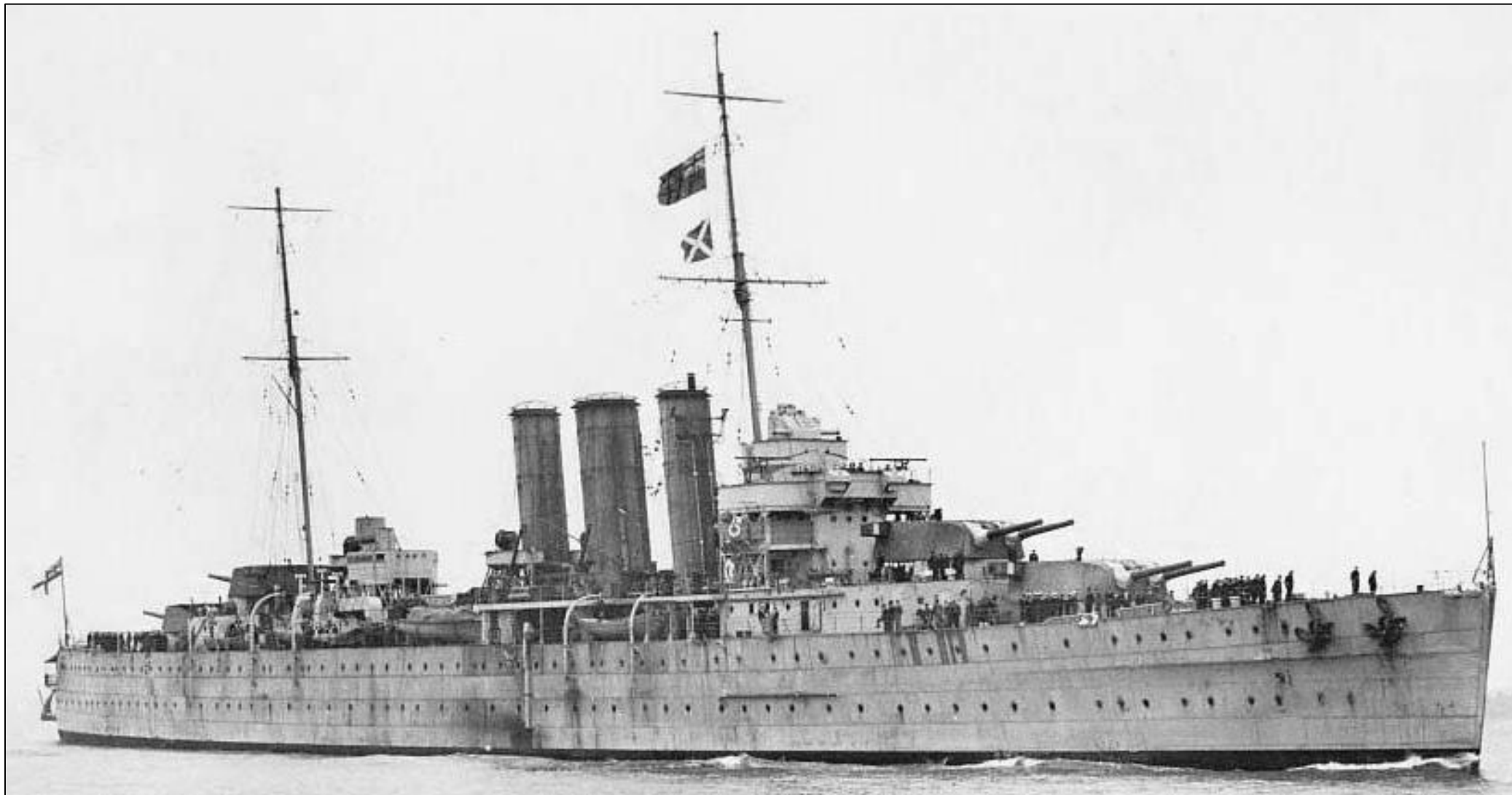


Appendix 1 – The Evolution of HMS Dorsetshire



This image and the one on the next page show Dorsetshire in 1930, during builder's trials¹

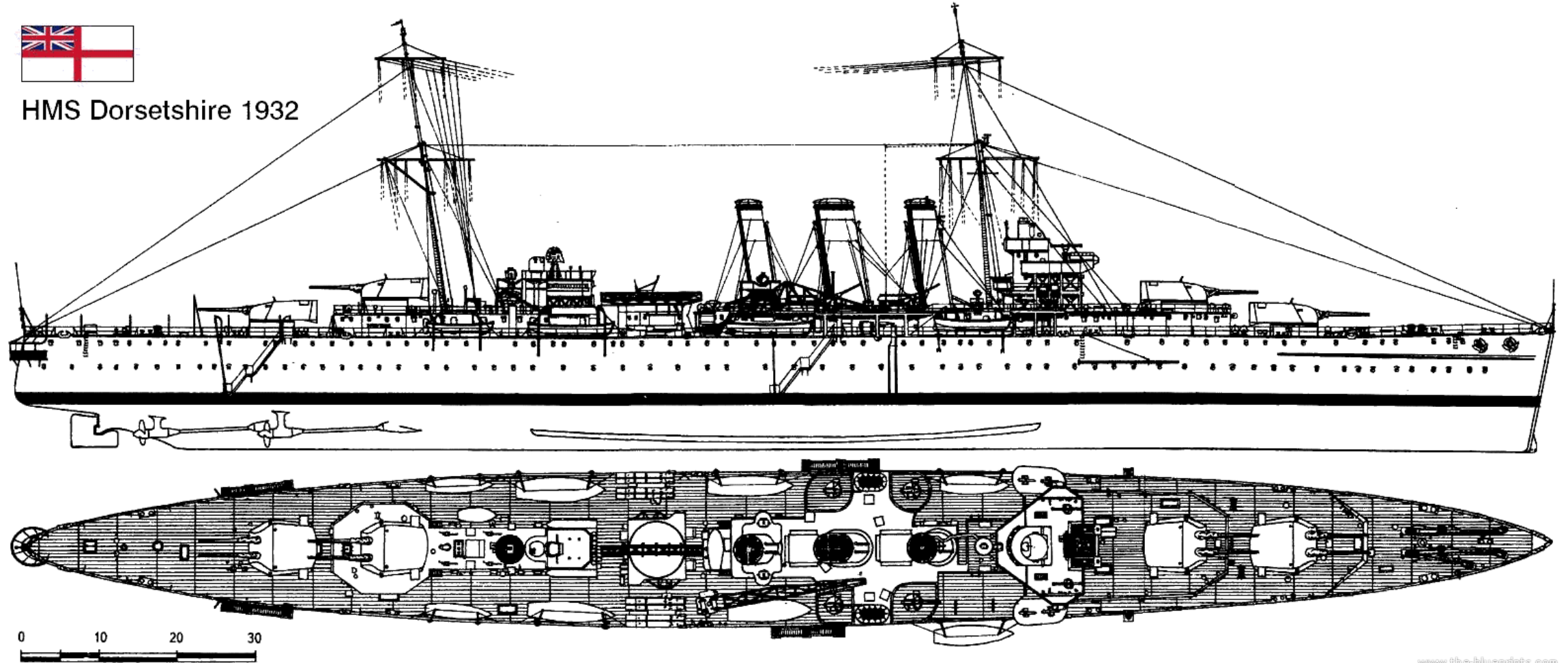




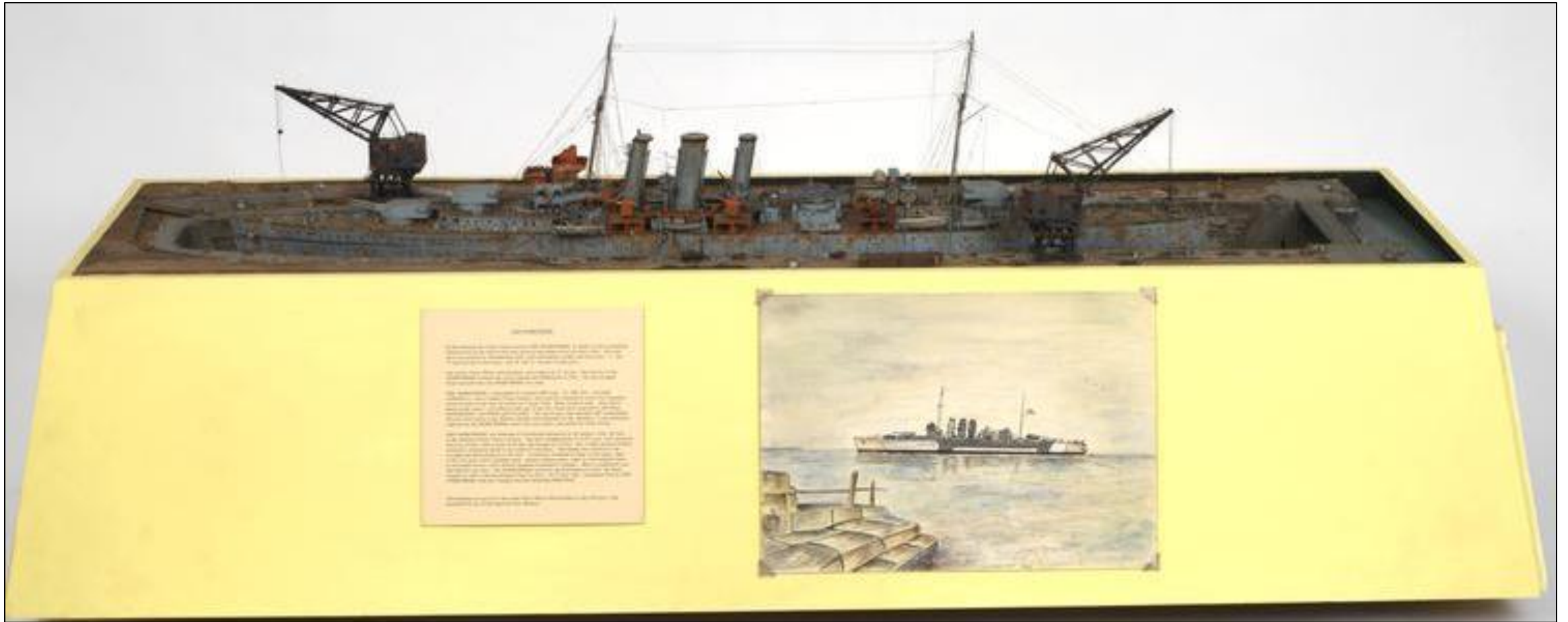
Dorsetshire in July 1931²



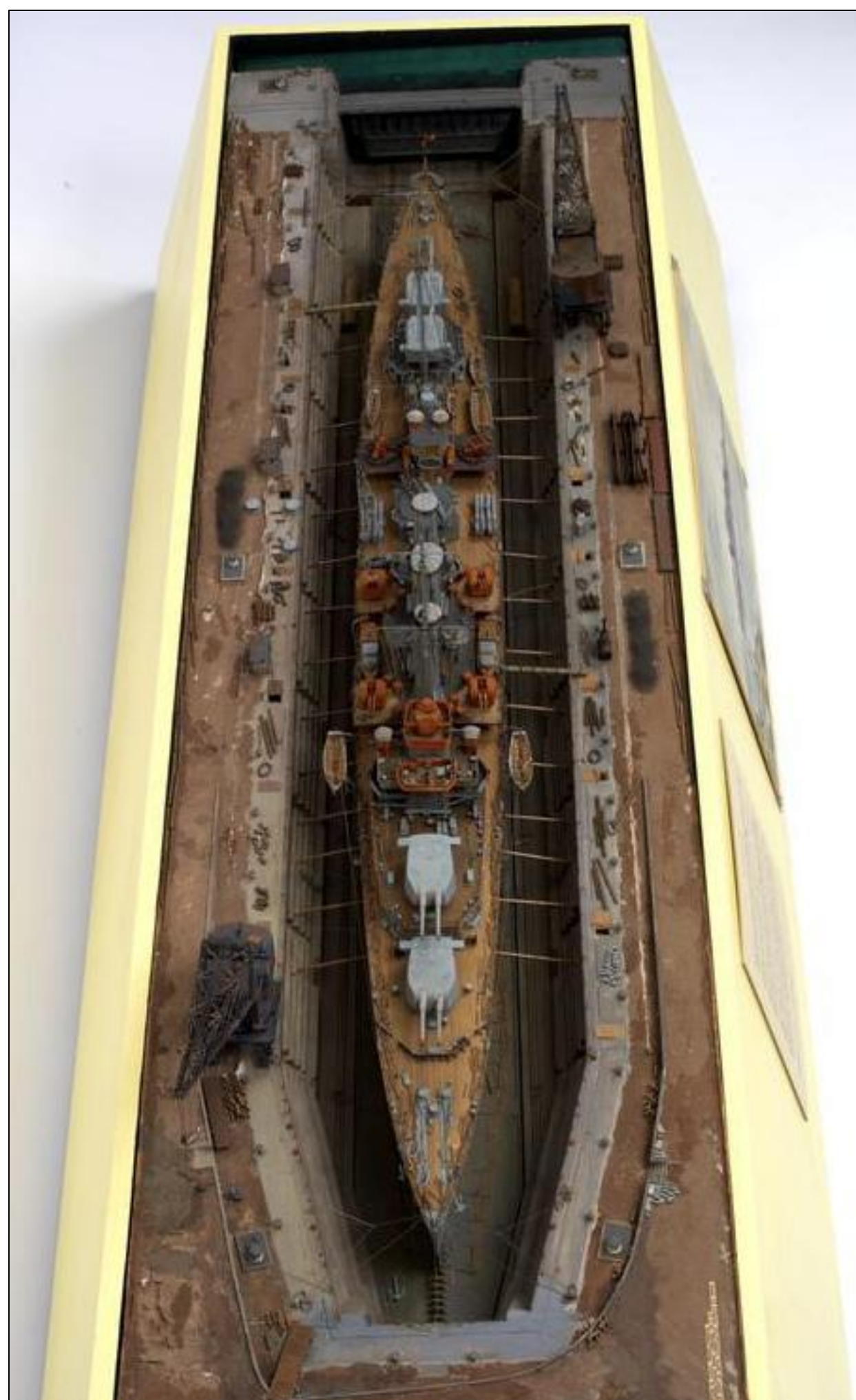
HMS Dorsetshire 1932

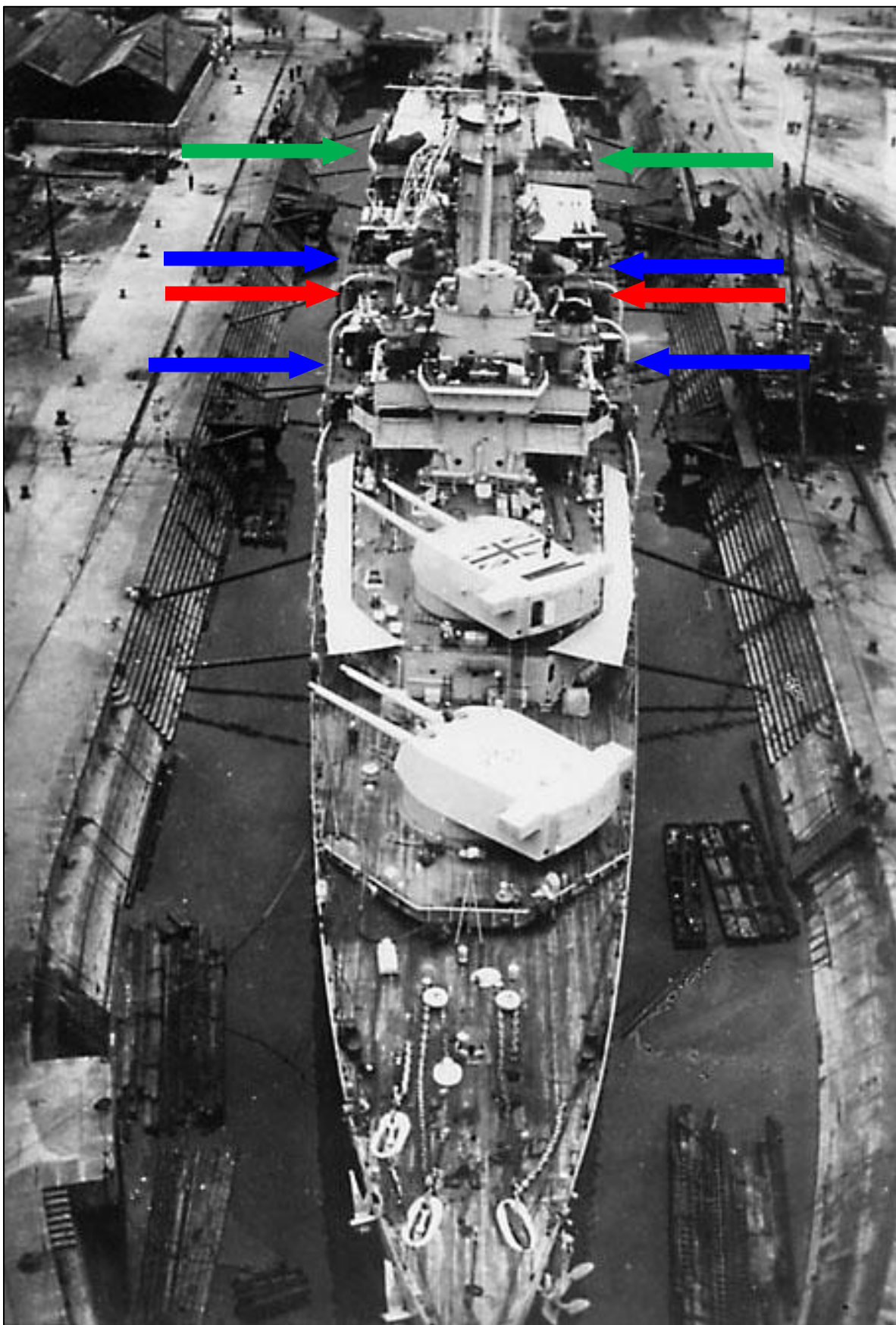


Dorsetshire in 1932. At this time her secondary and tertiary armament is still very light, just four single 4-inch guns abreast the forward funnels and four single 2-pdr pompoms abreast the bridge³



This 1948 model, shown to better advantage on the next page, depicts Dorsetshire under refit in 1937 in No. 14 Dock at Portsmouth Dockyard.
The twin 4-inch mountings are in place abreast the funnels, as are the octuple 2-pounder pom poms aft of the torpedo tubes.⁴





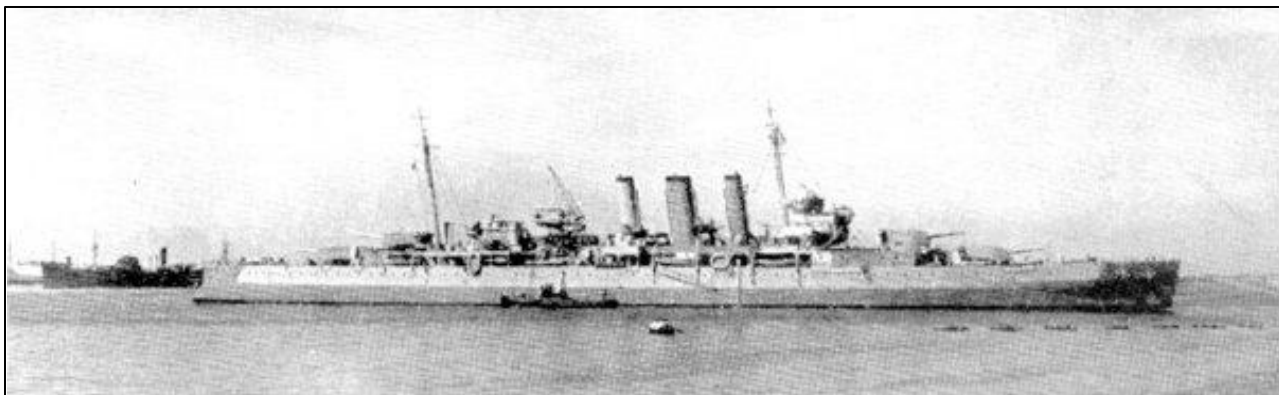
Dorsetshire in dock at Singapore after her 1937 refit.⁵ This image and the one on the next page show how difficult it was for her to engage aircraft attacking from directly ahead.

The arrows highlight her guns as follows:

blue = twin 4-inch
red = quad .5-inch
green = octuple 2-pdr pom poms



Dorsetshire in 1941⁶



Three shots of Dorsetshire in 1941. The painting of the aft funnel and part of the hull in a light colour was meant to make her appear to be a single-funnelled vessel – a sloop, according to one source. The paint scheme was possibly first applied at Simonstown between 16 and 20 March, since this was apparently Dorsetshire's only docking between December 1940 and June-July 1941.

The top image was taken at Cape Town, possibly between 21 and 23 April 1941.

The centre image was presumably taken prior to the June-July refit, since the ship sports what seems to have been the original version of this paint scheme.

The bottom image shows Dorsetshire at Scapa Flow in August 1941, with a shorter length of the hull painted in a light colour. This revision of her paint scheme was presumably made during her June-July refit.⁷



Dorsetshire at Trincomalee in March 1942⁸

Single Pom Pom

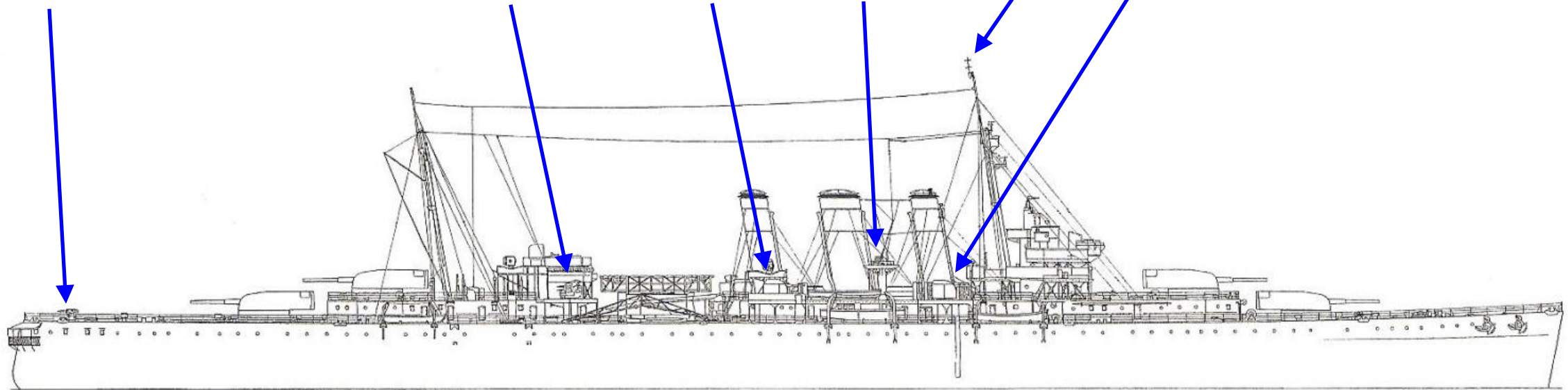
Starboard Quad 2-pdr Pom Pom

S2 Twin 4-inch

Quad .5-inch MG

Type 290 Radar

S1 Twin 4-inch



Dorsetshire as she is believed to have appeared on 5 April 1942, based in part on the image on the preceding page.⁹

Appendix 2 - Timeline

Part 1: December 1941 - March 1942¹⁰

Date(s)	Days at Sea	Event
Cornwall		
1-11 December	10	In route to Durban
16-23 December	7	Departs Durban, escorts incoming convoy CM 24 to Durban
24 December – 6 January	13	Sails from Durban, escorts convoy WS 12ZB to Bombay
17-? January	4	Sails from Bombay to Aden, probably arriving on 21 January
23 January – 1 February	9	Escorts convoy AJ 1 from Aden to Colombo
3-13 February	10	Escorts convoy JS 1 from Colombo part of the way to Batavia, then detaches and returns to Colombo
14-24 February	10	Escorts convoy JS 2X from Colombo part of the way to Rangoon, detaches and returns to Colombo
1-27 March	26	Escorts Australian troop convoy SU 1 from Colombo to Fremantle
Days at sea	89/117	
Dorsetshire		
1-7 December	6	In route to Simonstown
13-27 December	14	Escorts convoy WS 12X from Simonstown to Bombay
2-10 January	8	Sails from Bombay to Durban
13-26 January	13	Escorts convoy CM 25B from Durban to Bombay
5-8 February	3	Sails from Bombay to Colombo
10-19 February	9	Escorts Singapore-bound convoy JS 2 but on 13 February the convoy is diverted to Oosthaven. Dorsetshire then escorts convoy SJ 1 from 14 to 17 February, arrives at Colombo on 19 February
21-24 February	3	Sails to escort Batavia-bound convoy JS 3 but the convoy is recalled to Colombo and Dorsetshire proceeds to Trincomalee
26 February – 5 March	7	Escorts Madras-Rangoon convoy MR 5, returns to Trincomalee
5-24 March	-	Remains at Trincomalee
24-25 March	1	Sails from Trincomalee to Colombo
Days at sea	64/115	

Part 2: 26 March – 16 April 1942
(Local time, GMT+6, is used)

Time	Event
26 March - Thursday	
0500	KdB sails from Staring Bay
0800	Somerville assumes command of the Eastern Fleet
27 March - Friday	
	Dorsetshire enters dock at Colombo and commences refit
	Cornwall arrives at Colombo from escort duty. Its next scheduled task is to escort Australian troop convoy SU 4, due at Colombo from the Middle East on 8 April.
28 March – Saturday	
Afternoon	FECB decrypts radio traffic indicating that Colombo will be attacked on 1 or 2 April
30 March – Monday	
1400	Somerville sails from Colombo aboard Warspite, with Formidable, Enterprise, Cornwall, Caledon, Dragon, Nestor, Panther, Paladin, Hotspur, Express and Arrow

31 March – Tuesday	
1400	Ships from Colombo and Trincomalee rendezvous south of Ceylon
1600	Ships from Addu Atoll rendezvous with ships from Colombo and Trincomalee. Somerville divides his 28 ships into Force A and Force B, with Cornwall in Force A.
1900?	Dorsetshire leaves Colombo to join Somerville
1 April – Wednesday	
About 1430	Dorsetshire joins Force A
2 April - Thursday	
2100	Force A and Force B head for Addu Atoll
3 April – Friday	
0940	Cornwall and Dorsetshire are detached to Colombo
4 April – Saturday	
0652	413 Squadron Catalina QL-A takes off for a patrol southeast of Ceylon
1000	Cornwall and Dorsetshire arrive at Colombo.
1200	Force A arrives at Addu Atoll
1500	Force B arrives at Addu Atoll
1545	Nagumo issues Message Order Number 73. Three E7Ks are to fly search missions to a depth of 200 miles on 5 April, taking off at 0600. ¹¹
1605	QL-A reports a large enemy force 155 degrees 360 miles from Dondra Head, course 330 degrees. The composition of the enemy force is not given. QL-A is then shot down.
1905	Yamaguchi sends following to Nagumo: <i>In view of [the sighting of KdB by QL-A], it is felt necessary to advance the time of take-off as much as possible in tomorrow's attack on Colombo and the enemy air force, and at the same time to expand the area of search and patrol and keep on the alert planes ready to attack enemy surface vessels.</i>
1925	Nagumo issues Message Order No. 74, adding two more search lines to the air search plan for 5 April. They are to be flown by E8Ns to a depth of 170 miles. ¹²
2005	Arbuthnot advises Somerville that Cornwall and Dorsetshire are to sail for Addu Atoll at 2200
2040	Nagumo issues Message Order No. 75, ordering following changes: (1) Composition of Colombo attack force is changed to Organization No. 2, i.e., the B5Ns from Akagi, Soryu and Hiryu, and D3As from Shokaku and Zuikaku. (2) After the Colombo attack takes off, the D3As from Akagi, Soryu and Hiryu, and the B5Ns from Shokaku and Zuikaku will be on the ready in their hangars, with the B5Ns armed with torpedoes. (3) The E7Ks were to increase their search radius to 250 miles, while the E8Ns were to increase theirs to 180 miles. ¹³
2200	Cornwall and Dorestshire unmoor and proceed to sea
2300	Cornwall and Dorestshire reach the end of the cleared channel and head for Addu Atoll, course 220, speed 23 knots

5 April – Sunday	
0015	Force A leaves Addu Atoll, steers 70 degrees at 18 knots. ¹⁴
0311	Somerville instructs Arbuthnot to order Agar to rendezvous with him at 1600 on 5 April in position 00.58N, 77.36E. Arbuthnot relays this order to Agar at 0409.
0600	KdB launches Colombo attack force and five search planes.
0648	Catalina BN-L sights one battleship and two cruisers in position 04.00N, 80.40E, course 290. This position is about 150 miles from Cornwall and Dorsetshire.
0700	Cornwall and Dorsetshire alter course to 185, to rendezvous with Force A at 1600.
0703	Naval radio station at Colombo re-broadcasts BN-L's sighting report of 0648.
About 0748	The two E8Ns reach the end of their outward legs and turn right on to their doglegs.
About 0748	Tone's E7K crosses the track of Cornwall and Dorsetshire, ahead of them.
About 0752	Abukuma's E7K crosses the track of Cornwall and Dorsetshire, astern of them.
About 0800	Agar receives BN-L's 0648 sighting report and increases speed to 27.5 knots.
About 0806	The two E8Ns reach the end of their doglegs and commence their return flights
0828	Fuchida recommends a second strike against Colombo be launched
0830	KdB alters course to 230 ¹⁵
About 0830	The E7Ks reach the end of their outward legs and turn left to fly their dog legs.
0852	Nagumo orders CarDiv5 to rearm its B5Ns with bombs for an attack on Colombo. A third of the D3As on the other carriers are to change their SAP bombs for land bombs.
0855	An Albacore from Indomitable sights an enemy seaplane 76 degrees and 150 miles from Force A. This was Chikuma's E7K, which apparently did not notice the Albacore.
0910	Shokaku and Zuikaku start to remove torpedoes from their B5Ns and rearm them with 800kg land bombs
About 0912	The E7Ks reach the end of their dog legs and turn left to start their return flights
1000	Tone's E7K sends following report: <i>Sight what appears to be two enemy cruisers 268 degrees 150 nm from launch point. Course 160 degrees, speed 20 knots.</i>
1005	Sighting report from Tone's E7K is received by KdB. Tone and Chikuma immediately launch one E13A each to keep contact with the enemy ships and guide the attack force.
1023	Nagumo orders his carriers to prepare second wave aircraft to attack enemy cruisers. CarDiv5's B5Ns are to be changed back to torpedoes "as far as possible".
1025	Recovery of the aircraft which attacked Colombo is completed
1030	Nagumo orders his carriers to "Inform possible time" to launch attack on cruisers
1050	Nagumo orders that after the second wave is launched to attack the two enemy cruisers, the aircraft which attacked Colombo are to await orders in their hangars. The B5Ns are to be armed with torpedoes, depth set at 3 meters.

1050	Abukuma's E7K sends following report: <i>Sighted two enemy destroyers at 250 degrees 150 nm from launch point. Course 200 degrees, speed 24 knots.</i>
1057	CarDiv5 reports that it expects to complete preparations to launch its B5Ns at 1300
1100	Cornwall sights a wheeled single engine biplane a long way astern, perhaps 20 miles.
1118	Nagumo orders the second wave to start launching at 1200 to attack enemy ships.
1127	Nagumo issues order saying that "Previously mentioned cruisers are actually destroyers" and that only the D3As from the second wave are to be launched to attack them
1149-1203	Akagi, Hiryu and Soryu launch their D3As.
1155	Tone's E13A reports two enemy cruisers bearing 235 degrees, 158 miles from its launch point, course 200 degrees, speed 26 knots. When Tone receives this report it immediately orders its E13A to confirm enemy ship type.
1245	Tone's E13A reports that "Enemy cruisers are Kent-class. There are no other ships in the vicinity of the enemy cruisers. Visibility 20 miles."
1254	Egusa sights the British cruisers and sends a sighting report to KdB.
Just before 1257	Dorsetshire and Cornwall sight two aircraft. One is 14 miles ahead and is judged to be friendly. The other, twin-float monoplane 10-14 miles astern, is considered hostile.
1257	Agar reports being shadowed in position 2-12N, 77-47E.
1310	With the enemy ships confirmed as being cruisers, Nagumo orders CarDiv5 to attack the cruisers with their B5Ns and about half their D3As.
1325	Hara orders CarDiv5: <i>Attack force launch at 1700 [1400 local]. Target Kent Type cruisers. Attack course 200 degrees, distance 150 nm.</i>
1327	Somerville receives a mutilated copy of Agar's 1257 shadowing report, rebroadcast from Colombo. It is not identified as being from Dorsetshire until 1406.
1329	Egusa orders the attack to start
1338	Soryu's D3As attack Cornwall. A few seconds later Hiryu's D3As attack Dorsetshire
1344	Warspite's radar detects enemy aircraft at 30 ⁰ , 84 miles. Echoes fade after five minutes.
1345	Akagi's first chutai of nine D3As attacks Cornwall while its second chutai of eight D3As attacks Dorsetshire. One of the 17 bombs fails to release.
1348	Dorsetshire sinks
1351?	Last bomb dropped on Cornwall (according to Cdr Fair's report)
1352	Tone's E13A reports: <i>No. 1 and No. 2 ships on fire. No. 2 ship sinks.</i> ¹⁶
1355	Cornwall sinks

1355	Egusa radios <i>Two large cruisers sunk</i> . Nagumo immediately puts the launch of CarDiv5's aircraft on hold.
1405	Tone's Type 0 reports seeing no enemy after searching 50 miles along the cruisers' track to the southwest and KdB's attack aircraft are stood down for the day.
1411	Indomitable launches four Albacores to search ahead of Force A for the Japanese force
1445	Akagi, Hiryu and Soryu complete the recovery of their D3As.
1522	Albacore flown by Sub-Lt Streatfield reports wreckage in position 2-08N, 78-08E.
1600	Albacore flown by Sub-Lt Grant-Sturgis reports sighting an enemy force of 5 "unknowns" in position 3-38N, 78-18E. The Albacore is then attacked by Zeros from Hiryu. It escapes but the TAG is wounded and Grant-Sturgis heads back to Indomitable.
1610?	Streatfield sights KdB but is shot down at 1628 without sending a sighting report.
1730	Somerville orders Agar to steer south.
1815	Grant-Sturgis lands back on Indomitable, reports that the enemy ships he saw at 1600 were steering northwest.
1840	Somerville alters course to the northwest and searches for KdB throughout the night.
6 April	
1115	Somerville alters course toward the wreckage reported the previous evening.
1300	Somerville sends Enterprise, Paladin and Panther ahead to search for survivors.
1800-1900	Enterprise, Paladin and Panther rescue 1,122 survivors from Dorsetshire and Cornwall.
7 April	
1600	Enterprise, Paladin and Panther rejoin Force A. Enterprise and Paladin are then ordered to proceed to Addu Atoll.
1601	Somerville asks Arbuthnot to send Vita to Addu Atoll.
8 April	
0725	Enterprise and Paladin arrive at Addu Atoll. Wounded survivors from Cornwall and Dorsetshire are transferred to the base ship HMS Haitan.
1100	Eastern Fleet arrives at Addu Atoll. Unwounded and walking wounded are transferred from Enterprise and Paladin to Resolution, Ramillies, Royal Sovereign and Revenge.
9 April	
0200	Force B sails from Addu Atoll for Kilindini. Manwaring and Fair are aboard Revenge.
0600	Force A sails from Addu Atoll for Bombay. Agar is aboard Enterprise.
16 April	
1200	Vita arrives at Addu Atoll, loads 98 wounded survivors and sails for Durban.

Appendix 3 – Bombing Results Recorded by Cornwall and Dorsetshire

The following is from *H.M. Ships Damaged or Sunk by Enemy Action 3rd SEPT. 1939 to 2nd Sept. 1945*. It appears to be based on the reports submitted by Agar, Fair and Manwaring.

Cornwall	Dorsetshire
<p>Nine Direct Hits. Six Near Miss. 250-500 lbs. mixed delay and direct action fuzed Bombs. One Direct Hit direct action fuzed Oil Bomb [in addition to the other nine direct hits]</p> <p><u>Near Miss</u> abreast the bridge, port side, flooded the port bulges, wrecked the L.P. room, and dislocated all electric power. The steering motors also failed.</p> <p><u>Direct Hit</u> between the forward and centre funnel partially wrecked 'A' boiler room fan flat.</p> <p><u>Near Miss</u> abreast the starboard hangar exploded close to the after engine room, as a result of which the engine room became flooded.</p> <p><u>Direct Hit</u>, port side, between 'X' and 'Y' turrets.</p> <p><u>Direct Hit</u> in neighborhood of the dynamo room. No.1 and No.2 dynamos were put out of action and a fire started.</p> <p><u>Direct Hit</u> exploded on the starboard P.V. and splinters pierced 'B' barbette.</p> <p><u>Near Miss</u> abreast foremast, starboard side. The main steam pipe joint leaked, and the boiler room was evacuated due to flooding and escaping steam.</p> <p><u>Direct Hit</u> in vicinity of main switchboard room, starboard side. Severe damage was caused and the compartment was evacuated due to flooding.</p> <p><u>Direct Hit</u> in the sick bay flat caused a fire, and many important personnel were killed.</p> <p><u>Direct Hit</u> on the waterline abreast hangar, starboard side, burst in the forward engine room. The main steam pipe was cut, and a fire started. The compartment was evacuated.</p> <p><u>Direct Hit</u> in the recreation space. Killed first aid parties.</p> <p><u>Near Miss</u> under the fore end, port side. "B" boiler room was open to the sea, and all boilers were shut down temporarily.</p> <p><u>Near Miss</u> peart side of 'B" boiler room caused the compartment to be evacuated, due to flooding.</p> <p><u>Direct Hit</u> with an oil bomb on S.1 H.A. mounting.</p> <p><u>Direct Hit</u> on quarter deck killed important personnel.</p> <p><u>Near Miss</u> abreast the catapult, port side, caused bulges in the vicinity to be flooded. Power and circuits to all armament failed shortly after the hits.</p> <p>In less than five minutes, all power, main W/T and telephones were out of action. Both boiler rooms and engine rooms flooded rapidly. The port gunwale was awash, and the starboard outer propeller was breaking surface. Vessel heeled 70° to port and sank by the bows twelve minutes after the first attack.</p>	<p>Ten Direct Hit. Several Near Miss. 250-500 lbs mixed delay and direct action fuzed bombs. [...]</p> <p><u>Direct Hit</u> on the quarter deck put the steering gear out of action.</p> <p><u>Direct Hit</u> on the catapult wrecked both W/T offices.</p> <p><u>Direct Hit</u> port side amidships put all the A.A. armament on the port side, with the exception of the pom-pom, out of action.</p> <p><u>Direct Hit</u> through the base of the foremost funnel put 'A' boiler room and S.1 H.A. mounting out of action.</p> <p><u>Direct Hit</u> on the quarterdeck put 'X' turret out of action and flooded the magazine.</p> <p><u>Direct Hit</u> through the base of the after funnel caused the H.A. Magazine to explode, and put both pom-poms out of action.</p> <p>The ship heeled heavily to port within five minutes of the first attack. Serious fires occurred on the upper and stoker's mess deck. All communications, W/T and A.A. armament except the .5 inch machine guns were out of action. The ship sustained damage from several near misses during the attack, and later sustained four more direct hits. The vessel lost speed, heeled heavily to port, turned over on her side, and sank, stern first, about 8 minutes after the first attack.</p>

The following are extracted from Cdr Fair's report of 13 April 1942:

Air Attack on H.M.S. "CORNWALL".

Report in accordance with C.A.F.O. 595/41, Section IV.

1. Date. Sunday, 5th April, 1942.
 Time. About 1345 F.
 Position at { 2° 6' N.
 1330 F. { 77° 56' E.
 Course. 180°. Zigzagging.
 Speed. 27 knots.
 Weather. BC, Sea, calm, long low swell.
 Cloud. 4/10 Cumulus. 3000 feet.

2. Form of attack employed. Dive-bombing. In one case at least, the aircraft machine gunned the bridge. Initial attack came from ahead, (out of the sun), and was un-observed. Bombs were dropped in such a manner as to have one falling at the moment that the previous one was exploding. Slightly longer intervals were observed after every three aircraft, giving the impression that the attack was organised by sub-flights. The general impression of the attack was one of remarkable accuracy and efficiency.

Numbers of enemy aircraft. After both "CORNWALL" and "DORSETSHIRE" had been sunk, enemy aircraft formed up in Sub-Flights and flew past. Twenty seven dive-bombers and one float-plane were counted, but it is possible, from other reports, that there were more.

Types of enemy aircraft. Dive-Bomber. Single engined monoplane. Two seats. Fixed undercarriage. Rear and wing tip guns. Wing plan similar to early type "Spitfire". Flaps. Attacked fully flapped and throttled back until bomb was released. Camouflaged "Deep Sea" with diagonal red band just before the tail. Float Plane. This shadowed the ships. Twin float single engined monoplane.

3. Number and type of bombs. Number of bombs released, about 18. Height of release, between 600 and 1000 feet. 90% hit.

Types. (A) Normal H.E. with delay or non-delay fuses.
 Weight between 250 and 500 pounds.
 Example. Non-delay hit starboard P.V. on "B" gun deck from which splinters pierced "B" barbette and killed a number of bridge personnel.
 Example. Delay hits appeared to pierce one or two decks before exploding.

 (B) A form of "B" Bomb. Described as a depth charge with a pointed nose and small vanes. Fell as near misses. After a brief pause there followed a tremendous explosion, which caused great underwater damage and threw up a big column of water. Consider that these were responsible for sinking the ship.

- (C) Oil Bomb. Have the appearance of ordinary medium sized H.E. but are of metallic blue colour. One of these hit S.1 mounting. When it exploded, it produced a flame which enveloped S.1, the Starboard Pom-Pom, fore starboard superstructure, and swept right over the Air Defence Position and the 8" Director. Battle Dress and anti-flash gear saved all except the guns crew of S.1 whose clothing caught fire. Ready use ammunition which was exposed to the full effect of the flames did not explode. The demoralising effect of this bomb was large but fortunately did not last long.

4. Avoiding Action. As soon as the attack developed, the rudder was put to Hard-a-Starboard. The ship was hit port side forward early on in the attack, and to right the list attempts were made to put on opposite rudder, orders being passed direct to the tiller flat by sound powered telephone. It was found, however, impossible to carry out this operation.

5. Gunfire used. 8 inch. The 8" attempted to fire barrage but power failed before the first salvo. Port 4". First hit broke the control system, and local barrage was fired. (About 8 rounds per gun). Starboard 4". Fired two rounds in Director controlled barrage before the circuits failed. Then fired local barrage in which S.1 must have fired about 4 rounds and S.2 six rounds per gun.

Pom-Pom. Power failed after the first bomb. Pom-Poms were then put from "One man control" to "Hand". This took about a minute. They continued firing as long as possible.

0.5" Machine Guns. These continued firing to the end and claimed one aircraft (destroyed).

Miscellaneous machine guns. (4 Vickers, 2 "K", 1 Lewis). All fired and kept in action as long as possible. All guns crews stayed at their guns until the last possible moment.

6. See Appendix I. Enemy aircraft claimed, One probable, (seen to hit the water by the Forecastle) and one possible.

Appendix I.

Report on Bomb hits and damage.

- Part 1. Preliminary Remarks.
- Part 2. List of hits and their effect.
- Part 3. Conclusions.

Part 1. Preliminary Remarks.

(a) Explosions followed each other so quickly, and rapid communication was so difficult, that no exact idea could be obtained of their sequence, or of the separate effect of each hit or near miss. The list that follows in Part 2 must therefore be regarded as being very approximate.

(b) At the commencement of the attack, H.A. and L.A. Armament were at the second degree of readiness. All boilers were connected, main propelling machinery was isolated into four units, revolutions were 270 (27 knots), and all four dynamos were running, each being isolated on its own section of the electrical ringmain, with its supply breaker locked on.

Part 2. List of hits and their effect.

Note. In the following, "Near Miss" means a bomb which misses the above water portion of the ship, and explodes either on contact with, or close to, the underwater portion.

1. Near Miss port side abreast bridge. Flooded large sections of port bulges and accentuated the list caused by putting the rudder hard-a-starboard. The port ~~low~~ power room was wrecked and electric power supplies all over the ship were dislocated. Power to No: 1 steering motor failed, the rudder was put hard-a-starboard by No: 2 steering motor which also then stopped, (cause unknown). Steering gear was changed over to hand steering, but difficulty of communication combined with the rapidity of further hits prevented any appreciable effect in this direction. Later, all lights in both steering compartments failed, and the compartments were evacuated.
2. Bomb entered between forward and centre funnel, and partially wrecked "A" boiler room fan flat.
3. Near Miss starboard side abreast hangar. Appeared to have exploded in the after engine room. All personnel killed in the After Engine Room from whence black smoke came up the escape hatches, and a little later the after engine room was observed to be flooded.
4. Bomb exploded between "X" and "Y" turrets port side. Damage ?.
5. Hit in the neighbourhood of the dynamo room. Nos: 1 and 2 dynamos failed. All personnel were killed, and flames were observed coming up the escape trunking.
6. Bomb hit and exploded on starboard P.V. Splinters pierced "B" barbette and killed and wounded bridge personnel.

7. Near Miss by the water line, starboard side abreast the foremast. (Ship heeled 25° to port). Shock broke starboard side water gauge glasses and pressure gauges in "A" boiler room, and also caused a main steam pipe joint to leak badly, (main feed pressure to A2 and A3 boilers had failed shortly before, necessitating partial shutting down of those boilers, auxiliary feed pump being only half the capacity of the main feed pump. Communication could not be obtained with the Forward Engine Room. All lights were out and the boiler room was filling with steam and water coming up port side floor plates. Oil fuel was shut off and the boiler room evacuated.

8. About six hits had been felt in the main switchboard, but without any damage occurring there, except that water had started to run down into the compartment from the escape hatch. When this had reached two or three feet in depth, at the low side, (ship was heavily listed), all personnel were sent up out of the compartment except the Warrant Electrician. Lights were out, except pilot lamps for Nos: 3 and 4 dynamos which were still running. A very heavy explosion occurred starboard side, forward of the main switchboard compartment, and the plating at this corner was blown in, otherwise no damage. There was now no light or power, the room was filling with water, and was completely evacuated.

9. Bomb burst in Sick Bay Flat killing nearly all the personnel of T.S., H.A.T.S., No: 1 Fire and Repair Party, and First Aid Party, also starting a fire.

10. Bomb hit ship on water line, starboard side, abreast hangar, and burst in Forward Engine Room, starboard side aft. Fire started, and main steam pipe appeared to be cut. Half the engine room fans had stopped earlier, and now the remainder stopped and all lights went out. Room rapidly filled with steam and smoke and temperature rose rapidly. Room was evacuated, most of the personnel being saved.

11. Bomb burst in recreation space killing first aid parties.

12. Near Miss appeared to be under fore part of the ship. Water came down port air lock doors and seam started opening port side of "B" boiler room. Starboard main feed pump stopped, and B2 and B3 boilers had to be shut down to regain water level in boilers using the auxiliary feed pump. Communication with forward engine room was available only by messenger.

13. Near Miss port side "B" boiler room. Tubes in B.1 boiler started to fail, and boiler had to be shut down. All lights in boiler room failed and room started to fill with steam. Meanwhile, water was pouring into the room through the port bulkhead. Boiler room was evacuated and shortly after room was found to be flooded up to the airlock doors.

14. Oil Bomb burst on S.1 H.A. gunmounting, flame enveloped guns crews, setting their clothing alight. Other men in the vicinity were saved by their Battle Dress and anti-flash gear.

15. Bomb exploded on Quarter Deck messdeck. Killed T.S. crew and "B" Lower Quarters crew as they were coming up.

16. Near Miss abreast catapult port side. Flooded bulges in neighbourhood 159 - 183 Port.

In addition to the above, two complete misses were observed.

Part 3. Conclusions.

(a) Power and circuits to all armaments failed, at, or shortly after the first hit.

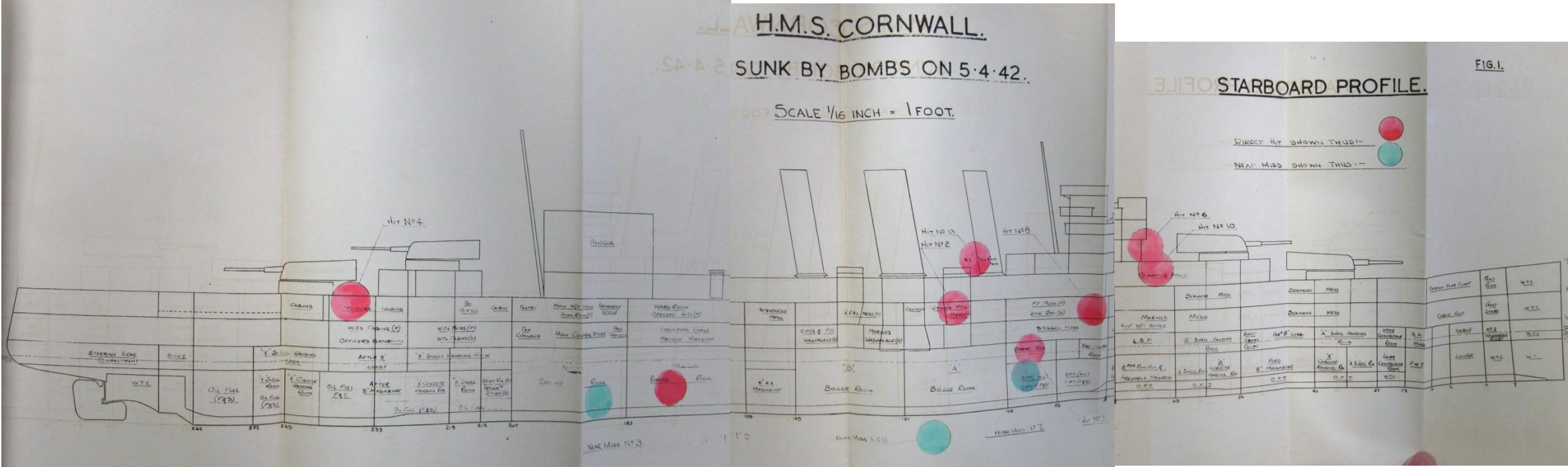
(b) Telephone communications failed.

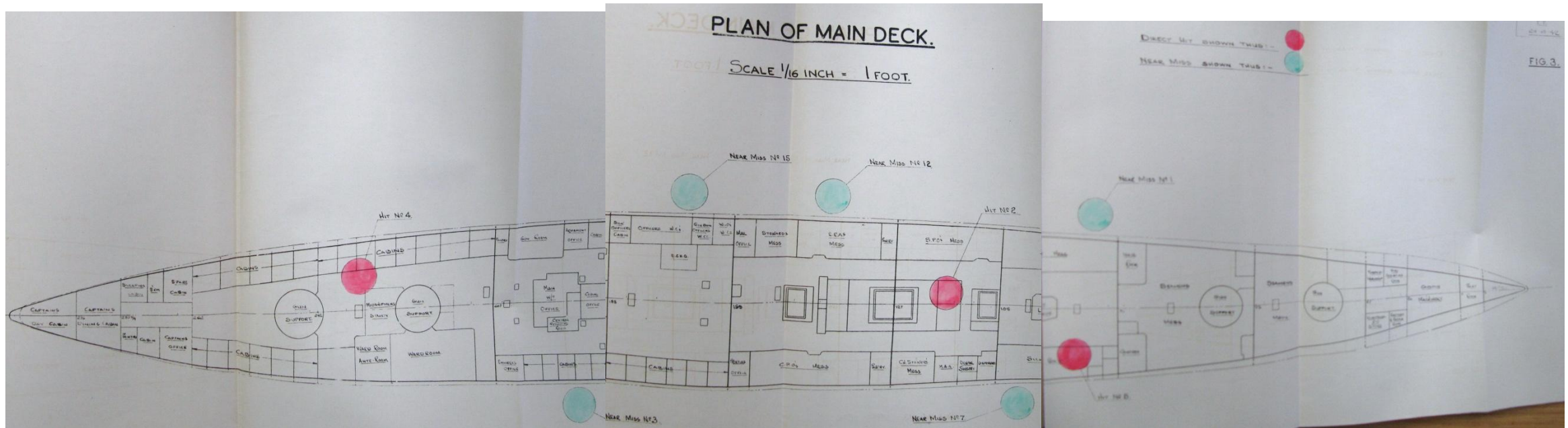
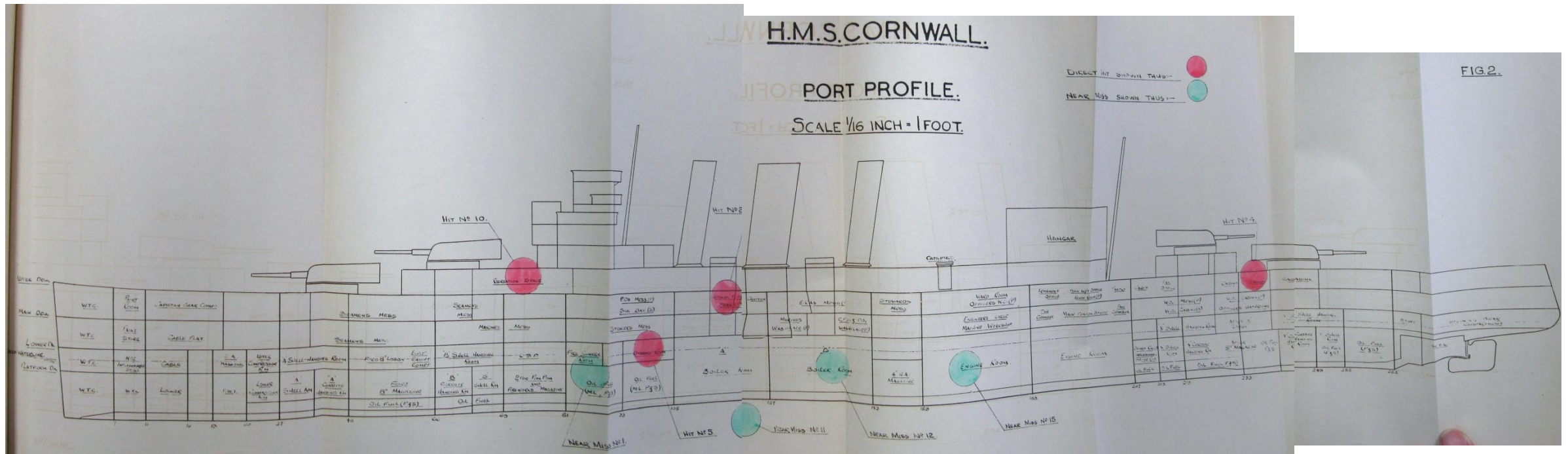
(c) The machinery stood up to shock as well as could be expected.

(d) The damage effect of the bomb explosions was accentuated by age of the ship, hull structure, condition of rivets, etc..

It is considered that the sinking of the ship was due primarily to underwater damage caused by "near misses".

Appendix 4 – Admiralty Bomb Plot for Cornwall¹⁷





NOTES FOR TEXT

1. For further information on Operation C, see the current author's previous articles:

"Leonard Birchall and the Japanese Raid on Colombo", at <http://www.journal.forces.gc.ca/vo7/no4/stuart-eng.asp>

"Air Raid Colombo 5 April 1942: The Fully Expected Surprise Attack", at http://www.rcaf-arc.forces.gc.ca/assets/AIRFORCE_Internet/docs/en/cf-aerospace-warfare-centre/elibrary/journal/2014-vol3-iss4-06-air-raid-colombo-5-april-1942.pdf

"20 Ships, Not 23: Ozawa's Score, 5-6 April 1942", "91 Bombs: The Japanese Attack on Trincomalee", and "State of the Art: The Japanese Attacks on Hermes, Vampire, Hollyhock, Athelstane, British Sergeant and Norviken, 9 April 1942", which are posted at <http://www.combinedfleet.com/articles.htm>.

2. The photograph has been copied from the Imperial War Museum site, at <https://www.iwm.org.uk/collections/item/object/205212379>. The deduction that it was taken between 1931 and 1934 is based on the type of aircraft carried. Dorsetshire first received a floatplane in April 1931, apparently a Fairey III F, which the aircraft carried here appears to be. It was still carrying a III F in 1933 but was provided with a Hawker Osprey by probably the end of that year or shortly thereafter. Marriot, Leo, *Catapult Aircraft: Seaplanes That Flew From Ships Without Flight Decks*, Pen and Sword, 2006, p. 16; Brown, Les, *County Class Cruisers*, Seaforth Publishing, 2011 (hereinafter referred to as *County Class Cruisers*), pp. 7, 60.
3. Friedman, Norman, *British Cruisers Two World Wars and After*, Seaforth Publishing, 2010 (hereinafter referred to as *British Cruisers*); Marriott, Leo, *Treaty Cruisers The World's First International Warship Building Competition*, Pen & Sword, 2005 (hereinafter referred to as *Treaty Cruisers*); *County Class Cruisers*, op. cit.; Raven, Alen, and Roberts, John, *British Cruisers of World War Two*, Arms and Armour Press, 1980 (hereinafter referred to as Raven and Roberts); , David K., *Nelson to Vanguard: Warship Design and Development 1923-1945*, Seaforth Publishing, 2012 edition, pp. 68-71.
4. Willmott, H.P., *Battleship*, Cassell, 2002, p. 142.
5. Marriott, *Treaty Cruisers*, op. cit.; *British Cruisers*, op cit; *County Class Cruisers*, op. cit.; Raven and Roberts, op. cit.; Lenton, H.T., *British and Empire Warships of the Second World War*, Naval Institute Press, 1998, pp. 46-52; excerpts posted in August 2018 in the thread at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&start=15> from Raven and Roberts, *Man O'War 1: County Class Cruisers*, Arms and Armour Press, 1973; Moulin, Jean, and Jordan, John, *French Cruisers: 1922-1956*, Seaforth Publishing, 2013; Chesneau, Roger, *Conway's All the World's Fighting Ships, 1922-1946*, Conway Martine Press, 1980; Backer, Steve, *Japanese Heavy Cruisers: Myoko and Takao Classes*, Seaforth Publishing, 2011; Jordan, John, *Warships after Washington: The Development of Five Major Fleets 1922-1930*, Seaforth Publishing, 2011; Lacroix, Eric, and Linton Wells II, *Japanese Cruisers of the Pacific War*, Naval Institute Press, 1997.

Table 1 must be read with caution. First of all, while reputable sources were consulted they do not agree in all respects. The figures cited are from what are believed to be the most reliable sources but it is possible that some may be somewhat in error. The reader should also note that:

- (a) Displacement figures are in tons.
 - (b) No "Actual standard displacement" for Dorsetshire at the time of her completion has been found. The figure of 9,830 tons is based on the displacement cited by Lenton for HMS London, given that the design of the Norfolk class was little changed from that of the London class.
 - (c) The designed maximum speeds are for standard displacement for Cornwall and Dorsetshire, and two-thirds of full displacement in the case of Myoko. It is unknown if the figures for Duquesne, Northampton and Zara are for standard or full displacement, or something in between.
 - (d) The Myoko class's designed endurance of 8,000 nm at 14 knots was not realized. Actual endurance during trials was in the order of 6,600-7,000 nm.
 - (e) The IJN Naval General Staff's original direction to the designers of the Myoko class specified a 10,000 ton standard displacement but additional requirements the NGS added later increased it to about 10,750 tons. Actual standard displacement proved to be about 11,550 tons after completion.
6. Raven and Roberts , pp. 107-110, pp. 412-413; *British Cruisers*, pp. 99-104.
 7. Chesneau, pp. 26-27; excerpts posted in August 2018 in the thread at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&start=15> from *Man O'War 1: County Class Cruisers*, op. cit.
 8. *British Cruisers*, p. 123; *Treaty Cruisers*, pp. 19-25; *County Class Cruisers*, p. 3.
 9. This image was found at https://media.iwm.org.uk/ciim5/55/288/large_000000.jpg.
 10. *British Cruisers*, pp. 123-125; *Treaty Cruisers*, p. 15.

11. The same image can be found at <http://dennilfloss.blogspot.com/2013/03/hms-cornwall-july-1936.html>, which states that it was taken in July 1936.
12. Raven and Roberts, p. 244-251; *British Cruisers*, pp. 123-125; *Treaty Cruisers*, p. 25.
13. *Treaty Cruisers*, p. 31; excerpts posted in August 2018 in the thread at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&start=15> from *Man O'War 1: County Class Cruisers*.
14. This image has been copied from <http://dorsetshire.byethost31.com/?i=1>.
15. This image has been copied from https://madison.com/gallery/news/photos-anniversary-of-sinking-of-the-bismarck/collection_903595cc-234f-11e6-bfde-e7a2b6493c87.html#6.
16. The photograph has been copied from the Imperial War Museum site, at <https://www.iwm.org.uk/collections/item/object/205142054>.
17. *British Cruisers*, p. 127; Friedman, Norman, *Naval Radar*, Conway Maritime Press, 1981, pp. 195-196; Kingsley, F.A., *The Development of Radar Equipments for the Royal Navy, 1935–45*, Springer, 2016, p. 174; Howse, Derek, *Radar at Sea: The Royal Navy in World War 2*, Springer, 1993, p. 107; R. Stuart email exchange in October 2009 with the late Lieutenant Commander Bill Legg, curator of the Royal Navy Radar and Communications Museum (now known as the HMS Collingwood Heritage Collection (CHC) of Naval Radar and Radio Equipments); Naval History website, HMS Dorsetshire service history, at <http://www.naval-history.net/xGM-Chrono-06CA-Dorsetshire.htm>.
18. *British Cruisers*, p. 127.
19. *British Cruisers*; *Treaty Cruisers*; Raven and Roberts; Lenton, pp. 46-52; reports submitted on 8 and 13 April 1942 by Agar, on 13 April by Manwaring's executive officer, Acting Commander John Fair, and on 24 April by Manwaring; undated 1942 Admiralty report "H.M. Ships Cornwall and Dorsetshire. Sunk by Bombs." which summarizes and comments on them, in ADM 199/623 and ADM 267/84; Dr. Malcolm Cooper in <http://www.j-aircraft.org/smf/index.php?topic=13030.msg93534#msg93534>; <http://www.world-war.co.uk/Kent/cornwall.php3>; and <https://en.valka.cz/topic/view/69616/CA-HMS-Dorsetshire-40>.
20. Naval History website, HMS Cornwall and HMS Dorsetshire service histories, at http://www.naval-history.net/xGM-Chrono-06CA-HMS_Cornwall.htm and <http://www.naval-history.net/xGM-Chrono-06CA-Dorsetshire.htm>; entries on HMS Cornwall and HMS Dorsetshire on the uboat.net site, at <https://www.uboot.net/allies/warships/ship/1184.html> and <https://www.uboot.net/allies/warships/ship/1185.html>; *Battle Summary No. 13, Actions with Enemy Disguised Raiders 1940-1941*, produced by the Admiralty in 1942 and accessed at http://www.navy.gov.au/sites/default/files/documents/Battle_Summary_No_13.pdf; Forczyk, Robert, *German Commerce Raider vs British Cruiser, The Atlantic & The Pacific 1941*, Osprey, 2010, pp. 55-60; Naval History website, HMS Prince of Wales service history, at <http://www.naval-history.net/xGM-Chrono-01BB-Prince%20of%20Wales.htm>.
21. The photo of Bismarck was copied from https://padresteve.files.wordpress.com/2013/05/wtbr_bismarck_sinking_pic.jpg and Martin's message was copied from <http://jproc.ca/radiostor/dorset.html>.
22. The photograph has been copied from the Imperial War Museum site, at <https://www.iwm.org.uk/collections/item/object/205125190>.
23. Entries on Cornwall and Dorsetshire on the Naval History and uboat.net sites, op. cit.; Commander in Chief, East Indies Station, war diary for January – March 1942, at <http://www.naval-history.net/xDKWD-EF1942.htm>; Commander in Chief, China Station and Eastern Fleet, war diary for 28 November 1941 to 26 March 1942, at <http://www.naval-history.net/xDKWD-EF1941ChinaStation.htm>; summary of Admiralty War Diary for 15-28 February 1942, at <http://www.naval-history.net/xDKWW2-4202-42FEB02.htm>.
24. Agar, Captain Augustus, *Footprints in the Sea*, Evans Brothers, 1959, p. 299. *British Cruisers*, p. 127, says that Dorsetshire was due to receive four 20mm Oerlikons.
25. *Footprints in the Sea*, pp. 294-303; entries on Dorsetshire on the Naval History and uboat.net sites, op. cit.; information on the Naval History site on Force Viper and HMS Jervis; information on convoys to and from Rangoon and Singapore on the Convoyweb site, at <http://www.convoyweb.org.uk/index.html>. Regarding the existence or non-existence of a dock at Trincomalee, the author of this article has been studying Operation C since 2004 and knows of no source saying there was a dock at Trincomalee, and Arthur J. Marder, Mark Jacobsen and John Horsfield state in *Old Friends New Enemies, The Royal Navy and the Imperial Japanese Navy, Volume II: The Pacific War*, Clarendon Press, 1990, p. 141, that Trincomalee had no dock.

26. The upper image was copied from https://en.wikipedia.org/wiki/Indian_Ocean_raid#/media/File:GF_in_Indian_Ocean,_1942.jpg but probably is ultimately from *The Maru Special, Japanese Naval Vessels No. 6*, April 1976, from which the centre image has been scanned. The colourized image has been copied from <https://forum.worldofwarships.com/topic/115036-color-pics-of-h%C5%8Dsh%C5%8D-akagi-and-kaga-image-heavy/>.
27. Map 1 is from Simpson, Michael (ed), *The Somerville Papers, Selections from the Private and Official Correspondence of Admiral of the Fleet Sir James Somerville, G.C.B., G.B.E., D.S.O.*, Naval Records Society, 1995, p. 400.
28. The War History Office of the National Defence College of Japan, War History Series (Senshi Sōsho), Volume 26, *The Operations of the Navy in the Dutch East Indies and the Bay of Bengal*, English edition, translated and edited by Willem Rimmelink, Leiden University Press (LUP), 2018, p. 569, accessed at <https://openaccess.leidenuniv.nl/handle/1887/65910>. Hereinafter cited as Senshi Sōsho.
29. Eleven destroyers sortied from Staring Bay with KdB but it appears that three of them were detached prior to 5 April. According to Japanese Monograph No. 118, *Operational History of Naval Communications, December 1941 – August 1945*, accessed at <http://cdm16040.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/2434/rec/23>, one destroyer was sent to the Ten Degree Channel, which lies between the Andaman and Nicobar Islands, “to report by radio the attack plan and subsequent movements of our force”. The other two destroyers were apparently detached to escort the oilers after refueling was completed on 3 April.
30. The widely available public domain picture of Nagumo is undated but was taken after 15 November 1939, when he was promoted to vice admiral.
31. *Somerville Papers*, pp. 8-9, 58-59, 78-79; War Diary of Commander-in-Chief, Eastern Fleet, 28 November 1941 to 26 March 1942, accessed at <http://www.naval-history.net/xDKWD-EF1941ChinaStation.htm>; Thomas, David A., *Japan’s War at Sea, Pearl Harbor to the Coral Sea*, Andre Deutsch, 1978, p. 92; MacIntyre, Captain Donald, *Fighting Admiral, The Life of Admiral of the Fleet Sir James Somerville, G.C.B., G.B.E., D.S.O.*, Evans Brothers, 1961, p. 181; *Task Force Operations*, Japanese Monograph No. 113, Military History Section, Headquarters, US Army Forces Far East.
32. The two images are copied from https://media.iwm.org.uk/ciim5/444/661/large_000000.jpg and <http://1.bp.blogspot.com/-TbgKt0vxTU0/UO97n7NsYtI/AAAAAAAAAKdM/idpEXkrfcGw/s640/Sommerville-&-Plane.jpg>.
33. C-in-C Eastern Fleet cable 0440Z/15, 15 January 1942; Admiralty signal 1511A/20, 20 January 1942. The picture of Arbuthnot was taken in 1938 when he was still a rear admiral. It was accessed at <http://www.npg.org.uk/collections/search/portrait-list.php?search=sp&sText=x163647&firstRun=true>. The picture of Willis has been copied from the Imperial War Museum site, at <https://www.iwm.org.uk/collections/item/object/205153686>.
34. Smith, Michael, *The Emperor’s Codes*, Arcade Publishing, 2000, p. 128; Prados, John, *Combined Fleet Decoded*, Random House, 1995, pp. 273-4; Commander-in-Chief Pacific operations log, at http://www.ibiblio.org/anrs/docs/D/D7/nimitz_graybook1.pdf; Op-16-F-2 summaries of Japanese Naval Activities, at <http://www.fdrlibrary.marist.edu>; Blair, Clay, Jr., *Silent Victory The U.S. Submarine War Against Japan*, Vol. 1, J.B. Lippincott Company, 1975, pp. 168-169, p. 188; Mendenhall, Rear Adm. Corwin, *Submarine Diary*, Naval Institute Press, 1991, pp. 53-57; *USS Sculpin Report of Third War Patrol*, at http://issuu.com/hnsa/docs/ss-191_sculpin?mode=a_p.
35. HW 4/25, Captain H. L. Shaw, “The History of HMS Anderson”, 24 May 1946. HMS Anderson was the shore-based intercept and direction finding station at Colombo.
36. Commander in Chief Eastern Fleet signal 0626Z/29, in ADM 223/867.
37. Tagaya, Osamu, *Aichi 99 Kanbaku ‘Val’ Units 1937–42*, Osprey, 2011, p. 56, and Senshi Sōsho, pp. 601-602, which explain that Shokaku and Zuikaku were delayed primarily due to a wild goose chase in response to false reports of US carrier activity northeast of Wake; R. Stuart exchanges with Don Kehn, Jr. and the late Luke G.A. Ruffato, August 2010, at <http://www.j-aircraft.org/smf/index.php?topic=9799.msg70939#msg70939>; *USS Sculpin Report of Third War Patrol*, at http://issuu.com/hnsa/docs/ss-191_sculpin?mode=a_p;
38. Lundstrom, John B., *Black Shoe Carrier Admiral: Frank Jack Fletcher at Coral Sea, Midway & Guadalcanal*, Naval Institute Press, 2013, pp. 220-221, p. 233, pp. 236-237.
39. Eastern Fleet Report of Proceedings, 29th March to 13th April 1942, accessed at <https://www.naval-history.net/xDKWD-EF1942-Introduction.htm>. Hereinafter cited as Somerville’s Report of Proceedings.
40. Monograph 113, pp. 68-70; Senshi Sōsho, pp. 605-619; 1st Destroyer Squadron War Diary, via 30 June 2013 email from Lu Yu to the author; I-7 TROM, at <http://www.combinedfleet.com/I-7.htm>.

41. Somerville's Report of Proceedings.
42. Somerville's Report of Proceedings; Somerville Papers, p. 397; SO (I) Colombo signal 1639Z/31; *Battle Summary No. 15, Naval Operations off Ceylon, 29th March to 10th April, 1942*, produced by the Admiralty in 1943, pp. 2-3, accessed at http://www.navy.gov.au/sites/default/files/documents/Battle_Summary_No_15_and_16.pdf.
43. *Footprints in the Sea*, p. 299; Admiralty War Diary; C-in-C EI report for March; HMS Dorsetshire entry on the uboat.net site, op. cit.; Sunderland, Jenny (Ed), *H.M.S. Dorsetshire – County Class Cruiser*, published privately in 2012, pp. 109-110.
44. Map 2 is from Boyd, Andrew, *The Royal Navy in Eastern Waters Linchpin of Victory 1935-1942*, Seaforth Publishing, 2017, p. 371. The photograph has been copied from the Imperial War Museum site, at <https://www.iwm.org.uk/collections/item/object/205123834>. It was taken in November 1942 and appears to have been originally taken with colour film.
45. Dimpleby, K.G., *Hostilities Only*, Unie-Volkspers, 1944, p. 81. Dimpleby was aboard Cornwall. Some sources give alternate texts for Somerville's signal, e.g., MacIntyre, op. cit., p. 186, says that it read "So this is the Eastern Fleet. Never mind, many a good tune is played on an old fiddle."
46. Somerville's Report of Proceedings.
47. Ibid. Aletta's arrival at Addu Atoll was reported in NOIC Addu Atoll signal 1847Z/30, which was recorded in the Admiralty War Diary.
48. Somerville's Report of Proceedings; HMS Dorsetshire entry on the uboat.net site, op. cit.
49. *Footprints in the Sea*, p. 303.
50. Somerville's Report of Proceedings.
51. Stuart, "Leonard Birchall and the Japanese Raid on Colombo", op. cit.
52. Somerville's Report of Proceedings.
53. Commander in Chief, East Indies Station, war diary for April 1942, at <https://www.naval-history.net/xDKWD-EF1942a.htm>, hereinafter cited as Arbuthnot's War Diary.
54. Ibid; Somerville's Report of Proceedings; reports submitted by Agar, Manwaring and Fair, op. cit.
55. *Footprints in the Sea*, pp. 303-304.
56. Ibid, p. 304.
57. Table 3 is based primarily on research by Marc Horan and Eugen Pinak (see <http://propnturret.com/tully/viewtopic.php?f=4&t=297> and <http://propnturret.com/tully/viewtopic.php?f=5&t=1430&p=8715#p8715>). Their data is consistent with other credible sources.
58. Multiple sources agree that Abukuma had one E7K. The four battleships' TROMs and other sources confirm that they were carrying E8N1s and it seems probable that they had three each. This was their normal complement and it is known that they had three each during their next operation, Midway. The aircraft complements of Tone and Chikuma are derived largely from exchanges with the late Luca "Luke" Ruffato and Don Kehn, Jr., at <http://www.j-aircraft.org/smf/index.php?topic=10065.0>, <http://www.j-aircraft.org/smf/index.php?topic=12016.0>, and <http://www.j-aircraft.org/smf/index.php?topic=13132.0>. The latter is no longer accessible on-line.
59. Francillon, R.J., *Japanese Aircraft of the Pacific War*, Putnam & Company, London, 1970, pp. 277-281, 297-300, 408-410. See also <http://www.combinedfleet.com/ijna/e13a.htm>, <http://www.combinedfleet.com/ijna/e7k.htm> and <http://www.combinedfleet.com/ijna/e8n.htm>.
60. <http://nhungdoicanh.blogspot.com/2011/07/aichi-e13a-jake.html>.
61. <http://www.combinedfleet.com/ijna/e7k.htm>.
62. Monograph 113, p. 70; Hiryū Detailed Action Report for Indian Ocean Mobile Operation, 1st Desron War Diary, via Lu Yu email of 30 January 2013; Senshi Sōsho, pp. 619-620.
63. Map 2 is from "A Question of Estimates – How Faulty Intelligence Drove Scouting at the Battle of Midway", by Anthony Tully and Lu Yu, in the *Naval War College Review*, Vol. 68, No. 2, Spring 2015, in which it is identified as

Map 1. (The article can be accessed at <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1202&context=nwc-review>.) It has been included in this article with the permission of Jon Parshall.

64. *Battle Summary No. 15*, p. 6; Arbuthnot's War Diary; Somerville's Report of Proceedings, para 31; AIR 28/431, Operations Records Book (ORB), RAF Station Koggala (copy kindly provided by Michael Wenger); AIR 23/4801, 222 Group report on the attack on Colombo, para 3.
65. Agar's 8 April report; *Footprints in the Sea*, p. 305; Fair's report.
66. Parshall, Jonathan B., and Tully, Anthony P., *Shattered Sword The Untold Story of The Battle of Midway*, Potomac Books, 2007, pp. 107-112.
67. Somerville's Report of Proceedings, para 33; Battle Summary 15, p. 11 and Plan 4; ADM 53/116078, Ship's Log, HMS Indomitable, April 1942, hereinafter cited as Indomitable log.
68. Abe, Zenji, *The Emperor's Sea Eagle*, Arizona Memorial Museum Association, 2006, p. 85; Senshi Sōsho, p. 622; Tagaya, p. 57; DesRon1 war diary, via 22 April 2013 post by Genie854 at <http://www.j-aircraft.org/smf/index.php?topic=13538.msg97570#new> (no longer accessible at this url). Genie854 is a reputable scholar whose identity is known to the present author.
69. The text of Fuchida's message is from Abe, p. 85; Senshi Sōsho, p. 622; 30 January 2013 email to the author from Lu Yu. The English translations given by these sources all differ. The translation in Abe's book has been used, except that "ten transports" has been changed to "20 transports" to reflect the number given in the other two sources. Arbuthnot's war diary states that 21 merchant ships were in the harbour, one of which would have been Soli.
70. Abe, p. 85; Senshi Sōsho, p. 622; Tagaya, p. 57.
71. Abe, p. 85-86; Senshi Sōsho, p. 622; Tagaya, p. 57; Parshall and Tully, pp. 119-120, 156-158; Isom, Dallas Woodbury, *Midway Inquest, Why the Japanese Lost the Battle of Midway*, Indiana University Press, 2007, pp. 5-12, 123-128; December 2018 exchanges in the thread "What took so long?", at <http://propnturret.com/tully/viewtopic.php?f=20&t=3660&start=60>.
72. "What took so long?", op. cit.; Wikipedia entry for the Type 91 Torpedo, at https://en.wikipedia.org/wiki/Type_91_torpedo; United States Naval Technical Mission to Japan report on *Aircraft Arrangements and Handling Facilities in Japanese Naval Vessels*, January 1946, p.15, accessed at https://web.archive.org/web/20120508031500fw_/http://www.fischer-tropsch.org/primary_documents/gvt_reports/USNAVY/USNTMJ%20Reports/USNTMJ-200A-0560-0608%20Report%20A-11.pdf.
73. CarDiv5 Detailed Action Report (DAR) records that it began to change its B5Ns from torpedoes to bombs at 0910, and it and the DesRon1 war diary indicate that the sighting report was received at 1005, according to correspondence from Lu Yu to the author. Senshi Sōsho, p. 622, states that the CarDiv5 B5Ns were "in the middle of changing their armament to bombs" when the sighting report was received.
74. Tagaya, p. 57; Abe, p. 86; Senshi Sōsho, pp. 622-623; CarDiv5 DAR, via 30 January 2013 email to the author from Lu Yu.
75. The quoted text for this sighting report is from a 30 January 2013 email to the author from Lu Yu, who consulted multiple Japanese sources. Senshi Sōsho, p. 623, states that the report read "Two [enemy] destroyers sailing at 200 nautical miles 250° of the starting point."
76. Tagaya, p. 57; Senshi Sōsho, p. 623. The initial identification of Minobe as the commander of Abukuma's aircraft was made in the 2012 thread at <http://www.j-aircraft.org/smf/index.php?topic=12666.0>. I am indebted to Jean-Francois Masson for his assistance, in 2018, in locating further information on Minobe.
77. Ibid.
78. Tagaya, p. 57.
79. Photo copied from https://upload.wikimedia.org/wikipedia/id/b/b3/Takashige_Egusa.jpg.
80. Photo copied from https://ww2db.com/image.php?image_id=799.
81. Photo copied from https://ww2db.com/image.php?image_id=18311.
82. Tagaya, p. 57; Senshi Sōsho, p. 624; 30 January 2013 email to the author from Lu Yu.
83. Ibid.

84. Agar's 8 April report; Fair's report; DesRon1 war diary, via 22 April 2013 post by Genie854 at <http://www.j-aircraft.org/smf/index.php?topic=13538.msg97570#new>, op. cit.
85. *Footprints in the Sea*, p. 306.
86. Agar's 8 April report; Fair's report; Arbuthnot's War Diary.
87. Somerville letter No. 30.S/4724, 14 May 1942, ADM 199/623.
88. It seems likely that all 91 of KdB's B5Ns could have been armed with torpedoes by around 1500. CarDiv5's B5Ns were all, or nearly all, rearmed by 1400 and the B5Ns back from Colombo had no bombs requiring removal to delay the process. Six of the 38 CarDiv5 D3As which attacked Colombo were lost, but the remaining 32, if all serviceable, could easily have been made ready by 1500.
89. Tagaya, pp. 6-14; Francillon, R.J., *Japanese Aircraft of the Pacific War*, Putnam & Company, London, 1970, pp. 271-276.
90. The three-view drawing is from <http://www.combinedfleet.com/ijna/d3a1.gif>.
91. Photo copied from <http://lex-for-lexington.tumblr.com/post/143970873636/ltcmdr-kakuichi-takahashis-aichi-d3a1-ei-238>. It also appears in Tagaya, p. 47.
92. Photo copied from https://commons.wikimedia.org/wiki/File:Akagi_Aichi_D3A_Indian_Ocean_raid.jpg. Abe, p. 89, has the same photo and it is captioned as being of Akagi aircraft AI-207 taking off to attack the British cruisers on 5 April.
93. Hiryu DAR, Japan Centre for Asian Historical Records (JACAR) document C08030581700, p. 51, accessed via <http://www.jacar.go.jp/english/>.
94. Tagaya, pp. 57-58; Abe, pp. 86-91; Senshi Sōsho, p. 624.
95. Tagaya, p. 58; Senshi Sōsho, p. 625; Fair's report; B.R. 1886 (2) (formerly C.B. 4273 (52)), *H.M. Ships Damaged or Sunk by Enemy Action 3rd SEPT. 1939 to 2nd Sept. 1945*, Admiralty, Director of Naval Construction, 1952, accessed at <http://www.navy.gov.au/media-room/publications/hm-ships-damaged-or-sunk-enemy-action-wwii>; information provided by Don Kehn, Jr., 28-29 November 2018, at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&p=22596#p22596>.
96. Tagaya, p. 58; Senshi Sōsho, p. 625; Agar's 8 and 13 April reports; *H.M. Ships Damaged or Sunk by Enemy Action 3rd SEPT. 1939 to 2nd Sept. 1945*, op cit; information provided by Don Kehn, Jr., 28-29 November 2018, at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&p=22596#p22596>.
97. Hiryu DAR and CarDiv5 DAR, via 30 June 2013 email from Lu Yu to the author; Tagaya, pp. 58-59; Senshi Sōsho, p. 625.
98. Information provided by Don Kehn, Jr., 28-29 November 2018, at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&p=22596#p22596>.
99. Senshi Sōsho, pp. 633-634; Tagaya, p. 60, p. 87.
100. The bomb plot, copied from Senshi Sōsho, p. 626, is a cleaned up version of a diagram found in the Hiryu DAR, JACAR document C08030581600, p. 64, accessed via <http://www.jacar.go.jp/english/>.
101. The four reports are in ADM 199/623 and ADM 267/84.
102. *Battle Summary No. 15*, pp. 7-10.
103. *Nelson to Vanguard*, pp. 23-24; Sinnott, Colin, *The RAF and Aircraft Design 1923-1939, Air Staff Operational Requirement*, Frank Cass, 2001, p. 171.
104. The author is grateful for the assistance in assessing these images provided by other members of the CombinedFleet.com discussion forum in the fall of 2018, in the exchange starting at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&start=30>. The images have been copied from the following sources:
- #1-5, #7, #11-12: <http://www.armouredcarriers.com/battle-for-ceylon-hms-indomitable-formidable/>
- #6, #8-10: 29 September 2018 posts by Kevin Denlay at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&start=45>

#13: JACAR document A06031081500. This document is a copy of Shashin Shūhō (Weekly Photographical Journal) No. 220, published in Japan on 13 May 1942.

105. Sketch 2 has been copied from the Dorsetshire bomb plot in the Hiryu DAR, JACAR document C08030581600, p. 64, accessed via <http://www.jacar.go.jp/english/>.
106. Fair's report; Somerville's Report of Proceedings, para 35-36.
107. Ibid, para 36-38; Indomitable log; Christopher Shores and Brian Cull, with Yasuho Izawa, *Bloody Shambles, Volume Two, The Defence of Sumatra to the Fall of Burma*, London: Grub Street, 1993 (hereinafter cited as "Shores et al"), pp. 405-406; Wallace, Gordon, *Carrier Observer A Back-Seat Aviator's Story*, Airline Publishing, 1993, p. 85; *Battle Summary No. 15*, Plan 4.
108. Somerville's Report of Proceedings, para 38-41.
109. Indomitable log; Shores and Cull, *ibid*. Grant-Strugis, with Dixon as his TAG, had participated in the very costly July 1941 attack on Kirkenes, Norway, according to Donald A. Bertke, Don Kindell and Gordon Smith, *World War II Sea War, Volume 4*, Bertke Publications, 2012, pp. 88-89. Grant-Sturgis died on 16 February 1944. According to http://www.royalnavyresearcharchive.org.uk/SQUADRONS/1820_Squadron.htm#.XDtV9VVKiUk, the aircraft in which he was training (probably a Helldiver) failed to pull out of a dive in time and dove into the sea killing both him and his US Navy instructor. At the time he was apparently participating in a dive bombing course at USNAS Vero Beach, Florida.
110. Somerville's Report of Proceedings, para 43-45; Wallace, pp. 85-86.
111. Boyd, pp. 374, 377; 30 June 2013 email from Lu Yu to the author.
112. Map 6 is from Boyd, p. 376.
113. Boyd, p. 374.
114. Wallace, pp. 68-69, p. 86; Mackenzie, Hector, *Observations*, Pentland Press, 1997, p. 108. Wallace and Mackenzie were observers on Indomitable. Wallace's book says that Formidable's 820 Squadron and Indomitable's 831 Squadron were ranged, armed and manned, and that he boarded his Albacore on Indomitable's flight deck at about last light and remained in it, awaiting the order to launch, until the attack was cancelled.
115. The arcs covered by Somerville's night searches are shown in Plan 4 of *Battle Summary No. 15*.
116. Somerville's Report of Proceedings, para 47-51.
117. Pugsley, Rear-Admiral A.F., *Destroyer Man*, Weidenfeld and Nicolson, 1957, pp. 108-109; Lock, Ray, *Bismarck, Dorsetshire and Memories*, Ian Morrison Publications, 2004, p.52.
118. This and the next image were copied from <http://nineteenkeys.blogspot.com/2010/05/>.
119. *Battle Summary No. 15*, pp. 10-11, Plan 4; Somerville's Report of Proceedings, para 46; Indomitable's log; Mackenzie, p. 109.
120. Copied from Dimpleby, opposite p. 82.
121. Ibid.
122. Fair's report; Coulter, Jack Leonard Sagar, *The Royal Naval Medical Service, Volume 1, Administration*, Her Majesty's Stationary Office, 1956, pp. 109-111, 218; Stuart, "State of the Art: The Japanese Attacks on Hermes, Vampire, Hollyhock, Athelstane, British Sergeant and Norviken, 9 April 1942", *op. cit*.
123. Copied from Dimpleby, opposite p. 98.
124. Image copied from <https://www.forces-war-records.co.uk/galleries/world-war-two-navy-personnel?page=2&fromGalleriesPage=1>.
125. Coulter, p. 111.
126. Somerville's Report of Proceedings, para 31; Arbuthnot's War Diary; Battle Summary Number 15, p. 6 and Plan 4. The 0127 report was actually sent by the aircraft at 0045, but 0127 is the time at which it was re-broadcast by the naval radio station at Colombo.

127. Senshi Sōsho, p. 621; Shores et al, p. 405. FV-R was the last surviving aircraft of 205 Squadron, which had been based at Singapore when the war with Japan started.
128. Somerville's Report of Proceedings, para 34. Two of these sightings, probably the 0648 and 1004 sightings, are marked "Various British sighting reports am 5 April" on Map 4.
129. Jones, Ben (editor), *The Fleet Air Arm in the Second World War, Volume II, 1942-1943: The Fleet Air Arm in Transition – the Mediterranean, Battle of the Atlantic and the Indian Ocean*, Taylor and Francis, 2018, per 4 October 2018 post by "alecsandros" at <http://propnturret.com/tully/viewtopic.php?f=14&t=3510&start=90>.
130. Senshi Sōsho, p. 625; Tagaya, p. 59.
131. Lundstrom, p. 36.
132. Map 7 is from "A Question of Estimates – How Faulty Intelligence Drove Scouting at the Battle of Midway", op. cit., in which it is identified as Map 2.

NOTES FOR APPENDIXES

Information in the appendixes is sourced below only if it has not been cited in the text and sourced above.

1. Both images have been copied from <http://forummarine.forumactif.com/t6186p345-croiseurs-de-la-royal-navy-et-du-commonwealth>.
2. Image copied from <https://picclick.co.uk/HMS-Dorsetshire-Warship-1931-BW-Photograph-BC076-312204048598.html#&gid=1&pid=1>.
3. Sketch copied from <https://laststandonzombieisland.files.wordpress.com/2014/04/hms-dorsetshire-1932.png>.
4. Both images copied from <https://www.iwm.org.uk/collections/item/object/30018187>.
5. Image copied from <http://dorsetshire.byethost31.com/>.
6. Image scanned from Raven and Roberts, p. 345.
7. The top photo has been copied from <http://rapidftp.co.za/waratsea/dorsetsh.html>. The centre photo is from <https://padresteve.files.wordpress.com/2013/05/hmsdorsetshireempl1284.jpg>. The bottom photo is from https://media.iwm.org.uk/ciim5/18/595/large_000000.jpg. Dimpleby, pp.66-67, is the source indicating that the paint scheme was intended to make Dorsetshire appear to be a sloop.
8. From <http://forummarine.forumactif.com/t6186p345-croiseurs-de-la-royal-navy-et-du-commonwealth>.
9. Sketch scanned from *British Cruisers*, p. 127. The reader is also referred to the colour profiles of Dorsetshire and Cornwall at https://www.world-war.co.uk/popup1.php3?file=Kent/cornwall38_lge.jpg and https://www.world-war.co.uk/popup1.php3?file=Kent/cornwall42_lge.jpg.
10. Part 1 of the timeline is primarily from the service histories for Cornwall and Dorsetshire on the Naval History website, at http://www.naval-history.net/xGM-Chrono-06CA-HMS_Cornwall.htm and <http://www.naval-history.net/xGM-Chrono-06CA-Dorsetshire.htm>; and the entries on them on the uboat.net site, at <https://www.uboot.net/allies/warships/ship/1184.html> and <https://www.uboot.net/allies/warships/ship/1185.html>.
11. Monograph 113, pp. 71-72.
12. Monograph 113, p. 72.
13. Ibid.
14. Somerville's report of proceedings, para 30.
15. Boyd, pp. 372-376.
16. Hiryu Detailed Action Report No. 9, per 26 December 2012 post by 'genie854' (whose identity is known to the author) at <http://www.j-aircraft.org/smf/index.php?topic=13030.15>.
17. DNC 4B/A, 28 October 1942, Figures 1 through 3, in ADM 267/84.