

Modelling 'Battle' Class destroyers

Having seen in the previous chapter how to detail the basic Airfix kit of HMS *Daring*, we can now attempt a more ambitious project utilising parts from two kits — *Daring* herself and HMS *Cossack*. A combination of parts from these models will enable us to produce a wartime 'Battle' Class destroyer.

The 'Battle' Class destroyer was the culmination of several decades of British destroyer design, and was evolved to meet the stringent requirements of the Pacific theatre, for which the standard 'War Emergency' destroyers were not adequately equipped.

The 'Battles' boasted several notable improvements over their predecessors. Their main fire control system was more advanced: they were heavily armed with close-range weapons exclusively of 40 mm calibre; and they were the first British destroyers to mount their main arma-

ment in a true 'turret'.

The major gunnery shortcoming of many of the forerunners to the 'Battle' Class was the lack of adequate anti-aircraft defence both at long and close range. The close range armament problem was not too difficult to solve, and all the earlier destroyer classes were given additions or replacements in the form of single (and later twin) 20 mm Oerlikon mountings; 2 pdr mountings (pom-poms), quad and single; and, towards the end of the war, 40 mm Bofors.

The long range AA problem was more difficult to solve, however, principally because the standard 4.7 inch calibre destroyer guns had been designed as surface weapons.

Background to main armament

The 4.7 inch gun was first introduced in destroyers during World War 1, and was protected by a simple spray shield, which merely covered the area of the breech and gunsights, leaving the pedestal mounting exposed. The maximum elevation of these weapons was 20°.

Between the wars the 4.7 inch mounting was slowly improved as destroyer class succeeded class. The shield, although still not armoured, became more substantial; the style of mounting was changed to a Centre Pivot design, and in the 'A' and 'B' class ships the maximum elevation had increased to 30°. However, this

Existing warships are often used as 'test beds' for new equipment and this photograph of the 'Battle' Class destroyer Saintes, taken in 1947, shows her with the prototype 4.5-inch Mk 6 mounting, later fitted to the 'Darings' (Wright & Logan).



extra elevation only increased the effective surface range, and the guns were unsuitable for use against aircraft targets.

The advent of the 'Tribals' immediately before World War 2 heralded a new era of destroyer weapon layout. The new twin 4.7 inch gun mountings were a tremendous advance on their predecessors. Power elevation and training was provided together with power operated loading trays, and although the conventional torpedo armament was halved, the overall gun armament was more than doubled. Nevertheless the elevation upper limit of 40° prevented the guns from tracking high fliers or from tackling dive bombing attacks. This fact was quickly recognised, and the 'Tribals' twin 4.7 inch gun in 'X' position was replaced

by the ubiquitous twin 4 inch HA mounting.

The 'J' and 'K' class ships followed the 'Tribals', and were quite different in many ways. Constructionally they differed in being longitudinally framed; in appearance they were distinguished by their single funnel; and in armament they reverted to a pair of torpedo tube mountings and three instead of four 4.7 inch twins. The quadruple 2 pdr pom-pom, first introduced in the 'Tribals', was retained, and was mounted immediately abaft the funnel where it re-appeared in many successive classes.

The 4.7 inch guns were the same mark as those of the 'Tribals', and suffered the same disadvantages. For this reason seemingly incongruous alterations were made to what were other-

The 'Battle' Class destroyer Solebay at Malta in 1960, with her White Ensign at the harbour position on the Ensign staff (A. & J. Pavia).



Another of the 'Battle' Class — HMS Cadiz — off Portsmouth in 1951. Note the windless conditions, with funnel smoke rising and the signal flags drooping from the yardarm (Wright & Logan).



wise splendid and heavily armed ships.

Included in the latter were the 'M' class destroyers and half the similar 'L' class. Often claimed to have introduced turrets to British destroyers, their big twin 4.7 inch mountings certainly did look like turrets, compared with the open-shield guns of the 'Tribals'. In fact, they were simply enclosed gun-shields, mounted directly on to the upper deck, without a revolving trunk extending below.

This design created two problems. The first was how to supply ammunition to the inside of the gunhouse, and the second was how to dispense with the spent cartridge cases. The first problem was solved by containing the ammunition hoists within the centre pivot of the mounting, allowing the shell and cartridge to be delivered into the gunhouse, irrespective of its position. This, however, produced attendant problems. Because the gunhouse revolved around the hoists, the passage of ammunition from the hoist top to the gun loading tray varied depending on the bearing of the mounting and this complicated the loading drill.

The second problem could only be solved by passing the spent cartridge

cases out of the gunhouse through special hatches in the rear. In addition, although the big mountings could be trained by hydraulic power, the individually mounted guns could only be elevated by hand gearing — a laborious task when tracking an aircraft target. Altogether these mountings were difficult to use against aircraft targets, hence the rather odd state of affairs in *Lookout* and *Musketeer*, for example, which were given a single 4 inch HA gun, when they already appeared to be heavily armed with three twin 4.7 inch mountings.

The 'Battle' Class

These shortcomings were resolved in the 'Battle' Class destroyers which began to appear in 1944. There was already a twin dual purpose mounting in service which had first emerged as a prototype in the battleship *Resolution* between the wars, was then fitted in the modernised capital ships *Queen Elizabeth*, *Valiant* and *Renown*, and then became a standard mounting for the Fleet Carriers of the 'Illustrious' Class. This mounting had guns of 4.5 inch calibre, whose ammunition, although fractionally smaller than the 4.7 inch, had superior ballistic quali-

Table of 'Battle' Class variants

NAME	2 x 4.5 inch Twin	'O' Gun 4.5 inch	'O' Gun 4 inch	'O' Gundeck 2 x Bofors	'B' Gundeck 1 x Bofors	Midships 1 x Twin Bofors	No Weapon	Midship Gundeck 2 x Sided	Midship 'Hazemeyers'	2 x After Gundeck 'Hazemeyers'	2 x After Gundeck STAG	Torpedo Tube Mounting	Q.D. 1 x Bofors	Bridge Wings 1 x Bofors each side	Squid Mortar	Extended After Superstructure	American Type Director Modified	'Daring' Type Director
<i>Armada</i>	R 14	Yes	Yes	Yes				Yes	Yes	QUAD	Yes	Yes	Yes	Yes				Yes
<i>Gravelines</i>	R 24	Yes		Yes	Yes			Yes	Yes	QUAD	Yes	Yes						Yes
<i>St James</i>	D 65	Yes		Yes	Yes	Yes		Yes	QUAD		Yes	Yes	Yes	Yes				Yes
<i>Agincourt</i>	D 86	Yes	Yes			Yes		Yes	QUAD		Yes	Yes	Yes	Yes	Yes			Yes
REMARKS																		
						'Daring' Kit Parts 43 and 44					'Daring' Kit Parts 45, 46, 47 and 48	'Daring' Kit Parts 16 and 17		'Daring Kit' Part 49				'Daring' Kit Parts 6 and 7



HMS Armada of the 'Battle' Class, in Grand Harbour, Valletta, Malta, flying her pennant number from the port yardarm (Anthony Peters).

ties. Further layout improvements were made, and the new weapon was fitted in the 'Battle' Class ships.

It was a true 'turret' in miniature, with a revolving trunk containing power operated ammunition hoists, and guns with a very high maximum elevation. The empty cartridges were automatically ejected into a special compartment between decks, and thus could not accumulate in the gunhouse. The mounting could be automatically operated in Remote Power Control from the main fire control system as well as by auxiliary means. The fire control system, designated the 'Battle Class system', was much in advance of anything which had preceded it, incorporating a novel and highly efficient radar in twin nacelles, mounted on a power operated, stabilised director. The same director was used in several other classes of warships, and with minor modifications was fitted to the 'Darings'.

The earliest weapon layout in the first group of 'Battles' allowed for the following:

- 2 × twin 4.5 inch dual purpose.
- 4 × twin Bofors ('Hazemeyer')
- 4 × single Bofors.

1 × single 4 inch (star shell gun).

Armada (R14) is an example of a vessel with this layout, and *Trafalgar* (R77) was similar but as a rare exception had two single 2 pdr pom-poms on the bridge wings in place of the more usual single Bofors. Alternatively, some of the first group were as above, but with two single Bofors mountings (sided) abaft the funnel in place of the 4 inch gun. These ships thus carried the then remarkable total of 14 Bofors guns.

The 'Hazemeyer' mounting was gradually replaced by a new mounting — the twin STAAG (Stabilised Tachometric Anti-Aircraft Gun) — of even more advanced design, which was completely automatic. This mounting could slew into line with a target indicated by long range warning radar, locate the target automatically, and follow it in radar control.

However, the STAAG was heavy, complex and expensive and in consequence was not mounted on the mid-ship gundeck, between the tubes, which was then reduce in width.

The STAAG remained in use until quite recently, and fortunately for the model maker, the 'Darings' were fitted with these mountings on the wings of



This is more a complete rebuild than a conversion, and represents a typical 'Battle' Class destroyer. Notice the scratch-built lattice mast, made from extended plastic sprue.

the bridge. A pair are, therefore, available in the Airfix *Daring* kit — of which more in due course.

Early in the 1950s, as the ships came in for routine refitting, the quarterdeck single Bofors was removed, a Squid Mortar was provided in place of the obsolete depth charge rails and the after superstructure was extended towards the stern to accommodate the Squid projectile handling room.

At about the same time the 4 inch star shell guns were removed from those ships so fitted, and a standard vessel emerged of which HMS *St James* in the Table is typical. The complete group of 16 ships became known as the '1942 Battles'.

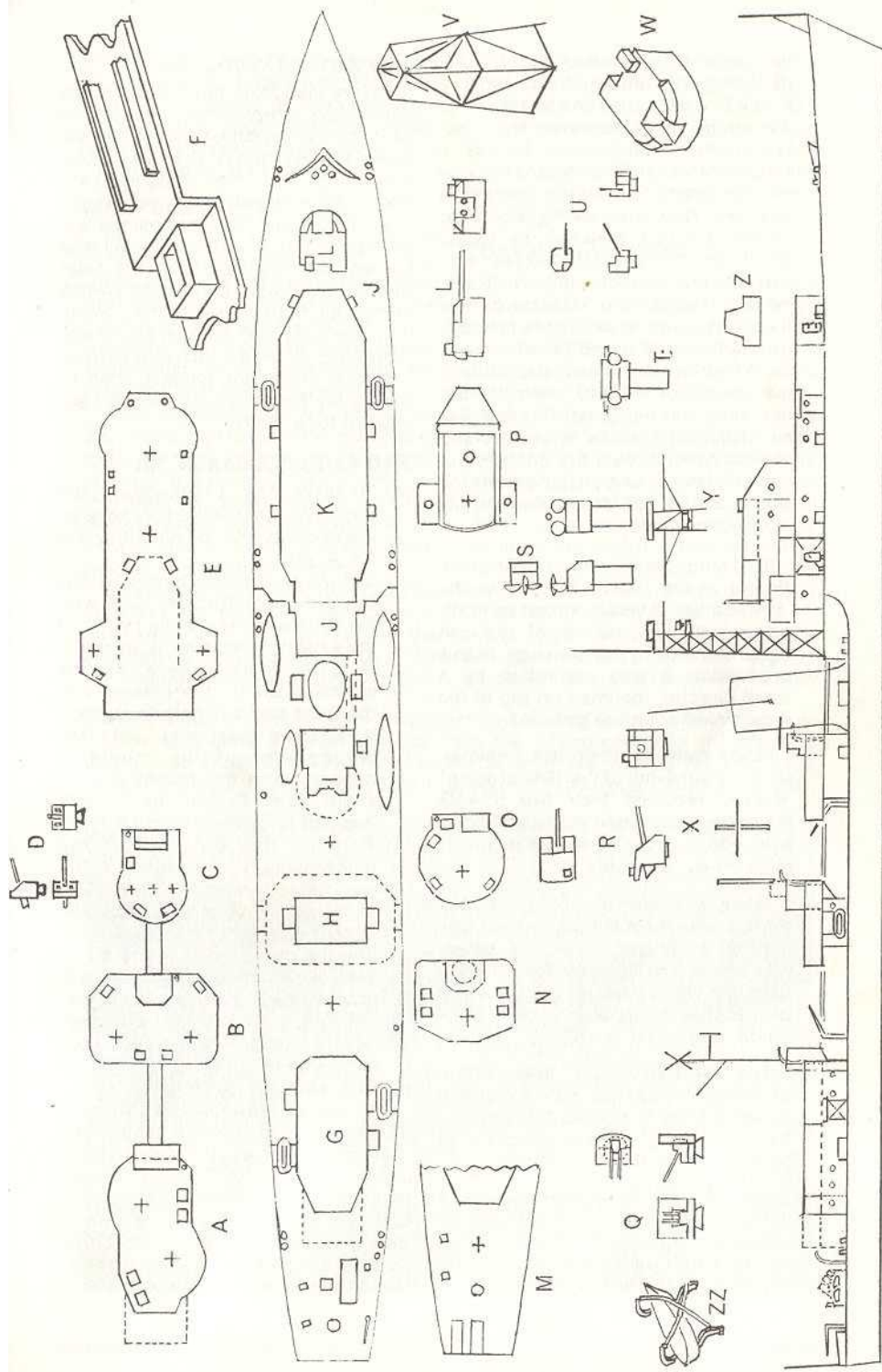
The '1943 Battles'

Notwithstanding the splendidly aggressive look of the '1942 Battles', with all their main armament concentrated forward, the need for coverage of the after arcs by a 4.5 inch calibre gun was advocated.

The second group of eight ships (or '1943 Battles' as they became known) were therefore given a single 4.5 inch mounting abaft the funnel, on the gundeck which originally carried the 4 inch star shell gun. The new 4.5 inch mounting was electrically powered and like the 4.5 inch twins forward, was capable of being controlled remotely from the main fire control system. Alternatively it could be used independently as a 'star shell gun', and became a recognition feature of this group of ships.

The close range arrangement was distinctive too. Like the '1942 Battles',

Key to drawings. **A** Deck for after superstructure; dotted extension for Squid projectile handling room. **B** Deck for midship superstructure. **C** Deck for 'Q' gundeck for 4 inch gun or single Bofors. **D** Plan and elevations of 4 inch Starshell gun. **E** 'B' gundeck (fits over K with forward edges flush; overlaps K aft). **F** Sketch showing modifications to 'Tribal' hull at break of fo'c's'le. **G** After superstructure; dotted extension for Squid projectile handling room. **H** Midship superstructure; dotted outline of (B). **I** 'Q' gundeck superstructure; dotted outline of (C). **J** 'A' gundeck; extends from fo'c's'le to foot of foremast. **K** Main superstructure. **L** 'A' turret, plan and elevations, 'B' turret is identical. **M** Early Quarterdeck; no Squid mounting or handling room. Depth charge rails and centre of rotation for single Bofors. **N** Reduced midship gundeck; suitable for final versions of 1942 'Battles' and 1943 'Battles'. Dotted addition is Director for Twin Bofors (1943 'Battles' only). **O** 'Q' gundeck for 4.5 inch gun. **P** Bridge superstructure. **Q** Plan and elevations of Twin 'Haze-meyer' mounting. **R** Plan and elevations of single 4.5 inch gun. **S** Plan and elevations of American-type Director. **T** Front elevation of 1942 Group Director. **U** Plan and elevations of single Bofors. **V** Mast construction. **W** Isometric sketch of 4.5 inch Twin DP turret. **X** Front elevation of diesel exhaust, showing yardarm. **Y** Front elevation of foremost head, showing yardarm and radar aerial. **Z** Curved shield in rear of bridge superstructure (fits on (P)). **ZZ** Arrangement of gripes for all boats on davits.



the second group had the STAAG mountings 'en echelon' aft, and the single Bofors to port and starboard of the bridge. Here, however, the similarity ended. There was neither a single Bofors on 'B' gundeck, nor one on the quarter deck, but instead, a new twin Bofors mounting was sited on the gundeck between the tubes, which on the earliest 'Battles' had carried the 'sided' pair of 'Hazemeyers'. Neither the 'Hazemeyer' nor the STAAG, with their built-in fire control systems and individual radars, were suited to mass production methods, so a third twin Bofors mounting was designed. This was less sophisticated than its forebears, and did not have its own fire control, but nevertheless it was electric-powered and could be operated automatically in director control.

This mounting is the centre-line twin Bofors in the *Daring* kit, and in the '1943 Battles' it was mounted centrally on a midship gundeck of reduced dimensions (N in the drawing). In this application it was controlled by a small director, mounted on top of the crew's shelter on the gundeck.

Incidentally, in their last commission, the survivors of the 1942 group of 'Battles' replaced their two STAAG mountings with a pair of these simpler twin Bofors, but I have not included this rare variant in the Table.

Another distinction of the '1943 Battles' was the main fire control system, an American installation which was a standard equipment in the US Navy. As well as equipping the eight later Battles, it was also found in *Vanguard*, *Eagle* and *Ark Royal*.

The American director on the bridge of the '1943 Battles' was noticeably different from that fitted in the earlier group, although it was modified to carry the same British radar set.

The final major weapon difference between the groups lay in the torpedo tubes, the quad mountings of the earlier ships being replaced by quintuple sets in the later vessels.

The Airfix 'Daring' kit

Before launching into details of the conversion programme, let us first examine the *Daring* kit and extract the useful fittings from it. The two STAAG mountings and the midship twin Bofors have already been mentioned. Don't forget that their gun barrels will be wanted too. The following will also be required: both parts of the main director; all boats and davits (which are better than those in the 'Tribal' kit); the mast and fittings; the Squid mounting; all the 4.5 inch gun barrels; both sets of torpedo tubes. Cut off all the Carley Floats too; three pairs are needed for a 'Battle'.

The Airfix 'Cossack' kit

- (1) Remove the breakwater, the ready-use ammunition lockers on the fo'c's'le, and the mounting pin for 'A' gun.
- (2) Cut away the bulkheads of the forward superstructure flush with the deck and reduce the height of the existing mast step as shown in (F). The fo'c's'le deck will be extended aft in due course, and the mast step will help to support it. File the mast step until the oblong slot of the moulding appears, and the height will be about right. Extend the fo'c's'le deck aft to conform with (J).
- (3) Remove the support for the machine-gun platform, the associated lockers, the bulkheads of the after superstructure and the mounting pin for 'Y' gun.
- (4) File the curved step in the ship's side at the break of the fo'c's'le square, ready for the extension to the ship's side at fo'c's'le deck level, and fit the extension to conform with the drawing.
- (5) Plug all holes in the deck.

The hull is now almost ready for 'fitting out', with one exception. The 'Battles' had a square stern so the curved stem of the 'Tribal' hull must be carefully cut off and replaced by a balsa section to the shape shown in the layout. This will make the length right, but in fact the 'Battles' were beamier by 3½ feet. However, this is so

small in 1:600 scale that it can be disregarded without detriment to the final appearance. Shape-up the balsa block from the keel and mount the propellers and rudder conventionally, if a full-hull model is required.

Main hull items

All the superstructure must be scratch-built, but this is not difficult using plastic sheet and the full size drawings. Don't forget to undercut the height of the superstructure bulkheads by the thickness of the plastic sheet used for the deck, so that the resultant total height is correct.

Two moulded lines are formed on the 'Tribal' hull to mark the confines of the black 'boot-topping', but the depth is much too great. A black band 1½ mm deep is quite enough, and the neatest way of achieving a dead sharp parallel strip is to paint a strip of Sello-tape as described in Chapter 2.

An excellent porthole effect can be obtained by carefully piercing the bulkheads with a fine drill in the appropriate positions. If you haven't a fine enough drill handy, try a house-

hold pin in a hand brace, with the pin head clipped off. The jagged stub of the pin will easily cut through plastic. Alternatively a hot pin can be used. There are several screen doors giving access to compartments. One of these cut out and left open also gives a most realistic effect.

Construction notes

Starting from forward, add the Jack staff and its twin supporting 'legs' from extended plastic sprue. The moulded cable holders on the fo'c's'le can remain, but a new V-shaped breakwater is required forward of 'A' turret. There are pairs of bollards abreast the muzzles of 'A' turret, beneath the bridge Bofors, abreast the foremast and abreast the after superstructure: make them from sections of plastic sprue too. Another section of sprue on the centre line of the bridge represents the compass, and signal lamps can be similarly depicted in the sponsons on the bridge wings.

The type of main fire control director depends on the 'Battle' groups chosen. Both are shown on the

The last group of 'Battle' Class destroyers had an American fire control system employing a quite different director from the British-equipped vessels. It is clearly seen in this photograph of Dunkirk, taken in the Mediterranean in 1960. Note the White Ensign, blowing forwards from its sea position (Bill Goodchild).



plan and T — for the early 'Battles' — can be made from the *Daring* kit director. One point, here, however. The radar nacelles of the 'Battle' directors were lower than those in the 'Darings'. Trim off the support beam from part 7 in the Airfix kit, and mount the nacelles level with the slot in the front face of the director. Aft and above the nacelles a range-finder was originally fitted, again plastic sprue can be used to represent this instrument.

The foremast can be adapted from the *Daring* kit, but a better job can be scratch-built. I have shown the construction of the mast — V in the drawing. Notice that the diagonal frames are in opposite directions on parallel mast faces, giving a cross effect when viewed from the side. Aerials and the yardarms are again made from the slimmest sprue as are the whip aerials on the funnel. Angle these outwards slightly towards the ship's side.

Make the funnel from balsa to the dimensions shown, allowing enough material to form a 'bell' base on the deck. Twin waste steam pipes — plastic sprue of course — lead up its forward surface. A semi-circular platform is fitted on the after side giving access to the sirens. Soak a scrap of nylon stocking in plastic cement, and when dry, cut to shape. This gives a good grating effect.

Ship's boats are the same as for *Daring* — motor cutters each side at the break of the fo'c's'le; a whaler abreast 'Q' gun on the starboard side and a dinghy (*Daring* kit part 8) in-board close up to 'Q' gundeck on the port side. Mount the other boats just flush with the ship's side, as shown in the plan, making holes in the deck for the davits as necessary.

The centres-of-rotation of the torpedo tubes are shown on the plan. Quad or quintuple tubes should be mounted depending on the group of ships. A pair of quad sets can easily be adapted from parts 16 and 17 of the *Daring* kit. Position the torpedo davits (parts 18 and 28) as shown.

All the gundecks have ready-use ammunition lockers — shown as small

squares and rectangles on the plan — and each of the gundecks abaft the funnel has a crew shelter in the form of a small deck house and also a small ammunition davit. The gundecks are linked from fo'c's'le deck level by a series of catwalks, which pass through the crew shelters (except if deck C is fitted, then the crew shelter is centrally placed). The catwalk to 'Q' gundeck is invariably on the starboard side of the funnel.

The gundecks had either plating splinter shields or guard rails, but fortunately those with guard rails usually had a canvas 'wind dodger' laced on to them, so that all can be surrounded by paper strips, forming a bulwark.

There is a diesel exhaust on the midship gundeck fitted with a yard to take the W/T aerial main, and on the after gundeck is the diminutive main mast with an Ensign gaff. Above the crew shelter on the midship gundeck is a small visual gun director position for the centre line twin Bofors, only applicable when a 1943 'Battle' is modelled. Make the director position from a thin paper tube and use a scrap of plastic sprue within it to represent the director sight.

The layout of the quarterdeck depends on the group of ships. The differences can be seen in the drawing and are also tabulated. One point — make sure that the Squid mounting, if fitted, is angled to fire ahead. The various small shapes represent hatches, winches, etc, and are made from scrap plastic.

The position of the Carley Floats is shown on the drawing. Make their support rails from sprue and similarly support the sponsons carrying the bridge Bofors.

Gun construction

The twin 4.5 inch mountings are best adapted from the *Cossack* kit. The shape is a little complex, but the sketch in the drawing should help.

The 4 inch star shell gun and the single 4.5 inch mounting are scratch-built, as are the single Bofors and twin Hazemeyers. The latter were very

complex in shape, but fortunately the mounting was protected by a large canvas 'wind dodger', laced to the framework in the rear. The difficult complexities can therefore be overcome by cementing a small curved piece of paper as shown in the drawing.

The other varieties of twin Bofors are available from the *Daring* kit, and their location is shown in the Table.

Painting

Only the earliest vessels of the 1942 group were completed before hostilities ended, and once the war was over a certain level of peace-time autonomy was allowed in respect of paintwork and brightwork. The modeller can, therefore, produce his 'Battle' in 'tiddley' peace-time finish.

The basic colour is, of course, grey, but this can be relieved by dark green gundecks and bridge, as well as a dark green fo'c's'le deck from the breakwater, aft to the foot of the foremast. There is a further green area at main deck level abreast the after gundeck. The rest of this deck is grey, both from the break of the fo'c's'le aft to the forward bulkhead of the after gundeck, and also in the area of the quarter deck.

All the superstructure is grey as are davits and gun mountings. Paint the gun barrels, the funnel top and the mast from bridge level to the yardarm,

black, and put a touch of black on the top of the diesel exhaust.

The fo'c's'le, forward of the breakwater, can be painted a dull brick red. Pick out the cable holders and the raised plating in grey for a contrast effect. The quarter deck area can also be painted red instead of grey, if desired.

When the main deck areas are dry, cement on the lockers, bollards, ventilators, etc, and paint them grey. Again, the contrast will be most effective.

The muzzles of the 4.5 inch guns and the 4 inch (if fitted) can be given a tiny dab of silver, to represent the polished collar, or alternatively paint a 1 mm white band on the muzzles to represent the canvas cover.

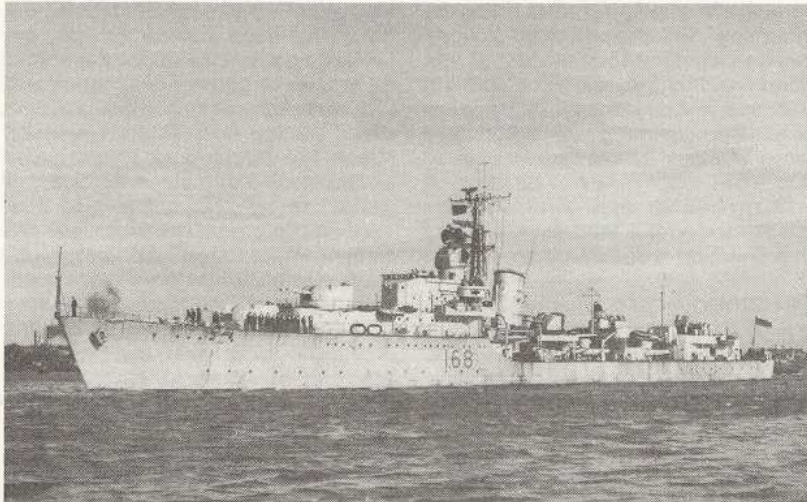
Pick out the following in white: front face of director radar nacelles, Carley Floats, foremast yardarm, warning radar aerial and topmast.

The boats can be painted almost any colour: red, blue, pale green, black and white, or even grey! Dark blue is quite popular, but whatever colour is chosen, use gloss paint and paint all the boats to match. White decks to the boats contrast well, and a final touch for 'Admiral's Inspection' can be achieved by painting the canopies of the motor cutters gloss brown to represent the varnished woodwork.

Below the waterline, use the same dull red as the fo'c's'le for the anti-fouling paint, make the boot-topping

A second distinctive feature of the last, or '1943' group of 'Battles' was their fifth (single) 4.5-inch Mk 5 gun mounting, sited, as in Jutland, immediately abaft the funnel. A similar weapon is still in service in the present-day 'Tribal' Class 'General Purpose' frigates (A. & J. Pavia).





Destroyers had several letters associated with their pennant number before all were rationalised at 'D'. Although Barrosa appears to be wearing '168' on her ship's side in this 1947 photo, it is in fact, I.68 (Wright & Logan).

black, and the propeller blades bronze or gold.

Pennant numbers

The following numbers were allocated in the first instance:

1942 Group	
* Armada	R 14
* Barfleur	R 80
Cadiz	R 09
* Camperdown	R 32
* Finisterre	R 55
* Gabbard	R 47
Gravelines	R 24
* Hogue	R 74
* Lagos	R 44
¹ St James	R 65
St Kitts	R 18
¹ Saintes	R 84
Sluys	R 60
¹ Solebay	R 70
* Trafalgar	R 77
Vigo	R 31
1943 Group	
¹ Agincourt	I 06
Aisne	I 22
¹ Alamein	I 17

Barrosa	I 68
¹ Corunna	I 97
Dunkirk	I 09
¹ Jutland	I 62
Matapan	I 43

Notes

- (1) Ships marked * were originally fitted with a 4 inch star shell gun.
- (2) Post-war pennant numbers were changed to flag 'D' superior, and the following numerical alterations were made at the same time:
Cadiz: D 79 Agincourt: D 86
Vigo: D 231
- (3) Ships marked ¹ were completed as Leaders. When so employed they wore a black band on the funnel (4 mm deep on the model) and no pennant numbers.
- (4) Pennant numbers were also worn on the stern but not invariably.
- (5) *Saintes* was used as a trials ship for the *Daring* type twin 4.5 inch mounting, which was temporarily fitted in 'B' position.
- (6) A further 16 vessels were ordered, but were cancelled in various stages of completion.