

Background – the 'Arethusa' class:

By the end of the 1920's, Royal Navy policy regarding cruisers had solidified around two distinct types; large cruisers for trade protection on distant overseas stations, and smaller cruisers for working with the battle fleet.

The light cruisers of the *Elizabethan* and 'E' classes fell into the large cruiser category, along with the new *County* class heavy cruisers and *Leander* class light cruisers. For fleet work, the Royal Navy was well served by the 35 surviving units of the 'C' and 'D' classes. Built with the benefit of war experience and displacing between 3,700 and 4,650 tons each, these ships were the ideal size for fleet work with low silhouettes, excellent manoeuvrability, and quick acceleration to top speed.

In 1929, with the design work completed on the light cruisers of the *Leander* class, attention shifted to a replacement for the 'C' and 'D' classes. These ships had all completed between 1914 and 1922 and faced block obsolescence by the mid-1930's.

The Washington Treaty of 1922 had placed a fixed upper limit on the total tonnage available for cruisers and the new *County* and *Leander* classes had eaten heavily into that upper limit. At 7,200 tons displacement, the *Leander* class could not be built in large enough numbers to replace all the 'C' and 'D' class ships. It was also felt that they were too large for fleet work and did not have the manoeuvrability required for working with destroyer flotillas.

A new fleet cruiser of reduced displacement would allow more to be built within the tonnage limit and would be cheaper than the *Leanders*. The lower cost would be welcome by the government of the day which was very interested in reducing the naval estimates. For these reasons, a requirement for a new light cruiser capable of working with the fleet and displacing less than 6,000 tons was given to the Director of Naval Construction in early 1929.

By 1931, the new design had solidified into a ship of 5,000 tons with 3 twin 6" turrets, 2 triple 21" torpedo tube mounts, a catapult, and a speed of 31 knots. This was met with considerable resistance from the government due to the world-wide economic downturn and approval was not given.

The non-approval turned out to be a blessing in disguise. The design had been badly cramped with minimal accommodation standards. Given the Royal Navy's world-wide commitments, habitability was a major concern.

The Admiralty was also able to look at adopting the new 'unit system' for machinery. Traditional power plants grouped multiple boiler and engine rooms in consecutive compartments; boiler room, boiler room, engine room, and engine room. This had the advantage of reducing the number of funnels and saving space as all the boilers were grouped together, but was very vulnerable to damage.

A hit that would damage two consecutive compartments would leave the ship dead in the water, without boilers or without engines. The 'unit system' alternated the boiler and engine rooms in consecutive compartments; boiler room, engine room, boiler room, engine room. A hit that would damage two consecutive compartments would still leave the other ones capable of moving the ship and providing power. The *Leander* class with their one funnel used the traditional power plant; the new *Arethusa* class with their 2 funnels used the 'unit system'.

By adding 450 tons to the design, both the 'unit system' and improved accommodation could be incorporated. This new design was submitted to government in February 1932 and was approved by the Treasury. The *Arethusa* class was born.

By reducing the number of the *Leander* class ships to 9 instead of the 10 planned, enough tonnage was left over to build at least 5 of the new *Arethusa* class. After the first two ships were ordered in 1931 and 1932, it was hoped to be able to order 3 each in 1933 and 1934 for a total of 8.

In 1933 it was discovered that the Japanese were building very large light cruisers armed with 15-6" guns, the *Mogami* class. This caused a dramatic revision of planned cruiser construction by both the Royal and US Navies which responded to the new Japanese ships with the *Town* and *Brooklyn* classes respectively. Construction of the *Arethusa* class was halted at four ships and the tonnage allocated to the much larger *Town* class.

The following ships were built:

•	Arethusa	ordered 1931	completed 28 May 1935
•	Galatea	ordered 1932	completed 25 August 1935
•	Penelope	ordered 1933	completed 13 November 1936
•	Aurora	ordered 1934	completed 12 November 1937

The new ships were 506 feet overall with a displacement of 5,200 tons. Armament consisted of six 6" guns in twin turrets, 2 forward and one aft. Four 4" single HA guns and 2 0.5" quad machine guns made up the anti-aircraft armament. Two triple 21" torpedo tubes mounts were also carried.

The unit system of machinery resulted in two widely separated funnels. A quadruple screw arrangement drove the ships at 32 knots at 64,000 SHP.

For surface targeting, a Mk IV director was installed on the bridge. A high angle director for AA fire was fitted directly behind and above the Mk IV director.

The armour scheme consisted of a 2¼" belt abreast the engineering spaces with a 1" deck and transverse bulkheads at the ends. A 2" platform deck covered the magazines which also had 3" longitudinal bulkheads fitted abreast. This scheme was deemed sufficient to deal with 6" gun fire.

Extensive use was made of welding to reduce weight.

The first 3 completed with a catapult and seaplane between the two funnels. Due to the small space available, the 46 foot lightweight catapult was chosen which limited the types of aircraft that could be carried. A crane was positioned forward of the catapult for handling the aircraft. *Aurora* was completed as a flagship for a Commodore of Destroyers and never carried a catapult but was fitted with the crane; an extra deckhouse for the Commodore and staff was installed in place of the catapult.

In keeping with tradition, the ships names reflected early Greek and Roman classical themes:

- Arethusa A Greek sea nymph changed by Artemis into a fountain
 Galatea Greek statue carved by Pygmalion which came to life after he fell in love with it
 Penelope Greek wife of Odysseus who remained faithful for 20 years while he was gone during the Trojan Wars.
- Aurora Roman God of the Dawn

On completion in 1935, *Arethusa* was found to be 150 tons underweight. This allowed for the fitting of 4 twin 4" HA guns and an associated crew shelter instead of the single guns as designed. *Penelope* and *Aurora* were modified while building to incorporate the new guns. They also shipped an additional high angle director at the aft end of the superstructure enabling them to engage two aircraft targets at the same time. *Arethusa* and *Galatea* received their twin 4" guns during subsequent refits after the outbreak of war.

Arethusa and Galatea completed with a derrick on the starboard side of the rear funnel to handle a spare aircraft to be stored on the after deckhouse. Once in service, this arrangement proved impractical and *Penelope* completed without it. It was also removed from *Arethusa* and *Galatea*. *Aurora*, as noted earlier, never carried a catapult and did not have the extra derrick.

The ships proved very popular in service, having all the desirable characteristics for fleet work coupled with the acceleration of a destroyer. Because they were so new, few modifications were made to the ships prior to the war.

The catapult was removed from the first 3 ships by July 1941, being replaced with 2 quad pom-pom mounts. *Aurora* had her quad pom-poms fitted by June 1940. Subsequent upgrades were limited to additional AA weapons (both *Arethusa* and *Aurora* were fitted with UP mounts at one point), various types of radar, and tripod masts.

All four ships served in home waters and in the Mediterranean where they saw extensive service, accumulating 23 battle honours between them. Always in the thick of the action, they collectively became the most famous of all the Royal Navy cruisers that fought in WWII.

Arethusa participated in the Norwegian campaign along with patrol duty in the North Sea and North Atlantic. She operated with Force 'H' and was present during the bombardment of the French fleet at Mers el Kebir in July 1940. Operating in support of Malta convoys and occasionally running supplies to the island herself, she returned to home waters to take part in the Lofoten raid in December 1941. Back in the Mediterranean she was badly damaged by an aerial torpedo in November 1942. Repairs took until December 1943 and were mostly carried out in Charleston, South Carolina. She was part of the bombardment force for D-Day in June 1944. She was sold for scrap in 1950.

Galatea served with the Home Fleet, taking part in the Norwegian campaign and in the evacuation of troops from France. In July 1941 she was transferred to the Mediterranean and became part of Force 'K' operating from Malta. She was torpedoed and sunk by *U-577* off Alexandria on 15 December 1941.

Penelope and Aurora served as part of the famous Malta striking force, Force 'K', from October 21, 1941 until both were mined on December 19, 1941 in the disaster off Tripoli which also resulted in the loss of HMS Neptune and HMS Kandahar. During subsequent repairs at Malta, Penelope came under heavy and frequent air attack, being so badly riddled with shrapnel holes that she won the nickname 'HMS Pepperpot'. Adopted by the City of Blackpool, Penelope went on to greater fame during the Battle of Sirte in March 1942, coming under fire from the Italian battleship Littorio. She also sailed in support of many Malta convoys. Penelope was torpedoed and sunk by U-410 off Anzio 18 February 1944.

Aurora served in the Norwegian campaign, carrying out various shore bombardments and troop movements. She participated in the *Bismarck* chase as an escort to *HMS Victorious* and sank the German supply ship *Belchen* off Greenland and the minelayer *Bremse* off Norway. Prior to transfer to the Mediterranean she also carried out many patrols in the Arctic Ocean and covered landings at Spitzbergen.

After being mined on December 19, 1941, *Aurora* went into dock at Malta for repairs from January to February 1942, leaving for home on March 18. From May to June 1942 she was under major repair at Liverpool where tripod masts were fitted. She would also be fitted with a Type 273 radar lantern forward of the bridge by 1945.

Aurora supported the landings in North Africa during Operation 'Torch', destroying 3 Vichy French destroyers and was assigned to Force 'Q' to intercept German shipping in the central Mediterranean as the North African campaign wound down. She provided shore bombardment for the Sicily landings and at Salerno. Taking part in naval operations in the Aegean in October 1943 she was hit by a 1,000 lb bomb and suffered heavy damage to the superstructure.

Aurora took part in the invasion of Southern France in the gunfire support role. She then saw out the war taking part in the invasion of several Greek islands.

She was sold to Nationalist China in November 1945, being handed over and renamed *Chungking* on May 19, 1948 at Portsmouth after a further refit. With her Chinese crew she sailed for her new home and arrived in Nanjing in August 1948, where she immediately saw action against the Communists. Her service with her new owners was destined to be short-lived as her crew mutinied on February 25, 1949 and handed her over to the Communists. Renamed *Tchounking*, she was scuttled after heavy air attacks in the port of Huludao, Northern China on March 20, 1949.

Salvaged in 1951, the hulk was stripped by the Russian salvors. She was given the new name *Hsuang He* but this was later changed to *Pei Ching*. She remained in use as a barracks ships under the name *Kuang Chou* until scrapped in the 1990's.



The Aurora:

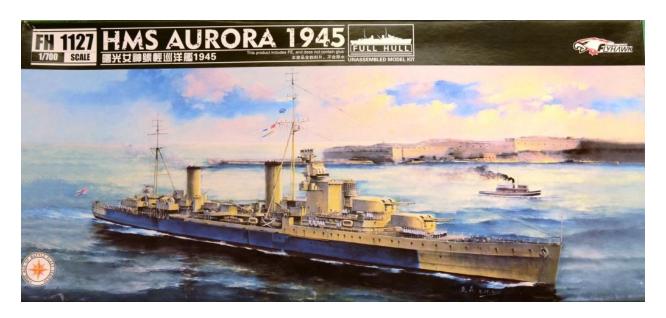
This kit features Aurora as she appeared in 1945 with all her war time modifications in place.

Packaging:

The kit comes in a well-constructed box featuring a painting of *HMS Aurora* entering Malta wearing an Admiralty Standard camouflage scheme.

Inside the main box can be found 2 smaller see-thru boxes; one containing the two sprues for the masts and the other the main superstructure pieces. The other sprues are individually sealed in plastic bags. There is also a large full colour glossy card featuring the box art on one side and a ship's history with general characteristics on the reverse.

The kit comprises 332 parts on 28 sprues with a further 81 photo-etch pieces.



---- Box Art ----



---- Box Contents ----



---- Boxes for masts and superstructure pieces -----



---- Front and Rear of included card ----

Hull:

The one piece hull scales out perfectly to the actual length of 506 feet. A lower hull and a waterline base plate are supplied giving the modeller the option to build either a full hull or a waterline version. There are no stands included so those wishing to build the full hull version will need to plan ahead for an arrangement to display the completed model.

The lower hull itself has finely molded bilge keels and the lower half of the armour belt. Rudder, propellers, and shafts are included as separate pieces. It has raised locating points enabling an accurate fit to the upper hull.

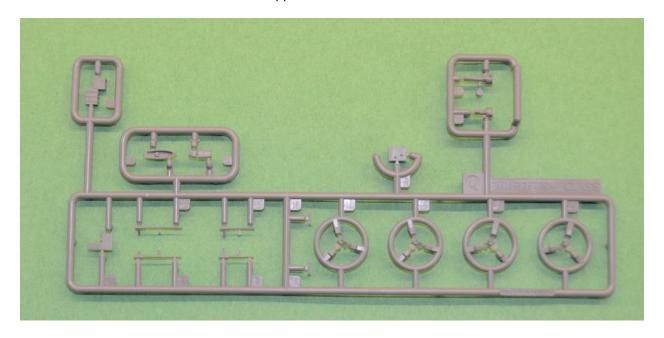
The pronounced bow knuckle is in the correct position, starting just under the anchor hawse pipe and terminating just aft of 'B' barbette. It is a perfect rendition of this distinctive feature, following the contour of the upper deck, curving slightly upwards under the anchor hawse.

There are also raised strakes capturing the line of hull plating from the bow back to the armour belt amidships and from the armour belt aft to the stern. It is slightly exaggerated in this scale and could be sanded down to be less conspicuous, but I find it so delicately executed that it would be a shame to remove it. The armour belt itself is exactly correct for dimensions and hull placement. The portholes all feature eyebrows and the anchor hawse pipe is very clearly defined. The hull also features bollards, fairleads, and ladder rungs.

A weight is included to give the completed hull some 'heft'.



---- Upper and lower hulls ----



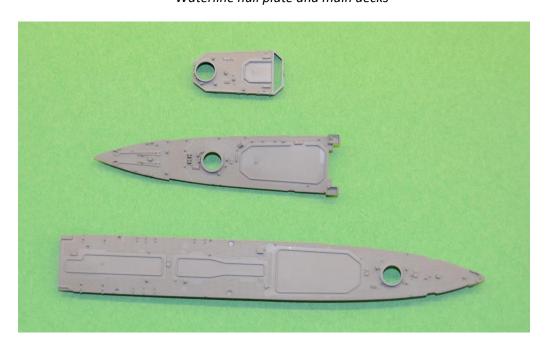
---- Propellers, rudder, and propeller shafts ----

Decks:

The main decks are in two pieces: the foredeck back to the focsle break, and the much longer after deck. Both feature amazing levels of detail with individual deck planks, bollards, capstans, boat chocks, anchor chains, hatches and raised edges for fitting the superstructure parts. The main deck forward features a raised non-skid pattern. The breakwater itself is a separate piece. Both deck pieces drop right into place on the main hull in an impressive display of precision fit.



---- Waterline hull plate and main decks ----



---- Forward superstructure and main decks showing the amount of detail ----

Superstructure:

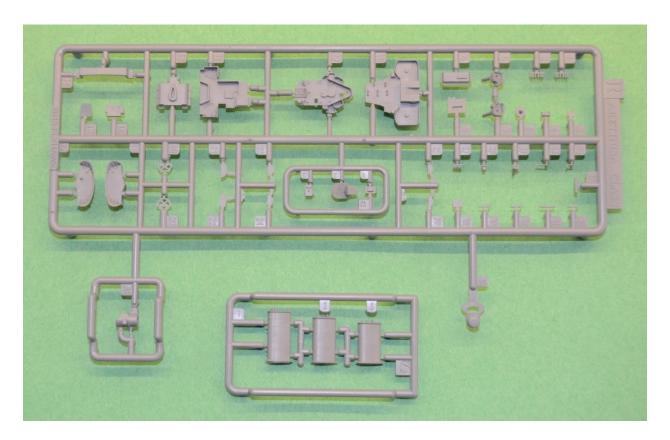
The seven main superstructure parts are in a separate box and are all individual pieces that do not require cutting from sprues, a great feature which will prevent any damage from sprue cutters and the like. They all feature immense detail on every face: hatches, handrails, deck fittings, slots for fitting other pieces. The bridge has a separate air deflector; 22 pieces go on the top deck which also features a raised wooden grating. This is quite amazing when it is considered that the piece is only $12 \text{mm x } 19 \text{mm} (3/8" \times 1/2")$ in size!

The rest of the superstructure parts are attached to sprues.

The funnels are single pieces with engraved lines, open tops, and steam pipes. The fore funnel was taller than the after one, and the after one was cut down during the war as a weight saving measure. This is reflected in the kit as there are 3 funnels supplied, it can be assumed that a future release will make use of the taller after funnel.



---- Superstructure pieces -----



---- Funnels and smaller fittings -----

Weapons:

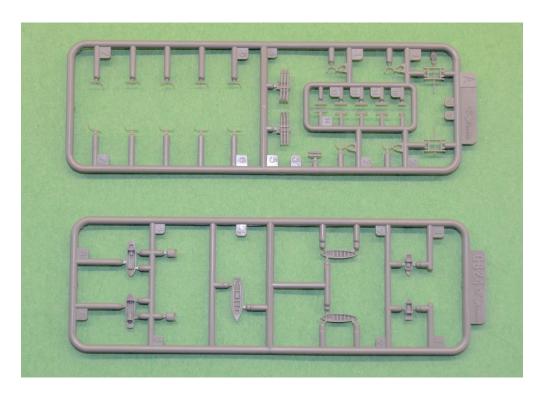
The 6" gun turrets feature plenty of detail on all four sides and the top including rivets and the doors between the gun barrels used when the turret was in local control. They are in two pieces with separate gun barrels. An extra turret base and 2 gun barrels are included.

Each twin 4" gun is composed of three pieces, with plenty of detail on the sides and top of the shields as well.

The guad pompoms consist of 3 pieces and have plenty of detail on the actual gun platform.

The single 20mm guns are mounts are extraordinary, with gun sights and very fine barrels. The twin 20mm are in two pieces, barrels and the actual mount.

The torpedo tubes are things of beauty with plenty of detail and hollowed out ends allowing torpedoes to be inserted if the modeller wishes. Torpedoes would have to be scratch built.



----- Torpedo tubes and boats -----



---- 6" turrets and 4" gun shields -----



---- 6" and 4" gun barrels with the bottoms of the mountings -----

Boats and fittings:

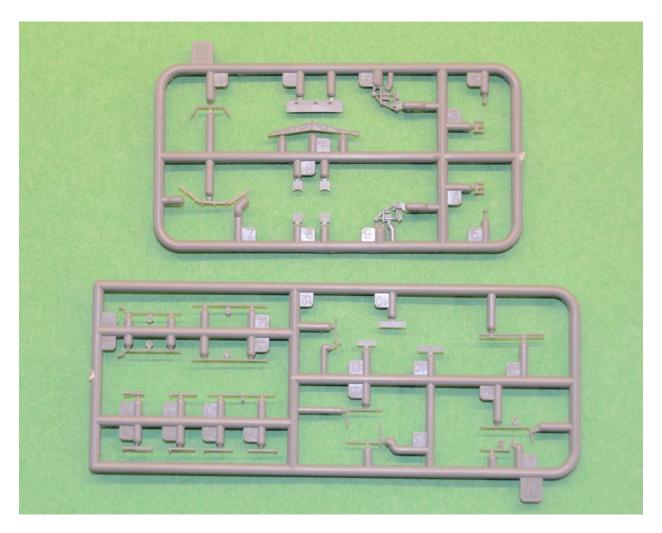
There are 3 open boats and 4 motor launches, each one features deck planks; the 3 largest launches have separate cabins. There are many smaller fittings, every piece of which is incredibly detailed. The ready use ammo lockers have lids and doors, fresh air intakes are hollowed out, the deck winches have detailed motors, the life rafts are detailed both top and bottom, the davits are extremely thin, the High Angle directors are hollow at the top, and there is a depth charge rack for the quarterdeck. The paravanes are not solid at the tips; they feature very tiny molded lines instead.

The large aircraft crane consists of 4 parts, the boom can be replaced with the photo-etch part if desired.

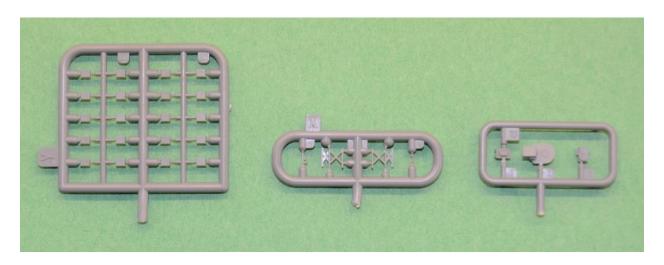
Types 281, 284, and 285 radars are included, along with the Type 273 radar lantern on a platform in front of the bridge. There are photo etch versions of the Type 281 and 285.

Photo-etch railings are supplied pre-cut to the correct lengths with very clear instructions on where each piece is to be placed.

Most of the sprues carrying the smaller fittings are the same ones that are found in the Flyhawk *Naiad* kit. This is a welcome level of standardization that most likely makes kit production very cost effective for Flyhawk.



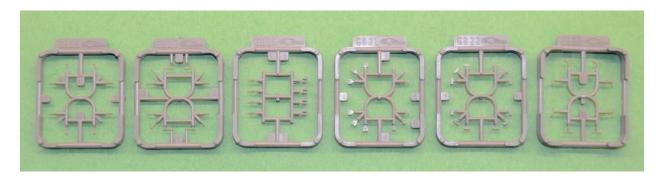
---- Crane and fittings -----



---- Fittings ----



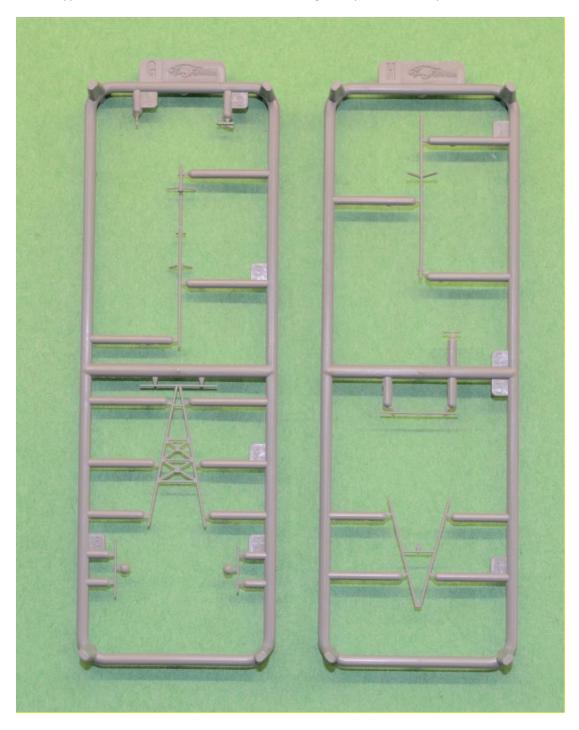
---- Fittings ----



---- Fittings ----

Masts:

The masts and tripod supports come on their own sprues and are packaged separately in their own box. They are extremely thin and can be used as is without resorting to replacements made from wire. Aerials for the Type 281 masthead radar are included along with photo-etch replacements.



---- Masts ----

Decals:

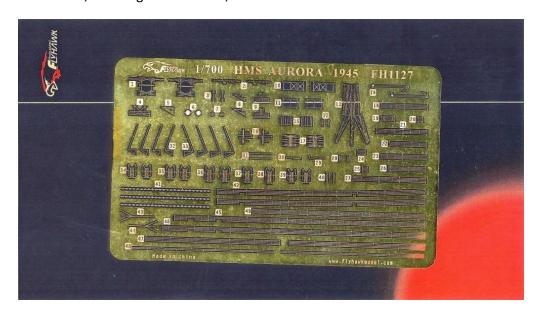
As Royal Navy cruisers did not carry pennant numbers as a rule, the decals are very minimal consisting solely of 4 White Ensigns.



---- Weight and Decals ----

Photo-Etch:

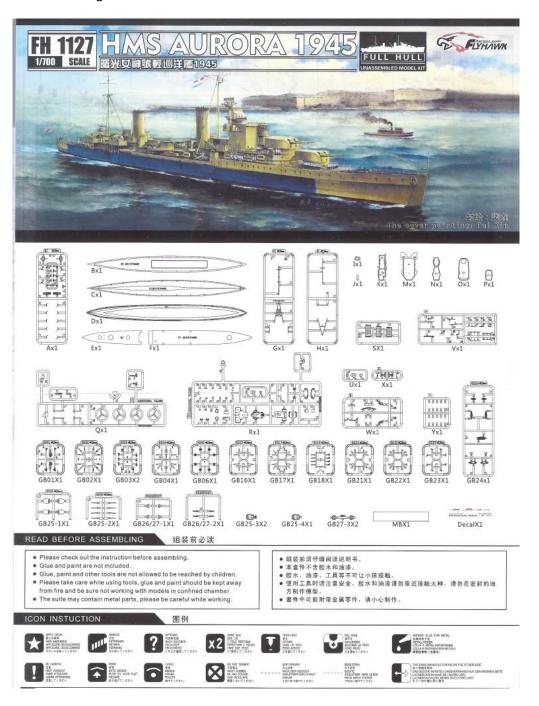
A very comprehensive photo-etch sheet with its own two-sided instruction sheet is also included with all the railings, ladders, and lattice deck supports needed for the kit. It also contains anchor chain, Type 281 and 285 radars, detailing for the masts, and a boom for the crane.

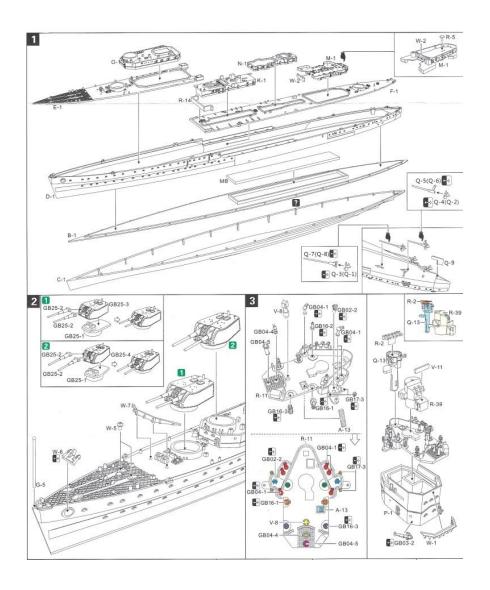


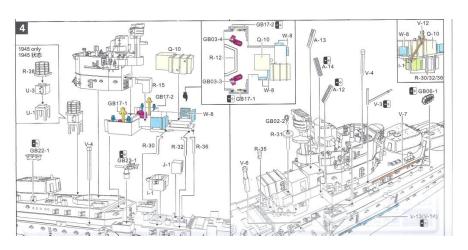
---- Photo-etch sheet ----

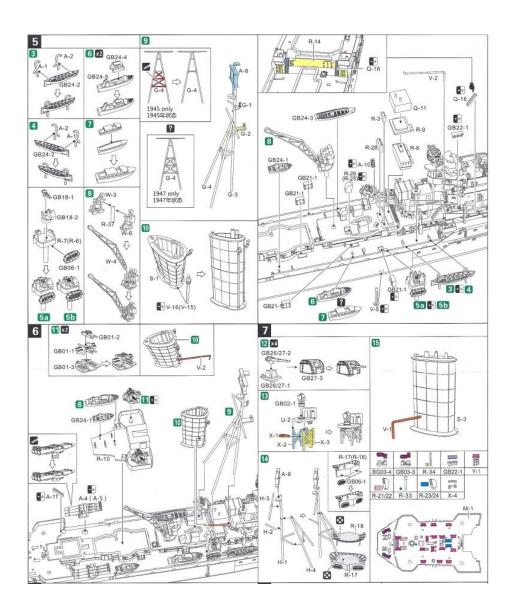
Instructions:

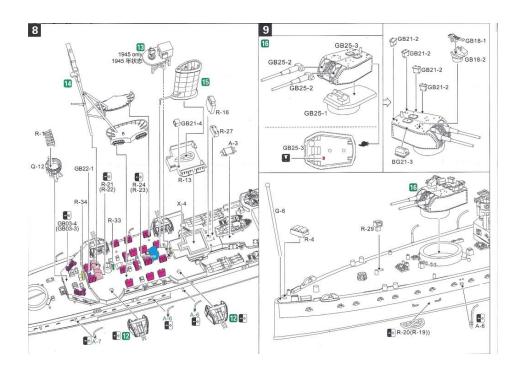
The instructions come on a large, double sided full colour page featuring 9 sub-assemblies. They are very clear and comprehensive and also feature a drawing showing all the sprues and parts included. Colour coding is used throughout to assist with placement of smaller parts; this is a very good feature which takes out a lot of guess work.

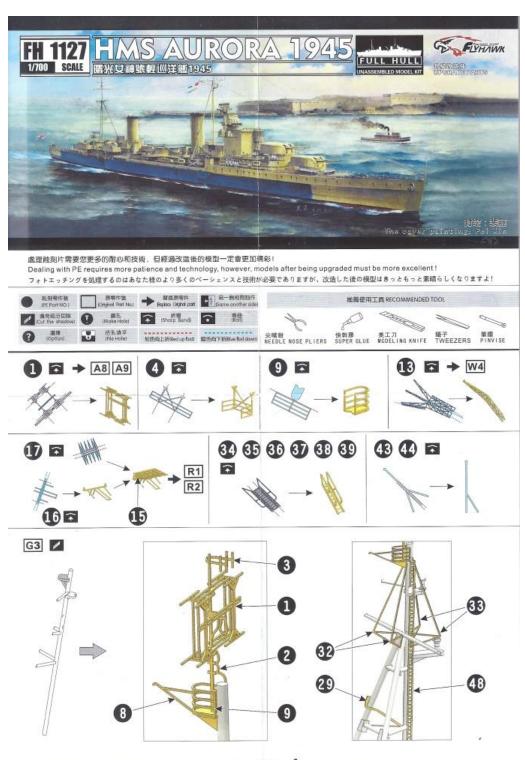


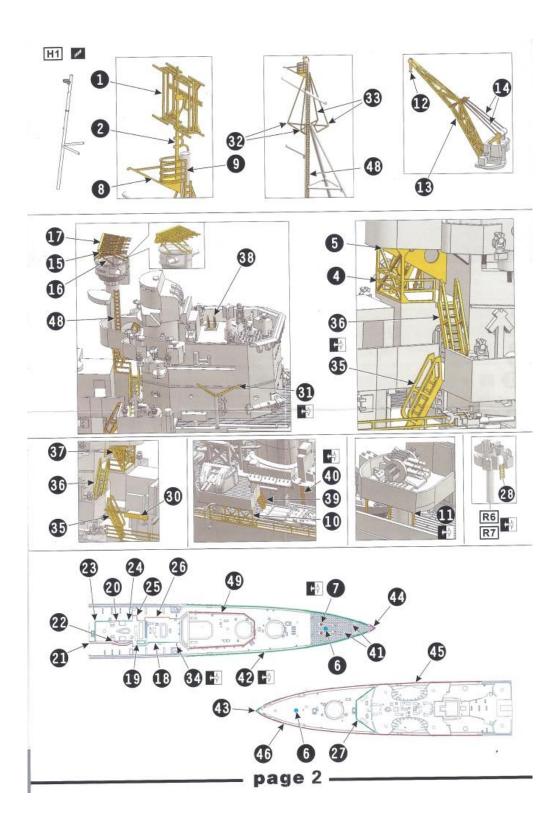








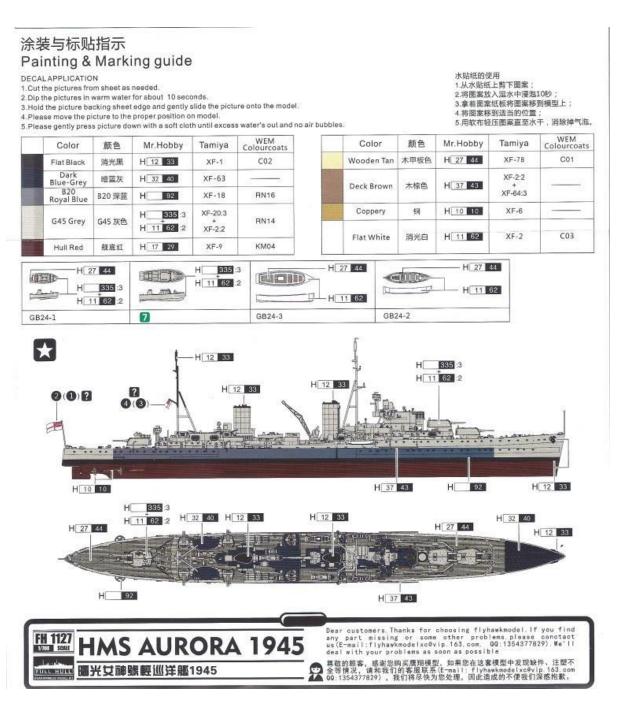




---- Instructions -----

Colour scheme:

There is a full colour diagram of the camouflage scheme carried by *Aurora* in 1945, complete with references to the Mr. Colour, Tamiya, and White Ensign Colourcoats paint ranges.



---- Colour scheme ----



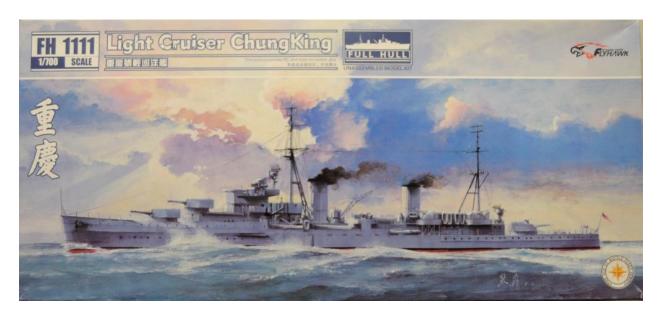
The Chungking:

The *Chungking* kit features *Aurora* as she appeared in 1948 when handed over to the Nationalist Chinese forces. As a result, the two kits are quite similar but there are some differences which I will detail here.

Packaging:

The box features a painting of *Chungking* on the open ocean wearing the flag of Nationalist China. The large full colour glossy card also features the same box art and particulars of the ship's service and eventual fate after her sale to China.

The kit comprises 307 parts on 28 sprues with a further 81 photo-etch pieces.

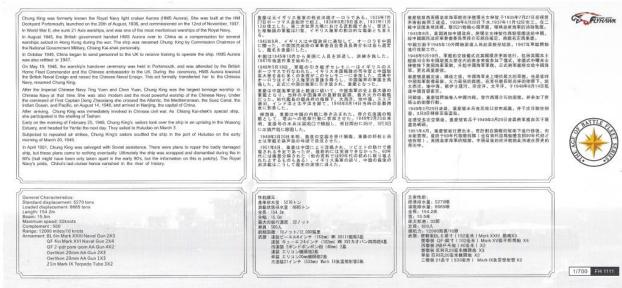


---- Box Art ----



---- Box Contents ----

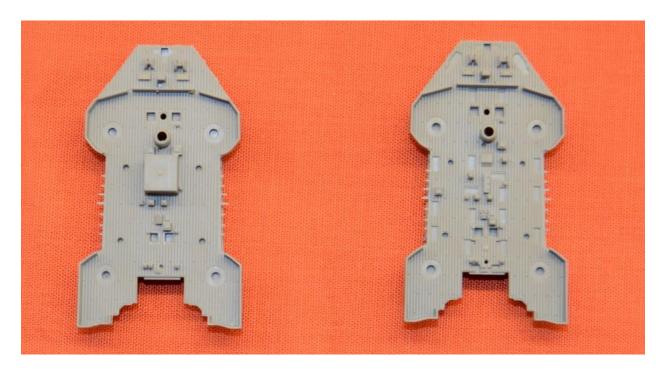




---- Front and Rear of included card ----

Superstructure:

The aft gun deck, Part L in *Chungking* and Part M in *Aurora*, are the same dimensions but feature different deck detail. The lattice work bracing under the quad pompoms is replaced with a solid plate (This is labelled as part X10 in the instructions, it should be V10).



---- 4" gun deck for Chungking (left) and Aurora (right) ----

Boats and fittings:

Chungking did not carry the Type 273 radar lantern or the searchlight behind the after funnel, so those parts are not included. The ammunition ready use lockers were also a different type on *Chungking* so different sprues are provided for them. *Chungking* also carried fewer deck winches but more life rafts than *Aurora*, so there are differing numbers of those sprues between the 2 kits.

Decals:

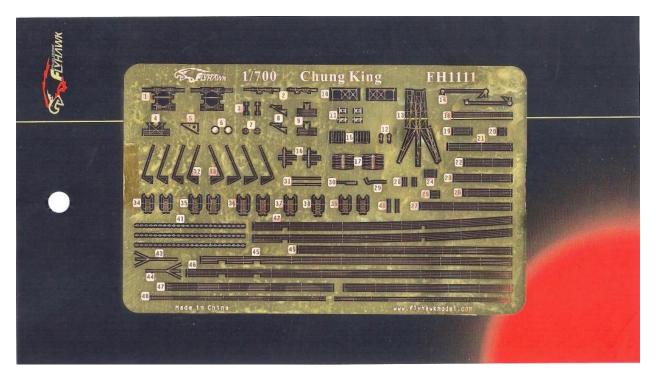
The Decal sheet contains White Ensigns, Nationalist, and Communist Chinese ensigns, allowing the modeller to depict the ship sporting the colours of any of the navies she served with.



---- Decals ----

Photo-Etch:

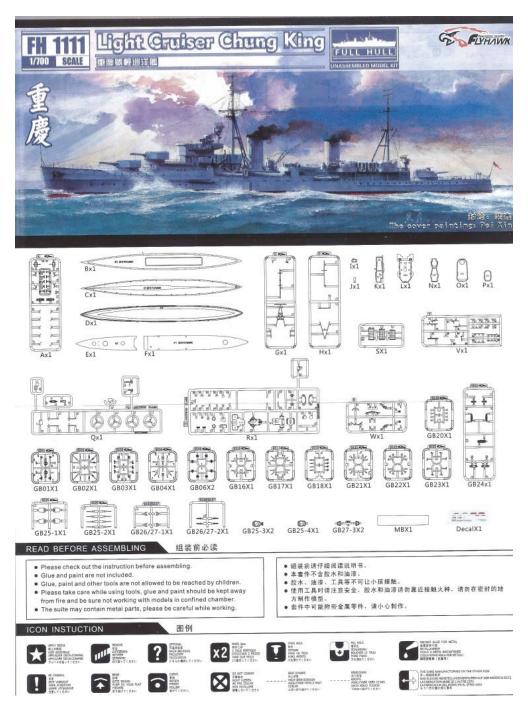
The open lattice work supporting the quad pompom platforms is not included. In its place are supplied the Chinese characters for the ship's name on the stern.

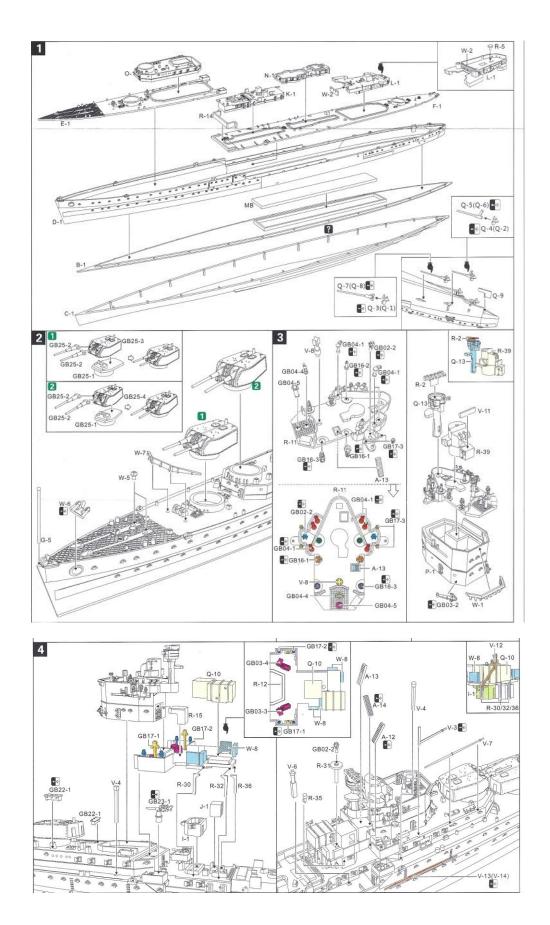


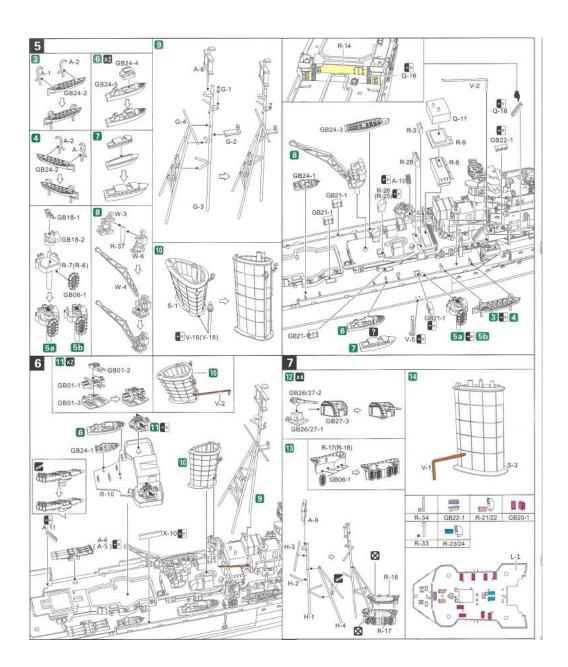
---- Photo-etch sheet ----

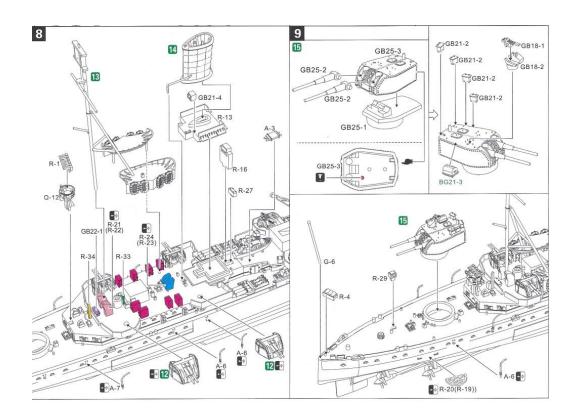
Instructions:

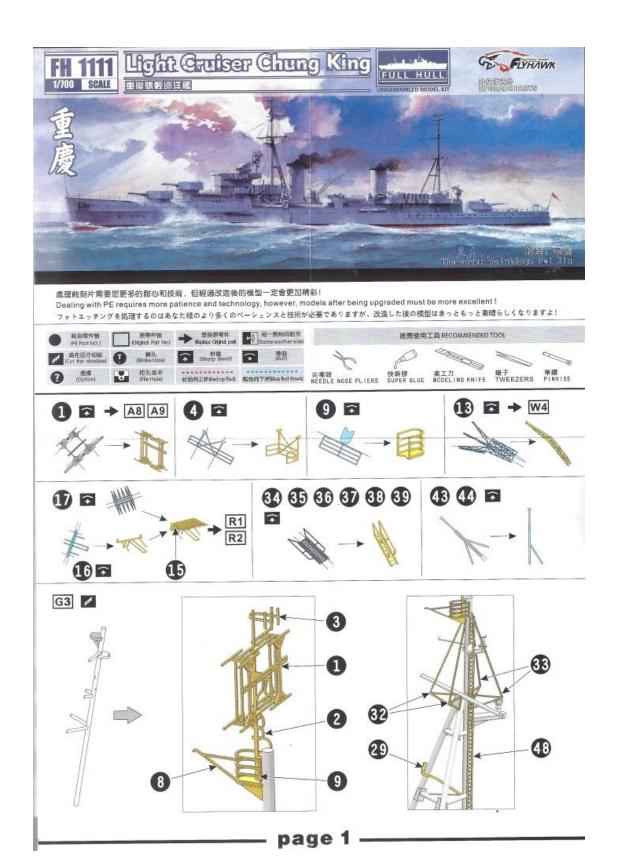
The instructions are not just a copy of the ones provided with *Aurora* with a few changes noted, but are specific to *Chungking* and reflect the different parts used to assemble it.

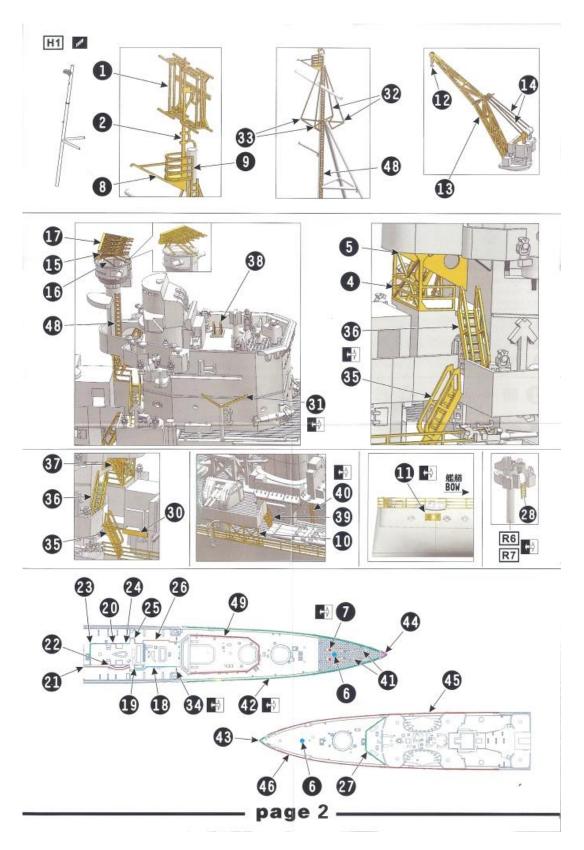




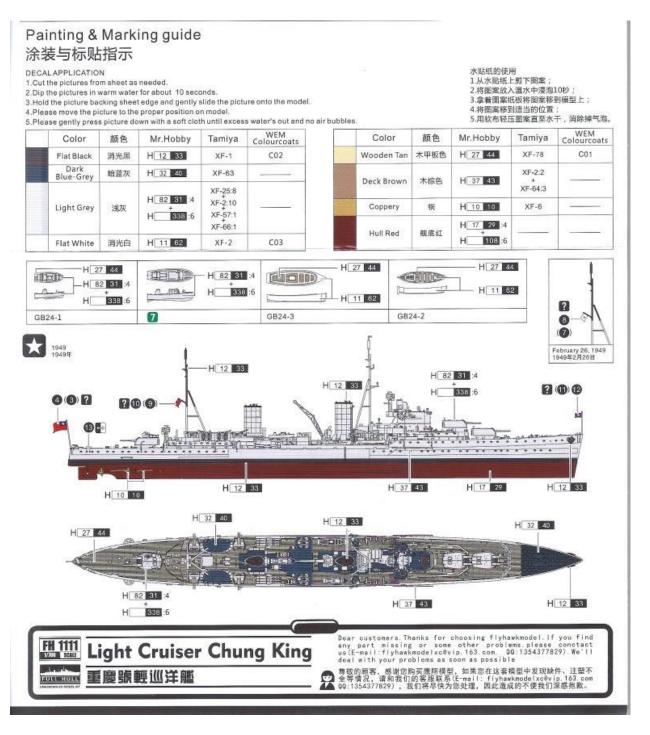








---- Instructions -----



---- Colour scheme ----

Extras:

My kit of *Chungking* came with a 16 page Flyhawk modellers guide for building their *U-48* drydock diorama. It is of very high quality, featuring many photos and modelling tips.





- 1、待消光漆幹透之後,就可以獲化了,工 具選是大家熟悉的温凉的顏料和以PPO油 2、至于舊化的輕重看大家的口味了,反正 我是比較喜歌小清新的 3、接下來是幹掃,還是用油畫顏料本制作, 主要是表現潛飯和場景的一些細節,特別 是潛艇的甲坂細節,掃出來是非常漂亮的, 掃得比較輕,以至于拍照出來不太明顯 1. ジッボ油を使って、ウェザリングを 行います。 2. ウェザリングの効果(シーン)。 3. ウェザリングの効果(治水艇)。
- After the extinction paint dry, we can make it looks old, the tools are still the Windsor pigment and ZIPPO oil.
 As for the degree of making old, it depends on your taste, anyway, I prefer Indie pop.
 The next is the dry sweeping, here still use oil paint to produce, it is mainly express some details of submarine and scene, especially the details of the submarine deck, after sweeping out it is very beautiful, because swept a little slightly, the photograph is

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FLYHNWK

---- U-48 Diorama Modelling Guide ----

Overall Impression:

In keeping with the standards set by their kit of *HMS Naiad*, Flyhawk has produced 2 superb models of this iconic British cruiser. All the parts are precision molded, with absolutely no flash or those lines that result when two mould halves are used to make a single component. The fineness of detail does not imply fragile pieces; I managed to bend the 4" gun barrels at right angles to the rest of the piece and was able to straighten them without breaking them off. I like the idea of not attaching the main superstructure pieces to any sprues, none of the molded on detail will be damaged during assembly.

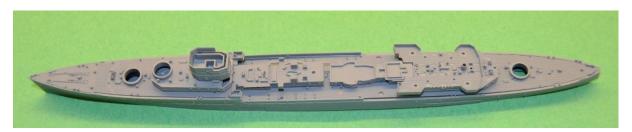
The models are 8.5" long; the amount of detail that Flyhawk has packed in is incredible. Their product research is very comprehensive as shown by identifying the subtle changes made to *HMS Aurora* between 1945 and 1948. The kits are also very accurate based on my available references.

Despite all the pieces, modellers will have no problems assembling either of these kits. They are well-engineered and the parts will fit together very easily. The instructions are very comprehensive and the use of colour coding will ease the assembly of the smaller parts.

More experienced modellers will find it fairly straight forward to convert either of these kits into one of her sister ships, or into an earlier fit of *Aurora*. Depending on chosen fit, they will just need to source 4" single guns, a catapult, and a Seafox. Camouflage schemes varied considerably, references and photographs should be consulted carefully. Flyhawk has announced *HMS Penelope* for later in 2016 and it appears to be an early war version.

The kits will build into superb models right from the box. A wood deck, deck mask, and machined gun barrels are available separately from Flyhawk for *HMS Aurora*. The only other item that modellers may consider would be anchor chain. By paying careful attention to the design of the sub-assemblies, Flyhawk has been able to produce 2 distinct kits of the same ship. No doubt each kit will find favour in its own particular market.

These are highly recommended kits, well-researched, well-engineered, and well-packaged. Flyhawk is to be congratulated for on providing us with another class of Royal Navy cruiser in 1/700 scale. They are relatively new to the field of injected molded plastic kits and I am impressed that they have chosen to provide brand new and long wished for subjects, rather than releasing ships already covered by others. I eagerly await their next new release!



---- Dry-fitting of decks and main superstructure pieces ----

Review kits courtesy of Flyhawk Models