Keppel* has been on her present patrol for the last two weeks.

The United States and Canadian Ice Patrol organisation were informed of the exact position of the accident. This organisation charts iceberg movements from Greenland as far south as Cape Horn.

* * *

We wish to express our thanks to the *Daily Telegraph* for permission to reproduce this article from their newspaper 13th June 1963.

H.M.S. 'Keppel'

by SUB. LT. P. V. MITCHELL, R.N., S.W.D.O.

AT 0900 on May 12th 1963 an S.O.S. was received from the French trawler *Alex Pleven* (1,700) tons. 'The *Alex Pleven* had hit a submerged iceberg 90 miles off the north coast of Iceland.

We proceeded at full speed to close the damaged ship and during the approach the ship's divers prepared to dive to assess damage and to repair if possible.

On arrival we saw that the crew of the *Alex Pleven* were all on deck and that their boats were already turned out and ready for slipping.

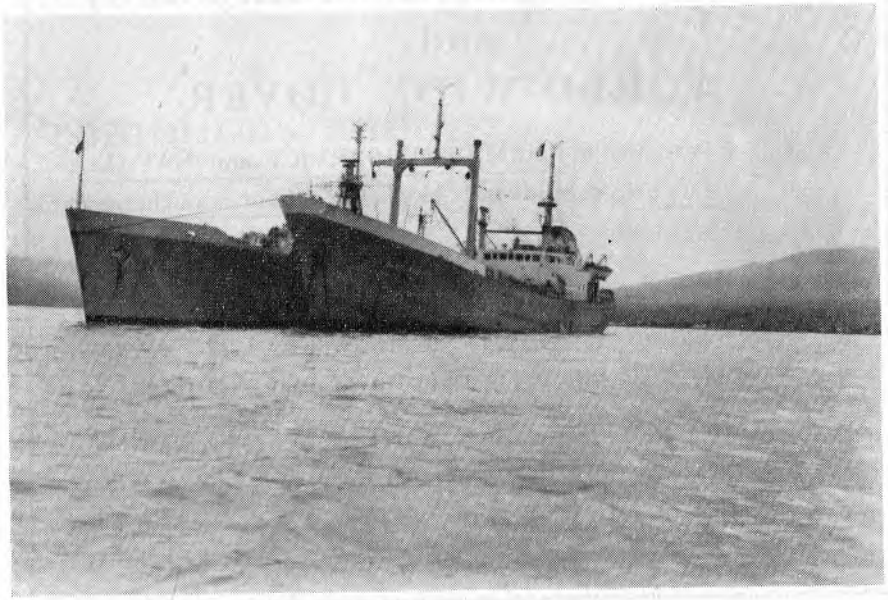
Keppel stopped close by and I took the divers in the ship's whaler over to the trawler and secured to their port bow, as close to the damage as possible. The first job was to assess the extent of the damage and on inspection I found the ship was very badly buckled about 10 feet below the water line. The sea was calm and the visibility very good, so I could see quite clearly that approximately 350 rivets were missing and that the plates were sprung and damaged for about 12 feet. In two places the plates were up to 4 inches apart, and so on my return to the surface I ordered the divers to wedge the splits and plug the rivet holes with soft wood.

"Alex Pleven", 8 ft. down at bows, 90 miles off the coast of Ireland. Divers about to commence work.

The divers worked through the day to stop the flow of water. The sea temperature was 42 degrees and thanks to the neophrene gloves we made — from the templates I obtained in *Vernon* — the divers could continue work for full endurances before returning to the surface. The divers experienced cramp very frequently but there was never a break in the work. The Engineers used all available pumps to pump out the flooded forward compartments. During this time, *Keppel* moved alongside to allow easy transport of equipment to the *Alex Pleven*. The crew of the trawler gradually removed the gear from the damaged compartments as the water level dropped. One of the biggest jobs was the removal of a 3 inch trawling warp, two miles long! The divers assisted during this time by going into the hold and passing gear up to the trawlermen.

By 0100 the pumps were gaining on the water and the divers had completed their task. We escorted the *Alex Pleven* into Akureyri Fiord as the weather forecast warned us of approaching bad weather.

At 1430 on 13th May, *Keppel* and *Alex Pleven* anchored in Akureyri Fiord and I dived again to check the plugging. I found that although the trawler had steamed at 12 knots through the night, only one plug was missing. During this time the soft wood had swollen with the water and the leaks had reduced even further.



In Akureyri Fiord, Iceland, with bows back to normal.

As there was still a small leak, I sent the divers down to carry out a a careful search of the trawlers bottom. No further damage was found and I could only assume that a large number of tiny holes were made by the loose rivets and plates, but that these were too small to see or to stop.

More pumps were brought from ashore and at last we overcame the flow. At this time I also tried to place a polythene backed blanket over the damage, but the internal suction was to small to hold the blanket on the trawlers' side. By 2230 the bows of the *Alex Pleven* had risen 8 feet, and she was now on an even keel.

Whilst standing by in case the divers should be required again, we dived to check the *Chernikeef* log which had been found impossible to raise. This we found to be broken off 2 inches from the bottom of the ship.

As there was only one civilian diver in Akureyri, and also because of the fact that the *Alex Pleven* was the first French ship to call in to Iceland for some years, the divers obliged the local press by posing for their photographs — much to the amusement of the ship's company!

The engineers and shipwrights made a good job of shoring up the compartments and when the trawler owner arrived it was agreed that the *Alex Pleven* should be beached alongside Akureyri pier so that a final check could be made by the trawler's crew with the assistance of welders from ashore. It is interesting to note that there is not a slipway large enough to take a ship of this size, anywhere in Iceland.

Having done all we could to assist, we left the *Alex Pleven* alongside the pier and sailed from Akureyri to continue our patrol. The *Alex Pleven* was to sail for St. Malo the following day. The diving team on *Keppel*:— S.Lt. P. V. Mitchell, S.W.D.O.; A./B. K. Johnston (F.D.) S./Lt. A. C. Shepherd, S.W.D.O.; A./B. D. Woods, S.W.D.; J./S. M. Ellis, S.W.D.

N.B. — The trawler owner thanked us in the usual service manner!

Promotions and Advancements

To Chief Petty Officer:

R. Flannagan, C.D.1

To Acting Petty Officer:

R. Pilling, C.D.1
D. E. Stevens, C.D.2
D. W. Tyzack, C.D.2
P. Booth, C.D.Star
C. Smith, C.D.Star
A. Charlwood, C.D.Star
K. Shennon, C.D.Star

To C.D. First Class:

P.O. A. D. Snell
P.O. D. J. Lott
L.S. G. W. Martin
L.S. D. W. Audoire

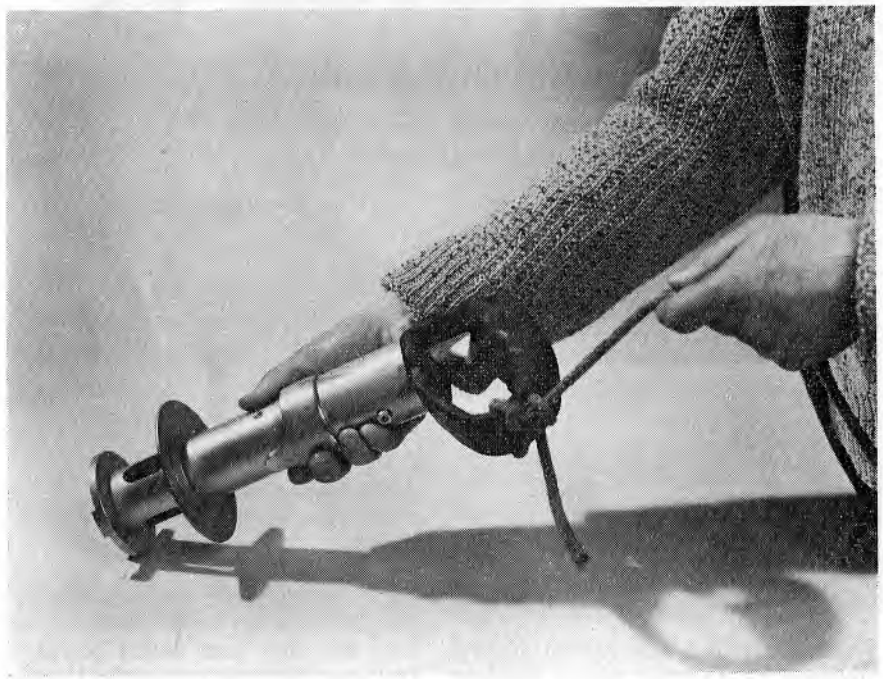
To C.D. Star:

P.O. S. C. Mansfield
L.S. D. V. Williams
L.S. A. Vernon
A.B. I. Duxbury
A.B. J. F. P. Curran

Tornado Amphibious Cartridge Hammer

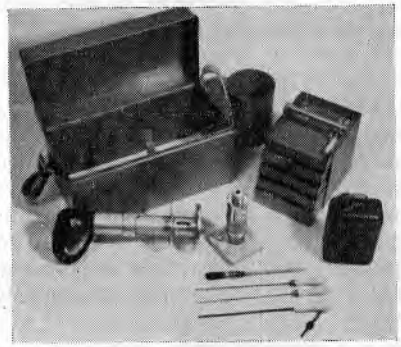
AFTER two years research on fixing methods underwater into various materials, steel, concrete, stone and granite, etc., a tool has now been produced to cope with this problem. No more arduous drilling, bolting and riveting, a fixing job can be done fifteen times faster than by the old conventional method. The tool has been proved on various jobs, one in particular, in Hull Docks, where it would have cost £500 to place a Limpet Dam in position to enable the Knuckle on the Dock entrance to be repaired. An 18 foot by 10 foot, by 5/16ths. steel plate, moulded to the shape of the Knuckle, was lowered into the fairway and placed in position over the damaged portion of the wall. A diver then secured the plate in position by firing studs through the steel plate into the granite construction of the Dock wall. It took less than six hours to complete the fixing, after which concrete was pumped from the surface of the Dock into the cavity. The supreme test was accidentally put on the plate when a cargo ship on entering the Dock stuck the plate and dented it. A diver was sent down to examine the fixings and he reported that everyone of the studs had held.

Known as the TORNADO T6U AMPHIBIOUS CARTRIDGE HAMMER, is a lightweight tool weighing six and a half pounds, is only 13 inches long, is breeched loaded below as well as well as above water, and is a one handed tool thus leaving the diver with a free hand to manipulate the materials he is fixing. The T6U cannot be fired accidentally



since two pressures must be taken up before the trigger mechanism comes into operation.

Three sizes of fixings can be put in by the tool, ¼ inch, 5/16th inch, and ⅜ inch, giving a shear or extraction strength of two, three and four tons in 1 inch Naval quality steel. As mentioned earlier it can be used on most building materials. Its counterpart is in daily use throughout the building industry saving the constructors thousand of hours fixing time.



The T6U has been demonstrated to Admiralty, N.A.T.O. and Lloyds and is being used by the Dutch Navy for Damage Control. Lloyds have passed it suitable for underwater fixing and Salvage Companies have shown interest in the tool. It was on show at the World Congress of Underwater Activities held in November last year in London where it created a great deal of interest amongst the diving fraternity of the world. The company manufacturing the tool has its own diver who is travelling the country giving practical demonstrations and training divers in the use and maintenance of the T6U. It is not meant to supersede the Cox Bolt Gun which has it's limitations, but can be used on nine out of every 10 fixing jobs and is far cheaper in both the Hammer and the fasteners. It is literally an everyday tool, as is the Diver's knife.

Port Diving Unit, Londonderry

THE new and extremely keen Editor has been dropping broad hints to me, such as, 'We know you exist so how's about an article?' It is two years since the last article appeared from Derry, so with a stricken conscience I put pen to paper. The reluctance to do so before stemmed from the fact that we are the last outpost of Standard Diving and wish to remain so not that we are against progress — but we do have our pride.

At present the team consists of:—

Lt. Davis, S.W.D.O.
C.P.O. J. Brown, Diver 1
Shpt. B. Robertson Art. Diver
A.B. W. White, S.W.D.
A.B. J. Graham, S.W.D.

Lt. Davis is a new arrival, having relieved Lt. O'Brien who is heading for a spell in the 'Far Flung'. We were sorry to see him go although he was expensive to run, he was well worth it. Graham also has recently arrived and is fast becoming used to Standard.

The Drafting authorities have recently whittled us down to a bare minimum but we are expecting two Free Divers in the near future and we also have divers in outlying billets that we can call on should the occasion demand it.

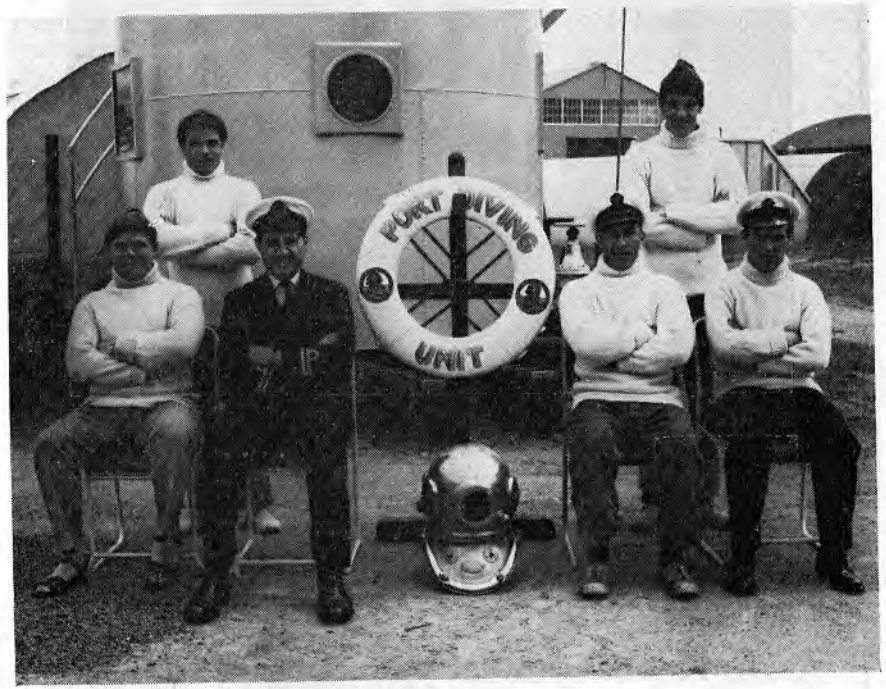
Our equipment comprises of Standard, Gas Mask (our main weapon on most jobs) and U.B.A., which we use mostly for inland and 'over the border' jobs. The wheels are beginning to turn for us to be equipped with this new gear called S.A.B.A. Just for exercise we sometimes borrow sets from visiting ships. Recently we discovered a frigate equipped with four in No. S.A.B.A. sets and one in No. U.B.A. — it makes you think.

The diving boat is a 45′ launch with a permanent canopy covering the compressor, Pattern III pump, engine space and dressing space.

We are housed in one large and one smaller Nissen hut left when our American cousins departed. The larger hut is a very well equipped workshop and stowage for the diving gear, the other being the mess, with built-in galley. Attached to the latter is the office, heads and shower room. 15 months ago the interiors of the huts were almost bare but with the usual ability of divers to 'borrow' we have installed the kitchen, work benches, racks, kit lockers, etc. I don't think 'Bungy' would recognise it now. We have had to do everything ourselves but it has been worth it — it is almost a pleasure to come to work.

Our jobs vary considerably. The main source of employment being the Londonderry Flotilla and Submarines, who seem to save their defects for Derry. The slip-way here in the yard provides a steady job keeping it free from mud; we do this in Standard using high pressure water hoses. Apart from the above we are called upon sometimes by the R.U.C. Civil Authorities, Eire Police and Eire Harbour Authorities. Work for these people has ranged through moorings, foul screws, obstruction clearing, lost articles and bodies.

Diving conditions here are somewhat of a problem, the Foyle not being an ideal river for diving operations. The vincinity of the base seems to be composed of liquid peat



The Last Outpost

resulting in nil visibility at all times. On the ebb tide it is impossible to dive and only a slight improvement is apparent on the flood tide. The inability of this tide to coincide with R.N. working hours causes a fair amount of overtime to be spent on a lengthy job.

H.M.S. *Yarmouth* provided us with a fiddling, but interesting job recently. The centre stay bright steel window of her Type 162 sonar was cracked and required a replacement. They were most insistant on us 'having a go' although the job was turned down in Pompey. What with our tides and visability we were a little reluctant to do so but decided that it was worth a try.

The 'window' is flush with the keel and held in place by 36 3/16 inch screws. the heads being recessed to take an Allen key. The recess is 1 inch deep and plugged to the full depth by a Teak bung. To ensure water tightness the screws pass through a thin rubber gasket.

Progress at first was painfully slow, it took a duration of five tides to remove the bungs and a further two tides to remove the screws. The temperature of the water was such that a 30 minute spell was enough for each diver as the nature of the work ruled out the use of any form of gloves. We learned a few tricks as we went along and the replacement of the new window was completed on one tide.

For the benefit of anyone else who has to tackle this job we pass on the following information. The bungs are a 'hammer home fit' and are end grain, so the only practical method of removal is by drilling. This still leaves the Allen key housing full of wood which can be removed by a small sharp pricker. Removal, or replacement of the screws by an Allen key alone, or even fitted with a handle, is a very slow process. Our answer was to adapt the key to fit a small pump screwdriver (Barry Bucknell type) which worked extremely well, cutting the time of a screw removal from between three and five minutes to about 10 seconds. We recommend that if divers are to continue doing this job the bungs are altered to dowels and so be cross-grained, this would make for simpler removal and also there would be much less chance of the wood filling the Allen key recess.

When replacing the window the only sure method of lining up all the holes in the rubber gasket with the screw holes in the window is to glue it in place first. Contact adhesive being excellent for this purpose. To position the window correctly initially, we made two extra long Y-shaped screws that we could enter by hand.

So there you are — we humbly offer these suggestions in the hope that you do not have to swear at your 162's as frequently as we did.

We have just recovered from an inspection by the Flag Officer of Scotland and Northern Ireland which included our departmental inspection by Lt. Grace from *Safeguard* who obviously did not realise the extent of our set-up here. Admirals evolutions passed us by without a task — must know we are good!

At Christmas we had our own 'Divers Dinner' in the Northern Counties Hotel. Bungy Edwards was to have attended but his civilian task masters would not free him from the shift work — some jazz about this firm being there to make money. We enjoyed an excellent evening and left, still on good terms with the management — extremely understanding these Irish folk.

Well that is a brief account of Derry Diving World which operates very well without a single C.D. on the staff — how do we manage?

I'm away now to polish the brass work on a Standard helmet, wishing the best of luck to all. BUSTER.

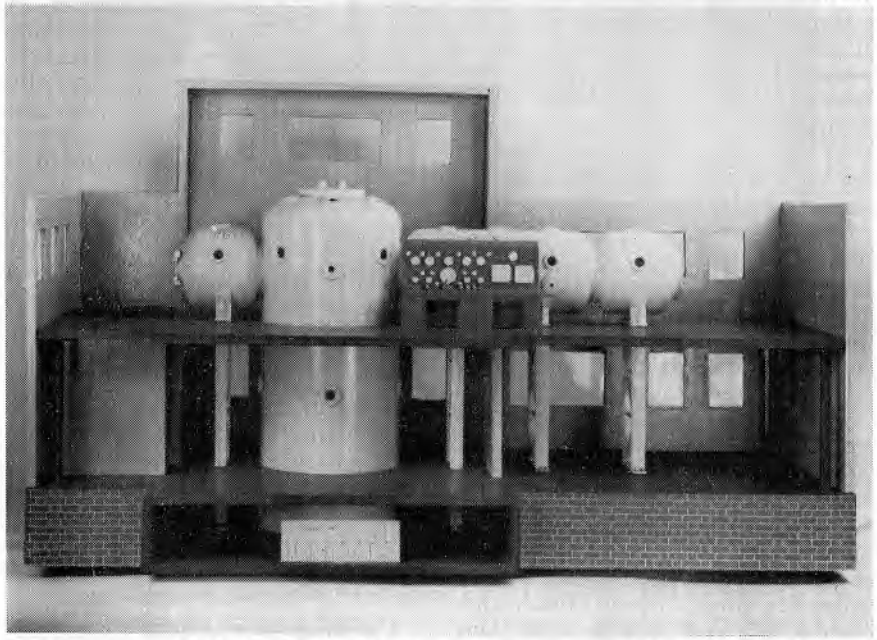
The Wet and Dry Compression Installation

by "B.F."

AFTER some 10 years of patient development and determined negotiation the sorely needed research set-up of a Wet and Dry Compression Chamber Installation for the Royal Navy is rapidly taking shape at Stokes Bay. It is being erected for the Admiralty Experimental Diving Unit within the boundary of the new Royal Naval Physiological Laboratory site.

The administration of this new facility will be undertaken jointly by the Superintendant of Diving and the Superintendant of R.N.P.L.

For those readers who perhaps do not know what a Wet and Dry Compression Chamber is I need only say that it is a vertical pressure chamber approximately half full of water. The diver is immersed in the water to carry out whatever test work he has been given to do and air pressure is admitted to the upper, dry half of the chamber, to simulate whatever depth is required within safety limit of the vessel. The diver has an attendant with him who tends his needs from a platform provided just above the water level. This is the principle in its simplest form and basically what the vertical vessel in the picture consists of. Like many other things it requires more than the basic requirements to get the best out of it. In this case a large recompression chamber and two air locks



Cut away model of the two storey building showing verticle and horizontal chambers and control panel.

have been added to the installation and the following specification data will help you to assess its value to diving research:—

Diving Chamber.

(*Vertical in picture*).

20ft. High, 10ft. Diameter.

Is fitted with air operated movable platform to take the diver down and up again. 11 ports are provided for viewing, external lighting, cinematography and closed circuit television. A small handlock is fitted for passing in medical requirements, refreshment, etc. A large eliptical hatch for loading heavy equipment is provided in the top of the vessel and positions for slinging equipment for test are sited under the dome of the vessel.

Recompression Chamber.

(*Largest horizontal chamber in picture*).

13ft. Long, 6ft. Diameter.

Is fitted with bunks and seats and has a small handlock. Arrangements have been made for internal heating.

Doors.

These are quick operating by means of moving one handle through a short arc of travel. They are unusual, inasmuch that apart from what is believed to be their unique design, they can hold pressure either side and proof of this is contained in the fact that the outer doors are mounted externally. A small centrally mounted viewing port enables the operator to see what is taking place the remote side of the door before he operates it.

Operating Capabilities.

The vessels are constructed of $2\frac{1}{2}$" special low temperature steel alloy which is strong enough to allow a working pressure of 500 p.s.i. equivalant to a depth a little in excess 1,100 ft. With the cooling and heating plant being installed the temperature of water in the diving chamber can be raised from 30°F. to 80°F. which simulates Artic to Tropical conditions. To achieve these differences of temperature economically, some 4" of lagging is being applied to the vessel.

Water Clarity.

Filtration plant is being installed to insure that the light transmission loss should be not more than 10% per metre.

Illumination.

External lighting consisting of 75 watt internal reflector lamps, shining directly through ports, will be fitted to each vessel.

Control.

Charging and exhausting the vessels will be achieved through air servo controls situated at the control console. The console also embodies the necessary pressure and depth gauge, a rate of dive meter, timing devices, pressure recorders, communications, illumination control switches, closed circuit television monitors and tape recorders.

Communications.

All compartments are to be fitted with transceiver units giving direct two-way communication with the Console. An U./W. loudspeaker unit will allow direct communication to the diver but his speech to the attendant and /or control will depend to a certain extent on the type of equipment he is using.

The foregoing installation is to be housed in a two storey building containing the usual 'offices', drying room, laboratory, ready use and main diving store, plant room, boiler room and air storage compartment. The main entrance will be at the first floor level into the administrative end of the building with a wide communication passage direct to the chamber

room. Access for stores and equipment will be provided at ground level with an overhead loading rail to the top of the diving chamber.

It will be a few months yet before the installation and * building is completed, in the meantime I hope the foregoing brief and somewhat sketchy discription of our research outfit will suffice to whet the appetites of all potential users and experimental subjects.

Scottish B. and M.D.

HELLO from the far flung outposts of the North. In response to a plea from the Editor and a particularly significant letter pinned on the notice board I decided to put pen to paper and let our southerly brethren know we still exist.

The new year started slowly but after hogmanay that suited us perfectly. Mostly we have been picking up the usual crop of marine markers that are forever getting washed ashore.

A trip to Barrow-in-Furness in mid-January to check on the underwater seals of the Reserve Fleet up there, commanded by Lt.-Cdr. Gash, C.D., did much to keep the diving logs up to date.

A flying visit by the Boss Chief plus a trip on B.E.A. and R.A.F. to Scallaway in the Shetlands, made a nice change. This was to deal with a 500lb. main charge complete with primer and detonator, both of which were so covered in rust and sea growth that to dismantle them was virtually impossible.

Then we had our Spring trip up to Wick to dive on the S.S. *Isleford*, an ammunition ship wrecked in Wick Bay during a gale in World War II. As she was carrying from ·303 to Mk. 17s this is a good area for B. and M.D. operations. Due to the kelp in the area Spring is the best time to go, even then, because it is a very rocky coastline, with an ocean swell running most of the time, it can only be dived on a very calm day with the wind out of the West.

It's funny how jobs snowball. We went out one Friday in late April to fix a 6" brick, as we thought, and six missles; we ended up with a 15" practice projectile at Portsoy, and 44, 4" mortar bombs, mainly H.E. in Lunan Bay, Angus.

At the moment of writing the team are in the Orkneys once more. The job is to blast a channel through some block ships sunk in the channel between the islands of Hoy and Graemsay. Using depth charges from a pussers M.F.V. in a 8 knot tide can be tricky at times.

The team now consists of:

Lt. K. D. Kempsel, C.D.O.
A./C.P.O. T. Norman, C.D.1
L./S. J. Harrison, C.D.2.
L./S. E. Welch, C.D.2.
L./S. F. Newman, C.D.3.
A./B. E. Cassidy, C.D.3.

So, for now, from the land of och aye, guid hunting. MAC HARRY.

'Crown and Anchor'

ANY diver in or around Framlingham, Suffolk, are recommended to visit the 'Crown and Anchor Inn' situated in Church Street. An old friend and ex-D.1, P.O. Ken Newson is now the proprietor and would be very willing to yarn about diving over a glass of liquid.

STAR DISCOVERY BY M.G.M. – Tarita, who was selected from hundreds of Tahitian girls, to star opposite Marlon Brando in 'Mutiny on the Bounty'.
By courtesy of C. H. Bernard & Sons Ltd.

Emergency Underwater Ascents

For the Amateur Diver

by SURGEON LT.-CDR. WYNDHAM DAVIES, R.N.

IN 1851 a young corporal in the Bavarian Light Horse Artillery made an emergency ascent from his pioneer submarine *Sea-Diver*. He had calculated that he could escape from a 60 foot pot hole in which his vessel had foundered by flooding up with water but he took four hours to persuade his two companions with a near mutiny on his hands. All three got out safely wearing no form of apparatus and rose to the surface. They were all virtually unscathed but it took many subsequent submarine disasters before their achievement of escape without apparatus was officially sanctioned.

In 1946 an Admiralty Committee was set up which examined reports of submarine disasters, it came to the surprising conclusion to some that many men were saved from sunken submarines who had worn no escape apparatus of any kind, others who had worn the apparatus improperly had lost their lives. Of course, there are many other factors involved too, such as the toxic effects of oxygen breathed at more than two atmospheres, the chilling effects of cold water and the problems of finding the survivors in strong currents and at night.

The possibilities of free ascent, as it came to be called, were carefully examined and it was found that the theoretical limitations could be determined. Maximum depth was governed by the onset of the 'Narks' (nitrogen narcosis) and the 'Bends' (decompression sickness) and might be about 600 feet. Contrary to popular belief there would be no desire to breathe over the period of ascent to the surface since there would be more than enough lung gas volumes, and oxygen and carbon dioxide would leave the lungs with the expanding gasses.

In fact, the escapee must remember to allow a free flow of air out of his air passages since from 100 feet he would need to get rid of 18 litres of gas (atmospheric pressure) to prevent his lungs bursting as pressure was released.

Free and Buoyant Ascent

Most individuals are buoyant enough to rise in the water without assistance from a life-jacket: however it requires confidence and training to accept the speed of $2\frac{1}{2}$ feet per second from a great depth. For example a 150 foot ascent would take 60 seconds which may seem an age in these circumstances. The Royal Navy wished to have a faster rate of ascent and first chose a 4 foot per second target, to give a time of ascent of 25 seconds over 100 feet, but later it was found that this speed was an average and that the variation was from $2\frac{1}{2}$ to $6\frac{1}{2}$ feet per second. This was thought to be a reasonable period for trained men but it required some added buoyancy, such as a life-jacket.

Not only must the man allow an unrestricted flow of air from his air passages and be completely free from all lung weakness that could lead to trouble but his life-jacket must be designed to release pressure also at a fast rate if necessary. His life-jacket could make the difference between life and death on the surface whilst awaiting pick-up, so that bursting or failure might be a disaster.

Careful experiments using animals and many trials with a large number

of men were engaged in before the Navy was satisfied with the safety of the technique which became known as 'bouyant ascent'. It was decided that practice must be given in this to give confidence, and training not to hold the breath or alternatively breathe out to much. Experience now exists of about 100,000 of these ascents, and the hazards, with careful medical examination of trainees, vigilant instructors in the water watching trainees all the way up and careful indoctrination are small. Nevertheless they are so serious when they occur that constant medical attendance is essential and there is an established emergency safety routine.

Buoyant Ascent Training Techniuqe

The trainees are given a careful chest X-ray and medical examination and must be completely fit, no age limits are set. The exceptionally nervous may be given special attention, or rejected depending on the trainer's customs. In the Royal Navy during training ascents not only is a full-time team of escape tank maintenance men required, but the naval staff consists of three officers, one a doctor, seven Chief Petty Officer instructors and eleven assistants. Instructors are stationed under the water at 20 feet intervals.

Tank at H.M.S. 'Dolphin' where free ascent training is carried out

The trainee is pre-tested in a 'pot' (a recompression chamber) to a simulated 100 foot depth to see if his ears will clear, he is then tested for buoyancy to check on the approximate 5% of the population who are negatively buoyant, i.e. who tend to sink rather than float in fresh water (although many of these might be buoyant in salt water). They are then sent off individually from gradually increasing depths under careful supervision and checked again on leaving the water. One on point there is still some controversy: is it as easy and safe a technique in the dark or with the eyes closed? Some say not. What is certain is that underwater confidence is built up in those previously inexperienced in this, from which it can be argued that trained underwater swimmers would be at an advantage in practicing these ascents. Unfortunately, however, the serious accidents that do occur are no respector of persons who seem to be fit and understand the technique and there is no warning of impending disaster on the ascent.

In some 90,000 recent ascents some 40 men have required special treatment, but this excludes all the safe ascents carried out by instructors who use the free ascent technique whilst supervising training.

Medical Hazards of the Ascent

If you imagine the lungs to be full balloons it should be fairly easy to

understand that, in an ascent from 100 feet to the surface in which the gas volumes expand as pressure is released, sooner or later the elastic walls must burst if that pressure can find no way out. This condition is called a burst lung (or pulmonary barotrauma). The position, however, is much more complicated than this. The actual tissues of the lung resemble the structure of a sponge, more than a balloon, through which run dividing and sub-dividing branches of the air passages finally ending in tiny clusters of air sacs (the alveoli). Here occurs the exchange of gases necessary in breathing, the uptake of oxygen and the giving off of carbon dioxide — the air meets the blood divided only by a fine structure of cells. Should local pressures of gas build up without release or, where there is only partial release, the gas bursts through to the blood with the disastrous effects of an air embolism.

Despite careful training and searching medical examinations, every so often this trouble will occur, although not frequently. In a recent survey made by Hume Wallace of the British Sub-Aqua club from Kingston Branch experience, he reckoned that at least 15,000 rapid ascents from depths between 10 and over 100 feet have been made without any incidents. However, when trouble does occur, and it is universal experience that there may be no indications that an abnormal ascent has been made, it is disastrous and usually rapidly fatal unless there is urgent recompression in a 'pot' and medical aid.

Where the condition caused is a serious air embolism death follows rapidly with any delay in treatment. Abroad two men died in the lift journey from the escape training tank surface to the recompression chamber on the ground floor before a chamber was installed at the tank top. In the Royal Navy, due to the foreign experience the chamber is situated close to the top of the tank to prevent any delay.

Trouble may be denoted by sudden unconsciousness or, less obviously, by pain, breathing difficulties, with maybe choking and coughing. Early signs of serious trouble may be pallor, blurring or alterations in sight, numbness or staggering. Perhaps a tenth of the cases will have small lung ruptures only, giving effects depending on the part of the lung structure penetrated by the compressed air.

Emergency Ascents in Diving Activities

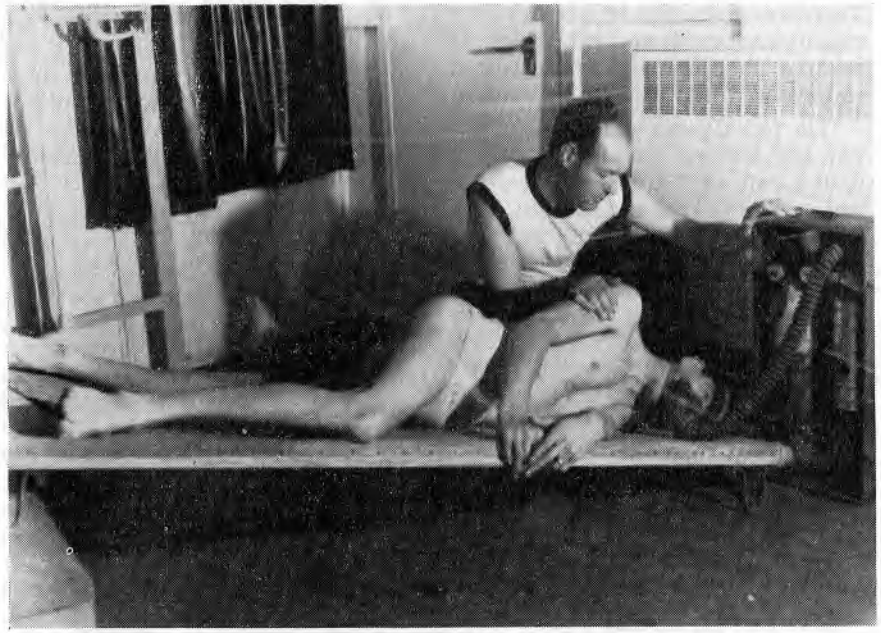
One of the potential dangers of self-contained underwater breathing apparatus is that there may be a failure of air underwater. Properly serviced good commercial equipment should not fail in use and instances of it doing so are extremely rare. If the demand valve were to fail, however, the effects are likely to be sudden. Then, it is possible to visualise situations where a diver runs out of air at depth unexpectedly and he may have pulled his reserve and found it empty. Calmly and rationally he should rise several feet when he may be able to breathe again or failing that, if the stoppage was complete he would need to consider a safe ascent technique. Submarine escape techniques of free ascent would then seem ideally suited to the situation and the B.S.A.C. have made this part of their training.

If the technique was completely safe all parties would be agreed that this was something to be practised so that if and when the emergency occurred responses would be more automatic. Wise counsel in trained circles recommended that this technique should be known but not practiced and only one body in the world has established the technique as one to be practiced by amateur

divers who had no easy access to medical treatment facilities; this was the National Diving Committee of the British Sub-Aqua Club. Ascents were described as 'Free', where a man had no form of underwater breathing apparatus and had jettisoned his weight belt, 'Assisted', when another diver was present to share his air, and 'emergency', where he dumped his weights immediately, exhaled hard and finned rapidly upwards. As no accidents had been in B.A.S.C. practice from their experience, it has been suggested that this could be due to three possibilities, difference in speed — since divers would be ascending more slowly as they would not use life-jackets to assist their ascent, difference in training — divers in regular training adapting automatically to pressure changes, difference in attitude — divers seldom tackling free ascent till they feel they want to.

However, it seems much more likely that the sum total of ascents made from any depth by B.A.S.C. divers is too small to be comparabe with escape training experience. Although accidents are, at present, unknown, statistics can be no real guide since chances are fickle and as we to our cost with, say, car tyre know punctures that all may be well for a long time then several come in quick succession.

What started out as polite concern for diver's welfare by medical diving experts became of much more urgent concern when it was reported that a serious accident had occurred to an experienced overseas naval diver practicing free ascent technique's. A search was made for further reports and it was found that other instances existed of deaths or serious illness



Treatment of the air embolism case in emergency where no immediate recompression is available. Note the body postition, oxygen is being administered.

from this technique. For example from Brisbane, Australia, Drs. Harveyson and Hirschfield described a well-documented account — 'A healthy man, aged 18 years, was diving in sheltered water 20 feet deep, and at the time was undergoing a test in which the 'aqualung' was discarded and a free ascent made from this depth. He was quite conversant with the use of the apparatus and had made numerous previous dives with it. His actions were observed by two examiners stationed underwater at a depth of 20 feet. 'On reaching the surface he clung to a buoy, immediately complained of feeling weak and nauseated, and vomited. Suddenly he experienced difficulty in breathing in both inspiratory and expiratory phases, and this was accompanied by limb pains an and occipital headache. Within several minutes of coming to the surface he was assisted from the water, completely exhausted and semi-comatose. There was generalized cyanosis which rapidly deepened, and the breathing became irregular and shallow and soon passed into a phase of apnoea.

'The radial pulse was not palpable, but the femoral pulse was strong, with a rate of 120 per minute, and was regular in rate and rhythm. The extremities were cold and beads of sweat were noted on the forehead. Several minor convulsive movements of the facial muscles occurred, and the eyes were rolling. There was a notable absence of intercostal muscle movement on inspiration, and the airway was clear throughout.

"The patient was placed in a head-low position, warmth was applied and artificial respiration was administered, together with oxygen from a Davis escape apparatus, and peripheral massage was carried out. Within about ten minutes there was a fairly rapid return of colour to the face, though the breathing was still irregular and had to be assisted intermittently for about 20 minutes. Normal respiratory rhythm was established after 30 minutes. At the end of this period the patient was still in a state of severe shock and became comatose, responding only to painful stimuli. However, this condition lasted for only about ten minutes, after which apparent rapid improvement occurred. One hour after the onset of symptoms there was considerable general improvement in his condition. There was no cyanosis, though pallor was still apparent; respiratory embarrassment had disappeared and the pulse was palpable at the wrist, having a rate of 86 per minute, but it was of poor volume. The patient felt nauseated, bit did not vomit, and he experienced some loss of power together with paraesthesia in the right arm and hand. The weakness was mainly in the abductors of the limb, good power being present at the wrist and in the hand.

"Three hours after the accident the patient vomited once and then felt much improved. At this stage there was no evidence of shock, and the pulse rate was 80 per minute. He was taken to his home and placed in bed, and instructions were left that any untoward symptoms were to be reported immediately.

"Within an hour the parents of the boy became alarmed about his condition and he was admitted to hospital at 9.30 p.m. seven hours after the onset of symptoms. On his admission to hospital he complained of discomfort all over the front of his chest, and this was made worse by breathing. He said also that he felt nauseated and that his right arm felt numb. On examination of the patient, the pulse rate was 120 per minute, and the blood pressure was 80 millimetres of mercury, systolic, and 60 millimetres, diastolic; the heart sounds were clear, and superficial crepitations were heard in the

second and third left intercostal spaces beside the sternum and to a lesser extent on the right side of the sternum. The crepitations had no relationship to the cardiac rhythm and were best heard on deep respiratory movement, but were heard only for a short period. The right arm was limp and flaccid. Morphine was administered and the patient went to sleep.

"Eighteen hours after hospital admission he died and on post-mortem was found to be perfectly healthy apart from lung rupture and air embolisms which had affected the heart."

So much for the theories that good health, experience and shallow water will prevent tragedy. He might have been saved in a recompression chamber had this been available and had the nature of the problem been more widely recognized at the time.

When talking about this whole problem to diving officers of the British Sub-Aqua Club I was told by one of his own experience which had not been hitherto published. He made a shallow free ascent, felt ill, collapsed, and was taken to hospital. The account is now somewhat clouded by time but the circumstances resemble those of a minor air embolism which was the hospital diagnosis. Perhaps there are more similar experiences that can be described.

Conclusions

1. Pulmonary barotrauma may occur in experienced healthy divers in relatively shallow free or buoyant ascents.
2. Wide recognition of this may save life by rapid diagnosis and urgent treatment by recompression with expert medical aid.
3. Training bodies must weigh up the relatively serious possibilities of death from pulmonary barotrauma against the practicing of free ascents and whether equally good results can be obtained from careful training to prevent the necessity for free ascent, or failing that, careful theoretical instruction.

H.M.S. 'Brenchley'

Motto:—'*Work hard — Play harder*'.

AS the *Brench* has not appeared in the Magazine for some time, we will now have a go — Viz. 'Branch Editors' suffering from some sore heads of unusual sources.

NEWS FLASHES

Port Edgar. After a quick docking at Rosyth, we had our inspection, which in the reports was almost faultless. Lt. Lovell-Smith handed over the Boat, lock, stock (negative barrel) to our new Captain, Lt. M. F. Dickens, at a typical *Brenchley* social, which was one to be remembered.

Invergordon. Pedro and George, after taking passage in H.M.S. *Winston* reported being snared to work for their passage. Naturally hostilities commenced. 'Results, not excuses' were ordered. Thus, *Winston* was attacked by divers, and reported heavy losses, e.g. barometers, logs, and 1st Lieutenants shattered pride. Also, left behind, a broken-hearted Q.M. among others.

This operation though superbly executed, caused quite a scandal. Best suits were worn by many that morn.

Diving-wise, we had a very arduous exercise during the course of which the predictions of many divers about M.T.G. were realised at last.

The diver is wearing an Underwater Swimmer's Dress made from rubber-proofed crimped knitted nylon, and is using SABA (Swimmer's Air Breathing Apparatus).

The suit is manufactured by Dunlop General Rubber Goods Division of Manchester, and the breathing equipment by Dunlop Aviation Division of Coventry.

Inverness. *Brench.*, *Brinks.* and *Dingley* were at one stage like sardines at this place, this would seem that the runs were unified, but alas hopes of this continuing were shattered when on an organised coach-trip all of our *Dingley* Dodgers 'cried off'. Poor show *Dingley*.

Loch Ness. Early that morning the monster was sighted. We closed and did battle. We are now alright for fresh meat, and Loch Ness offers safe bathing facilities.

We hear that shortly many of the lochs are to be mechanised. This will remove one of Jacks chief sources of amusement, or, what one gains on the swings, one loses on the round-a-bouts.

Oban. Our divers did a survey of the harbour bottom. Bruce reported that it was the foulest bottom he has ever seen. It just so happens that he was in the towns sewer outfall area. Scallops? mm mmm mmmm!

Ardrossan. 'Save your money for Ardrossan' announced with gusto Diver McEvoy. As this is his home town, he, if anyone should know, his words were not false, but only too true. Thanks Mac, it was a good run.

Brinkley, one morning decided (to our disgust) to play games as this was *their* Sports Day, so we had to tag along and play hide and seek on the sea-bed with some markers of Heath-Robinson design, with bars of nutty and beer for prizes. Result, 12 out of 12. We duly collected our nutty, beer and other prizes which reside in the deep.

Interest Note:—Viz.: 20′, abundance of crab.

Portsmouth. Our only run ashore in civilisation. To the dismay of our cowboys we found the Ponderosa with a new face, no longer the old, brass, resounding spittons.

To the lads in *Vernon*, look after our old 'Buster Brown', and see that he wants not whilst in Haslar.

P.S.—The team remains in good spirits (Vodka being the trend).

"Ode to a Diver"

There is a tin-head on here,
Who loves to pound our ear,
About the deeds he's done,
Everywhere under the sun.

Now he's got the job of I stroke C
He take's the boat out to sea,
Once at sea he's never seen
Poor George is down below . . .
Pale Green. A.B.

1st Mine-Hunting Team

S.-Lt. Parks, C.D.O.
P.O. Rose, C.D.1
L./S. Brown, C.D.2
A./B. Williams, C.D.2.
A./B. Jordan, C.D.3
A./B. Chapman, C.D.3
A./B. Longthorne, C.D.3
A./B. McEvoy, C.D.3
A./B. Pitt, C.D.3.

The last five are C.D.3's only because there aren't any C.D. 4's any more.

Train Trivia

OCCASIONALLY the time comes when one decides to travel by train. When this happens to me I resign myself to a time of miserable harsdhip.

On arriving at the station possibly on the off-chance or because you think a train departs at about the time you would like to leave, an impression of dismal disuse greets you. This feeling seems to follow you on your maze-like way to the office so that when you crouch down in an uncomfortable position at the win-

dow and ask for your ticket in a nervous voice, the glaring official with a pale face and bi-focals, who surly throws it at you, demanding a huge sum of money, looks almost like an apparition. On asking if there is any cheaper way, he glibly lets mysterious words like weekends, excursions, workmans, etc. roll from his wet lips without explanation.

Freeing yourself from this and slowly walking away in a slight daze, you wonder whether you will have enough money left to enjoy yourself. The price of your ticket and various other incidentals gloomily rise in your thoughts at least once an hour on the trip.

After this big step has been taken, the time the train leaves once more comes to the fore and so away to the enquiry office you go, this can be such a harrowing experience that it puts you off using trains forever. The result of the visit is a frantic dash to the far side of the station where you are casually informed, by an old man with bleary eyes and a cigarette end, that threatens to set light to a tobacco stained moustache topped by a dew-dropped nose, that this is the wrong platform, and the train you want leaves from the other side of the station; so another dash is needed to jump on the train as the guard blows his whistle in your ear.

Nett result up to now an exhausting run that could have been avoided and an uncomfortable feeling that a week in a bath won't remove the soot and grime ingrained in the skin that sweat oozing out of every pore.

Seating is now a problem to be overcome. This can easily be fixed by buying your ticket days early and booking a seat, but as you came on the off-chance this does not arise. Now if, and sometimes it's a big if, you manage to get a seat, you try to imagine what the bill for cleaning will be at journeys end, this coupled with the full ashtrays and motley collection of rubbish on the floor does not raise the prestige of the railways in your eyes.

Having obtained a seat this is the time to settle in, so, up on the rack with your suitcase, only to have it fall back into your lap due to the rack being to small and the train having jerked just then. Having restowed the case, during which time the feet of the other people in the compartment have suffered, that seat looks like an armchair. But you soon find out that this is not only untrue but that it must have been designed by a medieval torturer.

Ah, now maybe a smoke and a read, but no, a light tap on the knee and you turn to face a little old lady in a flowered hat who nervously clutches a piece of knitting in an arthritic hand whilst lightly tapping with the other a notice, that shouts to the world, 'NO SMOKING'. Well, a read, then the door. 'TICKETS PLEASE', a gruff voice calls; you think that this cannot go on for much longer, surely, but it can. 'Take your seats for first dinner. Anyone for coffee, buffet is open for snacks', followed by — 'excuse me whilst I go out'. It's too much, so in full retreat you stalk away to have dinner. First a wash, after a wait for the toilet to be vacated. The hot water is scalding and the cold freezing, finally you have some water in the bowl and wash your hands, then you bend over to wash your face but a jerk bangs your head into the mirror and also nearly submerges you at the same time. By this time you are overcome by exhaustion that the minor worries of drying on a paper towel, that either falls apart in your hands or rasps against your skin like a file, are soon overcome by using a handkerchief.

Now on to the dining car, a seat is soon found and the menu taken up, first a drink. 'Certainly Sir', says the very assured waiter, rocing backk and forth as though he were at sea. After a tedious wait the drink arrives — with the soup. A passing thought on the excellence of the meal is reassured, you think, by looking at the high price of it, but no, and the immediate reaction is, that dieting has been enforced, or maybe he has given you the meal asked for by the little old lady across the aisle, but this is not so. You rise and go back to your seat as hungry as ever, with only a sadly depleted wallet to tell you that you had eaten at all.

This journey back can be easy if the train is at a station, or fraught with danger, if it is moving. After being knocked from side to side in the corridor and knocking your shins on cases left there, being trapped in a spring-loaded door in an icy blast from an open window, or being deposited into a lovely young ladies lap, who, as you scramble wildly to your feet with apoligies pouring from your mouth and at the same time wonder why you didn't get that vacant seat next to her, just smiles at you, you finally make it to your own compartment, then once more the tirade starts. 'Tickets Please', etc.

Your destination approaches and you go through various contortions to get into your coat and to take the case from the rack, through the door and into the corridor only to be met by an anticlimax. The train stops outside the station and waits and waits. But finally the train, with many a jerk and hiss, pulls into the platform at last — on the wrong side, and the well meaning person who told you it was that side gets his feet trodden on as you angrily push through to get out.

A replica of the porter from the station where you started out looks at you. 'Porter', you say, and he with a condescending look takes your weekend case and with a great sigh slowly makes his way to the rapidly disappearing taxi rank. You settle back in the taxi, ignoring the look of malice flashed at you by the porter for the smallness of the tip, and think gladly of the hotel and the bath that you will soon be in.

The moral of the story, if in fact there is a moral, is this. If trains affect you like this then buy a car. See you at the car sales.

MAC HARRY

Whassat! a moving tree? *Ah! a disguised diver.* *Well, if he thinks he's a tree, what's the difference?* *Ah! that's better.*

The Anglo-French Sink-Rate Trials - 1962

by J. S. P. RAWLINS, SURGEON COMMANDER, R.N.

SINCE 1956 the R.A.F. Institute of Aviation Medicine, assisted by relays of Clearance divers, has been working on problems of escape from submerged aircraft. This work is now approaching its conclusion with the design of automatic underwater escape systems for each of the current types of Naval aircraft. These systems will enable aircrew, even if they are injured or unconscious, to be ejected from the aircraft, brought to the surface and supported there until they can be picked up.

An essential requirement for the design of such a system is an appreciation of the behaviour of an aircraft after it has entered the water — the time for which it is likely to float, the rate and manner of its sinking and the rate at which pressure builds up across the cockpit canopy, ultimately causing it to collapse.

The French Navy are equally interested in underwater escape and trials with their Etendard IV strike aircraft were carried out at Glen Fruin in 1961. They immediately appreciated the importance of sink-rate and offered to set up a trial pro gramme in which the British were invited to participate. This invitation was readily accepted.

Broadly the plan was to drop two aircraft, a French Etendard and a British Scimitar, into the sea off Toulon in various attitudes and at various all-up weights and to record their behaviour by instrumentation and cine photography. The French would be responsible for the instrumentation and the British for the photography. A 100-ton floating crane would be procured to carry out recovery of the aircraft after each drop and preparation, maintenance and repair of the aircraft would be carried out by the two aircraft firms concerned, Dassault and Vickers, with facilities provided by the French helicopter base at St. Mandrier. Diving would be co-ordinated by the G.E.R.S. from the vessel *Eli Monnier*.

Photography

There were three main photographic requirements:

(1) An accurate record of the path of the sinking aircraft

(2) A high-speed record of the collapse of the canopy (implosion)

(3) A general record of each test by surface and underwater cameras, to include material suitable for a documentary film.

According to information supplied by the G.E.R.S., 120 feet visibility could be expected, and as the depth of water at the trial site was only 100 feet it was thought feasible to record the path of the aircraft by cameras mounted on the sea-bed. The position of each camera and its angle of inclination would be accurately known and they would all be run at the same speed, eight pictures per second, a common time base being supplied to each camera electrically.

Flares would be mounted on the wingtips and tail of the aircraft and with an image of the flares on any two cameras at the same time the geographical position of the aircraft at that moment could be accurately plotted.

The camera elected for this task were Eclair Caméflexes which were mounted together with their motors and power supply in watertight alloy cases fitted with 3½" Ivanoff pre-

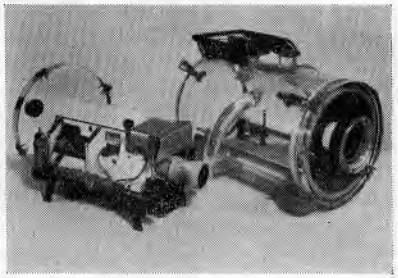
objectives, in order to take advantage of the full field of view of the cameras' wide angle lenses without lateral chromatic aberration. These cases, which were designed by Instrument and Ranges Department of the Royal Aircraft Establishment, in collaboration with Dick Tuson of the Admiralty Materials Laboratory, were mounted on trunnions from heavy bases so that they could be accurately aligned with an inclinometer.

Hand-held cameras, operated by divers, were also required, both to record any occurrence (such as crushing of compartments) on the sinking aircraft, to provide a record of its final position on the sea-bed and of its condition, and as an adjunct to the position plotting cameras by giving some indication of changes in attitude of the sinking aircraft.

No underwater cameras were available which would run for sufficient time to cope with a complete test, and again it was necessary to select a camera and design a case. 16mm. Telford scientific cameras, which have a speed range up to 100 pictures per second, were the final selection. These were mounted in cylindrical perspex cases, also fitted with Ivanoff pre-objectives, with a 200 foot magazine fitted in the long axis of the camera and a rechargeable power pack. A flashing red light indicated that film was passing through the gate.

For recording the canopy implosion a high-speed 16mm. photosonics camera was mounted in an identical case on the port wing. This ran at 600 p.p.s. and provision was made for starting it by a 'make' from the differential pressure unit in the main instrument container shortly before implosion was anticipated. A low-speed camera was mounted on the starboard wing and for illumination two 350 watt lamps in watertight housings were mounted in the cockpit.

I. and R. Department of the R.A.E. were in charge of the photography, the hand-held underwater cameras being operated by R.N. officers from I.A.M. and Human Engineering Division of the R.A.E. with the expert guidance and assistance of Frederic Dumas.



R.A.E./Photosonics high-speed underwater cine camera (up to 1,000 f.p.s.)

Progress of the Trials

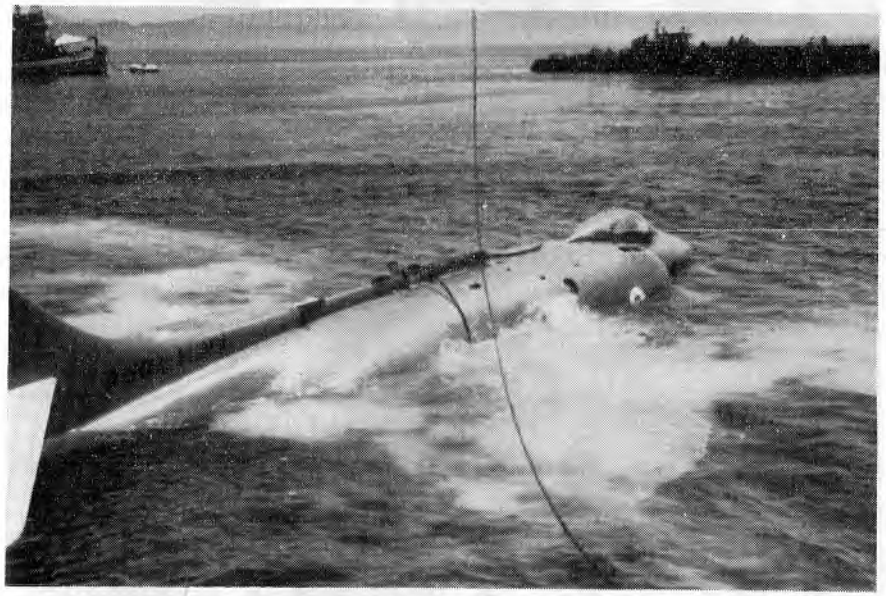
Before the main party arrived in France the mooring buoys had been laid by the G.E.R.S. enabling the floating crane to position itself with an accuracy of ± 1 metre. Immediately after arrival of the British party the sea-bed cameras were accurately positioned by the G.E.R.S. and the first drop of the Etendard was made on 6th July. From the point of view of determining the underwater behaviour of the aircraft the test was not an unqualified success, for after floating for 2½ minutes the aircraft sank tail first, the canopy, which had been very heavily reinforced with fibreglass, imploding at 40 feet, but not before there had been considerable crushing of the cockpit. The flares failed to ignite and a lifting bag, mounted beneath the skin of the fuselage and designed to inflate automatically at 60 feet and slow down the descent of the aircraft failed to inflate properly.

However, the main interest as regards this aircraft lay in establishing test techniques, and much valuable information was gained. Excellent photographs of the damaged aircraft on the sea-bed were obtained, after which a small marker buoy was attached and the crane moved into position for the recovery.

Recovery was performed by Lt. Besse, Captain of the Eli Monnier, and one of his team using C.D.55 mixture sets. Nylon slings were placed around the fuselage fore and aft, the crane hook lowered into the water and attached via a nylon strap and the lift made.

The hook of this crane was immense and it had been anticipated that hooking-on would be a real problem if there was any surface movement. Aquavox equipment had therefore been borrowed from the J.S.A.W.C. and the French had prepared a T.V. camera in a watertight case, the idea being that one diver could train the camera on the hook while another pair handled the slings. The crane driver could watch the position of the hook and slings and the divers' signals, and any instructions could be passed to the divers via the Aquavox. In good visibility this seemed an ideal arrangement but in fact the G.E.R.S. divers preferred their own technique of signalling to the crane driver by a klaxon operated by a push button on the end of a cable, and proved their point by recovering the aircraft with a single 20 minute dive.

The Scimitar is a very much larger aircraft and the problem of recovery was correspondingly greater. The lifting slings did not afford much margin of safety and it was clearly essential to drain as much water as possible out of the fuselage before attempting to lift it clear of the water. The aircraft cockpit had been modified by cutting a 10″ circular hole in the cockpit wall and fitting an alu-



Scimitar, immediately after drop.

minium bursting disc, the idea being to prevent implosion of the cockpit due to differential pressure. This scheme worked perfectly, the disc imploding at about 10 p.s.i., after which the differential pressure fell rapidly to zero.

On lifting the aircraft this orifice effectively aided drainage of the cockpit, but water was also trapped elsewhere in the fuselage and it was necessary to open all flaps and panes on the underside of the aircraft.

For this purpose special keys were made, one for each diver, and hand-holds of asbestos tape were fixed to the fuselage. It had been suggested that these panels should be opened when the aircraft was just beneath the surface, but the I.A.M. team felt that it was safer to get under the aircraft when it was resting on the bottom and accept the small chance of the undercarriage collapsing than to trust to the slings.

In the event this precaution proved well-founded because no difficulty was experienced in opening the panels on the bottom, whereas just as the aircraft broke surface on the first test the slings parted and the aircraft dropped to the bottom!

On the third Scimitar drop on 1st August, 45° nose down with the canopy off, the nose plunged beneath the surface and the aircraft then reappeared in a level attitude and floated for 40 seconds. It then sank rapidly in a nose down attitude striking the bottom at an agle of 50°. It was quite impossible for the divers to keep up with the aircraft at this rate and on arrival at the bottom they found the aircraft resting in its wheels but with the nose section completely crumpled.

While the trial continued with further drops of the Etendard the indefatigable Vickers team rebuilt the nose from scrap and on 8th August the Scimitar was dropped again but with a dummy pilot in the cockpit and with the Martin Baker Automatic Escape System. Complete success was achieved, the seat ejecting through the canopy at about 12 feet depth and the dummy separating from the seat and coming to the surface. Good film coverage was obtained.

On 10th August the implosion test was carried out and the technique for starting the high-speed camera proved successful and again remarkable films were obtained.

On 16th August the Scimitar, fitted once more with a dummy pilot and the Martin Baker Automatic Escape System, was catapulted into the sea from the flight deck of H.M.S. *Centaur*. The aircraft struck the sea with a tremendous splash, floated for 20 seconds and disappeared. Inspection on the bottom showed that despite estensive damage to the

Scimitar on the bottom at 100 ft. after the last test (catapulted from the deck of H.M.S. 'Centaur') Photo by 'Calypsophot' camera, F.P.3 film and natural light by Lt.-Cdr. Riddell.

cockpit, which had broken off forward of the engine intakes, the seat had operated and the dummy pilot had separated from the seat, but owing to damage to his equipment he was negatively buoyant and did not surface. However, in the circumstances it was considered that the system had functioned remarkably well.

Diving Considerations

The trial as a whole was very successful and will be the subject of a detailed report.

From the diving point of view there were many points of interests. Much experience of underwater photography was gained and the hand-held cameras were found to be very easy to handle and very suitable for the task. Their bulk kept them steady in the water and the five minutes running time at 24 p.p.s. provided by the batteries was entirely adequate.

The sea-bed cameras were technically satisfactory but unfortunately we had been misinformed about the visibility and it never approached 120 feet. As a result insufficient records were obtained and the method of sea-bed plotting was abandoned.

Visibility varied a great deal. The Mistral blew for days on end at up to 30 knots and it was impossible to manoeuvre the crane if there were more than 10 knots of wind. After the Mistral subsided the water was very cold and cloudy with precipitation, and on calm days there was another menace — ground swell, which caused tremendous movement of the crane jib and made handling of the Scimitar hazardous or impossible. Because of the swell we moved to a more sheltered site, but the visibility was worse. However, in order to show the possibilities of the area we did a dive off Bandol and here we were easily able to photograph a flare at 150 feet.

We all wore wet suits and used, for preference, 3-bottle Mistral sets. These were most convenient, each person being issued with a small box containing mask, knife, weight belt and demand-valve and tubes. This we were responsible for throughout the trial and simply took any set of bottles that happened to be full. A portable compressor on deck was kept busy all day recharging bottles.

On some days when aircraft repair work precluded tests, we visited some attractive spots with the *Eli Monnier* and dived to 120 feet or more in ideal conditions. On these occasions we were accompanied by Dumas and did decompression stops under his supervision on the anchor chain. We experienced no diving troubles of any sort during the trials.

Other Considerations

This account would not be complete without some reference to recreational activities. Diving was our work and our play and there were few days when diving of some sort did not take place. We also further depleted the littoral zone of its stock of fish, although spear fishing is not what it was in the Toulon area.

We initiated I. and R. Department into the diving business and record with some awe that four of them have just completed a course with flying colours at Dartmouth in this worst of all winters. They now not only design and build underwater cameras, they use them.

We also somehow found time to visit St. Tropez and the Ile de Levant. The underwater scenery at the latter is fascinating but unfortunately we thought it inadvisable to take the underwater cameras to record it.

Lastly, we are immensely indebted to our French hosts. We lived in the Naval Mess at St. Mandrier where the food was excellent and the company even better. The French scientific team from Bretigny, (the French equivalent of Farnborough), were first class, professionally and socially.

And we were immensely impressed with the G.E.R.S. (Groupe des Etudes et Résciches Sous-marins).

'Deepwater' Sports Report

ON rejoining the Diving Section in April, I was very soon entrusted with the task of Sports Officer. With the full co-operation of the Diving Training Officer and numerous others, *Deepwater*'s sports teams have as always, sallied forth to take on all corners.

During the past six months, *Deepwater* has taken part in the Soccer, Volley Ball and Deck Hockey leagues. Due to the spell of bad weather at the beginning of the year, the Soccer and Deck Hockey leagues were not completed. In the Volley Ball we finished runners-up to the Ordnance Division.

Our brightest moments have been the Athletics, Tug-of-War and Aquatic competitions and a run down on each is given below:—

Athletics:

This proved to be a very fine win for *Deepwater*, for around a few very good athletes, was mustered a team of many triers. Final positions were:

1st.	*Deepwater* ..	113 points
2nd.	*Ordnance* ..	104 points
3rd.	*Willis*	56 points
4th.	*Walker* ..	37 points
5th.	*Long Course* ..	33 points
6th.	*Maintenance* ..	28 points
7th.	*Scott*	17 points
8th.	*Boyd*	13 points

Event Winners were:—

Three Miles—
A.B. Setchell, C.D.Star
Shot—
L.S. Slingsby, C.D.Star
220 Yards—
S./Lt. Stratton, C.D.O. 'Q'
Steeplechase—
A.B. Setchell, C.D.Star
220 Yards Hurdles—
A.B. Barker, C.D.Star 'Q'
Javelin—
N.A. Murrell, F.D. (S.A.R.)
Long Jump—
Lt. Lafferty, C.D.O. 'Q'
440 Yards—
A.B. Brushneen, S.W.D.

The 'Victor Ludorum' Trophy for the best all-round performance was won by Lt. Lafferty with a total of 19 points our of a possible 24.

Tug-of-War:

The Trophy was retained by *Deepwater* and very rightly so, for the team really got down to it and

Lt. Lafferty receiving the Victor Ludorum Trophy for the best all round athlete of the sports.

put in many training stints. P.O. Roberts, C.D.1 was the coach and on the day it was a pleasure to watch the way in which they disposed of our old enemies (Ordnance Division) in the final by two straight pulls.

The Team comprised:—
P.O. Roberts, C.D.1 (Coach)
C.P.O. Christmas, C.D.1
P.O. Maynard, C.D.1
P.O. Hendrick, C.D.1
P.O. Hartshorn, C.D.1
L.S. Slinsby, C.D.Star
A.B. Smith, W. S., S.W.D.
L.S. Audoire, C.D.1
L.S. Martin, C.D.1

Tug-o-War Team in action

Aquatics:

It is perhaps not surprising that we expected to do well in the water, for with such stalwarts as P.O. Hartshorn P.O. Holland and P.O. Blaylock, together with many other capable swimmers we did, as in previous competitions, concentrate on getting a good entry for the heats to ensure as many places as possible in the final. Of the 16 places available to us in the final we managed to get 13 through. This was roughly twice as many as from any other Division and proved decisive as shows in the final placings:—

1st.	*Deepwater*	..	62½ points
2nd.	*Walker*	..	45½ points
3rd.	*Boys*	.. ..	22 points
4th.	*Maintenance*	..	18 points
5th.	*Ordnance*	..	17 points
6th.	*Willis*	.. ..	16 points

Event Winners were:—
100 Yards Backstroke—
P.O. Blaylock, C.D.1
100 Yards Freestyle—
P.O. Hartshorn, C.D.1
1 Length Butterfly—
A.B. Turner, C.D.Star
Medlay Relay—
P.O. Laylock, C.D.1
Lt. Trounson, C.D.O. 'Q'
A.B. Turner, C.D.Star
P.O. Hartshorn, C.D.1
Freestyle Relay—
A.B. Dolan, C.D.Star
P.O. Hartshorn, C.D.1
Lt. Lafferty, C.D.O. 'Q'
P.O. Holland, C.D.1
P.O. Ayre, C.D.1
L.S. Audoire, C.D.1

Water Polo:

The Water Polo match was arranged as a fixture between *Deepwater* and the rest of *Vernon*. Whilst it is fair to say that *Vernon* was not at its strongest (as most of the team are divers) a very interesting match was played, with *Deepwater* only extending themselves sufficiently to win. The final score was 3—2 and the goal scorers for *Deepwater* being P.O. Ayre, P.O. Holland and A.B. Dolan.

The Team comprised:—
P.O. Lott, C.D.1
A.B. Dolan, C.D.
P.O. Blaylock, C.D.1
P.O. Hartshorn, C.D.1
P.O. Ayre, C.D.1

P.O. Holland, C.D.1
L.S. Audoire, C.D.1

The latest escapade that we have embarked on is the Brickwoods Trophy, which was presented by Messrs. Brickwood Ltd. in 1907 to encourage Field Gun competitions for officers and ratings of the Portsmouth Command. Other trophies presented during the competition are the 'Wills' Trophy (fastest time), the 'Loader' Cup (winning Ratings crew) and the 'Officers' Cup (winning officers crew).

This year, *Vernon* have entered two ratings teams (one from *Deepwater*) and training started on Monday 10th June. Training with the gun is not allowed to start before 1st July. Training runs will be done on the old Parade Ground, Victoria Barracks at 0730 and 1700 daily.

Collingwood hold all four trophies at present, although the rules have been 'rewritten' to avoid any establishment taking more than three in future. It is our intention to try and bring back one or two of these trophies on the 26th July.

In conclusion may I say thank you all those who have contributed in various ways to a highly successful term and trust we will do as well in our future efforts. J.P.

R.M.S. in 1940-41 — My First Job

by LT.-CDR. TAYLOR, G.C., R.N.R.

DURING the first blitz on London hundreds of magnetic parachute mines were laid on the City as well as in the Docks and Thames Estuary. The consequent devastation encouraged the enemy to develop the use of these ground mines purely as bombs and this wholesale use of magnetic mines ashore created a situation for which the Navy was not wholly prepared. (Indeed, someone at the War Office must have earned promotion by discovering that these 'bombs', being mines, were a naval commitment and not a military one!)

The *Vernon* knew what to do about them and Lt.-Cdr. Ouvrey gave adequate instruction on how to remove the bomb-fuses, gains, picrics, magnetic detonators, primers, clocks and so on, to the early volunteers who had been hurriedly called on, from H.M.S. *King Alfred*, to deal with the many unexploded mines lying around in London. As each one had an evacuation area of a half a mile radius round it and could involve the evacuation of 22,000 people the urgency of the situation was extreme.

The trouble was that there were not enough tools available to completely equip even the first three volunteers, let alone those who were briefed to follow up. So, an 'ad hoc' assembly of 'rendering mines safe equipment' was got together after some concentrated thinking and this included the rubber bulb taken from the motor-horn of a London taxi, a bicycle pump, a football pump adaptor, a rubber washer, a nail, a piece of string, a screw-driver, an adjustable spanner, and the inevitable hammer. (The motor-horn subsequently gave way to a lady's hairpin, held in position by a matchstalk, which was later superceded by the more sophisticated 'gag').

The actual process of R.M.S. was simple enough, provided that one could get at the bomb-fuse and detonators; in other words: if the mine was 'sitting pretty'. This was rarely the case, however, and it was always a matter for intriguing spec-

ulation, whilst driving hell for leather to a job from our base in the Admiralty, as to how one would find the mine lying; buried in the earth, sunk in a marsh, welded to the live electric line of a railway, swinging by its parachute from the cornice of a nine-storey building or, just lost in a forest.

I was lucky in my first job — a type 'C' para-mine which had landed in the quadrangle of Shenley Hospital North London, commandeered by the military and now filled with soldier casualties. Important enough to take my mind off myself and — 'sitting pretty'!

I decided which way I should run for it if the bomb-fuse should start to tick and how far away I could get in the 17 seconds available. There I arranged for a funk-hole to be dug; not very deep, but fairly wide, as I should be coming over the top at some speed. My colleagues used to think that my funk-holes were usually too close to the job but I reckoned that they were better too close than just out of reach! Meanwhile, I ordained that the hospital's X-ray and other valuable equipment should be moved to a safe place and I insisted that the surgeons should clear off, too. This they appeared to do, if only to humour me.

I and my rating assistant then used the bicycle pump and adaptor to blow into the motor-horn bulb a pressure of air which, in our judgment, equalled a head of 12′ of water. This was then tested in a bucket of water for leaks and its air passage way was cleared by means of a nail. My assistant then retired to the funk-hole from whence he could report progress in case anything went wrong.

I then applied the rubber washer to the bomb-fuse and carefully screwed the clumsy, unhandy, motor-horn assembly onto it, released a stop-cock to admit the air-pressure to the hydrostat in the fuse thus immobilising it; in theory, but , not always in practice.

We always assumed that there would be a booby-trap behind the fuse (there was ample space for one) so, whenever possible, we arranged to withdraw it from a distance. 'Do it from a distance' was the watch-word of our squad, no matter what the operation. Thus, before completely unscrewing the keep-ring, the motor-horn and bomb-fuse were held in place by a piece of stick tied to a line which had previously been laid out to the funk-hole and also tied to the motor-horn.

Having done this I, also, retreated towards the funk-hole which I approached in a deliberately nonchalant manner (as much to re-assure myself as the many invisible people watching me through their telescopes and binoculars).

I joined my assistant in the funk-hole and gave the line a smart pull. As I did so, there was the hell of an explosion. Startled out of my wits as I was, I knew that it was'nt the main charge for I had seen one go off the day before carrying one of my two colleagues with it (he was gazetted as 'missing, presumed dead')

What had happened was that I, in my initial excitement on my first job, had forgotten to 'spit onto the washer — in other words, to moisten the washer which went between the motor-horn assembly and the bomb-fuse to make them airtight. In this case, because of the dry washer, it wasn't air-tight and the pressure of air which I had pumped into the rather unresiliant motor-horn was leaking away as I strolled back to the funk-hole. It released the hydrostat as I tweaked the line; the gain blew a large hole in the concrete path and flung the mine about nine feet away. Another second's delay and the lot would have gone off. Quite one of my luckiest escapes. (The hospital's too, for that matter!)

Book Review

by 'B.F.'

"THE MAN IN THE HELMET"

by DESMOND YOUNG

Published by Cassell, London

OF all the books I have read about diving I think this is probably the best. The author makes little or no claim to personal achievement in our sphere but as the son of that great salvage exponent Commodore Sir Frederick Young, he records with intimate detailed knowledge, numerous feats of determination, skill and courage that are part of the fascinating history of mans fight to conquer the underwater world.

The author pays almost hero-worship to Sir Robert H. Davis in portraying this great man's amazing foresight, generosity and prodigious contributions to the science of living and working in unnatural conditions. He also gives credit to many others whose work has helped to further the safety and ability of those who operate under these circumstances.

For those who would have knowledge of their heritage as divers this book is a must. It gives a most comprehensive review of the state of the art over a great number of years, written in a style that makes interesting and pleasant reading.

British submariners may be disappointed that their latest achievements in submarine escape have not been included, similarly I was not entirely in agreement with the authors account of the circumstances attending the indentification of *Affray* after she had been located at the edge of the Hurd Deep. Others may also find grounds for argument or disagreement but I feel certain that the knowledge of all those interested in the history and science of diving will be augmented by reading this book.

STOP PRESS

It has been heard that some Divers are somewhat self-conscience about their physical appearance and fitness. They are now training on 'LIMITS'. (Starch reduced, slimming type biscuits!)