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A.C.B. 0233/44 (2)

SOUTH-WEST PACIFIC

ANTI-SUBMARINE REPORT

FEBRUARY, 1944

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S E C R E T

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SOUTH-WEST PACIFIC

ANTI-SUBMARINE REPORT

OPEN

FEBRUARY, 1944

ANTI-SUBMARINE
WARFARE DIVISION,
NAVY OFFICE,
MELBOURNE.

A.C.B. 0233/44 (2)

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3. Status of Jap. U-boat Fleet
4. Extra-Service Submarine Officer's Notebook
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FEBRUARY, 1944

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Japanese Submarine Activity -
Map for January

Appendix I.

SECTION I

COUNTER MEASURES

1. REVIEW FOR JANUARY

No attacks by Japanese submarines were reported during January, and the enemy's main activity in the South-West Pacific Area again appeared to be concerned with supplying forward bases.

Aircraft made three attacks on submarines, and surface craft reported a promising attack west of Madang on January 13.

D/F fixes at the beginning of the month indicated that four enemy submarines were operating in the New Guinea Area, one of these possibly being engaged on reconnaissance. Aerial photographs of Rabaul showed from one to five submarines in harbour on various days during the month.

2. REFRESHER TRAINING SHIP

The refresher training ship, H.M.A.S. "ORARA" is nearing completion and should be available in the north eastern area within a short time. Provision will be made for gunnery, W/T, and Radar instruction as well as training in anti-submarine attacks and general escort tactics.

"ORARA" will be fitted with two Asdic sets - type 128C and type 128DV (for eventual conversion to type 144), - an Attack Table and two procedure teachers. Three Radar sets - A272, A286P and ABK - will be carried, and provision will be made for a Gunnery Instructional Centre and a projector room for showing films.

A U.S.N. training ship - U.S.S. "ALABASTER" - has also been allocated to the S.W. Pacific Area and this ship will be equipped to give instruction using U.S.N. type equipment.

3. R.A.A.F. MARINE MARKERS

R.A.A.F. aeroplanes engaged on Anti-submarine duties will

use two new types of marine markers for marking the last known position of a submarine.

The markers are about 2½ feet long and 6 inches in diameter. The Mark II type which weighs 19 pounds is instantaneous in action. Immediately it is dropped into the water it produces a flame which burns for a minimum period of at least two hours. The flame is visible from the bridge of a ship at a distance of at least three miles during daylight and a distance of about 20 miles at night. White smoke is given off with the flame and during daylight hours the smoke can be seen over a distance greatly exceeding three miles.

The marine marker Mark III weighs 21 pounds and is similar to the Mark II type, differing only in the fact that it is fitted with a variable delay of up to six hours. The advantage of the Mark III marker is that it can be used when escorts are not expected for some hours. By setting the variable delay the aircraft can ensure that, within limits, the marker is burning when the escort arrives.

4. CONVOY ESCORT CODE

A.C.B. 239 (South-West Pacific Convoy Escort Code) has been prepared and distributed and will be brought into operation shortly.

5. RADAR PLOTTING

A case occurred recently of an escort vessel making an attack on the wake of another escort. The attack which began when the escort obtained a Radar contact and then an Asdic contact on the same bearing, could probably have been avoided if the escort had been keeping a simple plot.

The necessity for keeping a plot of a suspicious echo is stressed and attention is drawn to the following extract from A.C.B. 0235 "Radar in Australian Escort Vessels".

"To obtain the full value from Radar reports, it is important that a plotting board should be kept always available for plotting any suspicious echoes.

"As a result of investigation into the possibility of

providing plotting facilities and relevant communications to allow efficient use of Radar in A.M.S. Vessels, the following general principles apply:-

(i) A Radar plot should be established in such a position that it may be readily viewed by the Commanding Officer without leaving the Bridge.

(ii) This Radar plot should be in close proximity to the navigational chart in order to facilitate transfer of information from one to the other.

(iii) There should be uninterrupted communication between the Radar operator and the plotting number.

(iv) The plot should be manned continuously when Radar sets are closed up."

6. INTRODUCTION OF ROMAN CANDLES

The white rockets employed by merchant ships to indicate a U-boat or E-boat attack are being replaced by Roman Candles firing five white stars at 10 second intervals to a height of approximately 250 feet.

British managed merchant ships will be supplied as rapidly as possible and in the meantime either the rocket or the Roman Candle signal may be used.

N.C.S.O's should inform Commodores of Convoys and Masters, and relevant publications will be amended.

The establishment per ship is seven (two in each wing of the Bridge, ready for instant use, and three spares - A.M.S.I. Article 232). The 504 about to arrive as first supply will meet the requirements of 72 ships and will be distributed as soon as possible to ships in the North Eastern Area.

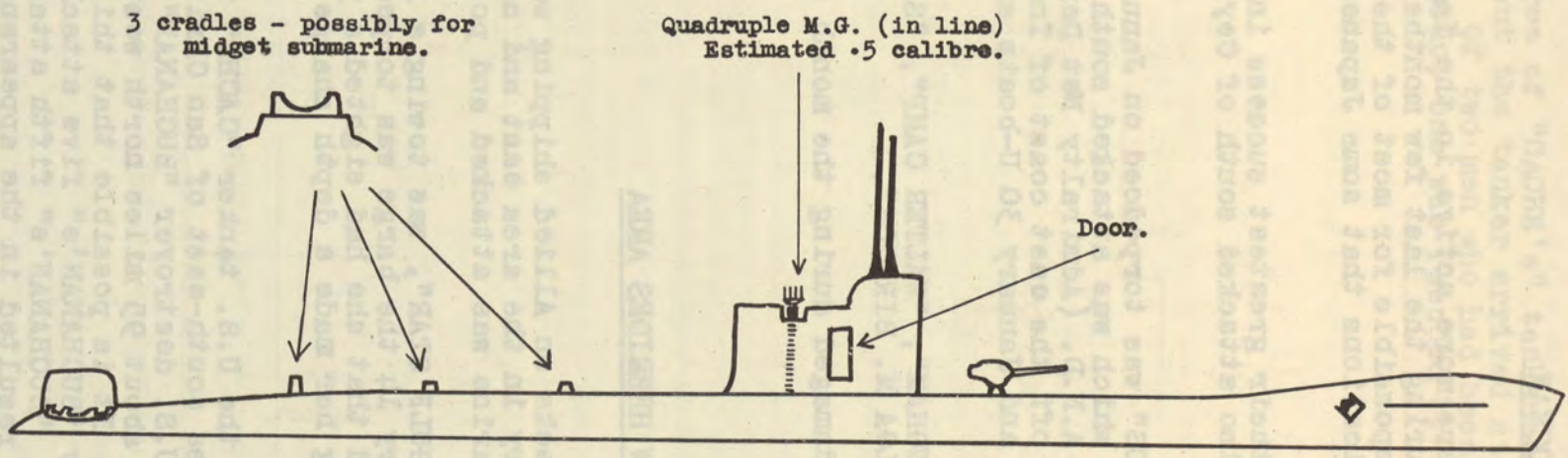
SECTION IIENEMY ACTIVITY1. JAPANESE SUBMARINE ACTIVITY - MAP FOR JANUARY

See Appendix I at back of this report.

2. ANALYSIS OF CONVOYS - DECEMBER, JANUARY

AREA	No. of Ships		Tonnage	
	December	January	December	January
Thursday Is. - Darwin	9	7	26,583	27,792
Barrier Reef - Brisbane	97	105	431,038	484,004
Brisbane - Sydney	54	57	198,186	188,154
Newcastle - Melbourne	34 *	*	118,807	*
Coral Sea	228	273	1,175,201	1,354,684
Arafura Sea	5	6	11,339	14,950
TOTAL	427	448	1,961,154	2,069,584

* O.C. and C.O. Convoys were discontinued on December 7.



JAPANESE U-BOAT WHICH SANK S.S. "BERAKIT"
IN THE INDIAN OCEAN.

3. SUBMARINES IN THE INDIAN OCEAN

German U-boats were more active in the Indian Ocean during January than they had been during the last few months of 1943. They are believed to have been responsible for most of the sinkings in the area although there were indications that some Japanese submarines were still operating.

The U-boats had their greatest success in the Northern Arabian Sea but ships were also attacked south of Ceylon and off the east coast of India.

The tanker "TORNUS" was torpedoed on January 1, but was not sunk, and S.S. "TRIONA", which was attacked south of Ceylon on January 11, was saved by her A.N.D. (Admiralty Net Defence). S.S. "PERSEUS" was torpedoed off the east coast of India four days later and between January 25 and January 30 U-boats sank the following vessels -

"SURADA", "FORT BUCKINGHAM", "WALTER CAMP", "SAMAURI",
"FORT LAMUANE" and "OLGA M. BIRICOS".

Tonnage sunk or damaged during the month amounted to approximately 55,000 tons.

4. JAPANESE SUBMARINES IN NEW HEBRIDES AREA

Two damaging attacks on Allied shipping were made by Japanese submarines in January in the area east and north of the New Hebrides, but one enemy submarine was attacked and possibly damaged.

A U.S. tanker, "GULF STAR", was towing a fuel oil barge to Espiritu Santo when on January 14 the barge was torpedoed. The following day the tanker reported that she had sighted a periscope and P.C. 1138 which was escorting her made a depth charge attack with unknown results.

Seven days later the U.S. tanker "CACHE" was torpedoed by a Japanese submarine 155 miles south-east of San Christobal. Ten hours after this attack the U.S. destroyer "BUCHANAN" gained contact with a submarine in position about 95 miles north west of where "CACHE" had been torpedoed. It is possible that this submarine, which was possibly damaged by "BUCHANAN's" five attacks, was the boat that attacked "CACHE". "BUCHANAN's" fifth attack, made nearly three hours after her first, resulted in the appearance of a large quantity of oil.

Three of "CACHE's" tanks had been badly holed and others were damaged, but the tanker arrived at Espiritu Santo 29 hours after she was hit. Of two men who had been blown overboard by the explosion of the torpedo, one was rescued by U.S. Minesweeper "SOUTHARD".

SECTION IIINARRATIVES1. SHIP SAVED BY NET DEFENCE

A British merchant ship, S.S. "TRIONA" (7203 tons), was attacked by an enemy submarine in the Indian Ocean south-east of Ceylon early last month.

"TRIONA" was streaming A.N.D nets when at 4-35 a.m. on January 12 a torpedo struck the port net forward of the cross bunker hatch and exploded causing severe concussion to the ship.

Hands were called to action stations and "TRIONA" began to zigzag. A keen lookout was kept for the submarine which, however, was not sighted as the morning was dark and the moon was obscured by heavy clouds.

During the morning an examination of the holds and bunkers was made and many slight leaks were found while a number of rivets had become slack. The fore part of the A.N.D. net was badly torn by the explosion. "TRIONA" was not attacked again and arrived at Fremantle without further incident.

2. A SUPERSTITIOUS U-BOAT CAPTAIN

Lieut-Commander Wolf Jeschonnek, a half brother of the late General Jeschonnek who was popularly regarded as the author of much of Hitler's intuition, was also an amateur crystal gazer and his patrols were regulated by superstition.

His U-boat, "U-607", was destroyed on her fifth patrol which began a year and a day after she had left Kiel on her first. Her crew were tried and experienced submarine men and her Captain was popular and efficient in spite of his pseudo necromancy.

The presence in the small ships of a medical officer of the rank of Surgeon Lieutenant and above is believed, in the German Navy, to foreshadow death among the ship's company and indeed on this occasion it proved correct for there were only seven survivors and the Doctor was not among them.

"U-607" was to have sailed on July 9, 1943, but this day was a Friday and her Captain was firmly convinced that to begin a patrol on a Friday was nothing short of suicide.

On her fourth patrol "U-607" had been hunted and had managed to escape on the surface in a kindly mist, but on reaching St. Nazaire for a refit her crew, the Captain in particular, were stricken with a devitalising form of dysentery.

When they left port early on July 10 there was uneasiness and foreboding of disaster among the crew. The first two days were uneventful, but on July 12 the Captain lost his favourite cap. Jeschonnek had worn it in every action in which he had been and had come to regard it as a talisman. He had sailed with a premonition of disaster in his heart, and when he saw his cap fall into the sea and float away and sink he was certain that it was a sign that his luck, too, had deserted him.

The 13th had a double meaning for "U-607's" Captain - it was his birthday and it was the day on which "U-607" was sunk. At about 0800 that day the U-boat surfaced and a Halifax aircraft was sighted astern and a Sunderland ahead. Jeschonnek immediately felt more cheerful. He was confident that with his new armament he could drive off any aircraft. He and the First Lieutenant both lit cigarettes and nobody bothered to put on life jackets.

When the Sunderland attacked "U-607" opened heavy fire, but it was the aircraft's guns and not the U-boat's that caused the damage. The shields of the quadruple 20 mm. gun were pierced and the gun's crew fell dead on the U-boat's deck.

The Sunderland's depth charge attack was extremely accurate, the centre charge falling almost on the conning tower, three charges falling close to port aft and three close to starboard forward of the conning tower. The U-boat's back was broken, the conning tower was blown into the air, the bows went forward on their own, stood on end, toppled forward and disappeared. Then what was left of the U-boat rocked violently, capsized and sank.

About noon Captain (D) Second Support Group, hot on the trail of another U-boat, came upon the seven survivors (as he put it) "squatting disconsolate in the dinghy under a blazing sun". He could not stay to pick them up and so "perforce left them to a contemplation of nature while the hunt was on."

About 0400 next morning H.M.S. "WEEN", detached from the Second Support Group, sighted the dinghy and a whaler was lowered. As it closed the survivors were asked for the number of their U-boat. When they refused to give it the Officer in charge of the whaler put about and said "no number no rescue."

Five minutes later the seven survivors were on board the sloop.

3. HISTORY OF A JAPANESE U-BOAT

As a result of the interrogation of survivors from the Japanese submarine "I-17" sunk off Noumea by H.M.N.Z.S. "TUI" and Soupac aircraft more is known of the early history of this submarine.

"I-17" had taken part in many routine patrols and the survivors claimed that she had torpedoed a number of Allied ships. There was however, one diversion from her normal activities. On the night of February 24, 1942 "I-17" surfaced off the coast of California and shelled an oil refinery at Galeta, a few miles north of Santa Barbara. The shelling was ineffective.

On her last cruise "I-17" was, as usual travelling alone and was mainly concerned with reconnaissance although her Captain had instructions to attack Allied shipping if opportunities were presented.

The crew had just had lunch when the detector indicated the presence of a ship in the vicinity.

"I-17" came to periscope depth and sighted "TUI" and two merchant ships. The submarine was manoeuvring to attack when she was depth charged. Some plates were sprung in the forward compartments and "I-17" dived to 130 feet. "TUI" made a second depth charge attack, but survivors said that this did not cause any further damage. The submarine came to periscope depth about an hour and a quarter later but she was immediately depth charged by an unseen aircraft. This attack caused more damage to the plates and "I-17" was leaking badly.

By 1500 the forward compartments were flooded and she was forced to the surface. The gun crew immediately manned the anti-aircraft guns and the submarine, emitting a heavy cloud of black exhaust smoke, made off in a southerly direction at the maximum speed of which she was now capable.

About 30 minutes after sunset two planes attacked through the exhaust smoke. The second aircraft, which made a run from starboard scored a damaging near miss and then circled and strafed the deck, killing several men. "I-17" began to settle in the water and the Captain ordered the gun crew below, but only two men were able to scramble down the hatch before the deck was awash and the hatch forced closed.



A German U-boat submerging while being attacked by a carrier-borne aircraft.

The gunnery officer had been the first to dive for the hatch and a handful of men were left stranded on deck. They knew however that the submarine was not merely submerging and realised their good fortune. A number of wounded men including the Captain were unable to swim away and was sucked down by "I-17" as she sank. Six men were later rescued by "TUI".

The following details of "I-17" was given by the survivors.

ARMAMENT & EQUIPMENT

Armament - 14 CM deck gun (removed from "I-17" at Yosuka in July, 1942). AA/MG (25 mm. type 96). Twin mount on conning tower aft of periscopes. Magazine fed, 15 rounds. 1000-2000 rounds carried in conning tower.

Survivors stated that the periscopes could not be lowered sufficiently to allow A/A guns to fire low forward. If aeroplanes approached from the bow, the submarine was forced to swing to bring her guns to bear.

One 7.7 M/G - portable. Six torpedo tubes, probably 21", all forward in two banks of three each. Two bottom tubes were seldom used and several survivors reported that they had been out of order for some time. Fifteen torpedoes were carried.

Aeroplanes - Floatplane in hangar just forward of conning tower.

Hangar - Just forward of the conning tower. Measurements Length - 20 to 25 ft., width - 7 ft., height - 7 ft. Detached portions of aeroplane showed against both bulkheads and fuselage rested on a moving carriage which was below the level of the sub-deck. Air pressure was maintained within the hangar to prevent leakage.

Derrick - Forward of the hangar and about 20 to 25 ft. high. It was operated by an electric motor and lowered to the deck when not in use.

Catapult - Approximately 40 ft. in length and located just forward of the derrick. Survivors reported it was operated by air pressure but was infrequently used as the plane usually took off from the water.

Periscopes - Not suitable for plane lookout or observation. Periscopes fitted for photography.

Underwater W/T - None.

Detection & Calculating Equipment - No Radar equipment

was aboard. Equipped with sound detector, offset angle solver, echo-range finder for soundings and Asdic for measuring bearing and distance to target.

Landing Barges - Survivors denied that "I-17" had carried barges since outbreak of war, although it was admitted that it could be done. One large landing barge (capacity 100 men) could be carried aft. Launching was accomplished by untying ropes and ten submerging until the barge floated. Survivors reported that barges were equipped with a single 13 m.m. machine gun.

METHODS

Sorties - "I-17" always operated independently and the longest cruise experienced by survivors was 42 days. Survivors stated that, on leaving Truk, the submarine usually travelled on surface for first two days.

Submerging - Survivors reported steepest angle of dive to be 30° and that "I-17" functioned badly in dives. This was generally understood to be due to the aeroplane hangar. Survivors believed that about 2½ minutes was required to reach periscope depth, thought to be about 35 feet.

"I-17" could travel 10 hours submerged and took four hours to recharge batteries. When attacked, she usually dived to 200 feet and the maximum depth to which any of the survivors knew she had submerged was 260 feet. Usual cruising depth was stated to be 80 to 100 feet. Survivors stated that "I-17" never rested on the bottom. The submarine used a surface speed of 12 knots and never exceeded 16 knots. Submerged speed was 2 to 3 knots.

Deception - One survivor stated that it was possible to release small quantities of oil while submerged, but that he did not know how it was done. Another survivor denied that this could be done.

W/T Communications - "I-17" on cruise only wirelessly based infrequently, possibly once a week, when operations would be summarized and weather reports sent. Silence would probably be broken in an emergency or discovery of important movements. There were no fixed time schedules.

Recognition Signals - "I-17" hoisted navy flag on small mast aft of conning tower when red ball insignia of Japanese aeroplane was recognized.

Aeroplane Reconnaissance by "I-17" - No flights on cruise of April-June, 1943. One flight on cruise of July-August, 1943, believed to be a reconnaissance over Espiritu Santo. The flight was made at dusk, the submarine remaining surfaced until the plane was recovered.

4. AIRCRAFT CRASHES BUT SINKS U-BOAT

"U-459", a 1,600 ton Supply U-boat, was sunk on July 24, 1943, by two Wellington aircraft. Of the crew of 59, 5 officers including a Surgeon and 32 ratings were later picked up by the Polish Escort "ORKUN".

On her first patrol "U-459" proceeded from Kiel on March 20, 1942, and may have penetrated into the Caribbean Sea as far as the Gulf of Mexico. A number of U-boats were supplied on this patrol, among them being "U-432" which was later sunk. The second patrol was made to a point about 300 miles from Bermuda and survivors claimed that on the third patrol "U-459" operated in the Capetown Area and was at one time 310 miles south of the Cape of Good Hope.

"U-459's" last patrol began at Bordeaux on July 21, 1943. She sailed with "U-117" and was escorted by a destroyer and 4 smaller escorts. Shortly after midnight on July 23 "U-459" dived, but it was found that the air quick release valve had failed to close properly and that the U-boat was rapidly shipping water. On surfacing it was found that the boat had been very cleverly sabotaged by a thick piece of copper wire wound round part of the valve seating.

At about 1715 on July 24 "U-459" was attacked by an aircraft which, in spite of heavy fire from the U-boat's 20 mm. guns, pressed home a very determined attack. The aircraft had achieved almost complete surprise and ratings were still trying to get additional supplies of ammunition up through the conning tower when there was a tremendous explosion.

Few prisoners were able to give any coherent account of what actually happened but it is known that the aircraft struck the bandstand on the starboard side, carried away the single 20 mm. gun, swung round and tore the quadruple gun from its mounting and then crashed into the sea. All the ratings abaft the bridge were killed by the impact of the aircraft.

The sole survivor of the Wellington, an air gunner, said that, when attacking, the Captain reported through the inner-communication system that the U-boat was preparing to fight. At 1,000 yards pieces started to fly off the fuselage, and when, at a height of 100 ft. there was an explosion and he lost consciousness, coming to in the water to find himself beside a dinghy.

Three depth charges had become detached from the aircraft, two falling on the bandstand and one right aft. In the brief moment of panic which followed the crash, the U-boat crew threw the three charges overboard and at least one exploded under the stern, wrecking the gear and causing considerable damage in the engine room.

The Captain was still reluctant to abandon ship, believing that some chance remained that the damage could be repaired. Hopes were dashed however, when another aircraft appeared and its machine-gun fire destroyed most of the dinghies which had been brought on deck after the first attack. The Captain ordered "abandon ship" but remained on the bridge himself until the crew had pulled away in the remaining dinghy. He then went below to scuttle the U-boat and was not seen again.

5. JAPANESE "MIDGET" EXPERTS GO TO GERMANY

A prisoner from "U-462", a Supply U-boat which was sunk on July 30, 1943, said that the boat had recently made a patrol lasting 138 days. She was heavily escorted through the Bay of Biscay and later met a Japanese submarine. She took over a Japanese Naval Captain and a Submarine Engineer as well as 48 bars of gold.

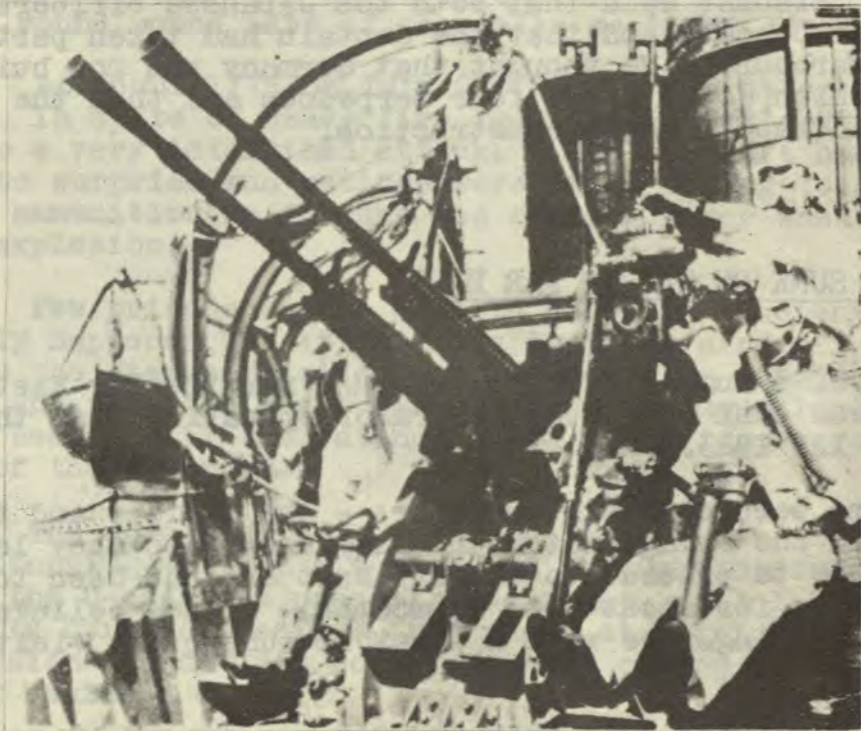
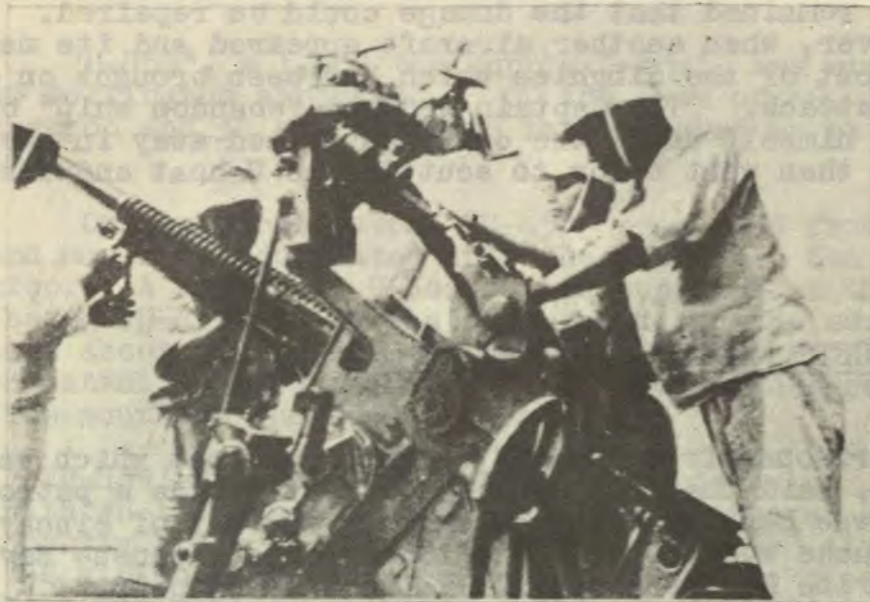
The prisoner said that both the Japanese officers were experts on two-man U-boats and that the Captain had taken part in the attack on Pearl Harbour. He thought that Germany was now building two-man U-boats which would carry four torpedoes and that the Japanese experts were to advise on their construction.

6. GERMAN U-BOAT SUNK ON WAY TO FAR EAST

One of a number of U-boats bound for the Far East, "U-506", a 740 ton boat, was sunk by a U.S. Liberator operating from the Gibraltar area on July 12, 1943.

There were only six survivors - one officer and five ratings who comprised the bridge watch. They knew when they left Lorient that they were to proceed to the Far East and had been told that they were to be away for about 9 to 12 months. They believed that they were bound for Singapore with a possible subsequent visit to Japan.

The survivors said that "U-506" was one of 10 or 12 U-boats which would leave French Atlantic bases at 2- or 3-weekly intervals to form a flotilla in Far Eastern waters. Another boat, "U-511", which had left about May 10, was operating in the area off Madagascar by the first week in July and "U-506" was expected to reach



Japanese naval light anti-aircraft guns.

her destination (which was in the same area) in about six weeks.

The ship's company were equipped with tropical kit and in addition to normal complement a surgeon and a war correspondent were carried. Lieutenant Reike of the German Propaganda Company had already made patrols in Italian submarines and he was to accompany "U-506" to the Far East making a film on the way. He brought with him a cine camera, 14,000 feet of film and his own electric accumulator.

The First Lieutenant, who was the only officer to survive, stated that Lieutenant-Commander Herbert Kuppisch had planned the operation of moving the U-boats from Lorient to the Far East. Other boats from the 10th Flotilla said to be allocated to the Far East were "U-509", "U-514", "U-516" and "U-533". "U-523", which had previously been detailed, had to return shortly after sailing owing to damage to her engines and "U-514" took her place.

"U-506's" survivors said that "U-511" had carried only six torpedoes when she left Lorient and that she had orders to proceed direct to the Far East. All ballast had been landed and in its place small black bottles resembling compressed air bottles had been embarked. Four of the ships company were left behind and one prisoner said that this was to make room for four Japanese officers. A Propaganda Company film operator was also carried in this U-boat.

Prisoners corroborated statements that the Japanese submarine which visited Lorient during the latter half of 1942 had been sunk. They said that she was mined just off Singapore.

7. CARRIED SABOTEURS TO U.S.A. - NOW SUNK

"U-202", the boat in which four saboteurs sailed from Lorient to Long island U.S.A., was sunk in June, 1943. In the first year of her operational life, she made five patrols but she sank no more than five ships and on one occasion was badly damaged when attacked by Swordfish aircraft off Cape Spartel.

Just before "U-202" was due to sail from Brest on her sixth patrol about the end of May, 1942, her Captain was summoned to Lorient where Admiral Donitz told him he was to undertake a special mission. The Captain returned to Brest and took his U-boat to Lorient where four men wearing infantry uniform came aboard. They carried shovels, explosives and were provided with civilian clothes and a large sum in dollars.

The U-boat left Lorient about May 27, and arrived off Long Island on the 12th June. A little after midnight the saboteurs, who were now wearing civilian clothes, were put ashore but they were promptly rounded up and sent to the electric chair.

As she was drawing away from the shore after landing the four men, "U-202" went aground and stuck fast. The combined force of diesels and motors could not get her off and the Captain ordered oil fuel to be discharged. The men could hear the barking of dogs and the crowing of cocks but when dawn broke a heavy mist covered the U-boat. Still "U-202" did not shift and the Captain wrote out a signal reporting that he had completed his mission but that he had to blow up his U-boat and surrender himself with his crew. Then the tide turned, the U-boat shifted slightly and "U-202" floated off and put to sea.

With a new Captain, the U-boat made another cruise before docking for a major refit which lasted until January, 1943. "U-202" sailed in heavy seas and when she reached her operational area westward of the Canaries a number of other U-boats were met. From February 20 to February 26 the U-boat shadowed a convoy but her attack was a failure. While returning to Brest, two mines exploded, one of them between her and her escort.

The last cruise was made off south Greenland. The month of May was notable because each time the submarine surfaced to get into position to attack a convoy she was detected by the air escort and forced to submerge. By June 1 "U-202" had only about 30 tons of oil left and she surfaced to make a long signal, reporting her plight. This signal was detected by the Second Support Group consisting of H.M. Ships "STARLING", "KITE", "WOODPECKER" and "WILD GOOSE". As the Support Group closed "U-202" to attack the U-boats lookouts mistook the warships for a convoy and the U-boat dived in readiness for an attack.

The Captain, who spent most of his time in his bunk, had a look through the periscope, saw the four ships approaching, and immediately recognized them as escorts. At first he thought of attacking them but then changed his mind and went deep.

"U-202" was hunted for 14 hours. The U-boat kept very deep and managed to avoid serious damage from the great number of depth charges which were showered upon her. But she could not escape by diving deep, by evasive steering, or by the prolific use of S.B.T.

Shortly after midnight the U-boat's limit of endurance was reached. The Captain had no idea where the sloops were and surfaced ahead of "STARLING". Her gunfire and a pattern of depth charges banished all hope of escape and the order to abandon ship was given. The survivors were taken on board "WILD GOOSE" where the Captain wrote what he called an "Order of the Day" to his crew. It said "We have lost this battle because the events of the night decided against us. I thank you for your loyalty."

SECTION IV

INTELLIGENCE1. JAPANESE SUBMARINE TACTICS AND EXERCISES

The following notes on Japanese submarines are extracts from a U.S. publication "The Japanese Submarine Situation."

"The importance with which the submarine service is regarded is shown by the fact that recently a separate unit of the forces afloat has been formed into a Submarine Fleet. The two submarine squadrons comprising this fleet were withdrawn from the Combined Fleet. Evidently training is more expeditiously carried out by an independent force.

"The Japanese submarine tactical doctrine, developed by Admiral Suetsugu is based on the following mission:

- (i) To maintain Japan's lines of communication.
- (ii) To destroy the enemy's lines of communication.
- (iii) To reduce the enemy's main fleet by surprise attacks until parity is reached, at which time the Japanese main body will attempt to engage the enemy main body.

"In general, submarine training emphasizes attack on the enemy main body rather than on employment as commerce raiders. Night surprise attack exercises are continuously stressed.

"The Japanese Navy is of the opinion that many of the disadvantages incident to inferior material are lessened during night operations and that spirit and morale, in which the Japanese believe themselves to excel, will give them a decided advantage over any enemy fleet. Particularly is this true of the destroyer, submarine, and aviation branches of the service which apparently are most confident that they can conduct successful night attacks on the main body of any enemy fleet."

2. SUBMARINE PERSONNEL

A number of articles by Japanese naval officers in.



The A.A. armament of this U-boat can be clearly seen.
The U-boat was attacked by aircraft from U.S.S. "CORE"

Japanese magazines have attempted to portray for the Japanese public the general problems of national defence, the important part that submarines play in the Japanese strategical plan, and the general characteristics of the submarine force. The following information has been taken from these articles.

"The crews of Japanese submarines are made up of picked officers and men, the best in the service. From the beginning they are filled with a sense of the importance of their duties, and this, combined with traditional Japanese bravery, loyalty, pride in the service, and spirit of the offensive makes a body of men unsurpassed in morale.

"The physical condition of submarine crews is excellent. Fresh provisions are provided whenever possible. The Japanese, however are accustomed to hardships and are taught to despise luxuries. They therefore consider that many problems facing foreign navies are minimized in their service.

"The use of submarines is peculiarly fitted to the Japanese temperament. The Japanese warrior is patient, believes in waiting for a favourable opportunity to take the offensive, understands the value of surprise attacks, and is determined to die rather than surrender. The Japanese take pride in the assurance that this spirit pervades their submarine force.

"Because they are picked men of splendid morale, training comes easy to them and Japanese submarine crews consequently consider themselves superlative.

"The personnel for the submarine service are volunteers from the general service, but there are deficiencies in numbers and these are filled by draft. The level of training varies considerably and some seamen assigned to the submarine service have had no submarine training whatsoever.

"Both officers and men are generally rather young. Promotions are rapid, particularly in the midget submarine service. The C.O. of a midget is generally a Lieutenant not more than 22-24 years of age."

Morale in the submarines is apparently very good, despite the absence of comforts that would be designated as necessities in Allied submarines. For instance artificial lungs are not found in submarines during wartime although they were manufactured and supplied to the vessels in peacetime. This is in line with the Samurai-Spartan teaching that in wartime no Japanese sailor would wish to escape from a sunken ship.

If possible, a Japanese submarine captain will surface or remain at periscope depth after a successful hit in order to allow all hands to see the results of their handiwork.

3. ESTIMATED COMPOSITION OF JAP. U-BOAT FLEET

The Japanese submarine fleet at September 30, 1943 was believed to consist of 89 vessels, 56 "I" class and 33 "RO" class.

From the outbreak of war to September 30, 1943 9 "RO" class are known to have been sunk and 19 "I" class. In addition to these, 13 more are estimated to have been sunk - a total of 41 Japanese submarines. These sinking figures have been taken into consideration in estimating the present size of the fleet.

Some of the cruiser submarines have been used for transport, as in the evacuation of Kiska, the Solomons and the supply service in the New Britain - New Guinea area.

Cruiser or large-type seagoing submarines are customarily utilized for operations in enemy territory. These are designed with moderately high speeds, large fuel capacity and reasonable living conditions. They are generally the larger "I" class boats.

Fleet submarines are used in co-ordination with tactical units of the fleet. Since manoeuvrability is an important characteristic, these are submarines with high surface speeds. Smaller "I" class and larger "RO" class submarines are customarily used for this purpose.

Transport submarines have become of increasing importance. These combine range with carrying capacity. (See "Submarine Transportation" below).

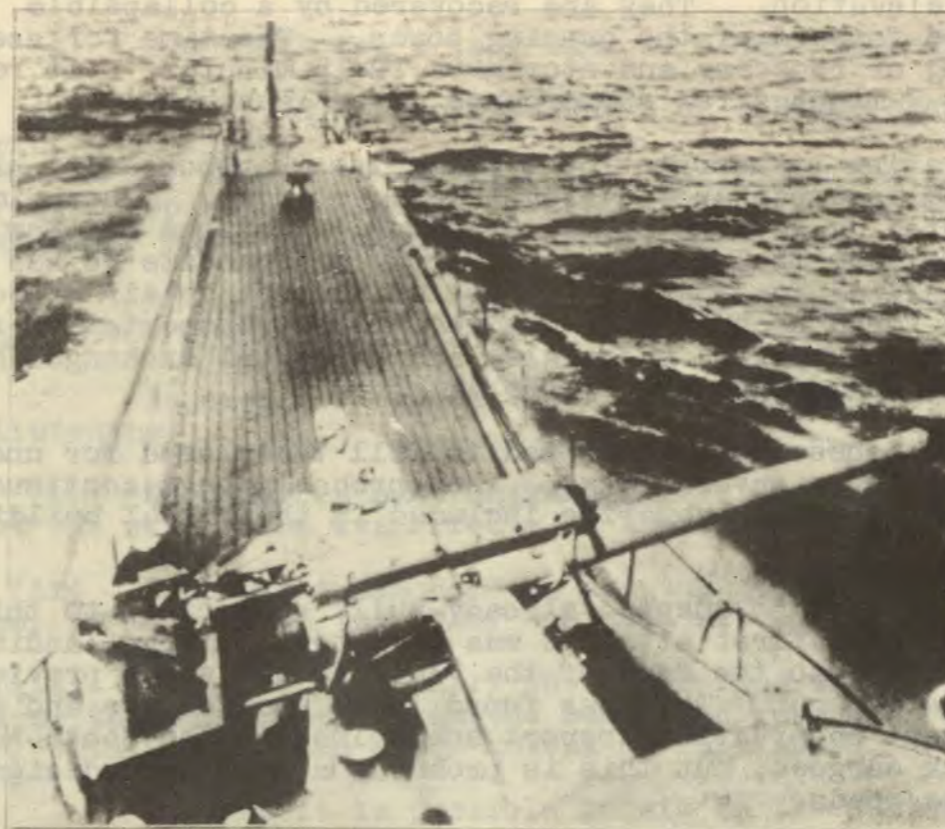
Minelaying submarines are specially equipped to carry both torpedoes and mines. They have a moderate range.

Coastal defence submarines combine low speed with small size. They are frequently obsolescent.

The crew of an "I" class submarine usually consists of about 63 officers and men and "RO" class boats carry about 51.

Plane-bearing submarines - Approximately 20 to 25 of the largest and most modern "I" class carry observation planes.

These collapsible, folding wing, float-type seaplanes



A Japanese Fleet submarine.

are carried in water-tight compartments just fore or aft of the conning tower, depending on the design. These compartments do not usually extend more than a foot above the deck line, with a minimum of interference with essential ship structure. It should be rather difficult to recognize the aeroplane equipment when secured for sea.

These planes are catapulted from a 50-55 foot catapult with adjustable elevation. They are recovered by a collapsible derrick installed forward of the conning tower. The time for assembling and launching or recovery and stowage is 12-15 minutes. It required approximately 7 minutes for submergence after launching.

Submarine transportation - Submarine transportation has greatly increased in importance during the recent past. The primary reason, highlighted by actions in the Solomons, Aleutians and New Guinea areas, has been the necessity to supply or evacuate forces in areas where the Allied forces have control of the sea or air or both. It has also been found necessary to use submarine transportation for important technical supplies, materials, and personnel exchanged between Japan and the European end of the Axis.

The Japanese have attempted to fill their need for underwater transportation in several ways. They probably have continued to build the 'supply type' submarine included in their 1941 building programme.

They have also adapted already-built submarines to this new need. One of the first attempts was to attach a large landing craft, or "daihatsu", to the deck of the "I-1" in the space previously occupied by the after gun. This was found to be ineffective and was discarded. Recent observations report submarines in the South-West Pacific with deck cargoes, but this is probably a makeshift designed to meet immediate needs.

More important is the Japanese decision to increase the cargo-carrying capacity of the older large "I" class, probably by remodeling their interior. Vessels of this type are reported to have been able to transport about 50 troops and 15 tons of ammunition to Attu and unload this cargo in one hour.

There is also good reason to believe that some new "I" class have been modified to increase their transport capacities to perhaps 100 men in addition to the full crew.

The Japanese are also reported to have placed an order with a German company for five 2,500-ton freight submarines. These vessels are to have a surface speed of 15 knots, submerged speed of 7 knots and will be able to travel from Europe to the Far East in three months.

4. EXTRACTS FROM A JAP. SUBMARINE OFFICER'S NOTE-BOOK

Dispositions in case located by sound gear.

In case the water is deep and it is impossible to lie on the bottom.

- (i) Lie still for a long time to escape pursuit.
 - (ii) Pay attention to the sounds of the sub-chaser and its stopping and pinging.
 - (iii) Operate one motor at minimum speed and, if possible, operate only when the sub-chaser operates.
 - (iv) Do not come up to periscope depth when a sub-chaser is about.
- In case surrounded by sub-chasers which have stopped and are listening.
- (i) When motors must unavoidably be used, utilise the direction of the wind (and its effect) on the surface vessels. Go upwind.
 - (ii) When night has come on and the sub has not been able to escape, it moves when the enemy operates his machinery.
 - (iii) When about to carry out determined evasive tactics on the surface, the sub blows and at the same time runs its motors at full power, with forward and after motors at full speed.

In case it is possible to sit on the bottom.

- (i) Study tides, currents, etc., beforehand.
- (ii) Get as far away as soon as possible from the position where you think you have been heard.
- (iii) Since tidal currents near the bottom are generally slight, dive deep and regulate by means of auxiliary tanks. If necessary, bottom.
- (iv) When full motor cannot be used (? something about drifting.
- (v) In case current is adverse, bottom several tons heavy,
- (vi) Do not bottom in 30 fathoms or less when the bottom is rock.

(vii) When surfaced at night the motors should not be used unnecessarily, even if there is nobody around.

The Germans are studying the defects of English sound gear and taking advantage of them.

(i) In narrow channels or near rock reefs it is difficult to distinguish perfectly a submarine.

(ii) Surface vessels drift when they lie to, and advantage is taken of this.

(iii) Effectiveness is greatly diminished in rough weather.

(iv) When there are loud noises near the sub; directly under a merchant ship, near the shore.

(v) When the enemy moves, the sub moves; if the enemy stops, we also stop.

The best protection is bad weather and high waves (wind force 5 and above).

Submerging as deep as possible.

Running motors at lowest possible speed

Operating planes by hand.

Stop using main pumps and auxiliary pumps, and use air.

Use sound detection gear and keep silent.

Prepare emergency lights.

Change course frequently.

If possible bottom.

5. JAPANESE RADAR DECEPTION AND COUNTER-MEASURES

A new type of radar deception used by the Japanese has been identified as a type of cloud or vapor metallicized with fine dust, possibly aluminium or graphite, and creating a false radar "pip". The name given to this type of radar counter-measure is "phantom".

Observations and deductions by General Headquarters, South-West Pacific Area, are as follows:-

(i) Phantoms are always dropped in the path of the Japanese plane as it approaches the target area. More than one phantom has been dropped by one plane, and as many as 10 different phantoms have existed at one time in a given area.

(ii) The "pip" obtained from a phantom is similar in size to that of helium filled balloons with dipoles attached which are sometimes used for calibration of Radars, but the phantom does not oscillate as the echo from a balloon with a dipole attached will do.

(iii) The target indicated by a phantom grows continuously weaker as it is tracked, and the "pip" gradually diminishes in height and in intensity. After 10 or 20 minutes phantoms have been noted to break up into smaller targets and to disintegrate.

(iv) The phantom changes only slightly in range and very little, if any, in elevation. It appears to be affected by conditions of wind. In one instance when considerable wind existed it moved approximately 20,000 yards before disintegrating. Change in azimuth is usually very slight and, in general, depends upon the direction of the wind.

(v) On one occasion search-lights are believed to have definitely flicked a phantom. It appears in the form of a small cloud. This was considered significant because the night was absolutely clear and there was not a cloud in the sky other than this small one. It is difficult to see a fine mist in a powerful search-light beam.

(vi) No trace of any materials such as screen wire, parachutes, or dipoles have been discovered in the area where phantoms have been experienced. This lends to the belief that none of these materials are being used to create phantoms.

(vii) Only a single plane has been tracked in and out of the target area by certain long range sets, yet, after the presence of this single plane, simultaneous "pips" have occurred on another set to indicate targets at several locations in the fuse range at 90 mm. batteries.

(viii) A number of rounds of unseen (radar control) fire have been fired by 90 mm. batteries before it was noted that the target being fired upon was not a Japanese plane, but a phantom which had not moved at all in range, azimuth, or elevation during the firing run.

The Radar counter-measure recommended for phantoms by the unit making the report are as follows:-

(i) Make every effort to have vigilant and efficient operators who can make a rapid identification of the "Phantom" and get back rapidly on the plane that drops it.

(ii) Whenever a phantom is dropped, one Radar (if available), should be assigned to it for definite identification. This Radar should be kept on the phantom until it disintegrates.

6. JAPANESE D/F EQUIPMENT

There is good reason to believe that certain Japanese destroyers are fitted with equipment enabling them to listen to, and D/F, Radar transmission from the Air Warning sets fitted in Allied vessels.

This equipment probably consists of fixed aeriels around the bridge structure and every opportunity should be taken to obtain further details and dimensions. Ships should take care that the enemy is afforded a minimum advantage from the equipment by ensuring that air warning equipments are not used unnecessarily without taking the usual anti D/F precautions, particularly when enemy surface craft (and submarines) are expected to be in the vicinity.

7. GERMAN ACOUSTIC TORPEDOES

A corvette, which gained contact with a U-boat by Radar in a recent convoy action in the Atlantic, kept contact by Asdic during the subsequent attack and operated "FOXERS" at the same time.

The corvette was attacked by a GNAT (acoustic torpedo) which probably circled the "FOXERS" before exploding 250 yards astern. This incident, besides confirming the value of "FOXERS" shows that Asdic contact can be maintained in deep water despite interference due to "FOXERS".

The acoustic torpedo has certain limitations such as speed, homing radius, and inability to distinguish between propeller and other noises. This last limitation has been taken advantage of in designing a counter-measure known as F.X.R. gear ("FOXERS").

F.X.R. gear is designed for use by escort vessels during a submarine attack. It consists of a noise source, or noise decoy, towed astern of the ship at a suitable distance and depth so as to

produce a sound source which will attract the acoustic torpedo and then induce it to circle around the decoy until it is exhausted.

Two designs of F.X.R. gear have been developed, one by the U.S.N., the other by the R.N. These designs differ only in the method of streaming, the noise source designated "Parallel Bars" or "Pipe Noise Maker" (P.N.M.) being generally similar. A brief description of the two methods of streaming follows:-

U.S.N. F.X.R. Marks II and III

This consists of one P.N.M. towed 500 feet astern of the escort vessel, the P.N.M. being kept at a suitable depth, approximately 30 feet, by means of a depressor. Mark II P.N.M. will operate at speeds between 14 and 20 knots, and Mark III P.N.M. at speeds between 9 and 15 knots.

R.N. F.X.R.

This consists of two P.N.M.'s, one being towed on either quarter from diverter paravanes, the spread being 300 feet, and distance astern 600 feet.

The main disadvantages of "FOXER" are:-

- (a) Difficulty of handling
- (b) Short life of P.N.M. units - about 10 hours at speeds over 15 knots and 50 hours at speeds under 12 knots.
- (c) Below 7 knots, the P.N.M. ceases to function as a "noise maker", and gear becomes non-operative.

The advantages of "FOXER" are as follows:-

- (a) Simplicity in construction
- (b) Skilled personnel not necessary for successful operation.
- (c) Can be manufactured locally.

Efforts are being made in Australia to simplify the streaming of the P.N.M. unit, to arrange quick changing of P.N.M. units during running, and to produce P.N.M. units with longer life.

Trials are in progress and results to date are satisfactory.

8. ITALIAN SUBMARINES IN FAR EAST

Three Italian submarines were in Far Eastern waters when the armistice was signed with Italy, and these are presumed to have fallen into the hands of the Japanese.

A fleet of nine Italian transport submarines was engaged in blockade running between Europe and the Far East, the submarines having been converted to cargo-carriers by the removal of torpedo tubes and all armament except A.A. machine guns.

Officers in the Italian sloop "ERITREA" (which escaped from Malaya to Colombo) said that arrangements had been made to scuttle the submarines in the Far East in the event of their being unable to comply with instructions to leave for an Allied port. It is not known how far these arrangements were put into effect.

At the time of the Italian capitulation two transport submarines, "FINZI" and "BAGNOLINI", were believed to be at sea on passage to the Far East and they must be considered potential blockade runners. The three U-boats known to be in Japanese controlled waters were "CAPPELLINI" (at Sabang) and "GIULIANI" and "TORELLI" (at Singapore).

The cargo-carrying capacity of these U-boats does not exceed 200 tons. Typical cargoes carried to the Far East were high grade steel billets, prototype arms and machinery, blueprints, etc. Cargoes to Europe included 44 tons of spelter, 90 to 100 tons of rubber, and bags of opium, quinine and tungsten.

SECTION V

MISCELLANEOUS

1. THE ANTI-U-BOAT CAMPAIGN

The following are extracts from a recent Admiralty Monthly Report:

"The most profitable areas for killing U-boats are (a) in the vicinity of convoys on which packs are massing, (b) the refuelling areas if they can be found and the U-boats surprised, (c) the transit areas. The first two exist only intermittently whilst the transit areas are constant probability areas.

"In areas where U-boats are operating singly in patrol areas to intercept shipping, they must approach the escorts when approaching the convoys. When the U-boat has been located it is well worth while detaching most of the escorts and laying on as many aircraft as possible to destroy it since the convoy is safe until it enters the next U-boat's patrol area. It is most important to destroy U-boats operating far from their bases, even at the expense of some shipping losses."

"U-boats achieved a measure of surprise with their acoustic torpedo, but the weapon has many limitations such as speed, homing radius and inability to distinguish between propeller and other noises".

Fourteen U-boats were sunk during January, while Allied shipping losses remained at a low level.

2. SUBMARINE DETECTION BY LIGHT PULSES

Experiments were recently carried out by the United States Office of Scientific Research and Development National Defence Research Committee into a means of determining the range and depth of a submarine through the use of short pulses of light.

Tests were made in air which indicated the maximum range to be more than a mile but tests in water failed to show any deflection on the cathode ray screen for distances of above about 140 feet. It was concluded that the transmission of sea water was so low that an apparatus of practical size and power requirements would have a range shorter than could be used to advantage in any practical operation.

3. GERMAN GLIDER BOMBS

An interesting account of an attack on a Support Group by German aircraft using glider bombs is given in a recent Admiralty Monthly A/S report.

The aircraft were first sighted approaching from astern, but they hauled out to starboard and worked round to the starboard bow at a range of 10 miles flying at about 1000 feet. The main body of 17 then split into small groups of ones and twos and a series of apparently aimless manoeuvres took place. Then a group of three JU 38's flew down on the starboard side on a steady course at a range of six miles and a height of 3,000 feet. When on the quarter they turned and flew on a reciprocal course until they were on the starboard bow of the Group when they formed into line astern and again flew down the starboard side at 10,000 yards range.

When the aircraft were on a bearing of Green 70° a puff of smoke which formed into a streamer appeared from the leading aircraft, and this was followed almost immediately by a similar puff from the one next astern. At the time of firing the aircraft were on a reciprocal course to the ships and were well out on the beam.

The projectiles were seen for some time apparently near the aircraft, but this was probably due to the fact that the bombs were coming towards the ships on a constant bearing. Flashes were seen coming from the aircraft about the time of firing, but neither smoke nor flame was seen coming from the projectiles during the later stages of their run.

After the first puff of smoke was observed in H.M.S. "LANDGUARD" an object appeared underneath the aircraft. This object then released another rocket which propelled it slightly ahead of the aircraft where it appeared to maintain station for some time. The projectile banked exactly like an aircraft and then set course towards the ship, descending at an angle of about 15° to 20°. When about two cables from the starboard quarter the bomb appeared to be

pointing straight at the ship, but it then banked to starboard and lost height rapidly. It fell into the sea 100 yards off "LANDGUARD'S" starboard quarter and exploded on impact.

The second attack was much the same as the previous one, but release took place from Green 50°. The bomb travelled down "LANDGUARD'S" starboard side and curved in gradually towards the ship, cutting the log line about 130 feet from the stern.

It was noticeable in the next attack that the bomb actually crossed "LANDGUARD'S" bows from starboard to port and banked very sharply in towards the ship. However it seemed to stall due to the steepness of the turn and fell into the sea 40 yards away pointing towards the ship. The explosion threw up a column of water 60 feet high, but did not shake the ship as much as a shallow depth charge.

The glider bomb has an 11 ft. wing span with a wing area of 26 square feet and a tail plane of 3 ft. 8 in. The bomb is incorporated in the glider and is probably about 500 pounds. A jet propulsion unit is slung below the glider giving it a speed of about 400 knots. The weapon which is apparently radio controlled by an operator in the releasing aircraft, can be manoeuvred like an aircraft and makes little noise. It probably has a green light in the tail to make it more visible to the operator.

4. MISCELLANEOUS PRISONER OF WAR INFORMATION

The following information has been derived from German U-boat survivors. The statements cannot always be verified and should not be accepted in their entirety unless confirmed by other sources.

1,200-ton U-boats

One prisoner said that 1,200-ton U-boats had been used to supplement Germany's trade with Japan. Boats of this type, which had travelled to the Far East, had brought back cargoes consisting chiefly of gold and quinine. On the outward voyage the U-boats carried torpedoes for supply to other U-boats.

This type of submarine has also been used to bring Japanese two-man U-boat technicians to Germany for consultation with German experts. Prisoners alleged that Indian Irredentist leaders had been transported and that this had given rise to the rumour that Ghandi had visited Germany.

Fuel without Coupons

The Fuehrer too, is apparently faced with a black market. U-boat prisoners declare that Nazi submarines based on Netherlands ports are making money by clandestinely selling part of their fuel supply to Dutch fishing boats!

Machine Guns

The G.A.F. type machine gun M.G. 81, gives a phenomenal rate of fire of between 1,200 and 1,500 rounds per minute. Ammunition is fed in 500-round disintegrating link belts, usually split into two lengths of 250 rounds. One prisoner estimated that it did not take more than 20 seconds for a belt to be changed. It has been stated that the guns do not stand up well to rough treatment and that they were soon affected by sea water. In some boats where two M.G.'s 81 were carried, one is usually kept below for cleaning and maintenance.

5. SMALL GERMAN U-BOATS

Reports from various sources indicate that the Germans are developing several types of small U-boats. The following is a summary of the latest information.

- (i) Pocket Submarine, crew 12, tonnage 110-120, intended for "coastal sectors".
 - (ii) Newly commissioned "channel types" of U-boats carrying out trials in co-operation with aircraft.
 - (iii) 15-man U-boats building.
 - (iv) One 250-ton U-boat is completely covered with rubber coating. Propellers are also covered with hard vulcanised rubber.
- Note:- A number of reports concerning small type U-boats state that they are rubber covered.
- (v) A U-boat, 110 feet long, was photographed at Kiel in August, 1943.

(vi) A new method of underwater propulsion giving much higher submerged speeds has also been mentioned in connection with these small U-boats.

(vii) German propaganda referred recently to "new and original methods of U-boat warfare" and suggested that it would be pursued within the coastal waters of the United Kingdom.

6. JAPANESE VERSION OF U-BOAT WAR

"The thrilling story of how a lone Japanese submarine entered a closely guarded enemy port on the Red Sea and sank a fully laden 10,000 ton cargo vessel which was resting at anchor, was disclosed for the first time today by the commander of the submarine which accomplished the daring exploit," Tokio Radio said recently.

"According to the Commander of the submarine, it was easy from the sea to have an unobstructed view of the port which he planned to attack. However the ease with which the port could be seen from the sea made it just as easy for defenders to detect the approach of the vessels. According to the Captain's testimony he fully realized that if his craft was detected and made the target of a depth charge attack it would be impossible to escape due to the shallow water. He thought however, that if a successful attack were made it would strike terror into the heart of the enemy. After careful planning and the completion of preparations, it was decided to make a surprise attack at dawn.

"Much depended on the careful calculations of the chief navigator. As the submarine moved in for the attack the navigator worked ceaselessly with the sextant plotting every yard of the course to be followed by the submarine. As the submarine moved silently through the dead of night, the sultry breeze from the Arabian mainland could be felt. Visibility was almost zero. With quiet words of encouragement, the Captain urged the lookouts to maintain the sharpest watch.

"The electric tension aboard the submarine was broken when one of the lookouts called, "Lights visible". The submarine had just reached a point outside the harbour. By this time many flickering lights could be seen in the distance. Even a casual glance showed that the entire enemy port was deep in slumber just before dawn. Submerged except for its periscope the submarine began to move slowly into the harbour.

"Through the periscope were reflected the first streaks of breaking dawn. Minutes later a crisp order rang through the submarine. "Enemy vessel sighted! Stand by for torpedoes." As the submarine silently crept on its prey it was discovered that the enemy ship was a fully laden 10,000-ton freighter. A considerable distance still lay between the submarine and its target.

"Although not yet light, enemy planes were patrolling the harbour area. With unerring accuracy the submarine slipped through the dangerous minefields and booms guarding the entrance to the harbour. The submarine also carefully avoided a number of firing vessels which were plying on the surface entirely unaware of the danger below.

"As the men in the torpedo chambers stood in readiness, the Commander on the platform in the conning tower issued a sharp order "Fire!" One second, two seconds passed. The audiophone caught a metallic sound as the torpedo made contact with its target. Through the lenses of the raised periscope was reflected a tremendous column of water which rose to the sky from the side of the stricken enemy ship. Even in the few following seconds the enemy ship could be seen sinking. It was a direct hit. The enemy vessel did not sink completely however, apparently due to the shallowness of the water. It was almost miraculous good fortune that all the enemy destroyers were outside the harbour on patrol duty.

"With comparative ease in making its way out of the enemy harbour without being subjected to a depth charge attack, this was the thrilling story of a daylight exploit by a Japanese submarine."

7. SUBMARINE TALLY FOR 1943

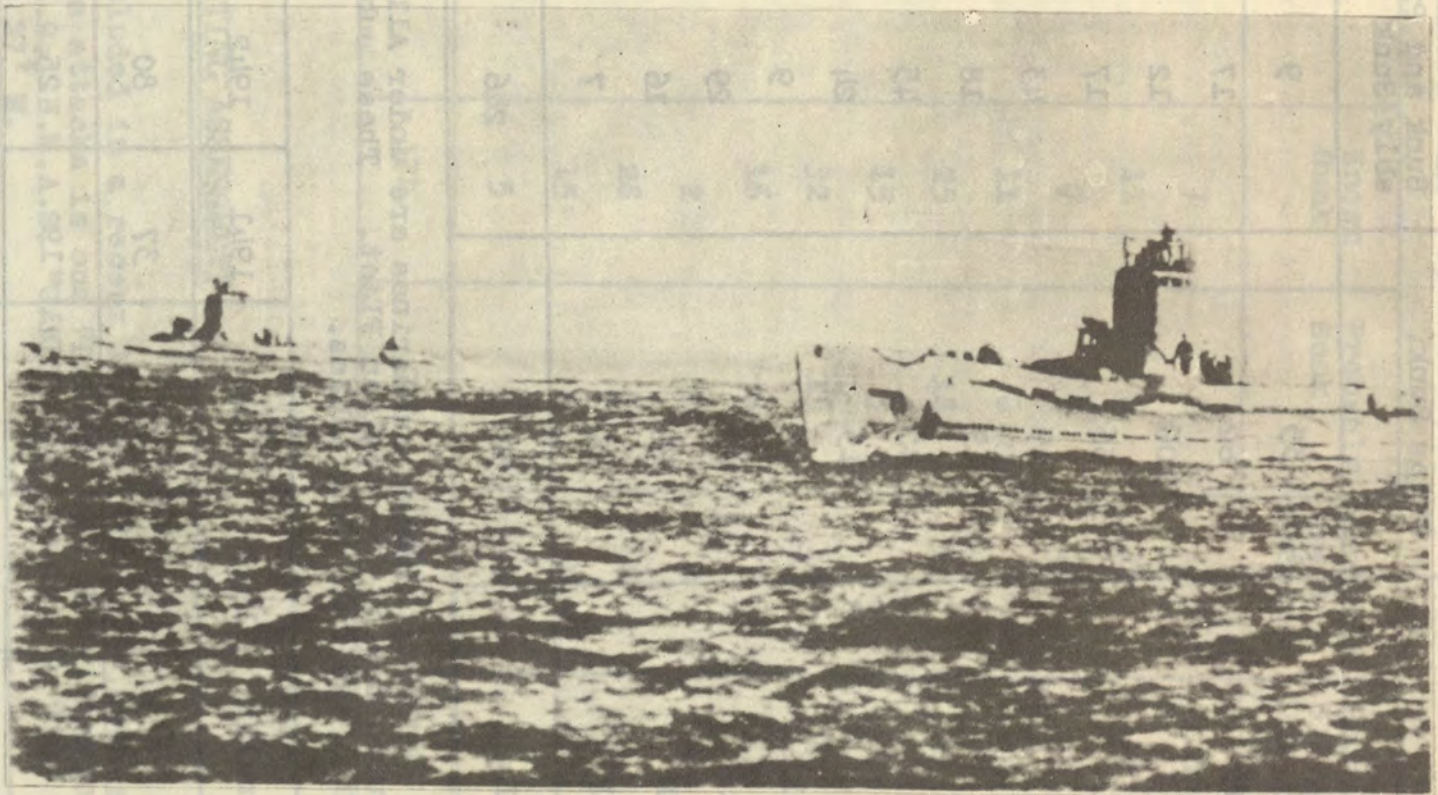
Last year U-boat sinkings were almost exactly double those for 1942, while shipping losses have been reduced to almost one third of the previous year's sinkings.

Submarines known sunk during 1943 were 174, while 72 were assessed "probably sunk" - a total of 246. During 1942 124 U-boats were sunk and probably sunk.

Shipping losses due to U-boat action during 1943 were 450 vessels of 2,550,400 tons. The Allies' total losses from all causes - U-boat, surface craft, aircraft, mines, marine casualties and miscellaneous enemy action, were 793 ships totalling 3,569,287 tons.

During 1942 one U-boat was destroyed for every 9.4 merchant ships sunk by submarine, while the ratio for 1943 was reduced to one U-boat for every 1.8 merchant ships.

The following table shows the number of merchant ships and submarines sunk for each month of 1943.



Japanese coastal type submarine engaged in exercises.

To other due at sea	-	-	-	-
9.8	-	-	-	-
8.8	-	-	-	-
7.8	-	-	-	-
6.8	-	-	-	-
5.8	-	-	-	-
4.8	-	-	-	-
3.8	-	-	-	-
2.8	-	-	-	-
1.8	-	-	-	-
0.8	-	-	-	-
-	-	-	-	-

Month	Allied Merchant Ships Sunk.	Axis Submarines Sunk and Probably Sunk	Ratio of Ships to Submarines
JANUARY	35	9	3.9
FEBRUARY	62	17	3.6
MARCH	106	12	8.8
APRIL	56	17	3.3
MAY	49	43	1.1
JUNE	19	18	1
JULY	45	45	1
AUGUST	15	24	.6
SEPTEMBER	18	9	2
OCTOBER	20	29	.7
NOVEMBER	12	16	.75
DECEMBER	13	7	1.9
TOTAL	450	246	1.8

Thirty Italian submarines are under Allied control following the surrender of the Italian Fleet. These submarines have been omitted from the following tables.

Nationality	1939	1940	1941	1942	1943	Total
GERMAN	9	27	37	80	207	360
ITALIAN	-	22	19	25	17	83
JAPANESE	-	-	2	19	22	43

The Table below is a summary of attacks assessed during 1943:-

Month	Known Sunk	Probably Sunk	Probably Heavily Damaged	Probably Slightly Damaged	Total
JANUARY	7	2	3	9	21
FEBRUARY	11	6	15	12	44
MARCH	7	5	12	18	42
APRIL	11	6	8	8	33
MAY	25	18	13	24	80
JUNE	15	3	5	9	32
JULY	32	13	15	13	73
AUGUST	16	8	7	12	43
SEPTEMBER	2	7	8	6	23
OCTOBER	28	1	8	4	41
NOVEMBER	15	1	4	7	27
DECEMBER	5	2	6	3	16
TOTAL	174	72	104	125	475

8. AN INTERESTING ASSESSMENT

Included in a recent list of Admiralty assessments of Anti-submarine attacks is one "Probably Slightly Damaged" carried out by an A.M.S., H.M.A.S. "GAWLER" on October 4, 1943 in position 62° 02' N 28° 27' W.

9. CAN YOU ANSWER ALL THESE?

1. What type of shell would you use if engaging a surfaced U-boat at a range of less than 5,000 yards? And at more than 5,000 yards?

C.B. 4097 Para. 91
A.C.B. 0233/43 (6)
Section 1 (5)

2. What should be the state of readiness of D/C's at sea? When should special precautions to set charges to "safe" be taken?

C.B. 4097 Para. 608D
A.S.C.I. (2) Para. 11

3. What are the duties of the following W/T Guards -
Routines, Convoy Recco, Commercial and Port Waves, and Transmitting Guards?

A.C.D. 653 (43)
Section VI - Para. 3

4. What W/T reports should be made of encounters with an enemy submarine?

S.W.P.C.I. Art. 30
A.C.B. 0234 (1)

5. What factors influence the efficiency of lookouts?

C.B. 4097 Para. 675

6. An aircraft, escorting a convoy, begins to fire White Verey's light. At the same time it flashes "S's" by Aldis lamp and begins to dive towards the sea. What is it indicating to the surface escorts?

S.W.P.C.I. Art. 112

7. How should Radar be used to detect U-boats on the surface? What positions on the screen should be allocated to Radar fitted escorts?

A.C.B. 0235 Chapter 3
Pages 11-12

8. You are O.O.W. of the starboard wing ship on the escort screen. A lookout reports a torpedo track approaching from starboard. What action do you take?

S.W.P.C.I. Art. 118.

10. THE CONTROL OF MERCHANT SHIPPING

The following Summary of the control of merchant shipping since the entry into the war of the United States, has been taken from the "U.S. NAVY ANTI-SUBMARINE BULLETIN" for January, 1944.

It provides an interesting review of the problems that have to be overcome by the Admiralty and the U.S. Tenth Fleet, and the various sub-commands of the Allied navies.

"The vital part played by merchant ships is one of the outstanding features of the present war. The battle of the supply lines during the past two years has been the critical battle, and the victory obtained has assured ultimate victory in the battles yet to be fought throughout the world.

"Nothing comparable to the extent of this struggle has occurred in any previous war. The entire ocean area of the world has been and remains the scene of action. German submarines have operated throughout the entire Atlantic, from the entrance to the White Sea to the approaches of the Panama Canal, from the Southern Coast of Brazil past Capetown and into the Indian Ocean from Madagascar to the approaches of Aden and the Persian Gulf. Japanese submarines have sunk ships off Seattle, Sydney and Bombay.

"The tremendous tonnage losses eclipse any similar destruction in world history. Since 1939 approximately 6,000 Allied ships of 23,000,000 gross tons have been sunk by all causes. This is the equivalent of 3250 standard "ships". By six month periods starting January 1, 1942, the decline in these losses illustrates the successful trend of the anti-submarine warfare

	<u>Gross Tons</u>	<u>7100 Ton "Ships" Lost</u>
January - June 1942	4,400,000	620
July - December 1942	3,600,000	507
January - June 1943	2,300,000	324
July - December 1943	1,100,000	155

"This decline is the more impressive when it is remembered the past year has seen offensive operations on numerous fronts.

"Readers of this publication are familiar with the vast amount of equipment and manpower that has been assigned to the offensive phase of the battle to cut these losses. A very large per cent of the strength of the Allied navies has been continuously engaged in anti-submarine warfare since the start of the war.

"The success of these units in protecting convoys and in destroying submarines has been graphically told. The less spectacular though equally vital job of organization and control of merchant ships throughout the world is not so widely known. A general outline of this story should be of interest to all engaged in anti-submarine warfare.

Control divided between R.N. and U.S.N.

"Since our entry into the war, the control of all Allied merchant shipping has been divided between the British and ourselves. In the giant shipping pool available there have been from 7000 to 8000 ocean going merchant vessels ranging from the "QUEEN ELIZABETH" and "QUEEN MARY" down to the smallest ships capable of an ocean voyage. The problem of allocating these ships to the greatest possible use has been the responsibility of the Joint Chiefs of Staff acting through the War Shipping Administration and the British Ministry of War Transport.

"These last two organizations have had the responsibility of actual operation of the ships including manning, repairs, and the loading and discharging of cargo. When ready for sea, responsibility of actual operation of the ships including manning, repairs, and the loading and discharging of cargo. When ready for sea, responsibility for each ship passes to the Tenth Fleet or Trade Division of the Admiralty. These authorities, each in its own designated area, are responsible for the safe and expeditious passage of the ship to its destination. The areas of responsibility are delineated by two arbitrary lines, one through the approximate centre of the Atlantic and one just west of Australia. Numerous sub-commands are set up under both the Tenth Fleet and Admiralty dividing these areas into smaller geographic units for closer control and protection.

"Routing and Reporting Officers are established in virtually every Allied and neutral port of the world. No merchant ship may put to sea without instructions from these Naval Authorities, all of whom operate under the general rules laid down by the Tenth Fleet and Admiralty. Whether sailing independently or in convoy, the exact sailing time and ocean route to be followed are sent by the Routing Officer by despatch to the interested sub-commands and to Tenth Fleet (Convoy and Routing) and Admiralty.

The Mercantile Movements Plots

"A complete plot of the positions of all merchant ships and convoys throughout the world is maintained at Washington and in London. Similar plots are maintained by the various sub-commands, each for its own area of control. Positions of ships at sea with few exceptions are accurate within 100 miles and the progress of each ship along its route is constantly watched in relation to the known

and estimated positions of enemy submarines and raiders. Many times each day, throughout the world, independent ships and convoys are diverted from their original routes by the various diverting authorities to avoid known or suspected areas of danger.

"These diversions have unquestionably saved hundreds of ships and are the primary reason for the tremendous volume of communications necessary to maintain the accurate merchant ship plots required.

"The world-wide merchant ship plot has a further value, however, for in Washington and in London it provides a current picture at all times of the volume of shipping on the traffic routes of the world for planning and the allocation of protective forces. The advisability of extending or curtailing the convoy system, or of maintaining existing general routes, is graphically shown.

"On these policy questions the most vital work in merchant ship control is done, for the Navy's job in connection with Merchant Shipping is not simply that of protection. Merchant ships are useless when idle. The constant aim is to see that merchant ships, once ready for sea, reach their destinations in the shortest possible time consistent with reasonable safety. Nearly all forms of protection cost valuable ship-days and it is in the constant balancing of risk against time that major policy decisions must be made.

"It is impossible to operate merchant ships in time of war with peacetime efficiency. Tremendous waste is inevitable. In many over-worked ports through the world valuable ships are lying idle waiting for berths to load or discharge, or for dry docking and repairs. This loss of shipping is the hard problem of the War Shipping Administration, the British Ministry of War Transport or of the Commanders of the various theatres of war.

Delays are unavoidable.

"The problem is to keep to a minimum the additional loss of effective shipping caused by delays incident to the convoy system and to the circuitous routing of independent ships. These delays have been, and continue to be, a major factor in the general shortage of shipping. There are now at sea each day approximately 1500 ships in convoy. Each of these ships waited in port for its convoy to sail an average of four days, is proceeding at the speed of the slowest ship in its convoy and will be delayed in discharging at its destination by its arrival in a group of from 5 to 50 ships all requiring the same labor and equipment. As the average passage of these convoys is about two weeks we have an immediate loss of roughly $4 \times 1500 \times 2$, or 12,000 ship-days each month due to delays awaiting convoy alone.

"Delays incident to circuitous routing have been greatly reduced due to the opening of the Mediterranean. One story widely

reviewed in the press was that of ships to the Red Sea, Persian Gulf and India from the U.S. East Coast making the long passage through the Atlantic and around the Cape of Good Hope. This route was actually discontinued almost entirely in September 1942 due to the concentration of submarines between Natal and Dakar. Over 50 ships per month were then routed via the Panama Canal and Cape Horn to Capetown.

"This concentration of traffic in a thinly protected area was not entirely desirable but it proved effective, and almost eliminated losses. By December 1942 submarines had moved down to Capetown and had begun operations in such force that the bulk of the Indian Ocean traffic was then routed trans-Pacific from Balboa south of New Zealand to Fremantle for onward routing to destination. This route through the South Pacific proved entirely safe and more than 500 ships have made the passage to Fremantle without loss.

"There have been losses in the Indian Ocean due to raiders and submarines but in general this trans-Pacific route was so successful it was maintained until the Mediterranean was considered open in July of 1943. The Cape Horn and trans-Pacific routes were essential because we were then entirely on the defensive in the submarine war. The loss of "effective" shipping as compared to the South Atlantic-Capetown route was very great. The savings since the Mediterranean has been open have been much greater still. Thousands of ship-days may be gained or lost by the proper handling of such problems.

"During the past year it has been possible from time to time to allow slow ships to run free in coastal areas when the submarine situation was favourable. Substantial savings in ship-days have thus been made. With few exceptions, ships of 14.5 knots and above have run free and their carrying capacity has been more than doubled by the days they have saved as compared to voyages in the slow convoys."

11. U.S. ANTI-SUBMARINE ATTACKS

The following summary of attacks on submarines by U.S. warships was taken from an analysis prepared by the A.S.W. Operation Research Group, Tenth Fleet, U.S. Navy.

"There were 129 attacks on U-boats in the Atlantic and Mediterranean by U.S. Naval ships from January 1943 through July, 1943. In addition there were 59 attacks on U-boats made by U.S. tankers and cargo vessels in self-defence. Of the attacks by naval craft 7 (5%) were kills or probable kills, 3 (2%) resulted in probable severe damage and 5 (4%) resulted in probable slight damage. No tangible evidence of damage was observed in the remaining 114 (89%) attacks by

naval ships nor in the 59 attacks by tankers and cargo vessels. The quality of the attacks was twice as good in the first seven months of 1943 as it was in the last six months of 1942.

Type of Ship

"The mass of attacks on U-boats occurred in the vicinity of convoys and were carried out by the escorts which usually were destroyers or the large coast guard craft.

Means by which First Contact was made.

"The means by which the attacking ship made its own first contact during 1943 consisted of 46% by sound gear, (Asdic) 33% by sight and 21% by Radar. A remarkable increase in the use of Radar was noted

Radar Ranges

"The average range of first Radar contacts for all types of Radar used in the Atlantic and Mediterranean by U.S. ships was 6911 yards. The average range for SG Radar was 8017 yards; this figure includes the data from attacks on enemy submarines in the Pacific in addition to those of the Atlantic and Mediterranean. There were enough contacts with ranges between 13 and 15 thousand yards to indicate that with good conditions it should be difficult for a surfaced U-boat to penetrate a screen of escorts all of which are provided with SG sets.

Asdic Results

"The average range of first Asdic contact on U-boats in 1943 was about 1300 yards. The Asdic data seemed to show that the U-boats are diving deeper in 1943 than they were in the second half of 1942. This conclusion comes from the rather small difference of 17 yards in the range of lost contact which was 193 yards in 1943 compared with 176 yards for the second half of 1942. U.S. ships increased their ability to regain sound contact on submarines and coordination increased the total number of contacts upon each U-boat.

"There was a high correlation between successful attacks and good sound conditions as determined from the echo-ranging map.

Degree of Submergence of the U-boat

"The quality of the attack depends greatly upon the degree of submergence of the U-boat at the time of the first attack. In 1943, 22% of the cases where the first attack was on fully surfaced U-boats the assessment was of A-D quality, but where the first attack was Asdic guided only 5% were of A-D quality.

Equipment Difficulties

"The most frequent type of failure was concerned with the sound gear. Thrower and rack failures were next in frequency of occurrence.

Depth Charge Expenditures

"In those incidents where damage was caused to a U-boat (A through E assessments) about 27 depth charges were used while only half as many (14 DC's) were used in the attacks which failed to cause any observable damage to the U-boat (F and G assessments). The greater expenditure of DC's in the damaging attacks resulted from larger patterns and more of them.

SECTION VIMATERIEL1. DEVELOPMENT OF DEPTH CHARGE EQUIPMENT

It is thought that depth charge equipment in surface ships is now developed to the stage where little improvement can be made without large re-designing of the ship. Rocket projectiles for depth charges have great potentialities, but at present insufficient advantage can be gained by the application of this principle to make it worth while.

At the outbreak of war in 1939 depth charge equipment in A/S vessels consisted of throwers and rails suitable for releasing a five charge pattern of T.N.T. or amatol charges. The maximum outfit in any ship was 30.

This position has improved considerably, the main developments being as follows:-

- (i) 10 Charge patterns have been standardized for all major A/S vessels.
- (ii) Minol charges, which give a 75% better chance of a kill for the expenditure of each pattern, have been introduced.
- (iii) Mark VII and IX series of pistols have been improved so that they are suitable for attack on submarines at depths down to 875 feet. Safety rods have been provided so that the charges cannot operate when set to safe except at very great depths. A new technique involving the use of Aquadag and large spanners has been introduced to ensure that the pistols fire nearer their set depths.
- (iv) Provision of primer safety gear allows primers to be properly screwed up whilst remaining safe and this, together with other developments, will permit a ship to cruise with a pattern instantly ready for dropping without the ship having to take undue risks.
- (v) Mutual damage between the different charges in one pattern has been avoided by the introduction of "split patterns", the heavy charge being released three seconds before the corresponding light charge.
- (vi) New patterns have been chosen in which depth charges are released further apart and thrown charges are fired to greater ranges by provision of new impulse cartridges.



Explosion of Squid.

(vii) A new pistol is being developed which will have 50 foot settings down to 1100 feet. It will work on the hydrostatic principle and will enable full advantage to be taken of the depth predicting Asdic.

2. DEVELOPMENT OF AHEAD THROWING WEAPONS

The advantages of firing at a submarine while it is still ahead of the attacking ship are well known and the Hedgehog was the first practical application of this idea.

The split Hedgehog was designed for those A/S vessels with only one gun forward and for whom it was necessary to provide an ahead throwing weapon which could be placed at one side of this gun. To throw a full pattern, the Hedgehog was split in two and the halves mounted on either side of the gun. For M.L.'s the fixed spigot mounting was designed to throw a pattern of 12 Hedgehog projectiles ahead of the ship in the form of a semi ellipse. The U.S. Navy Mousetrap which was described in A.C.B. 0233/43 (1) is also being used in small craft.

In May 1942 the situation in the Atlantic was serious and Admiralty made the somewhat Napoleonic decision of going straight into production of the Squid without waiting for trials and of fitting it in the whole of the new programme of Castle class corvettes and Loch class frigates. The Squid has the following advantages:-

(i) It is a non-contact weapon and can therefore be used not only to kill in a deliberate attack, but also for moral effect and in counter attacks.

(ii) Each of the six projectiles in a pattern is comparable in effect with an amatol filled depth charge.

(iii) The pattern has a high theoretical probability of success even with a submarine at 600 feet.

(iv) The weapon is used in conjunction with the new depth finding Asdic.

(v) The projectile has a high sinking speed (38 feet per second).

(vi) The fuse is a time fuse incorporating a clockwork delay mechanism which is set electrically to the required depth direct from

the depth finding asdic. The depth can be set automatically within five seconds of firing the weapon.

(vii) The Squid is automatically stabilized against roll.

(viii) The weapon is fired automatically at the correct time from contacts in the Asdic Range Recorder.

Trials of a new weapon which will increase the effectiveness of the ram are being conducted in Australian Waters. Based on the principle of the "Submarine Sentry" which has been used in Coral Sea waters for many years, the new weapon combines the contact charge with the towed kite. Being very simple in operation and maintenance it should increase the offensive power of M.L's and merchant ships.

3. GRID BIAS BATTERIES

In Australian Amplifiers Patt. AUST.5805B colour coding of Grid Bias Leads is different from Admiralty Amplifiers. The Red Lead which is connected to terminal "B" should be connected to the -6V. terminal of G.B. Battery. The Black Lead from the Amplifier frame should be connected to the positive terminal of the Battery as shown in the circuit diagram.

It is known that some Amplifiers already in service have the polarity of the G.B. Battery reversed. In all ships fitted with Australian Amplifiers the polarity of the G.B. Battery should be checked.

4. RETURN OF DEFECTIVE COMPONENTS

Some ships are taking the easy way out in the case of defective items (e.g. recorders and control training units) by drawing a complete new unit and interchanging part of the new item for the equivalent part of the defective unit. This has been particularly noticeable in the case of defects in the covers of components.

It is stressed that this habit may have serious consequences. In the case of the Control Training Unit, for example, the upper part of the body is manufactured to fit the lower part with precision,

and has even been dowelled to ensure an exact fit. If these parts become mixed through interchange with covers or bases of other C.T. Units constant trouble may be caused.



the depth finding system. The depth sounder is a device which sends out a sound wave which is reflected back to the receiver. The depth is measured by the time taken for the sound wave to return. This system is used in conjunction with a hydrophone which picks up the sound waves from the submarine. The depth sounder is used to determine the depth of the submarine and the hydrophone is used to determine the direction of the submarine. The depth sounder is used to determine the depth of the submarine and the hydrophone is used to determine the direction of the submarine.

(vii) The Squid is automatically afloat at night.

(viii) The weapon is fired automatically at the target and the contact is recorded in the Radio Range Recorder.

Trials of a new weapon which will increase the effectiveness of the gun are being conducted in Australian waters. Based on the principle of the "Submarine Sentry" which has been used in Coral Sea waters for many years, the new weapon combines the contact charge with the towed net. Being very simple in operation and maintenance it should increase the offensive power of A.S. and merchant ships.

3. GRID BIAS BATTERIES

In Australian amplifiers Part. AUST. 5305B colour coding of Grid Bias Leads is different from Admiralty amplifiers. The Red Lead which is connected to terminal "B" should be connected to the -4V. terminal of G.B. Battery. The Black Lead from the Amplifier frame should be connected to the positive terminal of the Battery as shown in the circuit diagram.

It is known that some amplifiers already in service have the polarity of the G.B. Battery reversed. In all ships fitted with Australian amplifiers the polarity of the G.B. Battery should be checked.

4. REMEDY OF DEFECTIVE COMPONENTS

Some ships are taking the easy way out in the case of defective items (e.g. recorders and control training units) by drawing a complete new unit and interchanging part of the new item for the equivalent part of the defective unit. This has been particularly noticeable in the case of defects in the covers of components.

It is stressed that this habit may have serious consequences. In the case of the Control Training Unit, for example, the upper part of the body is manufactured to fit the lower part with precision.

