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MAGAZINE

1/6

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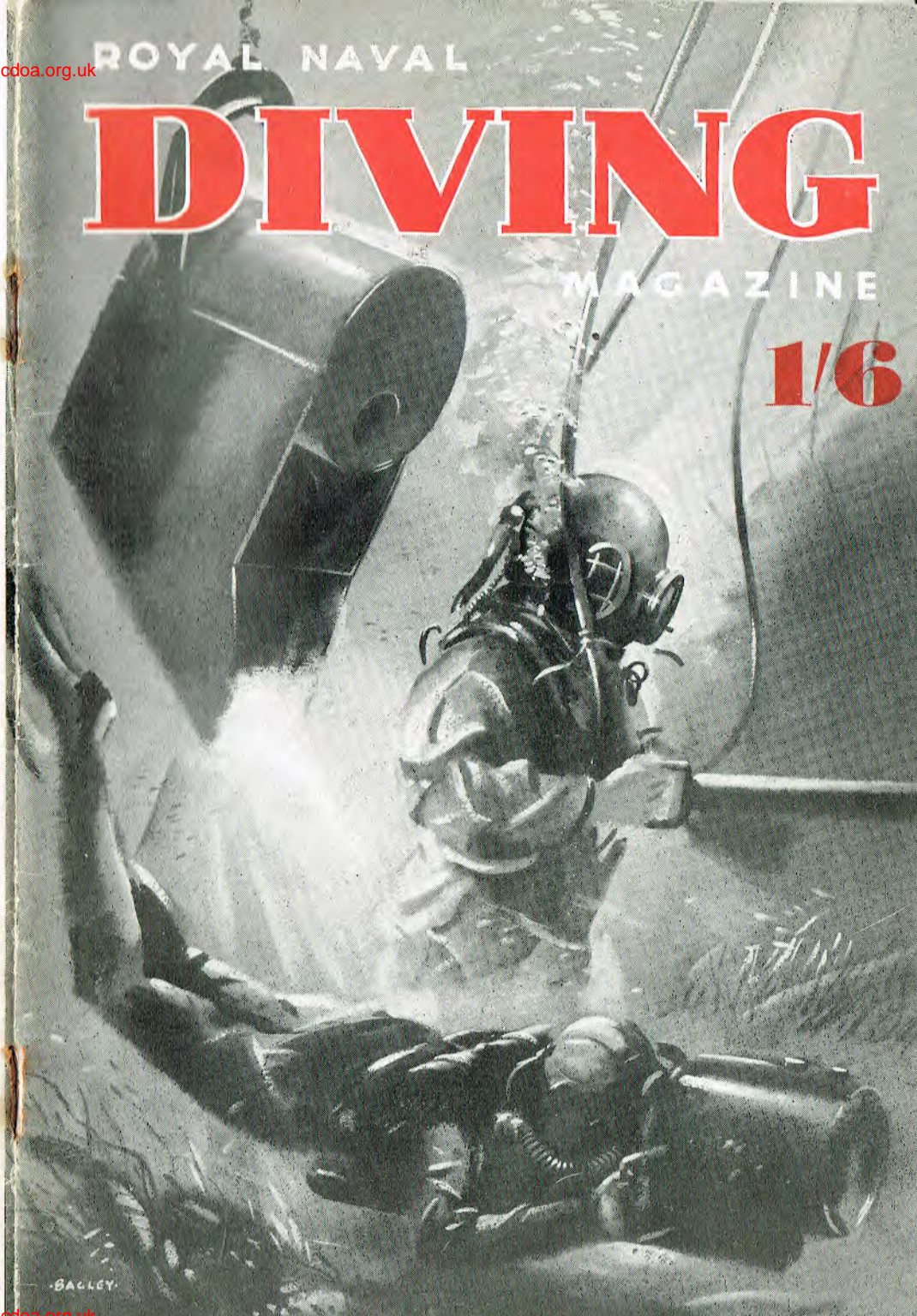


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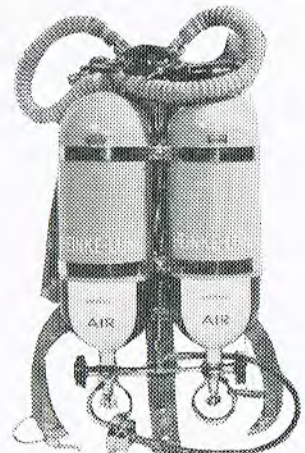
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Vol. 5

September, 1957

No. 3

## EDITOR'S NOTES

Dear Readers,

This magazine is run by a voluntary staff who rely on the heads of various units and civilian readers for articles, as we have no reporters to sift out interesting data. Previous Editorials have always stressed this but on the whole it is the same people whom we have to thank for the bulk of the material and hence the success of the magazine.

I would like to point out what it entails to put a magazine of this type into print.

Firstly, the stories, photographs and cartoons must come in and please note the more there are the better. These are read through, corrected if necessary, and sometimes cut down by Instructor Lieutenant Kelly. Once this has been done, all the suitable material has to be typed out in triplicate before going to Admiralty for censorship.

Only then can the staff start to compile the magazine. From here it goes to the printers who make out a galley proof. This is read through, word by word, in order to correct any printers errors and mistakes that may have been overlooked before. Having satisfied ourselves that all is well, we give the printers the 'go ahead' signal and await the delivery of the finished articles. These are then sent to the four corners of the earth and, just as everything appears settled, we find ourselves amid the chaos of the next issue.

EDITOR.



## OBITUARY

Lt.-Cdr. J. S. MOULD, G.C.

Lt.-Cdr. John Stuart Mould, who has died, aged 46, won the George Cross and the George Medal within six months of each other while on special service. He was serving with the Royal Australian Naval Volunteer Reserve.

He came to Britain in 1940 under the Australian Yachtsman's Scheme, for which he qualified as an amateur yachtsman holding a yacht master's ticket. He was awarded the G.M. in April, 1942, for special services and the G.C. in the November for 'great gallantry and undaunted devotion to duty, in stripping live enemy mines'.

As a volunteer for dangerous duty in bomb and mine disposal, he was first commended for brave conduct in 1941. He helped to develop the 'human mine-sweeping' technique by which specially trained divers cleared mines by hand.

Lt.-Cdr. Mould was an architect in civilian life.

(By kind permission of the Daily Telegraph).

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'Mouldy' was well known and greatly respected, both technically and socially, in the British Diving sphere during the war. His awards are sufficient in themselves to tell of his great personal contribution to the victory. They do not however necessarily tell of the high standard of morale he instilled in those who associated and served with him outside the field of action. One always felt that people like 'Mouldy' and his Commonwealth colleagues could not be subdued regardless of difficulties or enemy forces.

We add our sincere regrets and deep sympathy to Commander Harries, George Gass and Bill Bailly, who will feel closely the departure of such a great 'cobber'. By 'B.F.'

## "GERMAN STYLE S9s"

In February, 1955, the diving team of HMDT *Clearwater* rendered assistance to the German sail ship *Pamir*. To show their appreciation, the Passat Association invited the team, at the end of May this year, to be their guests in Hamburg and then sail back in *Pamir* to England.

Unfortunately, the only members of the team available to accept were S/Lt Walker, HMS *Kingfisher*, L/M(E) Gough, HMS *Vigo*, LS Thomas and AB Lockwood, HMS *Vernon*. Lt Checksfield, as the representative of the Diving Training Section in *Vernon*, also accompanied the party.

We travelled by air from London Airport, and after changing planes at Amsterdam arrived at Hamburg right on schedule there to be greeted by Dr Wach (Chairman of the Pamir Passat Association), Mr. Wierss (Ship's Husbandry), representatives from various shipping firms and the *Pamir's* crew and last but not least our old friend Captain Eggers. The press and radio made their presence felt after the welcoming speech by Dr Wachs, and numerous photographs were taken.

After clearing customs, we were driven out to what must be one of the loveliest spots in that part of Germany. The Sulleberg at Hamburg-Blankenese, perched on top of a hill overlooking the river Elbe. From the tree-shaded veranda one can get a glorious view of the miles of waterway and the wooded slopes of the surrounding hills, which shelter some of the loveliest houses to be seen.

Here, in very distinguished company, we thoroughly enjoyed both a superb luncheon and the friendly attention of our hosts.

An official speech of welcome was made by Dr Wachs, who made the most flattering references to *Clearwater* and her crew. On completion of his speech we were presented with an inscribed cigarette case as a mark of appreciation. Speeches were also made by the British Consul General, Mr King, and Dr Zwickler, Minister of Traffic, Federal Republic of Germany. Sub-Lieutenant Walker then spoke on our behalf expressing our general appreciation of the gift and the opportunity to sail in *Pamir*.

On completion of luncheon, we enjoyed the wonderful view of the river and surrounding scenery before being escorted to our bus and driven back to the Docks where we were taken by launch on a most interesting trip around Hamburg Docks. The amount of shipbuilding taking place was most noticeable, as was the volume of traffic. Every available foot of wharfage was taken up with ships, two and three abreast. I have never seen so many floating docks, not only in single units, but two, three and sometimes four, in a group. A huge tanker was under construction in two halves; one half was on the slips, the other in the water alongside. Practically the whole of the present German Merchant Navy has been built since 1947 and they are fine looking vessels with streamlined bridges, funnels, etc., and first rate accommodation. One of the largest companies has no ship built before 1951—their whole fleet is absolutely brand new.

# A watch that stays waterproof 660 feet under water!

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On completion of our trip around the docks we returned to *Pamir*, where we were introduced to the present Captain, Captain Diebitsch, and two old friends, the Engineer Officer and the Bos'n, a real old sea-dog of sixty-eight. We were allowed only half an hour in which to clean up before proceeding to the Hamburg American Line M/V *Wuppertal*. Here we were interviewed by Bremen radio, introduced to the Captain and Officers of *Wuppertal*, a splendidly appointed vessel, then wined and dined right royally. Dr Wachs, who is the head of the Hamburg American Line in Hamburg, gave a very witty speech, to which Lieutenant Checksfield made a fitting reply. The meal was further enhanced by the music and songs given by cadets from *Pamir*. This very versatile group of musicians sang English, German and Russian songs and sea shanties at which they are adept. Dr Wachs led our hosts in a couple of rousing songs, and though we were unable to understand the words, we were left in no doubt as to the meaning. A most convivial evening ended with a farewell toast.

The following day, *Pamir's* sailing was delayed, due to trouble with the auxiliary diesel engine, so we were taken on a very interesting and most enjoyable tour through Ahrensburg, Politz, Bad Oldesloe and Plon, where we made short work of a well-cooked lunch, then on to Eurin, Robet, Hoffnung, down the Baltic coast to Strand and across to Trave-munde. From this lovely watering place we could see the watch tower manned by East Zone Police. Alongside the Casino, in an open air cafe, we had coffee and cakes before returning to Hamburg via Schwactau, Lubeck, Hambergan, Politz, etc., along the autobahn. Herr Wierss, a most efficient organiser, guide and friend, unfortunately had urgent business to attend to so left us in the very capable hands of Herr Behn, an ex-*Pamir* 3rd Mate. He took the whole of our party to his home on the outskirts of Hamburg, where we cleaned up, were 'fed and watered' in a most hospitable atmosphere, before being escorted back to Hamburg, in time to attend Hamburg's top variety theatre. The show was extremely good and although unable to fully appreciate the comedians' jokes we nevertheless enjoyed ourselves immensely.

Thursday was 'Father's Day', a 'relaxation period', and both Lieutenant Checksfield and I took advantage of it. The others went ashore with some of *Pamir's* cadets on a sight-seeing tour of the City.

In the evening Herr Behn took us to his home once more where we met several members of his family, including small nephew, sister, parents, grandmother and great-grandmother, a fine old lady of 92. They left us in no doubt of the happiness they felt at our visit. After a very happy evening, our host escorted us on a sight-seeing trip through the City to *Pamir*, where we reluctantly said goodnight.

*Pamir's* departure being delayed until Saturday, we were again met by Herr Wierss and Herr Schwarz and driven through the docks to where a powerful launch awaited us. In this we enjoyed a wonderful trip for miles and miles down river. The scenery was varied and most interesting and among many places of interest pointed out to us was the 'Hail and Farewell' station. From here, all ships leaving and entering Hamburg

are greeted with their national anthem and words of welcome over a loud-hailer system. We also saw the school at which the cadets are given pre-sea training before joining the Merchant Marine. Only the best cadets of all German schools are accepted here; and then the top cadets from here after 3½ months of concentrated training are appointed to the *Pamir* or *Passat*. The remainder go to motor ships. There is terrific rivalry amongst the cadets to obtain places on the sail ships, which are considered an honour. The cadets do two round voyages before returning to officer cadet school for further training and promotion.

Returning to *Pamir*, we passed the outer fringe of a regatta. Dozens of yachts racing over the very shallow water close to the southern bank made a lovely sight.

So far the weather had been perfect and the north-easterly wind augured well for our departure in the forenoon. A quiet evening was enjoyed with early retirement in preparation for our sailing at 1000, Saturday. Dr Wachs, Herr Schwarz and others came to wish us *bon voyage* just before *Pamir* was towed out from her berth into mid-river.

Very regretfully, we said our goodbyes and joined in the general waving of farewells to wives, sweethearts, friends, officials, in fact the whole of Hamburg, for that is how it appeared. Every vantage point—windows, roofs, roads, trees—as far as one could see had its quota of people waving *Pamir* 'farewell'. This continued all down the river! Never had we seen anything like it yet it's apparently customary whenever *Pamir* or *Passat* enter or leave Hamburg. The whole port and the Merchant Marine appear to be inordinately proud of these two fine ships. As well they might be.

Unfortunately, the wind had changed overnight and was now westerly, which forced *Pamir* to accept a tow much further than she would normally do.

A noticeable custom was the way in which the cadets man the gunwhales to give their own particular brand of three cheers whenever another ship passes by and salutes *Pamir*, which they all do by dipping their flag and using their syren. In fact one German ship altered course in order to cut across *Pamir*'s bow and then proceeded to circle her very closely while both crews cheered and waved with enthusiasm. As usual the 'Hail and Farewell' station gave them a wonderful departure.

After slipping the tow, *Pamir*, still looking for a favourable wind, pressed on using her auxiliary engine. The sea was like glass on the second day out although light airs tempted the Captain to try a little sail drill by hoisting all jibs, staysail and spanker, but it was hopeless. It wasn't until the latter part of the trip that we had a fair wind, a s-westerly, force 5. Immediately, it was 'Make sail'. Believe me, these sail ship men hate an engine. It was a wonderful sight to see the way the cadets manned the yards and set sail. They were just like monkeys in their agility. It was hard to believe this was their first time aloft in *Pamir*. Heeling over, *Pamir* sped on at a good nine knots, all sail set with the exception of flying jib and royals. She was carrying 800 tons of sand between decks and in the hold as ballast, but we were told that in order to carry royals all ballast would have to be in the hold itself.

This was an experience we had long looked forward to and were enjoying to the full. My one regret was that all the original crew of *Clearwater* were not with us particularly 'Blood' Reid or 'Alexander the Great' as he was affectionately known by *Pamir*'s crew.

Captain Eggers, although officially on leave, came with us on this trip and proved, as did Captain Diebitsch, to be an excellent host. We had the full run of the ship and were treated with every courtesy by all onboard. It was fortunate that practically everyone onboard could speak and understand sufficient English to cope with our many questions. Both captains were full of interesting yarns of sailing ship life and their experiences during the last war. Captain Eggers was a U boat commander and his boat was sunk in the Skaggerak on the last day of the War, by a Fleet Air Arm plane! His accounts of fights with Russian submarines were most entertaining, and in particular his sinking of the largest one—S.I. He also had a yarn of the first 'airborne' cat. Apparently, in the early 1900's, a sailing ship was rounding the Horn and onboard was the Captain's pet cat. An albatross had been following close astern for days, with the cat keeping a watchful eye on it. Suddenly the huge bird flew close alongside and the cat pounced and landed on the albatross' back with apparently no more effect on the bird than a snow-flake! It wasn't until some time later, when the albatross again flew close, that the cat, minus one life surely, managed to 'bail out' and return to its customary domain. It appears the cat was never seen to stalk any bird again.

Captain Diebitsch, on being questioned, admitted to having rounded the Horn ten times and added that that was enough for him. Any man who wanted more was a glutton for punishment. During the war he was an officer on *Kormorant* the armed auxiliary which sank the Australian cruiser *Sydney*. He was later a POW in Australia. Recently he commanded *Xarifja*, Hans Hass' yacht, for over a year, in expeditions all over the world. Working with Hass at the time was the late Lt-Cdr Jimmy Hodges, who was one of the R.N.'s finest underwater photographers. We were privileged in being shown a wonderful collection of photographs which he had taken above and below water.

*Pamir*'s previous trip in February of this year took 40 days from Buenos Aires to Dungeness. Then, in the face of very bad weather and adverse winds, it was a further 60 days before she reached Hamburg.

On the trip out this time she made a record run of 34 days from the Lizard to Montevideo. Both these runs were made under the command of Captain Eggers. At this stage a few facts and figures on *Pamir* will no doubt be of interest. Built in 1905 at Lubeck, by Blohm and Voss, she is one of the 'Flying P' four-masted barques of 100 metres overall length, 96 metre water line, 14 metres beam and 3103 tons. She has 27,000 metres of rigging—14,000 of rope and 13,000 of wire.

The crew is:—Captain, 4 watchkeeping officers, 1 engineering officer, a surgeon, a pusser and radio operator. There are 7 petty officers, namely the bos'n, carpenter, 2 sailmakers, 2 engine room mechanics and a cook. Finally there are 2 assistant cooks, 3 able seamen, 39 ordinary seamen and 20 boys.

She carried 130 tons of water for an estimated 60 days trip and relies on rain water to help out. The ration is one bucket per person per day for all needs.

Dhobeying is done periodically and collectively with everything in together, with the exception of white shirts and underwear.

Watches are as follows:—1200—1800  
1800—2400  
2400—0200  
0400—0800  
0800—1200

with all hands in two watches. Whenever going about, or changing sail, clear lower deck is the drill. Although all capstan work is done by hand, the cable capstan can be connected to a power winch. Whenever she swings compasses—of which there are 3 (one either side of the wheel and a bearing compass), she does so three times, once each, with the yards fore and aft, braced to port, and braced to starboard.

Her four masts, yards and rigging weigh 800 tons.

Each watch is split up into mast teams. When the crew are fully trained and in good condition the full suit of 35 sails (40,000 sq metres of canvas) can be set in 25 minutes; and can be furled in one hour. The main mast is 56 metres high from deck level. The yards with rigging weigh as follows:—

Main	8 tons
Lower topsail	5 tons
Upper topsail	4 tons
Lower top gallant	1.3 tons
Upper top gallant	1.3 tons
Royals	1 ton

*Pamir* sails best with the wind just abaft the beam, with the ship over at 10–13 degree angle. She is a very good sailor and a 'stiff' ship. With a cargo of 2,850 tons she will draw 23 feet. Under her present ballast of 800 tons, which when in the hold will counter her masts and rigging, she will draw 17 feet. The finest seamen are always on the fore mast. In winds up to force 4–5 *Pamir* always goes about head to wind. In winds above force 5 she wears round, otherwise the strain would down the top mast, if there was the slightest delay in carrying out the drill. Six boats, one of which has a motor, and a number of inflatable rafts are carried. Decca, with portable antennae, and echo sounder are also part of her equipment. The steering is done by means of a five-foot diameter double-wheel amidships, housed in the continuation of the chartroom and open at the fore end. It is normally manned by two or more helmsmen with the weather helmsman in charge. Deckhead sliding hatches are fitted above both positions to give clear view of the sails in order to prevent luffing, etc. The cost of one full suit of sails is £30,000. Barring accidents, the sails are used as 'No 1' suit for 3 years, then become 'Fair weather' suit.

The decks are scrubbed morning and evening, first with 'strongers', then sand and finally hosed and scrubbed down. All this is done in a

most efficient and cheerful manner. Up to twenty cadets in line abreast move like a well drilled chorus and sing all the time they scrub and work outboard plank by plank. On reaching the ship's side, a word of command from the senior hand in charge turns them about as one man. They then work back the other way. In their time off watch, they either continue learning their rigging, write letters, lie on the hatch covers, or sing to the music of guitars and harmonicas.

A pigeon which joined us on leaving Hamburg and was christened 'Phyllis' by the cadets, had become a firm favourite onboard, stalking majestically around the decks ignoring everyone.

The steward, who was having his first trip in sail, had previously been on the North Atlantic Run to New York and Montreal, etc. This was a new experience and not all he had expected. None the less he went out of his way to make our stay in *Pamir* as pleasant as possible.

I saw one cadet do a 'Care and Maintenance' routine on the mainmast, yards, etc., completely, in less than 6 hours. This included oiling down, checking lashings, blocks, bunt-lines, etc.

For the first few days at sea the orders relative to making or taking in sail are repeated by all the cadets in order to learn them. After that initial period, only the officer in charge gives the orders and the Bos'n or senior hand repeats them. Stand easy is know as 'coffee time', and occurs only in the forenoon for a period of anything from five to twenty minutes, depending on the work in hand and the mood of the mate.

The whole crew from Captain to the youngest cadet seemed most cheerful. Throughout our trip I never noticed any 'morbid character'.

The 'potato peeling party' was something one usually associates with army cartoons, but in *Pamir* it was authentic. Anything up to a dozen cadets squatted on the forward hatch outside the galley industriously 'carving-up' huge stacks ready for the mid-day hot meal.

In the charthouse were the 'wind charts', large detailed sheets in book form, covering the oceans of the world for every lunar month. On each sheet was marked the direction of the wind at given points and times, and how winds varied according to the season of the year in direction, speed and locality. These charts have been compiled from records of over one thousand sailing voyages during the last eighty years and are invaluable for the efficient navigation of sailing ships. Also in the charthouse was the ship's chronometer, which had a singularly insistent bell. Whenever it struck, it was repeated by the helmsmen on the wheel bell, and finally by the look-out on the watch bell of the foc'sle head.

A catwalk ran the length of the ship joining foc'sle, midship and poop on the starboard side. It was fitted throughout its length with guard and hand rails breast high, allowing one to get from for'd to aft or vice versa in seconds.

There was a sick bay with three cots and a well fitted out surgery in a deck housing at the foot of the kreuz mast.

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The Captain's and officers' quarters are all under the bridge deck, as is the galley, purser cum W/T office and petty officers' mess. Able seamen's and cadets' quarters are under the poop deck, below which is the engine room. For'd, under the foc'sle head, are the Bos'n's, sail-makers' and lamp stores with cable lockers below.

A noticeable feature were the plants carried in both the Captain's quarters and the officers' cabins. 'A touch of colour during weeks of sea is very soothing to a man', one officer said.

Incidentally, an old friend I met in Hamburg (ex-*Pamir* mate known as 'man and a half' and he is literally that) was most sorry not to be on this trip. He was 'champing at the bit' in the school completing his course for captain, and obviously was impatient to be at sea again. Herr Rudolf Wittengagen, for that is his real name, was very disappointed at not finding Alexander Reid and Petty Officer Riley with our party. He was accustomed to greeting Riley with 'Good morning coxswain' and then picking him up off the deck with one hand. Reid, now left the service, was a great friend of his all through the period the team worked on *Pamir*. In fact 'Man and a half' was one of Captain Eggers' numerous liaison officers with us and helped out on *Clearwater*.

During the trip it was noticed that Lieutenant Checksfield was very partial to the many varieties of sausage and we are certain he had a secret understanding with the steward.

As we drew near the Solent, one of our destroyers, and later two motor gun boats, came close in to have a look at *Pamir* under sail. On arrival at the Nab Tower we took in sail and ran in under the deisel to pick up a pilot. Finally anchoring off Outer Spit Buoy, we were boarded by the customs, news reporters and a member of the C-in-C's staff. After the usual inspection we were photographed and interviewed before taking our final farewell of *Pamir* and her crew.

Captain Eggers, who was flying back to Germany next day, and Captain Diebitsch, waiting for an officer to join *Pamir* before resuming the voyage to the river Plate, both expressed the hope that we had enjoyed ourselves and had found the trip interesting. We most certainly did.

As we left *Pamir*'s side in the launch to return to HMS *Vernon* we were given tremendous 'three cheers' by the whole crew who manned the bulwarks to give their final farewell. It was the finale to a most wonderful experience, one for which we are most grateful to our generous and friendly hosts.

HOOKY.

#### NOTE:

The *Pamir* during her lifetime gained renown as a grain carrier. In 1939 she won the famous grain race and it is ironical that she should meet her end carrying a similar cargo. As one who has had the honour to sail in her and who knew the Captain, officers and crew, may I, on behalf of the personnel of the Diving Section of HMS *Vernon*, offer our sincere condolences to all the relatives and friends of those who met disaster.

LT. CHECKSFIELD, R.N.



## CHATTY "CHATS"

Changes have occurred during the last few months, CPO Hall having departed to HMS *Kingfisher* (complete with white walking stick for checking mooring gear) and CPO 'Algy' Ware having drawn his last S9 in the service.

The 'Steamers' made another epic voyage in *MFV 1062* to Ramsgate Water Carnival, where the fun became fast and furious and the ladies also. Our monster 'Willy' and the crossing-the-line ceremony received favourable comment in the local press and in the recent *Navy News*, and once again pleased the children (5 to 55 years of age). It is rumoured that 'Aphrodite' Carr was in receipt of numerous requests for dates during Navy Days, having to be rescued on one occasion from a big stoker.

Will 'Corkies' please note, it was 'Steamers' who found the handbag under *Scorcher* during Navy Days and in record time.

We welcome to the diving fold:—

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Spice LM (E)	C/Skx 920841
Langley AB	C/Jx 896880
Cripps OS	C/Jx 930593
Curry AB	C/SSx 898560

Now comes the time to close and so 'Cheerio' all dipchicks, look us up in Chatham. 'CHATS'.



'Sez, can he borrow a bottle of 60/40 please'

## A FALSE IMPRESSION

The story that I am about to relate actually took place a couple of years ago. I was spending a leave at an East Coast town and it was my wont to stroll round the fish market to work up an appetite until the licensing act permitted the refreshment rooms to open. On this particular morning I noticed a little more than the usual activity at the quay side and found to my surprise that there was some diving in progress; at least that was the impression given.

In an open boat littered with a pump, woollies, cups, an empty rum bottle and all the other accoutrements of diving was an unshaven gent, sitting on the gunwhale with one foot idling the handwheel of the pump. The pump I recognised as a single, double acting—or is it a double cylinder acting? Anyway, it was a normal pump and it required pumping a complete revolution of the handwheel to supply air to the diver. From the pump the air pipe led over the side to the harbour bed and on occasions a small bubble drifted upwards and gave a deflated puff as it collapsed on the surface, rather like a woman removing her corsets.

I was intrigued, for according to my reasoning the diver could not possibly survive on the air, if any, that was being supplied. There was something queer going on and I became determined to get to the bottom of it. So clearing my voice I hailed the unshaven gent in the boat with a 'Hello there'. This brought no reply, but undeterred I followed up with the question 'Is the diver working on the piles?' This time the bearded bloke looked up and in a rum and baccy voice said, 'That's a job for the doctor not a diver'. This brought a loud guffaw from the 'goofers' all along the quay and I decided that further conversation would only embarrass me, so I discreetly moved to a vantage point where I could observe operations without being too conspicuous. One hour passed, opening time arrived and I was tempted to forget the vigil and carry out a few dives into a pint pot, but my curiosity won and I stayed.

After some two and a half hours the crowd had dwindled away and only the odd passer-by and yours truly remained. I endeavoured to appear disinterested in the operations and tried to read my paper, keeping one sharp eye on the boat and the other longingly on the door of the nearest pub. Suddenly, from this salubrious establishment stepped an obvious sea-faring man, who came down to the jetty and climbed into the boat. The pump-hand, seeing him coming, stopped pumping and greeted the newcomer with 'Where the —y hell you been?' This started a most pleasant conversation, during which the legality of their parents' matrimonial bonds was open to doubt. However, all ended well.

After a curt goodbye, the unshaven one climbed out of the boat and strode off quickly in the direction of the pub. During this time, which lasted some ten to twelve minutes, not one movement was made on the pump handle and I began to fear for the safety of the diver. As soon as all was quiet, I casually walked back to the boat and asked 'How's the diver



Whatever the pleasure

Player's complete it



Player's  
Please

getting on?' The new arrival answered 'Alright'. 'But he can't be,' I said, 'he's had no air for the past ten minutes.' This made the chap in the boat roar with laughter and when he subsided he shouted back, 'He don't need any where he is.' 'But,' I said, pointing into the water, 'Isn't he down there?' 'No he aint' chuckled the boat hand, 'He's over there drinking his lunch. This 'ere is just for nosy flippin parkers like you,' and he pulled up the airpipe to reveal secured to it an empty helmet.

G.A.F. Disillusioned Cork-Head.

## DIVERS AND DOCTORS

by

SURGEON COMMANDER S. MILES

Generally speaking, outside the service doctors don't know much about diving, but its medical problems really afford a great deal which is fundamentally concerned with the basic principles of medicine.

Once a year, during the summer, the British Medical Association organises a general get together, scientific and social, in some large town. Doctors and others associated with the medical profession arrive in large numbers to spend ten days attending lectures, inspecting scientific demonstrations, collecting samples from advertising chemists and generally enjoying themselves with organised outings and lavish parties.

The meeting this year took place in Newcastle and the Royal Navy was, as usual, invited to present a scientific demonstration. 'Medical problems of Diving' was chosen as a subject in view of the general interest aroused by the recent world record dive, the Crabbe incident, and the increase in popularity of underwater swimming.

The planning and presentation were carried out by the staff of the RN Physiological Laboratory with considerable help from the Superintendent of Diving, and some models from Seibe Gorman and the Ministry of Supply.

The greatest asset was of course the visit of *Reclaim* to Newcastle. That the Admiralty should allow this visit was greatly appreciated and enabled a large number of visitors to see the practical side of modern diving and to chat with the men themselves. The officers and men of *Reclaim* certainly worked very hard to make the visit worthwhile and seemed to enjoy being questioned by visitors with medical knowledge.

Early comments by the divers on the questionable appearance of the Tyne water were seized upon by the local press who were urging the authorities to 'do something about it.'

As much glamour as possible was also diverted from the Exhibition Hall to the ship whose steep gangway from the shore must have exposed some shapely legs and frilly what-nots.

It is to be hoped that *Reclaim* enjoyed visiting Newcastle as much as the BMA enjoyed having her there. There certainly seemed to be large numbers of men ashore, the divers in particular, visiting the medical

exhibition and, after a professional appraisal of RNPL's stand, enjoying the many medical curiosities which were on show elsewhere.

*Reclaim* was the centre of attraction as far as the Navy was concerned but much interest was shown in the stand itself. Touches of humour broke the ice and the most popular exhibit was the oxyhelium mixture which was freely breathed by all and sundry. With its aid a charming singer reached unexpectedly high notes and deep voiced gentlemen were embarrassed to hear their voices emasculated.

High-lights of Lt. Wookey's dive were illustrated by a working model and a tape recording of his conversation with the ship. Various types of equipment were on show with charts demonstrating physiological problems involved and an ingenious apparatus showed the advantage of mechanical packing of soda-lime canisters.

A model of a 'Diving Belle', a blonde in a swim suit and aqua-lung sitting bolt upright on a rock, caused a distinguished gynaecologist to suggest that she looked as if she was trying out a new type of commode.

It was hard work explaining the exhibit and answering questions from all types of persons but great fun. The questions were often very strange—for example:—

'Did Lieutenant Wookey do his deep dive in the Tyne?'

'If *Reclaim* is a diving vessel, why doesn't she look like other submarines?'

All were sorry that *Reclaim* could not stay for the full week but the visit will be remembered by many and the Navy's reputation for doing things thoroughly was certainly upheld.

Next year the BMA meets at Birmingham which is somewhat remote from the sea and it will be difficult to put on anything like as good as show as at Newcastle.

Finally RNPL would like, through this magazine, to thank their friends in the diving world for all the help they have given.

## FAR EAST NOTES

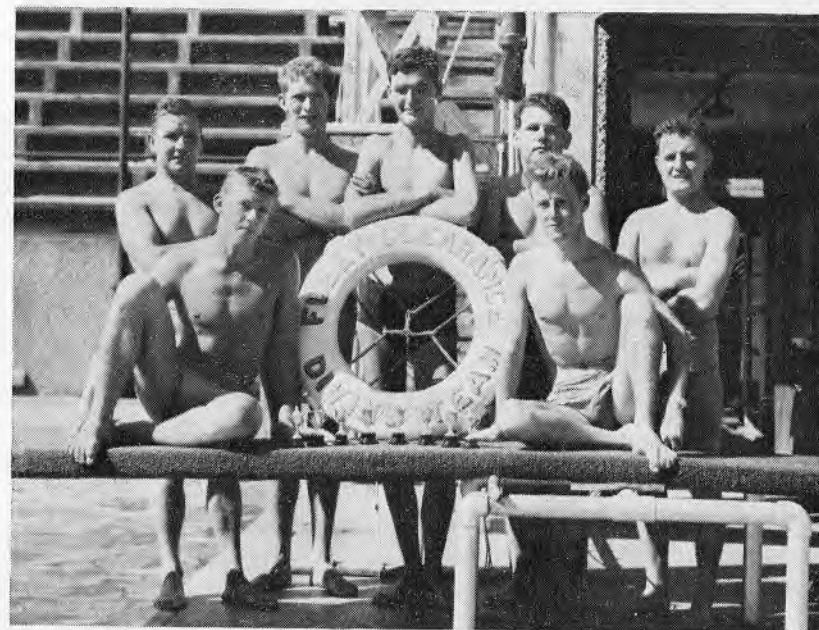
I would like to offer the team's congratulations to Lieutenant Commander Gutteridge and his party of Braves on their well earned decorations announced in the Birthday Honours List.

Meanwhile the steady grind of training continues in Hong Kong with a few operational jobs to add interest. We were called out one evening for a mine render safe job and dashed off full of enthusiasm only to find it was an empty case. The Fleet Clearance Officer was most displeased as he had missed one hour's duty at a Cocktail Party. He is, however, prepared to exchange the next ten parties for a live mine.

The Singapore Unit is still busy with their disposal problems. We had a visit from them last month which did everybody a power of no good.

At last we have had reports that the sharks are now in the area and although we have made three attempts to contact them we have so far had no success. If anybody has any ideas on this problem of producing an efficient shark repellent we shall be pleased to hear them.

Last week we said farewell to Leading Seaman Barker whose 'slipped disc' refuses to slip back again despite numerous stretchings.



Since commencing these notes, Hong Kong has experienced its first typhoon for several years. It was interesting but did not produce the amount of work for the team that we had anticipated. At least it has added to the list of things that have happened during this commission viz:—The driest year (fresh water for four hours every other day), the wettest year (27.4 inches of rain), the hottest summer for twenty years and the coldest winter since records have been kept. Riots, floods and fires have also occurred and to top it all the price of 'San Ming' has gone up.

J.W.

*Editor's Note*—For those who have not travelled to the Far Flung outposts, 'San Ming' is the local brew of beer.

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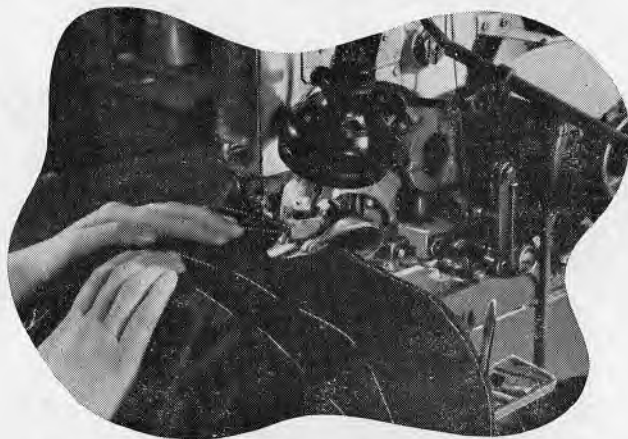
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## NITROGEN NARCOSIS AND THE BRAIN-WAVE MACHINE

By SURGEON LIEUTENANT A. GLASS, R.N.V.R.  
MR. P. B. BENNETT

*Royal Naval Physiological Laboratory, Alverstoke*

What is the connection between Nitrogen Narcosis which is experienced some way beneath the waves and Brain-waves which are not found on any sea? Recent investigations at the Royal Naval Physiological Laboratory have found a relationship between the narcotic effect of high air pressures on a diver and the electrical activity that can be amplified and recorded from his head whilst diving. This work was carried out with the co-operation of willing and helpful subjects from *Deepwater*, HMS *Vernon*, who many times went to pressure with electrodes attached to their heads as well as taking part in Surgeon Commander S. Miles' respiratory experiments.

### BRAIN-WAVES.

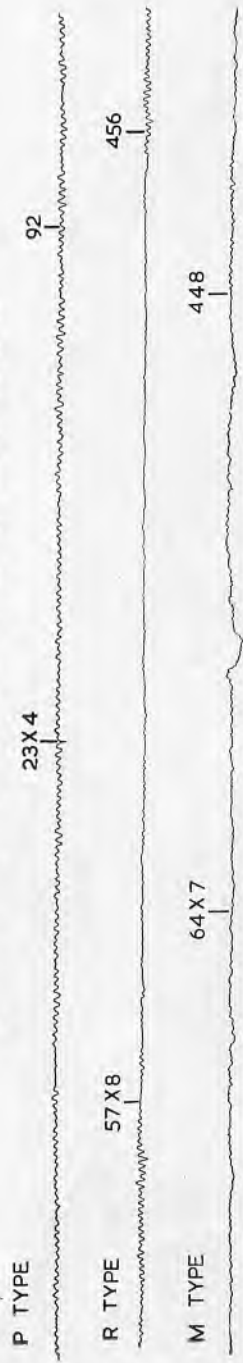
'Brain-waves' of the electrical variety were first discovered in animals in 1875 by a physiologist called Richard Caton, who later became Lord Mayor of Liverpool. However, further knowledge awaited the development of electrical and electronic recording techniques which has occurred in the Twentieth Century and it was not until 1929 that Hans Berger, a German psychiatrist, demonstrated to a sceptical medical world the existence of electrical waves or the 'occipital alpha' or 'Berger rhythm' in human beings. Adrian and Mathews in Cambridge in 1934, with improved apparatus confirmed his work and investigated many of the properties of the waves. Since then and particularly after the second World War the electroencephalograph—that is the trace of the brain-waves recorded on paper—has been used almost routinely as an aid to the diagnosis of many diseases of the brain.

Now the brain-waves are recorded at the Royal Naval Physiological Laboratory by eight electrodes which are placed on the head and held in position by a rubber cap. This gives the subject something of the appearance of the wife or girl-friend under the hair-drier (see photograph). These electrodes are connected through the sides of a Siebe-Gorman re-compression chamber to a six-channel Ediswan Electroencephalograph, better known to the 'guinea-pigs' as the 'Brain-washing' or 'Brain-wave' machine.

This consists of six amplifier systems which magnify the small electrical impulses received at the electrodes and write them out with pens on a moving strip of paper, eight inches wide. This continuous record is known as the EEG (Electroencephalographs).

What are these brain-waves? When a man or woman sits relaxed with their eyes closed and is connected to the EEG, then a rhythmic electrical wave potential can be recorded through the skull. This rhythm is most obvious over the back of the head (the occiput). This potential has a frequency of about 10 cycles per second and voltage of about 25

Fig. 1—THREE PHYSIOLOGICAL TYPES OF E.E.G. RECORD



R & P types are associated with irregular and M types with regular respiration. M types also tend to think visually. Classifications of this kind may be of use in the selection of men for diving and other underwater work.

Fig. 2



Effect of going to a pressure of 4 atmospheres absolute on the Electroencephalogram

microvolts (millionths of a volt), so that it can be seen how powerful the amplifiers must be in order to record these potentials.

When the eyes are opened the alpha-waves usually disappear being replaced by faster waves of much lower voltage giving more the appearance of a straight line. This is known as 'blocking' of the alpha rhythm. Similar blocking occurs when the subject concentrates on solving arithmetical problems, such as  $6 \times 98$ , in his head. Word association tests also produce blocking of this alpha rhythm.

To illustrate this point, a story can be told of one leading-seaman who did not show blocking to any arithmetical problem or to any word association except the word 'Black'. On questioning it was found that he was a confirmed snooker player and every time the word 'Black' was mentioned he produced a clear image of the black ball.

This does re-emphasise an important point that brain-waves are related in some way to what a person thinks; how he thinks; and how alert or otherwise is his brain. Brain-wave patterns in sleep and unconsciousness are different from the waking state. As to how a person thinks, it has been found that subjects who think of sums in terms of visual images, such as numbers on a blackboard, tend to have a low voltage flat record. They are known as 'M' or minus types. Those with brain-waves that 'block' easily to problems are known as 'R' or responsive types and those who do not block are known as 'P' or persistent types (Fig. 1). The names of the EEG types refer of course only to the EEG records of a subject and not to behaviour or activities outside the laboratory! The classification however may be related to breathing patterns which are of considerable importance in diving.

Apart from the relationship of the brain-waves to concentration, sight and the impulses that arise in the millions of neurones (nerve cells) that compose the cortex of the brain, little is known of the origin of brain-waves and, in spite of a great deal of work that has recently been carried out on them, they remain a puzzle. One theory has, however, compared the function of the regular occipital alpha rhythm to the function of a television scanner switching backwards and forwards over the screen. In the same way the alpha rhythm may scan the occipital cortex (the sight or visual area of the brain).

### NITROGEN NARCOSIS.

Consideration of brain-waves has led us rather far from work under the waves. As is well known, nitrogen narcosis occurs at depths greater than 100 ft and is caused by breathing air at high pressures. The subjective feeling of narcosis is one that is familiar to most divers. It is as much a form of intoxication as it is a form of narcosis, for a narcotic agent is one that produces sleep whereas an intoxicating agent produces excitement in its earlier stages. There is often a tendency towards laughter and over-confidence, some loss of power of clear thinking and very rarely hallucinations have been recorded, lip tingling and numbness are also noticed. Objectively, there is lack of control over finer movements and clumsiness is noticeable. More mistakes are made in simple arithmetic than would be made on the surface. These effects progressively increase

with depth and, at about 380–400 ft, can impair the diver's consciousness and efficiency to such an extent that his safety can be imperilled. This of course sets a limit to the depth of dives on air.

It is said that narcosis is more intense at the beginning of a dive but this feeling may be due to factors other than that of nitrogen and may in fact be partly illusory or psychological rather than physiological.

Since nitrogen narcosis was first recognised in the late Nineteenth Century, there have been many theories as to its cause because paradoxically nitrogen is a chemically inert gas, i.e. it will not combine with other elements or compounds. However, other gases which have an effect on the central nervous system are also inert. A notable example is the anaesthetic gas Nitrous Oxide—the 'laughing gas' of the dentist's chair which, in low concentrations, produces psychological effects and objective impairment of function not unlike that produced by nitrogen at high pressure, as many divers who have breathed 'laughing gas' at the Royal Naval Physiological Laboratory will testify.

A theory has been put forward by American workers fairly recently that the narcotic agent in compressed air is not nitrogen but carbon dioxide which they think may build up in the lung due to the increased breathing resistance in the more dense air at pressure. The air within the lungs of dogs was found to contain more carbon dioxide than normal. Work done on human beings at the Royal Naval Physiological Laboratory, by Rashbass, showed that in humans, carbon dioxide did not build up in



'Guinea-Pig' connected to the Electroencephalograph

this manner but even so it is well known that high concentrations do increase the effects of narcosis due to nitrogen and possibly both gases work together.

Another theory about nitrogen narcosis is an application of a law which was first discovered in drugs—a series of alcohols, and is known as the Meyer-Overton Law. This postulates that the narcotic or intoxicating action of one of a series of alcohols is proportional to its solubility in oil as compared with its solubility in water. That is the more narcotic a drug, the higher is its solubility in oil or fat and the less soluble it is in water (readers are advised not to experiment themselves with standard alcoholic beverages). If the properties of nitrogen are compared with those of similar gases it can be shown that this law is followed. Thus:—

Oil/water Solubility ratio	Argon	Nitrogen	Helium
	5·32/1	5·24/1	1·7/1

Argon is more narcotic than nitrogen, and helium, as is well known, is much less narcotic than either. Hydrogen is an exception to this hypothesis however.

#### EXPERIMENTAL WORK.

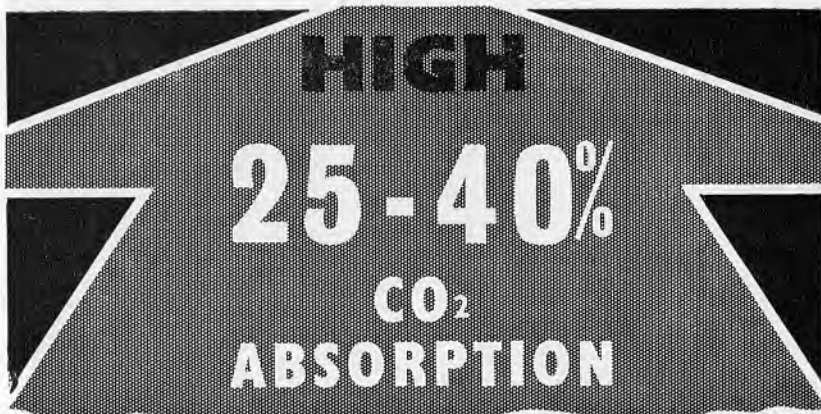
Once part of the background both to brain-waves and nitrogen narcosis has been delineated it is possible to comprehend more easily the aims and objects of the experimental work recently carried out at the Royal Naval Physiological Laboratory.

Because narcosis is the effect of some agent acting upon the brain, then it would appear sensible to measure this effect as directly as possible by measuring brain-waves at pressures.

The experiments were performed in the following way. All divers who came to the Royal Naval Physiological Laboratory had their EEG taken in the manner previously described. If their brain-waves were large, clear and regular and blocked well to arithmetical problems, that is they were 'R' or 'Responsive' types—they were selected for diving experiments.

In these experiments the selected subject was fitted with electrodes and asked to lie down and relax inside the Siebe-Gorman Re-compression Chamber where his electrodes were connected to the electroencephalograph. With him was a diving companion who was in telephonic communication with the EEG operators. An EEG record was then taken for a few minutes on the surface and subjects will recall that they were asked several short sums and sometimes word associations were presented. The sums were usually given at minute intervals and of course produced blocking of the alpha waves whilst they were being solved. The subjects were then compressed and EEG recordings taken at pressure. As before, sums were given at minute intervals. They were kept at pressure for a variable time depending on the depth and time available for de-compression, which was according to standard tables. Each subject on different days went to eight simulated depths between 50–200 ft in 25 ft intervals.

The main changes that were found in the brain-wave patterns were concerned with blocking. After a variable time at pressure, blocking to



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the sums did not occur (*Fig. 2*). The time to this non-occurrence or abolition of blocking was longer at 50 ft, when it happened after about 50 minutes at pressure, than it was at 200 ft, when blocking was quickly abolished 2–3 minutes after leaving surface. This meant that a fairly regular but complicated relationship existed between the depth and the time until the onset of abolition of blocking and, therefore, the time to what is probably an objective sign of loss of concentration. This loss of concentration occurred rapidly at high pressures, but more important, was also found at relatively low pressures after a very long time. From results like this, individual blocking thresholds to narcosis can be calculated and it has been found that there is considerable variation between individuals, but that this narcotic threshold is relatively constant for the same individual. It can however be lowered by fatigue (loss of previous night's sleep—and possibly alcohol).

In a previous set of experiments about twenty subjects of all types (P, R and M) were exposed to simulated depths of 200 ft. Their EEG's showed no consistent changes, apart from the rapid onset of abolition of blocking.

These subjects were also given a set of as many arithmetical problems on paper as they could answer in two minutes. The 'E' Test, in which all the 'e's are crossed out in a typewritten passage within two minutes was also presented. It was found that their answers were significantly more often wrong at pressure than on the surface, the learning factor having been eliminated. The 'E' Test on the other hand showed no significant change with the increased depth.

An interesting point was that two of the subjects did not show abolition of blocking at pressure and they gave as many correct answers to the problems as on the surface. This would seem to demonstrate that the abolition of blocking at pressure is an indication that the subject is not thinking as clearly as he was before, when blocking was present.

An analysis of the results over a range of shallower depths also showed that many more incorrect answers were given after blocking was abolished at pressure than at the same pressure before blocking was abolished. Therefore, it seems objectively that narcosis becomes more, and not less severe with time at pressure.

Another experiment that was carried out was to keep a subject at an equivalent depth of 100 ft until blocking was abolished. This took 10–12 minutes at this depth. The subject then breathed an oxy-helium mixture from a counter-lung. After this mixture had been breathed for a few minutes the blocking to mental arithmetic returned. On returning to air again blocking was once more abolished.

This substitution of helium for nitrogen points to nitrogen as being the agent responsible for abolition of blocking and provides confirmation that nitrogen is indeed the narcotic agent in compressed air.

A fourth group of experiments in which divers participated was that of breathing nitrous oxide, the previously mentioned 'laughing gas', in 20% concentrations. This would not be enough to produce unconsciousness but by calculation it was thought it should be equivalent to a 200 ft dive.

Some of the subjects did think that breathing 20% nitrous oxide was similar to a 200 ft dive and some of the symptoms experienced, particularly mouth and lip tingling and numbness, were comparable with those of nitrogen narcosis.

Psychological tests revealed slight impairment of skilled performance. However, the brain-wave patterns were not always the same as records taken with subjects at pressure. Narcosis appeared to go a stage further. Abolition of blocking was noticed in some cases but quite often the alpha rhythm would diminish in amplitude or voltage so that the record resembled an almost continuous straight line rather than a series of waves. These 'Silent' records corresponded subjectively to a feeling of spinning or floating. A similar record was obtained in a subject who went to a simulated depth of 300 ft.

Summarising the results so far, it would seem probable from the mathematical relationship between time to abolition of blocking and depth that atmospheric nitrogen is the agent responsible for this abolition by diffusion after a time into a certain part of the nervous system. It thereby produces a subjective feeling of narcosis and some objective impairment of mental clarity. There is no direct evidence as to which part of the brain may be affected but from work done elsewhere with drugs it is possible that a certain part of the brain stem is the site of action of nitrogen, rather than the cortex or rind of the brain.

Further work is proceeding on this subject and it is hoped that it will be of benefit in practical diving of the future.

May we take this opportunity of thanking the Commanding Officers and the Subjects who participated in the experiments, from both HMS *Vernon* and the DSEA Tank at HMS *Dolphin*, for their valuable assistance.

## A PIECE OF CAKE (NAVY STYLE)

Sunday, 2nd June what a day! It was a pity we had to stand in the train but we arrived at Portsmouth Harbour all in one piece and at 1315 we were waiting to go onboard HMS *Vernon*.

The Navy calls its establishments ships, even the large area of dry land that is part of the Diving School.

We were met by Lieutenant Commander Franklin who greeted us in a very warm way. We were then led to the scene of the proposed crime 'all wide-eyed with wonder'.

The various old ships' figureheads displayed around gave rise to some ribaldry but everybody found just the right level of seriousness once we were in the vicinity of the diving section proper. While waiting for our 'instructor' to arrive, we had the opportunity of examining an armoured dress, a diving observation bell and one of the TV camera housings used in the search for the sunken submarine *Affray*.

Our 'instructor' for the day, name of Sam or Lofty your choice, was a very experienced deep diver with many dips of 300 ft plus, and a cheery and bright party altogether. Anyway, with many wise-cracks from Sam,

we were soon all gathered round learning the secrets of the oxygen closed circuit gear that we were to use later in the 12 foot tank.

With the explanations over, we all trooped over to the tank and the first party made ready to dive. We were to use the Navy neck entry suits but Don had his 'Aquafort' along and we had a splendid chance of comparing the merits of the two types. Opinions differed somewhat over the suits but all seemed to agree that the blue woollen 'combs' worn underneath looked very chic!

With the first divers fully dressed, the next job was to flush the lungs and breathing set of CO<sub>2</sub> and the commands 'Breath in Breath out' were accompanied by much puffing and wheezing. Then came a sharp hiss as the by-pass valve was 'cracked' and the magic words rang out 'Diver on O<sub>2</sub>'.

Each diver, thus prepared, stood quietly breathing oxygen for two minutes to get used to the stuff and then the flushing process was repeated before entering the tank.

Little can be said about the tank. It was perhaps more interesting than Ladywell and that's all! We all were well occupied with sorting out the finer points of O<sub>2</sub> breathing and everybody seemed in the best of spirits.

While the first divers were in the tank, the others were going to interesting depths in the comfort of the recompression chamber (or Pot). Comfort? On the way 'down' the temperature soars and you nearly roast and on the way 'up' you have all the joys of a cold and foggy November night!

All back at the surface and best Navy 'char' oozed thickly down our throats and very fine it tasted too! I think the flavour was improved by the atmosphere of the place and our own high spirits and it felt 'good to be alive.'

The next call was to the 'Museum' to see the different types of diving gear, past and present. Sam, by now a firm favourite with all, was in his element explaining it to us. I think his language would have been more colourful had not Doreen been with us, but that's only guess-work on my part!

Trust the Navy to be perfect hosts!

They laid on a nice boat trip around Portsmouth Harbour for us when we saw HMS *Vanguard*, the Royal Yacht *Brittania*, and the 'moth-ball fleet'. Finally we returned to bid farewell to Lieutenant Commander Franklin, Sam and the 'Jolly Jack' who made the day so pleasant for us all.

The thing that impressed us most of all apart from the diving was the attitude of the Royal Navy divers to us 'civvies'. I half expected a certain amount of sarcasm and ridicule from the 'professional' but nothing was farther from the truth. Never before have I met such genuine interest and a desire to help than was shown by all the people we met.



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On behalf of all of us, I send a very sincere 'THANK YOU' to HMS Vernon.

The day was not over for Bromley as fifteen minutes after stepping 'ashore' we gave the people of Southsea the shock of their lives by going in, off the beach, for a spot of skin diving.

Well, that was our day at Pompey. With fine weather and good company who wouldn't be satisfied?

GEORGE ABEL,  
*The British Sub-Aqua Club, Bromley and District Branch.*



'And I expect your poor little hands get so cold'

## HINTS ON BENDS TREATMENT

by

SURGEON COMMANDER W. E. CROCKER

Dealing with a case of decompression sickness is a responsibility which may devolve upon any diver in the Royal Navy and the following notes are prepared with such a contingency in mind. They are based upon some eight years' experience in treating 'bends' ashore and afloat and, over such a period, it is perhaps not surprising that I should have developed certain strong views and convictions upon the subject. I am therefore venturing to record some of those views in the hope that they may be of assistance to any diver who may have to cope with a case of decompression sickness without medical aid.

First, let us once and for all decide upon a name for the condition. In various quarters it is referred to as Caisson Disease, Compressed Air Illness, Aero-embolism, Bends, or Decompression Sickness. 'Caisson Disease' is an inadequate description, for caisson workers are not the only ones who suffer. For similar reasons Compressed Air Illness is not, in my view, a good term because diving on helium and hydrogen can also result in the condition which we call 'bends' and it is moreover theoretically possible for such gases as argon, neon, and even oxygen, to be responsible for bubble formation after rapid decompression.

The term Aero-embolism is popular with our American colleagues but it suggests bubbles in the blood-stream, whereas many of us believe that the common limb 'bend' is caused by a stationary bubble in the tissues outside the blood vessels.

'Bends' is a good word and is quite suitable as a short title between divers because we know exactly what is meant. For that reason it appears in the title of this article but, from a strictly scientific view point, it should be restricted to the common limb type of pain.

'Decompression Sickness' is the best term because it embraces all kinds of pressure work, all the gases used for diving and also the aviators' particular type of 'bends'.

The first point to be clear about when confronted with a possible case of decompression sickness is:—

### WHEN TO RECOMPRESS.

If a man has recently been under pressure, and complains of pain in the limbs, dizziness, sickness, pins-and-needles, weakness of the arms or legs, pain in the chest or breathlessness, he must be recompressed without delay. Recompression should not be delayed until the arrival of a doctor for, in severe cases, a delay of even a minute may cost a man his life. Anyone who is qualified to supervise diving is competent to operate a recompression chamber. Of course, when a doctor arrives he will, probably, be able to decide if the man has decompression sickness or not,

particularly if he has had experience in underwater physiology. If he has not, the diving officer or rating in charge may well be able to advise him as to subsequent therapeutic decompression but that comes later. The important thing is, not to discuss the why's and wherefore's of differential diagnosis or to temporize in the hope that the symptoms will pass off, but to get the patient under pressure as soon as possible. Even if it turns out that he is suffering from something quite different, pressure will do him no harm, so long as the rules are observed, whereas if he really has got 'bends', recompression may well be a life-saver.

Difficulty sometimes arises when, instead of a definite pain, a diver reports with a dull ache, often in the region of the shoulder. The severity of the symptoms do not appear to justify a long therapeutic recompression and the patient himself is often reluctant to go into the chamber for what he considers to be a trivial case. Such cases are particularly hard to assess during trials on new diving tables when it is essential to be certain whether or not decompression sickness is present.

Sometimes the ache disappears after a hot bath and gentle massage of the affected region, but on the other hand I have found that the aching nearly always disappears if the diver is recompressed. In the absence of a medical officer it is safer to regard such border-line cases as 'bends' and recompress them.

This brings us to the question:—

### HOW TO RECOMPRESS.

Instructions as to the control of therapeutic decompressions are clearly laid down in the Diving Manual and there is no need to reproduce them here in full. Treatment is carried out in accordance with one of four tables depending upon the severity of the symptoms. In each case the patient is recompressed to a certain pressure—either 100 or 165 ft—and remains there for thirty minutes after which he is brought to the surface slowly in 20 ft stages as far as 50 ft and then in 10 ft stages to the surface. Tables I and II are only to be used for simple 'bends' pain. If pain is relieved at 66 ft, decompression starts from 100 ft on Table I and lasts seven hours. On the other hand, if the 'bend' is more severe, and is not relieved at 66 ft, the pressure is increased to 165 ft and the subsequent recompression lasts for about ten hours. For more severe symptoms, i.e. paralysis, 'chokes', 'staggers', Table III must be used, which lasts twenty hours, starting at 165 ft. Table IV, which is even longer, is available for the rare occasions on which Table III is ineffective. It is seldom necessary to use it. As stated above, the instructions in the Diving Manual are clear enough, but it is surprising how often they are misinterpreted. The commonest error is failure to use the table which the symptoms warrant. I have known cases of incipient paralysis to be treated on Table II instead of Table III, with the result that the condition was worse than before treatment. On other occasions, ordinary limb 'bends' have relapsed, simply because the shorter Table I was used when Table II, with its longer spell at the shallower depths, was indicated.

The lessons to be learned here are:—NEVER BE AFRAID TO USE THE MAXIMUM PRESSURE LAID DOWN and DO NOT BE DISMAYED BY THE LENGTH OF TIME TO BE SPENT UNDER PRESSURE. It cannot be repeated too often that pressure, properly regulated, can do no harm. It is far better for a diver to remain those extra few hours in the chamber than to surface prematurely and get a recurrence, say in the small hours of the morning, and have to repeat the whole thing again.

A word here about what we mean by 'relief of symptoms'. It means, in the case of limb 'bends', that the pain has substantially disappeared. Very often a slight ache or soreness remains but that is due to the inflammatory reaction which the body sets up around the bubble before treatment starts. It is therefore more likely to occur when there is delay in getting the man under pressure. No amount of further compression will make it disappear, so there is no point in using Table II when Table I would otherwise be indicated. That is a case where judgment and experience are needed. At the other end of the scale, there is no point in using a pressure greater than 165 ft. At that pressure (6 atmospheres) the volume of the bubble is reduced to 1/6 of its original size and its radius to 1/2. A further atmosphere, that is compression to 198 ft, will only reduce the volume by a further 1/42 and the radius by a further 1/20. The advantage to be gained by such a reduction is far outweighed by the danger of giving another 'bend' from the treatment alone. If the symptoms still persist at 165 ft, harden your heart and wait. They will disappear in a few minutes if they are really due to decompression sickness. I have sat in a chamber with a diver who was beside himself with pain one minute and sitting up drinking tea the next.

It is not a good idea to allow patients to sleep during the early stages of 'bend' treatment in case the onset or recurrence of paralysis should be missed. For the same reasons, narcotics such as morphia and barbiturates should be avoided. Sleep may be allowed at 30 ft during the twelve hour 'soak' on Tables III and IV so long as the patient is awakened every hour to see that all is well. He should move his arms and legs and sit up, and if anything is wrong do not hesitate to increase the pressure as instructed in the Diving Manual.

Oxygen should always be used in the latter stages of treatment if the proper gear is available. Experience has shown that the extra trouble involved pays a rich dividend in preventing recurrences. The Diving Manual authorises its use at 10 ft but there is no harm in using it from 30 ft if the 'bend' has been severe. Oxygen hastens the diffusion of nitrogen from the blood and tissues by increasing its diffusion gradient between the blood and the air in the lungs. The rate at which nitrogen leaves the blood is proportional to the difference in pressure between that in the blood flowing through the lungs and that in the air cells with which the blood is in contact. The only point against starting oxygen breathing early is that its effect is, to a large extent, nullified should the patient have to return to air breathing before the end of his therapeutic recompression, because nitrogen will then diffuse back into the blood and tissues. The best plan is for the diver to start breathing oxygen towards the end of the

twelve hour 'soak', and to continue breathing it, with short breaks, every half hour until the end of his treatment.

We, nowadays, have a further potent aid to bubble dispersal which may be used at depths at which pure oxygen would be too dangerous—namely a 50/50 mixture of oxygen and helium. It has only been used once to my knowledge in this country but, looking back over the years, I can think of many cases in which it would have been very useful. The case in point was one in which air had leaked, during free ascent, from a weak spot in one lung into the space in the chest between the lungs which is occupied by such important structures as the heart, windpipe, bronchi and gullet. The air, expanded to atmospheric pressure, was giving rise to severe chest pain and making breathing difficult. (Such a case does not come within the strict definition of a 'bend', although the principles of treatment are the same.) Complete relief was obtained at 165 ft but the symptoms twice recurred on reaching 60 ft and it began to appear as though we would never get him above that depth. This was because the location of the trapped air was such that reabsorption would be very slow. The only way to remove it reasonably quickly was to replace it with a gas which would diffuse into and redissolve in the blood stream much faster as the pressure was decreased. Such a gas is helium and it was therefore decided to administer a 50/50 oxy-helium mixture (which is safe to breathe as deep as 100 ft). It was completely successful. Decompression proceeded without further trouble until 30 ft was reached whereupon he was switched to intermittent oxygen breathing for the remainder of his Table III decompression.

The final piece of advice I have to offer concerns that very dangerous procedure which I will call 'Diagnostic Recompression'. By that I mean the practice of recompressing a diver with vague or doubtful symptoms with the object of seeing whether they are relieved by pressure and bringing him back to the surface relatively quickly by stage decompression if they are not. Such a practice cannot be too strongly condemned because the likelihood of converting a mild border-line 'bend' into something much more serious is very great. I well remember a diver being recompressed in such a fashion after complaining of dizziness and unsteadiness on his feet. He finished up with a 'spinal bend'. The lesson here, again, is HAVE THE COURAGE OF YOUR CONVICTIONS. If the case is considered bad enough to be put in the chamber, then he must have the full treatment indicated in the Diving Manual. Half-measures in 'bend' treatment can be fatal.

## CONCLUSION.

In writing these notes I have been thinking particularly of those of the diving fraternity who are likely to be directly responsible for treating 'bends' but I hope that there will be something of value in them for all divers. As I am shortly leaving the diving world I take this opportunity of saying goodbye and good luck to all of my diving friends, steamers, paddlers, deeps and cork-heads, amongst whom I have spent the most interesting and 'rewarding' years of my service life.

### DIVERS

#### CLUES ACROSS

1. Hole, not for a pier (11)
9. A short note loses its quaver (4)
10. Did the sun not shine in these days? (3, 4, 4)
11. The peer carries a concealed weapon (4)
14. How the R.P. schemed (7)
18. A hundred hope vaguely for a long time (5)
19. Bares a foreign national (4, 4)
20. Husband of an old salt (3)
21. Greek suffers broken hip (3)
22. Unite? Just the opposite (5)
23. A poser for Dior? (5)
24. Entrail in Valetta (3)
26. The lot (3)
27. Mined in reverse (5)
28. Lives for Rock and Roll (5)
29. Useless or useful in the works (7)
33. It is appropriate for the hunt to gather (4)
36. Save the sucker! (7, 4)
37. Upset the till with melodious sound (4)
38. So burnt hell aids the diver (7, 4)

#### CLUES DOWN

2. How do you do, little sir? (4)
3. Deaf, but diminish (4)
4. Truly this is a sobriety test (5)
5. Loyal, at breakfast (5)
6. Directional decoration for a stout party? (5)
7. Night Club in Atlantis? (4, 3, 4)
8. Lime robs aim of divers bubbly (3, 8)
12. Unarmed beauty (5, 2, 4)
13. In a satisfied manner (11)
14. Helps M.G. (anag) (7)
15. Loft frequently headless (3)
16. Here's the hint for your cue (3)
17. Docker's transport? (7)
25. Food and drink (3)
26. Bohemian wife of Richard II (3)
30. Romeo in pawn. Sounds Fishy! (5)
31. Twice the land for Peter Pan (5)
32. 'Mobile Bird' (5)
34. Tips back for headless revue (4)
35. A riotous crowd (1, 3)

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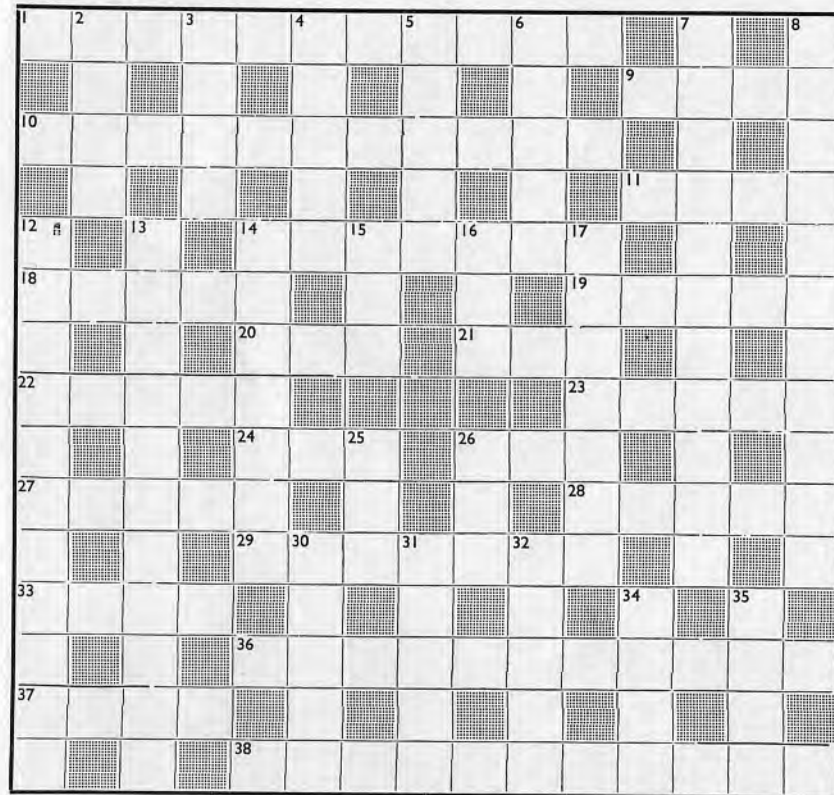
Dear Readers,

A scheme is afoot to produce a motified tie for the Diving Fraternity. This idea, although now advanced, is by no means finalised, as much depends upon the support of our subscribers.

The tie is to be maroon in colour, with gold diving helmet motifs and made from artificial silk, rayon or terylene material. Subscribers can be assured that the finished article will be presentable, and an asset to the wearer.

A figure of 12/6 to 15/- has been quoted by the manufacturers, but it will be obvious that the greater the support, the less the finished article will cost.

### X-WORD No. 5



The solution to this X-word is on page 41

To facilitate accounting, orders will only be accepted on the printed form.

Customers will be notified of the final cost when the ties are available, so that cash can be forwarded!

Correspondence relating to this should be addressed to Editor R.N. *Diving Magazine (Ties), HMS Vernon, Portsmouth.*

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## IN THE BEGINNING

Reckon you to be a dip-chick?  
The cold and ice the things below  
A bawling Chief (long a Diver)  
Things weren't always so.  
Time was when men first started  
Strange indeed the gear they used  
Guts and String (if yet invented)  
Sank willing feet in primeval ooze.  
Gazed they round if but a moment  
At a world outside their ken?  
Breathed they slow sometimes never  
And died, these ignorant precocious men?  
Some say twas gold that lured them  
To the deeps beneath the sea,  
Gold they say buys much courage  
Makes weak men brave, poor men free.  
Gold and fortune notwithstanding  
These were a few that paved the way,  
Left a heritage to those before them  
Give not their shades cause for dismay.  
Then give thanks you descendants  
For equipment beyond compare,  
Treat gently with compassion  
Your life can hang just there.

## H.M.S. RECLAIM

It has been a long time since the readers have heard from *Reclaim*, and hence most of the many interesting and varied experiences we had, will already be known. This article will therefore be a brief resumé of more recent events.

Last April we left Portsmouth for Loch Fyne to carry out a series of trials in what have now become known as the 'Crocker Tables'. We stopped at Portland for DG Ranging, and then resumed our journey to Scotland. Whilst steaming North from Wolf Rock, we intercepted a signal from SS *Pacific Star* saying that she had sighted sinker floats off Ushant. We altered course immediately to the South and cracked on maximum revolutions. A couple of hours later, C-in-C Plymouth signalled that all was well, and again course was set for the North.

Friday, 26th April, we moored off East Loch Tarbert in 19 fathoms, and the trials started on the Monday. Surgeon Commander Crocker joined us to watch the progress and by the end of the week we completed 47 dives, with two doubtful 'bends' resulting. The following week we managed about 50 dives and the results were even better, as only one 'bend' resulted.

As the fuel was running short, we unmoored on Friday, 10th May, and sailed for Greenock where, after refuelling from RFA *Rowanol*, we

secured at Princes Pier. A pleasant time was had by all over the weekend. Monday found us *en route* for Ardmucknish Bay, which is about five miles North of Oban. There a very interesting wreck, whose masts stuck out well clear of the water, had been discovered. We dropped two stern anchors and put wires on the wreck masts so being able to haul the ship ahead until the diving doors were practically plumb over the top of the wreck.

No one was sure what the ship was, so when we sailed into Oban enquiries were made. We discovered it was SS *Breda*, a Dutch vessel which had been bombed 17 years before, and towed into the bay. Unfortunately, she sank before she could be beached.

On Monday, 20th May, after another pleasant weekend, we sailed from Oban to Tobermory and moored in 30 fathoms. The Chief Diver and the Coxswain navigated the ship to Oban Harbour entrance and a good job they made of it too. Another hectic weekend in Oban flew by and again we sailed to Tobermory for three days and then to Fort William, to dive in rather stronger tides.

Back to our wreck in Ardmucknish Bay, where a large number of dives were carried out until Friday, 7th June, when we weighed and sailed for Portsmouth, calling at Oban for a couple of hours to water ship. We sailed through the Gulf of Corybrackan and, being a fine morning, the turbulent waters were at peace and our passage through was innocuous.

Nearly 300 dives were carried out during the pre-going period, and everyone was extremely satisfied with the result. The 'Crocker Tables' will no doubt be in service before long.

Before we left Portsmouth again, we were afflicted with Captain D's inspection, which seemed to go off very well. At least we had no re-scrub. The after inspection feeling was so good that we cheerfully left on Saturday 29th June for Harwich to participate in a NATO Minesweeping Exercise.

We arrived there on Sunday afternoon and, from then until the end of the exercise, we acted as parent ship to the sweepers. We did a couple of diving jobs, but nothing much to write home about. Being parent ship can be rather a bore and all were glad when the exercise ended and we sailed for Newcastle and the BMA Conference. More about that and our recent trip to Travemunde in our next bulletin.

J. GRACE, HMS *Reclaim*

### 'RECLAIM'S' FISHY TALE

ENGINEER LIEUTENANT W. POLHILL, R.N

During the recent visit to Scottish waters, the Engine Room Department's contribution to the diving programme and trials was a new method of food preservation

Observing that many members of the Ship's Company (and elsewhere) were very partial to scallops, brought up by the divers, a means was sought for preserving alive, this highly palatable sea-food.

Looking around it was thought that the bridge salt water gravity tank, which supplied the ship's sanitary system, would be the ideal spot. The float control gear, sited in the inboard aft corner, was screened off by fitting wire mesh guards and the sea food occupied the remaining space. The float operated, salt water pump in the boiler room ensured adequate supplies of fresh sea water. Several hundred scallops were secured and these lasted for three weeks.

When the ship went into Oban, lobsters were bought from the Crofters Association live lobster depot. Of the sixteen lobsters, three lasted six weeks without any deterioration in quality or taste. Perhaps they could have been kept much longer but one look at the murky waters of the Tyne immediately introduced them to the pot.

EDITOR'S NOTE.—The next time *Reclaim* visits Pompey, please ensure that the Staff of the *Diving Magazine* sample these delicacies.

#### SOLUTION TO CROSSWORD No. 5

**Across**—(1) Perforation; (9) Semi; (10) The Dark Ages; (11) Epee; (14) Plotted; (18) Epoch; (19) Aserb; (20) Lot; (21) Phi; (22) Untie; (23) Model; (24) Gut; (26) All; (27) Denim; (28) Elvis; (29) Spanner; (33) Meet; (36) Salvage Pump; (37) Lilt; (38) Snorkel Tube.

**Down**—(2) Echo; (3) Fade; (4) Rural; (5) Toast; (6) Obese; (7) Deep sea dive; (8) Air embelism; (12) Venus De Milo; (13) Contentedly; (14) Phlegms; (15) Oft; (16) Tip; (17) Daimler; (25) Tea; (26) Ann; (30) Prawn; (31) Never; (32) Eagle; (34) Spit; (35) A mob.

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## THE GUNNER'S DILEMMA

by 'B.F.'

Whilst doing my big ship time a few years back diving my 'oppo' and I fell to discussing our Diving Gunner. It was the days when the Gunnery Department were responsible for diving and the Gunner was allocated this responsibility in a ship. As these officers received only a week's acquaintance course on the subject it wasn't surprising that the vast majority viewed diving and the responsibility it brought with considerable mis-giving.

'Yank' and I agreed that our Diving Gunner was one of the best and further that we need never take longer over a job than was really necessary in order to obtain fair remuneration for the work well done.

'Yank' recalled a Diving Gunner he once served with who measured his diver's time under water with a stop watch and recorded the figure obtained in the appropriate column of the form used for payment. This proved a little irksome to the divers who were paid only 2/6 for anything less than half-an-hour under water, although it took them longer than this to get the pump and other cumbersome equipment into the boat. The divers decided to teach this officer who was so tight with the King's money a short sharp lesson.

Opportunity arose one day when the flag ship they were serving sustained a fouled propeller whilst securing to head and stern buoys in Alexandria Harbour.

This mighty vessel had to lead the fleet to sea next day on an important naval occasion so the Diving Gunner was sent for and told to work the divers all night if necessary to clear the propeller before sailing time next morning. At once the hue and cry went up for the divers to get cracking.

Having gone through the long and tedious business of rigging the boat and placing it abaft the port after gangway, adjacent to the bottom line, Chief suggested to the Gunner that two of the divers should go away and get their supper in case the job proved to be a long one and it was necessary to take meals in relays. AB 'Pincher' Martin and 'Bogey' Knight left the boat to get their suppers and diving commenced. 'Rattler' Morgan took first dive, and after ten minutes he surfaced with the news that it would be a long job as numerous turns were well and truly wound round the propeller and shaft. 'Rattler's' quick wink at Chief through the side glass window, had it been observed, would have warned the Gunner that something was afoot because ratings just didn't wink at Chief under normal circumstances.

Taking a marline spike and hacksaw, Morgan once again descended via the bottom line to the scene of the offending wire and diving continued for the next half hour to the accompaniment of the labouring gyrations of

the pattern 3 pump, and under the codfish gaze of the onlookers decorating the guardrails.

Watching diver's bubbles spew themselves out on the surface of the water is liable to get monotonous, but when Chief reported in staccato tones that the diver was not answering his signals, the somewhat bored scene was transformed in a flash to one of agitated activity.

'Ask the diver if he is all right!' said the gunner in a voice that more than betrayed his anxiety. 'No reply from the diver,' reported the attendant, repeating the signal once again. After the signal had been thus repeated three times, the Gunner, who had by this time paled considerably, ordered the diver to be pulled up. Chief backed up the attendant by taking the airpipe, and the two of them took the strain. At first there was no yielding and they were unable to pull in any slack at all. However, the Gunner, only too pleased to find an outlet for his nervous tension, grasped the breast rope and added his 13 stones to the tussle. Whatever was apparently holding the diver now became free and they hauled in the air pipe and breast rope quite rapidly. By this time the Gunner was almost frantic with worry as to what had happened to the diver and why it was that he was unable to answer his signals. What had happened when they had unwisely hauled on the air pipe and breast rope? Had the diver fallen off the propeller shaft and suffered the dreaded 'squeeze'? Thoughts of Boards of Inquiry and loss of seniority flashed through his mind; little did he know his worst moment was yet to come. With one hand on the gunwhale of the boat and the other on the diving ladder he peered anxiously at the centre of the seething mass of bubbles which had now intensified due to the expansion of the air as the diver apparently neared surface.

After what seemed an eternity, the helmet could be seen some 5-6 ft below the surface and momentarily the Gunner felt some measure of relief. This was very short lived, however, because to his intense horror and utter despair, he saw, as the helmet broke surface, that there was no diver attached to it. Just dangling there, somewhat grotesquely, was an uninhabited, tinned copper dome, hissing air and glinting in the light reflections from the water.

The situation was too much for the Gunner. Moaning and groaning he sank into an unconscious heap at the bottom of the boat, his face a hideous unrealistic pallor of green.

Chief now took charge and looking up to the quarterdeck he saw the grinning faces of the diver who had been sent to early supper plus 'Rattler' Morgan still in his diving dress, though relieved of his boots and corselet. There was also quite a crowd of spectators by now, most of whom, not having seen Morgan, were still gazing open-mouthed in horror at the scene that had taken place. The odd few who had spotted Morgan had an incredulous look as they tried to fathom out where he had sprung from. Chief called the divers down into the boat and between them bore the Gunner to the sick bay still unconscious but groaning and muttering profusely.

Not a word did they speak until they were back in the boat again, when Chief asked Morgan if he had completed the job. The diver replied that it had been a 'piece of cake' and that he had cleared the propeller in about ten minutes. He then followed the bottom line under both propeller shafts (contrary to regulations) and up the other side of the ship to surface close to the starboard gangway. 'Pincher' Martin and 'Bogey' Knight, who had ostensibly gone to early supper, were waiting at the gangway and assisted him on to the platform where they removed his helmet, corselet and boots. 'Pincher' Martin kept the breast rope in hand and answered signals ordered by the unsuspecting Gunner in the diving boat on the other side of the ship. That is to say they answered the signals until Morgan was satisfactorily relieved of his most cumbersome attire; then their responses ceased with, as we know, disastrous effects on the Gunner. 'You shouldn't have held on to the helmet quite so long', said the Chief, 'the Gunner almost burst a blood vessel trying to haul 'Rattler' up'.

Not unnaturally, Chief was somewhat concerned about the outcome of this prank, for they had not bargained on the Gunner being overcome to such an extent. Chief did not have to worry, however, because as the diving boat was being warped up to the boom they saw the Gunner, as yet only semi-conscious, being carried down to the duty boat on a stretcher.

STUDIO, STAGE & COMMERCIAL

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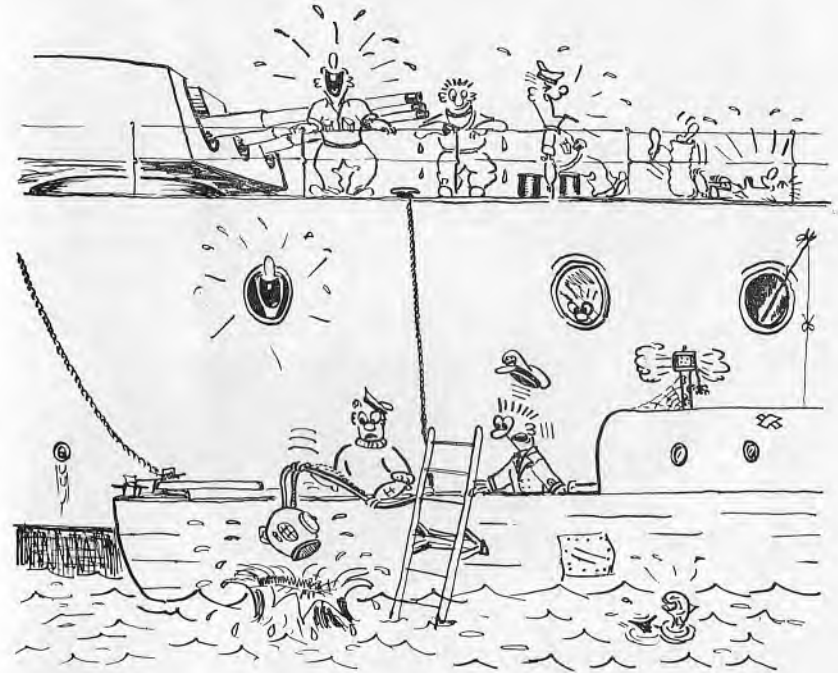
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Apparently the MO had found his heart weak and felt that he would not be fit to sail with the ship next day, so ordered him to hospital forthwith. He never troubled divers again either, as his heart never recovered from the shock and he was eventually invalided from the Service.

FOOTNOTE.—There was never any guarantee of authenticity with 'Yank's' stories but they were usually long enough to while away the night watches.





### R.N. DIVING BADGE



This blazer badge is available to all R.N. divers and ex-divers.

Since our last edition it has come to our notice that these badges are now available in many of the naval tailors in the various depots. Divers wishing to purchase a badge should contact their naval tailors direct. If you have any difficulty in obtaining your badge, then please let us know.

The colour scheme of the badge is: Gold lettering in Red scrolls outlined with Gold Braid; Gold helmets in Gold and Silver Braid, finished Black and White; the whole outlined with Gold Braid on a Black ground. The above illustration is true to size.

Some firms are producing badges with a double outline of Gold Braid, and in view of this there is a slight variation in the price range.

For the interest of new readers the aim of the Association (sponsored by the *R.N. Diving Magazine*) is to help all serving and ex-R.N. divers to obtain employment (see *opposite page*). It also aims to help, in any way possible, the dependants of serving divers should a fatal accident occur.

### DIVER'S EMPLOYMENT BUREAU

The bureau continues to function, and if you wish your name to be recorded, please forward the following information to 'Employment Bureau', *R.N. Diving Magazine*, H.M.S. *Vernon*, Portsmouth.

Applications can only be considered from serving R.N. Divers or Ex-R.N. Divers who have 'Paid Off' in the last twelve months and who are subscribers to the magazine.

Full Name ..... Rating ..... Off No. ....

Time as a Diver ..... are you willing to serve abroad .....

Time expires ..... Private Address .....

Married or Single .....

This record, when received from you, will be filed, but it is regretted that no acknowledgment can be made. Please remember that we have far more employees than employers, and the Bureau does not assure you of a job. If, however, any are available, we will put you in touch when your turn comes up, and the rest is up to you.



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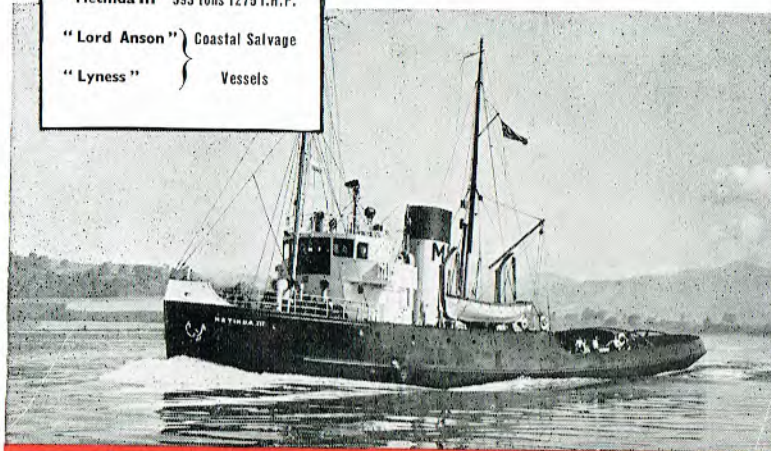
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