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ROYAL AUSTRALIAN NAVY

MONTHLY NAVAL WARFARE REVIEW

NOVEMBER, 1944

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ROYAL AUSTRALIAN NAVY

MONTHLY NAVAL WARFARE REVIEW

NOVEMBER, 1944

TRAINING AND STAFF
REQUIREMENTS DIVISION,
NAVY OFFICE,
MELBOURNE.

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REQUIREMENTS DIVISION,
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UNITED STATES DEPARTMENT OF THE ARMY

The following is a list of the names of the officers of the United States Army who were killed in action during the Vietnam War. The names are listed in alphabetical order by last name.

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It is intended to be a reference for the families of the officers and for the general public. It is intended to be a reference for the families of the officers and for the general public.

Contributions and suggestions for additions to the list should be sent to the Department of the Army, Washington, D.C. 20315.

UNITED STATES DEPARTMENT OF THE ARMY
 OFFICE OF THE SECRETARY
 WASHINGTON, D. C. 20315

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SECTION I.CURRENT EVENTS IN SOUTH WEST PACIFIC1. INVASION OF THE PHILIPPINES.

The landing on Leyte on 20th October employed most of the assault craft available in the Pacific area. Leyte was chosen because an Allied occupation of that island would effectively split the Japanese forces in the Philippines and also because of the potential air strips in Leyte Valley.

The Japanese forces on the island were estimated to be about 24,000 but a force of approximately 70,000 U.S. troops were to be landed in order to minimize the possibility of failure. This force was landed on D-Day in the amazingly short time of two hours. As much encouragement as possible had previously been given to guerrillas who had been equipped by parachute and who were believed to number about 4,000.

After a rehearsal at Hollandia on October 12th, the force sailed from that port the next day and arrived of Leyte Gulf early on the 20th. One of the most important operations connected with the landing was the buoying of dangerous shoals in Leyte Gulf before the arrival of the assault force. The Australian Survey Group commenced this work on the 17th - three days before the landing - and were completely successful in their mission.

H.M.A. Ships "AUSTRALIA", "SHROPSHIRE", "ARUNTA" and "WARRAMUNGA" formed part of the escort force for the assault ships. During the approach and a few hours before zero hour, "SHROPSHIRE" picked up a mine in her paravanes and had to leave it there for some time to avoid giving warning of the approach of the force. During the previous two days minesweepers had accounted for 189 mines in the approaches to Leyte Gulf but it was considered that several mines remained unswept and an incident such as "SHROPSHIRE'S" was not unexpected.

"AUSTRALIA" and "SHROPSHIRE" were detached from the assault force just before the anchoring position was reached. They joined up with the inshore bombardment force consisting mainly of battleships and heavy cruisers.

It is much regretted that H.M.A.S. "AUSTRALIA" suffered heavy casualties early on 21st October when a Japanese plane crashed into the port side of her foremast. The pilot of this plane

may have been one of the "Kamikaze" (Divine Wind) special attack corps now being extensively publicised in the Japanese news broadcasts. The bridge and director personnel were severely burned by flaming petrol and a number of officers and ratings were killed instantly or later died of wounds.

H.M.A. Ships "SHROPSHIRE" and "ARUNTA" later took part in the early morning action in Surigao Strait near Leyte Gulf on 25th October. "ARUNTA" delivered a torpedo attack from 7,000 yards and engaged with gunfire while "SHROPSHIRE" fired 32 eight-inch broadsides at the main force from ranges between 14,000 yards and 16,000 yards. Neither ship suffered damage or casualties.

2. BOMBARDMENT OF MOROTAI BY TASK GROUP 75.2.

Task Group 75.2 consisting of "AUSTRALIA" (Flagship), "SHROPSHIRE", "ARUNTA", "WARRAMUNGA" and the U.S. destroyers "MULLANY" and "AMMEN" left Humboldt at 2245I on 11th September for the operations off Morotai as part of Task Force 75.

The Task Group rendezvoused with Commander Attack Force and Echelon M1 on the 13th. Escort carriers provided anti-submarine patrols for the force. At 0500 on the 15th, Task Group 75.2 was detached from the main force to take up bombardment positions.

After "WARRAMUNGA" had engaged and set on fire two barges close inshore, "MULLANY" and "AMMEN" commenced bombardments from positions about 3,000 yards south of Mitita Island and Point Gila respectively. No sign of enemy activity in the target areas could be observed.

At 0650 the two cruisers commenced bombardments in indirect fire from positions about 1 mile east of Point Gila. Spotting was provided by planes from "NASHVILLE" and "PHOENIX". As the first spotting correction received by "AUSTRALIA" was "Up 50 yards" there appears to have been no difficulty in finding the target area. The two Australian destroyers carried out an A/S patrol to the eastward of the cruisers during the bombardment. It is of interest to note that the cruisers fire had to be interrupted on two occasions because 8-inch shell fragments were endangering "FLETCHER" which was about 1000 yards from the beach. All shells were falling inland in the target area but, when the range was increased by 400 yards, "FLETCHER" still reported that she was being near-missed by fragments.

No enemy air interference was encountered and no incidents occurred and, after patrols in support of the landings later in the day and further patrols during the daylight hours of the 16th, Task Group 75.2 set course for Woendi, arriving early on the 18th.

3. U-BOAT OPERATIONS IN SOUTH WEST PACIFIC - SEPTEMBER, OCTOBER, 1944.

Although there were several sightings and possible sightings of Japanese submarines from the Halmaheras to the Solomons, no attacks on shipping were made during September. Two attacks on submarines were made by aircraft near the Halmaheras on 21st and 30th September but no results were observed.

On 10th September a D/F fix was obtained of a possible German U-boat in the Java Sea.

H.M.A.S. "TAMWORTH" attacked a possible submarine target north of Rottneest island on 29th September and a possible periscope was sighted in the vicinity two days later.

The first successful torpedo attack by a Japanese submarine in the South West Pacific for over a year was made off Morotai Island on 3rd October when a U.S. Destroyer Escort was sunk. Once again no merchant shipping was attacked during the month.

4. H.M.A.S. "WARREGO" BRINGS DOWN A "HAMP" AT MOROTAI.

On 18th September H.M.A.S. "WARREGO" was at anchor near Soemoe Soemoe Island (off Morotai Island) and had closed up to dawn action stations at 0530I. There had been Japanese air activity during the previous day and "WARREGO" had opened fire on a "TOJO" which closed to 3,400 yards before being forced to take avoiding action.

Just after 0600 an aircraft appeared in the direction of Bandera Hill, showing a single bright white light. As an aircraft had been picked up by radar a few minutes before showing I.F.F. and a Catalina had passed over before this burning navigation lights, this aircraft was at first assumed to be friendly. When the aircraft was on the ahead bearing it banked and dived. It was then realized that the aircraft was enemy, and the bright light developed into a fire with smoke trailing from the aircraft. The aircraft continued in a

banking dive down the starboard side and released a 100 kg. bomb which exploded on contact with the water about 300 yards off U.S.S. "OYSTER BAY", an American P.T. Depot Ship. The plane finally crashed and exploded about 50 yards from Y.M.S. 316.

In the next few minutes three aircraft were picked up by radar on the starboard side. Two of these had closed to 9,000 yards when a "HAMP" appeared at Red 75 at a height of about 1,000 feet apparently making a bombing run on the ship. Fire was opened in director barrage firing and the first broadside burst immediately ahead of the aircraft forcing it to bank and to jettison a 100 kg. bomb. The aircraft passed down the port side at an estimated speed of 340 knots. As this speed exceeded the limits of the fuze keeping clock, aim off was allowed in the director and the bursts, which were at first astern of the aircraft as the range opened, were then close ahead of the target.

The port Oerlikons opened fire at the same time as the main armament and, when the aircraft was bearing approximately Red 140, bursts from the after port Oerlikon were seen to enter the target.

The "HAMP" was seen to crash approximately one mile west of Dodola Island. This was confirmed later by an American Army Officer serving on Dodola Island and also by a tidal observation party from "WARREGO" camped on Kokoja Island.

5. OFFENSIVE PATROLS BY M.Ls. IN DUTCH NEW GUINEA AREA.

The following extracts from the Reports of Proceedings for August from M.L's 426, 816 and 818 show that these ships have been doing their share in the elimination of Japanese left behind in islands by-passed by the recent American advances.

M.L.426

8th August at Wafordori Bay:- "At 0720 information was received from natives who paddled out to the ships of the whereabouts of 33 Japanese. A church building south of Wafordori Bay was indicated and at 0940 the two ships (M.L's 426 and 428) moved into the shore and strafed the building with all guns and, as was later learned from the Dutch Intelligence, accounted for 20 Japanese."

22nd August at Korim Bay:- "At 0953 a party went ashore and at 1114 returned with a Japanese prisoner who had surrendered to them. The Japanese was found foraging for food on the

site of the U.S. Army camp which had been evacuated the same day."

23rd August at Korim Bay:- "At 1650 a party consisting of the 1st Lieutenant and two ratings went ashore and returned to the ship at 1730 with two more Japanese prisoners."

26th August at Korim Bay:- "At 1053 on information received from natives as to the whereabouts of 15 Japanese, a landing party of one officer and six ratings were sent ashore with instructions to destroy as many as possible. At 1532 the party returned and reported that, in company with 30 armed natives, they had been taken some three miles inland and surprised three Japanese in a stockade. These were the only Japanese discovered and were despatched."

M.L. 816

15th August at Korim Bay:- "In company with M.L. 428 we escorted two American barges to a landing at a point 10 miles south east of Korim Bay. For $\frac{1}{2}$ hour prior to the landing both M.L.'s bombarded possible enemy positions ashore. It was later learned that two Japanese were killed in this bombardment and one surrendered."

22nd August at Warsa:- "We received information from native scouts to the effect that 100 Japs were in certain huts along the shore at Warsa. We shot up for fifty minutes the various huts pointed out by the native scouts. On entering Warsa Bay three Japs were sighted in swimming. During the initial burst of fire from small arms one Jap. was killed while running up the beach."

24th August at Korim Bay:- "We landed a party of one officer and 10 ratings (including 3 from M.L. 818) at Korim Bay - the American army had evacuated this area two days previously. Under the guidance of native scouts this party proceeded to a certain hut where 10 Japs. were reported to have been sleeping the previous night. Evidence of recent enemy occupation (possibly only a few hours previously) and seven dead Japanese in surrounding huts were the only things seen".

M.L. 818

24th August at Korim Bay:- "Acting on the advice of a native scout a landing party went ashore at Korim Bay and proceeded up river. A party of four Japanese soldiers was found in a native hut. They attempted to escape on seeing the landing party. All four were accounted for. They were armed with grenades but had apparently discarded their rifles. Their condition was poor and they had obviously suffered considerable privations".

6. AUSTRALIAN PRISONERS OF WAR RESCUED BY AMERICAN SUBMARINES.

On 15th September, the Japanese transport "RAYUTO MARU" was torpedoed and sunk by an American submarine whilst en route from Singapore to Japan. After the ship had sunk it was discovered that the survivors in the water included several Australian and British Prisoners of War who were being transferred to camps in Japan.

The U.S. Submarines "SEA LION", "BARB", "QUEEN FISH" and "PAMPANITO" were able to embark 92 Australian and 60 British personnel and to land them at Saipan after a rather cramped but nevertheless greatly appreciated journey. Three of the Australians were survivors from H.M.A.S. "PERTH" and they no doubt appreciated the return to Naval routine but, to most of the Army personnel, it was a sudden and unexpected introduction to the underwater mode of living.

After a short stay in Saipan, 86 of the Australian ex-prisoners left in S.S. "ALCOA POLARIS" for Guadalcanal and finally arrived in Brisbane in the U.S. Minesweeper "MONADNOCK" on 18th October. The remaining six are being flown home after a stay in hospital at Saipan.

7. LOSS OF H. M. A. S. GEELONG.

At 2007K/18th October H.M.A.S. "GEELONG" came into collision with the U.S. Tanker "YORK" (10,488 tons gross) in a position 32 miles north of Langemak. "GEELONG" sank at 2115K/18 after all her crew had been safely transferred to the tanker. H.M.A.S. "ARARAT" later embarked "GEELONG'S" survivors from "YORK" and landed them at Madang.

H.M.A.S. "GEELONG" was built at Williamstown and commissioned on 16th January 1942. For the first two years of her career she was occupied mainly with convoy escort work along the Eastern Coast of Australia. After her second refit early in 1944, "GEELONG" proceeded to the New Guinea Area and was engaged in escort duties up to the time of her sinking.

SECTION IIOPERATIONAL1. SURVEYING ACTIVITIES NORTH OF AUSTRALIA.

With the re-occupation of the area north west of New Guinea now proceeding apace, it has been necessary recently to transfer several A.M.S. vessels from escort duty to survey work in forward areas. On 25th August, 1944 the R.A.N. Survey Force (Task Group 70.5) was divided into the following groups for special surveys:-

- Surveys in New Guinea Area. - H.M.A. Ships "WARREGO", "SHEPPARTON", H.D.M.L. 1074, "SEALARK" and "SANDFLY" and U.S. Ships "MESQUITE", Y.M.S. 316 and Y.M.S. 393.
- Surveys in Torres Strait - H.M.S. "CHALLENGER", H.M.A. Ships "POLARIS", H.D.M.L. 1325, "WINTER" and "DART" and U.S.S. "BUTTONWOOD".
- Surveys in Darwin Area - H.M.A. Ships "MORESBY", "BENALLA", "HORSHAM", "CASTLEMAINE", "ECHUCA", "JUNEE", "SLEUTH", "STELLA" and "CAPE LEEUWIN".

Several of these ships had previously been engaged in surveying operations right on the heels of the Japanese as they were driven from the neighborhood of the Admiralty Islands, Humboldt Bay, Aitape, Hollandia and Biak.

H.M.A.S. "WARREGO" and H.D.M.L. 1074 commenced surveying operations in the vicinity of Morotai Island on 16th September, the day after the Allied landing at that point. As mentioned in another section there was some Japanese air activity in this area and "WARREGO" had the satisfaction of bringing down a HAMP soon after another enemy aircraft had crashed nearby.

On 1st October, H.M.A.S. "GASCOYNE" was allocated to C.T.G. 70.5 for survey duties in place of "WARREGO" which was due to refit. H.M.A. Ships "GASCOYNE", "BENALLA", "CAPE LEEUWIN" and H.D.M.L. 1074 were later assigned to C.T.U. 70.5.2 for surveying operations north of New Guinea and "GASCOYNE" and H.D.M.L. 1074 have already been mentioned for good work off Leyte during the three days before the American invasion of that island.

2. ESCORT POLICY IN THE NEW GUINEA AREA.

Commander South West Pacific Sea Frontier's area of responsibility for the routing and the protection of shipping in the New Guinea area has been increased considerably in the past few months. The Eastern limit remains at longitude 159° East but the following expansion has been made to the North and West.

<u>Westward</u>	From 12th July	- to Aitape and Hollandia
	From 19th July	- to Wakde Island
	From 26th July	- to Biak Island
	From 2nd August	- to Noemfoor Island
	From 6th September	- to Sansapor Island
	From 3rd October	- to Morotai Island
<u>Northward</u>	From 1st September	- to Admiralty Islands

The convoy system is no longer in force east of Hollandia and south of the Admiralty Islands. Special escort, however, is given to troopships, tankers and special ships proceeding through waters where convoys have been discontinued. Local A/S patrols are conducted by small craft off all ports in the North-Western New Guinea Area.

On 17th October convoys were commenced between Biak and Morotai. The present intention is to sail these convoys every four days.

3. EXERCISES WITH SUBMARINES.

Between 1st and 7th August, 1944, H.M.A.S. "GASCOYNE" was in company with U.S. Submarines "FLYING FISH" and "FLOUNDER" on passage from Brisbane to Milne Bay. "GASCOYNE'S" Report of Proceedings for August contains details of Asdic and radar exercises which were carried out en route.

"These exercises were designed for the benefit of both "GASCOYNE" and the submarine and they were of great value, including almost all types. Weather conditions were fairly constant with a south-east wind blowing about force 4 giving a moderate sea, and moonlight nights with considerable low lying clouds. This gave good asdic conditions but reduced the range to windward. If the submarines came within range they were usually picked up at about 1,200 yards and could be held by hand transmissions occasionally to 5,000 yards. Radar contact on Type 271 of a submarine on the surface

could be held out to about 18,000 yards. Picking up range was usually in the vicinity of 11,000 yards.

"In the night attacks particularly valuable experience was gained. It was found that a submarine could be detected with certainty from an all round radar sweep at 10,000 yards and no difficulty was experienced in holding the target when the submarine submerged to attack with the radar aerial only above water. Asdic could be directed on to the target from the radar bearings before the submarines were sighted."

H.M.A.S. "BURDEKIN" reports that, while she was on passage from Brisbane to Langemak with U.S. Submarine "CERO" from September 9th to 14th, exercises were carried out with the following results:

<u>Radar Type 271.</u>	Maximum range on surfaced submarine - 22,000 yards
	Maximum range on periscope - 4,500 yards
<u>Asdic Type 144XA</u>	Maximum range on submerged submarine - 4,400 yards

4. TRIGGERING OF ALLIED IFF BY JAPANESE RADARS.

The Japanese have at least two types of Radar in both of which the upper frequency limit overlaps the lower limit of the IFF Mark III band. One of these sets is airborne and is used for ASV purposes, and possibly for AI, the other, which is similar electrically, is a land based air warning set. Radars having a frequency lying between 157-188 mc will trigger the transponder, but there have also been cases in which the IFF has been triggered by Japanese radars at frequencies outside the 155-188 mc IFF band. In both instances, triggering will cause an increase of detection range, and eventually will enable the enemy positively to identify as Allied, all aircraft showing such signals. Recent possible examples of this effect are as follows:-

(a) A letter from Section 22 Field Unit 2 contains this passage. "IFF's are left on until within ten minutes of the target. On a flight to DAVAO, 18th September, 1944, IFF's were constantly being triggered by what were thought to be enemy signals. This provides a better warning than enemy radar."

(b) Field Unit 9 reports another case:- "Search mission, made 11th September, gave definite information on Japanese radar triggering of ABK transponder. At 0940 I, the RCM operator picked up a signal 147 mc 500 cps. 7 microseconds pulse width; from a radar

which was believed to be at MOROTAI. Performance of the RCM equipment indicates that this radar was triggering the plane's IFF. The operator is very familiar with the loud audio signal and the saturated scope indication characteristic of the plane's IFF transmission. No U.S. signals were heard at the time the IFF was being triggered. The logical conclusion is that the Japanese radar did the triggering. Furthermore, from the behaviour of the Japs. operation it was evident that he was getting some sort of scope indication. He would scan back and forth as though he couldn't quite get the definite information he wanted. Perhaps he was getting the IFF indication on his scope, but he was having difficulty getting a target pip. On the return leg, the operator heard an unusually large amount of noise from the Starboard (MOROTAI) side when the plane reached the vicinity where this signal had been previously heard. The operator said that the IFF was violent and all over the scope and IFF frequency band. He was not able to pick up the Japanese signal and the IFF was not turned off to enable him to check for this signal alone. This will be done in future encounters."

(c) Another Field Unit 9 report reads:- "Search mission, made 14th September, gave information on Japanese triggering the plane's ABK IFF transponder. The characteristics of the Japanese radar are 156 mc, 500 cps, 10 microseconds pulse width. The phones and scope gave the typical indication of the plane's transponder. Probable location of the radar is on the peninsula in Southeast Halmahera near Moeor Island. RCM operators have specific instructions to watch for indications of Japanese radar triggering the transponder, and are thoroughly familiar with the indication received by the RCM equipment."

(d) Still another report from Field Unit 9 reads as follows: "(RCM) Search Mission, made 23rd September, 1944 to the Southeastern Mindanao coast, gave information of Japanese radar triggering of the plane's ABK IFF transponder. Characteristics of the Japanese radar are 152 mc, 500 cps, 9 microseconds pulse width."

(e) An extract from 7th Air Force Intelligence Summary of 13th May describes another possible example of triggering of IFF. "A VT(N) plane which was launched from one of the carriers at Palau during the night of 30th March was trailed by a bogey for 20 + 25 minutes. When the VT(N) pilot turned into the bogey, it would dive away from him and become lost in the darkness. The ASD-1 radar was not very effective in finding the plane again. Evasive manoeuvres by the TBF were unsuccessful. The pilot climbed to 3,000 feet, dived low to the water, went into flipper turns, and flew into the clouds but always found the other plane following him. The VT(N) plane had no lights on, it had exhaust flame dampers, and the pilot's only explanation of the ability of the bogey to follow him was that it was

homing on his IFF. He finally turned his IFF off when the bogey closed to $\frac{1}{2}$ mile, and almost immediately it lost contact; then he turned IFF on about two or three minutes later, and the bogey reappeared." "

There are other cases which have been reported, but the foregoing list contains the best examples of possible triggering of IFF Mk. III by Japanese radar.

COMMENTS

Section 22 will continue checking this presumed triggering of IFF by Japanese radar.

Manuals for IFF state categorically that the transponder will not respond below 154 mc, or above 190 mc. It is believed by this Section that the above examples show the need for careful testing of the transponder by maintenance personnel, especially with regard to its frequency range, so that number of radars which trigger the IFF can be kept to a minimum.

For information purposes, the following is a list of Japanese radar stations with frequencies between 154 and 190 mc:-

BAKULIN POINT	155 mc.
BASILAN ISLAND	159 mc. and 161 mc.
SARANGANI AREA	164 mc. (Probable)
BANDA GROUP	156 mc.
BANDA GROUP	160 mc. (Probable)
BOELA	158 mc.
DJORANGA ISLAND	156 mc.
KABALADOGA	162 mc.
KAI	189 mc.
KASIROETA	156 mc. (Doubtful)
LEMPEH STRAIT	155 mc.
NORTHEAST CELEBES	161 mc. (Probable)
NORTHEAST CELEBES	158 mc. (Probable)
CAPE SAN AGUSTIN	155 mc.
DAVAO	156 mc.
NARA POINT	163 mc.

Any modifications to this list may be found in later Current Statements.

Careful and continual checking of zones in which IFF should be switched on or off is indicated. The advantage of identification by our own installations should always outweigh any disadvantage accruing from increased range of detection by Japanese.

(Current Statement 0200 of 7th October, 1944 -
Section 22 Allied H.Q., S.W.P.A.)

5. U.S. MINE LOCATION SHIP.

The United States Navy has recently commissioned YP-421 as a mine location ship to serve with Commander Service Force, Seventh Fleet. This ship will be employed during the clearance of minefields to locate and recover enemy mines, to provide assistance in mine and bomb disposal activities and to examine sunken enemy ships for intelligence purposes. The following special equipment has been installed for this work:-

(a) Ordnance Locator, Mark 1 - Capable of locating metal objects on a smooth sea floor. Its sphere of search is 30 feet in diameter and it is designed for the location of ground mines.

(b) Underwater Photographic Gear - Capable of photographing objects under water to a depth of 600 feet.

(c) QBE I - Echo ranging gear for the location of minefields.

(d) NJ 7 - Echo Sounder for examination of the sea floor.

(e) Deep Sea Diving Gear - To permit divers to work in water to a depth of 150 feet.

6. R.A.N. SHIPS WHICH HAVE PASSED THE 100,000 MARK.

The table on the next page shows the R.A.N. ships which have steamed more than 100,000 miles since the outbreak of war according to records at present received at Navy Office.

The figure for H.M.A.S. "VENDETTA" is based on her mileage since June 1940 (164,475 miles) plus an estimate for the first 10 months of the war. No figures are available for H.M.A. Ships "SHROPSHIRE" and "HOBART". The mileages of the Eastern Fleet destroyers are estimated to be approximately as follows: "NAPIER" (commissioned 11th December, 1940) and "NIZAM" (19th December, 1940) 250,000, "NORMAN" (29th September, 1941) 200,000 and "NEPAL" (11th May, 1942), "QUIBERON" (6th July, 1942) and "QUICKMATCH" (14th September, 1942) 150,000.

Ship	Date Commissioned	Mileage	Last Monthly Report (1944)
"AUSTRALIA"	28th August, 1939	305,090	August
"VENDETTA"	3rd September, 1939	210,000 (approx)	September
"STUART"	3rd September, 1939	201,187	March
"ADELAIDE"	3rd September, 1939	196,477	February
"SWAN"	3rd September, 1939	171,963	September
"ARUNTA"	30th March, 1942	139,308	August
"WARREGO"	10th February, 1940	135,727	June
"BATHURST"	6th December, 1940	133,745	September
"GOULBURN"	28th February, 1941	130,581	September
"BURNIE"	15th April, 1941	116,561	September
"LITHGOW"	14th June, 1941	114,864	September
"BENDIGO"	10th May, 1941	113,508	September
"MILDURA"	23rd July, 1941	113,264	September
"WARRAMUNGA"	23rd November, 1942	112,940	August
"MARYBOROUGH"	12th June, 1941	108,268	August
"DELORAINÉ"	22nd November, 1941	106,307	September
"TOWNSVILLE"	19th December, 1941	106,089	August
"CESSNOCK"	26th January, 1942	104,904	August
"WARRNAMBOOL"	23rd September, 1941	104,482	September
"GEELONG"	16th January, 1942	102,943	August

SECTION IIINARRATIVES1. ANTI-SUBMARINE WARFARE IN OPERATION "NEPTUNE".

The reduction in the number of U-boats destroyed must be largely put down to the fitting of the Schnorkel gear, upon the success of which the enemy is, no doubt, congratulating himself. It is thought that a skilfully handled U-boat can now operate for as long as three weeks without surfacing, except possibly for an occasional few minutes. From prisoner of war evidence it seems that the U-boats in the Channel area are spending a good deal of time on the bottom, not only to rest the crew and save the batteries, but also to escape detection by surface craft patrolling in their vicinity.

Ships can defeat these tactics to some extent by plastering with depth-charges any contact which is not definitely "non-sub" but for aircraft the problem is much more difficult. The Schnorkel gives only a poor A.S.V. contact, even at short range, and is difficult to sight even in daylight; to detect it at night requires very good A.S.V. tracking and Leigh-light or flare technique. It is not, therefore surprising that only one definite kill was achieved by aircraft in the Channel area during July. This took place on the 8th July to the westward of Ushant. The U-boat was rash enough to surface for a sight in daylight and was promptly pounced upon by Sunderland aircraft "H" of 10 Squadron, R.A.A.F., which made a first class attack. Survivors were picked up by surface craft and it was learnt that the boat was "U-243".

THE DESTRUCTION OF "U-390" AND "U-678"

Though the enemy was able, by using Schnorkel gear, to reduce his losses by air attack, the number of U-boats destroyed by surface craft was not so very much lower in July than it had been in June, despite the still greater degree of caution shown. On 5th July "U-390" was sunk off Pointe de Barfleur by H.M. Ships "WANDERER" and "TAVY", who were escorting a north-bound convoy. Its sinking was accomplished entirely by the Hedgehog, depth-charges being used only to ensure the complete disintegration of the wreck. It is thought that the U-boat was mortally wounded by the first Hedgehog attack which "TAVY" delivered. Five Hedgehog attacks were made in the space of just over an hour and a half and then about thirty depth-charges were dropped in two attacks. Between the first and second Hedgehog attacks one of the U-boat's crew, using escape apparatus,

came to the surface and was later picked up. This is the fifth time that "WANDERER" has taken part in the destruction of a U-boat, giving her the best record among the last war destroyers.

On the other side of the Channel, another U-boat was also being hunted at this time. After an explosion had been observed near a ship in a convoy about 25 miles south-west of Beachy Head, H.M.S. "STATICE" made a number of attacks, being joined early on the 6th by H.M.C. Ships "OTTAWA" and "KOOTENAY". "OTTAWA" obtained contact by Asdic and attacked with Hedgehog, "KOOTENAY" dropped a pattern of depth-charges and "OTTAWA" then crossed the target and with her echo-sounder obtained a very distinct trace of a U-boat at 60 ft. Another Hedgehog attack was then made. There was one explosion, some light oil was seen and the U-boat apparently bottomed, but was, however, able to move off across the tide when "STATICE" approached to attack. Defeating the U-boat's manoeuvres she delivered a Hedgehog attack so successfully that one hit was definitely made and a quantity of oil and wood came to the surface. An attack by "KOOTENAY" produced not only more wood and oil but also some clothing and, what is more uncommon, a number of novels. While these were being collected, "OTTAWA" again crossed the target with her echo sounder and obtained a trace showing the U-boat on the bottom with oil pouring from it. She was, however, dissatisfied at not being able to recover any human remains and decided to batter the U-boat until there could be no doubt as to its destruction. For about 10 hours the U-boat was therefore attacked with towed and dropped depth-charges and also with Hedgehog. In the course of these attacks "OTTAWA" made another contact two or three thousand yards away from the enemy, but this was probably one of the many wrecks in the area. The U-boat was finally left at daylight on the 8th, having then been giving off oil for over 36 hours. She was later found to be "U-678".

THE SINKING OF "U-672"

On the night of 18th/19th July "U-672" ended her career by being scuttled off Start Point; she had been damaged by depth-charge attacks made by H.M.S. "BALFOUR" during the previous afternoon. The outstanding feature of the information obtained from survivors is the extreme slowness of the boat's progress. Making apparently 2 knots by day, when she proceed on her motors submerged to between 30-50 metres, and at 5 knots by night, when she used Schnorkel almost uninterruptedly, she took from 2130 on 6th July to about noon on the 18th to get from St. Nazaire to Start Point.

On the 13th, when she was about 40 miles south by east of the Scilly Isles, she altered course to 070° and began to creep up the Channel, making about 35 miles each day. Whenever the tide was unfavourable to her course the U-boat lay on the bottom until it had changed. By her amended orders she was to operate against cross-Channel shipping in an area due south of the Isle of Wight.

There were few incidents in the course of the passage. On the 13th, shortly before the U-boat altered course to enter the Channel, an aircraft made an ineffective attack and on the same day the U-boat fired two Gnats at some warships which do not seem to have been aware of her presence. When in the Channel, Leigh-light aircraft were sighted from time to time, the U-boat diving from Schnorkel depth to avoid them.

At about noon on the 18th the U-boat bottomed off Start Point to await the change of an unfavourable tide. A few hours later hydrophone effect was heard and then two patterns of depth-charges were dropped close to the boat, others being heard later some distance away. The U-boat was badly damaged, both diesel and electric motors being made unserviceable and a battery wrecked. High pressure air bottles began to leak and water to enter both forward and aft. The pumps kept it in check but the atmosphere grew very bad and at about midnight on the 18th/19th the Captain gave the order to destroy all papers and prepare to abandon the U-boat. Owing to the loss of high pressure air and the weight of the water aft, he had some difficulty in surfacing.

The U-boat was abandoned and scuttled without haste about 0330 on the 19th. There was a flat calm and the crew were got safely into their dinghies which they had taken care to stock with ample provisions. In due course they were sighted by aircraft and picked up by Air/Sea Rescue launches.

(Admiralty Anti-Submarine Report)

2. MINESWEEPING OPERATIONS DURING THE INVASION OF EUROPE.

The burden of minesweeping during Operation "NEPTUNE" fell on no fewer than 347 ships - 309 British, 22 American and 16 Canadian. During the six weeks preceding the invasion when the enemy, no doubt anticipating that something was afoot, had intensified his minelaying effort on the South Coast of England and in the Southern sections of the East Coast War Channel, these ships had swept 128 ground and 88 moored mines for the loss of two minesweepers sunk and three damaged by mines.

While the Invasion Forces were approaching the Normandy Coast the minesweepers accounted for 25 moored mines and, by the night of 6th/7th June, they had cleared two approach channels to the required width of about two miles. The only minesweeping casualty during the actual operation was one M.L. which was damaged in striking sunken wreckage off shore.

During Operation "DRAGOON", the landing on the South Coast of France on 15th August, 84 minesweepers cleared the Gulf of Tropez and the Gulf of Frejus in quick time. In the latter gulf alone 75 contact and 12 magnetic mines were swept during the course of the landing operations. Two minesweepers were sunk but they had some compensation in the sinking of three E-boats by their colleagues.

Up to 27th September the "NEPTUNE" mine bag was 842 ground mines detonated by sweepers, 248 ground mines which were spontaneous or resulted in casualties and 294 moored mines, a total of 1384 for a period of three and a half months. The first two weeks of "DRAGOON" yielded a bag of 345 moored mines, 15 moored magnetic and 20 ground mines, a total of 380.

The total bag of mines by British forces in all theatres during the first five years of the war reached the mammoth total of 11,246, made up of 5728 moored mines and 5518 ground mines. Of these one ground mine and 36 moored mines were swept in Australian waters and 115 moored mines in New Zealand waters. In this period 171 minesweepers were lost in Home Waters, 74 by mine, 51 by aircraft and 46 from other causes - and 66 in other parts of the world - 25 by mine, 17 by aircraft and 24 by other causes. However 949 assorted minesweepers in Home Waters and 547 abroad, a grand total of 1494, were in commission in September, 1944.

3. U-852 SUNK OFF SOMALI COAST.

At 0420Z on 2nd May, Wellington aircraft E/621 sighted a U-boat on the surface near the Somali coast. The aircraft came in to attack and the U-boat started to dive, leaving a heavy swirl but keeping a straight course. Depth charges were dropped when the conning-tower was still partly visible and were seen to fall in line with the swirl. All were seen to explode correctly.

Oil appeared immediately after the attack in the middle of the swirl and three minutes afterward the bows of the U-boat appeared at an angle of 50°. Shortly afterwards the U-boat surfaced and opened with her 4.1 inch gun forward and 37 mm A/A gun aft. The shells fell into the sea around the aircraft at a distance of three miles. The Wellington then withdrew and shadowed from a safe distance. Knowing that other Wellingtons were on their way, the Captain of the aircraft endeavoured to head the U-boat towards the land.

After two hours the relieving aircraft joined in the attack and seven direct attacks were made in 18 sorties. From the time of the first attack the U-boats headed south-west, then south and finally west and along the coast at speeds varying between 5 and 12 knots, leaving an oil streak 20 miles long. At dawn on the 3rd May the U-boat ran herself ashore.

In the meantime H.M.S. "FALMOUTH" had been ordered to the scene to assist in the kill. She arrived at dawn on the 3rd and sighted the U-boat inshore against a background of cliffs of various shades which made her very difficult to detect.

The motorboat was ready for lowering and an armed boarding party standing by as "FALMOUTH" closed the U-boat. When two miles away three violent explosions occurred in the submarine followed by flames and columns of black smoke. "FALMOUTH" went in as close as possible and the armed party under Lieut. Gordon R.N.V.R. were at once landed to capture the crew. As the motorboat approached, oil on the water covering a large area was burning furiously and continued to do so after the party had landed. Only after the smoke had cleared away could the remains of the U-boat be sighted. She was lying about 130 yards from the shore with a 40° list to port.

Lieut. Gordon accompanied by a seaman and a stoker boarded the U-boat but found that she was flooded up to the lower conning tower. Gas was found to be present but the party was able to salvage gear and documents with the aid of respirators.

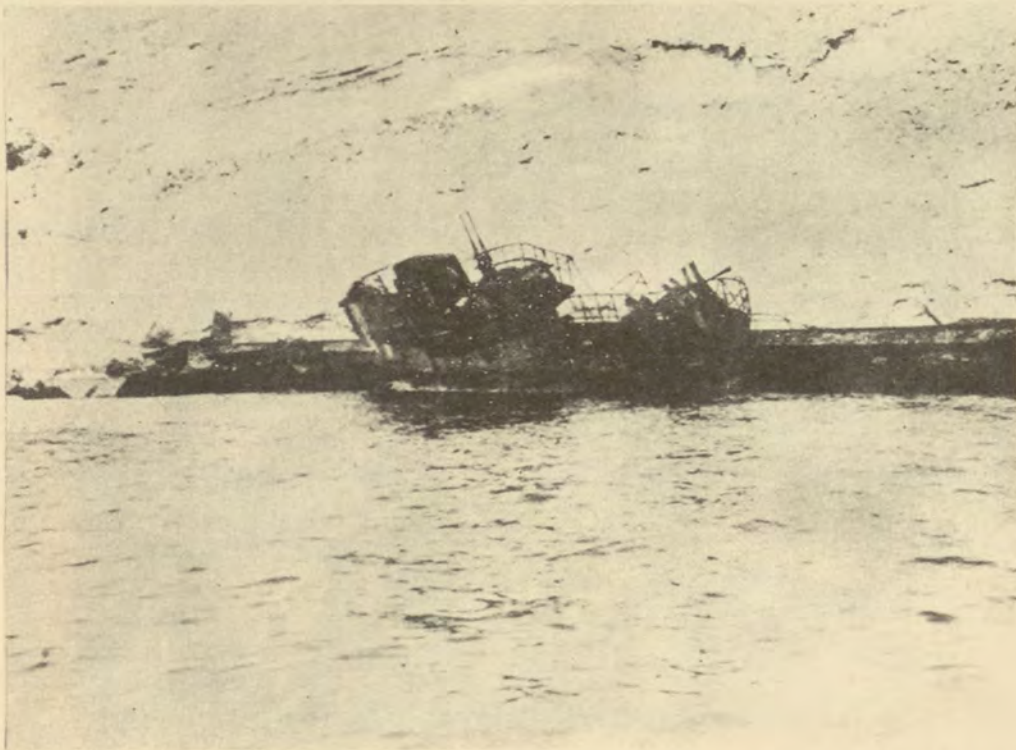
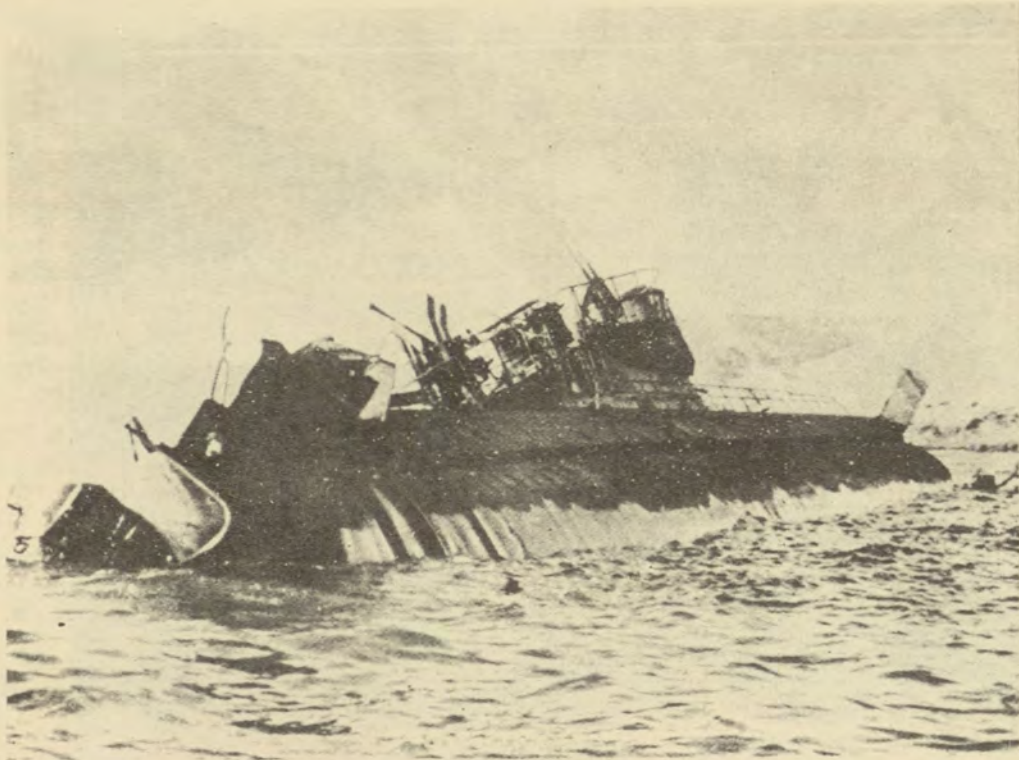
Meanwhile the landing party, assisted by parties from "RAIDER" and "PARROTT", completed the rounding up of the survivors who had been discouraged from climbing the cliffs by menacing moves on the part of the aircraft. In all 42 prisoners were taken, including the Captain and 4 officers, out of an original complement of 66.

The Captain of the U-boat reported that he did not expect any aircraft in the area where he was first sighted. He crashed as the aircraft came in to attack but the depth-charges straddled the U-boat and broke a main inlet pipe. Water began flooding the U-boat very rapidly and he had no alternative but to surface.

(Condensed from Monthly Report of U-boat Warfare - East Indies Station, May, 1944).

4. FIRST KILL WITH SQUID.

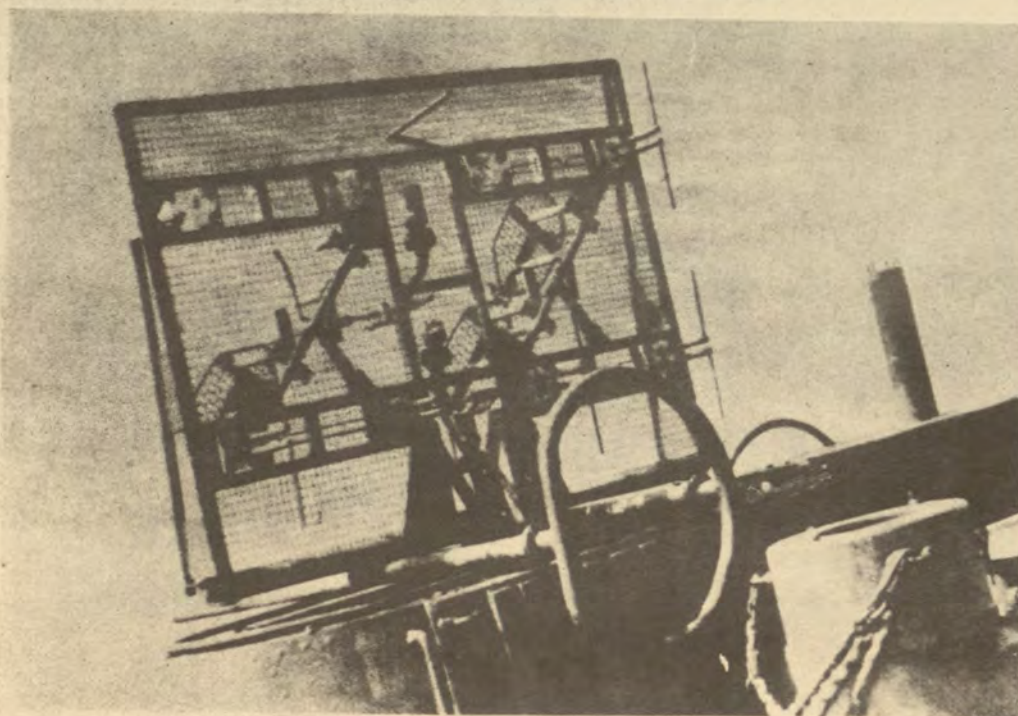
The first kill with Squid was accomplished by H.M.S.



"U-852" ashore near Cape Guardafui after attacks by Wellington aircraft on 2nd May, 1944.



"U-852" - Starboard Side looking forward



"U-852 - Radar aerial and after periscope

"LOCH KILLIN" during a patrol by the Second Escort Group between 3rd and 13th August. The kill was remarkably quick. "LOCH KILLIN" sighted a periscope on her starboard bow and then heard the U-boat pass down her starboard side. Reducing speed, she altered course under full starboard wheel and obtained asdic contact at 600 yards range. She slowed from 7 to 6 knots, but even so there was only just enough time to obtain a clear 147B depth - 80 feet - before the pattern of six Squid charges was fired. Almost simultaneously with the detonation of the pattern, a countermined "Gnat" exploded 20 yards on the port side abreast the pom-pom. This prevented "LOCH KILLIN" from altering course to avoid the pattern and the U-boat broke surface at a steep angle heading in the direction of the port beam.

"LOCH KILLIN" went full astern and then stopped her engines, but the U-boat continued to surface, fouling her hull abreast the bridge, and eventually came to rest apparently caught up in the port "A" bracket. A few rounds of Oerlikon were fired, but the conning tower and armament were already a mass of wreckage and all the U-boat's crew seemed anxious to do was to clamber on to the frigate's quarter-deck. The U-boat then took on a steeper trim and, after hanging for about five minutes, sank almost vertically by the stern. "LOCH KILLIN" hastily cleared the position in case the boat blew up, but fortunately she did not and, after she had sunk to the bottom, was finished off with 20 depth-charges from "STARLING".

Survivors were under the impression that they had been rammed. At the time of the attack, the U-boat, which was apparently altering under full starboard wheel, was on a course of 090°. The effect of the Squid pattern may be judged by the fact that she surfaced with her bows pointing 340°. She was "U-736", a 500 ton boat.

(This report was taken from the Admiralty Anti-Submarine Report for August. It is noteworthy that the ubiquitous "STARLING", in which the late Captain Walker had many of his successes, was once again in at the kill. This ship has been credited with two known kills on her own, 11 "assists" in known kills and one "assist" in a probable kill. "STARLING" however appears nowhere in the Admiralty list of attacks which only damaged U-boats).

5. AMERICAN "WOLF-PACK" SUCCESSES IN CHINA SEA.

The following report, taken from Commander-in-Chief

U.S. Pacific Fleet's Report on operations in the Pacific Ocean Area for May, 1944 gives an idea of the work being done by American submarines along the Japanese convoy routes between the East Indies and Japan.

Task Group 17.15, commanded by Captain G.E. Peterson, and consisting of "PARCHE" (F) (1st War Patrol), "BANG" (1st War Patrol), and "TINOSA" (6th War Patrol), formed the Fourth Co-ordinated Attack Group. Patrolling the China Sea Area, south of FORMOSA, the task group made contact with two convoys totalling about 20 ships, plus screens, fired 62 torpedoes for 30 hits, and sank or damaged 16 ships, totalling 116,100 tons, as follows:

<u>Submarine</u>	<u>Sunk</u>	<u>Damaged</u>	<u>Tonnage</u>
"PARCHE"	3 AK/AP	1 AK/AP	30,400
"BANG"	2 AK/AP, 1 DD	1 AK, 1 AO	35,200
"TINOSA"	<u>3 AK/AP, 1 AO</u>	<u>2 AK/AP, 1 AO</u>	<u>50,500</u>
Total	8 AK/AP, 1 AO 1 DD.	4 AK/AP, 2 AO	116,100

(AK = Cargo Ship, AP = Transport, AO = Tanker).

The first offensive action of this group was on 29th/30th April. In the late afternoon of 29th April, "BANG" sighted the smoke of a convoy, which developed into 12 ships plus eight or more escorts, including four destroyers. This convoy, at the time of the contact, was 150 miles southwest of Takao, apparently heading for the Philippines. "PARCHE" and "TINOSA" were 50 and 75 miles respectively, to the northwest. "BANG" tracked for several hours, sending contact reports to "PARCHE" and "TINOSA". Although attack conditions were not the best, "BANG" decided to attack with the hope of slowing-up and scattering the convoy since the other two submarines could not reach it for several hours. "BANG" then fired six bow torpedoes, sinking one ship and damaging two. Following a depth-charge attack, "BANG" surfaced, regained contact, and missed a large transport in two attacks with 10 torpedoes. "PARCHE" and "TINOSA" had not been able to make contact. "BANG" again reported the convoy position, and then made a surface attack on the transport, sinking it with two hits from four torpedoes fired. This left "BANG" with only four torpedoes, and she was ordered to the trailer position.

At daybreak, "BANG" was astern, "PARCHE" on the port flank, and "TINOSA" on the starboard flank of the convoy. "PARCHE" then damaged one ship with two hits from four torpedoes. Shortly thereafter, "TINOSA" found herself in an ideal position with five

ships passing by, fairly evenly spaced. She fired six torpedoes, with a 10° spread. These resulted in four hits, which sank two ships and damaged one. "PARCHE" and "TINOSA" were held down the balance of the day by enemy planes. "BANG" trailed for awhile, but was forced down by destroyers, and depth-charged for seven hours. No further contact was made with the convoy.

On 3rd May, the submarine group made rendezvous about 250 miles west of Luzon Strait, and passed orders by a line throwing gun. "BANG" again took the trailer position, with "TINOSA" as western scout, and "PARCHE" as eastern scout.

That same day "TINOSA" made contact with a convoy of eight ships, plus escorts, and passed the contact to the other units. Shortly after midnight, "TINOSA" on the port flank, fired six torpedoes, for five hits, sinking two ships and damaging one. In return, she received 55 depth-charges. One hour later, "PARCHE" fired six torpedoes for five hits, and sank two ships. She reloaded her bow torpedo tubes, and 20 minutes after the first attack sank another ship with two hits from four torpedoes. This was followed by an attack by "BANG" with her last four torpedoes. With three hits, she sank one cargo ship and one destroyer. About one hour later, "TINOSA" sank another ship with three-four hits from four torpedoes fired. "TINOSA" then missed a damaged cargo ship in two attacks, with four torpedoes each - her last torpedoes. This last attack was followed by a depth-charge attack for seven and a half hours during which 30 depth-charges were dropped.

"BANG" and "TINOSA" were both out of torpedoes, and therefore, were ordered to return to port. "PARCHE", with ten torpedoes continued her patrol, but without further success. On 9th May, "TINOSA" sank a trawler (150 tons) with gunfire, and captured one survivor.

Out of the first convoy, seven ships were sunk or damaged. The entire second convoy, plus one destroyer escort, was sunk. There was no damage to our units. This was the most successful "wolf pack" operation to date. The torpedo performance was excellent, and the percentage of hits (48%) was gratifying. Continued experience with "wolf pack" tactics should prove an effective counter to the enemy convoy system, with its increased escorts and anti-submarine protection.

6. MODEL ANTI-U-BOAT OPERATION IN THE INDIAN OCEAN.

On 5th August, 1944, a merchantman was torpedoed off

the northern entrance to the Mozambique Channel. Seven days later, the U-boat responsible was destroyed 175 miles west of the Seychelles, one thousand miles from the place where the merchant ship was sunk. The operation was conducted by Flag Officer, East Africa, who had under his orders Force 66, which consisted of two escort carriers, H.M. Ships "SHAH" and "BEGUM", four frigates (H.M.S. "TAFF", Senior Officer of the 60th Escort Group and H.M. Ships "FINDHORN", "NADDER" and "PARRETT") and two sloops, H.M.I. Ships "CAUVERY" and "GODAVARI". Shorebased aircraft of 246 Wing, R.A.F. and H.M. Ships "JASMINE", "GENISTA" and "FALMOUTH" also took part in the operations.

The SSSS from S.S. "EMPIRE CITY" was received at 2245/5 and at 0956/6 the ship's boats were sighted by a Catalina of 209 Squadron. "JASMINE" was ordered to sail from Kilindini to pick up survivors and search the area. It was assumed that the U-boat would retire to the north-east and "FALMOUTH" was sent from Diego Suarez and "GENISTA" from Kilindini to rendezvous about 300 miles north-east of the sinking and then sweep towards it.

Commander-in-Chief Eastern Fleet requested F.O.E.A. to operate Force 66, then on passage midway between Addu Atoll and the Seychelles, as required.

At 0110/7 a D/F fix put the enemy within 150 miles of 08° 00' S, 42° 30' E. which indicated he was steering a more northerly course than had been assumed. He held this course for the greater part of the 7th, found another merchantman, S.S. "EMPIRE DAY", torpedoed and sank her and then turned off towards the south-east.

The U-boat again broke W/T silence at 1758/8 and the D/F fix obtained caused the air searches by Force 66 arranged for the 10th to be moved 150 miles to the south. At first light on the 10th, S.O. Force 66 flew off aircraft on a "creeping Adder search" to cover the area to the south-westward. After a signal from F.O.E.A. indicating that the U-boat might be further to the northward, course was altered to the west-north-west. Two hours after this alteration, at 0950/10, one of the aircraft from "SHAH" sighted the U-boat. It dived and the attack made was without result but extremely efficient co-operation between the carriers, their aircraft and the frigates brought the latter quickly to the position. Under the direction of "TAFF", they began a search. The sweeps were drawing the ships to the north-westward when, at 2200/10, a Catalina reported an A.S.V. contact about 45 miles north of the U-boat's diving position and the direction of the frigates' sweeps was altered accordingly.

During the night of 10th/11th two more A.S.V. reports and a sighting of flares by "CAUVERY" tended to make the position extremely obscure. Fruitless searches to the northward had convinced S.O. Force 66 that the U-boat was not proceeding in that direction but bore to the east and the frigates were eventually recalled. Shortly

before noon the Force altered course to east-north-east, continuing air searches in that direction until after dark.

S.O. Force now appreciated that at first light the U-boat would be 50 miles ahead of the carriers and at that time "SHAH" flew off a large striking force. Twenty minutes later the Squadron Commander of 851 Squadron sighted the U-boat - he had already made the crucial sighting on the forenoon of the 10th - in a position about 53 miles 110° from the centre of the extended screen formed by the frigates, which at once closed at full speed. The aircraft, after carrying out an attack which is thought to have damaged the U-boat, homed them to the position most efficiently and at about 0630 they began to hunt.

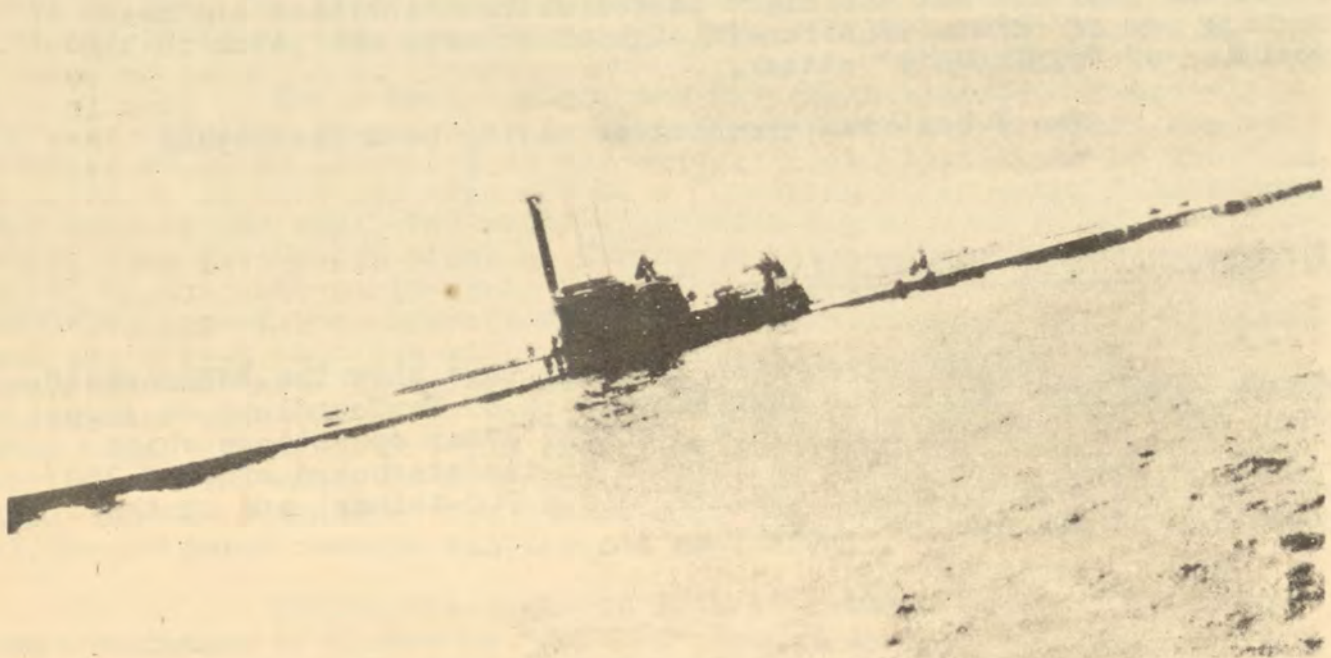
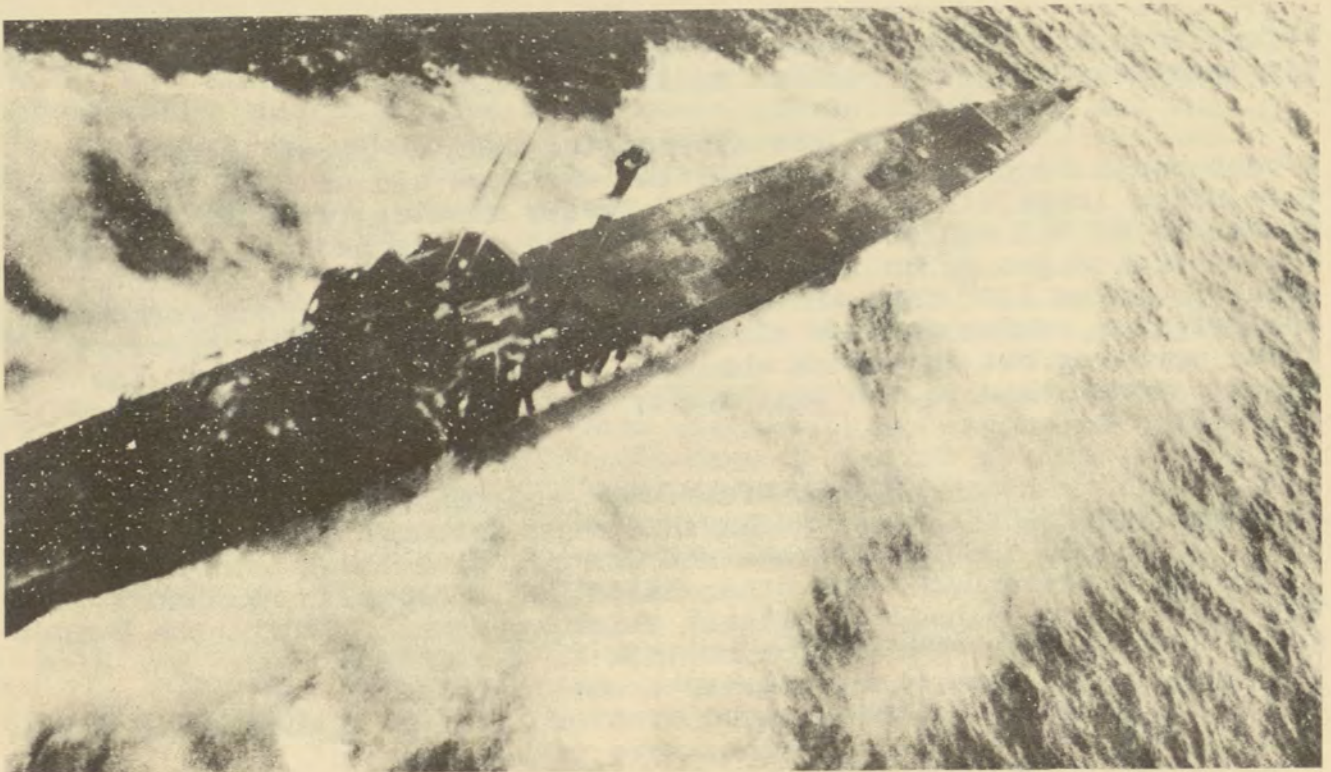
At about 1000 "FALMOUTH" and "GENISTA" joined the carriers and "CAUVERY" and "GODAVARI" were detached to join the frigates. At 1323 "GODAVARI" obtained contact with the U-boat and held it for 53 minutes until the other ships could close. "FINDHORN" then carried out a hedgehog attack which apparently caught the U-boat captain entirely unawares, for he took no avoiding action. Two hits were obtained. Two minutes later a small explosion was heard on "GODAVARI'S" asdic followed three minutes later by a much heavier one. Finally two more small explosions were heard.

In case the U-boat had escaped lethal damage and might try to escape during darkness, "TAFF" formed a large radar "box" round the position but the night passed without incident and next morning one of "BEGUM'S" aircraft sighted a large oil patch in the position of "FINDHORN'S" attack.

The U-boat was assessed as having been destroyed.

7. PHOTOGRAPHS OF "SCHNORKEL".

The photographs on the next page show the "Schnorkel" fitted to "U-1229" which was sunk south-east of Newfoundland on August 20th, 1944 by aircraft from U.S.S. "BOGUE" after operations which lasted 20 days. Schnorkel is located on the starboard side of 750 and 1200 ton German U-boats ("U-1229" is a 740-tonner) and on the port side of 500 and 1600 tonners.



Photographs of "U-1229" showing Schnorkel

SECTION IVINTELLIGENCE1. JAPANESE AIRCRAFT CARRIERS.

Prior to the Battle of Saipan, the Japanese had in operation 13 aircraft carriers of all types but four more carriers of unclassified type were believed completed.

The largest and most powerful units of the carrier fleet are "SHOKAKU" and "ZUIKAKU" of the "SHOKAKU" class, displacing 29,800 tons and capable of carrying 80 planes. This class has figured prominently in most of the enemy's offensive efforts, beginning with the attack on Pearl Harbour. Both ships suffered considerable damage in the action west of Saipan.

Carriers of the "JUNYO" class, consisting of "JUNYO" and "HIYO", were converted from the express passenger liners "KASHIWARA MARU" and "IZUMO MARU". This class has a very prominent island on the starboard side with a large funnel projecting from the island structure. This design is unusual for a Japanese carrier and there is a slight resemblance from a distance to British carriers of the "ILLUSTRIOUS" class. The ships are estimated to be 745 feet overall, displacing 28,000 tons. The armament is reported to consist of 16-5inch dual purpose mounts, 24-60 to 80 mm. A.A. guns in six barrel mounts and 40-20 mm. A.A. guns. One unit of this class was sunk in the Battle of the Philippine Sea; the other was heavily damaged.

The four new carriers which are unclassified are "TAIHO" "UNRYU", "KATSURAGI" and "AMAGI". It is believed that "TAIHO" is a large carrier equal in size to those of the "SHOKAKU" class. The reported maximum speed of this carrier is 32-33 knots and her plane-carrying capacity is believed equal to units of the "SHOKAKU" class. The other three are most probably large carriers and at least one, "UNRYU", may be converted from a battleship hull.

The light carrier "HOSHO", the oldest Japanese carrier, is used primarily as a training ship. It is too small and too old to be an efficient combat carrier.

The "ZUIHO" class of light cruisers is composed of two units converted from fleet tenders - "ZUIHO" and "RYUHO". These ships are estimated to displace 15,000 tons and are capable of carrying 36 aircraft.

The two units of the light "CHITOSE" class, "CHITOSE" and "CHIYODA" were converted from seaplane tenders during 1943. Apart from their estimated appearance little is known about these converted carriers.

Japan has four escort aircraft carriers, all of which have been converted from merchant ships. The first two units so converted were "KASUGA MARU" and "YAWATA MARU" two sister ships which were renamed "TAIYO" and "UNYO" and grouped in the "TAIYO" class. This class is believed to have the same plane capacity as the "ZUIHO" class but has a shorter flight deck, is slower and not so heavily armed. Very little is known as yet of the other two escort carriers "KAIYO", converted from the former merchant ship "ARGENTINA MARU" and "JINYU", converted in 1943 from the North German Lloyd liner "SCHARNHORST".

(Condensed from O.N.I. Weekly, 16th August, 1944).

Note:- During the engagement East of Luzon Island on 23rd/24th October, U.S. Forces sank one carrier of the "ZUIKAKU" class, one of the "ZUIHO" class and two of the "CHITOSE" Class.

2. FURTHER INFORMATION ON JAPANESE I-15 CLASS SUBMARINE.

The "I-15" is one of the newest and is the largest class of Japanese cruiser-type submarines. Although this class was originally fitted for carrying aircraft, midget submarines or supplies, it is now believed that only the "I-16" carries a midget and very few units still maintain the aircraft. Instead, most of the units of this class are engaged in supplying outlying bases and, as a result, they have been converted to the design shown in profile. This arrangement allows clear dock space aft for nesting up to five landing craft or carrying large loads of provisions in canvas containers.

The 4.7" deck gun, formerly abaft the conning tower, is now housed in a raised gun platform extending forward. This arrangement is similar to that employed in the large ocean-going British submarines and constitutes a dangerous recognition problem.

Additional statistics have also been reported on the standard aircraft-carrying model and are tabulated below:-

Dimensions. 335-338' length overall x 25' beam x 17'8" - 21' draft.

Displacement: 2100 tons (standard surface)

Armament: One 4.7" deck gun aft-20 rounds in ready use container. One 20 mm. twin in OT-2,000 rounds carried.

Torpedoes: Six 21" bow tubes; 16 torpedoes carried

Protection: Degaussing fitted

Diving: 230' safe tested depth
280' maximum depth (420' reported)
2½-3 minutes to submerge completely
4-5 minutes to 150'

(This is obviously dangerously slow crash-diving time and may be expected to increase even more when deck cargo is carried).

Endurance: 4-5 hours (submerged)

Fuel: 600-700 tons (including fuel for supply of other submarines.

New reports indicate that up to 40 or 50 tons of bulk provisions or parts are carried internally by units of this and other cruiser class submarines. Up to 156 troops have also been transported on short runs in the same space. This cargo is in addition to the 40 or more tons of provisions usually carried in rubberized canvas containers on the deck.

(O.N.I. Weekly 23rd August, 1944)

3. JAPANESE PROPAGANDA TO INSPIRE MORE "BODYCRASH ATTACKS".

The story below of Lieut. Nobuhiro Abe was broadcast over Shonan W/T on 25th October. It is a remarkable story with painstaking attempts at detail even to the mentioning by name of the hero's father. The fact that the story is completely fictitious (no ship was sunk or damaged in the prolonged raid on the Nicobars by the British Eastern Fleet) shows to what length the Japanese are prepared to go to inspire their pilots to carry out suicidal attacks on Allied warships. The damage to H.M.A.S. "AUSTRALIA" during the operations off Leyte Island is but one indication that these attacks are not idle boasts and they must be expected whenever Japanese aircraft are in the vicinity and must be expected to increase

as the Allied advances come closer to the Japanese mainland.

"A fearful warning of what Japanese pilots single-handedly can accomplish when prompted by the grim determination to win was given to the enemy in the recent battle off Car Nicobar when one Japanese fighter without explosives sank an enemy aircraft carrier of the "INDOMITABLE" class by a bodycrash - a feat so far unparalleled in the annals of warfare. The hero of this most outstanding feat was Lieut. Nobuhiro Abe, 23 year old son of General Nobuhiro Abe, now Governor of Chosen. According to a detailed account of this engagement it was on 19th October that formations of the Maruka unit took to the air on a mission to intercept an enemy task force off Car Nicobar. One of our fighter formations was led by Lieut. Abe.

"An eyewitness account indicated that Lieut. Abe's formation encountered enemy planes and engaged in an air duel. Abe's plane and two others in the formation succeeded in detaching themselves from the enemy interceptors by diving to a lower altitude. Simultaneously, according to the same eyewitness account, these three planes with their engines at full speed headed for the task force. Immediately upon breaking up their formation one of the three fighters, believed to be the one piloted by Lieut. Abe, crashdived into an enemy aircraft carrier then cruising southward in waters southwest of Car Nicobar. When this plane hit its target the enemy carrier was observed to be suddenly enveloped in black smoke. When that black smoke cleared the enemy aircraft carrier of 27,000 tons was no longer seen on the surface.

"Ten minutes later another plane, the second in the formation, was observed launching a daring bodycrash attack against an enemy destroyer which was also sent to the bottom almost simultaneously. The last remaining plane in the formation was observed following suit at about 1250. The plane found its target on an enemy battleship then cruising westward from a southerly direction".

The other planes returned to base and "enthused by the news, the base commander at once ordered all hands on and about the field to assemble for a special instruction. The base commander inter alia said, 'Nothing should be impossible for us to accomplish if only we are prepared as Lieut. Abe was. He has shown us the way to final victory and let us not permit his glorious sacrifice to be made for that one achievement of sinking an enemy aircraft carrier, but let it be the beginning of the sinking of many more. It can be done and it shall be done.'"

4. CODE NAMES FOR JAPANESE AIRCRAFT.

Air Forces S.W.P.A. states that the Technical Air Intelligence Center is now the sole authority for the assignation of new code names for Japanese aircraft.

Documentary evidence has been obtained that the Japanese Army-Navy method for designating aircraft is according to a "Model/Type" system which differs considerably from the "Mark Numbers" system used up till now by the Allies. A changeover is accordingly being made and code names will in future be followed by the Japanese Model/Type number (e.g. ZEKE Mark II becomes ZEKE Model 22).

Future Code Names

For the purpose of consistency, future code names will be selected by Technical Air Intelligence Center on the following broad basis:-

Male Names

1. Army and Navy fighters, both single and twin-engined.
2. Navy reconnaissance float planes.

Female Names

1. Army and Navy reconnaissance planes, land or carrier based, both single and twin-engined.
2. Navy torpedo bombers.
3. Navy dive bombers
4. Army and Navy twin-engined and four-engined light, medium or heavy bombers.
5. Navy flying boats
6. Army and Navy transports - female names starting with "T".

The complete list of code names of aircraft still in operational use is as follows:-

Navy Fighters - ZEKE 21,22 and 52, RUFÉ 12, SAM 11, IRVING 11, JACK 11, GEORGE 11, REX 11 and LUKE 11.

Navy Reconnaissance - JAKE 11, GLEN 11, NORM 11, PAUL 11, PETE 11, and IRVING 11.

Navy Torpedo Planes - JILL 11 and 12, GRACE 11.

- Navy Dive Bombers - VAL 22, JUDY 11, 12, 13 and 21.
- Navy Bombers - BETTY 11, 22, 25 and 34, LIZ 11 and FRANCES 11.
- Navy Transports - TESS 11, TABBY 22 and 32, BETTY 11.
- Navy Flying Boats - MAVIS 11, 22 and 23, EMILY 11, 12, 22 and 32
CHERRY 11.
- Army Fighters - OSCAR 2, TOJO 1 and 2, NICK 1, ROB 1, STEVE 1,
PAT 1 and FRANK 1.
- Army Reconnaissance
and Light Bombers SONIA 1, DINAH 2 and 3, CLARA 1 and EDNA 1
- Army Bombers - SALLY 3, LILY 2, HELEN 2 and 3.
- Army Transport - THORA 1, THELMA 1, TOPSY 1 and 3, THERESA 1.

5. GERMAN OYSTER MINE.

Information has been obtained from German prisoner-of-war sources of the German "Oyster" mine, a new type of mine which is actuated by pressure. This mine is said to be intended for use as a ground mine in water up to a depth of 30 meters (about 98½ feet). It was designed to be actuated by a 6,000 or 7,000 ton ship doing 12 knots and making eight to ten knots over the ground. A delay of five to seven seconds would be necessary for the mine to explode amidships.

The unit can be used by itself or with a magnetic or acoustic unit and can be incorporated in the full range of German mines including moored and ground mines.

The Germans began work on the mine during the later part of 1942. The prisoner, who was a precision fitter at the Kiel Mine Experimental Command, worked on it until September 1943 when a model was satisfactorily completed for use with a moored mine.

When fitted in the standard air laid ground mine case, it can be fitted between the fins but it can also be fitted inside.

The Germans claim that the new mines are unsweepable and that they become dead after three years.

The acoustic-pressure type has been named by Admiralty A.P. Mark I and the magnetic-pressure type M.P. Mark I.

6. USE OF CAMOUFLAGE BY JAPANESE SHIPS AT PALAU.

Photographs taken during the carrier strike at Palau on 25-27th July revealed the first extensive use of ship camouflage by the enemy in the Central Pacific. Eleven of 15 operational ships were camouflaged.

After an early strike, one torpedo squadron Commanding Officer reported: "Although shipping was assigned as the primary target for this strike, none was attacked by our planes. Returning pilots reported none but sunken ships in the harbour and it was not until photographs were developed that a considerable number of intact ships were seen to be present among the islands. The enemy has done a remarkable job of drawing shallow-draft vessels close along the shores of the relatively steep limestone islands and covering them with trees, bushes and undergrowth which conceal them very effectively. In view of the increased use of small ships by the Japanese and the value of these ships to their dwindling merchant marine, it is felt that concealment of vessels along the shores of their islands will be practiced as frequently in the North and Central Pacific as has been the case in the South and Southwest Pacific."

A photo interpreter commented "The method used was that of entirely covering the ships with vegetation, including the sides of the hull. The vegetation appeared natural in all cases.

"After covering the ships with the vegetation, they were moored close inshore along steep banks to blend with the background and take advantage of shadows.

"The weakness of this method was that the basic hull outline remained unchanged. As a result, oblique photographs when the area was not in shadow revealed their unmistakable outline.

"Vertical photographs revealed a noticeable change in elevation between the deck of the ship and the adjacent shore.

"It is interesting that reliance was placed on the camouflage to the point that A.A. guns were probably unable to operate and even when discovered and under attack, photographs indicate no evidence of A.A. fire from the ships."

(USPC and POA Weekly Intelligence,
25th August, 1944).

7. JAPANESE TORPEDOES.

The following Summary of Japanese torpedoes was published in a Technical Intelligence Bulletin (O516 ORD-ONI) issued by the Naval Intelligence Division Washington.

Type of Model	Used By	Nominal Diam.	Power Source	Type Explosive ϕ	Weight of Explosive (lbs.)	Speed/Range Knots/Yards	Remarks
44	Old ships Picket Boats	18"			441		
89	Subs. (I.1,5,7 9,15,121 153,161, 168 and RO 33 classes) M.T.B's and old Destroy -ers	21"	2 cyl. engine	1.Type 97 2.Shimose 3.Type 94	661 625	45/6014, 43/ 6561,35/11000 (Triple Speed)	
89 [*] (Mod)	Subs.	21"	2 cyl. engine	1.Shimose 2.Type 94	648,625	Same as Type 89	
90	Destroy -ers	24"	2 cyl. engine	1.Shimose 2.Type 94	880	45/8760,42/ 10940,32/16,410 (Triple Speed)	
92 [*]	Subs.	21"	Elec- tric	TNT/HND/ AL	660	28/3300 cold run),30/5,400 (pre-warmed run)(Single speed).	Trackless. Distinctive whining noise audible at short distances. Batteries must be pre-warmed and re-charged every 48 hours.
94 [*] (Mod)	Subs.	21"	Oxygen enrich- ed air	Type 97	868	44/	

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93	Destroyers, Cruisers	24"	2 cyl. engine; oxygen enrich- ed air	Type 97 Type 94	1200	50/22400, 40/33, 800, 32/33,000 (Double speed)	Used on modern ships. Small wake due to use of compressed oxygen. Easily detonated.
95	Subs. (I.1,5,9 15 class -es ?)	21"	2 cyl. engine; oxygen enrich- ed air	Type 97	880	38/4900 35/7100 (double speed)	Practically invisible water
96 (Report -ed)	Subs.						No data
97	Subs. Mid- get subs. MTB's(?)	18"	2 cyl. horiz. or 2 acting engines; oxygen enrich- ed air	Type 97		46,3500, 38/ 7900, 35/4100 (Triple Speed)	Small wake. White- head engine
6th year	Subs. (I. 151,152 RO.26,29 57,60) Cruisers	21"	4 cyl. steam engine	Shimose	452	37/7655, 32/ 10936, 25/ 16404 (Triple speed)	
8th year	Cruisers Destroy- ers	24"	4 cyl. steam engine	Type 97	900 (Approx)	27/24000, 31/ 16000, 38/10500 45/6500	
12th year	Destroy- ers	24"					No data

∅ Type 94 - Cyclonite (RDX) 40/Trinitroanisole 60
 Type 97 - Hexanitrociphenylamine (HND) 40/TNT 60
 Shimose - Picric Acid

x Based on pre-war information; may not be operational.

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SECTION VMISCELLANEOUS1. GERMAN AND JAPANESE SUBMARINE OPERATIONS.

In the final (September) edition of the South-West Pacific Anti-Submarine Report it was stated that, during August, 15 U-boats were sunk by the Allies and that these U-boats sank only 24,000 tons of shipping, all in the Indian Ocean. These figures have since been revised and the number of U-boats sunk or probably sunk has been increased to 17. The figures for merchant shipping sunk have increased rather drastically to a total of 89,000 tons. The main additions are six ships totalling 25,000 tons sunk in or near the Channel (five between the Isle of Wight and Le Havre and one off North Cornwall) and three ships totalling 25,000 tons sunk in the Indian Ocean. In addition the "human torpedo" claimed its first sinking in the Invasion Area - a ship of 5,000 tons.

The sinkings in the Channel were believed to be caused by a force of four to five U-boats. Towards the end of August the Germans had other worries on their mind and concentrated on transferring about two dozen U-boats from encircled Bay of Biscay bases to Norway. Our A/S forces had several successes during these operations as they were able to patrol very close to the U-boat bases without interference from German aircraft. Six of the U-boat sinkings for the month occurred within 100 miles of the French coast between Lorient and La Rochelle.

During September 59 attacks were made on German and Japanese U-boats by Allied forces - 32 by warships, 21 by shore-based aircraft and six by carrier-based aircraft. Nine U-boats were sunk or probably sunk - four by warships, four by shore-based and one by combined carrier-based aircraft and ships. The Allied shipping losses for the month amounted to seven ships totalling 43,000 tons, all sunk by U-boats. The recent average of at least one U-boat sunk for every merchant ship lost was again maintained.

2. FIVE YEARS OF ANTI-U-BOAT WARFARE.

The three tables below show that, in the five year

period ending 2nd September, 1944, German, Japanese and Italian U-boats sank 14,094,000 tons of Allied shipping out of a total of 20,365,000 lost from all forms of enemy action and that their own casualties were 641 boats - 368 sunk by the Allied Navies, 201 by the Allied Air Forces and 72 by combined attack and other causes.

1942-43 stands out as the critical year of the period. The Allied Air Forces came into their own with a vengeance and the ever increasing number of escort carriers made constant air patrols over convoys a general practice rather than a novelty. In that year the losses by U-boat action were still tremendous but the upward surge which had continued through the previous three years was halted.

In 1943-44 there was a sharp drop in the number of U-boats sunk by shore-based aircraft while the increase in warship successes was not so great as in previous years. However merchant shipping losses were reduced to an almost insignificant level compared with losses in former years and with the ever-mounting volume of new construction. The losses in the Atlantic were only one-tenth of the losses for 1942-43 and the only area which showed an increase was the Indian Ocean where most of the sinkings were of independent vessels making long and varied ocean voyages which still cannot be escorted while German U-boats are at large in the Atlantic. It is only the unaccountable temerity of the Japanese U-boat fleet which has prevented a similar situation occurring in the mid-Pacific.

Tables 2 and 3 have previously been published in the Admiralty Anti-Submarine Report for August, 1944.

TABLE 1

U-BOATS SUNK BY SHIPS AND AIRCRAFT DURING THE FIVE YEARS ENDING 2ND SEPTEMBER, 1944.

YEAR	GERMAN, JAPANESE AND ITALIAN U-BOATS SUNK OR PROBABLY SUNK BY						TOTAL
	Warships	Carrier Based Aircraft	Combined Ships & Carrier Based Aircraft	Shore Based	Combined Ships & Shore Based Aircraft	Other Causes	
1939-40	28	2	-	2	2	7	41
1940-41	34	-	-	3	3	5	45

Table 1 (Contd.)

YEAR	GERMAN, JAPANESE AND ITALIAN U-BOATS SUNK OR PROBABLY SUNK BY						TOTAL
	Warships	Carrier Based Aircraft	Combined Ships & Carrier Based Aircraft	Shore Based Aircraft	Combined Ships & Shore Based Aircraft	Other Causes	
1941-42	70	-	-	17	6	13	106
1942-43	90	19	2	108	10	9	238
1943-44	92	22	9	71	16	1	211
TOTAL	314	43	11	201	37	35	641

Of the 641 U-boats sunk or probably sunk 495 were German, 82 Italian and 64 Japanese.

TABLE 2

LOSSES OF ALLIED MERCHANT VESSELS BY U-BOATS FOR THE FIVE YEARS ENDED 2ND SEPTEMBER, 1944.

('000 Gross Tons)

Year	North Atlantic & Barents Sea.	South Atlantic	Mediterranean	Indian Ocean	Pacific	U.K. Coastal Waters, North Sea & Baltic	Total
1939-40	903	-	12	8	-	620	1,543
1940-41	2,368	-	8	-	-	196	2,572
1941-42	4,139	88	69	192	159	4	4,651

Table 2 (Contd.)

Year	North Atlantic and Barents Sea	South Atlantic	Mediterranean	Indian Ocean	Pacific	U.K. Coastal Waters, North Sea & Baltic	Total
1942-43	2,914	802	267	281	108	-	4,372
1943-44	279	78	135	405	7	52	956
TOTAL	10,603	968	491	886	274	872	14,094

TABLE 3

LOSSES OF ALLIED MERCHANT VESSELS BY ALL FORMS OF ENEMY ACTION FOR THE FIVE YEARS ENDED 2ND SEPTEMBER, 1944.

('000 Gross Tons)

Year	North Atlantic and Barents Sea	South Atlantic	Mediterranean	Indian Ocean	Pacific	U.K. Waters North Sea & Baltic	Total
1939-40	1,191	87	52	62	31	1,610	3,033
1940-41	3,006	138	378	166	68	890	4,646
1941-42	4,358	202	345	426	814	281	6,426
1942-43	3,114	830	480	323	122	47	4,916
1943-44	305	78	393	413	14	141	1,344
TOTAL	11,974	1,335	1,648	1,390	1,049	2,969	20,365

3. MERCHANT SHIPPING LOSSES DURING INVASION OF EUROPE.

The table below shows how ineffectual were the attempts of the German Navy and Air Force to destroy the Allied armada which set forth on the night of June 5th/6th and the re-inforcements which have been crossing the Channel ever since. The much advertised human torpedo succeeded in sinking only one ship in the first three months of the operations.

MERCHANT SHIP LOSSES BY ENEMY ACTION IN OPERATIONAL AREA OF THE ENGLISH CHANNEL

		No. of Ships Sunk	Gross Tonnage
JUNE	U-boat	2	9,584
	Mine	4	15,524
	E-boat	3	1,812
	Aircraft	2	9,008
	Shore Battery	3	10,681
		14	46,609
JULY	U-boat	1	1,499
	Mine	2	9,104
	E-boat	1	7,219
		4	17,822
AUGUST	U-boat	6	24,811
	Human Torpedo	1	5,205
	Mine	2	6,590
		9	36,606
3 Months Total	U-boat	9	35,894
	Human Torpedo	1	5,205
	Mine	8	31,218
	E-boat	4	9,031
	Aircraft	2	9,008
	Shore Battery	3	10,681
			27

Note: The above losses do not include vessels expended on "Portable Ports" which totalled 64 ships of 342,000 gross tons.

4. AMERICAN ANTI-SUBMARINE TACTICAL TABLE.

The U.S. Navy has recently introduced a new form of A/S tactical table for use in Fleet Training Centres. The most important innovation of this table is that it allows submarines to be plotted on the same glass sheet as the A/S escorts without the latter being aware of their whereabouts except when they are in contact by radar or asdics.

The glass-topped table is 10 feet by 6 feet by 3 feet high and is housed in a large hall containing two decks, one four feet above the other. The glass is one inch thick and is sand-blasted on both sides to reduce the transparency and make it possible to draw on either side with pencil or chalk. On the upper surface a model convoy with its screening escorts is manoeuvred by plotter ratings - one plotter to each of the five escorts and a sixth plotter to keep time and move the convoy.

On opposite sides of the hall are the conning booths rising from the lower deck to a height of 7 feet. From these booths training officers conn the escort vessels by giving orders to the plotters at the table. During day actions the officers stand on raised platforms in their booths, permitting them to see the ship models and talk directly to the plotters. During night actions these platforms may not be used and the table cannot be seen from the conning booths. Communication with the plotters is then by sound powered telephone. Inter-ship communication is effected by a loud speaker system with a microphone in each booth to represent ship-borne T.B.S. In addition, the booths contain plotting tables, plotting gear, R/T codes, etc.

Beneath the table is the submarine pit extending to the lower deck to give full headroom. In this pit student officers plot the track of submarines on the underside of the sanded glass sheet. Strong lights above the table permit the submarine operators to see the convoy, escorts and plexiglass asdic screens dimly through the glass. The escorts, however, are unable to see what goes on in submarine pit.

On the bulkhead behind the table are green and red manoeuvring lights to control the moves of the ship models. Similar lights, connected in parallel, are installed below in the submarine pit. All moves are of one minute's duration, the green light signifying moving time. At the start of each move, each conning officer informs his plotter of the course and speed to use and the plotter draws in the track of the ship for the next minute. Upon the completion of a move, the red light comes on signifying non-moving or dead time. While the red light is on, the submarines can determine if they have been caught within the 1500 yards assured

asdic range of the escorts. If a submarine comes within this range, a light is flashed up at the point of contact and this point is marked by the plotter above and reported to the conning officer as an asdic contact. The escort vessel then carries out an attack and, if this is handled correctly, the submarine is considered sunk. To notify the other escorts and the convoy that a ship has contact, a black pendant is hoisted by the conning officer and the escort commander is informed by R/T. If a submarine manages to run through the escort screen undetected, it can torpedo ships in company when within 3,000 yards.

Upon the completion of each move, the plotters trace in the edge of the plexiglass asdic screen attached to each escort, thus making it possible to see how effectively the area ahead of the convoy has been swept. At the end of the exercise the track of any submarine which eluded the escorts is traced in on the top side of the table. The students can then be shown the faults in the escort screen and how these faults could have been remedied.

In the night exercise the conning officers cannot see the ships and must keep station by radar ranges and bearings supplied by the plotters. Besides radar and asdic bearings of submarines, such complications as M/F D/F and H/F D/F bearings, radar decoys, rescue operations, etc. can be introduced and the students are also required to carry out search schemes such as operation "OBSERVANT".

5. OIL STREAKS.

Operations by ships in the shallow and wreck-infested waters of the English Channel have brought the subject of oil streaks to the fore again. Four years' experience has shown that it is essential to regard all oil slicks, which have an apex of fresh oil bubbling up, as emanating from a wreck until they are proved to be otherwise.

The diesel oil used in U-boats is very thin and very similar to paraffin. When it rises to the surface it has no marked colour and leaves no clear-cut edges. It resembles oil in a puddle, showing rainbow colours when the sunlight strikes it, but is chiefly noticeable by the way it smoothes out the surface of the sea. The other types of oil to be found at sea come from wrecks and are either crude or fuel oil. Both types are similar to look at. The oil is brown in colour but may vary in shade. It appears thick and viscous and has very clear-cut edges. It often comes to the

surface in bubbles or gushes and is far more persistent than diesel oil.

Oil comes to the surface from a U-boat either because the blast of a depth-charge forces some out of the saddle tanks, which are always open to the sea, or because of a punctured tank. In neither case does it rise in bubbles, except immediately after an attack when the U-boat is gravely damaged. On the other hand, oil from a wreck only comes to the surface when corrosion or wear has made a hole in the tanks. Then oil and bubbles will come up together and, if the hole is small, they may continue to rise for many hours or even days.

Though oil streaks may appear to be moving in a certain direction, the head of the streak does not, in fact, move appreciably. If there is no tidal stream but only a surface set caused by the wind, a bubble of oil rises straight to the surface and then trails off down the surface current, giving the appearance of a streak.

The slow surface drift in the ocean in calm weather will also cause a smoke float or other marker to move past the place where the oil actually breaks surface, and makes it seem that the head of the oil slick is advancing. There is no infallible way of finding out whether the oil is moving up to the marker or the marker is moving past the fixed source of the oil.

It should also be remembered that oil from a wreck never rises straight to the surface any more than cigarette smoke in still air does from a cigarette. If the rising stream of oil is gently displaced on its way by an underwater current or other means, the point where it reaches the surface will also move sideways. As the oil on the surface is drifting continually down the current, this displacement on the surface will not appear as a streak at right angles to the original one, but as a gentle curve.

If a depth-charge is dropped in the vicinity of the oil rising from a wreck, the blast of the explosion may break up the stream for a short while and at the same time may shake the wreck and cause more oil and bubbles to rise to the surface. The effect of this disturbance underwater will persist for some time and, until the water has finally settled down, currents will sway the rising stream of oil from side to side.

There is in fact, a most realistic impression of a U-boat changing course. First the oil streak apparently moves steadily, then the attack is followed by gushes of oil and bubbles and large alterations of course as though avoiding action were being taken and finally the streak steadies on its course again.

The direction of the wind is virtually immaterial to the illusion of the advancing oil slick. Extensive oil slicks are seldom seen unless there is little wind and the sea consequently calm and the surface drift, which causes the illusion, may be in quite a different direction from the wind at the time of the observation.

6. "THIEF" FOR COLLECTION OF OIL FROM SEA-WATER.

The difference between the diesel oil used by U-boats and the crude or fuel oil to be found at sea is considerable and a sample of oil taken in the vicinity of an anti-submarine attack may provide the Admiralty Assessment Committee with conclusive evidence as to the target attacked. To secure oil floating on the surface of the sea has always been difficult and a "thief" for this purpose has now been devised. It has yet to be proved at sea.

DESCRIPTION OF THE DEVICE

It consists of a cylinder 5 in. in diameter and 12 in. in length, sweated to a truncated cone 4 in. in length (a long axis) and 2 in. in diameter at the narrower end. This circular opening is covered with a metal plate having circular perforations $\frac{1}{8}$ -in. in diameter, spaced approximately six to the inch. This plate should be of the same metal as the rest of the construction. The top end of the cylinder is fitted with a cork collar of sufficient size to give slight positive buoyancy such that, when floating vertically in still water, the rim is approximately one inch above the surface of the water. The precise size of this collar will, of course, be dependent on the weight of the metal portion.

At the base of the cylinder two fins are fixed, each 4 in. long and $1\frac{1}{2}$ in. wide, at opposite ends of a diameter, and inclined in the same direction to the longitudinal axis at an angle of approximately 15° . On the same sides of the cylinder as the fins, and at the top end, are fixed two rings or lugs, for the attachment of a towline.

The lower end of the cylinder is lightly packed with a handful of clean cotton waste. This material has been found to be effective in the removal of oil from water flowing through the cylinder. It is important that the amount of the cotton waste is not too great, and that it be packed lightly, as otherwise flow-through of water will be unduly restricted.

In order to avoid contamination of the oil sample with the small amount of grease or dressing which may be present in the cotton waste, it is desirable that the latter should first be boiled in a diluted soap solution and then thoroughly rinsed before use. This pre-treatment could conveniently be done to a large quantity of the material, which is then set aside for this specific use.

OPERATION.

When using the "thief" the operator should stand at a level as close to the surface of the water as practicable, and the vessel should be under way at about 3 to 4 knots. The "thief" is lowered into the water on the end of the tow-line and allowed to drift astern until the line is at an angle of about 30° to the horizon-tal. This position enables a considerable degree of manual control to be exercised over the motion of the device and so to keep the opening in the surface of the water while rising and falling on the waves. Success in operation depends on maintaining this position while sampling. When the "thief" has been drawn through the area of oily water it is lifted out and the water inside allowed to drain out through the cotton waste. It is then lifted inboard and the waste immediately removed and placed in a suitable metal or glass container.

This gadget is not being produced as a store article but it is sufficiently simple for improvisation on board all ships who consider they have a chance in the future of passing through patches of submarine diesel oil.

SECTION VI

MATERIEL

1. RADAR MAINTENANCE FACILITIES.

The efficient maintenance of a Radar Set, is, to a great extent, dependent on spare parts.

The quantity and variety of spares which a ship can carry is limited. Therefore it is essential to see that spares aboard are kept up to establishment.

Larger quantities and greater varieties are carried at Radar Bases as shown in the following list which is mainly for the guidance of Escort vessels.

Whenever a maintenance job is beyond the capacity of the ship, assistance should be obtained from the Port Radar Officer.

It does not follow because a port does not list spares for your particular set, that assistance by the PRADO cannot be given, as often he may be able to substitute or obtain the necessary part.

Radar Maintenance Facilities & Spares

<u>Port</u>	<u>Spares Carried</u>
Sydney	All Admiralty and Australian sets.
Fremantle	All Admiralty and Australian sets, S.O.
Brisbane	272P, 242, A272, A286P/Q, S.O.
Cairns	A272, A286Q.
Townsville	A272, A286Q, 242.
Melbourne	A272, A286Q, 242.
New Guinea	272P, A272, A286P/Q, 242, 253.
Darwin	272P, A272, A286P/Q, 242, 253, S.O.

Note:- Where spares for a particular set are not listed they will be obtained from Sydney.

2. BETTER PERFORMANCES FROM YOUR RADAR SETS.

Are your Radar Sets giving their best performance?

Below are set out some figures of reliable picking up ranges which can be expected under normal conditions with an A272 or an A286Q when fitted in an A.M.S., given about three months for the sets, operators and mechanic to get used to each other.

<u>Target</u>	<u>A272</u>	<u>A286Q</u>
Fairmile	6,000 yards	Unreliable
Submarine (surfaced)	9,000 "	Unreliable
A.M.S. Vessel	12,000 "	4 miles
Destroyer	14,000 "	5 "
Cruiser	20,000 "	6 "
Liberty Ship	18,000 "	6 "
Aircraft Under 1,000	Unreliable	20 "
" 1,000 to 5,000		50 "
" 5,000 to 20,000		60 "

Weather conditions will affect the apparent performance and usually "abnormal conditions" will improve the maximum ranges on surface targets or low flying aircraft, whereas high fliers may be missed altogether.

When such conditions are encountered, it may therefore, not be the fault of the equipment, so make a note of the weather conditions and pass these to the Naval Board in accordance with Navy Office Letter 034319 of 14th July, 1944. This information if being collected in an endeavour to correlate "Radar conditions" so that they may be predicted.

If your Radar sets do not give results as good as those listed above, consult your nearest Radar Officer and have the equipments checked.

Radar sets are not simple by any means, and before mechanics can become really proficient they must have considerable experience in the particular equipment they are handling. Results to date have shown that it takes about three months for the mechanic

to get used to the equipment, more particularly when this is a newly installed set.

Help your Radar sets through their "teething troubles" and make them really work well by giving your mechanic every facility and incentive to get good results.

Experience is the key to better results, so encourage your operators to pick up targets and follow these even if you do know what they are. The operators may not know and it is most important that they get practice in following and recognising all types of echoes.

3. CAFOs ON ANTI-SUBMARINE SUBJECTS.

C.A.F.O. 1944.	Subject	Brief Description
1829	"Q" Attachment	Modification to Directing Gear of Type 144 Series
1830	"Q" Attachment	Modification to Directing Gear of Type 145 Series.
1865	Depth Charges	Importance of Correct Drill
1871	Hedgehog, Fuze No. 420	Removal of Safety Pins
1883	A/S Plot in Coastal Force Craft	
1884	Range Recorders A/S 3 and A/S 59 Series.	Secondary Method of Finding Time to Fire - Internal Range Scale
1886	Bearing Recorders, Patterns A.2097 and A.2247	Modification to Colouring on Square Bearing Scale
1888	"Q" Attachment	Precautions to be observed when Fitting.
1922	"Hedgehog"	Equipment and Firing Trials

C.A.F.O. 1944	Subject	Brief Description
1934	"Q" Attachment	Fitting in Ships fitted with Types 124/V, 127 Series, 133 Series A.s and A.s
1936	Bearing Recorders, Pattern A.2247	Modification to Cursor Operating Mechanism
1937	Captain's Bearing Instrument Pattern A 2030	Glass Cover to be fitted in lie of Perspex Cover.
1938	Fixed and Housing Domes	Introduction of Simmonds Stop Nuts, Pattern A.2538 for Securing Domes.

Attention is also drawn to the following C.A.F.O's -
1831, 1870, 1880, 1881, 1882, 1885 and 1923

SECTION VII

SHIPPING STATISTICS FOR SOUTH WEST PACIFIC

1. ANALYSIS OF CONVOYS - AUGUST, SEPTEMBER, 1944.

AREA	No. of Ships		Tonnage	
	August	September	August	September
Thursday Island - Darwin	22	15	107,522	66,443
New Guinea Area	133	13	860,606	117,000
Total	155	28	968,128	183,443

2. SINGLE ESCORTED SHIPS - AUGUST, SEPTEMBER, 1944.

AREA	No. of Ships		Tonnage	
	August	September	August	September
New Guinea Area	10	18	54,048	159,590
Arafura Sea	6	4	23,656	8,198
Total	16	22	77,704	167,788

3. INDEPENDENT VESSELS - AUGUST, SEPTEMBER, 1944.

AREA	No. of Ships		Tonnage	
	August	September	August	September
Eastern States - Western States	48	48	307,977	305,301
Melbourne - South Australia	91	100	412,946	463,657
Newcastle - Melbourne	194	200	917,599	874,995
Brisbane - Sydney	159	129	833,859	532,297
Barrier Reef - Brisbane	102	81	413,625	346,205
Coral Sea and New Guinea	832	965	5,352,440	6,355,940
Arafura Sea	7	7	14,326	19,038
Total	1,433	1,530	8,252,772	8,897,473

4. MONTHLY OUTWARD GROSS TONNAGE - AUGUST, SEPTEMBER, 1944.

PORT	No. of Ships		Tonnage	
	August	September	August	September
Langemak	362	332	2,399,684	2,410,137
Sydney	332	300	1,029,934	916,034
Milne Bay	193	151	1,188,862	903,347
Humboldt Bay	127	131	789,222	825,306
Melbourne	141	142	610,476	655,865
Oro Bay	78	97	434,602	611,650
Newcastle	219	234	485,547	503,496
Fremantle	82	74	559,229	494,514
Seeadler	37	52	181,944	408,696
Brisbane	97	83	466,291	377,133
Lae	60	44	390,452	263,940
Adelaide	46	52	225,382	256,010
Townsville	60	57	248,158	223,793
Biak	42	38	235,776	223,539
Cairns	56	66	127,506	150,905
Port Kembla	41	40	130,124	130,733
Port Moresby	29	25	142,189	110,301
Thursday Island	40	35	140,473	108,915
Whyalla	22	25	100,114	108,553
Darwin	14	13	74,469	53,356
Hobart	18	14	76,098	47,809

