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Vol. 6

H.M.S. VERNON

No. 2

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# R.N. Diving Magazine

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Vol 6

July, 1958

No. 2

## Editor's Notes

**I**N this issue we are continuing the policy of publishing articles of general interest to divers. It appears that this is generally acceptable since many new subscribers are now on our mailing list.

I am taking this opportunity to inform Naval Divers that the diving ties are now available from this section. The motifs of gold standard-helmets and frogmen on a navy-blue or maroon background are very impressive.

All orders should be sent with money and stating preference in colour to CPO Robert L. Benfield, H.M.S. *Vernon*. Price of ties 13/6. All postal orders and cheques should be made out to the R.N. DIVING MAGAZINE.



## Cape Town—Durban by Bicycle

**T**O ride a bicycle from Cape Town to Durban is not in itself a notable achievement providing sufficient time is available to cover the 1100 miles, but the 43 cyclists from H.M.S. *Kenya* who completed a three-week ride over this route certainly experienced a certain sense of achievement when they entered Durban on July 1st, still carrying on their bicycles the 50lb packs with which they had started out from Cape Town.

Perhaps, however, this sense of achievement was heightened by the fact that all along the route we had been treated by all and sundry as though we had been attempting to cycle across the Sahara, with the result that we were so pampered that we may well have had an unduly exalted sense of our own importance and the size of the task we were undertaking.

To go back to the point when it all began: there exists in England an

organisation known as OUTWARD BOUND, which seeks to promote a spirit of enterprise, initiative and pioneering. The First Sea Lord has taken a personal interest in this organisation and has encouraged the Royal Navy to participate in the type of activity it sponsors. It was felt in H.M.S. *Kenya* that an expedition on bicycles by a representative group of officers and ratings from the ship would constitute an Outward Bound type of activity, and the ride from Cape Town to Durban was chosen as it fitted in most conveniently with the ship's cruise programme on the South Atlantic Station. Preparations began as soon as the ship left Bermuda at the end of April, *en route* for Cape Town, when those who hoped to be included in the final list of cyclists began doing most energetic physical exercises each evening. This exercise continued daily, and was broken only by the ship's visits to Sao Salvador and Rio de Janeiro, Brazil, Tristan da Cunha and by unsuitable weather. While still on the western side of the South



Atlantic a signal was made to the Commander-in-Chief, South Atlantic, asking that 40 bicycles should be ordered — surely a somewhat un-nautical logistic requirement!

There was very keen competition to be included in the party of 45 who were to undertake the trip, and final selection was made only shortly before the ship arrived in South Africa. The last preparations were made during the visit of the ship to Simonstown and Cape Town; bicycles were collected, licensed and adjusted, camping equipment was purchased and distributed, the South African police along our intended route were warned, and desperate packing, unpacking and re-packing duly undertaken.

On Friday June 8th, the day of our departure from Cape Town, the cloud hung low over Table Mountain, and there were frequent heavy showers of rain in the morning. It was the sort of day on which one's thoughts inclined more readily towards firesides and good books on travel than towards actually cycling a thousand miles. Nevertheless, after lunch, in an unpleasant drizzle the bicycles were wheeled off the ship. This was done to the accompaniment of loudly spoken comments from our shipmates who lined the ship's side and who, we gathered, entertained in their minds a certain element of doubt as to our ability to cycle 11 miles, still less 1100. The cyclists, 45 in all, assembled on the jetty for inspection by the Commodore and for Press photographs. Then, refusing all offers of the train fare and to the strains of the ship's Royal Marine band and the by now ribald remarks from the ship, we set off in steadily falling rain on the first leg of our long ride to Durban.

A detailed log of our progress day by day is attached to this report, so

no account of the various stages of the journey is given here. But a few general impressions are worth recording.

Our route took us first along the famed Garden Route through Mossel Bay, George, Wilderness, Knysna, Stormsrivier, and Humansdorp, to Port Elizabeth. It very quickly convinced us that South Africa must be one of the most beautiful countries in the world, a conviction which remained and was deepened as we beheld later the dignified proportions of the university city of Grahams-town, history-steeped Kingwilliams-town, and modern attractive Coelocanth-conscious East London. There was a certain majesty, too, in the rolling country of the Transkei, and a magnificence in the vistas as we climbed up to Kokstad. Our reward for all the climbing was in the run down through Harding to Port Shepstone and the last delightfully easy run along the South Coast to journey's end at the great city of Durban.

Yet, for most of us, our chief memory of South Africa is not of its scenic beauty, but of the astonishing hospitality of its friendly people. Everyone, whether acting in an official or in a private capacity, went to endless trouble and expense to assist us and entertain us, with the result that we were so well looked after that there wasn't much 'pioneering' about our expedition at all, and probably from an Outward Bound point of view it was a dismal failure! All along the route our efforts were given publicity by the local Press, and though their frequent references to 'saddle soreness' were wide of the mark — it was our knees that troubled us — we were grateful for all they did. The police were most helpful in every way, and we received untold kindness from

many town councils and voluntary organisations, who invariably arranged our accommodation overnight. We can claim to have spent our nights in an unusual variety of accommodation — everything from a sheep-shearing shed to a well-appointed hotel.

Never have we met such kindness and generosity, and all this hospitality receives due recognition in the accompanying log. Sometimes, however, we felt that the generosity of the South African motorist with regard to his estimate of distances and gradients could be curbed a little: so often a motorist would stop and enquire where we were going and how we were faring, and would depart assuring us that 'Once you've dealt with the next pass, man, it's all level to your destination'. We would press on, encouraged, push energetically through the pass buoyed up by the hope of an easy, level ride to come, only to find, instead of a level road, a heavy piece of steeply undulating country, stretching away into the distance until the telegraph poles disappeared over the horizon. Level, indeed! We discovered that when a South African says the road is 'level' he really means that his monster 150 bhp car will do it in top gear! We soon learned to treat such statements about the terrain with a proper reserve.

The expedition ended at the Missions to Seamen at Durban, where a Service of Thanksgiving for a safe arrival was held, and the next day we all assembled on the jetty in Durban's winter sunshine to await the arrival of our ship. Though she was a fine sight as she entered harbour, we could not but regret that she was to carry us away from South Africa with its magnificent countryside, its splendid weather (a mostly

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following wind, and only one day's rain all the way) and its kindly people.

For everyone of us who had the privilege of taking part in the expedition, there are abundant memories of a happy time in a beautiful and hospitable country.

### H.M.S. 'KENYA' CYCLING EXPEDITION. CAPE TOWN — DURBAN, JUNE 8th — JULY 1st 1956

**1st Day.** Friday June 8th. Cape Town — Malan Airport (and Faure). 11 m. (21)

The company of 45 cyclists was divided into four sections, three of them under officers and one under the Padre. On the afternoon of our departure from Cape Town today it was still raining intermittently, but we set out in good heart to the accompaniment of the Royal Marine band and the sardonic cheers of our shipmates. The doubt about our ability to reach Durban, expressed so frequently and so forcibly by those remaining in the ship, soon began to appear a little less unrealistic than we had at first thought, for we soon ran into troubles; finding the way out of Cape Town was one of them, mechanical defects on the brand-new and untested bicycles was another, heavy rain yet another. In time these difficulties were overcome and eventually a fairly substantial number of cyclists arrived at the first rendezvous point at the Malan airport. The problem then was, where were the others? After an hour's wait at the side of the road near the airport, it was decided to camp among the bush-strewn sand dunes close at hand. A sentry was posted at the roadside while the others set up a camp and built a large fire. The rain had now ceased and the opportunity was taken of

drying out wet clothing and getting a warm meal. As it was getting dusk the sentry at the roadside noticed a Volkswagon being driven at high speed towards Cape Town. It stopped by our sentry, and the occupants, three gentlemen of the Press, representing the *Cape Times*, gave us the glad tidings that the missing cyclists were encamped at a place called Faure, some 10 miles further down the road. It seems that they too had difficulty in finding their way out of Cape Town and at one stage were pressing on energetically towards Johannesburg! Eventually they had found the Malan airport, but arrived the other side of it from the rendezvous point, found no one there, and continued to Faure.

The party at the airport did not linger long outside after the evening meal, but put on as much warm clothing as we possessed and turned in, with little sense of achievement, being still 11 miles from the centre of Cape Town.

**2nd Day.** Saturday June 9th. Malan Airport (and Faure) — Caledon. 63 m. (53)

The sections at the Malan airport got under way at 9 a.m. in fine sunny weather after a cold night and a somewhat less than adequate breakfast, and after a smooth easy ride joined up with the rearguard of the other cyclists who had camped at Faure. The others had already started the day's run. After a stop for refreshment at the cafe at Faure where the campers had been so well cared for, we made on towards Sir Lowry's Pass, the first real obstacle of the trip as far as the terrain was concerned. This proved to be definitely a 'walking' and not a 'riding' hill — all 1530ft of it, but eventually the Summit Cafe was reached and a fairly long stand-easy

taken. The fact that the cafe was burned to the ground only three days later has no connection whatever with our visit. Just as the last few riders were leaving, the Commodore arrived in a car with friends and saw the rearguard on its way down the hill on the far side of Sir Lowry's Pass. It was during the descent of one of the steep hills in this area that we had the first casualty. EA Allen fell off when part of his pack fouled the back wheel and jammed it. Although badly shaken and scratched, he carried on and eventually reached Caledon well after dark that evening. The next thirty miles or so from Sir Lowry's Pass were over undulating country, heavy going for people like us who had not ridden bicycles for some time, and by the time we arrived at Caledon most of us were ready for a good rest, though we had been much impressed by the beauty of the country during the day's run, with snow-capped mountain ranges stretching away on our left and the rolling green countryside on our right. Three members of the rearguard, one of whom was suffering from a heavy cold, failed to reach Caledon, but were most hospitably received by Mr and Mrs P. de Wet of Boontjies Kraal about six miles on the Cape Town side of Caledon. At Caledon the police helped us by taking us to Mr. Rabie, who was good enough to lend us the market shed for the night. He went to great trouble to see that we were comfortably cared for; and the rector of Caledon, the Reverend F. Van der Bayl, whose rectory was across the road from the market shed, generously put the rectory bathrooms at our disposal, and loaned us cooking utensils. The party was spread out over a good many miles and the last ones in did not arrive until well after

dark. A substantial evening meal was had at the Good Hope Cafe, a fire was made on the concrete floor of the shed, and few found sleep long in overtaking us.

### 3rd Day. Sunday 10th. Caledon — Rivierzonderend. 32 m.

While some prepared a breakfast of sausages, boiled eggs, bread and butter and tea, other attended the 8 a.m. services at the Anglican church, and the majority of the party began the day's run at about 10 a.m. It was not a long journey, only 31 miles; there were few complaints about the shortness of the ride after our efforts yesterday! It was another day of travelling across attractive but undulating country in fine, clear weather. Our destination for the day, Rivierzonderend, was reached about lunch time, where we were kindly received by Police Sergeant La Grange, who arranged for some of our number to be accommodated at the police station overnight, while others bedded down in the local cinema (bioscope) at the invitation of the manageress. In the same building as the cinema was a cafe which must have done a good trade in satisfying the hunger of 45 cyclists. Sgt La Grange took Lt Stacpoole and Mech Wand and others to a nearby lake for a swim; the lake was fed by melted snows from the mountains and was, as Lt Stacpoole admitted afterwards, 'a bit chilly'. Nevertheless, he not only swam in it, he shaved at the lakeside as well. One of these spartan characters, Mech 'Sam' Wand, got himself warm again by attempting to repair Sgt La Grange's refrigerator, feeling, perhaps, after his swim, that he knew a thing or two about refrigeration. The indefatigable Sgt La Grange arranged dinner for us at the hotel, where for a very moderate sum we

enjoyed an excellent dinner. One of the party, LM(E) 'Shady' Lane, worked through the entire menu — including all the alternative dishes.

It was here at Rivierzonderend that we began to be rather worried about M(E) Robinson, who was complaining of abdominal pains, and OS Loomes, whose knee was troubling him a good deal and giving him difficulty in riding. During the evening a group from the party accepted an invitation to attend an organ and choral recital at the Dutch Reformed church, where we were most warmly welcomed, and in our honour the choir and congregation sang a hymn — in Afrikaans — which we soon recognised by the tune as being the Navy's hymn 'Eternal Father, strong to save' — a very nice gesture which was much appreciated.

### 4th Day. Monday June 11th. Rivierzonderend—Heidelberg. 70m

An advance-guard left Rivierzonderend at 7 a.m. in semi-darkness and a distinctly cold and misty atmosphere. The remainder left an hour later, and the morning was spent in continuing our ride through country that could not really be called hilly but which was certainly far from level. At the bottom of each hollow there was thick mist, at the top of each rise warm sunshine, and our progress was marked by frequent changes of speed, altitude, and temperature. Our lunch stop was at Swellendam, which though historically interesting and attractive enough in its own right, was chiefly of interest to us as a place where food and drink could be obtained. Once refreshed, however, we had time to notice buildings of artistic and historical merit, including the fine old Drostdy, which is now an extremely well-preserved historical

museum. The remainder of the day's ride, though still undulating, passed pleasantly enough and in due course the party arrived at Heidelberg, where the rector, Fr Brunsdon, invited us all to spend the night in his rectory. It so happened that our arrival coincided with the Feast of St Barnabas, the patron saint of Heidelberg church, and to celebrate the patronal festival a special Solemn Evensong was to be held, and clergy from several other parishes had been invited to attend. When these clergy did arrive they found that they had to pick their way amongst dozens of sailors, recumbent on the floors of the rectory, recovering from their day's exertions. They were most tolerant and good-humoured about it all, however, as was Fr Brunsdon as he coped with the invasion and arranged meals and washing facilities. The majority of the cycling party attended Evensong, at which Padre read a lesson. The service was, frankly, rather more elaborate than that to which most of the party was accustomed, with the result that some were not certain of the 'drill' as regards sitting, kneeling and standing. Padre remembers hearing a stentorian whisper from 'Shady' Lane, who was 'right hand marker' of the pews full of sailors: 'When I say "*kneel*," you *all* kneel'. M(E) Robinson, who had abdominal pains yesterday, was by now giving us some concern, and OS Loomes was still finding riding painful. EM Patterson had developed a poisoned finger, and M(E) Booth had an abscess in a part of the anatomy which made sitting on a bicycle saddle distinctly uncomfortable. After the service we were entertained at a braaivleis (South African barbecue, at which lamb chops take the place of steak) given by the parish; chops, sausages

and scalding hot tea were served round a great fire of logs in a field near the church, and in due course we found our way to our sleeping billets in the rectory.

**5th Day.** Tuesday June 12th.  
Heidelberg — Mossel Bay. 72 m.

Early in the morning, arrangements were made with Canon Blundell, one of the visiting clergy who had come from St Peter's, Mossel Bay, to take M(E) Robinson and OS Loomes in his car to Mossel Bay where they would see a doctor. Fr Brunsdon supplied breakfast, after which Lt Stacpoole took his section on a visit to a farm near the town before continuing the day's toil, the rest of the company saying farewell to hospitable Fr Brunsdon and then starting on the long haul to Mossel Bay. The first 20 miles continued to be as undulating as the country was during yesterday's run, but after this it became more level and our average speed increased considerably. Lt Stacpoole had in his party M(E) Booth, and by the time they reached Riversdale, about half way through the day's ride, Booth was in such discomfort that it became necessary for him to discontinue riding. Accordingly, Lt Stacpoole put him on the train at Riversdale, and was amused to find that the cyclists overtook the train three times on the way to Mossel Bay, and in fact the cyclists arrived at Mossel Bay some two hours before the train! As we entered this attractive port we found a large banner proclaiming *Welcome to Mossel Bay* hung across the main street, and were surprised and flattered to find that we were the occasion of it. The Mossel Bay Publicity Association and, in particular, Mr Bakker, did things for us in a big way; first of all the proprietor of Anne's Cafe gave us an

excellent tea, then we were given accommodation in the town hall, baths at the hotels and dinner and entertainment at private homes arranged through the Golf Club. There were free seats at the bioscope for those who wanted to go, free suppers at Anne's Cafe, and a farmer gave a whole sheep which was cooked for us at a breakfast braai-veis the next morning. We met Canon Blundell, who had taken his two passengers to the doctor, and he told us that Robinson had appendicitis, and Loomes had sinovitis. Neither could cycle any more, a bitter disappointment to them both.

**6th Day.** Wednesday June 13th.  
Mossel Bay — George. 32 m.

A fairly late start today: the main party left at 11 a.m.; Commander Wilson, Padre, OA Hack and OA King remaining behind to make arrangements about the sick members of the party. EM Patterson had his finger-nail removed at the hospital, and then pressed gamely on; M(E) Booth was given a shot of penicillin at the hospital, and EM Worthington, whose leg was troubling him, was examined by Dr. Cricks (who treated the other casualties) and was assured, to his great relief, that it would be all right for him to continue riding. Robinson is to have an operation for appendicitis, Loomes is to return to Simonstown, from where he will be returned to the ship. After making these arrangements, and making signals to Simonstown and to the ship about them, Commander Wilson's little party thanked Mr Hofmeyr, the town clerk, and the others who had done so much for us, and at mid-day began the relatively short ride to George. *En route* we were met by a lady from George, who had been out in her car meeting all the

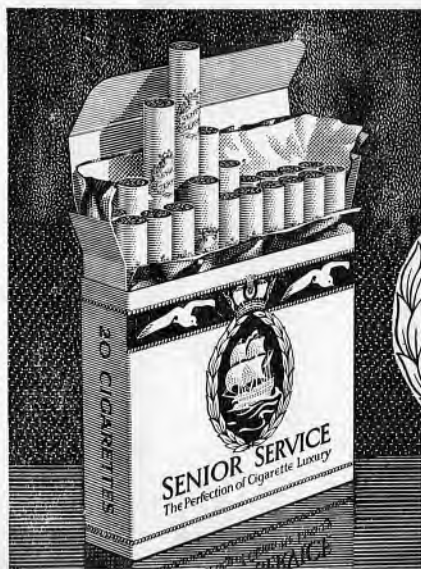
cyclists and distributing largesse in the form of oranges and apples, which were most refreshing. At George, Mr Ernest Ashley of the Victoria Hotel had been somewhat misled as to our time of arrival and had prepared lunches for the party. As the riders arrived between 1 p.m. and about 4 p.m. he had to hastily re-arrange his organisation to cope with the situation, which he did with remarkable success. After being refreshed at the Victoria Hotel, we were directed to the tourist camp where the entire party was accommodated for the night in a large shed. The deputy mayor and the city council were there in some strength, lavishing hospitality on the cyclists in the shape of food, drink, and goodwill. A braai-veis was soon in progress, at which a statistically-minded cyclist noted that the sausages were 18 inches long and an inch thick. A kind speech of welcome was made by the deputy mayor, and a reply was made by Padre. The warmth of our welcome served very well to keep out the cold of a South African winter's night.

**7th Day.** Thursday June 14th.  
George—Keurboom's River. 63 m.

A longer ride today, so an early start was made, the first riders getting away while it was still getting light. It was fairly level going for a while, then a drop amidst wonderful scenery through a cutting down to the coast once more at the pretty little seaside resort of Wilderness. There was a cafe there, which opened at 8.30 a.m. Unfortunately we arrived at 8 a.m. and so had to continue unrefreshed. On the way, Padre made the observation that coming out of a place called Wilderness on a journey such as ours put him in mind of the journeyings of the children of Israel through *their*

wilderness, except that we had no cloud by day nor pillar of fire by night. The retort from Padre's cycling companion was not long in coming; it consisted of the tersely expressed hope that *this* journey would not take 40 years! Our route now took us through the very pleasant area known as the Lake District, which resembles the English Lake District to some degree but on a smaller scale. Although we had no luck at Wilderness as far as refreshment was concerned, we were more fortunate further on when we came up with The Jolly Springer Cafe. When we found that the proprietor's name was Francis Drake it was clear that this was the place for us, and we stopped for coffee and biscuits. While we were there we espied a baboon on the other side of the road; 'Shady' Lane expressed the greatest possible disappointment when he discovered that it was tethered. M(E) Pilbeam closed it with photographic intent, but the baboon (like Noël Coward's nun) 'resented it', and leapt upon Pilbeam, who retired in good order but with the utmost despatch. On then to Knysna by way of the road which passes along the edge of the lagoon with its lovely colouring and reflections. At Knysna, a busy semi-industrial community, we were given a great welcome at the Royal Hotel — as well as drinks and a splendid lunch, provided by the municipal authorities. We were welcomed by the mayor, Mr G. S. Parkes, and the managers of the hotel, Mr and Mrs Venter, were most kind to all. During our short stop at Knysna we had time to look in the shops at some of the furniture made from the local stinkwood trees. On the way out from Knysna we passed through a wooded area known as the Garden of Eden, where some of us stopped to see stinkwood and other

# The Outstanding Cigarette of the Day



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trees. It was about 6 p.m. before the last of the party arrived at our destination for the day, the Frederick Hotel at Keurboom's River. Here we were received with traditional South African hospitality by Mr and Mrs Koch, who first of all fed us with large quantities of tea and sandwiches and then arranged accommodation for us. This night we were really spoiled, for most had real beds to sleep on — Mr and Mrs Koch virtually turned the hotel over to us.

If this log seems to dwell a good deal on the matter of food and drink, it is because on an expedition of this nature such fundamentals assume a rather more important place in one's consciousness than they do normally; thus when we say that Mr and Mrs Koch provided the entire party with

all we could cope with in the way of both these commodities, it does not mean that other aspects of the hospitality we received were unappreciated.

There was a great sing-song round a huge log fire after dinner, at which M(E) Rogers excelled himself at the piano and the entire company got the song 'Alouette' pretty well weighed off. It was a song which was to be heard on many more occasions during the rest of the journey to Durban. Other songs were sung, too, amongst them, 'Land of Hope and Glory'. During the evening Commander Wilson rang through to Mossel Bay and we received the good news that Robinson was getting on very well after his operation.

*To be continued.*

## The Experimental Clearance Diving Unit

I wonder how many of you, over the years, have seen various bods trying out bits of equipment under trial and complained that you first saw that self same bit 'b . . . . . ages ago'? This could be considered fair comment, the average time for the introduction of new equipment since the end of the war being five years, and in one particular case it has taken NINE years to bring a major development to the Acceptance Trials stage. Now, what's been the reason for all this?

As some of you may know, the Admiralty Experimental Diving Unit in H.M.S. *Vernon* is responsible for the development of new diving equipment affecting the efficiency, safety and comfort of the divers. The 'boss' of A.E.D.U. is the Superintendent of Diving who, together with the Senior Experimental Officer, controls all development work, subject of course to the requirements of the Navy. The routine, then, is that

when the need for a piece of equipment is raised by the users — that's you — a Staff Requirement is produced by the Admiralty, if they agree, and passed to the Superintendent of Diving. He then has the equipment produced within the Unit, or calls for tenders from civilian firms, either producing an initial prototype with drawings for them to copy or letting them do the whole of the development work themselves. This may take anything up to eighteen months. When the first prototype is produced, it has to be tried, as many snags as possible ironed out, and the *idea* passed to H.M.S. *Vernon* Acceptance Trials. It must then be further developed for production, and the production models finally passed back to Acceptance Trials who flog it as hard as they can for anything up to six months and, if satisfactory, accept it into service, when full production begins.



Due to the considerable delay caused by trial equipment having to be passed backwards and forwards for testing it was decided that a unit be attached to A.E.D.U. to carry out their trials immediately and to iron out most of the snags before the gear ever reached the Acceptance Trials stage. After much paperwork the formation of the team was approved by Their Lordships and in October last the School scraped around the doss-houses and came up with one officer+four to form the Experimental Clearance Diving Unit. For our first store we were given the heads! This was not considered to be a good thing, and after a number of quick shifts we ended up in a very nice little caboosh right around the back of nowhere. Needless to say we weren't allowed to stay there long, and at the time of writing we

### Londonderry Diving Unit

JUST prior to Christmas 1957, we received delivery of a brand new 45 ft Parkins Diesel launch, and also a new JAP compressor, and since then, by means of a little inter-departmental co-operation, it has been turned into a most comfortable working boat. With the exception of Chief, everyone has made their mark in various places on the boat, but so far we have only one tingle!

Due to circumstances beyond our control we recently spent a couple of hours high and dry half-way up the River Foyle. The engine broke down, so we anchored and were perfectly comfortable. A well-meaning motor launch attempted to take us in tow, so having swamped the anchor, the tow parted, and we met the 'putty'. No tow, No anchor, No tea!!!

At the beginning of the New Year the team were engaged in air-lifting mud from the slipway in the

have moved to the M.I.D. building from where we have an excellent view of yachts and pretty girls — in that order.

During the seven months we have been operating we have commenced no less than 23 different trials, of which we have completed about half. The rest are expected to extend over a lengthy period. It is still too early for you to have received the benefit of our wisdom, but within 12 months gear should be coming into service which otherwise you might not have seen for a considerable length of time. Perhaps the most interesting have been the development of deep-swimming to 120 ft using a new type of reducer with a 12 litre flow, and investigations into the problems of controlled ascent and decompression stops from that depth introduced by the expansion of gas in the counter-lung and suit inflation.

R.N. Yard, much to the indignation of the Maintenance Staff who occasionally had to brave the snow and ice to service the Broomwade compressor. One gentleman of the Engineering Branch (who shall be nameless) remarked that no machine should be run in such inclement weather! It would appear that in some spheres the machine will not replace man!

Before proceeding on Easter leave we heard, with some apprehension, that the services of the team, plus equipment, would be required to attend a civilian diver — from C.E's department at Devonport — to carry out a survey of all the jetties in the port. When he appeared, he turned out to be Mr E. Grinter, extremely well known in the dock-yard and naval circles from Guss to Hong Kong. Since his arrival, the tone of the diving team has been

lowered somewhat, although Mr. Grinter insists that morale has been raised! So far we have inspected upwards of 8,000 piles, and it is considered amongst certain members of the team that our qualifications are as high as any Surgeon Commander's!

The team had a pleasant interlude of four days at the beginning of May, when Belfast was honoured by a visit of Her Majesty Queen Elizabeth, the Queen Mother, on board *Britannia*. We were sent for security duties but we think that the Chief has a little pull in Buckingham Palace, because it was an ideal opportunity for him to deliver all his 'Rabbits' to his home at Bangor.

During the last month we procured a Primus stove for use in the boat and on the occasions when we run it on petrol, instead of paraffin, the attendant is paid ½d a minute danger money!

On Saturday 31st May we were asked by an Army unit at Castle Archdale if we would try to locate an outboard motor which had fallen into the middle of Lough Erne. No luck, unfortunately. The transport

to and from was by Army Land Rovers, and when we tried to enter H.M.S. *Sea Eagle* upon our return we were mistaken for an I.R.A. Unit! It so happened — luckily — that we were sober!

Our activities are not restricted to Ulster either. One trip was to a fishing village 70 miles away named Burtenport, where some unfortunate had fallen overboard from his drifter.

One minor point, we frequently exercise the shallow water divers from the local flotilla and any visiting ships. (SWD's please note — we are always available, but the day time is preferred!)

In signing off, the team wishes everyone in the Diving branch the very best of luck and no wet shirts! The Unit consists of:—

S/L (SD) TAS R. Boon, D.S.M. (I.D.O.)

CPO J. Edwards Diver 1.

L/Sea J. H. A. Morris Diver 2.

A/Sea J. Birrell Diver 3.

Changes in the above list lately are:

PO Scantlebury to H.M.S. *Reclaim*.

L/Sea J. Wilson to H.M.S.

*Kingfisher*.

A/Sea J. McLaren to H.M.S.

*Gambia*.



## Diving in Borneo

PRIOR to release from nine years of undetected crime (including five in and out of *Deepwater* penitentiary), I recollect being interested in a *Diving Magazine* article about civilian diving

Now having descended to the status of civilian diver myself, and recalling the pleas and screams (no bribes yet), of the editorial staff in each issue of the Magazine, I forthwith pen a line or two with the expansive knowledge of an illiterate ex-steam-diver

All fanatical 'cork-heads' may now discontinue reading as pure oxygen is used only for hangover revival.

Diving for a Borneo oil company is certainly interesting and varied even though S.9's and weekly pot-dips are non-'U'. Most underwater work is connected with maintenance and evolution of four oil-tanker berths three miles off-shore. Each berth has six sets of heavy cable groundwork and two submarine pipelines from tanks ashore, terminating in large rubber hoses. Sea drilling-platforms up to thirty miles from the coast, cross-river pipelines from oil fields to refinery, surveys of prospective sea drilling-areas also come under diving commitments. Clearing mooring wires from propellers, salvage of small craft, the customary search for false teeth, gold watches and lost anchors are added for good measure.

The marine maintenance section consists of two European and six Malay divers with attendants, plus a mooring gang who work from a mooring tender. This craft is a converted L.C.T. fitted with powerful winches and lifting horns and handles for cable laying and pipeline work. Ironically named *Karuwai*, meaning in Malay bird of paradise, she does

not justify her name (just imagine an L.C.T. with bow horns), but must be one of the most useful L.C.T's afloat.

There are also two diving launches equipped with diesel compressors, salvage pumps, various pneumatic tools, and welding generators which are capable of handling any situation. All men are trained in Standard and converted gas-mask equipment, the latter being generally used in shallower waters. On one unique occasion a Standard diver was required to free a jammed valve in a tanker's tank full of oily ballast.

A diving tank for general training and under-water welding and cutting practice is under construction.

Soft mud and moderate visibility are encountered in the moorings, where clamping leaks and oxy-arc cutting of steel pipes are general jobs. Sea snakes, lion-fish and stone-fish frequent this area; and sharks are occasionally seen but have never endangered a diver, though fish repellent (cupric acetate crystals) is carried whilst diving. In many years of diving only two fish-stings requiring hospitalization are on record, although injuries from razor-sharp shellfish and sea-urchins are more frequent. From personal experience I can say it is extremely painful to sit on a many-pointed sea-urchin.

Often seen is the gaudy trigger-fish whose flesh is poisonous according to survival information for mariners. Under the Malayan name 'ayam laut' (sea chicken) it is in great demand at the local fish market for its food value!

Distant sea drilling-platforms are situated in crystal-clear water on coral beds giving great opportunity

for observation of undersea life, although often the reverse is the case. Whilst we were welding bracing to the main structure of one platform, a two-hundred-pound grouper, attracted by the arc, daily swam up from its sea-bed lair, inspected progress and descended, not to be seen again until the same time next day. Curious turtles gazed at the fierce light with awe and, having visions of native turtle-divers, I grabbed one beast around the middle — he shot off as if propelled by an outboard motor, carrying me to the extent of my air pipe. On releasing him he wheeled around with obvious intentions of proving his formidable beak, only to receive a well-directed kick from a shallow-water diving boot. This immediately points out to our 'cork-headed' friends one advantage of self-contained equipment.

Swift currents and no visibility are the usual river conditions, the water

being dyed dark brown by certain tree roots. A monstrous type of catfish is reputed to live in the rivers and recently I saw a crocodile 11ft long that had been speared when in the oil pipeline area. Still alive, it actually had tears flowing and one felt sorry for it until its large yellow teeth, sharp talons and powerful tail were observed. Although I have no blood-curdling story of diver versus crocodile, it is not unknown for natives to be taken whilst bathing or fishing.

To conclude I would like to thank the ever-changing staff of the *Diving Magazine* for their extremely interesting production, and with reference to articles on divers' diseases, if any medico has a certain cure for tropical ear I'm sure all divers in Eastern waters would greatly appreciate the information.

G. B. BOOTH

## The 'Twa Brigs'

GREETINGS from 'God's own' country where we are still being kept fairly busy, the load being evenly spread between disposal and diving jobs. Just before Easter leave we travelled approximately 7,000 miles in three weeks. Last week-end (May 5th) we had the unique experience of having all three sea-going Clearance Diving Teams (i.e. *Dingley*, *Brenchley* and *Brearily*) together in one port. Unfortunately, they have now sailed for northern latitudes and we wish them good hunting and good diving on their cruise. This article is entitled 'The "Twa Brigs"' (Two Bridges), this being the name of one of Burns' poems written about two bridges in Ayr, namely the Auld Brig and the New Brig. However, the bridges I am going to write about are the

Two Forth Bridges — the Forth Railway Bridge and the New Forth Road Bridge.

**The Forth Railway Bridge.** This bridge is one of the most famous in the world and was opened in March 1890 by the Prince of Wales (later King Edward VII). The engineers were Sir John Fowler and Sir Benjamin Baker, and the contractor Sir William Arrol. The cost of building the bridge, a cantilever type, was over £3,000,000 and involved 5,000 men working day and night for seven years. It should be remembered that it was begun just four years after the Tay Bridge disaster, recently depicted in the 'You Were There' series on television, and therefore much thought and planning went into its design.

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The materials used in its construction were as follows: Steel 54,160 tons, Rivets 6,500,000 (4,200 tons), Concrete 64,300 cubic yds, Granite 740,000 cubic ft, Cement over 21,000 tons, and ordinary Stone 48,400 cubic yds. 57 lives were lost during its construction, and several lives have been lost since in carrying out care and maintenance, the last one, a painter, in 1952. The length of the bridge including approach viaducts is over 1½ miles. There are two spans of 1,710 ft each and two of 690 ft each. The highest part above sea level at high water is 361 ft. The height of the rails above sea level at high water is 157 ft 8 ins and the depth of water below the bridge is 91 ft.

Most capital ships entering Rosyth dockyard in the days before the 1939-45 war had to strike topmast to pass under the bridge. Striking topmast was often exercised in evolutions and was always a standard question in seamanship examinations.

About 50 men, consisting of painters, riggers, surfacemen, blacksmiths and carpenters, are employed all the year round on the care and maintenance of the bridge. Whenever work is taking place on the outside of the bridge a safety-boat manned by a man and a boy is in attendance. The safety boatman, a Mr Roberts, recently appeared on television in 'What's My Line'. The bridge sways east and west a maximum of 8 ins, and produces quite high voltages of induced E.M.F. due to its movement in the Earth's magnetic field. It also tends to act as a T.V. transmitter and causes ghost receptions in local T.V. receivers.

New rollers were placed on the piers in 1952-53 by Sir William Arrol & Co and whilst these repairs

were being done the speed of trains was limited to 20 m.p.h. The normal speed limit of trains on the bridge is 40 m.p.h. A wind gauge on the south arm of the bridge is read every day, and a wind fence guards trains and workmen from the full fury of the winds which frequently sweep up and down the Forth. There is a 3 ft walk on each side of the railway lines which cross the bridge, and permission to walk across the bridge can be obtained from Waterloo Place, Edinburgh, on payment of a fee of 1/-. It is interesting to note that women are not allowed to cross the bridge, as in olden days it was thought there would be a danger of the long skirts getting entangled in the rails. Actually women were employed on the bridge during the war. It takes three years to paint the bridge completely, and the annual consumption is 50 tons of paint and 2,000 brushes. Five grades of red oxide paint are used, and 30 ft of the columns is painted with silverene to counteract the action of salt-water spray.

The bridge was attacked in December 1939 by the Luftwaffe, and although there were some near misses no damage was done. This was the same attack in which the cruiser *Southampton* was badly damaged. No further attacks were carried out on the bridge throughout the whole of the war.

It is said to be lucky to throw a coin into the water when crossing the bridge. Any divers financially embarrassed please note.

**The Forth Road Bridge.** The need for a Forth road bridge has been a debating point in Parliament for Scottish M.P's over the past 30-40 years. Without going into the wrongs and rights of this cause let us be grateful that work is about to be

started. At the present moment the only method of crossing the Forth for east-coast traffic is the Queensferry Passage Ferries which run every ½ hour from 0645 till 2230. They can carry about 24-28 cars, at a price varying from 3/6d to 7/6d depending on weight and H.P. At busy times such as Monday mornings cars may have to wait between an hour to two hours to get across.

and it is hoped it will be finished some time in 1963. The engineers are Messrs. Mott, Hay & Anderson, and Messrs. Freeman, Fox & Partners. The contractors are Wimpeys and Dorman Long. Some details of the new bridge are as follows:— Total Length about 6,000 ft, Centre Span 3,500 ft, Side Spans 1,337 ft. There will be two roadways each 24 ft wide, two footpaths each 6 ft



Photograph by kind permission of 'Daily Mail'

The distance by road over Kincardine Bridge is 38 miles, so if there is a long queue it is often quicker to make this detour.

The new bridge will lie to the west of the railway bridge and actually passes over parts of Port Edgar. The pond, once the initial training ground for prospective Clearance Divers, is to be filled in and a new security fence will be put up. The bridge is to be a suspension bridge

wide, and two cycle tracks each 9 ft wide. Minimum clearance above high water is 150 ft. The diameter of the main cable is 26 inches with a breaking strength of wire in cable of 100 tons per square inch.

Well, gentlemen, this is all the details of the bridge I have for the moment, so instead of signing off to 'the skirl of the pipes' I'll sign off to the strains of 'Sur le Pont'.

Yours aye, MAC.

### M.I.D. Moments

JUST in case you haven't yet heard, the M.I.D. section is now at Horsea, using a small part of the C.D. Section as offices and lecture rooms until we eventually get our grasping hands on a few of

the Phoenix huts in order to set up a permanent base.

We are also looking after surface and underwater demolitions, and the S.C.U. (which to the uninitiated

means Submersible Craft Unit) also falls under our wings.

Chief Petty Officer McKinlay has left for the Far East after giving us invaluable assistance in getting the underwater demolition course going. He has been relieved by CPO Fawcett who, after getting over the initial shock, is settling down very well. Able Seaman Calkin has been posted to the Scottish B&M.D. section, and — for the record — no relief has yet arrived.

The only real fly in the ointment is that there is no suitable place near here where we can daily practise the new art of deep-swimming which has just been officially introduced.

The highlight of the last few months was a diving display given in Holborn swimming baths, London, where we daily ran the MK 1 chariot

which was used in the film *Silent Enemy* — Have you ever been in a goldfish bowl? Now I know what it is like.

We had a grand liaison with the London branch of the Sub Aqua Club; representatives of Dunlop and Beauforts (Air Sea Equipment) and even our opposite numbers, were busily recruiting at the entrance.

For the benefit of the film fans, we were visited by Lawrence Harvey and Sidney James who told us just how to really run a chariot!

I'm sure that the sight of the glamorous girl we had as No. 2 on the chariot should have boosted the recruiting figures.

After that pleasant week we now attack our work with new vigour and await in hope for another recruiting campaign in London.



'Says he wants some wire wool to knit a frying pan'

# A Review of Shark Attacks in Australian Waters since 1919

By V. M. COPPLESON  
Sydney

Reprinted from *The Medical Journal of Australia*, November 4, 1950

... the dragon that is in the sea.  
—ISAIAH XXVII : 1.

FROM Australia's earliest history, sharks have been known in her waters. In 1623 the Dutch navigator Carstenzoon recorded the presence of 'sharks, sword-fishes and the like unnatural monsters' near Cape York. William Dampier in 1699 sailed the *Roebuck*, the first British naval ship to visit Australia, into a Western Australian bay which is named 'Shark's Bay'.

The first account of an attack by a shark in Australian waters was written in 1793 by Tench in 'The Narrative of the Expedition to Botany Bay'. He refers to a female aboriginal, who was bitten in two in New South Wales about 1790. Francois Peron, who accompanied Baudin's expedition, described an attack by a shark at Faure Island, Hamelin Harbour, Western Australia in March 1803. Sharks were apparently feared by the early settlers, and in *The Sydney Gazette* of July 20th 1806, there is a 'caution to parents', warning them that a shark was hovering round Hospital Wharf.

Since these times, with increased population, the popularity of surf bathing and the advent of pearl diving, shark attacks have become more numerous. Each year about four or five attacks occur on the coast of Australia, of which about

Read at a meeting of the Section of Surgery, Australasian Medical Congress (British Medical Association). Seventh Session, Brisbane, May-June 1950.

two or three are on pearl divers. A detailed list of shark attacks up to 1933 was published in this journal, and it is proposed shortly to publish a further detailed list to 1950. This paper briefly reviews the attacks on swimmers or persons bathing since January 1919. There were 77 such attacks of which 42 occurred in the surf and 31 in harbours, rivers or estuaries, whilst four were on swimmers in the open sea or at long distances from the shore (Figure I). There have been excluded 33 attacks on pearl divers (between 1926 and 1936), and several attacks at Darwin and along the north coast of Australia.

## Injuries to Fishermen

The numerous reports of injuries to fishermen, one of which was fatal, show that all's not fish that cometh to the net. These also have been excluded, and also reports of swimmers who have disappeared. Such disappearances are often credited to shark attacks without any evidence. In one instance a naval petty officer, who was reported to have been taken by a shark in Melbourne, was found next day at Albury, 200 miles away.

## Mutilation of Dead Bodies.

Amongst the incidents recorded are a number of reports of the mutilation of dead bodies by sharks and of the finding of human remains in captured sharks. It was once held that sharks did not attack dead bodies. There is ample evidence to show that this view is not correct,

It is often stated that sharks have great powers of digestion. Judged by mammalian standards, this is not so. There is little analogy between the physiology of digestion in sharks and that of mammals. The gastric juice of sharks contains little, if any, hydrochloric acid. From mouth to anus, the alimentary canal of a ten ft shark would not measure more than eight feet.

The discovery of human remains in sharks' stomachs is not infrequent. In five or six cases, a human limb with little sign of digestion has been found on the opening of a shark, in which it had evidently been present for a week or more. In the 'shark-arm' case, the arm had apparently been in the shark's stomach for several weeks. It was in a good state of preservation with only minor signs of digestion.

In a recent shark attack at Broome, Western Australia, a young woman lost her left arm. Eight days later the shark was caught. When its stomach was opened, the arm was found. The ring which was on one of the fingers the victim now wears on her right hand.

Numerous attacks on boats and rowing skiffs have also been recorded. In one instance three men lost their lives when their boat was attacked, and one man lost his life in another attack. The evidence against the sharks responsible literally comes out of their mouths. Some teeth are usually left in the woodwork of the boat by which their identity can be established. In every case in Australia, such teeth have been those of the blue pointer (mako). In other parts of the world, the white shark has been credited with similar



FIGURE I  
Showing location of shark attacks since 1919

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attacks. It is thought that this shark may be responsible for the attacks on boats in Victoria and South Australia. So far, no identification has been reported.

### Analysis of Details of Attacks

An analysis of the details of the attacks since 1933 shows that they agree in the main with the findings of the previous paper.

Attacks are most common between the months of November and April, particularly in the warmer weather (Figure II). South of Mackay, Queensland (latitude 20° south), in 63 recorded instances, only one attack has fallen outside the period from October 20th to April 20th. This, curiously enough, was the most southerly of all. It took place at Flinders Island, Bass Strait on August 18th, 1949. In the Sydney and Newcastle areas, all except one of 40 attacks have occurred between December 14th and April 14th. North of Mackay attacks have been reported in all months of the year.

Most of the attacks occur in the afternoon, usually between 3 and 6 p.m. (Figure III), and may take place close to the shore in very shallow water. Attacks have been recorded at all distances (see Table I) and at most depths (Table II). Those in a crowd have been taken as well as the 'shark-baiter' (Table III). However, it is usually the lone bather or one of a small group or on the edge of a crowd, or a 'shark-baiter' several hundred yards out, who is singled out. It is a common story that a number of men were out a long distance waiting for a 'shoot', which they all took except one, who was then attacked by a shark. Attacks have taken place in all sorts of weather, on dull days and fine days, at high tide, medium tide and low

tide, in clear water and muddy water and even in brackish water. At times there has been a sandbank with an inshore channel. Most surfers believe that attacks are more likely in calm water, but they are as frequent when there are good short and heavy surf.

Usually one bather is attacked, and there has been only one definite instance in which two persons have been injured by bites in the same attack. This was at Coolangatta in October, 1937. It is not certain whether one or two sharks were involved. At Maria River, in 1937,

TABLE I  
*Shark Attacks (41) Relative to Distance from Shore*

Distance (Yards)	Number of Attacks
0 to 10 ...	11
10 to 50 ...	14
50 to 100 ...	5
100 to 600 ...	11

four brothers were bathing. Two of them were injured; one was bitten by a shark, the other was undoubtedly injured by the shark's fin. In a recent attack at Cairns, a bather was similarly injured, though only slightly. The shark often makes two or three attacks, which are usually confined to the victim even though others may be near by. In the majority of cases, the victim reaches shore unaided or is rescued. Great heroism has been shown by surfers and members of surf life-saving clubs in swift and daring rescue of their comrades. There had been no instance of a rescuer being attacked, except perhaps in the Coolangatta case, in

which the second man was swimming in deep water close to the first victim at the time and was swimming towards him when attacked.

TABLE II  
Depth of Water in 27 Recorded Attacks

Depth of Water	Number of Attacks
Shallow, depth unknown ... ..	2
2 feet ... ..	2
3 feet ... ..	6
4 feet, or waist deep	10
5 feet ... ..	2
Deep, but depth unknown ... ..	2
12 to 20 feet ... ..	3

#### Wounds and Mortality Rate

Sharks may attack with great force and ferocity. Wounds may be caused by the shark's bite, by its fins or by the impact of its rough hide. Wounds due to the bite may be amputation of limbs or deep lacerations, usually with loss of tissue in the limb or trunk, which may open the thoracic or abdominal cavities. Bones like the femur may be bitten through cleanly. The first attack is usually on the legs or buttocks. It is common for the victim to have one or both arms snapped off whilst trying to fend off the shark. Straight lacerations and wounds may be due to the shark's fins, whilst the multiple skin abrasions, usually arranged in definite rows and generally described as 'tooth marks', are due to the impact of the shark's rough hide. The small wounds in some cases may be caused by small sharks or other fish.

Of the attacks on bathers, the result in four is not known; of the remainder of the victims, 51 died

(one double attack) and 23 recovered. Of the 51 who died, all but seven were brought ashore, and 25 died during rescue or before being admitted to

TABLE III  
Shark Attacks (25) Relative to Number Bathing

Number of Persons	Number of Attacks
Bathing alone ... ..	5
Under 10 ... ..	10
Less than 20 ... ..	3
30 ... ..	2
Between 30 and 40	2
40 to 70 ... ..	1
Several hundred ... ..	2

hospital. Thirty-one were admitted to hospital, 17 of whom died after admission. In a number of the recorded instances only minor injuries were inflicted, and in several it is doubtful whether sharks were responsible. Where there is a definite bite by a shark, the mortality rate has been about 80% or more. The mortality rate among native divers is very much lower. Prompt rescue and first aid probably explain this.

#### Man-Eating Sharks

There are about 35 species of sharks found along the coast of New South Wales, and many more in other parts of Australia. Gilbert Whitley, the ichthyologist of the Australian Museum, regards the sharks along the eastern coast of Australia as living fossils—the almost unchanged remnants of the marine fauna of a prehistoric sea, which existed to the east of Australia in the Eocene period.

At least six Australian sharks have been regarded as dangerous to

man (Figure IV). They are: the tiger shark (*Galeocerdo cuvier*), the whaler shark (*Galeolamna macrurus*), the blue pointer or mako (*Isuropsis mako*), the hammerhead (*Sphyrna lewini*), the grey nurse (*Carcharias arenarius*) and the white shark or white pointer (*Carcharodon albimors*).

It was once thought that the grey nurse was responsible for most attacks. This shark chases its prey in the open sea. There is little evidence to support its evil reputation, although the wounds in a few instances may have been caused by the teeth of a shark such as the grey nurse or possibly the blue pointer. The blue pointer or mako is also a pelagic shark. There is no evidence yet to incriminate it as a man-eater.

It is known to be responsible for attacks on boats and probably surf skiers on the eastern coast. Hammerhead sharks have been known to attack man in other parts of the world, but there is at present no evidence against the Australian hammerhead. It is a distinctive shark and easily recognised at a distance. The fact that it has never been reported or seen during an attack suggests that it has been responsible for few if any attacks. The white shark is the shark which follows ships. It is undoubtedly a savage shark and must be regarded as a man-eater. This shark is probably responsible for attacks on boats and possibly on bathers on the southern coast of Victoria and South

TABLE IV  
Details of Sharks Caught by Meshing

Period	Whaler	Tiger	Grey Nurse	Blue Pointer	Hammerhead	White	Not Classified	Total
December 1st 1939, to December 1st, 1940	76	62	141	81	62	113	216	751
December 2nd 1940, to December 1st, 1941 ...	109	80	185	120	71	16	124	705
<i>Three Year Period, May 1947, to April 1950</i>								
May 1947, to December 1947 ... ..	23	15	18	66	46	—	(a)	168
December 1947, to December 1948 ... ..	79	67	27	24	63	—	(a)	260
December 1948, to December 1949 ... ..	79	7	13	4	5	—	(a)	108
December 1949 to April 1950 ... ..	15	1	0	0	5	—	(a)	21
Total since May 1947 ...	196	90	58	94	119	—	494	557

(a) During this period, 494 unclassified sharks caught.

Australia. The whaler and the tiger sharks are proved man-eaters. The evidence implicating them is complete. The whaler is the scavenger shark usually responsible for the attacks in bays, harbours, creeks and estuaries and around the mouths of harbours. It basks in warm shallows

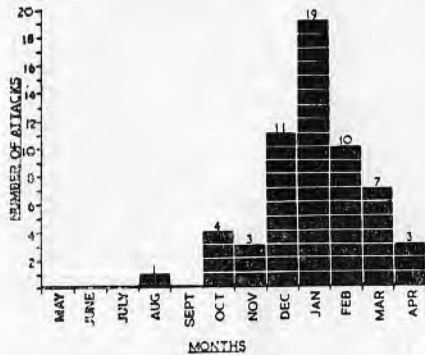


FIGURE II  
Showing the month of attack on 58 recorded occasions

and even enters fresh water. The tiger shark is responsible for most of the outside shark fatalities. Dr. J. Nimmo has informed me that the divers of the Barrier Reef regard any shark over six ft in length as a man-eater and disregard any under this size. They consider the tiger as the most vicious of the sharks. The

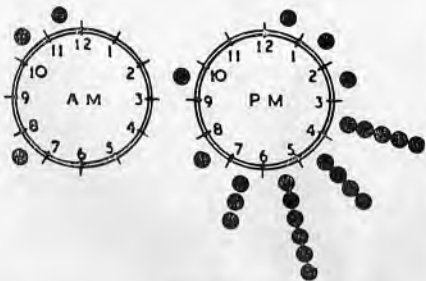


FIGURE III  
Showing the time of attack on 28 recorded occasions

TABLE V.

Details of Beaches at which Sharks were Caught by Meshing between January 14th 1946, and October 12th 1947<sup>1</sup>

Site	Whaler	Tiger	Grey Nurse	Blue Pointer
Palm Beach	4	20	11	5
Whale Beach ...	2	11	11	4
Avalon ...	3	2	3	2
Newport ...	3	7	2	2
Mona Vale ...	1	2	0	1
Narrabeen ...	4	22	12	5
South Narrabeen ...	—	—	—	—
Collaroy ...	—	—	—	—
Dee Why ...	0	2	6	1
Curl Curl ...	0	5	9	2
Harbord ...	4	3	3	2
Queenscliff ...	2	1	1	5
North Steyne	—	—	—	—
Manly ...	3	8	8	6
Bondi ...	7	8	4	8
Tamarama ...	—	—	—	—
Bronte ...	3	5	1	2
Coogee ...	0	2	3	3
Maroubra ...	1	8	1	3
North Cronulla	—	—	—	—
Cronulla ...	3	7	4	2

<sup>1</sup> One blue pointer was caught on January 9th 1947, and no more were caught until the fortnight beginning April 28th 1947, when four were caught; then no more were caught until June 23rd 1947, after which there was a fairly consistent catch. No tiger or grey nurse sharks were caught between July 7th and October 12th 1947, except one tiger on July 11th; no whaler sharks were caught for four months from August 4th to December 8th 1946. No whalers were caught between January 6th and February 28th, or between September 1st and October 28th; then there was a fairly consistent catch, although low in numbers throughout. However, 110 were caught between December 16th 1946, and July 11th 1947, 49 of which were caught in the five weeks from December 23rd 1946 to February 2nd 1947.

teeth of each of these sharks are distinctive. This is the easiest means of distinguishing them (Figure V).

**Shark Meshing**

Numerous ingenious methods have been suggested to eliminate the danger of shark attacks and to protect bathers. At the instance of the Surf Life Saving Association, the Government of New South Wales, after a

TABLE VI  
Sharks Caught, Summer and Winter<sup>1</sup>

Year	Winter (June to September)	Summer (October to May)
1938 ...	53	465
1939 ...	32	148

<sup>1</sup> Similar figures were recorded in later years, but the difference was not so pronounced

series of fatal attacks in the State, appointed in 1934 a Shark Menace Advisory Committee under the chairmanship of Mr. (now Judge) Adrian Curlewis, to investigate methods of securing the protection of bathers from shark attack. After taking evidence and considering the matter exhaustively, they recommended to the Government that shark meshing should be introduced on the beaches around Sydney. Meshing consists of laying a long twine or rope net overnight near a beach and removing it by a trawler in the morning. It is to the credit of the Government of New South Wales that, in spite of strong criticism that the proposal was 'a stupid, futile waste of money', it was willing to adopt unusual methods to meet an unusual foe. The experiment appears to have been well worth while. Meshing was begun in 1937. From this date, thirteen years ago, not one attack by a shark has

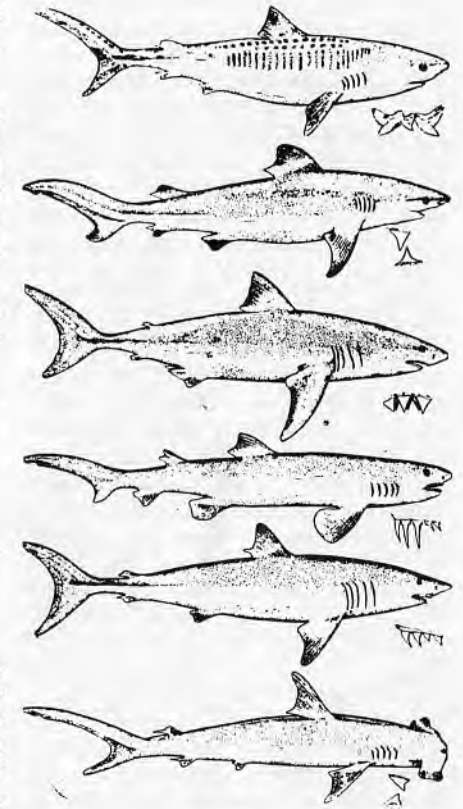


FIGURE IV

The commonly suspected man-eating sharks, from above downwards, as follows: (i) the tiger shark (*Galeocerdo cuvier*); (ii) the whaler shark (*Galeolamna macrurus*); (iii) the white shark (*Carcharodon albimors*); (iv) the grey nurse (*Carcharias arenarius*); (v) the blue pointer (*Isuropsis mako*); (vi) the hammer headed shark (*Sphyrna lewini*). The teeth of each species are shown behind the head of the corresponding shark.

occurred on any ocean beach in the area meshed (Figure IX). In the previous thirteen years, 13 attacks had taken place on these beaches. The longest interval between attacks was one of five years from 1929 to 1934. Attacks which occurred



during this period were confined to harbour and river waters where there had been no meshing.

I am indebted to Mr C. Mack, who was secretary of the Shark Menace Advisory Committee, for the following information concerning the results of meshing. The first contract was let with Cranwick Fisheries, Limited, and started in October, 1937; 517 sharks of all species were caught until October 28th, 1939. Contracts with C. R. Stuart & Co began on December 2nd 1939, and ran to March 23rd 1941, when the ships were taken over by the United States Navy. Meshing recommenced in May 1947. The accompanying table (Table IV) shows the numbers and types of sharks caught. It is probable that these are not strictly accurate. The beaches at which the sharks were caught are also shown (Table V). The smaller numbers meshed during the winter (Table VI) suggest that these sharks go elsewhere or hibernate during these months. The low figures in recent years suggest that the shark population in the meshed areas is decreasing. More data are required before conclusions can be drawn.

**The Location of Attacks**

Of the 77 attacks on bathers and swimmers since 1919, all except nine have occurred in New South Wales or Queensland (Table VII). The most southern attack was at Flinders Island in Bass Strait in October, 1949. No authentic attack is known to have occurred south of latitude 40° or in Tasmania.

*Analysis of New South Wales Attacks, 1919 to 1949*

Sydney Harbour: Middle Harbour 2, Sirius Cove 1, White Bay 1, Camellia 1 ... .. 5  
 Sydney beaches: Coogee 3, Bondi 3, Maroubra 2, Bronte 1,

North Narrabeen 1, Dee Why 1, Queenscliff 1, North Steyne 1, South Steyne 1, Collaroy 1	15
Botany Bay and George's River: North Brighton 2, East Hills 1, Milperra Bridge 1, Kentucky 1, Como 1 ... ..	6
Newcastle Harbour: Throsby Creek 2 ... ..	2
Newcastle Beaches: Stockton 3, Newcastle 2, Merewether 1, Bar and Cook's Hill 3, Red-head 1 ... ..	10
Elsewhere in New South Wales: Macleay River 1, Byron Bay 1, Maria River (Port Macquarie 1, Forster 1, Austinmer 1, Lake Macquarie 1, Woy Woy 1, Port Hacking 1	8
New South Wales Total ... ..	46

Attacks are extremely rare in South Australia and Victoria. The reason that they are not common in Western Australia is probably that those who expose themselves to the risk there are few. The numbers of attacks in these States since 1919 are: Western Australia four, South Australia two, Victoria two. Only three attacks have been recorded in the history of South Australia. In Victoria the last attack on a bather occurred in 1930; the only fatal attack prior to this was at Albert Park in 1876. The details of the attacks in Queensland are shown in the following summary:—

*Analysis of Queensland Attacks, 1919 to 1949*

Cairns: Trinity Beach 3, Ellis Beach 2, Yorkies Knob Beach 1 ... ..	6
Townsville: Ross Creek 5, Cleveland Bay 1, Magnetic Island 1, Kissing Point 1 ... ..	8
Elsewhere in Queensland: Mackay 1, Yepoon 1, Paliba 1, Caloundra 1, Bulimba (two	

involved) 1, Coolangatta (two deaths) 1, Southport 1, Currumbin 1 ... ..	8
Queensland Total ... ..	22

Examination of the location and dates of attack gives some suggestive information. Apart from attacks on pearl divers along the Barrier Reef, it is obvious that the majority of attacks occur in harbours and estuaries and on beaches near the entrances. More than half the attacks on bathers and swimmers have occurred in the vicinity of Sydney, Newcastle, Townsville and Cairns. The yearly freedom from attack along the New South Wales coast from April to December is supported by the meshing figures given above, and by evidence of the feeding habits of captive sharks. There is also reason to believe that at least along the east coast, the dangerous sharks which are cold-blooded creatures are active only when the sea temperature is about 70° F. or higher.

If the attacks in given areas are studied, a most striking feature is the occurrence of many of the attacks in sets or sequences. Examples of several attacks in one area over a short period have been reported. On August 8th 1899, three shark attacks

occurred at Port Said in the same vicinity. Between July 6th and July 12th 1916, on the bathing beaches of New Jersey in Sandy Hook Bay at the mouth of New York Harbour, four bathing fatalities took place which were ascribed to a white shark. In New Guinea, early in 1931, attacks occurred in the same vicinity on three successive days.

Somewhat similar sequences are apparent in Australian attacks; this will be seen from the following summary:—

*Attacks in a Given Vicinity at Short Intervals, New South Wales only*

- Coogee: February 6th 1922; March 3rd 1922; Bronte, February 30th 1924; Coogee, March 27th 1925.
- Bondi: April 14th 1928; January 12th 1929; February 8th 1929.
- Queenscliff, Manly, January 7th 1934; Dee Why, March 12th 1934; North Steyne, April 1st 1934; North Narrabeen, March 2nd 1935; South Steyne, Manly, February 4th 1936.
- George's River: East Hills, January 29th 1934; Milperra Bridge, December 31st 1934; Kentucky, December 31st 1934.
- North Brighton: January 23rd 1940; February 4th 1940.

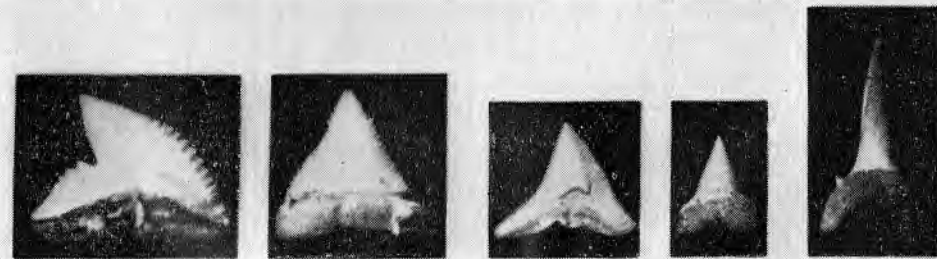


FIGURE V  
 Isolated teeth of sharks: (a) the tiger shark; (b) the white shark; (c) the whaler, upper jaw, (d) the whaler, lower jaw; (e) the grey nurse.

Middle Harbour: January 6th 1942; December 26th 1942.

Stockton Beach, Newcastle, February 12th 1948; Bat Beach, Newcastle, January 26th 1949.

1. At Coogee Beach, Sydney, an attack took place on February 6th 1922; there was another attack on March 3rd 1922, and attack on February 13th 1924, at Bronte Beach about two miles north, and a further attack at Coogee on March 27th 1925. There had not been a previous attack at Coogee, nor has there been any attack since those dates.

2. At Bondi Beach an attack took place on April 14th 1928, a further attack on January 12th 1929, another on February 8th 1929, and one at Maroubra, some six miles south, on February 18th 1929. There had been no previous attacks at Bondi, and there have been none since. A further attack took place at Maroubra in 1935.

3. An attack took place at Queenscliff Beach, near Manly, on January 7th 1934, one took place at Dee Why Beach, four miles to the north, on March 13th 1934; on April 2nd 1934, there was an attack at

North Steyne, just south of Queenscliff. On March 4th 1935, there was an attack at North Narrabeen, about seven miles to the north, and on February 4th 1936, one at South Steyne. The attacks were over a distance of about seven miles. No other attacks took place on any other Sydney beaches, nor was there anything to suggest a local increase in sharks. There had previously been no attack in this area, nor has there been one since.

4. At George's River a man was killed by a shark at East Hills, twenty miles from Botany Bay, on January 27th 1934; another attack took place further up the river (one mile), near Milperra Bridge, at 4.30 p.m. on December 31st 1934. At 8.15 the same evening another attack took place three miles up the river at Kentucky.

5. At North Brighton, Sydney, a boy was killed by a shark on January 23rd 1940; twelve days later, a quarter of a mile away on February 4th 1940, a man was killed by a shark.

6. At Egg Rock, Bantry Bay, Middle Harbour, Sydney, a young

woman lost her life in a shark attack on January 6th 1942; at Instone Point, Bantry Bay a short distance from the previous attack, another young woman lost her life by shark attack on December 26th 1942.

TABLE VII  
*Attacks on Swimmers and Bathers, 1919 to 1949*<sup>1</sup>

Place	Number of Attacks
Queensland ... ..	22
New South Wales ... ..	46
Victoria ... ..	2
South Australia ... ..	2
Western Australia ... ..	4
Bass Strait, Flinders Island ... ..	1
Total ... ..	77

<sup>1</sup> Thirty-three attacks on divers and several in Northern Territory excluded

This grouping is not confined to Sydney. Five attacks in the vicinity of Cairns are in two groups (Figure VII). Three attacks occurred in the first group; one at Trinity Beach on June 19th 1945, a second one at Trinity Beach on April 19th 1946, and the third at Ellis Beach, a few miles south, on August 19th 1946. The second group consists of two attacks, one at Ellis Beach on April 18th 1949, the other at Yorkey's Beach, some miles south, on August 29th 1949.

Sharks of types known or reputed to be man-eaters are caught with great frequency in the vicinity of beaches where large number of people are constantly bathing. There can be little support for the view that the sea is full of man-eating sharks hunting in packs, ready to pounce on

unwary bathers. In all the Australian attacks, except one, if there has been any evidence, it has been that only one shark was concerned in the attack, and in the majority of cases the shark is seen. The evidence, which includes the freedom from attacks over long periods, the continued presence of man-eating sharks, the attacks in sequence, and cessation of attacks once a particular shark is caught, suggests the guilt, not of many sharks, but of one shark. It suggests the presence of a vicious shark which patrols a certain area of the coast, of a river or of a harbour, for long periods. If it leaves — and there is evidence to suggest that it either leaves its area or hibernates

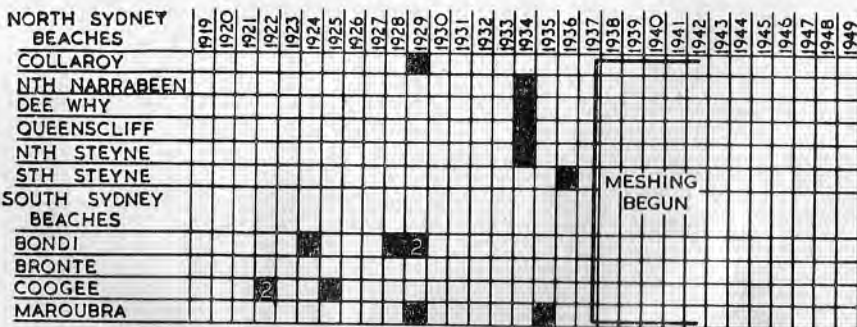


FIGURE VI

Showing the effect of meshing. Each black square represents one shark attack, except where two attacks are shown by the figure 2

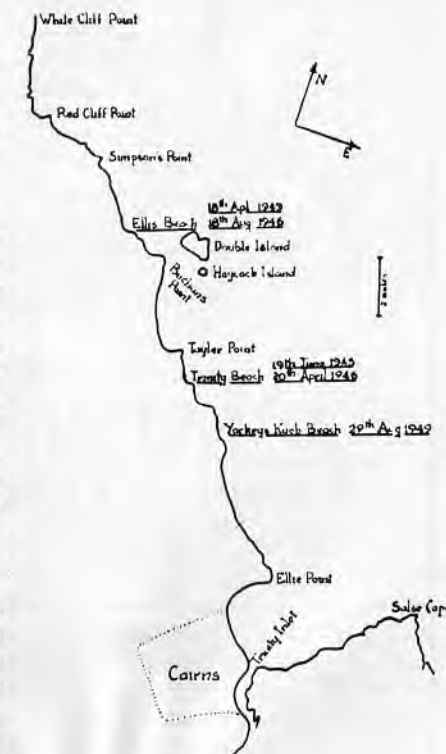


FIGURE VII

for a time each year — it returns to the same patrol and may do so for a number of years. The extent of its territory appears to be about ten to twelve miles. Its presence is usually disclosed by its viciousness. Dogs may be attacked, fish taken from lines, and in other ways it may disclose itself. Once an attack has taken place at a given spot the danger still remains, and it must be a warning that further attacks may be expected within ten miles and even up to one or two years later in the same area, unless the shark is destroyed. In this respect the man-eating shark appears to be somewhat analogous to the man-eating tiger.

Based on this theory, a letter was written by me to *The Sydney Morning Herald* on January 24th 1940, the day after a boy had been attacked and killed at North Brighton Beach, Sydney, in which the possibility of a further attack near North

Brighton Beach was predicted. Danger often comes quickly when it is despaired. A further attack took place almost at the site of the previous attack twelve days later.

### Conclusion

It would appear that in Australian waters there is an ever-present danger of shark attack, especially along the eastern coast north of Port Hacking and probably along the northern and north-western coasts, on beaches and in harbours, creeks, rivers and estuaries. The danger to any individual bather is infinitesimal and very much less than the risk of serious injury in a motor-car accident. Nevertheless, it is a horrible and fearful type of injury, which falls mainly on those who are full of life and youthful vigour. Precautions are necessary for safety. This can best be obtained by bathing in enclosed areas. However, meshing which has been introduced by the

New South Wales State Government, appears to have eliminated or greatly reduced the risk of attack. Whilst the time during which meshing has been carried out is too short to come to definite conclusions, so far it appears to have proved successful, and the meshing returns appear to suggest a reduction in the shark population of the beaches.

A measure of prophylaxis may also be able to be taken when the presence of a dangerous shark is known in any vicinity. It should be the responsibility of local bodies to detect such sharks, and they should be able to call upon other authorities to assist them by meshing, by the provision

of shark anglers and perhaps by other methods. Undoubtedly a number of fatalities could have been prevented if these facts had been known and the proper precautions taken.

Vigilance both before and after an attack on open beaches, in harbours or in inland waters should never be relaxed in the presence of a dangerous shark. Such a shark must be hunted until it is destroyed. In conclusion, it would seem that over the last twenty years we have made considerable progress in our knowledge of sharks and their habits in relation to attacks on man, and considerable advance in methods of protection against their attacks.

### 51st Clearance Diving Team

THE main interest of the 51st during the last eighteen months has been the Dove search which is almost finished. Lieutenant Whatley has been our guiding light and the team has responded nobly.

At present we are on a six-week cruise along with our arch enemies H.M.S. *Dingley* and H.M.S. *Brearley*. When this is over we return to Port Edgar, and then we intend to show

the land-lubbers at Portsmouth just how out of training they are. The Forth Hotel is still our rendezvous and training headquarters.

The team consists of Lt Whatley, LS Andrews, AB's Barrett, Chaplin (Snoz), Mackenzie, Wannerton, Handford and Barnes. AB Barrett and Mackenzie move to *Vernon* next month and are being relieved by AB's Lewis and Pearson.

### News from H.M.S. Defiance

SINCE the last issue, S/Lt Rock has been relieved by S/Lt Walker. The latter is relieved that he now has the opportunity to go home to his family at regular times.

'Rancho Defiance' is running quite well, with the foreman and hands busily engaged in 'branding' the new crop of calves (mostly shallow water types). As is usual, we have had our quota of 'bum steers', but feel that we are keeping up the feeling of the branch in general, by having only the best.

Everyone is working at full pressure, and, although out to a clench with instructors, we are holding our own.

One good point about being here: bearing in mind the international flavour of our many clients, the staff have unbounded confidence they can obtain a post with UNO when their service careers are at an end.

With our aid being sought in England at Whitsuntide (Plymouth Navy Days), much heavy thinking is taking place to concoct something

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suitable for the show. Sopey has been doing some very intensive crystal-gazing in the store and has quite convinced a Middle East pupil that he is possessed of certain peculiar powers which, if true, augurs well for our forthcoming show.

At the time of writing, Jerry Lock and one are over in Wales giving assistance to a group of Boom types on a mix-up of anchors and also working on the crashed Venom naval

plane. We hope to have them back soon, for their absence makes a great difference to the organisation here.

A piece of news that may be of interest was a request which came from a certain naval establishment, not three thousand miles away from *Defiance*, for the assistance of divers to clear a swimming bath of builders' residue (after repairs).

Our CD 1 and three sped smartly to the scene, and were requested to

commence sweeping up a few hundred grains of sand on the bottom of the bath in 6 ft of water. It was felt that our airlift was too much for the job. We couldn't very well take out all the water, that the bath attendants had worked so hard to put in.

Three new members have qualified: L/Sea Roberts, L/Sea Foyle, and A/B Morton.

For the vegetarian — spring cabbage is now available from the head gardener. Leave details of your requirements with OOD and collect on going ashore.

On closing our efforts, we should like to report that 'Mr Mac', our CDO and B & MD is editing a fresh set of road maps of Cornwall (based on his experiences here) for the benefit of any of you who come here from England. HOOKY.

### DIVERS'

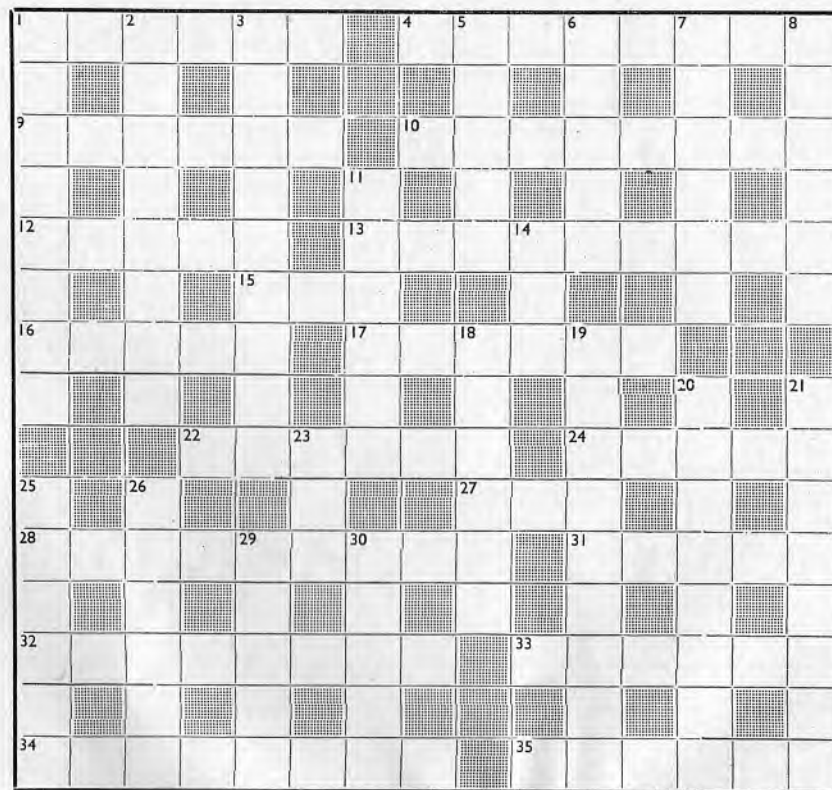
#### CLUES ACROSS

1. Return from where bat entered (6)
4. Musicians add it and reverse it. Robbers! (8)
9. A hundred throw a shilling—The louts! (6)
10. Example of Pirot art? (8)
12. Where the diver goes (5)
13. Amuse by going in and putting one in a can (9)
15. Non-U-Aunt (3)
16. Italian city (5)
17. Shag gleaners bargain (6)
22. He issues red ale (6)
24. Poems make him miserable (5)
27. 'Sweet are the ...s of adversity' (3)
28. Diver takes a roundabout to the Holy City (9)
31. What the diver has to do on a muddy bottom. (5)
32. Occupied (8)
33. Set Tom on a pole (6)
34. A food watcher? (8)
35. Dog you can have for an old coin (6)

#### CLUES DOWN

1. Tells a tale after a miscalculation (8)
2. Ill mannered kangaroos? (8)
3. Clear tone (anag) (9)
5. Sailor beaten in a fight (5)
6. Discourage (5)
7. Worn by rich girls such as Rita (6)
8. Concentrating under canvas (6)
11. Permit Harold to kill (6)
14. Chicken potential (3)
18. Red gun (anag) (6)
19. T.V. fruit garden (4-5)
20. Adversary (8)
21. Evaluator (8)
23. Put singular article onboard for animal. Silly! (3)
25. Wartime heroine (6)
26. A wayside meeting place (6)
29. Found in musical circles? (5)
30. Torpid like nitrogen. (5)

### X-WORD No. 8



The solution to this X-word is on page 50

## Oil (or Perils of the Deeps)

The D 3's Q up the harbour steamed  
The fate in store they never dreamed  
The *Albion* crew a stanchion lost  
And must be recovered at all cost

The boat alongside and the diver dressed  
It's just down there the Suby guessed  
Kinky looked up and gave a frown  
And with a command sent the diver down

Meanwhile old Joe on the canopy top  
Was having a Maltese bottle of pop  
Then pusser down aft let out a yell  
'The *Albion's* sprung an oil well'

Poor old Joe in the midst of his tot  
Looked up at stokes and caught the lot

Then Jock the Scotsman up forward shouted,  
'Stokes be careful or you'll get clouted'

Daft stokes grabbed the hose dragged it clear

And drenched the Suby standing near  
He opened his mouth to give an order

And caught the lot in wild disorder

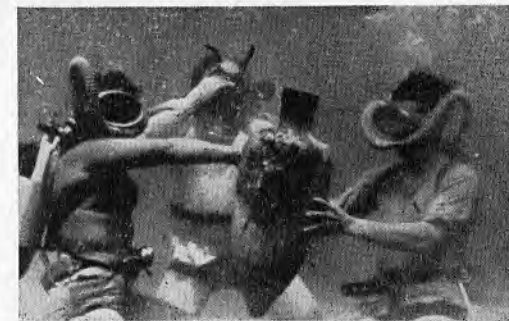
A few spectators standing near  
Were just too late in getting clear  
Then Hayward who was coiling down  
Came up like a well-dressed clown

The moral of this story is  
That when old stokes is in a diz  
All divers working around beware  
Or they may partake in such an affair.



## Club Aquatique—Le Trayas

THE Club Aquatique, centred at Le Trayas, is now very well known both by British and other foreign visitors to this delightful spot midway between Cannes and St. Raphael. Many of our clients return year by year to the Navirotel and spend their holiday either underwater swimming, sailing, water skiing, or relaxing in



the hot Mediterranean sun. Our headquarters are at the Navirotel which has a wonderful situation overlooking the sea, and the Club is staffed by an experienced British team under the leadership of Mr Jack Atkinson.

The coast abounds with underwater grottoes and the sites of Roman galleys wrecked over 2000 years ago — most of the amphorae from these are still perfectly preserved. Dives are made from our own 30ft motor launch, and this is also used for other excursions. We also have our own boat for water skiing, a sport 'leaping ahead' in popularity, and there are facilities for sailing nearby. Excursions are run to Cannes and other places of interest, both by car and by motorboat.

at the end of September and we shall be pleased to send you full details of our inclusive arrangements. We are also able to quote party rates for these arrangements for groups of 10 or more and to give details of available camping sites if necessary. If you are uncertain of your leave dates, but are touring in the South of France, you can still join the Club for the period of your stay. Our host and hostess, Jack and Edna Atkinson, will make you very welcome and arrange the sports for you. If you have your own aqualungs, these would be a help, especially during the months of July and August — we would supply you with air from our compressor, at the local rate of exchange.

The centre is open from June until

Club membership is included in our inclusive fares, but should you join locally the fee is £3, entitling you to one full session at each sport. The rates for each sport after this are as follows: Diving (per session) 30/-, Sailing (one hour) 5/-, Water Skiing (five minutes circuit) 7/-.



Please write for further details to World Sport & Travel Service, 198/199 Sloane Street, London, SW1 quoting reference RND.1.

## Notes from the Clearance Diving Acceptance Trials Team

By 'BF'

**S**ORRY we did not make the last issue but perhaps it is as well because progress in trials is necessarily somewhat slow. However, several of our trials will no doubt interest the diving world; but again, due to security, we cannot publish everything.

### Two - Way - Stretch Swim Suits.

We now have the final version of these suits which have been given a pattern number and are ready to issue to general service as soon as we are satisfied that they are satisfactory. The first impressions of these suits are most favourable and they cope with the minor objections that were put forward about prototype suits. The only criticism at the moment is that the forearm measurement is not sufficient to allow the underclothing necessary in cold weather. It is understood that this criticism will not jeopardise the supply of these excellent garments to those of you whose need is so great.

### Cure - C - Cure Repair Outfits.

Vol. 5, No.4 issue of the Magazine introduced this repair outfit to you. This kit fulfilled its early promise and was recommended by *Vernon* for acceptance into service with suggestions for a modified form of repair outfit. Money available in the appropriate estimates will probably decide when you will receive the new outfits.

Incidentally, it should be noted that 'PVC proofed staple welt nylon fabric, 40ins E5 Sec Patt No.10150' is intended for the repair of Submarine Escape Trunks and not for diving dresses.

**Wide - Vision Face Masks.** An experimental model of this mask, mentioned in Vol. 5 No. 4, has continued to show considerable improvement over the Patt 3384 face mask that is available at present. The Gas Mask Establishment (to use a very loose, but illustrative phrase) has just produced what will be the final prototype. This has not yet been tested but as prototypes should be better than experimental models, we should have no trouble in recommending this very pleasant piece of equipment for your use.

**Diverphone.** This equipment has completed its trials in *Reclaim* and has been recommended for acceptance into service. An increased range of volume control was also recommended because, although satisfactory two-way communication could be achieved at all depths, full volume control setting was invariably required.

**Double Wool Combinations.** We were happy to let you know in a previous issue that these items had been recommended for service. However, we raise the matter again to say that they afforded us great comfort throughout the winter, and (for when they are issued) it has been found that dhobeying them by hand is the best method as a washing-machine will only reduce them in size to that of your miserable ½ pint oppo.

**Neck Seals.** Again it was our pleasure in a previous issue to tell you of these. Though we recommended their use from May to October (U.K.), limited numbers of the team have dived with reasonable

comfort, using neck seals, throughout the winter. This has been done before by hardy types but this time it was accomplished by a typically fragile slightly-aged diving character, with the aid of (and this is very important) a loose-fitting sponge-rubber hood.

**Gloves.** We have had the pleasure and privilege of diving in complete comfort throughout the winter, even at Inveraray, Loch Fyne. This is entirely due to the two-way-stretch suits, double wool combinations and —last but not least — comfortable gloves. These gloves fit, keep your hands warm (providing they are the correct size) and leave a reasonably adequate sense of touch when U.K. waters are extremely chilly. The debatable point is what type of under-gloves to wear. When this is

solved we hope to put the wheels in motion to get useful gloves to you by next winter.

**Swimmers' Air Breathing Apparatus.** Trial order production sets of this equipment have been in use for instructional survey and trials purposes. Unfortunately, a number of snags have appeared which have given rise to restrictive signals and letters to existing users. This is virtually the difference between the hand-made article and the production-line model. In other words, the wheels of production have not quite started on the right foot (or should it be tread?) As a result of these set-backs there will undoubtedly be a delay in getting this equipment into service but we feel that the problems can be speedily solved



'Stop! The diver's got ears'

and that compressed-air lovers will not be frustrated much longer.

**Aluminium Alloy Storage Cylinders.** We think the trouble of the leaky valve has been solved and that you will be enjoying the benefit of these cylinders in the future.

The assistance of the H.S.C.D.T. in these trials was very much appreciated.

The highlight of the period since we last went into print was our long stay with *Reclaim* at Inveraray, and the privilege of the passage from Portsmouth to the Western Isles. The co-operation with our trials was much appreciated, the food and hospitality were nothing short of terrific, and the stupid 'steamer/corkhead' attitude reduced to a minimum. Liaison was so good in

fact that two of the C.D. Trials Team managed to contact bends. Part of what we were 'up to' is under the security cloak like several other trials that we have been doing, but we do declare that the funniest thing we saw in *Reclaim* was the Chief Diver waiting in the Diving Flat until the Chief Buffer surfaced from the depths, so that he could have his leaving chit signed before going on draft. We feel sure he would have been sent down with it had he not been temporarily unfit to dive.

Good luck to Andrews in the Far East and on his recent marriage, and the same to Robinson in civilian life even if he decides not to marry. Wilkinson and Gardner have joined the team and a long time ago Petty Officer White took over from Petty Officer Spicer. From us all, good dips to divers everywhere.

## Escape from Submerged Aircraft

WITH the recent influx of new jet planes into the Fleet Air Arm new problems for the safety of the crews have arisen. These involve not only flying and carrier-landing difficulties but escape from aircraft which may have crashed during take-off.

Hitherto, most aircraft have shown a tendency to float for a period of time sufficient to afford the crew a reasonable chance of getting out, although there are few, if any, records of successful escapes from aircraft which have entered the water upside-down. But the present generation of Naval aircraft have drastically altered the picture, for whereas it was formerly the practice to take-off and land with the cockpit hoods open, aerodynamic considerations preclude this in modern jet-planes and, as the all-up weight has increased to more than twice that of a London bus, the plane will lack positive buoyancy.

In the Sea Vixen, the observer has to crouch more or less at the pilot's feet with only a small rectangular window in the side of the fuselage to give him a view of the outside world and is sealed-in by a massive 40lb hatch of metal and perspex which is stamped down into position over his head by one of the flight-deck crew prior to take-off. Thus he probably finds difficulty in escaping.

It was in relation to this particular aircraft that the Institute of Aviation Medicine was first asked to co-operate in an investigation into problems of underwater escape. This was an unusual assignment for an organisation specialising in problems of flight but logical because the Institute is an authority on seat-ejection and had already put forward proposals

for using the ejection-seat as a means of escaping from submerged aircraft. This trial was regarded as a preliminary to a more ambitious programme.

The trials team comprised two doctors from the Institute and a Clearance Diving Team — Lt/Cdr Terrell, L/Sea Robbies and A/LSea Rowe; the trial was conducted at the admiralty Hydro-ballistics Research Establishment, Glenfruin with the co-operation of the staff there and of representatives of the De-Havilland Aircraft Co. A section of Vixen fuselage, incorporating both pilot's and observer's compartments, was mounted in a metal frame with 7,000 lb ballast. This was suspended from a hoist which could lower it into the tank at a maximum speed of 0.8 ft/sec.

Preliminary tests were carried out to assess the chances of the walls of the cockpit collapsing from the pressure of the water and when it was apparent that this was unlikely to happen the three divers and one of the doctors took it in turns to descend in the fuselage to various depths and try to jettison the canopies and escape. Pattern 5562A breathing apparatus was worn on all but the last test (in which the subject wore a standard aircraft oxygen mask and made a free ascent to the surface), and a waterproof intercom system permitted the divers in the fuselage to keep in touch with the surface and call out the depth of water within the cockpit as the sinking fuselage flooded up.

It was found that the canopy could not be jettisoned until the cabin was about half-full of water and the pressure difference between the trapped air and the surrounding

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water was not more than  $2\frac{1}{2}$  lb/sq in. At this stage, the jettison-system would blow off the canopy with a loud bang, and for a brief period the diver would be subjected to a severe buffeting from the intruding water. As soon as this ceased he could release his seat-harness, kick himself free of the cockpit, and surface.

From these trials it was concluded that the chances of escape from a Vixen submerged in the normal attitude were good; but if the aircraft was inverted the essential flooding-up process would cause the pilot's head to be submerged first and his chance of escape against the inrush of water were obviously not so good. It was also demonstrated that it was fatally easy to become snagged by the multitude of equipment which the aviator has to carry, and the

difficulties of sorting this out, with little or no visibility, while being dragged down by a sinking aircraft can well be imagined. For this reason it was decided to investigate the use of the ejection-seat under water as this offered a means of carrying the pilot clear of the wreckage, and the automatic release system would then separate him from the seat and allow him to float unimpeded to the surface.

It was not really anticipated at the outset that there would be much future in using the seat with the existing explosive charge for, although Lt McFarlane, R.N., had actually escaped under water by firing his ejection-seat, there was no means of telling how many others had tried it and failed. However, the first step was to fire a seat and see what happened.

This was carried out in a tank at Farnborough with various types of seat and a 150lb dummy-subject and the following facts were established:—

- 1 Acceleration of the seat  
160 ft/sec
- 2 Maximum velocity achieved  
34 ft/sec
- 3 Blast pressure from the  
ejection cartridge  
26 lb/sq in
- 4 Maximum height of rise of  
seat  
19 ft

Could a man withstand the continued effect of the drag resulting from acceleration and velocities higher than had ever voluntarily been experienced under water before, and of the shock-wave acting on his head and chest as he was shot up through a pressure change of over half an atmosphere?

It was decided to tackle the question of velocity first.

On Horsea Island a metal and wire trapeze was constructed and attached via a float and a single sheave to a 2.4 litre Jaguar car. The subjects took it in turns to lie on the bottom of the lake braced between the two bars of the trapeze and, having breathed out to avoid the danger of lung-rupture during their sleigh-ride towards the surface, gave the signal to go. The Jaguar accelerated along the bank from a racing-start, pulling the trapeze up from the bottom at a shallow angle and then horizontally across the lake at about 10 ft below the surface; a maximum speed of 44 ft/sec was achieved in this way. Velocity itself was no problem.

Acceleration and blast pressure were then tackled together by actual ejections using reduced charges in the tank at Farnborough.

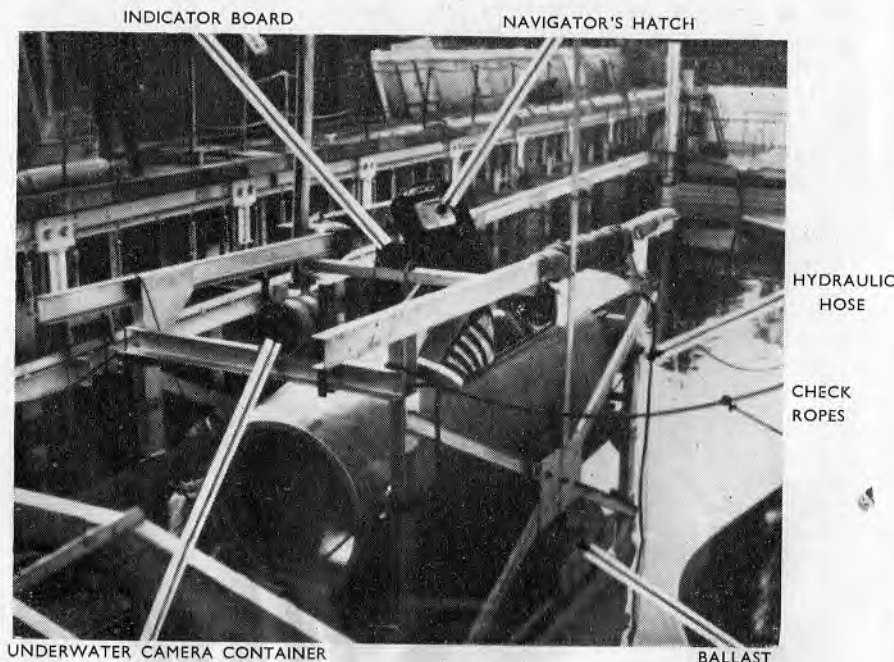
As there was no hoist available the seat was mounted on a frame at the

bottom of the empty tank and the subject, wearing a two-way stretch and D.S.E.A., was strapped in. With Lt-Cdr Terrell standing by as underwater attendant the tank was filled up with cold mucky water. As soon as a depth of 15 ft above the subject's head was reached, the recorders were switched on, the subject pulled the ejection-blind over his face, spat out his mouthpiece and breathed out hard into the water, and the signal to fire was given. Five seconds later, the seat was fired by remote control and the next moment seat and occupant were being lifted out into the sunshine.

The first test with 350 gr cordite, although a somewhat exhilarating experience, was a complete success and the next test with 750 gr took place a few days later. Exactly the same routine was followed but this time the kick of the ejection-seat was much more marked — probably because the subject was not strapped in sufficiently tightly, and both subject and attendant were considerably shaken by the double thump of the explosion and its reflected wave from the sides of the tank. It was decided that future tests must take place in a larger tank where good visibility would permit full photographic coverage of anything which might occur. Accordingly a move was made once more to Glenfruin.

By this time two more doctors had qualified as shallow-water divers and the new diving-team from Vernon arrived: PO Christmas, L/Sea Davis, A/B Stanswick.

Supported up to the hilt by the Royal Air Force at Farnborough, who provided aircraft ranging from Devons to 600 m.p.h. Canberras to bring up spare seats and equipment and bring back relays of divers and



FRONT VIEW OF RIG



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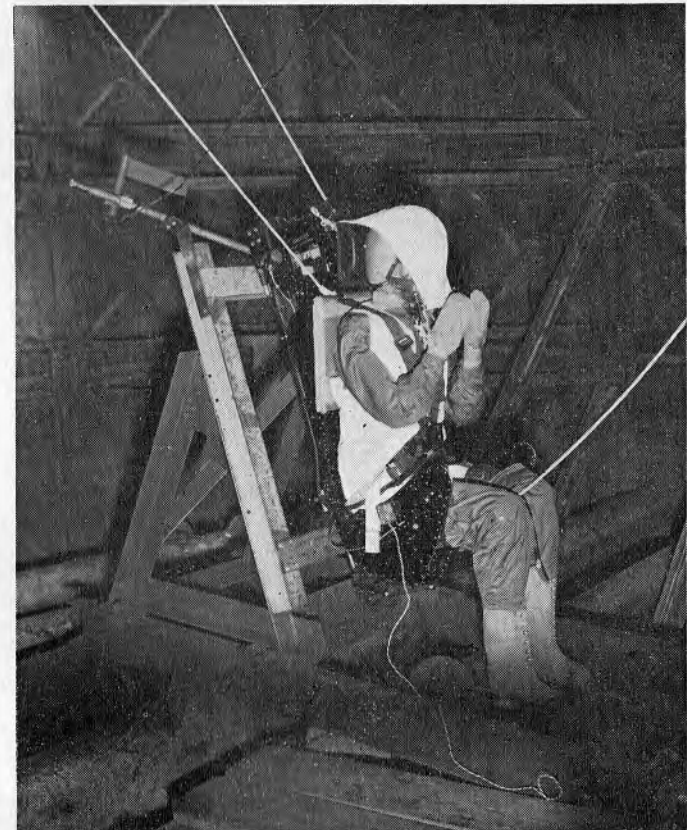
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doctors for week-end leave, the trial entered upon its most enjoyable phase.

Initially further tests were carried out to check the Glenfruin recording gear and to make certain that the tank's glass windows would withstand the shock-wave, for the force

safety of the diver remained at the window, all cameras and recording-gear being operated by remote control, the technical staff and officer-in-charge of test being linked to the controller by means of an intercom system.

The routine employed for a live



on the lowest panes was of the order of 10,000 lb — equivalent to the thrust of a jet-engine at full-power — and the effect on personnel inside and outside the tank of a breakage would be disastrous. For this reason in each test only the controlling officer who was directly responsible for the

test was as follows.

The subject, wearing a suit and cut-down S.W.B.A., was strapped tightly into the seat which was mounted on an A-frame attached to the hoist. One diver acting as underwater attendant, and two stand-by divers, entered the water as the seat

was swung out and lowered to the bottom. There the stand-by divers unhooked the straps, connected the firing cable, and retired towards the surface — one being responsible for the subject, the other for his attendant. The latter removed the safety-pins from the seat, showed them to the controlling officer at the window, and retired to the wall near the subject; there he anchored himself by a loop of rope. The controller checked in turn with the recorders, photographers and the officer-in-charge of test at the tank top and signalled by five flashes of a flood-lamp to the subject and his attendant. The subject pulled the face-blind over his face, breathed out and gave a thumbs-up to the attendant. The latter, if he was satisfied that all was still well with his subject, gave the signal to 'Fire' which was transmitted over the intercom system by the controller to the officer-in-charge of test. With a five-second count-down to allow the cameras, recorders and timing mechanism to start up and the flares to be ignited, the seat was fired.

In the event of a misfire or hang-fire the attendant would go at once to the subject, warn him with a tap on the shoulder not to start breathing, and insert the first safety-pin. This took five to seven seconds. He then tapped the subject again to signify that he could start breathing shallowly and screwed home the second pin. Seat and subject were then hoisted out.

The reason for the breathing routine was that no re-compression chamber being immediately available it was essential to eliminate all risk of a ruptured lung during the ride to the surface at over 20 m.p.h.

This system of diving worked perfectly throughout, and by the end of July five further live tests had been

completed, including two by PO Christmas and one with the 750 gr full charge. Since then a further eight have been made including full-charge shots with the more powerful telescopic gun. No serious damage resulted from any of the shots and, although no one would recommend riding the ejection-seat under water as a form of sport, there is no doubt that use of the ejection-seat is an acceptable method of underwater escape.

In addition, a number of tests have been made of firing dummies through the perspex canopy of a Sea Hawk fuselage, and it is concluded that the best way of getting out of a cockpit with a breakable canopy when under water is to fire the seat through it.

This trial was a joint effort by the Navy, the Royal Air Force and the Ministry of Supply, and it would be impossible to acknowledge all those who played a part. Much of the credit, however, belongs to the two diving teams mentioned and to their colleagues who subsequently replaced them. Not only did they act as subjects in some of the tests as well as being responsible for the safety of the other subjects but, in addition they spring-cleaned the tank and its windows, assembled equipment under water, acted as assistant engineers, electricians and photographers and generally maintained the morale of the Establishment.

It is hoped that in the amenities of Glenfruin and in the hospitality of the natives they found adequate recompense for their labour!

Other divers who took part in these trials were:— PO Ronald Flanagan, L/Sea R. Davies, L/Sea J. Hendrick, L/Sea Harrison, AB F. Newman, AB H. McLean, AB W. Smith, AB D. Vaughan, AB E. Horricks, AB Le-Cornu.

## Mediterranean Fleet Diving School

GREETINGS from the Mediterranean! Sorry for the long absence of a scroll from us out here; though we've all kept well in touch with the diving world through the medium of the *Diving Magazine* so regularly and conscientiously purchased. However, due to pressure of work with S.W.D's (Q), we just haven't had time for even a tiny contribution to its much-read pages. If anyone thinks we are kidding, just come and take a look, provided you can find your way out of those cobweb-clad diving stores.

Nevertheless, here we are now, shirts off and perspiring with all the latest — and some old — news from this part of the globe. Lieutenant Wookey is now C.-in-C Diving School having replaced Lieutenant Foster. CPO Allen has been relieved by PO 'Nobby' Clark from 'Guzz'; PO Tappin has relieved PO Falk; and yours truly AB Limbrick relieved AB Holdsworth in early January.

Incidentally, CPO Allen's thirteen year old daughter has been doing very well out here in various piano-accordion contests, having recently won the Malta Junior Championship as well as being runner-up in the under-14 contest. This girl certainly has talent.

PO Ken Peak is on loan to us from H.M.S. *Ranpura*, and we have one Maltese M.E.1 also on the staff. This small but very efficient unit has turned out 207 S.W.D's in the twelve months ending December 1957. Excuse us blowing our own trumpet, but we reckon it's international amongst divers anyway. At present we're booked up for courses until May with still more requests coming in, so we're not due for any make-and-mends for quite some time to come.

The school itself has developed from an old Nissen hut to a good solid brick building, comprising the store, staff-room, two offices and a lecture room. The outside has been concreted, and stowage for bottles (big type) is in progress. Any old members of the school, or ex-monthly dippers, would certainly now notice a big difference here. Most of the improvements have been made in the last couple of years. We've obtained, through various wangling ways, a portable H.P. compressor and automatic booster which *no-one* seemed to own, but at time of writing both are in the dockyard's hands being thoroughly re-fitted, and we have hopes of installing them in the 75ft M.F.V. expected by the school in July or August this year.

Monthly dippers are swarming to the school like bees to a honey-pot, one of whom is the only S.W.D. in existence who can swim a quarter mile under water on atmosphere. He says it dates back to the days of his unhappy childhood when he was bathed by his wicked step-mother.

Private aqua-lungs are being made-up ashore by keen underwater enthusiasts who visit the school and bring them in for further opinions by the great diving brains in our midst. These are tested in the lunch hour by anyone but the owners as they are married and couldn't bear to dip out of the L.O.A.

Other than the usual routine of training, nothing has occurred apart from the usual foul screw, loose rope-guards and lost ladders. We recently dived on the sunken submarine *P.36*, a 'U' class submarine sunk in Lazzaretto Creek, and took for analysis air samples from inside the engine room compartment where, as is probably now well-known, ex Navy

Petty Officer Cresdee was killed some months ago due to an explosion whilst underwater-cutting in the unventilated compartment.

PO Tappin has gone all baronial and bought himself a new car commonly known as the 'Fire-Engine' due to its dazzling red exterior. No wonder he wears sunglasses. He still won't part with the crumbling heap of steel he calls his bike though.

That just about wraps it up from the old favourite weekend station of 'bells and smells', so all the best to you half-frozen members of the 'Royal Naval Institute of Underwater Technology' back there in the U.K., and all divers in general.

S.A.H.A.

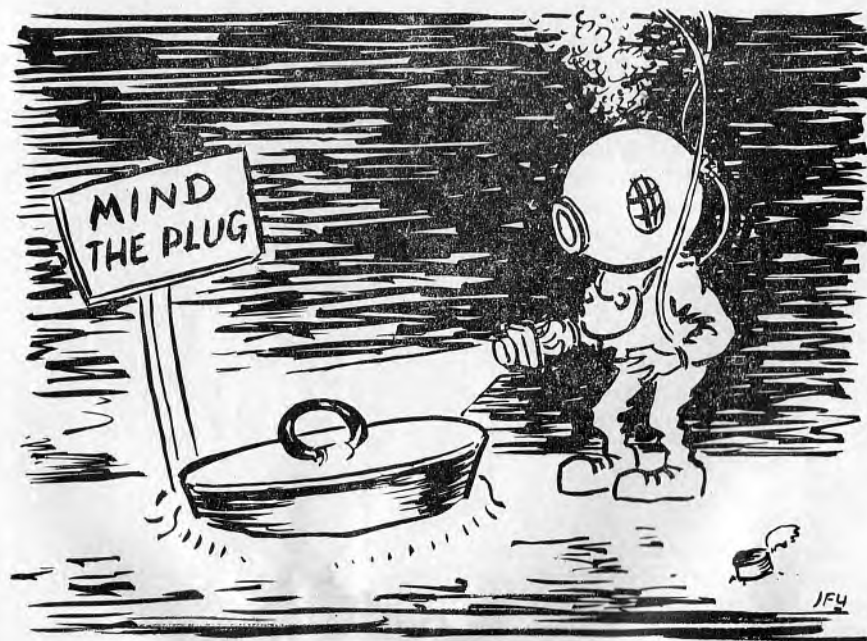
### Solution to Divers' X-Word No. 8

**Across:**

1. REBATE
4. BANDITTI
9. CHURLS
10. PORTRAIT
12. UNDER
13. ENTERTAIN
15. ANT
16. TURIN
17. HAGGLE
22. DEALER
24. MOPES
27. USE
28. DIVERSION
31. GROPE
32. TENANTED.
33. TOTEMS
34. EYETOOTH
35. SETTER

**Down:**

1. RECOUNTS
2. BOUNDERS
3. TOLERANCE
5. ABOUT
6. DETER
7. TIARAS
8. INTENT
11. LETHAL
14. EGG
18. GERUND
19. LIMEGROVE
20. OPPONENT
21. ASSESSOR
23. ASS
25. OBETTE
26. AVENUE
29. RONDO
30. INERT



*'No one's going to believe this'*

### Down Under (or 'Fair Dinkum')

**D**UE no doubt to a sudden influx of 'diggers' in the experimental jobs of the Royal Navy, many divers have been reading most avidly the A.F.O. (No. 2676/57) for those interested in the transfer of R.N. ratings to the R.A.N. Many may wonder just what the diving set-up

S.A.B.A., together with a 'Hookah' which is a surface supply given down a  $\frac{3}{8}$ "-bore hose from a portable compressor with a small tank of emergency bottles. He, naturally enough, does the normal ship's diving tasks and to ensure that his training and equipment are kept at a very



H.M.A.S. *Walrus*—home of the Eastern Area Mobile Clearance Diving Team, Royal Australian Navy

is in 'Aussie' and if it differs in any way from what one is accustomed to.

high standard Clearance Divers are borne in the ships.

Standard diving is now non-existent in the R.A.N. One is either a C.D. or just a straight 'diver'. The 'diver' is equivalent to the R.N. S.W.D. and he uses a 'Porpoise' compressed air set, similar to the

'Awkwards' are in consequence regularly practised and the 'diving' attitude in Australia is such that we have one very senior officer who actually did rounds of his carrier under the ship as well as in it,



Whatever the pleasure  
Player's complete it



Player's  
Please

The Clearance Diver can be employed in one of four jobs:—

- (a) A Sea-going Draft (as a C.D.)
- (b) The Instructional School.
- (c) The Mobile Team.
- (d) Mine Countermeasures and Developments Team.

The first job has been explained and the second one doesn't differ at all from *Deepwater* in broad principle — one still sees chaps in queer rigs, always drinking brew, and working hours that differ from those kept by the rest of the establishment.

The last two drafts can really be classed as one. A posting to these will mean living in the Mobile Team's ship (for the want of a better word) H.M.A.S. *Walrus*. She is a G.P.V. and carries 1 officer, 1 petty officer,

1 leading seaman and 7 able seamen who are all qualified C.D's., plus a leading stoker mechanic for driving. The craft is fitted out exactly as H.M.S. *Dingley* and fulfils the same functions. Unlike *Dingley* divers, however, the Eastern Area Mobile Clearance Diving Team have a far more varied existence as the R.A.N. are not 'blessed' with (if I've chosen the correct word) any marines and our army bomb disposal capabilities are rather limited by lack of numbers.

Hence the team is often employed with L.C.V.P's doing beach landings at Port Stephens for a T.A. Commando Unit. On other occasions they may well be chasing an old practice bomb way out west beyond



'This should stir it up, comrade'

the black stump, or perhaps just giving diving displays for general interest.

In short, the C.D. in the R.A.N. has more responsibilities on his plate because of our lack of L.O.C.U.'s and S.B.S. units and straight marines. This means his S.9's may not be as big as yours but he does get a more varied selection of tasks.

For those with an eye for the £ s.d. a married R.A.N. Leading Seaman C.D.2 with one child would get £35 7s. 0d a fortnight, and a single Able Seaman C.D.3 would receive

£22 14s 0d not counting S.9's of course.

So all you intrepid, blue-eyed red-blooded hunks of he-men who have a yen to sun-bash in a tropical clime — those of you who have tasted the joy of the Med and Far East Teams in not using suits for diving look with languid eyes towards your R.A.N. counterparts.

N.B. — Immigration Dept. please note — my bottom drawer will be left unlocked for any remunerations.

“BREASTBRUSH.”



## Divers' Employment Bureau

The Bureau continues to function, and if you wish your name to be recorded please forward the undermentioned to the Employment Bureau.

Applicants must be either serving R.N. Divers or Ex-R.N. Divers who are subscribers to the *Diving Magazine*.

Full Name .....

Rating ..... Off. No. .... Age .....

Time Expired or Expires .....

Private Address .....

Willing to Serve Abroad .....

Diving Rate ..... Date and Place Qualified .....

Equipment Experienced in .....

Diving Experience .....

This information will be filed and referred to as and when diving employment is required. The Bureau does not assure you of a job, but it will advise applicants on vacant diving situations.

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