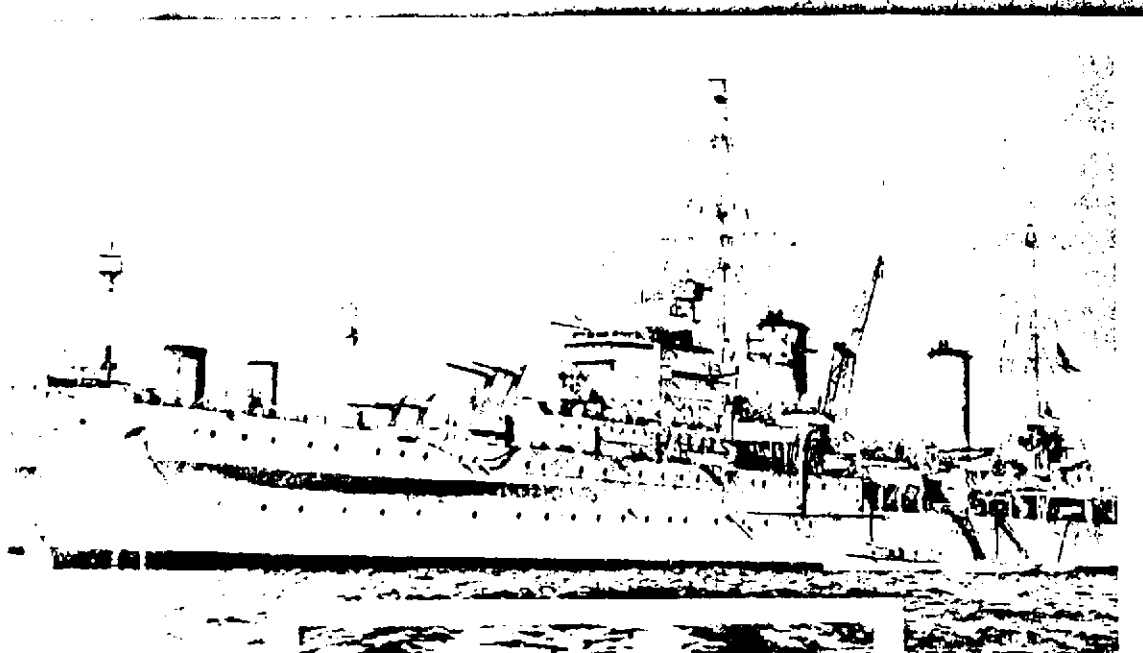



Australian War Memorial

The Scientific Investigation of a Carley Float



Ashton • Challenor • Courtney

\$12.95

Part of her pre-war equipment comprised two large No. 18 (9 ft x 14 ft), Carley type floats fitted to the blast shield to the rear of the after funnel (these can be seen in Plates 2 and 3). It would appear that no other Carley type floats were on board the ship at this stage, unless they were hidden from sight.

HMAS *Sydney* spent the first 8 months of the second world war in the Indian Ocean and then joined the British Mediterranean Fleet again on 26 May 1940. On 19 July 1940 she was in action with two Italian cruisers, *Bartholomeo Colleoni* and *Giovanni Delle Bande Nere*, the first of which was sunk by HMAS *Sydney*. The only damage received by *Sydney* during the battle was a shell hole in a funnel and minor shrapnel damage which was repaired at Alexandria before her return to Australia in February 1941.

Photographic evidence indicates that *Sydney* was repainted in camouflage colours in February/March 1941 and received additional Carley type life floats of the smaller No. 20 type. The two original large floats were relocated on the stern deck, with a smaller type fitted to the inside of one of them (Plate 4). Four were placed on the blast shield, with two on each side (Plate 3). } later?

From April to November 1941 HMAS *Sydney* was mainly engaged as an escort for convoys in the Pacific Southern Ocean. On 17 November she completed her duty in escorting the troopship, *Zealandia*, to Sunda Strait and turned south for Fremantle. Two days later she was engaged in an action with the raider, *Kormoran*, and, according to the official history, *Royal Australian Navy 1939-1942*, by G.H. Gill, probably sank during the night of 19-20 November after the damage she received from shells, bullets and the ravages of fires on board.

On 23 November 1941 the Navy Office in Melbourne accepted that HMAS *Sydney* was overdue in returning to Fremantle. Sea and air search commenced the following morning. Although survivors and equipment from *Kormoran* were located during the few days following the engagement, *Sydney* vanished virtually without trace.

4. Controversies surrounding the loss of the Sydney

The sudden loss, without any survivors, of the best known ship in the Royal Australian Navy, and the consequent uncertainty surrounding the action, led to controversy and debate which have persisted to the present day. The absence of survivors from *Sydney* meant that the uncorroborated account of the captured survivors from *Kormoran* was the only version of the engagement available. The lack of even substantial material debris from *Sydney* served to heighten both the mystery and the controversy, and also gave added importance to the Memorial's Carley float.

Four particular areas of discussion have arisen:

(a) *Why the Sydney was sunk by an inferior adversary*

The sinking of the cruiser, *Sydney*, by a raider disguised as a merchantman, was unexpected and led to questions of blame, focusing on the tactical procedures adopted by *Sydney* during the encounter.¹

(b) *Whether Kormoran's ship's company took action against Sydney survivors in the water*

A possible explanation of the lack of any survivors from *Sydney* was that *Kormoran's* ship's company had machine-gunned survivors in the water. This was denied by the Germans when interrogated in 1941/42, but their evidence was of necessity uncorroborated.²

(c) *Whether a Japanese submarine was involved in the sinking*

A theory which has gained wide publicity alleges that a Japanese submarine was involved in the action, although the date of the sinking was some weeks earlier than the attack on Pearl Harbor.³

(d) *Whether material found in Western Australia in 1980 came from the Sydney*

In 1980 Wilson P. Evans discovered a small chest of material believed by some to have been cast adrift from the *Sydney* shortly before its sinking. The balance of scholarly opinion is that the material is not genuinely from *Sydney*. The box contained a 'Letter of Proceedings' which, if genuine, would be the only surviving account of the *Sydney-Kormoran* action by a member of *Sydney's* crew.⁴

5. The Australian War Memorial Carley float

The float in the Memorial's collection is described in the accession register as:

AWM30128 - Carley Life Float which was recovered from the sea by HMAS *Heros*.
One of the remaining relics of HMAS *Sydney*. 'Condition: damaged by shell fire.'

East This relic was found on 28 November 1941 at 24 degrees 7 minutes South, 110 degrees 58 minutes ~~West~~, or approximately 160 miles north/west of Carnarvon, Western Australia. It was extensively damaged and contained two Australian naval life belts (whose present location is unknown). There were no survivors or other

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1. This was one of the first questions to be asked, see B. Winter, *HMAS Sydney- fact, fantasy and fraud*, Boolarang Publications, 1984, pp. 154-155.
 2. See especially M. Montgomery, *Who sank the Sydney*, 1st ed., Cassell Australia Ltd, 1981, pp. 154-155.
 3. See especially *ibid.*, pp. 182-196.
 4. For an analysis of this material, see S. Allen, 'HMAS *Sydney*: the limits of historical analysis', *Journal of the Australian War Memorial*, no. 22 (April 1993), pp. 4-10.

2. A steel with principally chromium and silicon as the additional alloying elements.

The highly corroded state of the samples meant that the surface analysis using semi-quantitative SEM techniques on a lightly cleaned surface indicated quite different results to the sub-surface analysis again using SEM, but on a freshly-ground, flat area of the sample. The cuprous projectile (Sample 2) appeared on the results of the surface analysis to be a very unusual alloy with more zinc than copper. It does not conform with any common copper/zinc (brass) alloy specifications. The reason for what would appear to be a reversal of major constituent amounts was not established. The semi-quantitative results must be treated with some caution because of the corroded state of the surface of the samples. Sub-surface analysis revealed that it was a standard brass with 70% copper and 27.3% zinc.

The analysis of Sample 16 proved that the thin curved sheet metal was mainly aluminium (95.8% aluminium, 0.7% magnesium, 0.4% silicon with traces of red-lead on the surface).

Sample 7 is also aluminium.

Three examples of contemporary German munitions (20 mm and 3.7 cm) were also submitted for analysis. The results of that investigation indicated that, although there were similarities in the Fe (iron) content between the samples removed from the float and the unexploded munitions, there were major differences in the other alloying elements.

8. Results of the investigation of the Carley float

The Carley float has suffered much damage during its existence. The major destructive event was the result of multiple strikes by pieces of both high-explosive and perhaps, solid projectiles of varying calibres. Other damage has been caused by early investigative techniques and as the result of being on 'open' display from 1942 to 1960. Some deterioration caused by desiccation is evident in the rope. There is no evidence of the float being subjected to fire or heat damage, apart from the obvious fusion of cork and canvas/paint in some of the holes made by the hot projectiles.

The projectiles from the various munitions have struck the float primarily from one side, with only two entry holes on the other long side. We counted 339 disruptions of the canvas likely to have been caused by the projectiles. Of these, 222 are entries into the canvas and cork only, 63 are entries into the canvas, cork and steel body, 26 are exit holes from cork and canvas, 28 are exit holes from the steel, cork and canvas. Nineteen samples of projectiles were recovered from the float, ten of which were 'captured' by the cork. The other 9 samples were solder and other extraneous material recovered from the tube cavities. Considering the number of entry holes (285) located and the number of exit holes (54), the number of projectiles discovered is quite small. This may be accounted for because many of the projectiles with the lowest trajectory angle travelled through the port side into the starboard side, thus creating two entry holes and one exit hole. Other entry

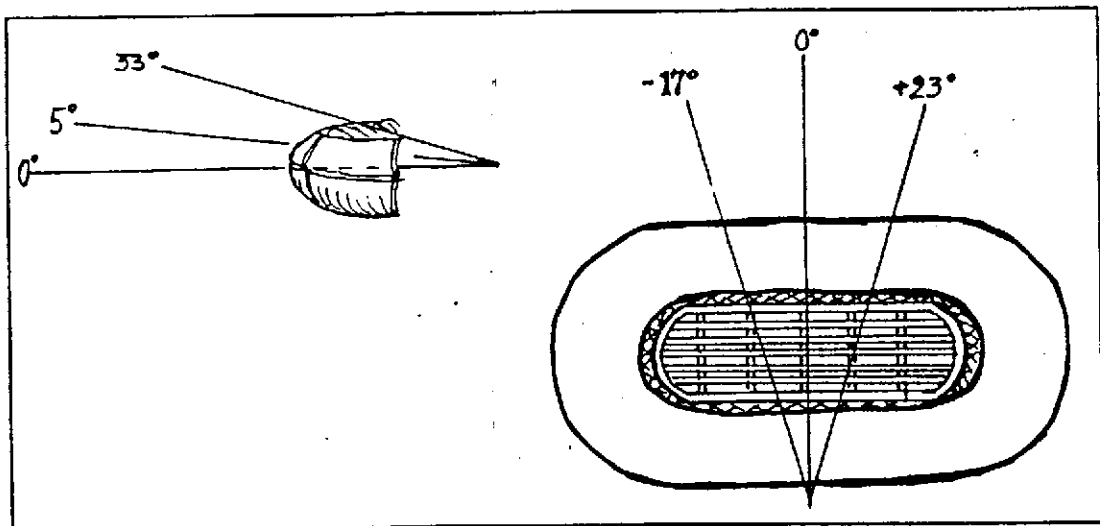


Figure 15: Angles of trajectory and divergence of the projectiles which struck the Carley float

9. Discussion

Our investigation indicates that the composition and morphology of the projectiles which struck the Carley float is consistent with pieces of exploded munitions similar to other pieces of munitions in the AWM collection. The projectiles are assumed to be from 'incoming' munitions from the *Kormoran* as it is highly improbable that the *Sydney's* ammunition fired at *Kormoran* would have exploded so close to the *Sydney*.

According to Hogg and Weeks,⁶ by the beginning of the 20th Century, the 'jacketed' bullet was the standard military ammunition for rifles and machine-guns; lead bullets only survived in revolver cartridges. Germany introduced the pointed bullet in 1905. The 'boat-tailed' or streamlined bullet required for machine-gun accuracy and maximum range was developed in the 1920s. In the 1930s the Germans produced the 7.92 mm calibre ammunition system, for rifles and machine-guns. The standard ammunition for use with German machine-guns right through the second world war was the copper alloy jacketed, lead-filled, 178 gr weight bullet with a muzzle velocity of 676 m/s. If, as proposed, the float was shot at by machine-guns, any projectiles from the German weapons then in use would be expected to have penetrated the relatively soft body of the float with clean entry and exit holes. No such holes were found and nothing discovered and removed from the Carley float has any morphological or metallurgical resemblance to the type of machine-gun bullets that could have been used during the naval action in November 1941.

6. I. Hogg and J. Weeks, *Military small arms of the 20th century*, 1985, Arms & Armour Press, London, pp. 292-7.

The direct association of the float to the HMAS *Sydney* has not been established. The geographic location of the float when found in 1941 indicates a probable connection. Finding the Australian manufacturer's logo inside the steel tubular body of the float has produced another connection - still only probable - as Lysaghts did not make floats and the steel used to make floats could have been exported in flat sheet form. The identification of the timber used in the decking at first sight appeared to be convincing evidence of local manufacture, but New Zealand Kauri was shipped overseas in vast quantities in response to a world-wide demand and was formerly one of the principal timbers used in Britain and elsewhere for boat building.⁷

No information has been located which indicates that the painted number '5' on the float has any significant connection with any particular vessel or any particular location on a vessel.

The holes in the float, the projectiles removed from the float and the angles of trajectory and divergence of those projectiles is consistent with explosive shells detonating relatively near the float while the float was in a horizontal, stored position.

There is no evidence of burning or heat damage to the painted surface or to the canvas or rope fibres. This tends to prove that the damage was done to the float before the ship was engulfed in flames. The *Sydney* was described by Detmers⁸ as follows: 'from the forebridge to the stern the cruiser was now a mass of flame and moving very slowly' when the two ships were about 7300 m apart, with the *Kormoran* stationary. If Detmers' account is accepted it supports our speculation that the float was not on the *Sydney* at the time of which he was speaking, and probably was damaged and either blown or washed overboard some 15 minutes earlier during the action before the *Sydney* passed behind the *Kormoran*.

7. B. Rundle (ed.), *World Timbers*, Vol. 3, 1970, E. Benn, London, p. 158.

8. T. Detmers, *The raider Kormoran*, 1975, Tandem, London, pp. 187-192.

ADDENDUM TO MY LETTER TO R.C.H.COURTNEY
DATED 8 MARCH 1994

In response to my above letter, Bob Courtney (Australian War Memorial) telephoned late on Friday 11 March, to make the following comments on the points I had made:-

p. 5 Had evidence that Carley floats were repainted. I explained that my reference to repainting was a reference to the particular time of re-doing the camouflage, i.e. 9.9.41. Looking at the wording, I can see that it would have been better were the words "at that time" to have been inserted after "repainted" where it appears on the fourth line. My explanation accepted.

Non-mention of the torpedo was accidental. The report had passed through many hands. Moreover it was desired that the report should confine itself to the matter of the float and not get into the area of questions about the loss of the ship. "Bullets" seems to have strayed into it for a similar reason. Nevertheless, I am inclined to place a caveat on the explanation given, especially so in the light of his response to my second point on p.6, as to which see below.

p. 6 My comment on Montgomery and the Japanese noted with interest.

Co-ordinates of finding the float. When completed by the A.W.M. people, the report was submitted to the "recognised expert", Dr. Tom Frame, for review. The A.W.M. had thought the longitude was East, and had checked their drafts and computer records etc. following receipt of my letter, to be certain that that had been the designation. Frame had sent the thing back to them altered, in his own hand, to West. He "being a naval man, we bowed to what we assumed was his superior knowledge". Laughter.

p.24 The question of the alloy of the cuprous projectile remains unresolved because the A.W.M. has been unable to get its hands on all types of 37mm. projectiles used, in order to carry out the requisite tests. No complete samples left anywhere apparently. My question noted with interest.

p.26 Non-use of "Sydney's" secondary armament was completely unknown to the A.W.M. It sounded to me as though it had come as a bit of a shock, so went on to give my reasons. Firstly, I stated that I was not surprised at such unreadiness, as I had experienced it twice during the previous voyage - once when I remained on the bridge at my cruising stations position, and again when I remained on my mess deck, while identification of firstly an unknown ship and secondly an unidentified object (the much vaunted target) took place. The more pragmatic reason for "certainty" in the "Kormoran" encounter was that there would have been many more German casualties had my gun - the after point five, and her sister, the port point five - sprayed the deck, and probably the hull of "Kormoran" with the nasty hail of lead of which they were capable. Furthermore, use of multiple point fives,

against personnel, by H.M.A.S. "Yarra" in the Shatt-al-Arab is on record, when she followed orders to "inflict maximum casualties" on the Iraqis, who were swarming on the banks of the river. To this I added that both Detmers, in his book, and Ahl, in his article in Naval Historical Review, December 1979, state that "Sydney's" secondary armament was not manned. Courtney was very well aware of the implications.

The reference to German machine gun bullets could be seen as in some conflict with the reference to the same in my p.5 note. I think Courtney indicated that that reference was in the same mould as the torpedo omission - something which crept in, contrasting with the torpedo reference which crept out. (As an aside, I confess I had and continue to have, a cynical feeling that the bullets thing on p.5 was allowed to stay in order to be consistent with Frame's ranting utterance on T.V. about "Kormoran's" VAST ARRAY of weapons. Before writing the 8 March letter, I had spoken about that to Hermann Ortmann, who also appeared on the programme, and he confirmed my view that only the 20mm. cannon and the PAK 37 were used - only four of the former and one of the latter being able to bear at any one time).



8. 4. 1994