

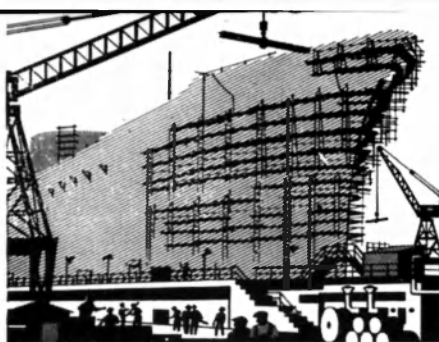
THE Navy

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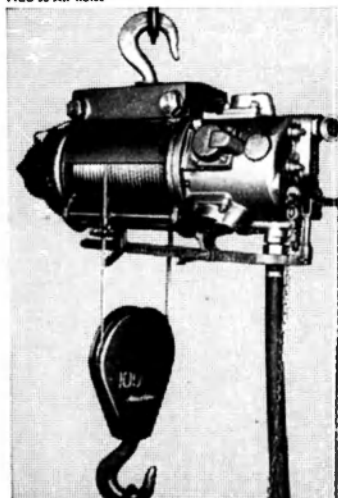


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LETTER TO THE EDITOR

The Editor,
"The Navy."

Dear Sir,

Having just returned from a visit to the United Kingdom, via the United States, I feel that members of the Navy League and, perhaps, other readers may be interested in a few comments on matters of Naval interest.

First, as a general comment, conditions in the United Kingdom show a marked improvement since my last visit three years ago. Greater prosperity is evident on all sides and is more widely spread than perhaps ever before. Traffic jams, however irritating, clearly demonstrate greater spending power and all the usual indicators show widespread industrial and business activity, with some few exceptions, such as shipbuilding, still bedevilled by industrial disputes, all too often of a trivial nature, and the oil industry, suffering from world-wide over-production.

I cannot speak with any really intimate knowledge of conditions in the United States, but, judging by the volume of air and road traffic, business activity was, at a high level, in spite of the holiday season. The exception is the steel industry, currently running at only 55 per cent. of capacity, mainly, it is said, owing to the cut-back in orders from the automobile industry, now swinging over to smaller models.

In London, I called on the Chairman of the League and my wife and I spent a most enjoyable week-end with him and Lady Edwards at their home near Liss, in Hampshire. It was interesting to learn that, in spite of comparatively recent service as Commander-in-Chief, Mediterranean, Sir Ralph shared our concern at the lack of information regarding the current trend of Naval policy. In marked contrast to our friends in the United States, our Governments tell us only what they think is expedient for us to know, and the reasons for policy decisions of great moment are too often shrouded in mystery.

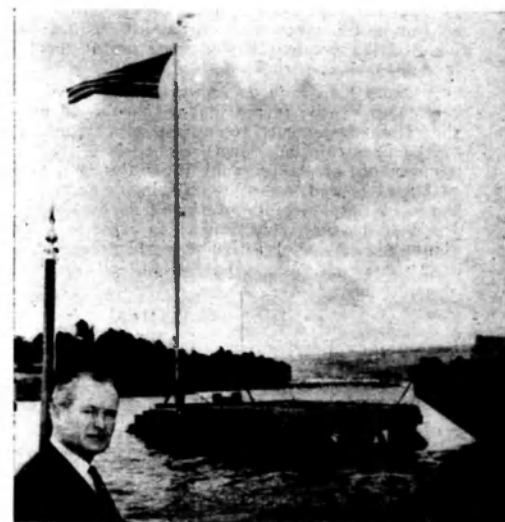
This contrast was clearly shown by a full exposition in American magazines and newspapers of the operational plans of the United States Navy to maintain some 15 nuclear submarines equipped with "Polaris" missiles on station throughout the oceans of the world.

This great force, as yet only in the course of formation, may well prove to be the basis for peace for a generation or more. Its cost is such that only a rich and powerful nation, such as the United States, can afford it.

Throughout our history the Royal Navy has done more to preserve peace for our own peoples and for the world at large than any other source of power. I see no reason for concern that the mantle has now fallen on our good friends in the United States. It seems to me that if we in the British Commonwealth were to re-appraise the position in acceptance of this simple thought we would make drastic alterations to our current Naval programme.

Under such a basic concept we would admittedly be forced to accept a secondary role, but it is surely a matter of first things first. The maintenance of sea communications has always involved many routine tasks lacking in glamour—such as harbour defence, includ-

(Continued on page 4)



Rear Admiral H. J. Buchanan, R.A.N. (Retd.), photographed during his inspection of Pearl Harbour.

November, 1960

STAIN ON PAGE

THE NAVY

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ing mine-sweeping and local escort duty, for which our current provision, in Australia, at least, appears woefully lacking.

With such thoughts in mind, I found myself the guest of Admiral H. G. Hopwood, our last Coral Sea Week visitor, on a conducted tour of Pearl Harbour. These tours are part of a regular programme of indoctrination for Service personnel and their friends to keep alive the memory of the attack on Pearl Harbour on 7th December, 1941. The commentator was a young seaman who showed a remarkable grasp of the events which he described with accuracy and great effect and with an obvious sense of their significance in the world of to-day.

It was a great privilege to be shown this great Naval Base from within and to see such a high state of readiness being maintained, not only for the major units, most of which were at sea, but for the auxiliary vessels of all types, without which the larger vessels might well remain immobilised. The comparative lack of balance in our own Naval forces is all too evident.

There has, I know, been some co-operation between the Naval forces of the British Commonwealth and the United States, but it seems to stop short of integration at planning levels. Perhaps more has been done than we are aware of, but in the absence of official information, I am of the opinion that co-operation at this level leaves much to be desired.

A sound plan requires an agreed basic concept. If it can be agreed that we should leave the "Great Deterrent" to our powerful friends and concentrate our own resources on the maintenance of sea communications for the use of ourselves and our allies, within an agreed sphere of responsibility, we would be making the best possible contribution to what is, I think, our agreed objective of world peace.

What we need is small ships, and plenty of them.

H. J. BUCHANAN.

Rear-Admiral, R.A.N. (Retd.)

Navy Beats the Drum

The combined Bands of the Royal Australian Navy gave many displays and recitals in Sydney during Navy Week. They led the procession which finalised the Waratah



Festival and later "Beat Retreat" at the open day at Garden Island.

The Bands later visited Melbourne.

Photograph, which is by courtesy of the "Sydney Morning Herald," shows some of the drummers practising.

THE NAVY

THE development of a complicated piece of modern equipment is akin to bringing up a child: it has to be soothed through teething troubles and brought to maturity, and you are never quite sure what its adult characteristics will be.

Recent unofficial reports suggest that naval scientists are at present nurturing more than one dream child. One can understand the Admiralty's reluctance to comment on matters of research and development. The absence of outright denial, however, gives credence to the reports and if we only accept them with reservation they still point to very significant progress towards vastly improved means of detecting both mines and submarines.

"Britain has made a breakthrough in the problem of sweeping pressure mines," says "The Daily Telegraph" naval correspondent. "West Germany is negotiating with Britain for a fantastic new submarine detection device" reports a special correspondent from Bonn.

Underwater Detection

The latest developments as seen by a writer in the English magazine "The Navy":

The mine detection breakthrough has, it is stated, been achieved with a piece of equipment which can detect objects on the sea bed, even if they are only the size of a biscuit tin.

Since World War II both British and American naval scientists have been experimenting with many methods in their endeavour to find a satisfactory way of dealing with the pressure mine, which the Germans introduced at the end of the war. Normally this mine is effective up to a depth of 50 feet. It is detonated by the pressure waves set up by the passage over it of a ship's hull.

The experimental equipment was tested in the English Channel when the Scimitar aircraft which crashed over the side of H.M.S. "Victorious" in 1958 was located. It was found to be so accurate, it is claimed,

that it was possible to tell not only at what angle the aeroplane was lying on the bottom, but also what parts had become separated from the body of the wreck.

Britain's Underwater Weapons Development Establishment at Portland has been concerned with the submarine detection device. This is claimed to be uncanny and incredible—capable of pinpointing submarines up to 75 miles away, if not farther. It is known as "The Variable Depth Asdic Set", but unofficially called "The Assassin."

The idea was developed by the Canadian Navy and consists of a detection device housed in a cage which can be towed submerged astern of anti-submarine frigates, the depth at which it is towed eliminating the disadvantages imposed by adverse water conditions on Asdic gear fitted in a ship's hull.

The Admiralty has stated that its range is that of the conventional Asdic under good conditions, but West German naval authorities who wish to adopt it for use in the Baltic, where Russia has many submarines, consider its performance "fantastic". One of their observers at a demonstration is reported to have said, "It is uncanny, incredible. With this device it is hard to see how submarines could function in the future as they did in the last war."

The Admiralty seems to be unduly cautious. If it is only half as good as it is claimed to be it would be more than ten times as effective as any Asdic set of the last war.



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November, 1960

DIVERS AND DIVING

Every year King Neptune finds his kingdom being more disturbed

In the last few years man has tremendously improved both mechanically and physically his knowledge of the world under the water.

Off the coast of America he has in a specially built craft descended over five miles under the surface. Here off the Australian coast spear fishermen are becoming so plentiful that one expects to hear every day of an angler hauling one in by the seat of his pants.

The glamour of this underwater world is being brought home more and more to the general public by books, films and television, but few stress the dangers that are inherent in this new field, and the hard training and knowledge that is necessary to avoid these dangers.

In the civilian and defence spheres, however, this knowledge is being put to more and more use. This is particularly so in the Navy, where the diver, formerly used solely for repair and defensive purposes, is every day assuming a more offensive role.

The Navy clearance diver, or Frogman, as he is more generally known, is today trained for many different types of work, including sabotage — coming out of the sea and blowing up a railway bridge near the coast, finding out vital information and then returning again to the sea. Then, again, he must be able to enter an enemy harbour and attach a limpet mine to the hull of a ship.

In addition, he must be in a position to render a mine or bomb safe, even if it lies many feet under the water, or clear a harbour of underwater obstacles.

To undertake these tasks he must know his equipment, be physically and mentally fit and prepared to undergo strenuous training.

In the following articles an attempt has been made to show some phases of this underwater work and how men are trained for it.

WATSON MEMORIAL CHAPEL

The New South Wales State Government has given £500 to the appeal to build a memorial chapel at H.M.A.S. WATSON.

Rear-Admiral G. C. Oldham, who accepted the cheque from the Premier, Mr. Heffron, said he was pleased that the Government was backing the Chapel Appeal "in such a generous and practical manner."

The Appeal, which opened in May last year, with a target of £30,000, has already raised over £24,000.

Rear-Admiral Oldham said that Naval personnel had supported the Appeal very generously.



"He flies through the air" . . . and with ease.
Frogman Able Seaman Harry Wilson leaps into a fast-moving dinghy in Rushcutters Bay. Picture by courtesy of the Sydney Morning Herald.

THE NAVY

NAVY DIVERS

How a Civilian Found Out and What he Wrote

THE strangest thing happened to me the other day — well — it wasn't really just the other day! I suppose the sort of thing I had been seeing has, in fact, been going on for some time, but I hadn't really taken any notice of it. It all started because I lived at Manly. I travel over to the city and back every day by ferry, except one afternoon I wasn't feeling too well — I can't imagine what it was — must have been those oysters or — oh! — where was I? Oh! Yes — well — as I was saying, I wasn't feeling too well and I left work early and came home about one o'clock. As the ferry came around Bradleys Head and we approached Taylor Bay I heard an almighty "bang." I must have been looking more or less in the right direction because just then there was a flurry of water in toward shore — and then — well — that was all, really — except that right where the explosion took place was a grey boat — I suppose it was a Navy boat really — and there were a lot of people on board and it had some flags flying and all that sort of thing, you know. Well — I didn't pay much attention to it really, except that every day after that I used to see that boat all over the place. I'm a sort of salesman, you might say, and my business takes me to various parts of the harbour foreshores, and as I was saying, everywhere I went I saw this boat — Athol Bight near all those old Navy ships that are laid up or something — at a buoy in Farm Cove — over in Chowder Bay — near Neilson Park — everywhere.

Well, one day after all this seemed to happen I had to drive

down to Rushcutters Bay, and what should I see but this grey boat tied up to a jetty in that Navy place down there. You know me, Harry — I'm a pretty easy going sort of bloke, but, I reckon I pay my taxes and to my mind this boat never did seem to do very much constructive sort of work and I wanted to know what it was all about. So, I went in the main gate and you'll never guess who was standing there! Old George — he's not really old, I know, but you know who I mean — that bloke who lives two doors down from me. Anyway, I asked him what all this was about and it seems I had walked into the Navy's Diving School and this boat was one of their diving boats.

Of course, I was intrigued by all the odd bits of things I could see lying about and there seemed to be a lot of people about doing all sorts of strange activities, when an officer happened to walk by. It turned out he was the Officer in Charge of the Diving School — George spoke to him, you see, and he came and spoke to me — anyway, after a while he — the officer that it — told me about the place.

It seems as though this place is the only Diving School in the Navy and they train about sixty different types of divers each year. He explained that there were two types of divers — a "diver" who is the man found in a ship and who does the simple, everyday tasks in a ship, like clearing inlets, looking at propellers, finding lost articles, etc. The other is a clearance diver or "frogman" as the papers call him, but the officer reckoned he

doesn't know of any such marine animal.

He then told me that the "diver" does a three-week course and the "clearance diver" does a 22-week course and to train them thoroughly they get taken to all parts of the harbour. When they go to Taylor Bay they are diving on the CENTENNIAL, an old collier that sank in '18. These divers do an underwater survey of it and then use it for demolition training. They only use small amounts of explosive each time so as to not damage any windows ashore.

When they go over to Chowder Bay they are doing their training for long-distance swimming. Apparently these Clearance Divers can attack ships in enemy harbours and this requires a long swim underwater so, they start off over in Chowder Bay just going up and down until their gas supply runs out. They keep this up for a long time and they must better their previous day's time every day. The Officer in Charge also said that these "makee-learn" divers start off the day with 20 minutes' rigorous physical training and then go off for a swim on the surface, gradually building up to a distance of four miles at the end of the course.

Just then a Petty Officer, I think he was, came across and said that something was ready and the officer said would I like to watch. He called it something I didn't really catch, but we walked over to a large glass tank. This is where I saw people doing things when I came in and it turned out they were practising with cutting steel plate under the water. I found this a bit hard to believe at first, but, sure enough there was a guy wearing a sort of aqualung suit under the water

in that tank cutting steel plate with a sort of oxy-acetylene torch. I later had it explained to me that all these people must be capable of doing underwater all the tasks that

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have to be done every day above water. This was one of them.

Next we saw a man using "air tools" — the sort of things used in salvage of ships or helping submarines that might have had an accident and are on the bottom.

Over in another corner of this school were some sailors looking at what I thought were bombs. I was nearly right — they were mines and these divers were learning how they worked and about all the things inside them because, as the officer explained, clearance divers are also responsible for bomb and mine disposal. Boy! You can have that — these guys were fiddling around with fuses of bombs — all just waiting for the 1,200 lbs. of T.N.T. to blow up. He reckoned it was as safe as houses, of course, and that provided one observed simple precautions one was alright. Anyway, these divers have to look for any mines or bombs that are on the bottom of the harbour and when I see them around in different places, though I may see that grey boat on top there

are probably six or eight divers und-rneath swimming up and down just training and training and training.

This chap said that in addition to the school there was a Port Diving Party, and they did all the everyday tasks that come up in the harbour. I must admit I was a bit ignorant as to what an everyday task could be, but, it seems there is not a day goes by without there being divers out in the harbour somewhere working away. For example, Harry, did you know that every one of the large buoys in the harbour has to be surveyed every so often, and this needs divers to inspect every link of the cable to ensure it is safe for ships to be up to. Every ship that goes into Captain Cook Dock needs divers to bed her down and you'd be surprised the number of things there are that get lost over the side of ships or off jetties and have to be found. Apparently it's not just a matter of standing in a field and looking around for something, because 90% of the harbour is thick, black, oozy mud that comes up to your armpits in places and you can't see two inches in front of. It must be like looking for a box of matches in a strange house at night with all the lights turned off.

I was listening to all this and all about how these divers are all volunteers and must be under 25 and extremely fit when I happened to glance at my watch — and boy — did I scoot. I'd been there for ages, but I'll be back.

Must admit, Harry — it was an eye-opener for me. Every time I go across the harbour or near it I see one or some of these diving boats and it sure gives you a kick to really know what it's all about now.

See you, Harry — must get home.

HOW TO BECOME A DIVER

by a Serving P.O., Diving Section R.A.N.

IN the summary of '45, I was Flinders bound, for what I hoped to be an exciting Naval career.

Recruit time passed pleasantly by in spite of the training staff. Fresh fruit was easily come by during the silent hours, and every second week-end was spent up the line in Melbourne.

Draft out was on everyone's mind as winter set in, then it came, H.M.A.S. BATAAN was to receive 28 of us, to release the H.O.'s

Life is good to an O.D. on a destroyer and soon all of us were in a "perk" number, myself — Captain's motor-boat cox'n. Those far-away places appeared as in a dream, night watches, cook of the mess, and overtime were only stepping stones to gain the pleasure of visiting foreign ports.

Eventually I was surrounded with friends who'd taken the easy way out and had received a gunnery rate to wear on their right arms. Next came the radar rates flashing their new badges. A few of us who'd always been together had these rates last on the list, and were waiting for butchers and sailmakers to leave the service.

Luckily, one morning I incurred my Divisional Officer's displeasure and was threatened with a draft to the diving school for course. I acted as though horrified at the thought and succeeded in arriving there in July, 1948.

My mind was never in doubt, after my first dip in standard diving dress, I knew I'd make out O.K. in the branch.

"Chowder Bay," where the school was located, had all the qualities a young A.B. desired, away from everyone, small boats to potter around in, and negative Pussa's routine.

Under expert instructors, P.O. Kielly and Harvey, at the end of three months we all qualified, and once again waited for the "DRAFT OUT" notice.

Luckily, I drew the H.M.A. Boom Depot, Fremantle, my home port, and a five-month's diving job. The team under Lt.-Cdr. Elley consisted of Com. Gunner T. Lae, P.O. D2 Brutnal, Frigar, A.B. Smith and myself.

Our job was to demolish two boom defence block pilons, laying on the harbour bed in the entrance to Fremantle Harbour. The block sections of the pilons were 24ft. x 24ft. x 18ft. of reinforced concrete mounted on reinforced concrete piles down 14ft. into the harbour bed.

The piles were easily shifted, using necklace charges at the top near the block and the bottom near the sea-bed.

The blocks could not be penetrated with conventional Naval charges until P.O. Brutnal hit on the bright idea of pressurising tins with air placed under the charges. Success led to success and we tried a 25-pounder on top of an M.T. 5-gall paint drum: the hole

was large enough for me to stand and lay in. The experiment meant finish to the two pilon blocks and they soon were reduced to rubble on the sea-bed. The remainder of my time in the West was spent on maintenance slips in Reserve moorings in Careening Cove.. DRAFT.

Back to renew old acquaintances at the new Diving School in Rushcutters. Our course instructor, C.P.O. Sawyers, saw to it we were up to the mark after our two months' D2's course. This was closely followed with a "P" party course, which was my introduction into what is now known as clearance diving. It was during this course I nearly lost my best friend, P.O. Davies, because of anoxia. Then and there I decided I could never know too much about the problems of diving, and I began to study much harder.

During the ensuing two years in Rushcutters as diving instructor I had the good fortune to work in the Bunnerong Power House water supply tunnels. The team under Sen. Com. Bos'n Homewood consisted of L/sea Jones, L/Sto Purdy and myself and a crane driver from the motor pool.

Our job was to locate and clear an obstruction in the tunnel. To reach the tunnel we had to be lowered, fully dressed, by crane down a 50ft. manhole, complete our search and be hoisted up again.

On my first dip I had trouble in getting back to the crane wire because of a very strong current. On making the wire, I was hauled up only to be trapped by my helmet being caught between the platform of the crane and the top of the tunnel. A sneaky reporter got hold of the story and played it up.

Our second attempt was sue-



A young spear fisherman went fishing off Sydney recently, but instead of fish he caught the object shown above. In case you don't recognise it, they call them Sono Buys and they are dropped from aircraft to detect submarines. They are fitted with detection gear and radio to send their reports to the aircraft that drops them.

(Courtesy S.M.H.)

THE NAVY

cessful and we cleared an obstruction 17ft. long by 9ft. wide made of wood. The success raised our morale when we eventually found out civy diving firms had been unable to do it.

That word again (D——!) and I was on the Vengeance mixing with the "birdies"; but not for long, soon we became the floating sports ground.

In harbour, naturally, most minds turned to elbow bending, except for M.E. McKay and McDonald, who enjoined me into becoming senior hand of the Vengeance Spear-fishing Club. My efforts in this field were blessed by Capt. Beecher and Cdr. Stephenson and soon the Club boasted 75 members.

During this commission, whilst at Port Phillip Bay, I helped in the rescue of 23 O.D.'s whose cutter had sunk. Later in the day the Vengeance diving team returned to the scene, located and salvaged the cutter. For my part in the rescue I was awarded the B.E.M., which was presented to me by Admiral Sir George E. Creasy, A.F., G.C.B., C.B.E., D.S.O., H.V.O., on board H.M.S. VICTORY in Portsmouth, U.K.

When the VENGEANCE arrived in U.K., I went happily on draft to the R.N. Diving School, H.M.S. VERNON, to spend what turned out to be the hardest working two and a half years of my life. I endured it because of the companionship shown to me by every clearance diver with whom I came into contact. Nothing was any trouble to them when I needed information or help, and I needed both frequently.

On return to Australia, I was drafted to the diving school and took up instructing in earnest under Lt.-Cdr. Drummond, R.N.

During my time I've seen the changeover from Tin Hat Diving to Clearance Diving.

How I became a Diver in the R.A.N.

BEFORE I joined the Navy I was a fisherman all up and down the east coast of Australia and often our nets would foul up on the bottom. I would think to myself, if only I could go down and free them.

I'd seen a diver at work in Jervis Bay, where an Island trader had gone aground, and I made up my mind to become a diver there and then. I asked all around the fishing boats, trying to find out where to become a diver; all I got was silly answers; most said I was sick in the head and to forget it. At last I was told by a diver, the only place to learn diving properly was in the Navy.

I talked five other boys around the boats into joining up with me. We left the boats in Eden and headed for Sydney; on arrival, I pulled a sailor up and asked what it was like. His reply was, "Bloody awful, keep out of it, mate."

Nevertheless, we found the recruiting booth and, to my surprise, I was the only one accepted. That night I found myself on a train with fifteen other boys bound for Flinders Naval Depot. There I spent six long months learning how to become a seaman. At last we passed out and were drafted to the training ship H.M.A.S. AUSTRALIA, where I found the people I'd been looking for — the Divers.

I soon became great friends with them — L/S Wally Sinclair; the Passionate Frenchman, L/S Andre Corlay; L/S Big Cyril Smith — they were a happy bunch and really boosted my ideas of becoming a diver. My time in H.M.A.S. AUSTRALIA was happy and passed quickly. At the end of

our time aboard we were mustered and told what courses we were to do. I was to become an AA3 Gunnery. I had already had a taste of it and was certain in my mind I wouldn't become a gunnery rate. I requested to get out of the course, but the Commander explained diving was only a cuff rate and secondary. Gunnery is the heart of the Navy, "Get in it, lad."

I went off to Gunnery School with a heavy heart and determined not to do the Gunnery Course. I paled up with two other boys in the Course who were not interested in Gunnery. We decided to give them hell, between us we did.

We went through G.I. like a baby goes through napkins. But, needless to say, they left their mark on us; that old six-inch shell sure got heavy after awhile, or holding the old .303 extended full arms length above the head on the double sure made the knees buckle.

The Course changed its name from M.A. to G.I. and during this period I had a run in with a leading hand doing a course. Snow Davies, now Sub-Lt. Davies, was in charge of our mess. He told me I would never make the diving school with a bad set of papers; to date they were clear, I'd got away with murder. Alan Davies said I was just plain lucky, but it wouldn't hold out for ever. He told me all about the diving school and what was required, he said he would see what he could do in getting me into the Diving School (the selected few, as I was to learn later).

I pulled my head in and qualified G.I. and was placed on draft immediately to H.M.A.S. BATAAN, under the

command of Cdr. Bracegirdle. I did my best aboard her, hoping all the time I would get a draft to the diving school. While in Korea my draft came out and I was really glad. On returning to Australia I left H.M.A.S. BATAAN and joined H. M. A. S. RUSHCUTTER. After my draft in I met five other ratings who were also there for the course.

We were introduced to the Officer in Charge of Diving School, Lt. J. W. Homewood, and Port Diving Officer, Sub-Lt. Lovell, and our Instructor, now C.P.O. Foord. We were put to work immediately as pump hands on D.B.I. and I was quick to learn it was a hard job pumping air. I also learnt that the last class had failed, only one passed, — a Rocky Sub. I didn't like my chances, but I made up my mind, there and then, to pass or die in the attempt.

The course got under way with twenty-two starters. I was the youngest, and after a brief lecture on diving, we were shown a Patt. 3N85 diving set and how to put it together. We then put it on and with a forty lb. front weight under our right arm we doubled and marched for forty minutes. This was known as the heart test, breathing was difficult and only nine were left standing at the end of the run. The course carried on with the nine till only five were left.

The pump hands and the qualified divers treated us like dirt. There was no brew for the class or dinner, no matter how cold the day, we were kept busy at all times. Two nights a week were compulsory instruction. The time came for passing out under water and the O.I.C. himself got dressed to watch us perform our tasks of drilling plate, hammer and chiselling wire, back-sawing

railway iron and various other tasks.

I drew the chiselling wire and while in the process the O.I.C. placed his hand on my job to feel how I was going. I didn't see this as he was deliberately stirring up the mud. I felt the seven lb. hammer hit something soft and I said to myself, "Missed." At last it was through and I was called up, and as I came up the ladder I could see all eyes on me. The face glass was renewed and I was informed by the P.D.O., amidst roars of laughter, that I could consider myself dipped, as I had belted the O.I.C.'s hand. All five of us qualified, but we remained in the Diving School for quite awhile doing port diving duties. When we had passed, the divers treated us as equals and I had at long last made the selected few.

I went on draft to H.M.A.S. VENGEANCE, where I joined forces with C.P.O. Foord once again, A/D Lawrence and A/M Browman. Whilst in VENGEANCE I helped salvage one of her motor cutters which sank in Port Phillip Bay. Lt. Cdr. Jarrett received the O.B.E. and C.P.O. Foord, the B.E.M. From there we went north and did a demolition job at Honiara, blowing up barges, M.W.L. and pontoon, clearing the way for a wharf.

The job completed, we proceeded to Rabaul, where I met my instructors for the first time, ex-P.O. Harry Bruttrall, who was diving for a living in the area. I got quite a lot of hints about diving in the tropics from Harry and found every one to be very true when the ship went to the Admiralty Islands.

At H.M.A.S. TARANGAU, A/B Lawrence and myself were left behind to dive under the command of Lt. P. G. Williams. Once again I met the

passionate Frenchman, Andre Carboy, who had just handed in his rate, also one of my old class-mates was there, M/A Harris; it was here, while raising a fifty-ton lighter in 60ft. and using Cox Belt gun, that A/B Harris blew both his ear drums.

The job was a success, but on reaching the surface the lighter had too much air in and turned turtle and sank once again.

Air was always scarce, as the natives hated the pumps; on one occasion, with A/B Lawrence at 99ft. and two pumps, the natives went on strike. Lt. P. G. Williams and myself brought him up on one pump. This was the last time we used natives for pump hands.

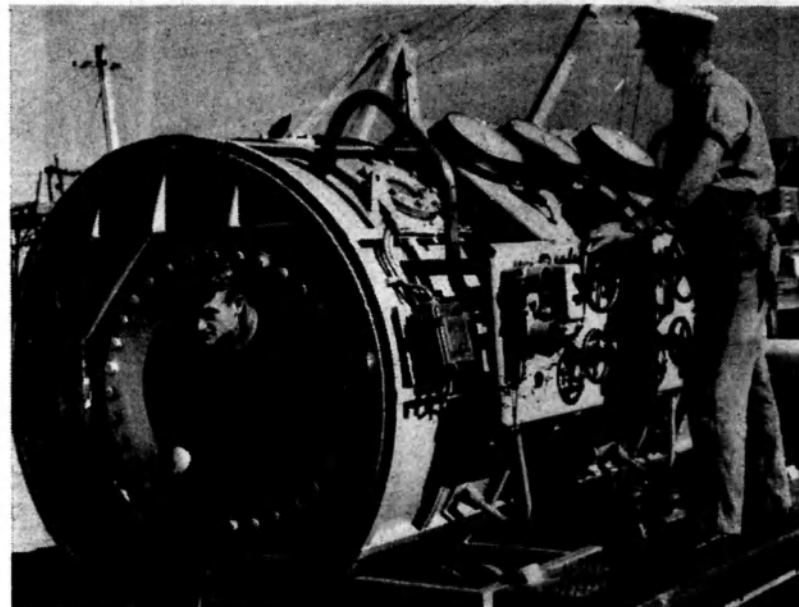
It was here I flunked my first dive to three hundred feet in an R.C.C. aboard the U.S.S. TEST. She had hit a reef, tearing off her Port A Bracket and folding up her screw. She had three divers aboard, but all had developed some sort of sickness after seeing the amount of surface offal and sharks around. I did the inspection alone and was awarded the R.C.C. dip in return.

A fortnight later, M.V. MALAITIA bumped into Seadler Harbour with a hatch cover in her main intakes. It took myself and M/A Lawrence eight hours to clear it.

I was drafted from TARANGAU back to the diving school at H.M.A.S. RUSHCUTTER, where I went to work for my old boss, Sub-Lt. Lovell, and while doing a routine inspection of C.C. Dock I was attacked by a stingray, receiving wounds to the feet and chest. I received three stitches in my left breast and one near my wind pipe.

While healing up, I was given the job of instructing shallow water divers, and during this

NEW RECOMPRESSION CHAMBER FOR R.A.N.



time I heard the talk of the Clearance Diving Team they were going to start. I tried to find out all I could about it, but was told it was only a trial and wouldn't last in the R.A.N.

However, it did last. The old standard diving went out. I qualified C.D. and have just completed a draft with the E.A.M. C.D.T., under the command of Lt. B. Wilcox. It was with this team I was able to attend the helicopter which sank at Melton Weir in Victoria. It was here that the clearance diving equipment shone over the other types and methods of searching. The water was the darkest I have ever encountered; it was just as black at 10ft. as at 70ft. on the bottom of the weir.

The last job of interest on

which I was employed was at Mackay, Queensland — the Fokker Friendship, T.A.A. airliner, which crashed into the sea, with all lives lost. The officer in command of the team, Lt. S. Wright (L.W.). For this job the whole team were given a Naval Board Commendation.

Diving for a long time has been stationary in the R.A.N., but now I believe clearance diving will go a long way in the next few years and become a great asset to the Royal Australian Navy, as each day divers are becoming more essential to a world of nations who are looking under the sea for protection.

Of the shallow water divers I trained, there are seven qualified clearance divers, at present in the R.A.N.

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Maritime Services Board Standard Dress Divers photographed underwater.

BENEATH THE SURFACE

By J. A. Stuart, M.I.E., Aust. M. Inst. T.,
Deputy Engineer-in-chief

(Reprinted from "Port of Sydney," by courtesy Maritime Services Board)

DIVING, in its simplest form, is as old as man's ability to swim, but the history of man's practical attempts to perfect an apparatus which would assist him to move and breathe freely under water is relatively short.

In unassisted diving, the diver relies for his underwater endurance on his ability to store air in his lungs and to conserve it by avoiding unnecessary exertion. Times in excess of 4½ minutes have been recorded for single dives

made under ideal conditions. In practical diving for pearl shell or sponges, however, the limit is usually about 1½ minutes and the depth of the dive as a rule does not exceed 75 feet.

In his writings of about 360 B.C., Aristotle referred to a device which was lowered from time to time to a diver in order that he might replenish his store of air. From Aristotle's description, one assumes that it was in the shape of a heavy bell which enclosed air and, when lowered to the diver, provided him with a reservoir into which he could place his head and breathe fresh air. This, no doubt, was the forerunner of the diving bell built by Dr. Halley, Secretary of the Royal Society, in 1690. Within this bell the diver or divers could remain seated and dry, breathing freely in an atmosphere that was constantly replenished by a series of barrels, and observing their surroundings through windows in the walls or through the open bottom of the bell. The diving bell is still used for certain types of salvage and construction work but it is rarely seen in commercial ports.

About the year 1500, Leonardo da Vinci wrote of many devices for enabling a man to work under water but, like so many of his inventions, they were not put to practical use.

It is recorded that on the day of the great eclipse in 1715, John Lethbridge of Newton Abbot began his experiments in diving by clambering into a hogshead in which he was sealed for half an hour. Later the device was fitted with armholes and a glass observation panel. After half an hour under water, it would be raised to the surface and a fresh supply of air would be blown in to the operator by bellows, thus allowing him to continue his work. With this primitive contraption he dived on wrecks in many parts of the world and, it is stated, went on to make his fortune.

In 1819, a German named Siebe introduced the diving dress and helmet. His first dress was an open type, the air being supplied under pressure to the helmet and escaping from the dress at the waistline. This was followed in 1837 by his closed dress which, with his helmet, constituted the diving outfit which became standard throughout the world and has remained in general use, practically without alteration, until the present day. The diver's dress is of heavy waterproof fabric so that the wearer remains dry and, when necessary, he is kept warm by means of heavy woollen clothing which he dons before entering

the dress. His air supply enters his helmet by means of a rubber hose connected to a source of compressed air which supplies it at a pressure appropriate to the diver's depth under water. By means of an adjustable air escape valve on his helmet, the diver can regulate the escape of spent and excess air, thus accelerating his descent on the one hand or inflating his dress to the extent that he becomes buoyant and rises to the surface. To overcome natural buoyancy and provide him with sufficient deadweight to give him stability when on the bottom, the helmet diver wears heavy metal boots and carries leaden weights on his back and chest. The whole of his personal equipment weighs about 160 lbs. in air. Usually his first sensation on entering the water is of relief from the deadweight that he was carrying prior to submerging.

In New South Wales, the use of this type of equipment is controlled by regulations under the Scaffolding and Lifts Act, which provides for very stringent precautions to be observed in order to safeguard the health of divers. Periodical testing of equipment and regular medical examination of operators are obligatory under the terms of the regulations, which also contain rules covering such matters as the amount of air to be supplied to divers working at various depths, the time to be spent in decompression whilst ascending to the surface, the order of dressing and undressing of the diver and other general precautionary measures to be observed by all taking part in the diving operations.

The Board employs up to four men who have been specially trained in diving. Their work as divers is intermittent, and when not diving they are employed as bridge and wharf carpenters. Each diver is furnished with a punt which houses the manually operated air pump and provides him with shelter while changing. He is attended by an assistant called a tender, who dresses and undresses him, pays out his air hose and life line while the diver is submerged, remains in communication with him either by telephone or by hand signal on the life line and constantly watches to see if the diver needs assistance. Two men operating the hand pump make up the crew of four. In addition to its carpenter-divers, some of the Board's civil engineers have been trained in the use of this type of equipment and use it for submarine inspection work.

The development of self-contained underwater breathing apparatus during the last

war enabled the various countries at war to train teams of "Frogmen" for combat work. Freed of dependence on air hose and leaden weights, these men could swim for long distances and to record depths, taking their supply of air or oxygen with them. Of various systems which have come into general use, the simplest and probably the best known is that devised by the Frenchman Cousteau. His first set of equipment was made and used in France in 1943 without arousing the suspicions or interest of the occupying forces. In his book — *The Silent World* — Cousteau tells of many exciting exploits carried out by means of his gear. Unlike the systems used for combat work which employ oxygen in a closed circuit to avoid leaving tell-tale bubbles and to give greater underwater endurance, Cousteau's system uses air compressed in cylinders to a pressure of 120 atmospheres. Similar equipment is readily obtainable today and is widely used for recreational purposes. The Board has recently acquired a number of aqua-lung sets which are regularly used by its engineers for underwater inspections. Each set includes two steel bottles, each containing 40 cubic feet of air stored at a pressure of 120 atmospheres. This is sufficient to enable the diver to remain underwater for about an hour and twenty minutes at shallow depths. The necessary reduction in pressure is achieved by means of a demand valve-reducer unit which breaks it down from 1,800 to about 120 pounds per square inch in the first stage and then delivers it at lung suction from the second stage. The diver breathes and exhales through a rubber mouthpiece, which is gripped between the teeth and is connected by means of flexible tubes to the demand valve. One air cylinder is held in reserve and used to replenish the cylinder in use as it becomes depleted. By this means, the diver is unlikely to find himself without a reserve of air.

The aqua-lung equipment is very slightly buoyant, that is, it has no weight when submerged. The diver wears a belt of lead weights, usually 8 to 10 pounds, so that when fully equipped and submerged he has neutral buoyancy. This enables him to move freely from one depth to another by means of his flippers and to make a survey of the bottom without walking on it and stirring up silt which would obscure his view. For that reason, this gear has great advantages over the helmet equipment when used for inspection work. Moreover, it is much faster in use and does not require the same number of men. On the

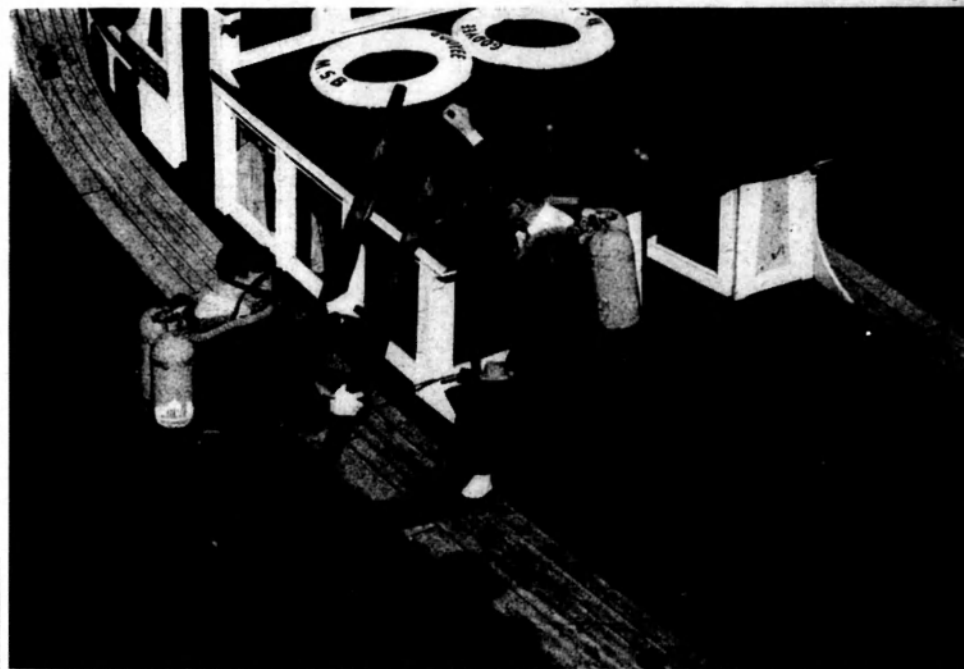
other hand, for tasks which require the application of human effort and require the diver to resist the run of the tide, the underwater stability provided by the great weight of the helmet equipment is necessary. This applies in particular to such underwater operations as sawing through heavy timber, hauling in a heavy line, manhandling heavy gear and tools.

The physiological aspects of diving are worth a little consideration. Atmospheric pressure is about 14.7 lbs. per square inch (one atmosphere). At 33 feet deep, the pressure on the body increases to 2 atmospheres and at 66 feet to 3 atmospheres. A free or unassisted diver descending to 66 feet with his lungs full of air would have the volume of his air reduced to one-third by the pressure at that depth. Conversely, an aqua-lung operator who fills his lungs with air at 66 feet then ejects his mouthpiece and ascends while holding his breath would risk serious injury from the threefold expansion of air in his lungs. For that reason, divers who are obliged to make a free ascent do so with the mouth open.

A little consideration will quickly dispel the notion that it is possible to roam the depths while breathing free air through a hose extending from the mouth to the atmosphere. Induction of air is achieved by expanding the chest against the pressure of the water which surrounds it, and a depth of only two or three feet is sufficient to convince one of the impracticability of sucking in free air when the body is under pressure.

In his monumental work — *Deep Diving and Submarine Operations* — Sir Robert H. Davis tells an amusing story which concerned certain City Councillors who visited the workings of a new tunnel to celebrate its near completion. The work was being carried out under compressed air and, in consequence, champagne opened and consumed for the occasion lacked effervescence and was declared to be flat. However, as the Councillors underwent decompression on leaving the workings the deferred effervescence took place, causing considerable physical discomfort and embarrassment. He tells also of a diver who was examining a wreck with the aid of helmet gear. Each time he ascended he showed symptoms of intoxication but this seemed to be impossible. However, having found a pocket of air trapped in the wreck, the diver had breached the submerged cargo of whisky and moved to a position which brought his helmet

Divers Preparing to Make an Underwater Inspection

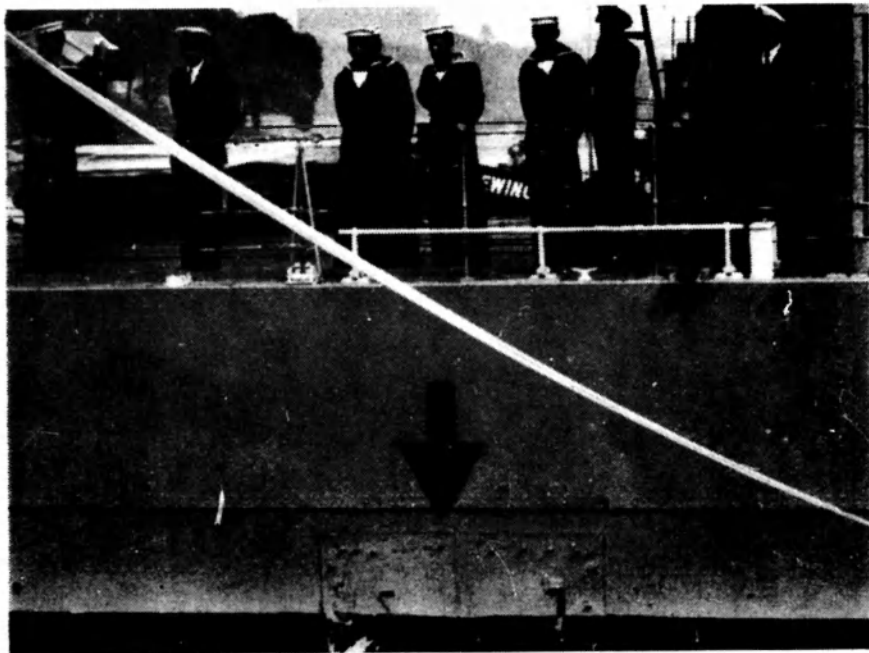


The aqua-lung operator carries his air supply in high pressure cylinders in a back and shoulder harness, enabling him to move underwater without restriction.

into the trapped air. There he removed his facepiece and imbibed at leisure refreshed by fresh air pumped from above, his lifeline secured to a convenient stanchion to prevent his attendant from hauling him aloft.

The silent world of Cousteau is a new world to many and, for those who explore it, one of tremendous interest. Even in its shallower reaches in Sydney Harbour it is impressive in its beauty and, above all, in its quietness. No matter how the wind blows or how disturbed the surface of the water may be, below the surface it is quiet and still. In the shallows, there may be a slow and gentle

waving of the sub-marine vegetation, but in the deeper water the stillness is profound and the quiet is disturbed only by the rhythm of one's breathing. The fish glide rather than swim and some of them, inquisitive, come right up to one's face but, if one reaches for them, they are gone in a flash but without sound. Freed of weight and buoyancy, able to breathe freely beneath the surface and to glide fishlike rather than to walk, it is easy to shed the cares of city life for a short time and to identify oneself with the shy but mildly inquisitive fellow inhabitants of the silent world.



Food *tastes better . . .*



*food is
better with*

**Good
Beer**

**FOSTER'S LAGER
MELBOURNE BITTER**

**ABBOTS LAGER
VICTORIA BITTER**

H.M.A.S. TOBRUK

Enters Sydney Harbour Flying
Her "Paying Off" Pennant.

The patch on the side indicates where a shell from ANZAC accidentally holed the ship.

The speed with which repairs were effected reflects great credit on the Damage Control team and on their training.

H.M.A.S. TOBRUK "PAYS OFF"

Ten Years of Service ends

An adventurous career has ended for Royal Australian Navy, Battle Class destroyer, H.M.A.S. TOBRUK.

Now lying at Garden Island, Sydney, TOBRUK has been "paid off" and will go into operation reserve.

Announcement of TOBRUK'S "paying off" was made by the Minister for the Navy, Senator Gorton.

Senator Gorton said Tobruk would be put into operational reserve so that its technical specialists could provide nucleus crews for the sea trials of two new Type 12 frigates.

These new anti-submarine frigates, H.M.A.S. PARRAMATTA and H.M.A.S. YARRA, were due to start their sea trials soon.

H.M.A.S. PARRAMATTA, which had been built in Sydney, would begin her sea trials in November. YARRA, built in Williamstown Naval Dockyard in Melbourne, would start sea trials early next year.

H.M.A.S. TOBRUK was built at Cockatoo Dock almost ten years ago.

Her career has been studded with thrills.

TOBRUK saw service in the Korean War and was on several tours of duty with the South-East Asian Strategic Reserve.

During the Korean War TOBRUK engaged mainly in shelling shore batteries, installations and trains.

Around the Malayan area she bombarded terrorist hideouts.

TOBRUK was attacked several times, but no enemy fire hit her.

Several times she drove off attackers.

But she did not escape unscathed during her service.

Three times she suffered damage, each under unusual circumstances.

During exercises off Singapore in 1955 two star shells from a Royal Navy destroyer struck TOBRUK.

Two were killed and seven injured.

Last year one of her own torpedoes went astray as it was fired.

It went straight through a galley, but fortunately no one was injured, but the torpedo ended in the ship's sick bay.

It was a freak accident.

TOBRUK was again "in the news" recently.

While exercising with the Fleet off Jervis Bay on September 14, TOBRUK was holed when struck by one shell of four salvoes fired by H.M.A.S. ANZAC.

None of the crew was injured, but a frogman who dived into the flooded engine room to turn off steam valves was burned by steam.

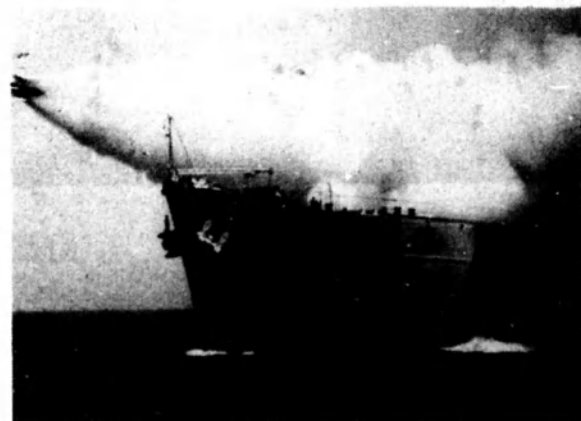
His action enabled TOBRUK'S pumps to work at full pressure.

TOBRUK was taken in tow by ANZAC and was temporarily repaired at Jervis Bay to enable her to steam under her own power to Sydney on September 16.

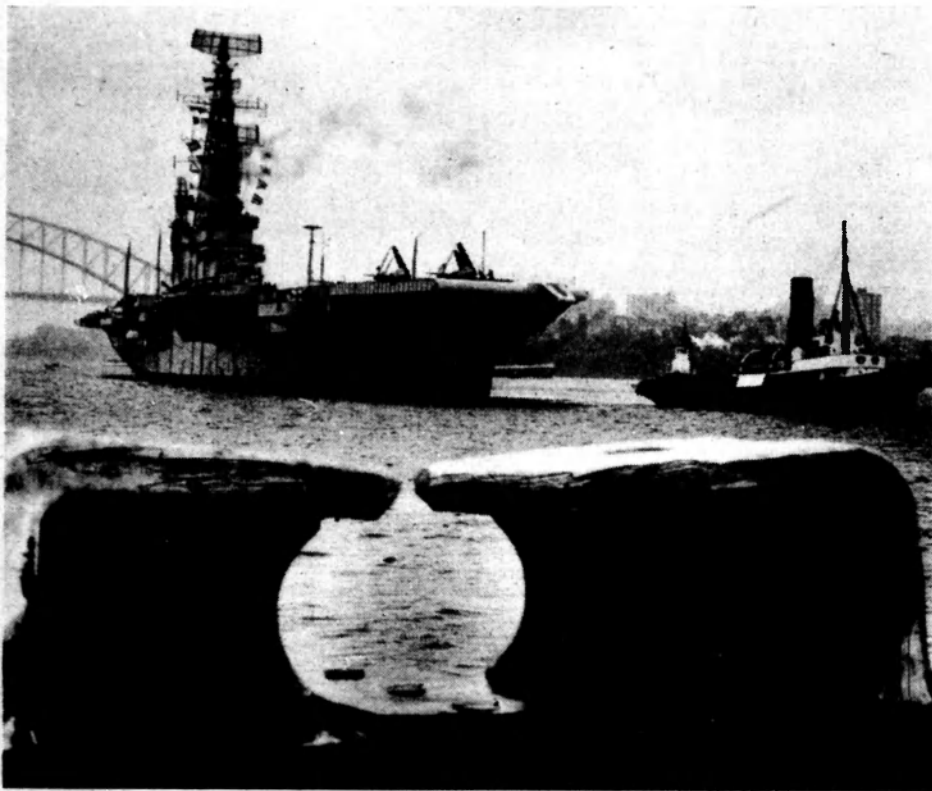
Flying a 370-foot "paying off" pennant she berthed at Garden Island.

It was a dramatic end to TOBRUK'S final exercises.

A Sea slug Guided Missile leaves a trail of smoke as it roars off the launcher H.M.S. GIRDLENESS, the Royal Navy's Guided Missile ship, to seek out and destroy its target—a pilotless plane. The missile is being fitted in four ships of the Hampshire Class.



DUTCH CARRIER VISITS SYDNEY



The Flagship of the Netherlands Navy, the Aircraft Carrier, KAREL DOORMAN, recently called into Sydney on a four-day goodwill visit.

KAREL DOORMAN, formerly H.M.S. VENERABLE, has recently visited Dutch New Guinea and is returning to Holland.

To many survivors of H.M.A.S. PERTH, the name was familiar, as the ship was named after Rear Admiral Doorman, who was in command of the combined Allied Fleet, consisting of ships from the Dutch, Australian, British and American Navies.

Under the Red Duster

R.A.N. and Merchant Navy Liaison

Recently the Naval Board began a scheme which in both peace and war is bound to have far-reaching beneficial results. Selected Lieutenant-Commanders and Lieutenants of the Seaman Specialisation are loaned to various shipping companies to serve in Australian Merchant ships for voyages lasting up to one month.

THE long range benefits in a practical sense will be more marked for the Navy, as a solid core of officers will mature with a first hand knowledge and understanding of the functions, capabilities, limitations and problems of the Merchant Service.

But it is by no means a one-sided bargain, and mutual benefits will include a closer relationship between the two vital sea forces and bonds of friendship and a sense of "togetherness" that will make a virile, united front at all times.

Lt. Dowling Chosen

The first officer to be chosen for one of these enviable appointments was Lieutenant A. R. Dowling, R.A.N.

He joined M.T. "William G. Walkley," owned by the Ampol Petroleum Co. Ltd., at Kurnell Refinery on Tuesday, January 12.

This tanker (with M.T. "Leslie J. Thompson" and two other tankers under charter) is engaged in carrying crude oil from the Midas oilfields in Sumatra to the A.O.R. Refinery at Kurnell (Botany Bay).

Here the crude oil is mixed with the cargoes of the Caltex and Golden Fleece tankers, refined, and the petroleum and oils sold back to the oil companies, who add their own patented "additives".

With a large area of shallow water, Botany Bay is by no means ideal for the site of a refinery, but a half-mile jetty

can handle tankers drawing up to 36 feet.

A buoys system and an underwater pipeline nearing completion will cope with super tankers up to 45,000 tons.

Busman's Holiday Begins

Lieutenant Dowling was impressed from the beginning. Of 12,624 tons, the "William G. Walkley" has a deadweight capacity of 18,000 tons and can take on oil with pumps at the rate of 2,000 tons per hour.

In the event of pump failure, gravity loading can be carried on at a rate of about 1,500 tons per hour. The high rate of intake and discharge permits a rapid turn-around of the tanker, but leaves no time for "goofing" at either terminal.

Four deck officers (including the captain), seven engineers and one electrical officer, are carried. Of these only four were Australians, but Lieutenant Dowling was warmly welcomed and quickly felt at home. The mate was an officer in the R.N.R., having served in H.M. ships "Bulwark" and "Whitby", and the second mate had commanded H.M.A.S. "Glenelg" during the war.

The accommodation was extremely clean and spacious—indeed, even luxurious. The Naval "learner" was conducted to his quarters, which proved to be, in fact, a suite. Amidships were an eye-catching and comfortable dining saloon and smoke-room. A swimming pool and cinema shows are provided as extra amenities.

Roast turkey, followed by fresh strawberries and ice-cream for Sunday dinner, convinced the man from the "Grey Funnell Line" that his opposite numbers from the M.N. catered for the needs of the inner man.

The next day, January 13, the tanker cleared for the voyage to Sumatra, north-bound up the east coast of Australia, then through the Torres Strait and across the Arafura and Java Seas.

Heated Oil

This was no idle cruise in sun-drenched tropic waters. Once at sea, preparations began for receiving the cargo of black gold. Tanks were flushed out with fresh water and the ship "gas-freed". High-pressure hoses washed down each of the 24 tanks and the oily water was pumped into a tank set aside as a "slop" tank.

At the captain's discretion certain tanks are kept filled with water for ballast. Empty tanks, after washing, are left open until just before arrival in Sumatra, and wind sails are rigged to help them to dry out.

While these tanks are empty, an inspection and any necessary repairs are carried out on the steam-drench system, suction pipes and heating coils. These coils maintain the temperature of the oil cargo at about 80 degrees Fahrenheit, keeping the oil at a low viscosity to permit rapid pumping.

Shortly after entering the southern end of the Malacca Strait the tanker was en-

closed waters, proceeding up the long, tricky channel to Dumai.

Situated on the east coast of Sumatra, about 150 miles from Singapore, this port offers none of the delights of that glittering city.

It consists of a small native village and the oil installations built and run by Caltex, but it is the Indonesian port from which all the crude oil for the Kurnell refinery is taken. The channel has been excellently buoyed by Caltex, the installations are very modern, there is plenty of water off the berth and tugs are available. The oil itself is piped from the Midas fields inland.

The "William G. Walkley" was taken over by a Norwegian pilot and manoeuvred into the only available berth. Then, for the next three hours, the water ballast was pumped out and the loading of crude oil began.

With the intake rate exceeding 1,500 tons per hour, care-

ful planning on trim and a critical watch on draught is essential. In 12 hours 17,500 tons was gulped into the long, sleek tanker.

A supreme moment of achievement came the Naval officer's way, as next morning he assisted Captain Lord in taking the deep-laden tanker down that menacing channel out of Dumai. Such a craft seemed unworldly and recalcitrant after the hair-trigger response of Naval craft.

A brief stop-over at Singapore lightened the demanding score of sea-time, loading and more sea-time.

Now the Chinese crew, in particular, had their material reward. These impassive, hard-working Orientals sign on as crew-men in Hong Kong during the tanker's biennial refit in that port, and the condition of all weather-decks and superstructures (six hands only being responsible here) bear sparkling testimony of their speed and thoroughness.

Southward bound and the tropic heat became more bearable as Lieutenant Dowling spent more of his off-watch hours in the large pool rigged forward of the bridge. Now, instead of cleansing tanks, all hands turned to on chipping and painting.

And so on Sunday, February 14, a spick-and-span tanker arrived in Botany Bay, edged alongside the long jetty and began to discharge her cargo at 2300 the same night.

Lieutenant Dowling parted from new "old" friends with a major feeling of regret. In 33 days he had passed through his "make-learn-ee" phase and had come to identify himself with the tightly-knit, competent band who live their lives above a deadly cargo—a nation's life blood in peace and war, and the No. 1 target for the enemy when the free world is forced to take up arms to ensure man's continued freedom.

SURPRISE FOR DIRECTOR OF WRANS



WRANS Entry Age Reduced

The Women's Royal Australian Naval Service has reduced the entry age by one year.

Girls of seventeen can now join the service.

The reduction in the age limit has been taken to attract girls direct from school and to increase the average "life" of WRANS.

A survey showed that many girls left school with a desire to join the WRANS, but were loath to leave, when they reached eighteen, an interim job which they may have obtained.

DIRECTOR OF WRANS INSPECTS SYDNEY ESTABLISHMENTS

During a recent visit of inspection to Naval Establishments in Sydney, where WRANS were employed, the Director of WRANS, Chief Officer Joan Streeter got quite a surprise when she was transported in a workboat entirely manned by WRANS.

This is the first time that a boat manned by WRANS has been used, in peace time, on Sydney Harbour. The photograph shows, from left to right, Leading Wran Ruth Holmes, Leading Wran Joan Baker, Second Officer P. J. McNamara, Chief Officer J. Streeter and the

executive Officer of H.M.A.S. RUSHCUTTER, Lieut.-Cdr. R. Clark-Smith.

At a Press interview during her visit, Chief Officer Streeter told reporters that there was no difficulty in getting young women for the WRANS — the difficulty was in keeping them. "They all get married," she said. "I never know the strength of our branch of the Service, it changes from day to day. Easter and Christmas are the worst times, for most of the girls seem to pick these occasions to get married."

JOIN THE



NAVY LEAGUE

The object of the Navy League in Australia, like its older counterpart, the Navy League in Britain, is to insist by all means at its disposal upon the vital importance of Sea Power to the British Commonwealth of Nations. The League sponsors the Australian Sea Cadet Corps by giving technical

The League consists of Fellows (Annual or Life) and Associates.

All British subjects who signify approval to the objects of the League are eligible.

MAY WE ASK YOU TO JOIN and swell our members so that the Navy League in Australia may be widely known and exercise an important influence in the life of the Australian Nation?

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sea training to end instilling naval training in boys who intend to serve in Naval or Merchant services and also to those sea-minded boys who do not intend to follow a sea career, but who, given this knowledge, will form a valuable Reserve for the Naval Service.

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- 60 Limestone Ave., Ainslie, Canberra, A.C.T.

THE NAVY

November, 1960

R.A.N.'s PART IN OCEAN RESEARCH

An Australian scientist believes Australia is on the verge of making important scientific discoveries in the Indian Ocean.

The scientist, Dr. George Humphrey, is Chief of the Division of Fisheries and Oceanography of the C.S.I.R.O.

Dr. Humphrey, who returned to Sydney by air recently from London, said Australia was among the leading nations carrying out scientific studies in the Indian Ocean.

Research in the immediate future could reveal important information about fish reserves,

currents, and the problem of establishing radiation waste-dumps on the ocean floor.

Dr. Humphrey said the results of studies already under way indicated that Australia would soon be in a position to cut out all fish imports.

A vast, untouched reservoir of fish had recently been discovered on the north-west coast of Western Australia.

Dr. Humphrey said he would ask the Federal Government to take part in a conference later this year to establish an international authority for co-ordinating research in the Indian Ocean.

He said: "Our knowledge of the Indian Ocean is two-hundred years behind our knowledge of all the other oceans."

Dr. Humphrey said Australia owed its status in Indian Ocean research to the work of the Royal Australian Navy.

He said the Oceanographic unit of the Navy deserved the highest praise for its contribution to knowledge and understanding of the Indian Ocean.

Dr. Humphrey forecast that the Navy would play an increasingly important role in ocean research work.

R.A.N. Adjusts for Scientific Age

The Royal Australian Navy is adjusting its officer training programme to keep pace with the complexities of a scientific and technological age.

The Minister for the Navy, Senator Gorton, said recently that the Royal Australian Naval College would have to attain even higher graduation standards so that its graduates could cope with the demands of future ships and weapons.

Beginning next year, the college syllabus would be adjusted to put more emphasis on pure academic subjects, particularly science.

Senator Gorton said the higher graduation standards would in turn call for greater selectivity of students for the Naval College.

To attract the right type of student, the Navy had changed its officer structure to provide greater career prospects.

About sixty per cent. of graduates of the college who became Lieutenant-Commanders in the future could look forward to promotion to the higher ranks of the service.

The Royal Navy had also set a new higher standard for its future officers to cope with the growing complexity of modern ships and armaments.

It was important for Australia to achieve the same academic standards as the Royal Navy, because of the training undertaken in Britain by R.A.N. officers.

In the future, the structure of the training schedule may have to be adjusted to retain the balance between academic learning and practical sea experience.

This would involve giving cadets a period at sea in the Australian fleet between their years of academic training.



Senator J. G. Gorton

He said the Naval College would continue with annual intakes of boys aged between fourteen and a half and sixteen and a half, and special entries of matriculation students up to the age of nineteen.

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NEW FRENCH SURVEY SHIPS

The hydrographic survey ship, *INGENIEUR HYDROGRAPHE NICOLAS*, has been condemned. She is to be replaced by a 1,000-ton ex-passenger ship, the *GUYANE*, built in 1951, which has recently been purchased and is now to be converted.

The A.M. type minesweeper, *ORIGNY*, is to be converted into an oceanographic research ship to extend our knowledge of the deep sea waters and assist new methods of defence against the submarine threat. In wartime, the ship could be easily re-converted.

THE NAVY

Are you denying yourself RELAXATION?



Relaxation, both mental and physical, is, according to the world's leading physicians, essential. Yet how many people today, due to constant mental pressure brought about by the ever-increasing tempo of business and life in general, are finding themselves "run-down"? Well, the old adage "Don't let this happen to you" still stands good!

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November, 1960

CAPTAIN G. A. WILD TO COMMAND NEW LINER CANBERRA

P. & O. Orient Lines announce the appointment of Captain G. A. Wild to command the 45,000-ton passenger liner CANBERRA, which is due to sail on her maiden voyage from Southampton on June 2, 1961. Captain Wild was in command of the 29,734-ton Arcadia until October 3, 1960. The appointments to CANBERRA are announced also of Mr. John A. Skakle as Chief Engineer, Mr. L. S. Warren as Purser, and Mr. J. G. Crawford as Tourist Class Purser. The appointment of a Full Purser as Tourist Class Purser in CANBERRA is due to the ship's size and the number of passengers she will carry (550 first-class and 1,685 tourist).

Captain Geoffrey Alan Wild

Captain Wild was born in February, 1904, in Bolton, Lancashire, the son of a Lancashire clergyman. He served his early apprenticeship at the Nautical College, Pangbourne, from 1918-1919, being one of the second entry at Pangbourne, which had been formed in 1917. Following a year as a cadet on the barquentine "St. George," he completed his apprenticeship with two years in the New Zealand Shipping Company. He joined the P. & O. Steam Navigation Company as Fourth Officer in the Novara in 1923, obtaining his Master's Certificate in 1929. Captain Wild served during the war in troopships, commencing in the 22,270-ton Strathnaver on the long voyages in convoy round the Cape to Suez until 1942. He served as First Officer in the Ile de France, 44,356 tons,

when she was a troopship operated by the P. & O. Company. In 1944 Captain Wild went to the U.S.A. to take over as Chief Officer of the 15,100-ton Chitral, which had until then been operated by the Royal Navy as an armed merchant cruiser, and stood by this ship whilst she was being converted into a troopship at Baltimore. He served in Chitral during the landings in Malaya a few days after V.J. Day, and later brought home British prisoners of war from Rangoon. In 1947 he stood by the conversion of the troopship Empire Fowey at Glasgow. Captain Wild was promoted to Staff Captain of Stratheden in 1949, and in the following year was appointed Staff Captain of the new 24,215-ton passenger liner Chusan. His first regular command was in 1951 as the Captain of Shillong, in which he stayed over four years. After relieving voyages as Commander of Iberia and Strathnaver in 1956, Captain Wild flew to Cape Town in January, 1957, to command Canton. Since then, he has commanded Corfu, Chusan, Strathaird and Arcadia. Captain Wild was married in 1932 to the sister of Mr. A. R. G. Bickell, a P. & O. Purser at the time. Captain Wild has his home at Eastbourne, Sussex. Captain Wild has been relieved in Arcadia by Captain W. T. C. Lethbridge, who previously commanded the 22,568-ton Strathaird.

Mr. Skakle Chief Engineer

John Skakle was born in June, 1909, in London. He

served his apprenticeship with R. & H. Green & Silley Weir Limited, and joined the P. & O. Steam Navigation Company in 1931 as Assistant Engineer. He received his appointment as Chief Engineer on the 22,270-ton Strathnaver in January, 1956. Since then he has served on the 29,614-ton Iberia and the 23,580-ton Strathmore.

Mr. Warren

Mr. Leonard Samuel Warren, who is aged 52, joined the P. & O. Steam Navigation Company at the age of 18 in 1927. After three years of service in the London offices of the company, he was appointed Assistant Purser of Ranpura in 1930. His appointment as Purser took place in March, 1932, when he served in Mantua. During the last war Mr. Warren served in the R.N.R. and returned to the company in March, 1944. His first post-war appointment with P. & O. was in Corfu in 1945. Mr. Warren has since served as Purser in many P. & O. liners, including Canton, Strathaird, Arcadia, Iberia and Strathmore. He has recently been relieved from the 24,261-ton Chusan.

Mr. Crawford

John Crawford was born in 1914 and joined the P. & O. Steam Navigation Company in May, 1936. His first appointment afloat was as a Purser's Clerk on board Naldera in June of the same year. He was appointed Assistant Purser in 1939 and his appointment as Deputy Purser came 10 years later in 1949 after he had returned to the company following war service on troopships. Mr. Crawford was promoted to Purser in 1952, and his first ship in this rank was Empire Fowey. He has since served in Corfu, Strathnaver, Arcadia, Stratheden and Chusan.

600th ANNIVERSARY OF THE COURT OF ADMIRALTY OF ENGLAND AND 800th ANNIVERSARY OF THE LAWS OF OLERON

ON the 1st June, 1960, a Service of Thanksgiving was held in St. Paul's Cathedral in the presence of H.R.H. The Duke of Edinburgh, in connection with the 600th Anniversary of the Court of Admiralty in England, and afterwards celebrations took place in the Island of Oleron, off La Rochelle, in connection with the promulgation, about the year 1160, of the Laws of Oleron by Eleanor of Aquitaine, the wife of King Henry II of England.

It is thought that the Fleet might be interested in a little historical background relating to these two events and to indicate the reasons for Their Lordships' decision to associate themselves with these celebrations.

The Laws of Oleron, based on the decisions of the Merchant Court of the little island of Oleron were, from the latter half of the 12th century, accepted as maritime law in north-western Europe. Their prestige in England was especially high. They codified in plain, commonsense language the principles that should govern the relationships between the parties concerned in maritime trade, ship masters, mariners, owners and merchants and they prescribed the action that might properly be taken in various contingencies.

The foundation of the Court of Admiralty of England dates from 1360, when King Edward III appointed Sir John Beauchamp to be Admiral of all the Fleets and gave him extensive judicial powers. The appoint-

ment of Sir John Beauchamp is significant, because it placed for the first time the command of all the Fleets in the hands of one man who, in addition to the usual disciplinary powers of an Admiral, had at the same time the grant of maritime jurisdiction with power to appoint deputies. From this date can be applied the opening words of the Black Book of Admiralty, the ancient muniment book now in the Public Record Office, which also contains the text of the Laws of Oleron:

"When a man is made Admiral, he should at once appoint under himself to be his lieutenants, deputies and other officers, some of the most loyal, wise and discreet persons in the maritime law and ancient customs of the seas which he can anywhere find, so that, by God's help and their good and just government, the office of Admiral may be executed to the honour and good of the Realm."

The intervening centuries have seen great changes in the office of Lord High Admiral. His judicial powers have gradually been separated from his executive naval powers. The former are now exercised in the United Kingdom in prize cases by the President of the Admiralty Division of the High Court, in Admiralty (Maritime Law) cases by the President and certain other judges and in criminal cases by those judges, commissioners, recorders and magistrates who administer the criminal law of the land. The latter powers, executive or

naval, are entrusted to the Lords Commissioners for executing the Office of Lord High Admiral of the United Kingdom.

Again the laws of Oleron have gradually been superseded, but certain aspects of modern maritime law may be traced directly to them. Their glory is not in the letter but in the tradition of law and justice, order and commonsense, discipline and humanity which have survived through eight centuries. Today seafarers and all concerned with maritime matters have good reason to give thanks for the Laws of Oleron and for the wisdom that inspired them.

Accordingly, the Lords Commissioners of the Admiralty and the Judiciary now join in bringing together a great and distinguished concourse of persons concerned in their various ways with shipping and maritime law in all parts of the world to take part in the Service of Thanksgiving at St. Paul's Cathedral.

At the Service, an illuminated copy of the ancient Laws of Oleron, extracted from the Black Book of Admiralty, was handed over by the President of the Court of Admiralty to the Chaplain of the Fleet with the request that it should be conveyed in one of Her Majesty's Ships to the islanders of Oleron. H.M.S. WAKEFUL was detailed for this duty and was accompanied by H.M. Ships THAMES, VENTURER, ST. DAVID and BOSSINGTON.

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Commonwealth Carriers

The Commonwealth is to lose one carrier-borne air-arm, but is to gain another. The fact that the Australian Fleet Air Arm is to be disbanded in 1963 is unfortunately only too well known, but the growth of Indian carrier-power has been left practically unnoticed. The Indian carrier VIKRANT (the former H.M.S. HERCULES) has received some attention, but the aircraft it is to operate are an enigma to many.

It says something for the quality of British aircraft that India should consider the obsolescent Hawker Sea Hawk suitable to her requirements when so many aircraft better (in performance) are available. Twenty-one Sea Hawks were ordered and the first squadron to be equipped with this aircraft is scheduled to be operational by the end of August.

It was expected that the Fairey Gannet would be obtained for anti-submarine patrol, but the French Alize had more appeal and orders have subsequently been placed with Breguet for approximately 10 machines of this type.

With the end of Australian naval aviation, India will be the only Australo-Asian country to have a carrier. The possibility of Pakistan obtaining a carrier is almost negligible, but the Japanese Navy continues to grow and it would come as no surprise to a number of people if the "rising sun" flag were once more unfurled from a carrier.

Canada, of course, has the BONAVENTURE and happily has no prospects of scrapping this excellent vessel in view.

An interesting footnote to this brief review of Commonwealth naval aviation is the news that the Ghana Air Force plans to equip two jet-fighter squadrons with Sea Hawks.

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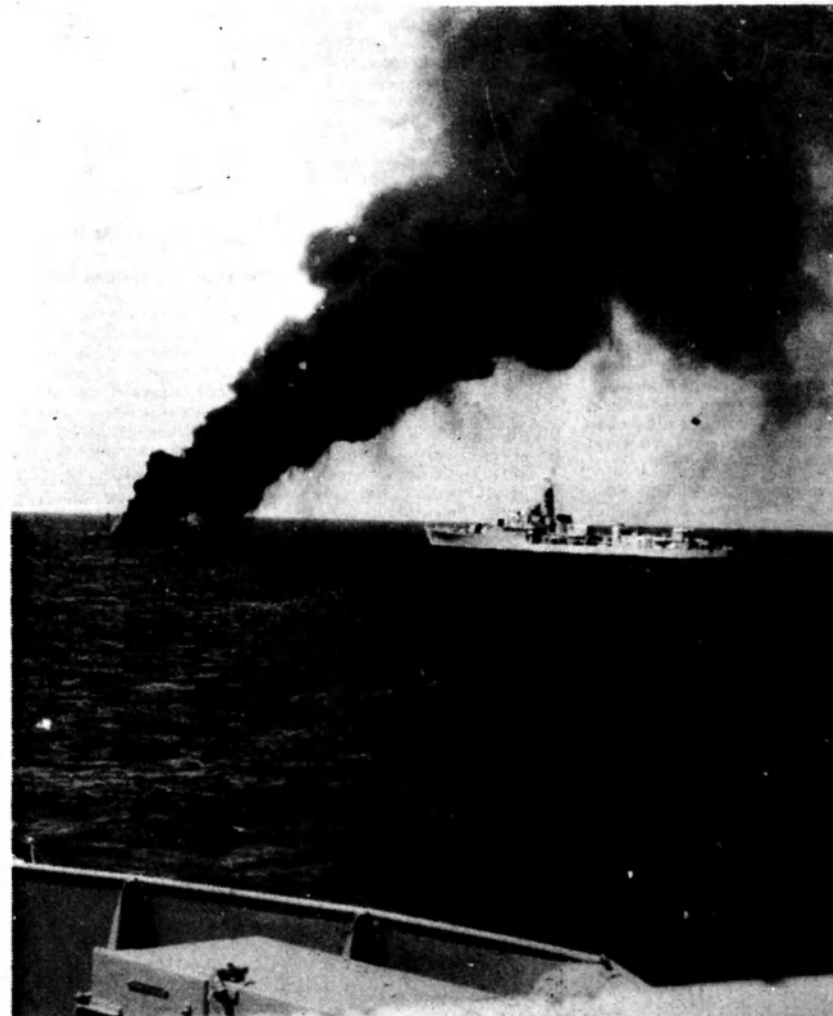
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BRITISH MINISTRY OF DEFENCE
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H.M.S. CAVENDISH stands by the burning Cargo Carrier H.M.A.S. WOOMERA. The ship was engaged in dumping ammunition when she caught fire, exploded and sank, with the loss of two lives.

BAMBOO CARGO FOR NAVY SHIP

Urgently required supplies of bamboo poles have taken a Royal Australian Navy ship, H.M.A.S. BANKS, on an unusual mission to Portuguese Timor. H.M.A.S. BANKS went to the isolated Timor anchorage of Beaco to load the bamboo.

The Minister for the Navy, Senator Gorton, said that the bamboo poles were needed as a result of increased survey work being carried out by Navy ships. The bamboo poles, which were thirty feet long, were used to support beacons. When no land fixes were available for survey ships, they surveyed along a line of the beacons, which, lashed to the top of the bamboo poles, could be seen for several miles.

Senator Gorton said bamboo, because of its length, resilience and strength, was the only material suitable for the task. It was a scarce commodity,

and Portuguese Timor was Australia's only source.

He said H.M.A.S. BANKS would be the first Royal Australian Navy ship to visit Beaco. The normal port of call was Dili, but storms had cut land communications, and the only way to obtain early supplies was to go direct to the isolated anchorage.

It is the first major trip away from Australia for H.M.A.S. BANKS, which is an Explorer class, general purpose vessel commissioned only a few months ago.

H.M.A.S. BASS COMMISSIONS

H.M.A.S. BASS was commissioned at Garden Island on the 15th November, 1960.

She is a sister-ship to the BANKS and is a general purpose vessel with a length of 90 feet. Both ships were built by Walkers Ltd. in Maryborough, Queensland.

The BASS has been specially equipped for survey duties and will commence her duties by

carrying out a survey of Portland (Vic.) Harbour. On completion of this task she will spend the rest of the year working in South Australian and Queensland waters.

With a complement of 2 Officers and 14 ratings, H.M.A.S. BASS is the fourth ship to undertake survey duties and will bring the total number of ships in commission in the Royal Australian Navy to 17.

ROYAL FLEET AUXILIARIES

Service Conditions Improved

One hears a great deal today about the flexibility of naval forces. This term is mainly applied to the ability of H.M. Ships to move about the oceans without requiring the facilities of bases as frequently as was once the case.

This flexibility is, to a large extent, made possible by the Royal Fleet Auxiliary Replenishment Service which has been called on to supply fuel, ammunition, provisions and stores to H.M. Ships at sea on a scale never previously attempted in peace-time.

The recent appointment of Mr. David Leathley, O.B.E., as the first Commodore, Chief Engineer of the Service, was in part a recognition of the increasing importance of the R.F.A. It is, however, only one step in the plan to fit the Auxiliary for its modern tasks.

Mr. Leathley's appointment follows improvements in the complementing, pay and conditions of service of the crews of R.F.A.'s. The aim, I understand, is to increase the skill and experience of the civilians who man these vessels and encourage them to serve longer. Living conditions in the Blue Ensign ships have also been improved.

SIXTH "PORPOISE" SUBMARINE

There are now six "Porpoise" submarines flying the White ensign—the first under-water craft to be designed since the war.

In the past year the rate of submarine building has increased considerably and, apart from the completion of the "Porpoise" class, good progress is being made in the construction of several "Oheron" submarines. Submarines of the "Oheron" class are similar to the "Porpoise" boats, but include many modifications found desirable in the light of experience with the earlier "Porpoises".

H.M. Submarine FIN-
WHALE, sixth "Porpoise"
boat, was accepted into service in August and is now under the

command of Lieutenant-Commander J. R. Wadman, R.N.

She was built by Messrs. Cammell Laird on the Mersey and, like her sister craft, is of 2,000 tons standard surface displacement and is powered by diesel-electric Admiralty Standard Range engines which give

high under-water speed. Her complement is six officers and 65 ratings.

The other boats of the "Porpoise" class now with the Navy are H.M. Submarines PORPOISE, RORQUAL, NAR-
WHAL, GRAMPUS and CACTI-
ALOT.

THE SECOND NUCLEAR SUBMARINE

The contract for the second nuclear submarine, foreshadowed by the Civil Lord of the Admiralty during the last session of Parliament, has now been placed with Vickers-Armstrongs, and the machinery will be built by Vickers-Armstrongs (Engineers) Ltd., and Rolls-Royce and Associates. I understand that the nuclear plant will be of the type now being developed for the Admiralty at Dounreay and will be based on the American P.W.R. design, but with various alterations of

British origin, which it is hoped will improve performance, and in particular will at the least reduce materially the noisiness of the plant. Present indications are that the prototype plant at Dounreay will be ready for test-running sometime in 1962 and it is possible that the new submarine may be completed late in 1963 or more probably in 1964. She is expected to be somewhat larger than the DREADNOUGHT; but, like the latter, she will not carry ballistic missiles.



H.M. Submarine ANDREW, which recently sailed for Singapore. H.M. Submarine TAPIR, which will replace her in the 4th Submarine Squadron, has already arrived and is at present undergoing a refit at Cockatoo Island Dockyard.

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NAVY TO INVESTIGATE RIVER PORT FOR N.T.

The Minister for the Navy, Senator Gorton, announced that the Royal Australian Navy will carry out the initial stage of a project that could make a significant contribution to the development of the Northern Territory.

The Minister said H.M.A.S. BANKS would conduct a reconnaissance survey of the Adelaide River later this year.

The task was being undertaken at the request of the Northern Territory Administration to determine whether large freighters could navigate the river as far as the Humpty Doo Pumping Station.

If it were feasible, it would be a tremendous boost for the rice-growing industry.

In addition to facilities for shipping rice, a river port

would contribute in many ways to the development of the Territory.

Senator Gorton said the survey would begin in October.

H.M.A.S. BANKS would verify the reliability of existing Admiralty charts of the entrance to the Adelaide River, and then work upstream from the river port, Port Daly.

The reconnaissance would establish the greatest distance that a 300 ft. vessel could navigate the river, and the minimum size of a ship that could reach Humpty Doo Pumping Station, which is nearly 50 miles from the river mouth.

Senator Gorton said at the completion of this work the Royal Australian Navy would consider plans for the detailed survey of the river.

The reconnaissance survey will be under the supervision of the Naval Officer-in-Charge, North Australia Area, Captain A. H. Cooper, R.A.N.

SEA CADET NOTES

Sea Cadets in the New South Wales area featured in some interesting events during October —

Ten young cadets, from Sydney, Wollongong and Newcastle, were undergoing sea training in H.M.A.S. TOBRUK when she was accidentally holed by a shell from ANZAC. Captain and men from the TOBRUK said that the cadets behaved splendidly in what must have been to them a terrifying experience.

Members of the Navy League and over 100 Sea Cadets took part in the annual Trafalgar Day Service at the Garden Island Church on the 23rd October. The service was of historical interest, as it was the first service to be televised direct from the church.

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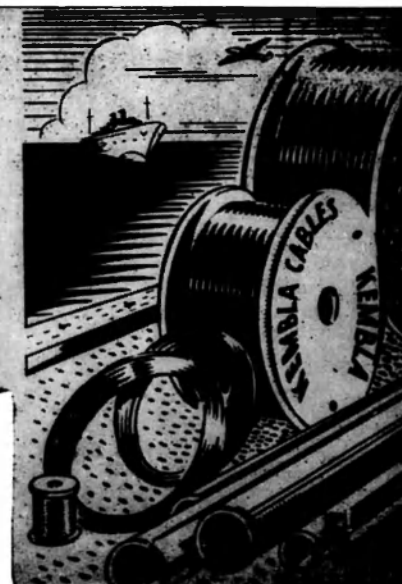
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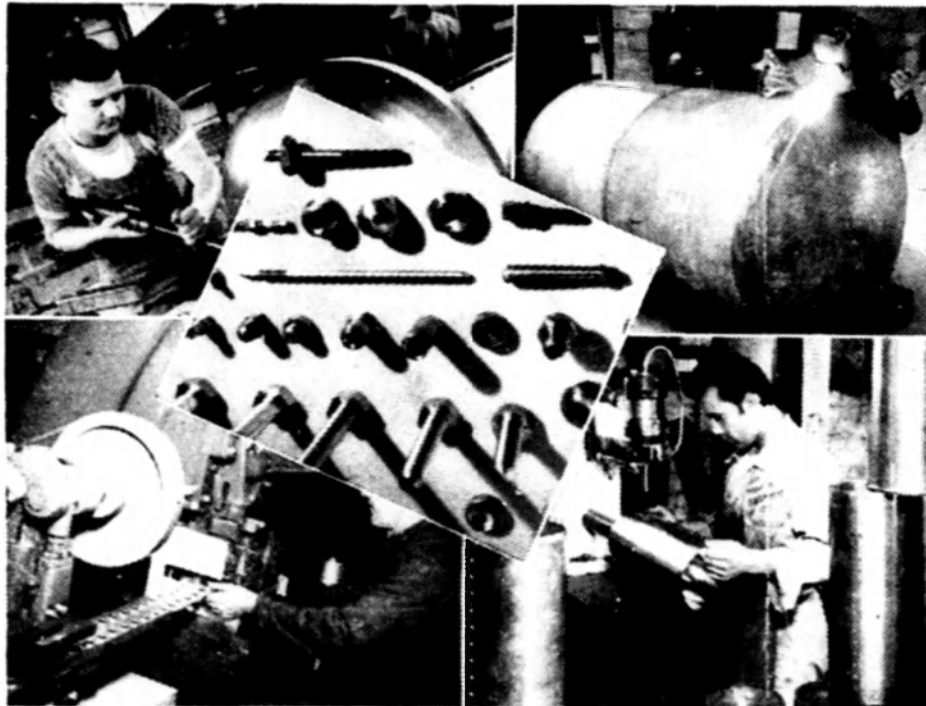
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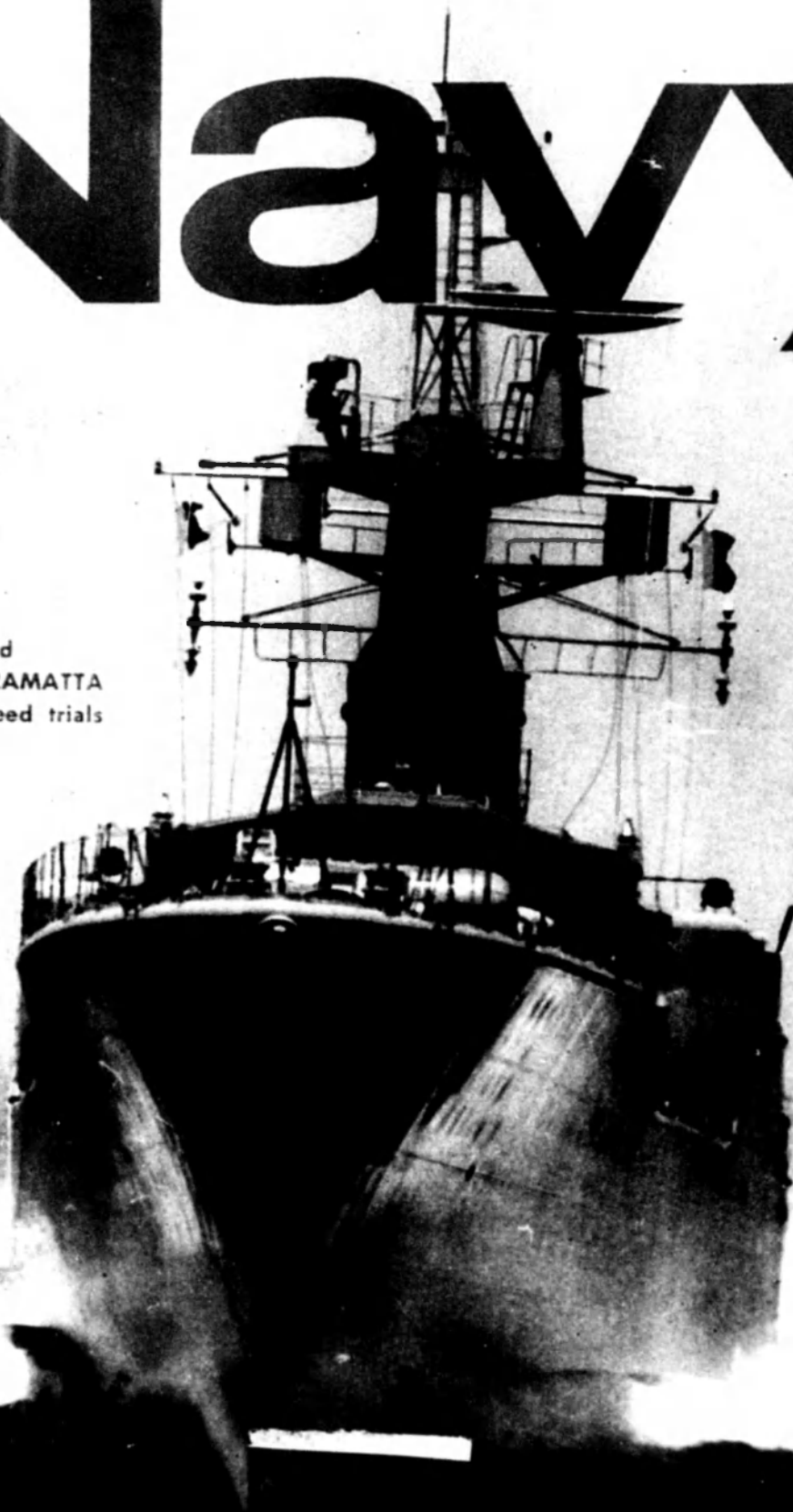
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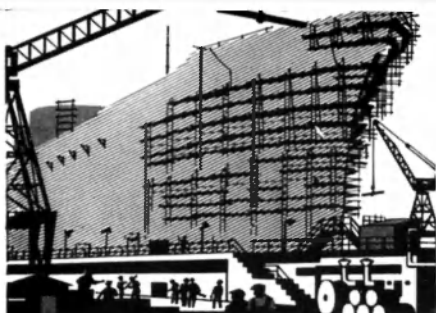
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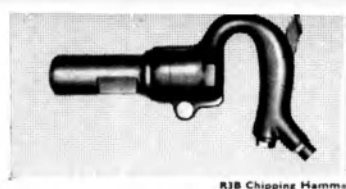
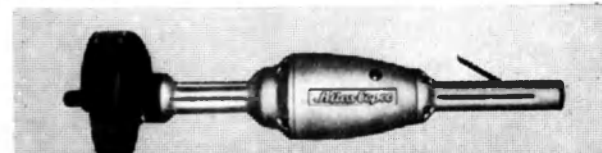


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New Aircraft for Royal Navy

Naval Aircraft Named Buccaneer

Although there was no naval flying display at the Farnborough Air Show this year, that most important naval aircraft, the N.A.39, was on view and was introduced by its new name—Buccaneer.

A great deal of interest was shown in this strike aircraft, from which the Navy expects

a great deal. It is designed for high speed, low altitude flying and for making long range strikes.

It will, say the experts, be able to penetrate deep into enemy territory with little fear of interception either by fighters or missiles.

One of its interesting features is its large bomb bay with a rotating door. It can carry a variety of weapons.

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NEW SHIPS AND A.S. HELICOPTERS FOR R.A.N.

IN the Senate on November 9, Senator Gorton announced that the Cabinet had made the following decisions regarding the Royal Australian Navy.

H.M.A.S. MELBOURNE

Senator Gorton said: "Subject to a firm price being obtained for an anti-submarine helicopter which meets all the Navy's military requirements, H.M.A.S. MELBOURNE will continue in commission after 1963 as an anti-submarine helicopter carrier." The Minister made no mention of the type of aircraft that was under consideration, but it is of interest that the Royal Navy has just taken over the first two Westland Wessex machines to be produced.

When accepting the machines, Lt. Cdr. R. Turpin, who commands 700 H Flight, which will test the helicopters for service purposes, said that it would be "a real breakthrough for the Navy as far as helicopter flying is concerned."

The makers claim that the Westland Wessex is the first helicopter to join the Navy capable of both finding and destroying enemy submarines. The helicopter is fitted with electronic equipment which makes it possible for it to fly at night as well as by day with a high degree of safety.

MINESWEEPERS

"A firm decision has been taken that the R.A.N. should acquire six modern minesweepers, equipped to hunt for and dispose of modern types

of acoustic, pressure and magnetic mines.

"The minesweepers selected are the 'ton' class at present in use with NATO navies.

"Four will be bought 'off the shelf' in the United Kingdom but modified and altered to suit Australian climatic conditions.

"Inquiries will be made to see if the other two can be built in Australian shipyards at a comparable price and with a comparable delivery date.

"These ships are of specialist nature constructed of wood and aluminium, with engines designed of materials specially selected not to activate a sensitive mine, and equipped with the latest devices for locating and disposing of mines.

SURVEY SHIP

Senator Gorton said that "it has also been decided to build, in Australia, a survey ship of approximately 2,000 tons. The ship would be constructed in a civil yard and work would begin as soon as possible."

In addition, he said: "Other items in the naval programme are to be the subject of detailed investigation as to price, the firmness of that price, the method of payment, and availability before a final decision is made.

"Such investigations, though they delay the announcement of a full programme, will not delay the planned date of acquisition of these items should it be eventually firmly decided that they will be acquired."

IMPROVED MINESWARFARE IN ROYAL NAVY

As Described in the British
Navy Magazine

Important advances have been made in techniques for dealing with the threat of mines.

In this, as in many other directions, the Royal Navy has shown the way and one of its smaller ships has been to the United States to demonstrate its capabilities. These have been acknowledged by the U.S. Naval authorities as "a significant contribution to the art and science of mine hunting."

The equipment, which is naturally of a secret category, is installed in the coastal minesweeper SHOULTON, 360 tons, which has just returned to Portland after many months across the Atlantic during which she travelled about 10,000 miles on a demonstration cruise. The cruise also included a visit to Canada and what are described as "side-by-side trials" with equivalent U.S. equipment.

As the ship has none of the usual minesweeping gear, it is assumed that the new equipment performs the functions of both asdic and depth sounding and that such ships would have the duty of locating mines when working with normal sweeping groups.

The composition of her small company is a pointer. It includes five divers who had to work and dive in the warm waters of the Gulf of Mexico and in icy conditions off the coast of Canada, often in hazardous circumstances.

In announcing the SHOULTON'S return the Admiralty stated that the equipment with which she is fitted is to be installed in other British minesweepers.

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SCIENTISTS GO TO SEA WITH THE NAVY

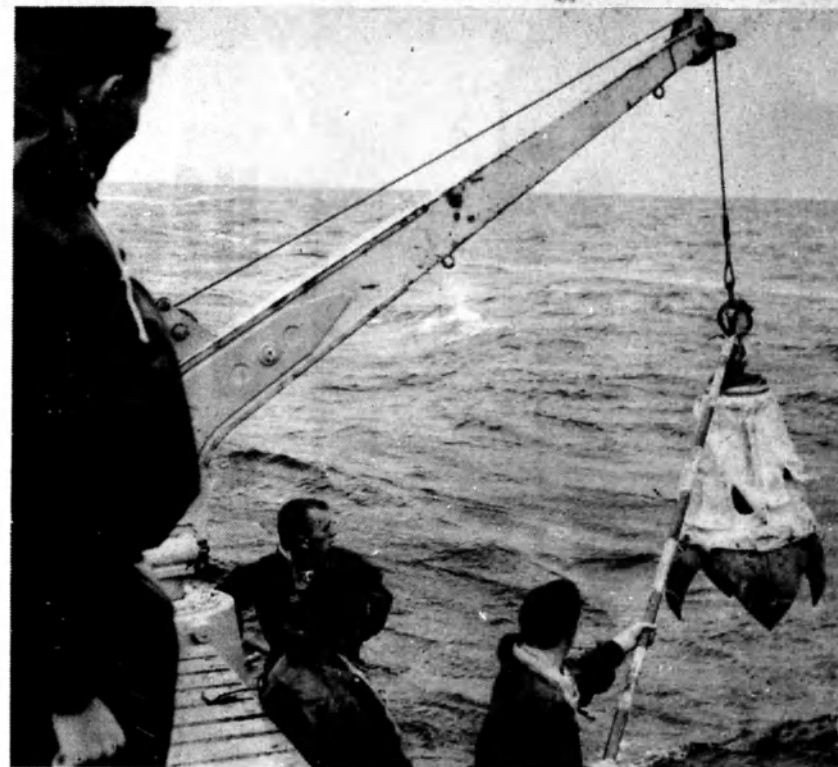


H.M.A.S. GASCOYNE BACK AFTER SCIENTIFIC CRUISE

H.M.A.S. Gascoyne returned to Sydney on the 4th December after a cruise of almost 5,000 miles. During the cruise, C.S.I.R.O. scientists, who were embarked in the ship, carried out a survey of the currents which sweep along the East Coast of Australia. The scientists believe that investigation of the current which begins in the Coral Sea could be of great value to the fishing industry and also to merchant ships which use inshore waters.

Above: A scientist lifts out a special bottle which has just obtained samples of water from 60 fathoms. This is used for scientific investigation.

Top Right: Naval ratings lower an "Orange peel grab" to collect samples of the sea bed which will be examined for marine and animal life.



Right: Scientists make a filtration test for plant productivity and examine a deep water sample from a Nansen bottle. They hope to prove from these tests the best fishing areas off the East Australian coast.



Photographs, by courtesy of "The Daily Telegraph."

life at sea

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SLOTTED between the wharves at Darling Harbour is a red brick emporium where you can get anything from a sword to a pork chop — providing you are a sailor. It is the Royal Edward Victualling Yard, which recently breached its 55th working year as housekeeper to the Fleet.

When I called last week, some of the staff of 200 were unloading cabbages and sacks of onions from a truck and wheeling them on trolleys into a large sorting shed. Here a foreman was piling them into heaps in separate bays.

Each bay was marked with the name of a ship — BARCOO, VOYAGER, PENGUIN — and already contained a jumble of "dry" goods, including jars of chutney and tins of syrup and fruit juice.

At the back of the shed more men were hooking joints of meat and gnarled sides of bacon on to a sliding rail in a specially cooled storeroom.

The Beginning

In 1907, when the yard first opened for the Royal Navy, it was responsible for holding only seven items of food — preserved meat, suet, oatmeal, mustard, vinegar, pepper and raisins. These were to be shipped in event of war to British bases at Hong Kong, Singapore, Ceylon, South Africa and Malta.

Today the provisions list contains more than 200 items, including nine sorts of sauce, six varieties of breakfast cereal

and such delicacies as ice cream mix.

"We handle over £300,000 worth of food a year," Mr. Bretherton, the Superintending Victualling Stores Officer (V.S.O.), told me. "You name it — we have it." "Rum," I suggested. His face set. "The Royal Australian Navy is dry," he said wistfully. "But you can have lemon juice powders if you like."

Although the yard was taken over by the R.A.N. in 1913 it still supplies food to a number of British bases as well as to visiting men-o-war.

When the American aircraft-carrier BENNINGTON called into Sydney her shopping list included several tons of lettuce and tomatoes.

The Royal yacht BRITANNIA also stopped at the yard to stock up before sailing for the Falkland Islands. ("... the turkeys, in particular," wrote her supply officer later, "were some of the best birds I have seen.")

Apart from feeding the R.A.N. the yard dresses it. "When you see a sailor ashore in his 'Tiddley' suit," said the V.S.O., "you couldn't guess how much care and hard work has gone into its production."

He indicated a large workshop where trained tailors were feeding a bolt of blue cloth into the electric processing machine and examining it through the light. "In the old days," he said, "material for uniforms would often be all colours of the rainbow. You

even saw sailors walking out in odd trousers and jerseys."

Today contractors send samples of their cloth from the mills to be mechanically tested for shade variation, durability and flaws before it is made up.

But some people, of course, are never satisfied. The V.S.O. claimed that when one stoker was asked recently if his new uniform fitted him, he replied: "Perfectly, except for the trousers. They pinch a bit under the arms."

Mess equipment, of which the yard holds stocks valued at £4m., includes everything a housewife could dream of, from toasting forks to champagne glasses (officer for the use of).

Museum

There is even a museum where samples of obsolete equipment are preserved for posterity. Here you can find the brave striped trousers and "blue jackets" of the age of sail, and a shelf of those immense silver-plated meat dish covers so dear to Mrs. Beeton.

There are coffee mills, beautifully finished wooden sponge tubs and a dust-choked knife polisher. And there are square, spoutless teapots (used in the last war when replacements were hard to get), and a gallimaufry of cooking pots, starting with the old black iron and progressing through copper, turned steel, enamelware and aluminium to modern stainless steel.

I asked the V.S.O. if he had ever been stumped by a request from the Fleet.

"Only once," he said. "just after I joined the Yard. A storeman rang up from H.M.A.S. Tingira and asked for a cap for one of the crew. 'I don't know what size his head is,' said the storeman, 'but he takes size six boots'."

"Nowadays," said the V.S.O., "I'd know what to tell him."

New Ships for United States under 1961 Programme

The three new high-speed attack submarines BARBEL, BLUEBACK and BONEFISH, of the improved "Tang" class, are officially stated to be the last conventionally powered submarines that the United States Navy will ever build.

Completed last year, they went on extensive trials and joined the operational fleet this year. They have a standard displacement of 1,750 tons with a submerged displacement of 2,637 tons, and are powered by three Fairbanks Morse diesels and electric drive giving a speed of 15 knots on the surface and 25 knots submerged.

In future all new construction submarines will be nuclear-powered. By 1967 it is planned that there will be no fewer than 75 nuclear-powered submarines.

The United States Navy proposes to have 45 Polaris ballistic missile submarines in its underwater fleet. This figure has just been revised upwards from the 40 units envisaged last year.

It is intended that before 1970 the United States Navy will have 150 ships with nuclear-powered machinery plants.

In the same period some 200 will have been armed with surface-to-air guided missiles.

And all combatant ships will be armed with anti-submarine missiles or equipped with anti-submarine aircraft.

Under the 1961 programme the United States is to build an attack aircraft carrier, three guided missile frigates, two guided missile destroyers, nine nuclear-powered submarines, an amphibious dock transport, two destroyer escorts, a fast combat support ship, a combat store ship, an oceanographic research ship, an escort research ship, a deep-diving auxiliary submarine, and other vessels. In addition provision has been made for the procurement of long lead items for seven more Polaris submarines.

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VTOL AND THE FLEET POTENTIAL

By Major Oliver STEWART, M.C., A.F.C.

PEOPLE have been talking about vertical take-off and landing aircraft and about short take-off and landing aircraft (VTOL and STOL) for years. And from time to time there have been sensational experimental flights with research machines coming in one of these categories. There have been the Rolls-Royce "flying bedstead," the French SNECMA flying Atar, the Ryan, Bell and other American aircraft and the British Short S.C.1, the latest and, perhaps, the most highly developed of the series. But to-day we still seem to be as far from the ordinary practical use of VTOL aircraft as we were 10 years ago. Yet the rewards to be had from a successful VTOL machine are prodigious. That is so for the civil, the military and—especially—the naval fields.

Let us recall that it was the Royal Navy that gave helicop-

ters an impetus at the very moment they most needed it. For there was a time when the helicopter was under fire from the critics. It was held to be uneconomical both financially and technically. It was pointed out that the wings, or rotor blades, of a helicopter travel a much greater distance than the body of the machine and that this fact imposed upon it totally unfavourable cruising conditions.

It is perfectly fair criticism. The rotor blades of a helicopter do in fact do a great deal of unnecessary travelling compared with the fixed wings of a conventional aircraft no matter what the journey. And for this reason the helicopter has always been regarded as a form of aeronautical speciality rather than a fully developed VTOL aircraft in its own right. Where the critics were utterly wrong, however, was in thinking that the admittedly

uneconomic conditions of cruising flight in a helicopter could not be recompensed by other advantages. The Royal Navy found that they could be so recompensed.

For a great deal of work from surface vessels, for air-sea rescue, for ship-shore communications, the advantages of the ability to rise vertically, to land without a run and to hover more than compensated for the waste of power that is entailed when the wings rotate. For naval duties the helicopter's hovering powers were shown to be of dominant value. Its inability to attain high forward speeds, its high first cost, its somewhat difficult maintenance problems, its relatively low payload, these were all, well within the price that was worth paying for its VTOL capacity.

Helicopters of various kinds, with the emphasis upon the Westland machines, have established themselves as indispensable for naval work. Their future is assured. But clearly all operators, civil, military and naval, would benefit if there were also to be developed a machine with VTOL capabilities but with a higher top speed and with more aerodynamically economical cruising conditions.

Something should here be said of the Fairey Rotodyne. I hailed this aircraft as one of the most important new developments in design ever to be seen. I hold that same view today despite the fact that the Rotodyne's future is at the moment unpredictable. But the Rotodyne, by its use of an Autogiro freely rotating wing (Continued on page 22)

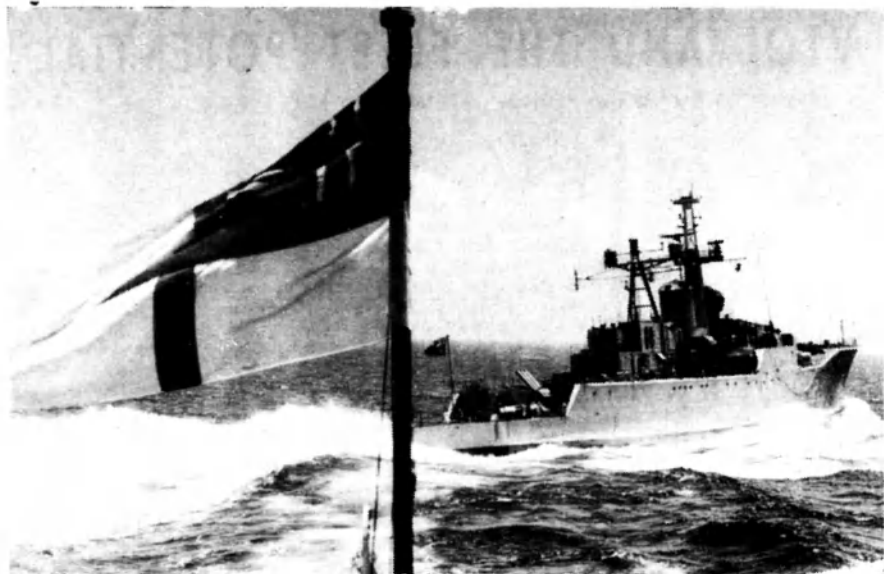
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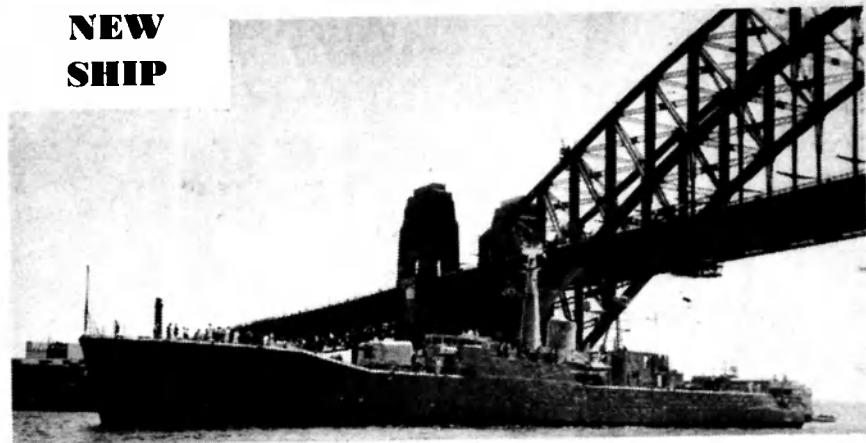


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NEW SHIP



H.M.A.S. PARRAMATTA BEGINS SEA TRIALS

H.M.A.S. PARRAMATTA, the first of the four anti-submarine frigates being built for Australian Navy, began her builder's sea trials off Sydney during December.

Top Left: PARRAMATTA at speed trials.

Top Right: She passes under Sydney Harbour Bridge for the first time.

Right: The streamlined mast, the first in Australian Naval history, caused a lot of comment as the ship went down the harbour.





ALMOST the entire white population of the Cocos Islands turned out on the 9th November to watch the Governor of Western Australia, Sir Charles Gairdner, unveil a plaque commemorating Australia's first naval victory.

The unveiling took place on the forty-sixth anniversary of the naval engagement commemorated by the plaque, which is set on the lawns in front of the cable station on Direction Island.

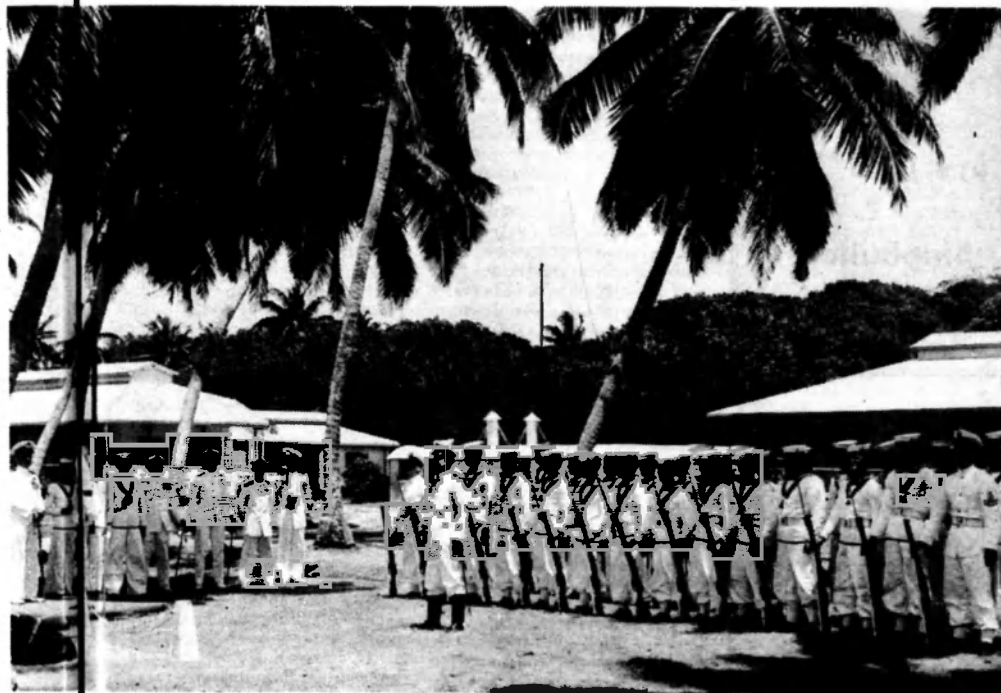
The memorial recalls the battle between the Royal Australian Navy cruiser, H.M.A.S. SYDNEY, and the German raider, EMDEN, in the early stages of the First World War. It was the first engagement for the infant Australian Navy, and won the R.A.N. an immediate place in naval history. H.M.A.S. SYDNEY defeated the raider, and thwarted the German attempt to destroy the cable station, which was a vital link in allied communications.

At the ceremony Sir Charles Gairdner paid special tribute to the boys from the original R.A.N. training ship, H.M.A.S. TINGIRA, sixty of whom had their first taste of action in the SYDNEY-EMDEN engagement. The plaque was erected by the TINGIRA Old Boys' Association in co-operation with the staff of the Cocos Islands Cable Station.

The captain of H.M.A.S. DIAMANTINA, Lieutenant-Commander G. McC. Jude, represented both the Royal Australian Navy and the TINGIRA Old Boys' Association at the ceremony, while his ship's company provided the guard of honour.

Lieutenant-Commander Jude read cables of congratulations from Sir Godfrey Ingh, of Cable and Wireless Limited, London, and from the General Manager of the Overseas Tele-

W.A. GOVERNOR UNVEILS COCOS ISLANDS NAVY MEMORIAL



communications Commission in Australia.

Among those at the ceremony were Mrs. John Clinies Ross, wife of the owner of the estate on the islands, and Mr. and Mrs. Gerald Clinies Ross, all descendants of the sea captain granted possession of the Cocos Islands by Queen Victoria. The official representative on the islands, Mr. Charles Buffet, of the Australian Department of Territories, was also present.





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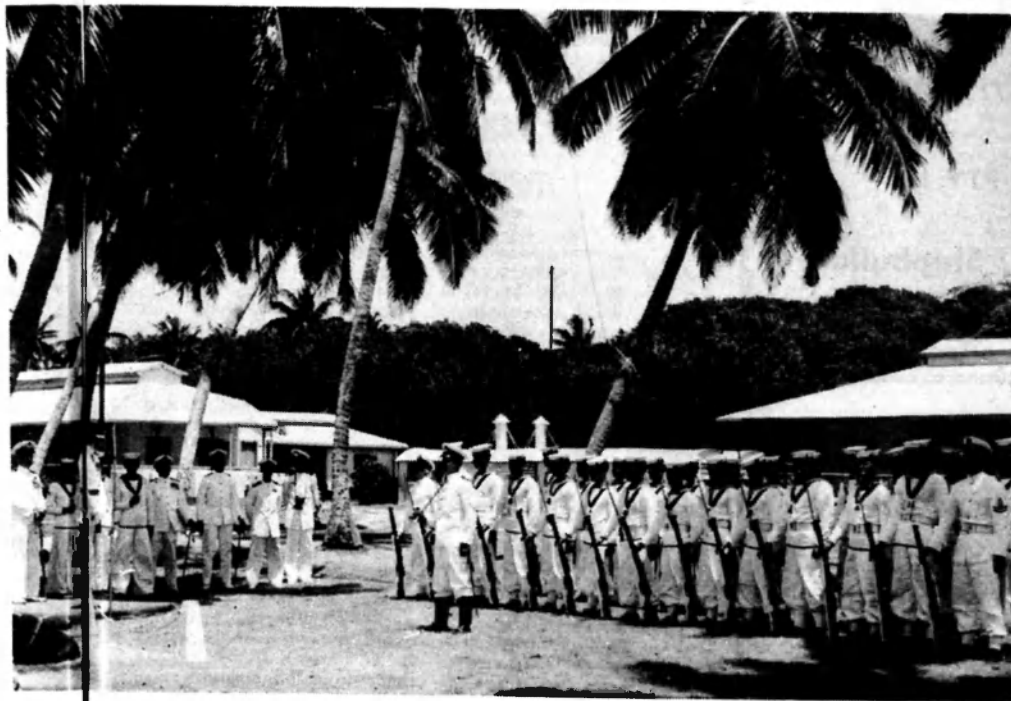
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The captain of H.M.A.S. DIAMANTINA, Lieutenant-Commander G. McC. Jude, represented both the Royal Australian Navy and the TINGIRA Old Boys' Association at the ceremony, while his ship's company provided the guard of honour.

Lieutenant-Commander Jude read cables of congratulations from Sir Godfrey Ingh, of Cable and Wireless Limited, London, and from the General Manager of the Overseas Tele-

W.A. GOVERNOR UNVEILS COCOS ISLANDS NAVY MEMORIAL



communications Commission in Australia.

Among those at the ceremony were Mrs. John Clunies Ross, wife of the owner of the estate on the islands, and Mr. and Mrs. Gerald Clunies Ross, all descendants of the sea captain granted possession of the Cocos Islands by Queen Victoria. The official representative on the islands, Mr. Charles Buffet, of the Australian Department of Territories, was also present.



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ENDEAVOUR ENDS LONG CRUISE

A 4,800 mile cruise among remote islands in the South Pacific ended in October when H.M.N.Z.S. ENDEAVOUR, the Royal New Zealand Navy's only commissioned wooden ship, returned to Auckland.

ENDEAVOUR, whose primary role is that of an Antarctic support ship, left at the beginning of September to take obsolete military explosives for reef blasting, deliver mail and stores, provide medical attention and conduct a wide variety of research. To complete this research programme she carried four scientists from the Department of Scientific and Industrial Research.

ENDEAVOUR'S first call was at the Raoul weather station in the Kermadecs, 335 miles north east of New Zealand. She spent eight hours there, landing supplies while her scientists carried out their investigations.

Next stop was Suva, 700 miles to the north, where she took in fuel and her sailors played Rugby and softball against Fijian and R.N.Z.A.F. teams.

Then ENDEAVOUR went 600 miles eastwards to lonely Niue, to land explosives and to see the new buildings which have been constructed to replace those destroyed in the recent disastrous typhoon.

From Apia the ship made a rough 560 mile passage to lonely Palmerston Island. Polynesian drum bands, precariously balanced in canoes, met the ship at the next call, Aitutaki. Explosives were landed and the visit ended with a native feast and dance.

Next stop was Rarotonga, administrative headquarters of the Cooks, and from there ENDEAVOUR went to the island of Mangaia. She unloaded 100 old naval depth charges, receiving in return, according to her commanding officer, Lieutenant R. F. Vosper "enough bananas to feed a battleship."

From Mangaia, ENDEAVOUR made the long 1,100-mile journey back to Raoul and finally began passage to Auckland.

Research Programme:

During the cruise the ship took oceanographic readings every four hours and she towed a magnetometer to record the earth's gravity field. The geologist, Mr. J. C. Schofield investigated former sea levels. At Rarotonga he found evidence that the levels were once two, three, five, six and ten feet higher than that at present. These changes probably occurred within the last 5,000 years and while the situation is obviously not pressing, the information has definite value in the planning of land reclamation and coastal protection.

In the geophysical sphere, new gravity stations were established by Mr. A. Hanley at Raoul, Niue and Mangaia. The entomologist, Mr. J. Hay, collected scale insects associated with native vegetation in the South Pacific (about which very little is known) and soil samples were taken by Mr. C. G. Vucetich, with particular interest being shown in the volcanic ash of Raoul which provide a link between New Zealand and the tropics.

THE RUSSIAN NAVY

Guided missiles said to be carried in Russian submarines.

RUSSIA's annual Navy Day was celebrated recently, when statements were made in broadcasts by Admiral S. G. Gorshkov, the Commander-in-Chief of the Soviet Navy, and by Admiral Golovko, the deputy C-in-C. The statements were summarised in the "London Daily Telegraph," with comment from the Naval Correspondent, Commander Nowell Hall.

Russia, he wrote, claimed that the Navy was being equipped with the most advanced weapons, including nuclear and rocket weapons which could deal powerful blows against objectives on remote enemy territory as well as against enemy navies. Admiral Gorshkov had implied that the Russian submarine arm was being closely integrated in the new rocket strategy, and this theme had recurred several times. He had referred to rockets developed for the Navy for various purposes with atomic and hydrogen warheads. The Admiral had derided the big surface artillery ships and also the aircraft carrier, now both out of date. Commander Hall quoted him as follows: "Development of rocket weapons, radio, electronics and other modern techniques sharply limit military possibilities of aircraft carriers."

Their missions, he said, could be performed better by other means, though the carriers remained the nucleus of the American and British navies. The submarine arm had assumed great significance, and progressive military thought regarded it as the most suitable

to meet modern conditions. The Soviet navy was being developed on these lines and was capable of the most complex tasks in co-operation with the other branches of the armed forces.

Admiral Golovko, Commander Hall wrote, had announced a big drive to build up the Soviet navy, and spoke of the great importance of the rapid development of the most advanced weapons.

Commander Hall noted that Admiral Golovko was speaking only a few hours after the third successful underwater Polaris firing from the nuclear submarine GEORGE WASHINGTON. He had made no mention of these submarines, and the Polaris firings had not been reported in Russia; but, Commander Hall commented: "The impact of Western thinking on Soviet naval thinking is nevertheless clear."

His comment continued: "Although the Russian admiral did not give details of the weapons carried by Soviet submarines, he implied that certain of the ships are now being fitted with long-range rockets."

"It is noteworthy that he did not specify such missiles as being fireable from submerged submarines. Naval experts in Washington said it had been suspected for some time that Russia has submarines which could fire missiles from the surface."

"But, they declared, they had no reason to believe that Russian submarines could do this while submerged. They frankly doubted if the Russian navy had anything to equal

America's nuclear Polaris submarines.

"Often there have been reports that some ships of Russia's big undersea fleet have been fitted to release rockets from the surface. But such accounts have never been confirmed by Russia."

"Not long ago an American admiral suggested that in the Pacific was a large number of Communist submarines able to do this. Some reports have mentioned that a number of Russia's biggest oceangoing 'Z' class submarines had launching equipment and rocket tanks on deck."

"There are believed to be 50 'Zs,' all of them 'Snort-fitted' and apparently broadly resembling, if a little larger, the Royal Navy's Porpoise class submarines and the Oberons coming along."

"The 'Zs' are reputed to have a submerged speed of 12 to 16 knots, a standard displacement of 1,850 tons and to displace 2,750 tons when submerged, the Porpoises' comparable tonnage figures being about 1,700 and 2,500."

"Some of Russia's 120 medium-size 'W' class patrol-type submarines were also alleged to be equipped for launching guided missiles from the surface."

"However, a senior American admiral told me recently that Western authorities have no proof that Russia was able to fire a missile from a submerged submarine."

"Persistent reports over the years that some Russian submarines have an underwater missile named the Komet, behaving rather like the

Polaris after it breaks surface have never been confirmed, and many experts believe they can be discounted. The range of this rocket has been given as about 500 miles.

"Another missile fireable from the deck of a surfaced submarine is said to be called the Golem. Like the Komet, it is reported to have a short range and its existence is questioned. Undoubtedly Russia is striving to evolve a really long-range submarine missile on Polaris lines."

Commander Hall added that Russia was believed to have three nuclear-powered submarines — but none were yet serving with the fleet. They were thought to have a standard displacement of about 3,000 tons and to be designed for similar duties to the British DREADNOUGHT.

In a general article on the Soviet Navy which appeared in the "Journal of Commerce," Shipbuilding Edition, on 18th August, 1960, Rear-Admiral Horan also referred to the Golem and Komet missiles, but described the Komet as a solid-fuel missile with a range of only 95 miles; and the Golem as being driven by a liquid fuel and having a range of 300 miles. Admiral Horan also thought it unwise to assume that Russia, which had the nuclear-powered icebreaker LENIN in service, had no nuclear submarines yet in service. This might account for reports of unidentified submarines as far away as South America or Australia, though they were unlikely to go undetected in the Mediterranean, where Russia had eight

submarines at her base in Albania.

Arising out of the general world situation it had been indicated in a Presidential Message to Congress early in July that it was intended to build more Polaris submarines, and also to strengthen the American Fleets in the East and in the Mediterranean. On 24th August, 1960, both the "Daily Telegraph" and the "News Chronicle" carried messages on this matter, dated from the U.S.S. INDEPENDENCE, flagship of the Sixth Fleet (the American Mediterranean Fleet). In the "Telegraph" Commander Hall wrote:

"... Another aircraft-carrier, the SARATOGA, 60,000 tons, is now on passage from the Western Atlantic and is due here next week.

"Reinforcement of the fleet is necessary to fulfil commitments under N.A.T.O. and largely because of increased Russian submarine activity.

"Vice-Admiral George Anderson, who commands the Sixth Fleet of about 50 ships, 25,000 men and 200 aircraft ... said two more Russian submarines were in the Mediterranean. These were on training operations in the Ionian Sea and 'we are keeping a friendly eye on them.'

Mr. Angus Macpherson reported in the "News Chronicle" in much the same terms; but suggested that Russia might now have 12 submarines in all in the Mediterranean. He also mentioned the nine submarines supplied to Egypt, still partly manned by Russian officers and technicians, and added: "The Russian submarine menace in the Mediterranean may also lead to further reinforcement of the Sixth Fleet with a carrier specially designed for detecting and attacking submarines."

Navy steps up Shipping Protection Training

Reserve Officers Training to be increased

THE Royal Australian Navy proposes to intensify the training of its reserve officers who, in the event of war, would be responsible for the control of merchant shipping.

The Minister for the Navy, Senator Gorton, announced recently that special training centres for shipping control officers were being set up in each State. Instead of merely taking part in annual training, the reserve officers would meet at least once a month. They would study techniques of ensuring safety for sea communications that bring 220 ships

into Australian waters every day.

He said the State training centres would be run by the reserve officers who last month attended a Navy Office Conference in Canberra to study and apply the latest techniques of shipping protection.

In each State a specially equipped room with the necessary charts and instruments had been set aside for the reserve officers. They would be set regular tasks by Navy Office in Canberra, much of the practical work being based on actual shipping movements. The reserve officers would also

visit ports to establish personal liaison with merchant shipping authorities.

SEA COMMUNICATIONS VITAL

Senator Gorton said that for a country that was so dependent on sea communications it was appropriate that emphasis should be placed on shipping protection. Exercises in this field of naval activity were also receiving attention from Australia's allies, and it was important that the Royal Australian Navy should set a high standard.

The continuous, year-round training meant that more value could be gained from the annual training courses.

He added that shipping protection officers, after assessing the potential dangers, were responsible for advising merchant ships on all matters affecting their safety.

(Continued on page 20)

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German diver Gustav Cziesche enjoys a meal during his 39 hours' "immersion" in the Navy's recompression chamber at H.M.A.S. Rusheutter. Able Seaman Glennie, who volunteered to enter the chamber with Cziesche to watch his reactions as he recovered, is talking on the telephone to Lieutenant Titecombe (right) while Petty Officer Gilchrist checks the pressure gauges of the chamber.

THE NAVY



"The Royal Australian Navy saved my life I owe it a debt I cannot pay".

There were tears in the eyes of the 27-year-old German migrant as he uttered those words of gratitude in the dawn hours of November 25 to officers of the Royal Australian Navy's Diving Section at H.M.A.S. RUSHEUTTER.

NEW SUBMARINES FOR R.N.

The submarine building programme is also increasing its tempo. The third of the new "Oberon" class, H.M.S. ONSLAUGHT, is now afloat, having been launched at Chatham towards the end of September.

This, of course, is one of the submarines similar to the "Porpoise" boats but incorporating several improvements which have become possible through experience gained in operating the earlier "Porpoises."

The ONSLAUGHT is 295 ft. 3 in. long with a beam of 26 ft. 6 in. and she will be propelled by diesel-electric machinery. Most of her superstructure will be of glass fibre-laminate.

The boat, says the Admiralty, will be capable of high underwater speed and will be able to maintain continuous submerged patrols in any part of the world. Her weapons will include homing torpedoes.

HELICOPTERS FOR INDONESIAN NAVY

The Indonesian Navy is to add helicopters to its equipment.

The machines in question are believed to be Japanese-built Mitsubishi S-55s. At present Indonesia is forming a Fairey Gannet anti-submarine squadron, the pilots for which were trained at N. 8 F.T.S., Swindon.

A Fairey Aviation mission is at present in Indonesia training both aircrew and technicians and will remain there until mid-1961.

The Indonesian Air-Force has two squadrons for maritime reconnaissance, one of which is equipped with Convair PBY-5A Catalinas, the other with Grumman SA-16 Albatross aircraft.

December, 1960

(Continued from page 17)

RESERVE OFFICERS IN CHARGE

The reserve officers in charge of the shipping protection training in the various States will be:

Commander B. L. Dechaineux (Tasmania), Commander E. B. Hopkins (South Australia), Commander O. M. May (Queensland), Lieutenant-Commander R. G. Harris (Western Australia), Lieutenant-Commander A. G. Bayly (New South Wales), and Lieutenant-Commander B. H. Dick (Victoria).

They will work under the direction of the Naval Staff Officer (Trade) at Navy Office, Lieutenant-Commander W. M. Swan.

BIG SALVAGE AWARD

An Australian Naval Officer Lt.Cdr. Wheatley, will Share in Award of £100,000

As a result of the largest salvage award ever made to the Navy, nearly 3,700 officers and men of H.M. ships and Royal Fleet Auxiliaries are sharing a sum of about £100,000.

They do so in recognition of their work in salvaging the tankers MELIKA and FERNAND GILBERT which caught fire and were abandoned after a collision in the Arabian Sea two years ago.

Men who were serving in ten ships share the award: the aircraft carrier BULWARK, the cruisers SHEFFIELD and

CEYLON, the frigates PUMA, LOCH ALVIE, ST. BRIDE'S BAY, LOCH KILLISPORT, the naval tug WARDEN and R.F.A.'s CEDARDALE and SEA SALVOR.

Salvage money is allocated by shares based on rank or rating, and therefore relative responsibility. It applies to all serving in the ships at the time. The largest single award of £699 goes to the commanding officer of the BULWARK at that time, Captain P. D. Gick, R.N., who was in charge of the initial salvage operation.



H. M. S. TABARD ARRIVES IN SYDNEY

H. M. S. TABARD arrived in Sydney during November. She will be the first of the British submarines to be refitted at Cockatoo Island Dockyard.

Photograph shows her Commanding Officer leaving the submarine.

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(Continued from page 9)
system, did overcome some of the ordinary helicopter's handicaps and it has shown a higher forward speed. It should be more economical in cruising flight. Yet it retains the ability to take off vertically, to land vertically, and to hover. (It should be added that its hovering ability is restricted compared with that of a conventional helicopter).

Yet the Rotodyne cannot be the whole answer to the application of VTOL to naval purposes. Something more is still wanted. And it may be that the Short SC.1 has that something though obviously in very crude and elementary form. It may be recalled that the SC.1 was at Farnborough last year and that it did a vertical take-off, but was immediately forced to land again because the jet lift engines had drawn in great masses of freshly mown

grass and this had choked the intakes. This year much more is known about this method of jet lift and, most important of all, transitions have been made between the condition of direct jet lift, such as is used at take-off and again at landing, and the condition of normal cruising flight when the aircraft is, to all intents and purposes, a conventional aircraft. It is then drawn forward by its power plant and supported by its wings just as the conventional aeroplane has been since the days of the Wright Brothers.

But lest we become too enthusiastic about the SC.1's way of flight, let it be noted that it carries a battery of small, lightweight, jet engines solely for vertical flight and hovering flight. These jet engines are susceptible to angular adjustment for assisting in the transitions between forward and vertical flight, but they do not

provide forward propulsion. This is the duty of a separate power unit. Clearly the critic could point to this battery of lift engines and say that the VTOL principles of the SC.1 are as uneconomic as those of the ordinary helicopter. The helicopter makes its wings travel much farther than they need in cruising flight; the SC.1 carries a load of engines which it does not need in cruising flight. It would be a difficult matter to decide which was basically the more uneconomic!

But it is clear that in the SC.1 there are possibilities of development of the highest importance. It may be that their realization is approached in the new Hawker P1127. There had been hopes at one time that this might be seen in flight at Farnborough this year but the date of the first public presentation does not greatly affect the issue. This aircraft

WRECKAGE FROM CRASHED DAKOTA



Ratings from H.M.A.S. QUIBERON with wreckage recovered from a Dakota which crashed into the sea off Sydney Heads. She was exercising in the area with H.M.A.S. VOYAGER at the time of the crash.

uses the Bristol Siddeley BS53 ducted fan engine which is expressly designed for VTOL aircraft and which is so arranged that its direction of thrust can be altered at will. The P1127 will therefore be able to use the same power unit for vertical take-off and vertical landing and for cruising flight. In other words it will not be carrying unnecessary weight nor will it be making its wings travel an unnecessary distance.

Note now the vast scope of such a machine for work with a fleet at sea. The cruising speed can be high—the performance of the P1127 is said to equal that of the Hunter—yet the ability to take off from

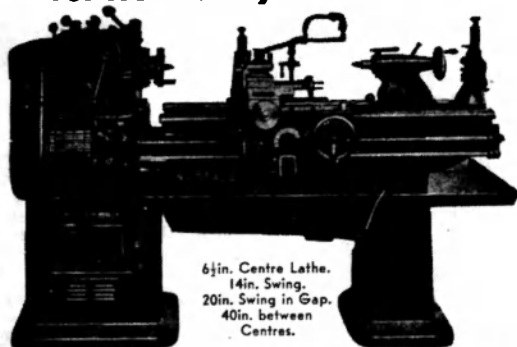
a space scarcely larger in dimensions than the overall dimensions of the aircraft is realized. The hope of centuries—for cruising performance coupled with landing and taking off performance—is on the way to achievement.

During the past 12 months we have seen the official views on national defence undergo some considerable changes. These changes have been in accordance with the criticisms of independent observers. For instance it has at last been officially appreciated that mobility in defence systems is as important as ever it was and that static rocket sites are a waste of time and money. The static site has accordingly

given way to the mobile site—that is to the ship-based Polaris and the aircraft-based Sky Bolt. But that same basic principle applies to all the instruments of defence. Every aircraft is enhanced in military value as its base becomes more mobile.

And the crux of VTOL developments is that they will eventually produce aircraft in nearly every category which will be freed from the ties of the fixed runway and the static aerodrome. There is no branch of aeronautical endeavour at the present time which is of greater significance to all who are interested in naval matters than this work on VTOL machines.

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R.A.N.'S FOURTH SURVEY SHIP

H.M.A.S. BASS was commissioned at Garden Island on the 14th November, 1960.

Built by Walkers Ltd., Maryborough, Qld., she is a general purpose vessel 90 feet long and has a displacement of 232 tons.

She has been equipped for survey duties and will begin her career by surveying in Victorian waters early in January.

After completing this survey she will proceed to South Australian and then to Queensland waters.

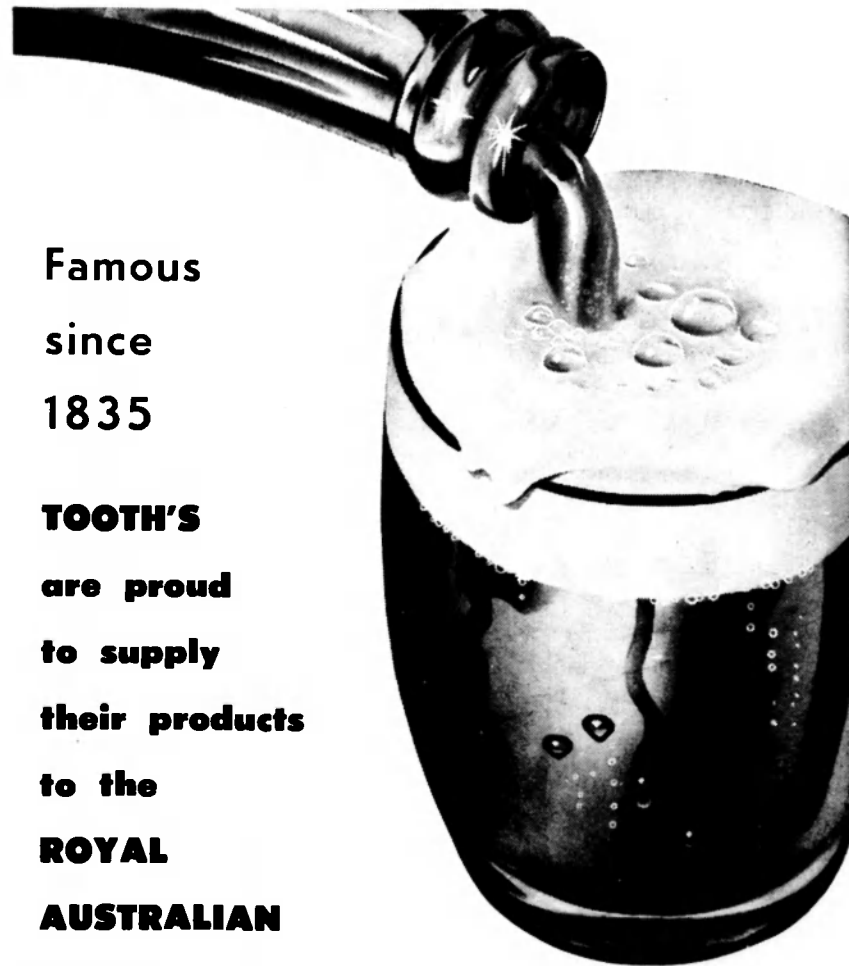
She carries a complement of 2 Officers and 14 men.

A sister ship, H.M.A.S., BANKS, is at present engaged on surveying work in North Australian waters and is also used as a Fisheries Surveillance work.

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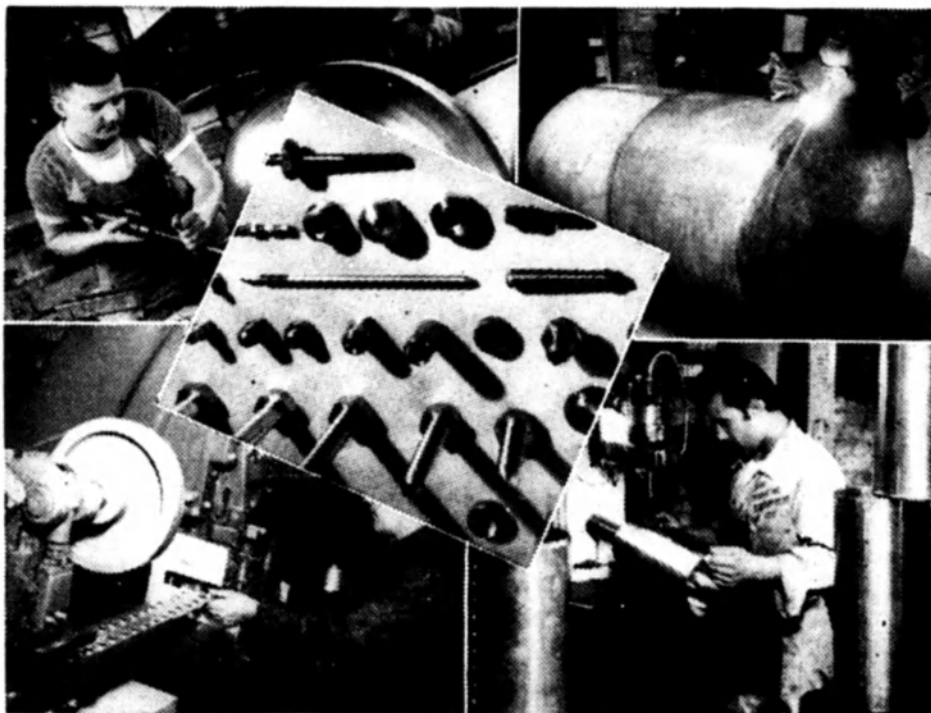


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