

# PLANS HANDBOOK

model boats, cars  
& radio control

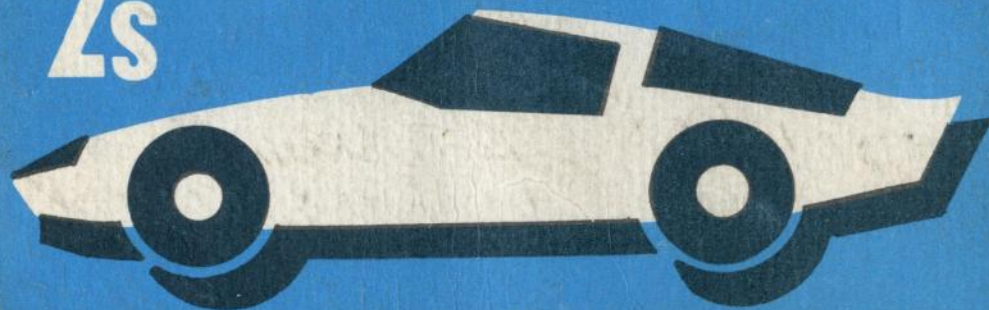
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# Adhesives for Marine Models

By R. H. Warring

The "classic" model makers' adhesive—balsa cement (or, strictly speaking a cellulose cement)—is not really a suitable glue for marine model joints, except for all balsa construction. Although a strong adhesive, with the advantage of being quick drying and gap filling, it is water-resistant rather than fully waterproof. Its main limitation is that used for glued joints on harder woods (and particularly ply), such joints can fail and open up after a period of immersion in water, even though the hull is apparently fully protected with a paint finish. This can be particularly disturbing in the case of a hard chine ply skinned hull, and even more serious in the case of bread-and-butter laminations bonded with a balsa cement.

Modern synthetic resins of the urea-formaldehyde type are usually recommended for glued joints in hardwood and ply, these being readily available as cold setting adhesives suitable for amateur use. They are also formulated so as not to require high contact pressures to complete a satisfactory joint, which means that they are 'gap filling' to a certain extent. More attention must, however, be given to clamping up such joints than is usually the case with balsa cement.

They take appreciably longer to set and, for the user who is not familiar with them, may appear of dubious value at first because of the absence of 'stickiness' when the joint is initially completed. Nevertheless, properly applied, synthetic resin adhesives of this type produce a joint which is stronger than the material being bonded. If a glued-up joint is subsequently broken the material rather than the glue line will fail first, unless the joint is definitely faulty. The latter could be caused by improper proportions of resin to hardener, improper mixing of these two constituents, dry areas, lack of clamping pressure, insufficient setting time or too low a temperature.

In spite of the fact that these urea-formaldehyde resins are the standard for full size construction of amateur (kit) and professional (ply skinned) craft they are still not completely waterproof. They are more than adequate for most purposes, however. Where maximum durability is required then a cold-setting resorcinol resin adhesive would normally be chosen for professional (full size) boat building;

or a phenolic resin if the necessary facilities for working are available. The phenolics set under heat and pressure (e.g. around 250 pounds per sq. in.) and thus require elaborate jiggling and clamping of assemblies. Hot-moulded (full-size) ply hulls employ this type of adhesive for 'gluing up'.

Since the model boat is never left afloat continuously, the cold-setting urea resins will be quite suitable for all 'hardwood' glued joints. They are colourless and basically non-staining adhesives which are quite easy to mix and use. The model maker looking for that little extra durability might prefer the cold-setting resorcinol resin which is now available for amateur use (previously it could only be obtained for professional use). It is a somewhat thicker, 'stickier' adhesive, usually coloured, with good gap-filling qualities.

There are a number of other modern adhesives available which may appear attractive to use and so it is well to know their properties and any limitations they may have. Melamine resins, for example, are in the same class as the ureas as regards water resistance and joint properties and have particularly good adhesion to wood. They are not generally available, however, and we do not know of any adhesive of this type produced for amateur work in this country. The other chief 'wood gluing' synthetic resin is casein which makes a good general purpose glue for carpentry but is not durable and loses appreciable joint strength when wet. It is not suitable for boat construction, model or full size.

PVA adhesives, whilst excellent for "dry" woodworking joints are equally not a suitable type for marine use.

Polyster resins (as used for glass fibre construction) and epoxy resins are two other types of modern adhesives. The former is, of course, the standard type of resin for laying up glass fibre laminates, largely because of its good 'wetting' properties in contact with glass fibre and tenacious adhesion to most other materials. It is not a superior adhesive as regards bonding to wood, however and so, as well as being more expensive, offers no advantage over a urea resin for this purpose. Because of its inherent 'stickiness', however, it is a logical choice for applying a sheathing of glass fibre to any wooden assembly.

Performance Classification	Glue Type	Gap Filling	Durability	Suitability
Weatherproof Adhesives	Phenolics	No	Excellent	Require high temperatures and high pressures. Not suitable for amateur construction. Used for bonding marine ply in manufacture
	Resorcinols	Yes	Excellent	Cold setting types available maximum durability
Moisture Resistant	Urea Resins	Yes (with fillers)	V. good mould proof	Cold setting basis of most amateur construction
	Melamines		V. good mould resistant	Good adhesion to woods
	Casein	Yes (with fillers)	Good, but loses appreciable joint strength when wet. Not resistant to mould	Not suitable
	Cellulose	Yes	Fair to good	All balsa assemblies only
Water Soluble	Animal and vegetable glues, Polyvinyl	No	Joints fail completely if wet or damp	Not suitable

## CASCAMITE

TEMPERATURE	...	...	...	...	50°F.	60°F.	70°F.	80°F.
CLAMPING TIME—hours	...	...	...	...	18	5-6	2-3	1½
*POT LIFE—hours	...	...	...	...	9	3	1-1½	40 mins.

(Recommended before relief of clamps or stressing of joints)

\* Made up with water in proportions—2 parts powder; 1 part water (by weight). 3½ parts powder; 1 part water (by volume).

CASCAMITE is not recommended for use in air temperatures below 50°F.

## AEROLITE

TEMPERATURE	...	...	...	...	50°F.	60°F.	70°F.	80°F.
SHUFFLING TIME—minutes	...	...	...	...	60-70	40	20	10
APPROX. SETTING TIME—hours	...	...	...	...	2-3	1	½	¼

For Medium Setting Hardener GBQ.X reduce shuffling time to one half. For Fast Setting Hardener GBQ.X reduce shuffling time to one quarter.

Aerolite Is Not recommended for use in a temperature below 50°F.

## CASCOPHEN

TEMPERATURE	...	...	...	...	60°F.	70°F.	80°F.	90°F.
POT LIFE—hours	...	...	...	...	8-10	3½	1½	¾
MAXIMUM OPEN ASSEMBLY TIME—minutes	...	...	...	...	25	15	10	5
MAXIMUM CLOSED ASSEMBLY TIME—minutes	...	...	...	...	60	45	20	15

CLAMPING TIME—hours ... 16-20 7½ 3½ 1½  
(Recommended before relief of clamps or stressing of joints)

CASCOPHEN is not recommended for use in air temperature below 60°F.

The epoxy resin adhesives offer outstanding glue line strength and bond between two non-porous surfaces. They can be used to glue almost any two surfaces together which are dry and grease free.

They cannot be better than a good urea resin for jointing wood since this type gives full joint strength as already mentioned (the wood fails before the glue joint). Their extra cost is, therefore, not



justified for general hull assemblies although occasionally specified (usually on American plans) for 'high strength' areas (e.g. bonding motor bearers in place). They are, however, a most useful type of adhesive to use for special bonding problems—such as gluing metal or plastic fittings in place to wood or glass fibre decks, gluing small metal parts and fittings together, and so on.

The choice of a standard ureaformaldehyde resin for all 'hardwood' joints—e.g. attaching ply skins, bread-and-butter assemblies, etc.—should be entirely satisfactory, provided the adhesive is used as specified, joints are properly clamped up, and the ambient temperature is above the minimum required for setting (see Tables 2, 3 and 4). In the case of ply skinned hard chine hulls adequate clamping pressure can be given by pinning the panels in place. Steel pins are satisfactory for permanent fastenings on models, although brass pins are better practice. Screws (brass for preference) are better fasteners for highly stressed areas. Stressed joints, such as motor bearers installation, should never rely on glue alone but should be reinforced by permanent fastenings, e.g. by screwing through the hull skin. Tightening up these fasteners then provides the necessary clamping pressure for the joint.

Some builders prefer to use a cellulose adhesive for gluing up the framework—e.g. gluing chine stringers, etc. into the notches on the frames and bulkheads. This appears quite satisfactory, with the ply skin panels finally attached with a synthetic resin adhesive. There is no reason why the same synthetic resin adhesive should not be used throughout, however. The same applies to the gluing up of secondary structures. The synthetic resin adhesive will provide the more durable joint, unless the wood involved is balsa.

Balsa cement is, generally, a suitable adhesive for gluing up a balsa bread-and-butter assembly, but a synthetic resin adhesive is better. It is usually more fluid than balsa cement and when clamped up, is more readily squeezed over and into the whole joint surface area to provide a consistent joint line. It is essential that

enough clamping pressure be applied to close all the joint lines tightly, but not so tight as to squeeze out most of the adhesive.

An important point to note when using powdered resin adhesives (e.g. powdered resin or powdered 'one-shot' mixtures) is that the powder should always be mixed up with the specified proportion of water, measured out and not guessed. Powdered resin should be allowed to stand after mixing with water so that air bubbles can clear before the hardener is added. As first mixed the liquid resin will appear 'milky'. After standing it should turn quite clear.

The hardener employed is invariably of the acid type, which means that it will be liable to react chemically to most metals. That is one reason why steel fasteners should not be used. Also glue mixtures should be made up in a glass jar (e.g. a jam jar) rather than metal containers and, if applied by brush, the metal ferrule of the brush kept out of the mixture. Actually mild 'contamination' of the adhesive by contact with metal does not seem to affect the properties of the glue but it can cause staining of the wood. This applies particularly to two-part mixtures where the hardener is applied separately to one surface. 'Contaminated' hardener can result in bad stain marks on the wood. It is usually recommended that the hardener be applied with a soft cloth pad wound round a stick and tied with thread or a rubber band—not bound on with wire.

Finally, good as they are, modern synthetic resin adhesives will not bond satisfactorily to surfaces which are dirty, greasy, oily—or wet. If skin panels have to be wetted to curve to shape, therefore, they should be clamped in place and allowed to dry first, then removed, glued up and replaced under the necessary clamping pressure. Cleanliness is seldom a problem with model construction, using new stock material. Attempting to glue parts to a used, oily hull interior, however, is another problem. It is unlikely that a satisfactory glued joint can be obtained under such circumstances, however much the area is cleaned up.

## Star Plan Grading

In order to help you in your choice of plan, a grading system is employed to give some idea of the degree of complication or ease of construction. At the bottom of each caption will be found one, two, three, or four stars, with the following meanings:

\* A simple design with sufficient detail and explanation for the complete beginner; also suitable for anyone requiring an easily-built model.

\* \* Slightly more advanced, for the average modeller or beginners with some modelling experience in other fields.

\* \* \* For modellers of some experience, or those who have built one or two similar models or are prepared to read up constructional technique.

\* \* \* \* For the expert able to interpret drawings (e.g., 3-view drawings) and decide his own constructional methods; also used for designs where workshop equipment is called for.

## SARDINE

All-metal (tinplate) submarine of very simple construction for .5 to 1.5 c.c. diesels. Overall length 48 in., automatic resurfacing, etc., using schnorkel tube when submerged.

MM/485 \* \* 9/-

## CUMBRIA

By G. H. Deason

19 in. model of old-time paddle tug built with gum strip paper hull, card paddles, etc., electric-powered, very strong and light.

MM/468 \* \* 3/6

## H.M.S. COSSACK

By Vic Smeed

38 in. model of the famous Tribal class destroyer of the 'Altmark' incident. Detailed plan, simple construction in balsa and ply, or hardwood if preferred. For electric power, large enough for small radio control equipment.

MM/500 \* \* 6/-

## ROCKET CLASS FRIGATE

Simplified scale model of a well-known type of anti-submarine warship, using all balsa construction. For any small electric motor, 24 in. L.O.A..

MM/400 \* 3/6

## R.N.L.B. PLYMOUTH

By Vic Smeed

Barnett-Stromness type lifeboat, modelled at  $\frac{1}{4}$  in.-1 ft. (39 in. l.o.a., 11 in. beam) for advanced builders. Bread-and-butter construction, large amount of detail. Authentic drawings on two large sheets.

MM/418 \* \* \* \* 10/-

## RIVER CRUISER "DUBARRY"

28 in. hull length. A perfect detailed model of a typical Thames cruiser, complete with centre cabin and deck fixtures. Performs well with 1.3 c.c. diesel engine. On three sheets.

MM/154 \* \* \* 15/-

## ROYAL YACHT "BRITANNIA"

Detailed working model, complete with ship's boats, etc., for electric or steam propulsion. Six-page instruction leaflet with 17 sketches and four photos. Available in two sizes. (See also page 34)

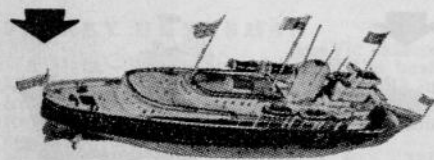
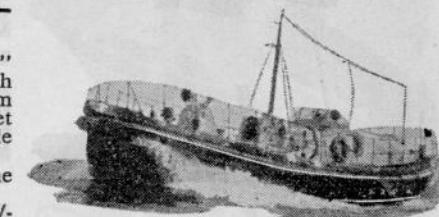
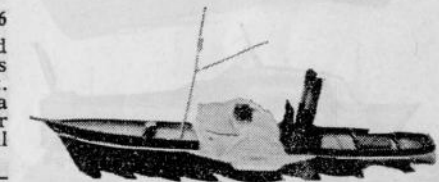
Electric version, L.O.A. 23½ in., on one sheet 34 x 25 in.

MM/303 6/-

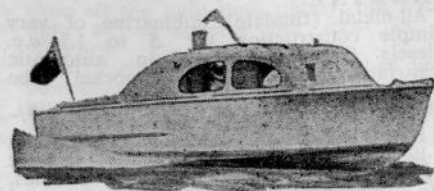
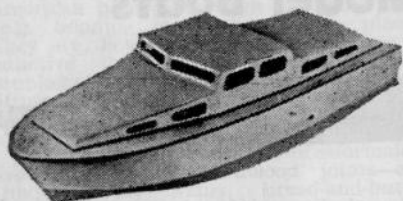
Steam version, L.O.A. 46½ in., on two sheets, 50 x 39 in. and 39 x 25 in.

MM/314 \* \* \* 15/-

## Model Boats



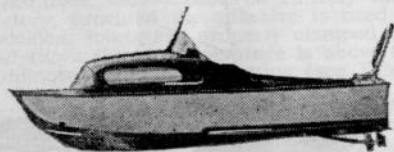




### TOD BOAT

A 16 in. miniature of balsa and ply construction, based on the Tod Tuna. Powered by any small or medium electric motor.

MM/561 \* 4/6



### KINGFISHER

By Vic Smeed

22 in. model specially designed for maximum strength with all balsa structure. For 5 to 1.5 c.c. diesels, can be used for radio.

MM/516 \* 6/-

### LOROSA

By Vic Smeed

A scale two-berth cabin cruiser which, although only 24 in. in length, is large but nevertheless attractive. For 1 to 1½ c.c. motors, all-ply construction.

MM/506 \*\* 6/-

### IONIA

By Arthur O. Pollard Jr.

Scale model (¾ in.—1 ft.) of a tug built in 1960, 24½ in. length, 6½ in. beam. Lines drawing of hull, superstructure outlines. For electric drive.

MM/634 \*\*\* 8/6

### P.S. DUCHESS OF FIFE

An accurate scale 54 in. paddle steamer for either metal or timber hull construction, and suitable for radio control. All details for articulated paddles, etc., on drawing. Electric drive.

MM/528 \*\*\* 12/6

### TARPON

A really lovely Italian-designed cabin cruiser, 35 in. in length, for electric or up to 2½ c.c. motors. Planked construction, fully detailed plan. Excellent for radio.

MM/494 15/-

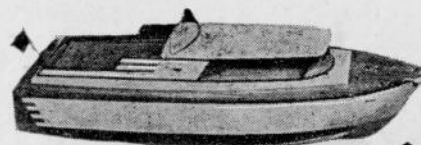
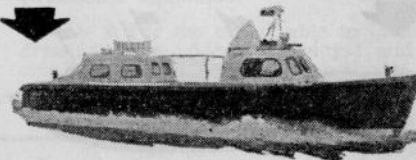


### PILOT II

By Vic Smeed

A distinctive small pilot launch, ¾ in.—1 ft., length 24 ins., scaled from a Universal Shipyard aluminium hull. Largely balsa construction, planked round bilge hull, electric power, suitable for small R/C.

MM/645 \*\*\* 5/-

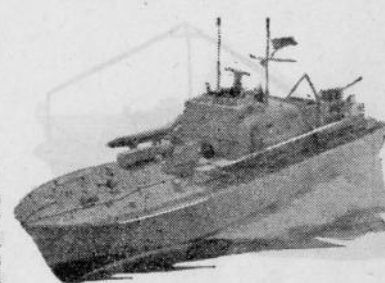


### PIRANA

By Vic Smeed

A 28 in. express cruiser for medium/large electric motors or up to 5 c.c. Advanced hull form with convex sections for very fast R/C performance, simplified hull also detailed for easier construction. 10 in. beam, roomy for radio, one-piece superstructure.

MM/620 \*\* 7/6



### BRAVE BORDERER

A 36 in. (¾ in.—1 ft.) model of Vosper's fastest patrol boat, for diesel or electric power. A single rudder and screw arrangement is shown on the plan together with a triple arrangement for those who prefer absolute authenticity.

MM/609 \*\*\* 10/-

### ANN M

Largest merchant ship model in Plans Service, this modern motor coaster has a particularly clean deck and is a most practical prototype for a working model. Length 57½ in.

MM/708 \*\*\* 15/-



### M.Y. PATRICIA

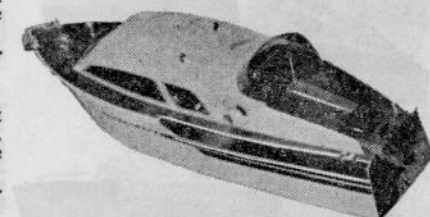
An attractive model of all balsa construction, gives an excellent performance with any medium sized electric motor. Suitable for R/C. L.O.A. 21 in. Beam 4 in.

MM/618 \* 4/-

### CARVELLE MINOR

A 14 in. modern-style outboard speedboat for use with electric outboard motors. Balsa construction, attractive appearance and performance.

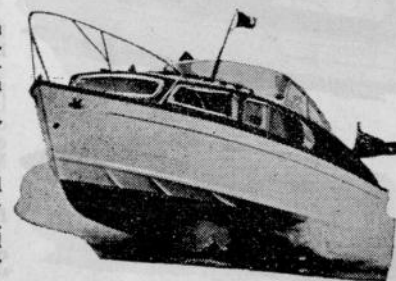
MM/703 \* 4/-



### SWEET SIXTEEN

Smart little cabin cruiser, 16 in. in length and 5½ in. beam, capable of accommodating simple transistorised R/C. All-balsa construction, small to medium electric motors.

MM/713 \*\* 4/-



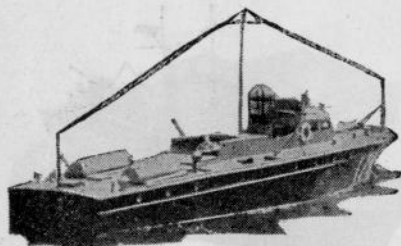
### FAIREY HUNTSMAN

By Vic Smeed

A 1½ in.—1 ft. model of one of the best-known fast sea-going small cruisers, 42 in. in length for up to 15 c.c. engines. Hull form is steeply V'd monohedron. Ply construction.

MM/680 \*\*\* 12/6





### H.M.S. BITTERN

A 1/20 in. scale warship using gum paper strip construction for the hull and a balsa or obechi superstructure. Powered by any small electric motor, costs little more than 10/- to build including motor. Length 14½ in.

MM/587

\* \* 3/6



### THORNYCROFT A.S.R.L.

31½ in., half-inch to the foot. Revolving gun-turret. Cabin, control room and twin dinghies installed. Suitable for any form of power.

MM/104

\* \* 10/-

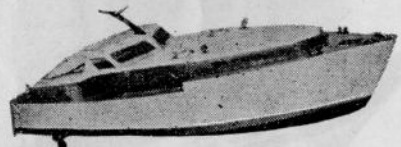


### R.M.S. EMPRESS OF BRITAIN

An authentic 1/200 scale model of the Canadian Pacific liner which made its maiden voyage in 1956. B. and b. hull, 38½ in. l.o.a., for builders with a little previous experience.

MM/445

\* \* 8/6

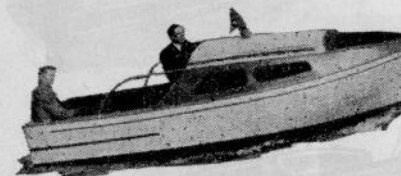


### ADMIRAL'S BARGE

L.O.A. 33½ in. Beam 9½ in. A scale Naval Pinnace built specially for radio-control for 2-2½ c.c.

MM/242

\* \* \* 10/-

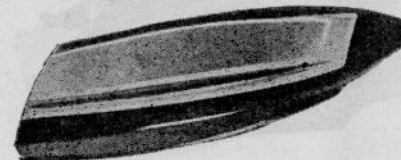


### TINTAGEL

Simply-built lightweight motor yacht, 24 in. in length, for electric power or up to 2 c.c. engines. Either balsa or ply construction, depending on power.

MM/556

\* \* 6/-



### PARKER BELL FOURTEEN SIX

A large-scale model, 2 in.-1 ft., of a popular runabout launch. With a 12 in. beam and 28 in. length and very roomy cabin, this model is ideal for R/C with electric or 1.5 c.c. drive.

MM/326

\* \* 7/6

### FLATSO

By Philip Connolly  
An efficient 30 watt "flattie" of functional appearance. Construction is straightforward using a single-piece ply bottom.

MM/795

\* \* 4/6

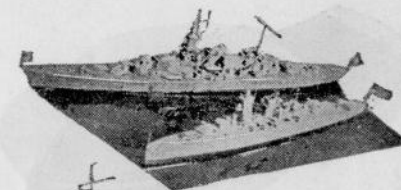


### BOSTON ARROW

Modern trawler model 36½ in. length, 5/16 in.-1 ft. scale. Bread-and-butter construction, accurate detail. Outlines and body plan only, for experienced modellers.

MM/666

\* \* \* 8/6



### SCHARNHORST

A simple 30 in. all-balsa model of the famous German battle-cruiser. Powered by Kako 4 or similar electric motor. Suitable for radio control.

MM/572

\* \* 6/-

### ADMIRAL GRAF SPEE

A 24 in. model of the notorious German pocket battleship with a beam of 2½ in. All balsa construction. Simple construction for rubber or electric drive. Same scale, shown with 'Scharnhorst'.

MM/613

\* \* 4/6

### CERVIA

By Vic Smeed  
A well-known Thames tug in ½ in. scale, giving 28 in. hull with 6½ in. beam. For electric or steam drive, excellent for R/C. With instruction book. Not for beginners.

MM/567

\* \* \* 8/6



### THEODOR HEUSS

An unusual 1/25th scale German rescue boat with round bilge hull and after flooding well carrying a smaller power boat. Parent length 36½ in. For electric propulsion. A fascinating R/C project.

MM/568

\* \* \* 15/-

### VOSPER PL4

By Vic Smeed  
An attractive scale model of sleek lines suitable for 3½ c.c. or over. Ply and hardwood construction. Length 46 in., beam 9½ in.

MM/560

\* \* 11/6

### TELECTRA

Semi-scale 30 in. police or customs launch of remarkable strength and high performance. Adequate room for R/C. All balsa construction, up to 3.5 c.c. diesels.

MM/417

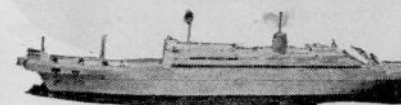
\* \* 7/6

### CABLE-SHIP MERCURY

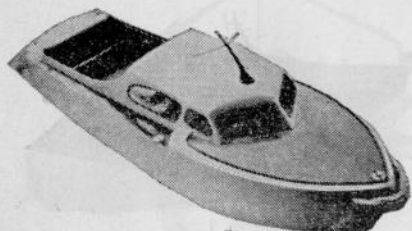
An attractive 35 in. scale model cable-layer for one or two small electric motors. Balsa "bread and butter" construction.

MM/782

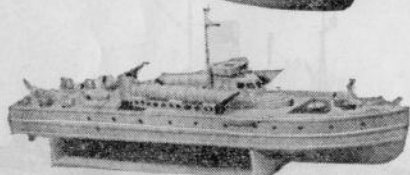
\* \* 5/-



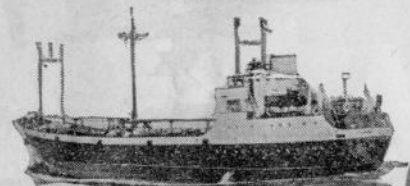




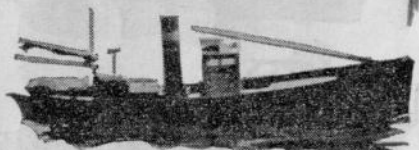
**SPERANZA** By Vic Smeed  
Scale model 1 in. to 1 ft. of a fast small motor yacht. Length 38½ in., beam 12½ in. A most attractive model for diagonal plank construction, engines of 2½ to 10 c.c.  
MM/550 \* \* \* 10/-



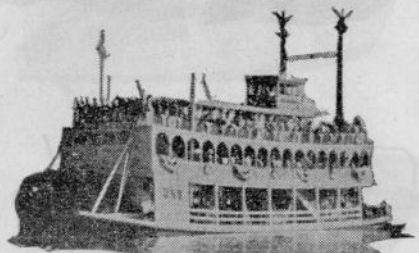
**COLUMBINE**  
A simple 26½ in. cabin launch for up to 1½ c.c. diesels or electric drive, employing mostly balsa construction, but with some ply parts.  
MM/520 \* \* 6/-



**THORNYCROFT M.T.B.** By Vic Smeed  
An extremely popular model, this ½ in.-1 ft. (36½ in.) scale M.T.B. is absolutely authentic and fully detailed. For electric or 1-3.5 c.c. motors; R/C can easily be fitted. Ideal for exhibitions or regattas.  
MM/337 \* \* 9/-



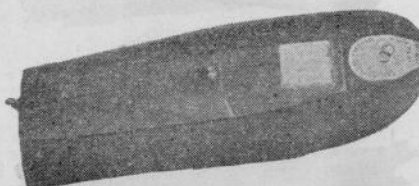
**M.V. PATEKE**  
Scale shelter-deck type cargo vessel for more experienced builders. Length 50 in., beam 7 in. (½ in. scale). Hull lines, etc., and superstructure outlines on one sheet.  
MM/424 \* \* \* 8/6



**BILL BAILEY — FREE LANCE TRAWLER**  
L.O.A. 27 in. Beam 6 in. Attractive scale type model electric powered and intended for radio control or free sailing. Simple construction.  
MM/252 \* \* \* 5/6

**ST. LOUIS BELLE** By Vic Smeed  
By popular request, a 33 in. scale model of a Mississippi stern-wheeler, though not based on any particular prototype. Suitable for a working or static model; for builders of some experience.  
MM/826 \* \* \* 10/-

**ANDREA II**  
A highly successful lightweight R/C 30 watt electric boat of Yugoslavian design. Construction is of ply and balsa and the overall length is 20 ins.  
MM/816 \* \* 4/6



**SILVER MIST** By Vic Smeed  
A 21 in. round bilge motor vessel of most attractive shape for electric propulsion, and suitable for miniature radio. Balsa planked hull with ply decks, etc.  
MM/524 \* \* 3/6



**FAIRMILE TYPE "C" M.L.** By Vic Smeed  
A ½ in.-1 ft. scale model of a wartime "little ship", length 55 in., beam 8½ in. Good performance with 2½-3½ c.c. engines or a combination of two or three electric motors. Plan includes simplified method of construction and a true scale body plan for those who require complete authenticity.  
MM/585 (Not illustrated) \* \* \* 12/6

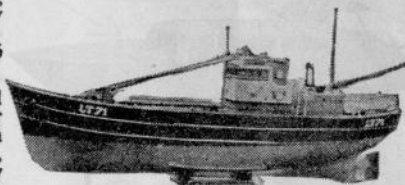
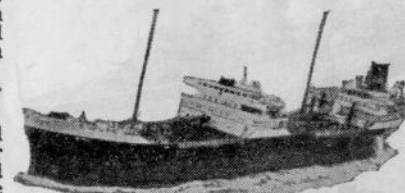
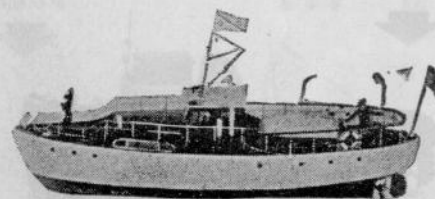
**WATER BUG** By Vic Smeed  
The smallest boat in our range, this 13 in. model is an excellent performer with an Ever Ready TG18 or similar small motor. Very simple, all-balsa construction and neat appearance.  
MM/357 \* Now 2/-

**S.T.S. DILYSIA** By Vic Smeed  
37 in. model of modern 18,000-ton tanker to 1/150 scale. Bread-and-butter bow and stern with planked midships; for electric power.  
MM/470 \* \* 6/-

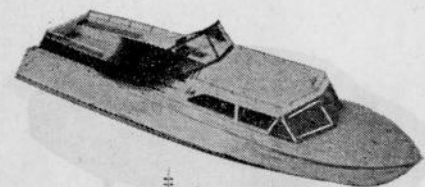
**BARDIC FERRY** By Vic Smeed  
A 42½ in. (½ in.-1 ft.) model of a North Sea vehicle ferry launched in 1957. Attractive lines, plenty of detail work. Bread-and-butter hull base, composite topsides, straightforward for those with previous experience. Electric propulsion.  
MM/636 \* \* \* 12/6

**LOWESTOFT DRIFTER-TRAWLER**  
30 in. L.O.A. scale model of this attractive double-purpose craft for those who desire authentic finish to their working models. For electric motor and battery propulsion.  
MM/282 \* \* \* 7/6

**VOSPER R.T.T.L.** By Vic Smeed  
½ in. scale model of the 68 ft. Vosper Rescue and Target Towing Launch, length 34 in., beam 9½ in., for 1½ to 3½ c.c. diesels, or electric drive. Suitable for radio. Ply construction, authentic full-size detail.  
MM/530 \* \* 10/-





**SIROCCO**

Handsome 39 in. cabin cruiser for 2½–8 c.c. engines or large electric motors. Straightforward ply construction, modern styling. Excellent for radio control. MM/704 \* \* 7/6



**H.M.S. DIAMOND** By Philip Connolly  
This attractive warship model fills the need for a scale, working model of this type capable of carrying the extra weight of multi-channel radio control gear. Length of Diamond is 49 ins. and power is electric. A straightforward model but not one for the beginner. Two large sheets of plans, completely detailed. MM/763 \* \* \* 15/-

**M.V. STEYNING**

A delightful 23 in. near scale model collier of balsa and ply construction. A fairly simple model although some previous experience is necessary. For electric power only. MM/601 \* \* \* 5/6

**SLALOME** By Vic Smeed

A 30 ins. freelance missile launcher with an intriguing new slant on construction and a hull form ideal for steering events. Quite straightforward to build, the model takes motors from 1½–3½ c.c. MM/718 \* 7/6

**MOONMIST**

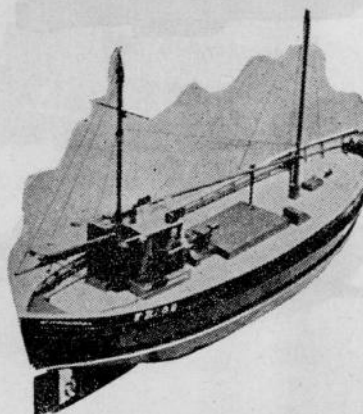
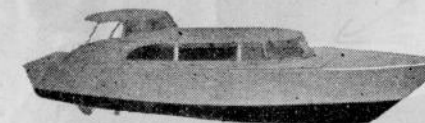
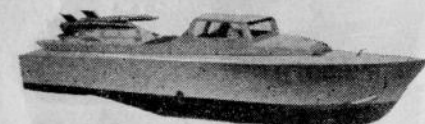
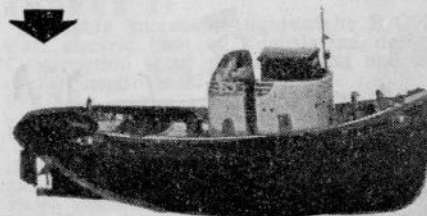
By Vic Smeed  
An extremely attractive, 21 in. cruiser which can be built from only four sheets of balsa. An ideal beginners' model; plan includes sketches of construction and all full-size parts separately drawn. Can be built for less than 15/- complete. Suitable for small and medium sized electric motors, will take miniature R/C. MM/610 \* 3/6

**M. F. V. EILEEN**

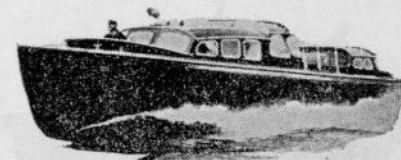
By S. Jewitt  
A fine 28 ins. model of a motor fishing "keelboat" vessel. Plan includes detailed building instructions and elaborate deck detail drawings. Not originally built as a working model, Eileen can, however, be powered by medium sized electric motors. MM/737 \* \* 8/6

**RIVER TUG**

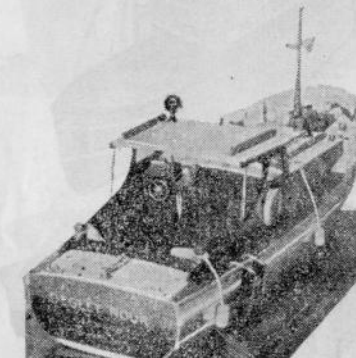
A 12½ in. scale model Dutch river tug, beam 3½ in., for any small electric motor. Simple planked construction in balsa. MM/451 \* \* 2/6

**VOSPER ROYAL BARGE**

By Vic Smeed  
30 in. (¾ in. to 1 ft.) model of the barge carried on "Britannia" and used on many Royal occasions. A superb, colourful model, authentic and fully detailed, for the craftsman. Electric or 1 c.c. drive, with or without radio MM/356 \* \* \* 9/-

**DEGLET NOUR**

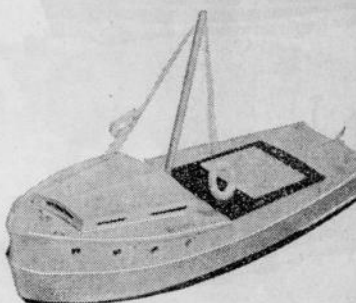
One-tenth scale replica of full-size Cabin Cruiser prepared from designer's drawings and the actual full-size craft. Length O.A. 36 in. Suitable for radio control with either i.c. or electric power. On four sheets, including alternative "economy" building method. MM/231 \* \* \* 15/-

**BRITISH POWER BOAT A.S.R.L.**

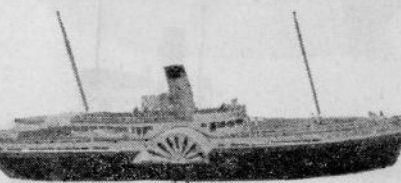
31½ in., half-inch to the foot version of the popular A.S.R.L. Rakish pleasing lines, clear swept decks. One of the best for radio-control installation owing to absence of "bitty" detail. For any form of power. MM/102 \* \* 10/-

**MISTRAL**

By Vic Smeed  
All-balsa electric semi-scale model of a typical 30–36 ft. day cruiser, with forward cabin and open well. Total cost of materials approximately 5/-, excluding motor and shaft. Length 18 in., any 4½–9 v. motor. MM/348 \* 3/6

**P.S. ROYAL FALCON**

By Vic Smeed  
A simplified 24 in. model based on the famous Thames estuary pleasure boats, employing paddles belt-driven from a small electric motor. Very easy and inexpensive construction. MM/381 \* \* 4/-

**LIVERPOOL TYPE LIFEBOAT**

By Vic Smeed  
A ¾–1 ft. model of a well-known type of lifeboat in current use. A model for experienced builders. 26½ in. L.O.A. for electric power. MM/374 \* \* \* 6/-



**BLAZER**

Large tug model for steam or electric capable of taking heavy radio gear. Total displacement 23 lb., length 42½ in., bread-and-butter construction; for builders with a little experience.

MM/487

\*\*\* 10/-

**CYGNET**

Electric-powered model of steam yacht. 29½ in. length using planked construction with ½ in obechi frames and 1/16 in obechi planking.

MM/478

\*\* 5/6

**H.M.S. WOLVERTON**

A remarkably fine fully detailed free-lance cruiser, 5 feet length overall. Designed for electric power, and with full radio-control circuits and diagrams for operation of steering gear, complete with deck fittings, funnels, superstructure, guns, etc. On two sheets, size 78 x 35 in. and 76 x 35 in.

MM/286

\*\*\* 15/-

**PATHFINDER**

By Vic Smeed

Authentic ½ in. scale (45 in.) model of Trinity House pilot tender of simple construction. Two sheet plans include all details. For electric or steam drive with or without radio.

MM/393

\*\* 15/-

**MAGGADAN**

By Vic Smeed

A ½ in. to the foot (30½ in.) scale model of a famous prototype used for polar transport, etc., a model incorporating much detail, just large enough for R/C if desired. Electric motors only.

MM/456

\*\*\* 8/6

**BUSTLER**

By Vic Smeed

An 18 in. model of a harbour tug, very close to scale but extremely simple and inexpensive to build. All-balsa construction, any 3-6 v. electric motor. Full detailed plan, with colour scheme, etc. A most popular model.

MM/363

\* 3/6

**TYPE IX U-BOAT**

A scale U-boat for twin electric motors or equivalent, with or without radio control. L.O.A. 45 in.; balsa or obechi bread-and-butter construction.

MM/471

\*\* 8/6

**OLAN**

By Arthur O. Pollard Jr.

Thames waterman's launch, ½ in. scale. 21 in. length, featuring double chine hull (may be simplified to single chine as indicated on plan). Suitable for smaller diesels (up to 1 c.c.) or electric power.

MM/662

\*\*\* 5/-

**MIS'DEEDS**

By Vic Smeed

Thames holiday cruiser to ½ in. scale, 12½ ins. length. Includes notes on clinker building or flush planking. Any small electric motor; has even been built as a cigarette box!

MM/483

3/6

**LORELEI**

By Vic Smeed

Simple cabin cruiser for 1-3.5 c.c. diesels or electric propulsion by ace model aircraft designer, L.O.A. 34 in. Beam 7½ in. Of obechi and ply construction, suitable for novices.

MM/267

\* 7/6

**VOSPER A.S.R.L.**

35 in., half-inch to the foot version of the 72 ft. prototype. Of light construction, may be used with rubber drive, giving a speed of about 4 knots. Fully detailed decking.

MM/101

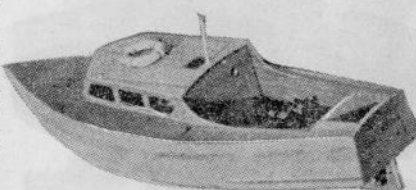
\*\* 10/-

**TORNADO**

Attractive little semi-scale patrol launch, 15 in. in length, for Tornado or other small motor. Balsa construction, cheap to build and operate.

MM/422

\*\* 3/6

**LORETTE**

By Vic Smeed

Roomy semi-scale two-berth cruiser, 34 in. L.O.A., suitable for R/C and electric, steam, or 1-3.5 diesel drive. Simplified lines for easy building, well within the scope of a beginner.

MM/370

\* 7/6

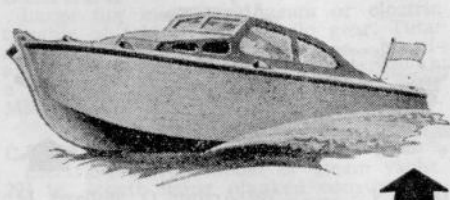
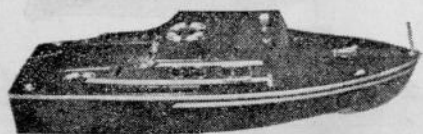
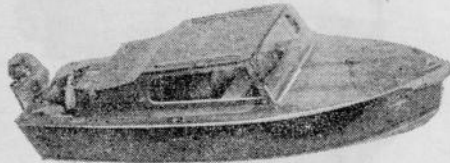
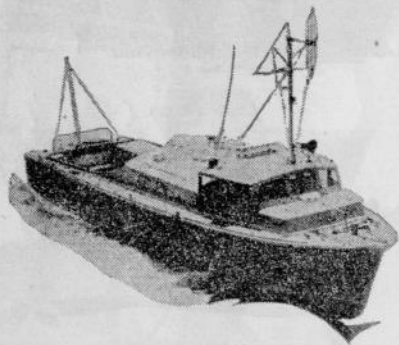
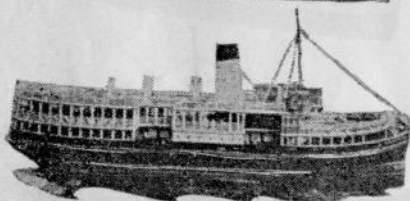
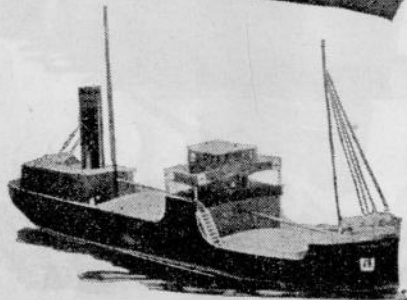
**H.M.S. KING GEORGE V**

This 37 in. model (1/20 in.) battleship makes an extremely interesting project for the slightly more advanced modeller. Powered by any medium sized electric motor. Suitable for R/C.

MM/590

\*\* 7/6





### ELEKTRA

A 21 in. O.A. length Cabin Cruiser of ply construction, using a Bassett-Lowke electric motor, and run off batteries. Simple to build but "big" looks. Could also be powered by 1 c.c. or smaller diesel.

MM/269

\* \* 4/-

### GRAF ZEPPELIN

34½ in. near-scale model of Germany's only aircraft carrier. Scale is 25 ft.—1 in. and hull is slightly simplified in shape without affecting appearance afloat. Balsa construction, electric power.

MM/676

\* \* 5/6

**S.S. PAINTED LADY** By Vic Smeed  
Intriguing 36 in. raised quarter-deck coaster built of gummed paper strip over a simple balsa frame. For electric drive and up to 6 lb. of radio gear. Can be built conventionally if preferred.

MM/442

\* \* 8/6

### ROYAL DAFFODIL

One of the best-known Mersey ferries, now named St. Hilary, at 1/72 scale, 26 in. l.o.a. A model for the detail lover; outlines and body plan only.

MM/664

\* \* \* \* 6/-

### RANGE SAFETY LAUNCH

1 in.—1 ft. scale model of latest Thornycroft R.A.F. launch, length 43 in., beam 12½ in. Suitable for 2.5 c.c. diesels upwards, excellent for radio control. Completely detailed on two large sheets.

MM/412

\* \* 12/6

### FLYING FISH

20 in. runabout, designed primarily for out-board motors, but suitable for small inboard diesels. Cabin and open cockpit versions shown, plus all installation details.

MM/412

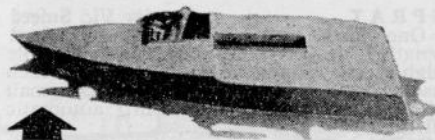
5/-

### SEA FALCON

All-balsa 18 in. cabin cruiser using all-commercial fittings etc. and any of a wide range of electric motors. Suitable for miniaturised radio.

MM/632

\* \* 4/-



### STEPLESS HYDROPLANE

24 in. hull length. A freelance design based on the type of hydroplane popular in the Lake District. It is of easy construction, having no step, and broad in beam. For Mills 1.3 c.c. or similar engine.

MM/150

\* \* 7/6

### U.S.S. NEWPORT NEWS

64 in. model of an American heavy cruiser. The original was of all metal construction, but can equally well be built in wood; for steam or electric drive with or without R/C.

MM/382

\* \* \* \* 13/6

### NYMPH

Clever automatic steering launch, simple all-ply construction, 27 in. L.O.A. For .75-2.5 engine or electric drive, with steering mechanism details.

MM/362

\* \* \* 5/-

### CULLAMIX—½ in. SCALE TUG

By Bernard Reeve, M.S.N.R.  
L.O.A. 39½ in. Beam 10 in. Depth 9½ in. A superb model based on one of the Cement Tug fleet and authentic in every detail. Suitable for radio-control and steam, or larger i.c. engines, etc. Built on "bread-and-butter" principle.

MM/256

\* \* \* 15/-

### M.V. ARRAN

By Vic Smeed  
31 in. electric powered model of British Railways Clyde ferry in 4 mm. scale, i.e., can be built for 00 layouts. Balsa/ply construction, authentic detail.

MM/415

\* \* \* 5/6

### AUDREY VII

Simple all balsa cabin cruiser, 14 in. in length, for any miniature electric motor.

MM/423

\* \* 3/6

### CHIQUITA

24 in. hull length. Smart looking hard chine cabin cruiser, suitable for a beginner to tackle. No complications. Suitable for operation by electric motor, petrol or diesel engine.

MM/156

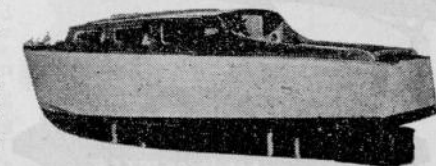
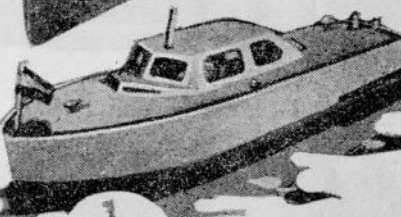
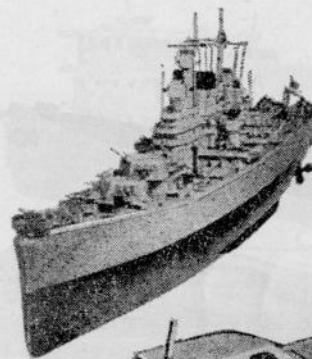
\* \* 6/-

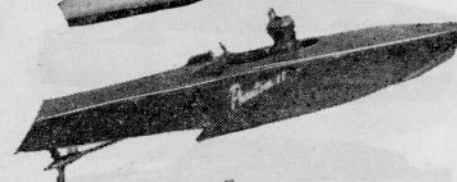
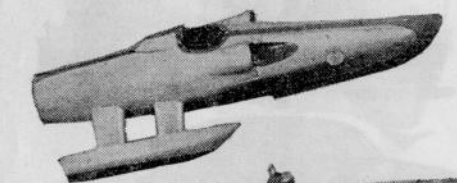
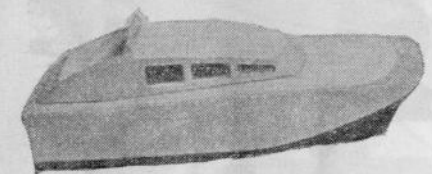
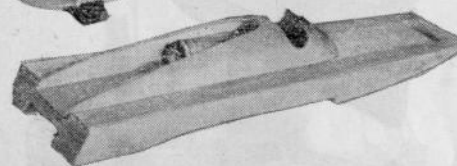
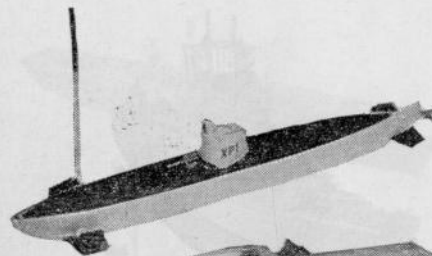
### RACING HYDROPLANE

By J. Benson  
Modern high-speed craft based on designer's famous 30 c.c. boat 'Orthon' (illustrated). For 5 c.c. or 10 c.c. engines, tethered operation only.

MM/440

\* \* \* 4/-



**SPRAT**

By Vic Smeed  
One sheet of  $\frac{1}{4}$  in. balsa and a short length of 1 in. square builds this simple high-speed miniature submarine, which uses a Mabuchi/Orbit 205 or similar small electric motor. Length 15 in., automatic diving.  
MM/624 \* 3/-

**PIP**

By A. F. Palmer  
Simple all-balsa hydroplane for 100, 200, or Jetmaster. Tunnelled hull to reduce step suction, etc. Very fast and easy to build.  
MM/316 \* 2/6

**BUOY CAT**

By Fred Body  
A very successful catamaran design by a well-known R/C speed and steering enthusiast. Model is of pleasing lines and gives very good turn of speed when powered by a 5 c.c. motor. Length 25 $\frac{1}{2}$  ins., beam 10  $\frac{1}{2}$  ins., simple construction.  
MM/728 \* \* 6/-

**MUSTAVAGO**

By Ross Baker  
This slick looking model is straightforward to build and is reasonably conventional in construction. Power is 1 $\frac{1}{2}$  c.c.—5 c.c. motors and Taplin Baker Hydrojet and performance has been described as "very thrilling". Length 24 ins. Also suits conventional 1 $\frac{1}{2}$ –2 $\frac{1}{2}$  c.c. drive.  
MM/760 \* \* \* 6/-

**CRUSADER**

Scale model of John Cobb's ill-fated contender for world speed records, for Jetmaster 150. Simple all balsa construction.  
MM/426 \* \* 3/-

**PHANTOM II**

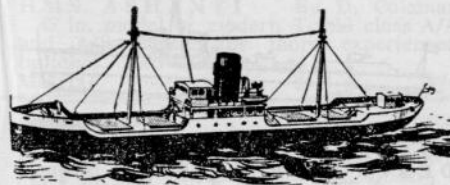
Overall length 21 $\frac{1}{2}$  in.; Beam 7 $\frac{1}{2}$  in. A delightful miniature racing hydroplane for 5 c.c. engines. Designed by Norwegian expert, who enjoyed wide contest success.  
MM/183 \* \* 7/6

**HIAWATHA**

36 in. hydroplane for radio-control, employing two 2 c.c. motors synchronised and driving twin screws. Simple ply and balsa construction. On one sheet. Single engine can be used.  
MM/289 \* \* \* 6/6

**H.M.S. JERSEY**

A 1/20 in. scale model warship, using gum paper strip construction for the hull and balsa or obechi for the superstructure. Any small electric motor; can be built for little more than 10/- including motor. L.O.A. 17 $\frac{1}{2}$  in.  
MM/586 \* \* 3/6

**HOBBO**

By Vic Smeed  
A simple 24 in. model of a typical small tramp steamer built either in balsa laminations or on the gummed paper system. An attractive little model suitable for beginners. Any small electric motor.  
MM/465 \* 3/6

**CONAKRY**

Unusual 21 in. all balsa model of a push-tug used on the African coast. Plan includes step by step assembly sketches for this quite out-of-the-rut design.  
MM/651 \* \* 5/-

**M. S. SCOTTISH COAST**

28 ins. semi-scale model of a cross-channel ferry featuring "bread-and-butter" construction. Suitable for radio control, the prototype uses a Mighty Midget for propulsion and R.E.P. radio gear. A pleasing performer.  
MM/732 \* \* \* 5/-

**H.M.S. DEVONSHIRE**

Simple construction and a wealth of added deck detail makes this 32 $\frac{1}{2}$  ins. model of a modern guided missile ship ideal for beginners and experts alike. Features flush plank'd hull from balsa twin screws, etc.  
MM/720 \* \* 6/6

**AYUTHIA**

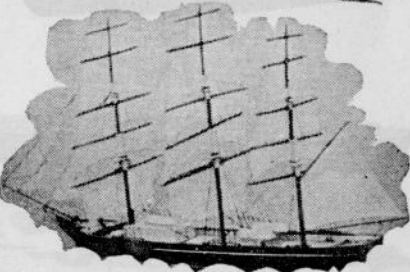
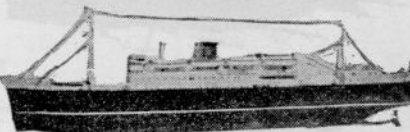
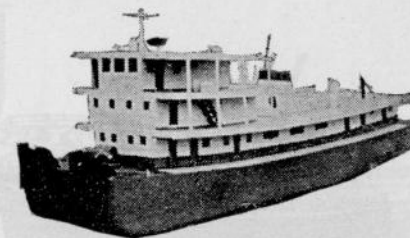
Scale model of the Siamese Navy's Pocket Heavy Cruiser, this attractive warship is well within the scope of the "not so experienced" modeller. Model measures 19 $\frac{1}{2}$  ins. and plan is exceptionally well detailed.  
MM/714 \* \* 6/6

**CYNETTE**

By S. Jewitt  
An elegant 35 ins. motor yacht based on the 52 ft. 6 ins. Fleur-de-Lys class boat built by Dagless Ltd. Plan includes complete superstructure detail and step-by-step diagrams. Suitable for R/C. Suitable power: 1 $\frac{1}{2}$ –2 $\frac{1}{2}$  c.c. diesel or electric.  
MM/762 \* \* \* 10/-

**ARIEL**

By F. W. Boyd  
A fine scale sailing model of one of the most famous of the China Tea Clippers, 55 ins. l-o-a, 46 ins. hull length. Plan consists of two sheets and includes lines, deck and rigging details, etc. Definitely not a beginners' project but an interesting exercise in sail for the experienced man.  
MM/746 \* \* \* 15/-







**"JAVELIN" CLASS DESTROYER** By Edward Bowness  
Length 70 in., beam 8 in., draught 3 in., masthead 19 in. above waterline. Two sheets.  
PB/13 \* \* \* 10/-



**CHRIS-CRAFT COMMANDER**  
24 in. scale model of an attractive cabin cruiser, for electric or up to .75 diesel power. Easy construction using balsa and ply.  
MM/318 \* 4/-

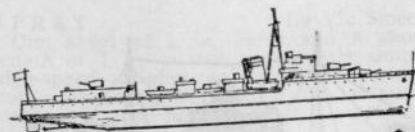
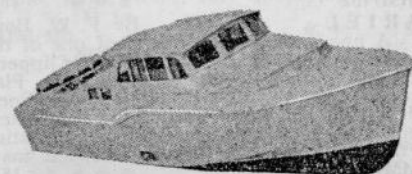
**DARK CLASS MTB**  
A detailed model of a fast post-war ML, suitable for 1½-2½ c.c. motors. Detail drawn in outline only—suitable only for experienced modellers. Length 31 in.  
MM/564 \* \* \* 7/6

**WALTON THAMES A.S.R.L.**  
32½ in., half-inch to the foot model of 65 ft. Walton Thames A.S.R.L. Spacious cabin accommodation. For diesels of up to 5 c.c. or other motive power.  
MM/103 \* \* 10/-

**SIRIUS STAR** By Max Coote  
Based on a full-size prototype but given a hard-chine hull, this 41½ in. boat is for 3.5-15 c.c. motors, with speed control details, etc.  
MM/332 \* \* \* 11/-

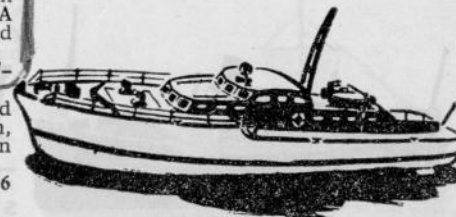
**NAUTILUS**  
A novel rubber-powered submarine with automatic diving gear. Overall length 28 in. Simple construction and very detailed drawing.  
MM/285 \* \* 6/6

**VIVACITY** By Vic Smeed  
Largest power boat in plans range, 54 in. length and 17 in. beam, suitable for up to 35 c.c. engines or very large electric motors. A nice-handling model for R/C steering competitions etc. Straightforward construction.  
MM/652 \* \* 12/6



Not illustrated  
**H.M.S. ASHANTI** By D. Coleman  
45 in. model of modern Tribal class A/A and A/S frigate for more experienced builders. Two sheets.  
MM/797 \* \* \* 10/-

**ANTARES** By Vic Smeed  
Portuguese patrol boat, 28 in. in length, for up to 2½ cc. or electric, using all sawn parts in ply. Attractive modern lines.  
MM/822 \* \* 6/6



**LORRAINE** By Vic Smeed  
A really elegant 54 in. motor yacht with 12 in. beam, suitable for electric or large i/c propulsion, and excellent for radio. Ingenious construction giving choice of methods and either hard chine or rounded hull, fully explained on plan.  
MM/512 \* \* 12/6

**VELETA** By Vic Smeed  
Simple 24 in. all-balsa motor yacht suitable for radio control. Builds into an extremely attractive model. Novel construction with sheet sides and laminated bottom to give round bilge hull. For medium-size electric motors.  
MM/575 \* 4/-

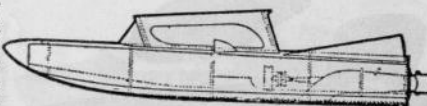
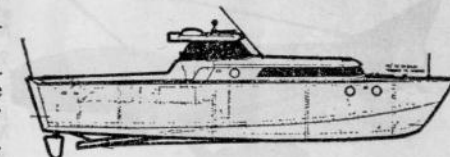
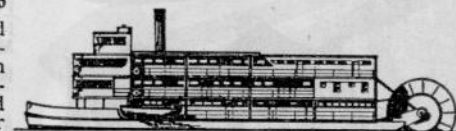
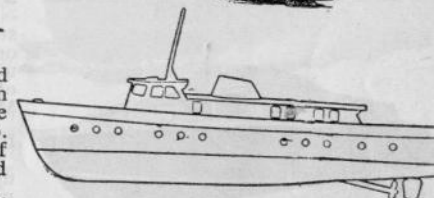
**CLEOPATRA**  
An unusual semi-scale stern-wheel paddler, as used on the Nile or in the Yukon, for electric drive. Simple, all-balsa construction, belt-drive paddle. A good performer, but restricted to calm weather. L.O.A. 27 in., Beam 7 in.  
MM/319 \* \* 5/-

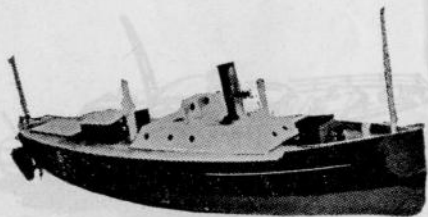
**RUNABOUT**  
18 in. sporty speedboat based on a Chris-Craft design. Ideal for towing small-scale water-skiers. Just large enough for miniature R/C. Ply construction.  
MM/480 \* \* 4/-

**EGRET** By Philip Connolly  
This attractive, modern cruiser is a model of an Italian prototype. Length is 22½ ins. and the model features one piece removable superstructure and deck well. Construction follows conventional practice and power is electric or small diesel. Suitable for small R/C.  
MM/744 \* \* 5/-

**SPURTSTER** By Vic Smeed  
Unusual 27 in. model designed round the Taplin Baker Hydrojet unit with 1½-5 c.c. engines. Simple all-ply construction, excellent performance with this novel form of propulsion.  
MM/695 \* \* 6/-

**TUNA**  
34 in. freelance patrol boat designed originally for glassfibre hull, but with full hull details for wooden hull shown on plan. For 1-3.5 c.c. engines, excellent for radio control.  
MM/505 \* \* 8/6



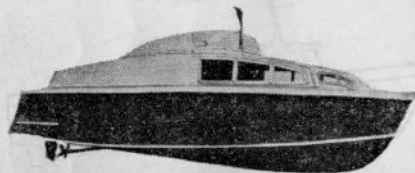


### STEAM PINNACE

Naval pinnace, 24 in. length, for small steam units or electric propulsion. Carved or bread and butter hull construction. An unusual model of an almost defunct type of boat.

MM/699

\*\*\* 5/-



### FURY

An attractive model, basically a scaled-up 'Scudabout' which gives an extremely nippy performance on 1½ c.c. engines. Length is 29 in., construction straightforward, excellent for radio.

MM/646

\*\* 6/6

### R 2 WHALECATCHER

By R. A. Sweet  
Although highly detailed, this extremely attractive model is of a very simple and rugged construction. Prototype power was supplied by a Kako Super Q 2 electric motor. Length 24 ins., beam 3½ ins.

MM/781

\*\* 7/6

### SEA FOAL

Baby hydroplane for up to 1.5 c.c. motors, capable of very high speeds. Sponson type design, all ply construction strictly for tethered running only.

MM/339

\*\* 3/-

### 2½ c.c. HYDROPLANE

Three-point suspension and ultra-simple construction are features of this fast R.T.P. model.

MM/301

\*\* 3/-

### ALTEREGO

By Vic Smeed  
Scale model of the 4½ world speed record holder, for up to 1.5 c.c. engines on tether, or suitable for free running with smaller motors. Simple ply/balsa construction.

MM/377

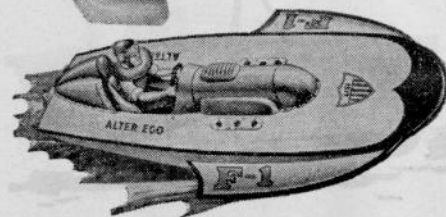
\*\* 3/6

### QUERIDA

By Vic Smeed  
A fast 40 in. competition model for 2½-15 c.c. motors. Simple but handsome lines, one-piece detachable superstructure.

MM/640

\*\* 8/6



### H.M.S. HOOD

The famous battle-cruiser to a scale of 1/16 in.—1 ft., giving a length of 54 in. and a displacement of 14½ lbs. Bread-and-butter hull construction, ply etc. superstructure. For electric power.

MM/672

\*\* 10/-

### E. BOAT

By Vic Smeed  
Scale 1/8 in.—1 ft., length 35 in. beam 5½ in., this model is of a German S-boat as used in W.W.II. Round bilge hull, simple construction, balsa can be used. For electric propulsion or up to 1½ c.c.

MM/667

\*\* 8/6

### CHIRPY

Electric outboard model, 18 in. in length, all balsa construction, designed for radio control with commercial German actuator. Very simple structure, can be free run.

MM/626

\* 4/6

### ADRIAN M

By Arthur O. Pollard Jr.  
Modern coastal motor tanker 1/4 in. scale. length 27 ins., beam 4 in. Hull shown as lines drawing, superstructure and deck detail in outline. For electric power.

MM/682

\*\*\* 6/6

### H.M.S. RODNEY

A 35½ in. (1/20 in.—1 ft.) model of effective lines suitable for R/C. Although balsa and ply construction makes this model comparatively simple, some previous experience is desirable. Powered by any medium sized electric motors.

MM/603

\*\* 7/6

### FAIRACRE II

By Philip Connolly  
Thames luxury cabin cruiser, 30 in. in length ply or balsa construction, for 1-1½ c.c. diesel or electric drive. Light construction, suitable for R/C. Hull shape is similar to Vosper Royal Barge.

MM/709

\*\* 6/-

### SMACK/YACHT "KINGFISHER"

By L. S. Humphries  
A pleasing sailing model of the designer's own boat. Plan for this 24 ins. o.a. model is well detailed and includes full constructional diagrams.

MM/751

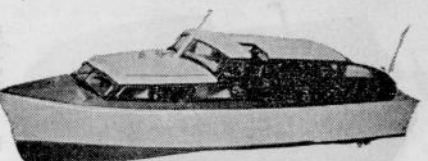
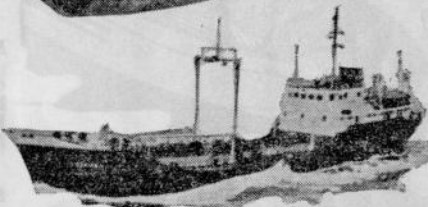
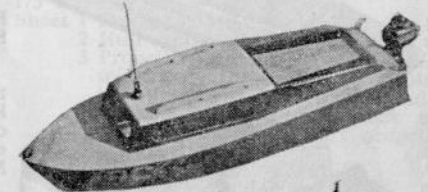
\*\* 6/-

### BISMARCK

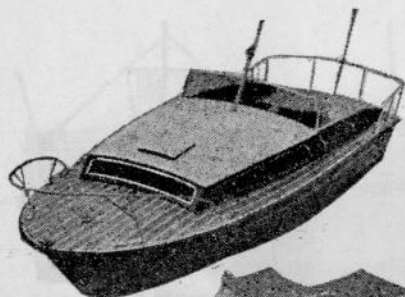
Model of one of Germany's most famous warships, 55½ ins. in length (1/175 scale) drawn in outline only (with hull cross-sections) and suited only to builders of experience.

MM/644

\*\*\*\* 7/6





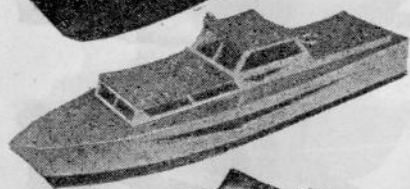


### H.M.S. GRENVILLE

Anti-submarine Frigate

By Norman M. Peters  
Length 45 in., beam 4½ in., depth 3 in.  
Scale ¼ in.-1 ft. Hull lines, side and plan  
elevation, and superstructure details are  
given. Two sheets.

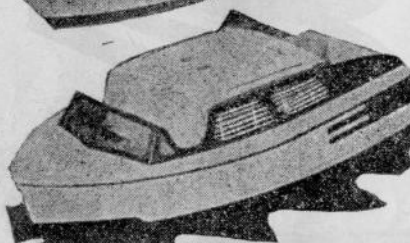
PB/23 \* \* \* 10/6



### FAIREY MARINE SWORDSMAN

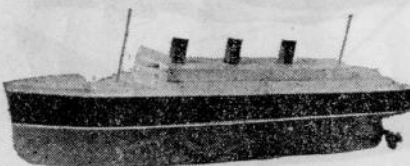
By Philip Connolly  
A 33 in. model of an elegant and up-to-the-minute prototype. For either electric or R.C. propulsion, this model performs well on motors up to 10 c.c. and makes an excellent R.C. project.

MM/791 \* \* \* 8/6



By Vic Smeed  
The ideal beginner's boat, MOONGLOW can be built in a couple of evenings. Power by electric or 1½ to 3½ c.c. diesel or glow. R/C can be fitted.

MM/800 \* 6/-



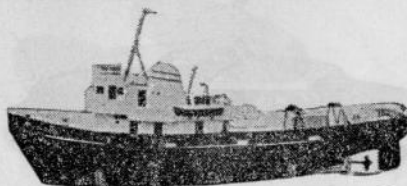
By Philip Connolly  
An attractive semi-scale cabin cruiser with forward cockpit designed for 2½ c.c. and radio. Simple construction with one-piece ply bottom.

MM/784 \* 5/-

### QUEEN MARY

By C. R. and M. Moore  
Semi-scale model, 22½ in. L.O.A. employing rubber drive. Normal cruise 200 yds. in 3½ mins. Simple construction and fun to operate.

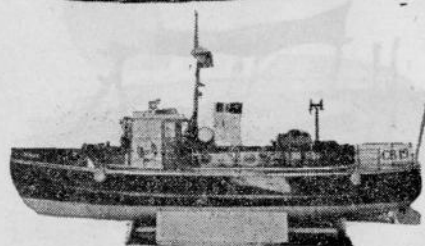
MM/317 \* \* 3/6



### IKWERRE

A 30 in. 9 lb. model of a Thornycroft tug built for service in Nigeria. Construction is of balsa on the "bread and butter" principle. For electric propulsion. Suitable for R/C.

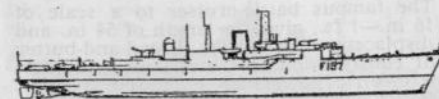
MM/802 \* \* 7/6



### BADGER

A big 47 in. Customs launch model for R/C or free running. Original was powered by a Taplin Twin and the hull was built in obechi on the "bread and butter" system.

MM/796 \* \* \* 10/6



Not illustrated

### SCUDABOUT

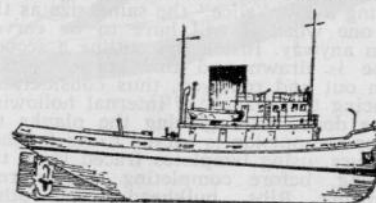
By Vic Smeed  
A really nifty miniature fast cabin cruiser, only 16½ in. in length, for up to .8 c.c. diesel power or electric motors. Ply construction, room for radio control.

MM/535 3/6

### LORENA

By Vic Smeed  
A 42 in. small motor yacht for either hard chine or round bilge construction offering six or seven methods of building, all explained on plan. For electric or up to 10 c.c. engines.

MM/526 10/-



By Oliver Smith  
Overall length 28 in., beam 7 in., depth 3½ in., scale ½ in.-1 ft.

Sheet 1 General arrangement, side and plan elevation 5/6  
2 Frame and water lines. 5/6  
3 Stern frame and rudder, anchor housing and beam joints, bulwarks, stanchions and general arrangement of position. 5/6

PB/25 \* \* \* \*

### M.T. MOORCOCK

Alternative sheets to scale ½ in.-1 ft.  
Sheet 1 Frame lines. 2/6  
2 Water lines. 5/6  
(For general arrangement, side and plan elevations, and other details see PB/25, Sheets 1 and 3).

PB/25a

### REMORA

By Vic Smeed  
Vic Smeed's latest speed steering design for up to 3½ c.c. engines. Conventional construction is used on this 30 in. boat.

MM/812 \* \* 7/6

### KWIK-KWAK

By G. H. Deason  
Rubber-driven hydroplane, 8 in. length, of simplest construction; two can be built from a 6d. packet of suitable balsa off-cuts. Fast and amusing.

MM/449 \* 2/6

### M.S. VELARDE

By R. A. Sweet  
An attractive and accurate 42 in. working scale model. Construction is of balsa and gummed strip and the model is designed for electric propulsion. The plan includes constructional sketches etc.

MM/830 \* \* \* 10/-

### TRYON (not illustrated)

An easily built airscrew-driven hydrofoil of balsa construction with dural or aluminium foils, can be powered by air-cooled engines of .5 to .8 c.c's.

MM/811 \* \* 5/-

### Cross Channel Packet

"DUNKIRK" By A. D. Trollope  
Length 52 in., beam 10 in., draught 5 in., masthead 20 in. above waterline, scale ⅜ in.-1 ft. Two sheets half-size.

PB/14 \* \* \* 7/6

### PB/20

ST. NINIAN\* Short Sea Passage Steamer. By Edward Bowness.

Length 57.1 in.; beam 9.2 in.; draught 3 in.; displacement approx. 31 lb. Scale 1/5 in.-1 ft.

Sheet 1 Profile and deck plan 4/6  
2 Hull construction 4/6  
3 Propeller shaft, centre piece, midships' bulwark, coverplate bow and stern, bulwarks 1½ and 8, under after-deck, fore deck aft, section, support for aft propeller bearing 4/6  
4 Deck construction details 4/6  
5 Deck construction details 4/6  
6 Deck construction details 4/6  
(The complete set 25/-) \* \* \* \*



## Hull Construction

BOAT HULLS are divided into two primary categories which refer to their actual cross-sections. The first and simplest of the two is the **hard chine hull**, where definite "corners" exist between the sides and bottom panels; in such a boat the sides and bottom panels are virtually flat for all or most of the length, although varying in angle throughout. The **round bilge hull**, on the other hand, curves gently from gunwale to keel, with no suggestion of a "corner", and calls for rather different constructional methods.

### HARD CHINE HULLS

This type of hull is most often built on permanent frames or bulkheads which remain part of the finished hull. Occasionally, however, "shadows" are used, removable after completion, especially where light weight is desirable. The frames or shadows are shaped and fitted to a jig which, in power boats especially, may be the actual keel. Longitudinal strips are then affixed to form the inwale and chine, and sometimes additional stringers are added as stiffeners. The planking is then fitted to these strips. The planking is frequently sheets of ply, etc., which cover the whole side or half the bottom in one piece; sometimes diagonal planking is used, when narrow strips of ply, etc., are fitted along the sides and bottom at an angle of 45 deg. to the centre line. In the latter case, double diagonal planking is frequently specified; this means that a second skin of narrow strips is laid over the first, sloping at 45 deg. in the opposite direction. At the bow, a block or blocks may be called for, to simplify construction by obviating that part of the skinning which would need a very sharp change in angle. The transom, or stern end, is usually a flat plate built in as a bulkhead. Skinning is carried out with the hull upside down, and on completion the hull is strong enough to be removed from the jig (if an external one is used) and the shadows (if any) knocked out. Interior details and deck, etc., are then added.

Most modelling materials lend themselves to this type of hull, and balsa, obeche, spruce, or birch are often used. The most frequent material specified, however, especially for skinning, is resin-bonded plywood, which is easily available in all sizes from 1/32 in. thickness upward.

### ROUND BILGE HULLS

The simplest form of construction for hulls of this type is to carve the whole unit from the solid, using a timber such as pear, holly, lime, yellow pine, or obeche. This is an expensive and wasteful

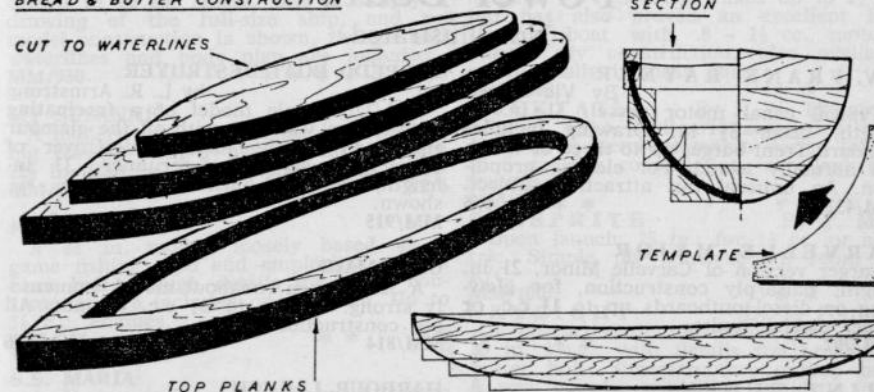
means, apart from the difficulty of obtaining good quality material in sufficiently large sizes, and as a result "bread-and-butter" building is employed. In this system the "bread" is the timber and the "butter" the glue used to bond the planks together. It has the advantage of being less wasteful and of rendering hollowing much easier. The hull profile and cross-section are first divided off on the plan into slices of the thickness of the planks available, and the top line of each slice traced on the timber—there is after all, little point in making a low "slice" the same size as the top one when it will have to be carved down anyway. Inside the outline a second shape is drawn and this shape is also sawn out and removed, thus considerably reducing the amount of internal hollowing to be done. After glueing the planks together the outside is carved to its finished contours, using templates traced from the drawing, before completing the internal hollowing. Ribs, bulkheads, and other interior details are added after the hull shell is completely finished.

An alternative system becoming popular is "bread-and-buttering on the buttock lines", which entails the use of vertical planks.

The most common material for bread-and-butter construction is obeche, which is available at most timber yards and model shops. Sugar pine, yellow pine, mahogany, and red cedar are also excellent timbers for this job, though more difficult to obtain.

Planked hulls, either clincher (overlapping) or carvel (flush) built, are constructed in two ways, depending on whether permanent frames are fitted. Procedure is much the same, except that permanent frames are cut to the cross-section of the hull less the thickness of the planking, while in the other case, the temporary frames ("moulds" or "shadows") are cut to finished cross-section less the thickness of the planking and the ribs. The cut frames can be fitted with a square piece of timber running along one side of their top edges and screws passed through the jig plank into these filets, or slots can be cut in the jig to accept the top edges of the frames. Where the deck has "sheer" the frames or shadows must be made up so that their top edges form a straight line. When set up (upside down), the keel, inwales, stem, and transom are fitted to the frames, and the ribs (if any) lightly pinned in place. Planking is carried out, usually starting with the garboard strakes (next to the keel). After completion and sanding of the planking, the jig is removed and the shadows or other building aids knocked out before adding the internal timbers, etc. With permanent frames little internal timbering is necessary of course.

### BREAD & BUTTER CONSTRUCTION



Materials for such a hull are normally ply, 1/4 in. for shadows, 1/8 in. for ribs, etc., and mahogany sheet for planking, up to 1/2 in. thick. Cedar and some pines are also suitable for planking.

The best glues to use in boat-building are the gap-filling resin glues such as Cascamite "One-shot", Aerolite 306, Beetle, etc.

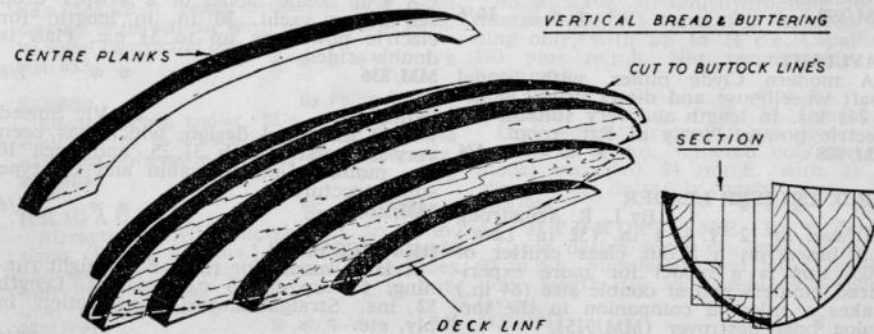
drawn directly on to the ply from the plan, allowing for planking thickness, etc., and set up on a jig in the manner described above.

Alternatively, the planks for bread-and-buttering may be taken directly from the water or buttock lines shown on the drawing.

The fin is normally solid, and bolted in place after the completion of the planking. The plans giving lines only are primarily intended for boat-builders with a little experience who are interested in top performance craft, but a study of an existing boat of similar size in conjunction with one of these plans will render construction straightforward to any beginner of average capabilities.

### Use of Lines

Some of the advanced 'Model Maker' yacht plans consist of lines only, but there is no difficulty in building a hull from the information given. The shadows can be





# Power Boats

Not Illustrated

## M.V. FRANK RAYNER

By Vic Smeed  
Typical canal motor vessel. 31 in. in length, beam 3½ in. Drawing includes standard Trent barge, up to three of which are normally towed. For electric propulsion. An unusual but attractive subject.  
MM/432 \* \* 5/6

## CARVELLE MAJOR

Larger version of Carvelle Minor, 21 in. length, balsa/ply construction, for glow-plug or diesel outboards up to 1½ c.c. or larger electric units.  
MM/702 \* \* 5/-

## PRINZ EUGEN

Well-known German heavy cruiser of World War II modelled to a length of 44 in. Hull lines and superstructure outlines only, for builders with previous experience  
MM/700 \* \* \* \* 6/6

**BLACK MARAUDER** By Philip Connolly  
A 38½ in. free-lance M.T.B. based loosely on the Brave class but with a wider hull more suited to model speeds. Suitable for 24-15 c.c. engines or high power electric; a very good high speed design.  
MM/840 \* \* 10/-

## H.M.S. KENT

By David Coleman  
Delightful ½ in. scale early cruiser, ram bow, three vertical funnels etc. Length 57½ ins., for electric power, etc. A connoisseur's model. Detailed drawing with constructional sketches, etc.  
MM/897 \* \* \* 15/-

## SUN XXI

By Philip Connolly  
A superb modern tug model, 36 in. in length, attractive in appearance and performance. Hull lines and superstructure outlines, with explanatory sketches and construction suggestions. Electric propulsion.  
MM/899 \* \* \* 10/6

## RAYLIGHT

A modern Clyde puffer, with funnel abaft wheelhouse and diesel drive. Model is 24½ ins. in length and very suitable for electric power. Plenty of R/C room.  
MM/908 \* \* \* \* 6/6

## T.B.D. CRUISER LEADER

By L. R. Armstrong  
Drawn at 12 ft. - 1 in. (32 in. l.o.a.) and based on a Scout class cruiser of 1905, this is a model for more experienced builders and at double size (64 in.) makes a splendid companion to the torpedo boat destroyer (MM/915).  
MM/913 \* \* \* \* 5/6

## TORPEDO BOAT DESTROYER

by L. R. Armstrong  
A 1/72nd scale model of a fascinating early steam warship, with all the glamour and dash of the modern destroyer of which it was the forerunner. 33 in. length, bread and butter construction shown.  
MM/915 \* \* \* 7/6

## OHM MAID

A 32 in. open runabout model, immensely strong, for up to 3½ c.c. engines. All ply construction.  
MM/814 \* \* 6/6

## HARBOUR LAUNCH

A freelance harbour launch, very near to scale, with a garvey style hull which is strip planked. For electric power or under 1 c.c. motors.  
MM/799 \* \* 6/-

## SKI BOAT

A functional fast radio model for up to 3½ c.c. engines. Length 30 in., ply and hardwood construction. Rakish appearance  
MM/793 \* \* 6/-

## SUZIE Q

By Vic Smeed  
A semi-scale offshore power boat racer, which can be electrically powered or fitted with up to 3½ c.c. motors. Has been run with 5 c.c. with success. Length 27 ins.  
MM/819 \* 5/6

## SEA SLED

An unusual but efficient 28 in. model for up to 5 c.c. engines, using a double hull merging into one. Very fast and clean running.  
MM/835 \* \* \* 5/6

## DIMARCHA

By Vic Smeed  
A ½ in. scale model of a Vosper deep sea motor yacht, 30 in. in length, for electric power or up to 3½ c.c. Plan is double sided.  
MM/836 \* \* 7/6

## RORQUAL

By Vic Smeed  
A 32 in. speed design, which has been very successful with 3½, 5, and even 10 c.c. motors. Unusual cabin and fin type superstructure.  
MM/918 \* \* 6/6

## BEACHCOMBER

A large model for radio or straight running, for up to 35 c.c. engines. Length 52 ins. Straightforward construction in ply, etc.  
MM/926 \* \* 12/6

## SCHARNHORST

One of Germany's most famous warships drawn to 46 in. length, this is simply a drawing of the full-size ship, and no model construction is shown, though hull waterlines and body plan are included.  
MM/930 \* \* \* \* 12/6

## MY SUSANNE

A modern transom sterned inshore fishing trawler with a planked hull. Length 22½ in. Can be built throughout in balsa.  
MM/925 \* \* \* 12/6

## PERSEUT

A 28 in. model, loosely based on a game fishing type and employing a glass fibre hull, though details for wood construction are included on the plan. Up to 3½ c.c. engines.  
MM/947 \* \* 6/6

## S.S. MARIA

A 26 in. designed based on a tramp steamer of the 1920's. Of simple construction and designed for use with a Mamod or similar steam engine. Can also be electrically powered. Balsa/ply construction.  
MM/949 \* 6/-

## H.M.S. INVINCIBLE

A 45 in. x 5½ in. interpretation of the Invincible class battle cruisers which were never completed. A very handsome model.  
MM/955 \* \* 8/6

## BLUE STREAK

By Philip Connolly  
Winner of the 1967 5 c.c. class European Championships, and a superb performer with engines from 2½ to 5 c.c. Simple and quick construction. Conventional flattie appearance.  
MM/956 \* \* \* 7/6

## DENNY TYPE STEAM GUNBOAT

A 36 in. model of the round bilge wood gunboats which were ultimately built in steel. "Grey Goose" was of this type initially. Hull external detail and lines only given.  
MM/946 \* \* \* \* 8/6

## U.S.S. NAUTILUS

The first nuclear-powered submarine, 300 ft. l.o.a. and 28 ft. beam, launched in 1954. Scale drawings of the full-size vessel to a length of 36 in. No model construction details.  
MM/433 \* \* \* \* 3/6

## RAMROD

By Philip Connolly  
Elegant express cruiser, 31 in., for high power electric or up to 10 c.c. motors. For those who want high performance with semi-scale appearance.  
MM/961 \* \* \* 8/6

## BRIGADIER

By J. Pottinger  
Attractive Clyde diesel tug to ½ in. scale (length 27½ ins.) with Kort nozzle and modern low profile. Drawing includes hull lines and all superstructure in outline; no structural detail  
MM/999 \* \* \* \* 8/6

## SNAPPER

By Vic Smeed  
Semiscale R/C racer, 25 in., for international FI-V2.5 class. Takes up to 2½ cc. but has also proved an excellent R/C steering boat with .8 - 1½ cc. motors. Simple ply construction, also available commercially in glass fibre.  
MM/1000 \* \* 5/6

## BUCKTAIL

By J. W. Thompson  
Based on a Molinari racer, this is a 30½ x 16 in. semi-catamaran design for up to 5 cc. Ply construction, excellent performance.  
MM/1003 \* \* 8/6

## SEASPRITE

By P. Mays  
Open launch, 28 in., for 1½ cc. or electric. Simple ply construction, room for R/C.  
MM/1007 \* \* 6/-

## SKYLIGHT

By J. Pottinger  
A characteristic old-style Clyde puffer, 26 in. l.o.a., with details for bread and butter hull. Superstructure outline only. A very popular modelling subject.  
MM/1009 \* \* \* 8/6

## BRODICK

By J. Pottinger  
Small (20 in.) model of a Fleet Tender based on the Clyde. Unusual double-chine hull, brief constructional suggestions on plan.  
MM/1012 \* \* \* 4/6

## TOP CAT G.T.

By R. P. Reynolds  
Flat-V design with full-depth hull and smart superstructure, 30½ in. length for 1½-8 cc. engines or electric. Ply construction.  
MM/1013 \* \* \* 8/6

## HAMMERHEAD

By Vic Smeed  
Unusual-looking 36 in. model (15 in. beam) with wide flared bow. Designed for offshore power boat racing with up to 15 cc. but a good all-round boat. Moderate V hull, alternative superstructure suggested on drawing, ply construction, glass fibre hull available.  
MM/1015 \* \* 10/-

## HYDRO GULL

An international A.2 class hydroplane for tethered running with 5 c.c. motors. Suggested construction included, but not recommended to a complete beginner.  
MM/952 \* \* \* \* 4/-

## SIRALY

An airscrew driven hydroplane to the international B.1 class. For tethered running only, with up to 2½ c.c. Capable of 100 plus m.p.h. Not recommended for beginners.  
MM/953 \* \* \* 4/-

## LINDOH

By M. Drinkwater  
High speed airscrew-driven hydroplane for up to 3½ c.c., tethered only. Original model recorded 84 m.p.h. with 2½ c.c. glow motor. Balsa/ply construction.  
MM/906 \* \* \* 5/-

## A2 HYDROPLANE

By V. Moucha  
Czech design for 5 cc., capable of over 90 m.p.h. Simple ply and balsa construction; length 31½ in.; usual two sponson layout.  
MM/1011 \* \* \* 5/6

# Power Boats From the Model Engineer Range

An asterisk (\*) indicates that the model is suitable for radio control.

- P.B. 1 HYDROPLANE.** By Edgar T. Westbury. Length 24 in., beam 7 in. Drawn full-size, with plan, elevation and sections, and details of stem, transom, main bearers and bulkhead. Two sheets. **5/6**
- P.B. 2 HYDROPLANE.** By Edgar T. Westbury. Length 33 in., beam 9 in. Plan, elevation and sections drawn full-size **4/6**
- P.B. 5 "F" Class Destroyer "FURY."** By F. L. Davies. Length 27 in., beam 3 in., draught 1½ in., masthead to waterline 6½ in. Suitable for clockwork or other light power plant. Drawn full-size, with elevation, plan and sections. **3/6**
- P.B. 6 Hard Chine Hull "SEA MAID."\*** By A. D. Trollope. Length 48 in., beam 12 in., draught 3 in. Hull lines and suggestions for superstructure are given half-size, with full-size forward and aft hull sections. **12/6**
- P.B. 7 Motor Coaster "KARRIER."** By A. D. Trollope. Length 25½ in., beam 5 in., draught 2 in., masthead to waterline 10 in. Three sheets. **8/6**
- P.B. 8 Motor Yacht "MERMAID."\*** By A. D. Trollope. Length 50 in., beam 10 in., draught 2 in., with round bilge and masthead 20 in. above waterline. Elevation and plan, hull lines drawn half-size. Two sheets. **7/6**
- P.B. 9 Motor Trawler "GLENER."\*** By A. D. Trollope. Length 53½ in., beam 12 in., draught 5 in., masthead to waterline 20 in. Based on "Thorina," one of the modern trawlers which work off the coast of Iceland. Three sheets, half size. **8/6**
- P.B. 10 Motor Salvage Tug "TITAN."** By A. D. Trollope. Length 51 in., beam 10 in., draught 5 in., masthead 21 in. above waterline. This model is based on the 3,000 h.p. Diesel Salvage Tug "Bustler," which was built for the Admiralty by Robb of Leith. Elevation plan and hull lines are given half-size. Two sheets. **7/6**
- P.B. 11 VOSPER M.T.B. No. 379.\*** By W. J. Hughes. Length 36½ in., beam 9½ in., draught 2½ in. Suitable for 2 c.c. diesel or 6 c.c. petrol engine. Two sheets. **10/6**
- P.B. 12 Metre Hydroplane "GILDA."** By E. A. Walker. Length 40 in., beam 13½ in. Drawn half-size, this has proved a simple but very successful design. **3/-**
- P.B. 15 Ultra Cabin Cruiser "SENIOR."\*** A "Scomod" Design. Overall length 63½ in., maximum beam 15½ in., maximum draught (propeller and rudder) 5 in. Hard chine hull with central cockpit, cabins fore and aft. Four sheets. **17/6**
- P.B. 16 Cabin Cruiser "INSPIRATOR MK. I."\*** A "Scomod" Design. Length 26 in., beam 6½ in. This is a modern type, with hard chine hull. Plan, elevation and frames are drawn full-size; constructional details and wiring diagram for electric propulsion are given. **5/6**
- P.B. 17 Motor Launch "JAVELIN."\*** A "Scomod" Design. Length 25 in., beam 6½ in., draught over propeller and rudder 11½ in. This model has hard chine hull. **4/6**
- P.B. 18 "Scomod" Reverse and Speed Control Unit.** Wiring diagram and details of equipment for controlling the motor of an electrically driven power boat. **2/6**
- P.B. 19 H.M. YACHT "BRITANNIA."\*** By Edward Bowness from Admiralty Plans. Hull length 68 in., (L.W.L. 62½ in.), beam 9½ in., draught 2½ in. Displacement 30-33 lb. Profile and deck plans given to 1/12 in. scale, hull lines to ½ in. Two sheets. **17/6**
- P.B. 22 Wooden Steam Drifter.** By R. Neville. Length 44½ in., beam 9 in., draught 3 in. This model of an East Coast drifter of 1906-7 can be powered by steam or I.C. engine. Drawings give elevation, deck plan, with full details of formers, superstructure, etc. Three sheets. **15/-**
- P.B. 24 R.M.S. "HIMALAYA."** By C. J. Sawbridge. Overall length 44½ in., beam 5½ in., depth 4 in. Scale ¼ in.-1 ft. Two sheets. **24/-**
- P.B. 27 M.T. "IONA."** By Oliver Smith. Scale ¼ in.-1 ft. A diesel-powered ship towing tug designed for dock duty, and working mostly in the Royal Group of London Docks. Drawing shows general arrangement, side and plan elevation. **5/6**

**P.B. 28 HYDROPLANE** for 5 c.c. engines. Designed by Ken Hyder and Peter Lambert. Length 26½ in., beam 8½ in., depth 2 in. Full-size drawing. **4/6**

**P.B. 29 M.V. "CRANBORNE."** By Oliver Smith. (Vols. 126-129). Length 41½ in., beam approx 7 in., scale ¼ in.-1 ft. Drawings give general arrangement, side and plan elevation, hull and water lines. Two sheets. **12/6**

## Hydroplanes

**HOT FOOT** By Peter Holland

Most unusual three point hydrofoil air-screw driven boat for up to 1.5 c.c. Extremely fast for tethered or free running, simple balsa construction, overall length 15 in.

**MM/476** \* \* 4/-

**SKIDDER** By Vic Smeed

Air-driven hydroplane of rather more advanced construction, but still within the scope of the beginner. Designed for tethered running at very high speeds with 1.5 to 3.5 c.c. motors; or free running with 1.5 max.

**MM/309** \* \* 3/-

**SCUDDER** By Vic Smeed

Large twin pontoon hydroplane, for up to 3.5 c.c. The simplest form of boat for radio-control, which can be easily accommodated in the spacious cabin. Length 24 in. Beam 15 in. Balsa and ply construction.

**MM/311** \* \* 4/-

**SLIPPER** By Vic Smeed

Simple 11 in. near-scale outboard racing hydroplane for small and medium electric outboard motors. All-balsa. With fully illustrated step-by-step instructions.

**MM/518** \* 2/6

**HYDROJET**

16½ in. hull length. A modern design for power by the popular Jetex 350 jet unit. The model can be run free or on circular course with a cable. Capable of very high speeds.

**MM/172** \* \* 3/-

**JALLOPY**

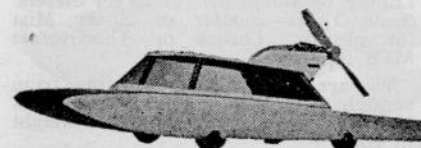
Hydroplane 16 in. L.O.A. Beam 6 in. Specially designed for the under 1 c.c. engines, in particular .5 c.c. Frog or similar. For free running or circular tethered work. Suitable for novices.

**MM/241** \* 3/6

**AVOCET** By J. M. Drinkwater

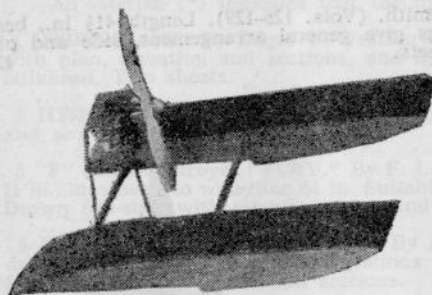
A 17½ in. long airscrew-driven amphibian model, capable of fast running on land and water with .75-1.5 c.c. motors. Unusual but handsome appearance, ply/balsa construction

**MM/627** \* \* 4/-





# Airscrew Driven Hydroplanes



**SKIMMER** By Vic Smeed  
A twin pontoon airscrew-driven hydroplane of the simplest possible construction, capable of excellent performance with up to 1 c.c. motors.  
MM/310 \* 2/6

**MENANG**  
L.O.A. 15½ in. Beam 5½ in. Simply propelled hydroglider capable of fairly high speeds powered by diesels of up to 1 c.c.  
MM/235 \* \* \* 3/6

**SKIPPER** By Vic Smeed  
Skimming dish type of air-driven hydroplane of ultra-simple construction and suitable for motors of up to .75 c.c. A quick to build model which will give hours of fun on the water.  
MM/308 \* 2/6

**DETOUR**  
An unusual triangular airscrew hydroplane with a vented step etc., suitable for up to 1½ c.c. free-running. Mainly balsa construction, requires pusher propeller.  
MM/650 \* \* 3/6

**AQUAFOIL** By M. H. Bosier  
A revolutionary model hydrofoil boat of exceptional performance. Features simple hull construction but needs some care when making the foils. Airscrew drive, power on prototype was 0.8 c.c. diesel.  
MM/765 \* \* 5/-

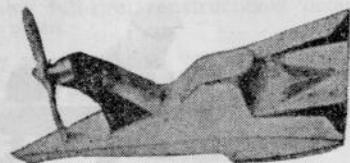
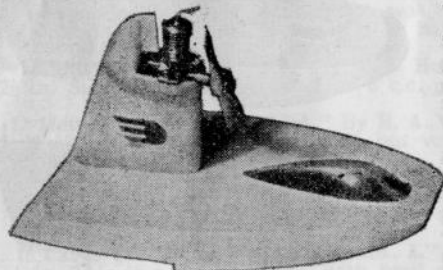
## GETTING STARTED WITH BOATS

Model boating, sail or power, is increasing in popularity month by month. Our range of plans, already the finest in the world, is continually expanding to meet the demand with a carefully balanced programme designed to cater for both beginner and expert. If you are thinking of building a boat for the first time, may we suggest the following:

Sail—Sea Urchin, Water Baby A or B, Lancet, or Lady Betty.

Power—Waterbug, Mistral, or Moonmist for electric power, Kingfisher or Scudabout for electric or small diesels, Lorette or Moonglow for larger diesels. Scale Types—Bustler or Silver Mist for electric, Lorosa or Thornycroft MTB for diesel.

We are sure that, if starting from scratch, you will find the book "Boat Modelling" at only 5/- worth its weight in gold.



**SKATER** By Vic Smeed  
Three-float air-driven hydroplane of advanced design, but straightforward construction, using balsa and ply. For very fast free-running with 1-2 c.c. motors.  
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A 19 in. airscrew driven hydroplane for free or tethered running. High speed achieved with engines up to 1½ c.c.  
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Airscrew-driven hydroplane, 18 ins. x 9 ins., for 1 c.c. engines. Simple construction excellent for small radio equipment, positions etc. of which are given on drawing.  
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**BALLERINA**  
Unorthodox airscrew-driven hydroplane, capable of up to 75 m.p.h. with up to 2½ c.c. motors. Length 24 in., for tethered running only. Straightforward construction from standard materials.  
MM/350 \* \* \* 3/6

**SHALIN**  
Attractive airscrew-driven hydroplane for .5 to 1.5 c.c. constructed in 1/32 and 1/16 ply, overall length 22 in.  
MM/475 \* \* 4/-

**SCOOTER**  
22 in. A.S.D.H. for .5-1.5 engines, employing pusher propeller and outrigger rear stabilisers. All balsa construction.  
MM/435 \* \* 3/6

## STAR PLAN GRADING

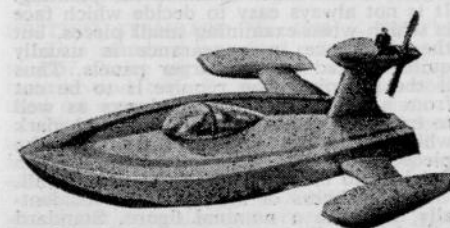
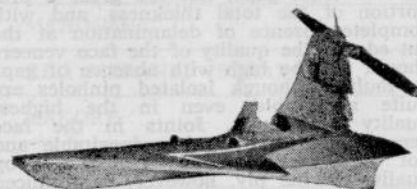
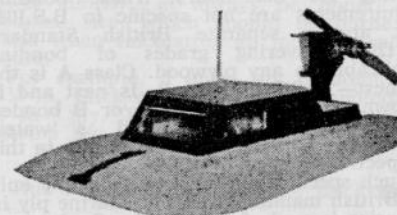
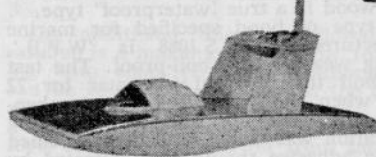
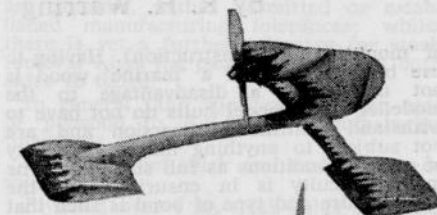
In order to help you in your choice of plan, a grading system is employed to give some idea of the degree of complication or ease of construction. At the bottom of each caption will be found one, two, three, or four stars, with the following meanings:

\* A simple design with sufficient detail and explanation for the complete beginner; also suitable for anyone requiring an easily-built model.

\* \* Slightly more advanced, for the average modeller or beginners with some modelling experience in other fields.

\* \* \* For modellers of some experience, or those who have built one or two similar models or are prepared to read up constructional technique.

\* \* \* \* For the expert able to interpret drawing (e.g. hull lines drawings) and decide his own constructional methods; also used for designs where workshop equipment is called for.



# Marine Ply

By R. H. Warring

There are a number of common misconceptions regarding the difference between 'marine ply', 'waterproof ply', 'exterior ply' and ordinary plywoods; and also about the properties of plywoods in general. Practically all modern plywood is resin bonded—i.e. manufactured with synthetic resin adhesives—although not all the glues used are 'waterproof' or even water-resistant. Even more important, however, is the choice of woods which may range from virtually rubbish to carefully selected veneers; and the specification relating to manufacture. The majority of plywoods are not produced to any specification, only to what manufacturers consider necessary requirements. Thus properties can vary widely, and this applies particularly to imported plywoods. Some of the latter are good—some very poor to the extent that, apart from internal defects, delamination can take place at the edges when exposed to damp, or surface 'blisters' appear.

Exterior grade ply generally classifies a plywood where the bond is water-resistant and thus the material is suitable for exposure to normal atmospheric conditions with a minimum liability to warping, etc. There are no rigid specifications controlling its manufacture. Aircraft ply and marine ply, on the other hand, are produced to strict specifications, the main difference being on restrictions regarding the woods to be used.

Basically, all marine ply must be made from a wood classified as 'durable', which restricts choice to seven species (see Table I). These, it will be noticed, differ appreciably in weight and thus there is no 'typical' weight figure for marine plies. The special need for a light marine ply has, however, led to the acceptance of one non-durable wood to be included in the specification. This is Gaboon, with a density of 27 lbs. per cu. ft. e.g. 50 per cent. less than Makoré, which is a common choice for top quality marine ply (usually made with a lighter core material such as Seraya). Because Gaboon is 'marginal' on durability, all marine ply manufactured to B.S.1088—1957, and employing it, has to carry the word 'Gaboon' stamped on the panel.

A majority of aircraft plywoods are made from birch or spruce—with some mahogany—and high quality 'general' ply also usually has birch or spruce facing veneers. These woods are definitely unacceptable for full size marine use since they are 'perishable', although they are used quite successfully for model construction. Where very thin plywood is required, in fact, birch ply may be the only solution since the majority of marine ply is made in 3/16 in. thickness upwards and very little thinner stock is readily available (although it is made for forms

of 'moulded' hull construction). Having to use birch instead of a 'marine' wood is not necessarily a disadvantage to the modeller since model hulls do not have to withstand continual immersion and are not subject to anything like the severity of service conditions as full size craft. The main difficulty is in ensuring that the manufacture and type of bond is such that the plywood is a true 'waterproof' type.

The type of bond specified for marine manufactured to B.S.1088 is 'W.P.B.', meaning weather and boil-proof. The test is to boil the plywood in water for 72 hours, when there should be no weakening of the adhesion. The earlier gluing specification was 'A.X.100', which specified that the adhesive should be unaffected by boiling for six hours. These bonding requirements are not specific to B.S.1088 but are a separate British Standard (B.1203) covering grades of bonding applicable to any plywood. Class A is the highest—'W.P.B.'. Class B, is next and is known as 'A.X.100'. Class A or B bonded plywood would be regarded as 'waterproof' and equivalent to marine ply in this respect.

Such specifications, of course, apply only to British manufactured ply. Marine ply in America is made from Douglas fir, because of the ready availability of this durable wood. American Douglas fir ply, in fact, was the material first described as 'exterior' ply, with a suitable bond. Much imported ply is produced to similar standards to B.S.1088, but a lot is not.

One clue as to assessing the probable quality of an unknown ply is to examine the core at the cut edges. The core should be free from gaps, not too great a proportion of the total thickness, and with complete absence of delamination at the cut edges. The quality of the face veneers should also be high with absence of gaps or faults, although isolated pinholes are quite acceptable, even in the highest quality production. Joints in the face veneers are more or less inevitable and not necessarily colour matched. Top quality marine ply, however, is produced as far as possible with one surface colour matched (the side to choose for varnishing), and the other intended for painting. It is not always easy to decide which face is which when examining small pieces, but the difference in appearance is usually quite marked on the larger panels. Thus if the ply piece you require is to be cut from a larger sheet, it is always as well to examine the whole sheet first and mark which is the best or 'varnish' side on the piece to be cut, especially if a varnish finish is to be employed on the final hull.

The thickness of all plywoods, incidentally, is quite a nominal figure. Standard practice in all countries except the United States and Canada is to specify veneer and

ply thickness in millimetres. These sizes are nominal, within permitted or established manufacturing tolerances; whilst there is yet a further tolerance for stock removal when the panel is sanded on both sides to finish.

In general (and specifically in the case of plywood to B.S.1088), manufacturing tolerances are:

Plywood  $\frac{1}{2}$  in. thick and under—plus or minus 5%.

Plywood over  $\frac{1}{2}$  in. thick—plus or minus 3%.

The additional tolerance allowable for sanding is a maximum of .016 in. for sanding both sides (B.S.1088), although this can be considerably higher in the case of some 'general' plywoods.

Plywood to a nominal thickness, therefore, can vary quite a bit from sample to sample. In general it will tend to the lower limits, i.e. always be under the nominal size, which should be borne in mind when calculating an inch equivalent figure.

For example, 6 m.m. ply is nominally .236 in. thick and is commonly quoted as  $\frac{1}{4}$  in. ply. The lower limit of 6 m.m. marine ply would be:

.236 in. — (5% of .236) — .016 in.

= .208 in.

This is well down on  $\frac{1}{4}$  in. thickness—

just a little over 13/64 in. in fact, or nearer 3/16 in. than  $\frac{1}{4}$  in.

Another interesting point is, just how "waterproof" is marine ply? The bond is fully resistant to water but the veneers themselves, being wood, are not. Marine ply must be protected like any other wood by painting or varnishing, particularly at exposed edges. And although the bond is not affected by water the glue layers do not present a waterproof barrier. Water can pass through the glue line. It is another characteristic of marine ply—or almost any ply, for that matter, that if exposed to excessive damp when unprotected by surface coatings it will develop dark stains, and often these stains will appear under a varnish coating (showing that even a varnish coating is not fully waterproof). Such stains are not harmful and can usually be removed by drying out the wood properly.

Finally, a word about adhesives for assembling plywood hulls. The best adhesives are, without doubt, the synthetic resins—Aerolite or Cascamite. The cellulose base adhesives (balsa cement) are not satisfactory, largely because they are not fully water resistant. The synthetic resin adhesives are more awkward to use and take longer to set—but there is no substitute for them in ply hull construction model or full size.

## PERMITTED WOODS FOR MARINE PLY MANUFACTURE \*

Name of Wood	Colour	Durability	Average Weight lb./cu. ft.
AGBA ... ..	Yellow	Good	32
IDIGBO ... ..	Yellow	Good	34
MAHOGANY ... ..	Red	Moderate	32
RED MERANTI (SERAYA) ...	Pink	Moderate	33
MAKORE ... ..	Red	Excellent	39
SAPELE ... ..	Pink	Moderate	39
UTILE ... ..	Pink	Good	41

\* GABOON is also permitted (Density 27 lb./cu. ft.)

## BRITISH STANDARD No. 1088 — BRITISH MADE PLYWOOD FOR MARINE CRAFT

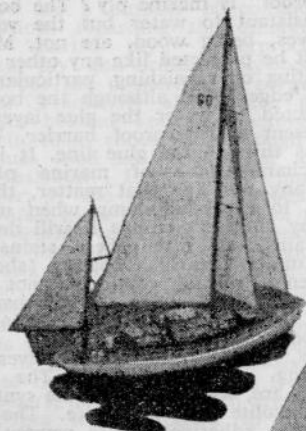
This standard was first published in 1944, revised in 1951, and again in 1957. Prior to 1957 choice of woods was not restricted other than to "agreement between manufacturer and buyer", thus perishable woods (e.g. obeche) could be and in fact were used on some earlier marine plywoods.

Plywood manufactured to B.S.1088 bears this stamp and the manufacturer's name and batch number on the original panel. Subsequent to 1957 the nominal thickness is also stamped on the panel. Marine ply utilising gaboon will also bear the additional stamp "Gaboon".

Additional markings 'A.X.100' or 'W.P.B.' may or may not appear on the panel. They would not normally appear on marine ply manufactured to the 1957 specification since 'W.P.B.' bonding is implied in the specification. However, some manufacturers use the stamp 'W.P.B.' to emphasise that the bonding is to the latest standard.



## Scale Sailing Craft



### PORTUGUESE DORY

Authentic drawings for a 1/10 full-size exhibition model of a 17 ft. Grand Banks hand fishing boat. All equipment carried in the boat is detailed on plan, down to bait knife! Non-sailing.  
MM/563 \* \* \* 4/0

### CARIBBEE

A 1/24th scale ocean racing yawl with excellent sailing characteristics. Length 29 in. Bread-and-butter hull with "centre-board". On three completely detailed sheets.  
MM/403 \* \* \* 15/-

### DINGHY

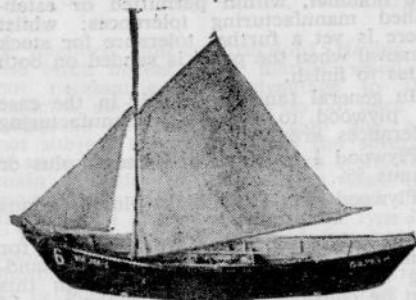
21 in. scale model based on a 14-foot centreboard gaff-rigged, half-decked sailing dinghy. A really detailed model. Centreboard lifts in scale fashion, hull is clinker-built, properly clenched, with watertight compartments. On two sheets, each 40 x 30 in.  
MM/153 \* \* \* 9/6

### SAND FAIRY ANN

Smart land yacht model capable of very high performance and incorporating such ingenious devices as a crew ballast swinging out to windward by an amount proportional to wind pressure on the sail. Simplified vane gear, easy and very inexpensive construction, length over all 17 in., height 30 in.  
MM/466 \* \* 5/-

### MOTH—SINGLE SHEET SCOW

Scale model of popular American—and British—one-design class racing yacht. 1/4th full-size. L.O.A. 16 1/2 in. Beam 6 in. Of balsa and plywood construction and capable of amusing sailing. On one sheet, size 29 x 28 in.  
MM/258 \* \* 4/-



## Scale Sailing Craft

### DUTCH AUXILIARY

15 1/2 in. L.O.A. 13 1/2 in. L.W.L. Beam 7 in. A 1/12th scale model of typical Dutch sailing yacht with auxiliary engine, suitable for sail and model electric, clockwork or sub-miniature (.5 c.c.) diesel engine. On one sheet, size 36 x 28 in.  
MM/240 \* \* 4/-

### WILL EVERARD (non-sailing)

A really authentic 4-in. to the foot model of one of the famous Everard Fleet of Coastal Sailing Barges. Drawn with co-operation of the owners from the ship's actual lines and sail plan, it includes 16-page comprehensive step-by-step building instructions, complete with scrap sketches of principal fittings and all information necessary to complete exhibition model. Detailed drawings on four sheets 29 x 22 in. and a fifth sheet (sail plan) 38 x 37 in.  
MM/189 \* \* \* 20/-

### ARGUS

By H. E. Andrews

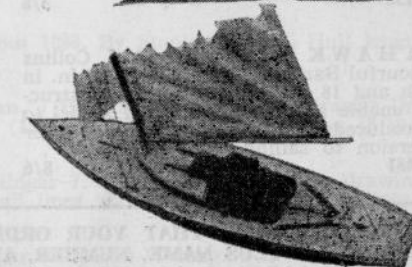
A near scale wishbone schooner with a 30 in. hull length, for builders with a little experience. One of the most attractive models in our range.  
MM/405 \* \* \* 7/6

### BLUEBOTTLE

A magnificent 1/10 scale model of the Royal Dragon class yacht. Length 35 in., beam 8 in. On one sheet, size 64 x 22 in.  
MM/293 \* \* \* 7/6

### STAR CLASS YACHT

A pleasing 20 in. L.O.A. scale Star class boat, with hard chine construction. Braine steering, all constructional details. An inexpensive little model, excellent for beginners.  
MM/346 \* 3/6



## Scale Sailing Models

### TOPSAIL SCHOONER By L. R. Armstrong

A 30 in. sailing model schooner/yacht for bread and butter construction; a successful compromise between full-size complexity and model-size simplicity, and an excellent sailer.

MM/909 \* \* \* 8/6

### BARGE YACHT By L. R. Armstrong

With a hull length of 24 ins. and an overall length of 38 ins., this is a model of a type of craft frequently seen in the 1920's. Laminated bow and stern, 3-plank midsection, barge rig. A fine sailing model.

MM/902 \* \* \* 8/6

### STUART YACHT By I. J. Browne

An attractive, typical Stuart period yacht of c.1670 drawn to a hull length of approx. 12 ins. (14 ins. overall). Fore and aft rig (two headsails and gaff main) plus one square topsail. Heavily decorated topsides and stern. No model construction shown.

MM/1004 \* \* \* 7/6

NINA. A simple sailing model galleon with overall length of 20 in., employing a bread and butter hull and detachable keel. Based on Santa Maria.

MM/921 \* \* 7/6

PEARLING LUGGER. By L. R. Armstrong. An attractive and unusual model of an Australian lugger (in fact a ketch). Suitable for decorative or sailing purposes. Length 30 in. o.a., 22½ in. hull.

MM/928 \* \* \* 10/-

### GRAND BANKS SCHOONER By L. R. Armstrong

A fine sailing model Indian-headed schooner of the type used for fishing off Newfoundland. Length over bowsprit and spanker boom 47 ins.

MM/962 \* \* \* 12/6

## NON SAILING MODELS

### ELIZABETH REGINA

A decorative galleon of the Tudor period, circa 1580, designed by a specialist in this class of historical model. Fully detailed drawing of hull, sails and fittings. One sheet size 28½ x 21 in.

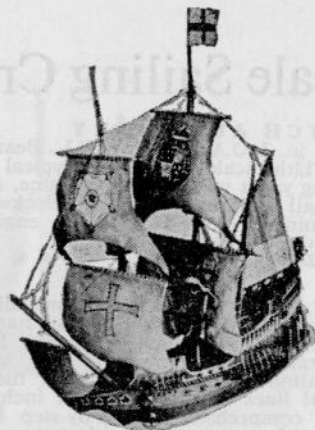
MM/135 \* \* 3/6

### SEA HAWK By R. J. Collins

Colourful Barbary Pirate Xebec, 29 in. in length and 18 in. high. Plans and instructions enable a museum standard model to be produced; also suitable prototype for conversion to sailing.

MM/481 \* \* \* 8/6

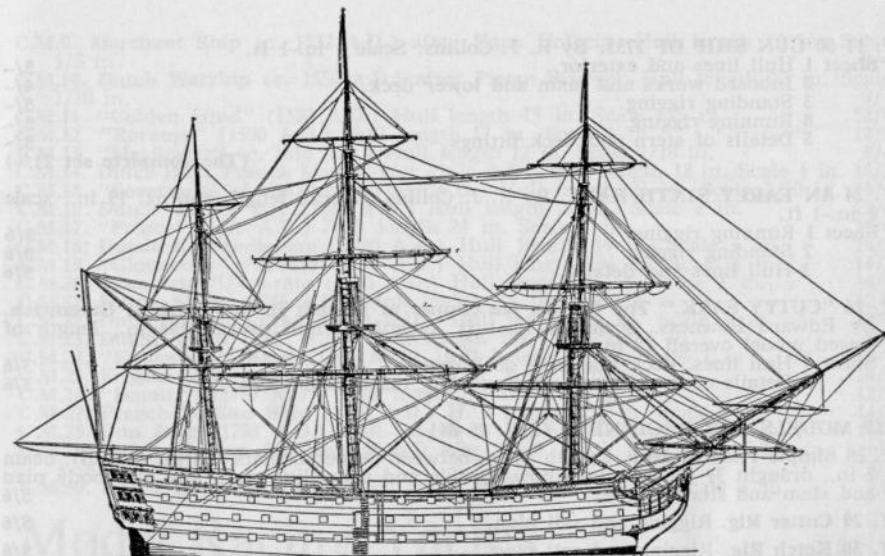
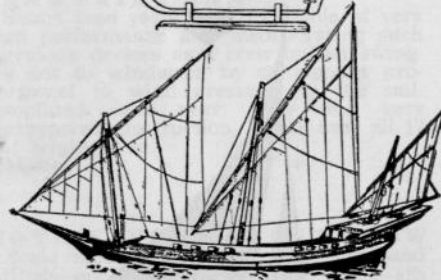
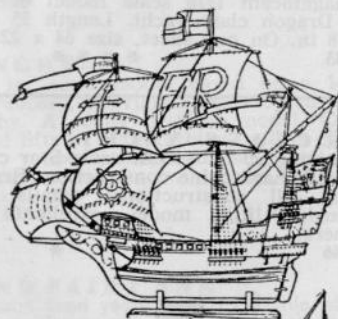
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### SAILING GALLEON

Practical model, approximately 24 in. overall length, of a typical galleon of the Armada period. Bread and butter construction, simplified rigging with interlocked yard bracing for quick trimming.

MM/641 \* \* \* 8/6



### H.M.S. VICTORY

By G. F. Campbell  
Drawings designed and executed by G. F. Campbell, Assoc. M.I.N.A. Scale ½ in.-1 ft.

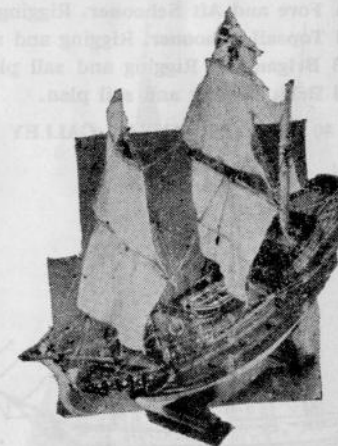
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2 Standing rigging.	5/6
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6 Body plan (½ in. scale)	3/6

SY/21 (The complete set 21/-)

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A beautiful ship model typical of the 'Mayflower' type by a well-known authority on period ships. Authenticity of detail makes this model a real museum piece. On two sheets. Overall length 21 in.

MM/444 \* \* \* 10/-



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S.Y. 1 "MARY DEAR." 12 Gun Brig of about 1820. By Stanley Rogers. Hull length 20½ in. beam 5 in., keel to truck 18 in. 3/-

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S.Y. 17 50 GUN SHIP OF 1733. By R. J. Collins. Scale  $\frac{1}{2}$  in.-1 ft.

- Sheet 1 Hull lines and exterior. 5/-  
 2 Inboard works and main and lower deck. 4/-  
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 4 Running rigging. 5/-  
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S.Y. 24 AN EARLY SIXTH RATE. By R. J. Collins. Overall length approx. 19 in., scale  $\frac{1}{2}$  in.-1 ft.

- Sheet 1 Running rigging. 3/6  
 2 Standing rigging. 3/6  
 3 Hull lines and details. 5/6

S.Y. 26 "CUTTY SARK." The famous tea clipper at present in dry berth at Greenwich. By Edward Bowness. Scale  $\frac{1}{8}$  in.-1 ft. Length of hull overall  $14\frac{1}{2}$  in., length of rigged model overall 18 in.

- Sheet 1 Hull lines, deck plan and deck details. 3/6  
 2 Details of deckhouses, rigging plan, masts and spars. 3/6

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S.Y. 28 Simple Planked Hull. Length 30 in. between perpendiculars (34 in. overall), beam 7 in., draught  $3\frac{1}{2}$  in. Drawing shows profile and water-line plan, and also body plan and stern profile. 5/6

S.Y. 29 Cutter Rig. Rigging and sail plan. 5/6

S.Y. 30 Ketch Rig. Rigging and sail plan. 5/6

S.Y. 31 Fore and Aft Schooner. Rigging and sail plan. 5/6

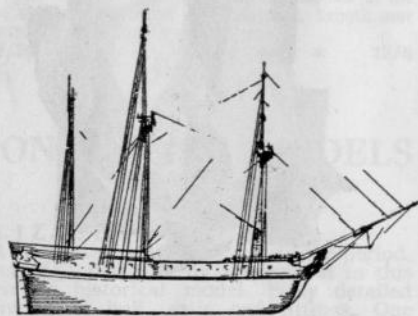
S.Y. 32 Topsail Schooner. Rigging and sail plan. 5/6

S.Y. 33 Brigantine. Rigging and sail plan. 5/6

S.Y. 34 Brig. Rigging and sail plan. 5/6

S.Y. 40 MEDITERRANEAN GALLEY

Two Sheets 10/-



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A ship-rigged sloop of 22 guns, late 18th century man-o'-war. (Vols. 116-117). Scale  $\frac{1}{2}$  in.-1 ft.

- Sheet 1 Hull lines, body plan, hull construction details, deck fittings 4/6  
 2 Deck and rigging details. 4/6  
 3 Standing rigging 4/6  
 4 Standing rigging 4/6

SY/25

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C.M.16. Dutch Man-O-War (1665 A.D.) Hull length 20 in. Scale  $\frac{1}{2}$  in. 19/6

C.M.17. "Prince" (1670 A.D.) Hull length 24 in. Scale  $\frac{1}{2}$  in. 19/6

C.M.18. Dutch East-Indiaman (1730 A.D.) Hull length 14 in. Scale  $\frac{1}{2}$  in. 14/3

C.M.19. "Gloucester" 4th-rate (1736 A.D.) Hull length  $19\frac{1}{2}$  in. Scale  $\frac{1}{2}$  in. 14/3

C.M.20. "Centurion" 4th-rate (1740 A.D.) Hull length 21 in. Scale  $\frac{1}{2}$  in. 14/3

C.M.21. Dutch Sloop (1745 A.D.) Hull length 14 in. Scale  $\frac{1}{2}$  in. 12/9

C.M.22. Dutch Bomb Vessel (1750 A.D.) Hull length 14 in. Scale  $\frac{1}{2}$  in. 12/9

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C.M.26. "Bounty" (1787 A.D.) Hull length 13 in. Scale  $\frac{1}{2}$  in. 12/9

C.M.27. French 74 Gun Ship (1790 A.D.) Hull length  $25\frac{1}{2}$  in. Scale  $\frac{1}{2}$  in. 14/3

C.M.28. Gun Brig (1798 A.D.) Hull length 18 in. Scale 1/5 in. 14/3

C.M.29. Dutch 60 Gun 3rd rate Man-O-War (1800 A.D.) Hull length  $24\frac{1}{2}$  in. Scale  $\frac{1}{2}$  in. 9/-

C.M.30. Dutch Despatch Yacht (1800 A.D.) Hull length 17 in. Scale  $\frac{1}{2}$  in. 7/6

## Model Racing Yachts

### MM CLASS

This is a yacht class introduced by "Model Maker", to encourage the new-comer and junior in the yachting world. The rule is based roughly upon the popular Marblehead rating divided by two, hence the half Marblehead,  $\frac{1}{2}$ M, or, as it has come to be known, M.M. Class.

#### WATER BABY A By Vic Smeed

MM 1 in the illustration, this is the first boat to the MM 25 in. class. Can be built in several ways, plan A showing all details for bread-and-butter (balsa or hardwood) or glass fibre construction. Everything—including all rigging, vane gear, etc.—fully detailed. Displacement 55 ozs.—a genuine racing model in miniature. MM/354 \* 5/-

#### WATER BABY B

Exactly as above—the same boat, but giving full details for rib and plank construction, again in balsa or hardwood. Please ensure that your order clearly states code A or B to ensure correct plan being despatched.

MM/355 \* 5/-

#### SEA URCHIN

By Vic Smeed

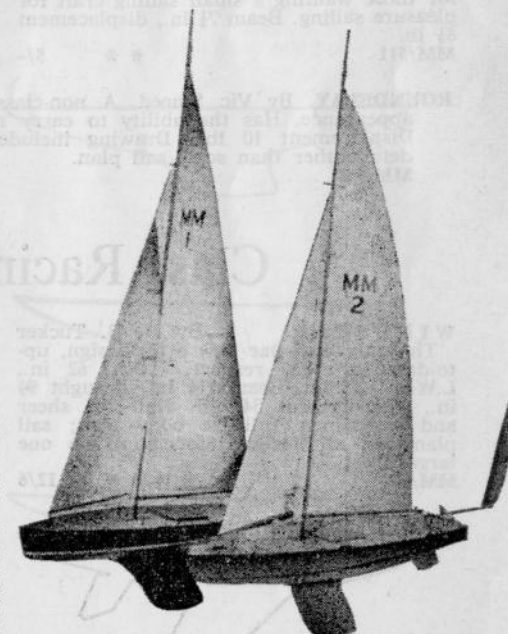
Illustrated (MM2) with Water Baby right, this is a hard chine boat to the MM 25 in. class, suitable for ply or all-balsa construction. Full details given for all parts, including rigging and vane.

MM/361 \* 5/-

#### DRAKE

A simple hard chine M.M. design with bulb keel and minimum of internal structure. Ply construction, all hull parts shown, reduced sail plan. 25 in. l.o.a.

MM/376 \* \* \* 4/6

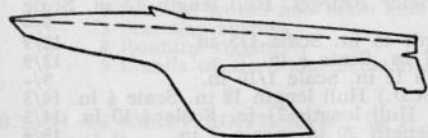


Not illustrated.

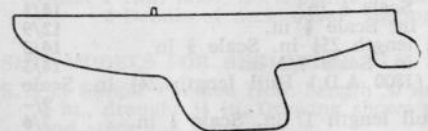
#### HUSKY By D. A. MacDonald

25 in. MM class design for builders of a little experience. Partly based on circular arc principles and an excellent all-weather design. Full hull lines, sail suits, explanatory details for building from lines.

MM/366 \* \* \* \* 5/-



**PLANE JANE** By F. G. Draper  
An unusual 36 in. double chine yacht, simple to build and capable of outstanding performance.  
MM/823 \* \* \* 9/6

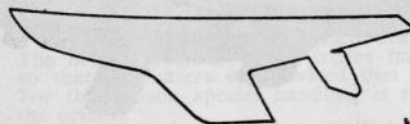


**LEO**  
A simple 30 in. yacht by W. J. Daniels, for those wanting a small sailing craft for pleasure sailing. Beam 7½ in., displacement 8½ lb.  
MM/511 \* \* 5/-

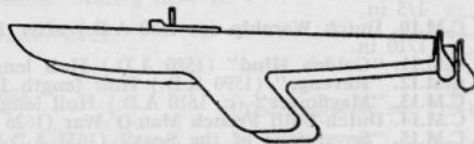
**ROUNDELAY.** By Vic Smeed. A non-class 1 metre long yacht design of attractive appearance. Has the ability to carry radio control. Can fit DF and DX classes. Displacement 10 lbs. Drawing includes lines, hull laminations, but no rigging detail other than scale sail plan.  
MM/957 \* \* \* 9/6

## Class Racing Models

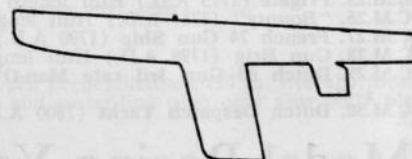
**WINDSTAR** By H. B. Tucker  
The only post-war new 6 M. design, up-to-date in every respect. L.O.A. 62 in., L.W.L. 42.5 in., Beam 11½ in., draught 9½ in., displacement 34½ lb. Half-size sheer and waterlines, full-size body plan; sail plan and all design information on one large sheet.  
MM/364 \* \* \* \* 12/6



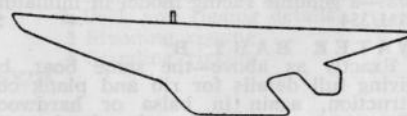
**CONRAD.** By H. B. Tucker. Designed primarily for a handysize radio control yacht, this model has proved a popular choice for R/C. Fits 'R' Class rule. In effect a Marblehead with overhangs, she is designed to carry up to 4 lbs. of radio in her 25 lbs. total l-o-a is 56 ins., l-w-l, 48 ins., beam 11.4 draught 11.25, S.A. 845 sq. ins. A good number of these boats are already sailing with success. MM/799 \* \* \* \* 10/6



**SEA MEW** By Vic Smeed  
36 in. racing catamaran for vane steering. Simple construction, principally of ply, twin round bilge hulls, overall beam 18 in. The first "serious" catamaran design for model yachtsmen.  
MM/533 \* \* 8/6



**SIGMA**  
An easy-to-build 24 inch hard chine sailing boat of balsa construction.  
MM/831 \* 5/-

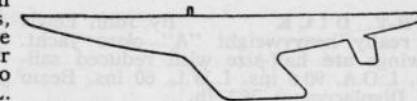


**ADAGIO** By H. E. Andrews  
Adagio is the first design to be published to the new "R" (radio) class rule and has been very carefully thought out by the designer. L.O.A. 65 ins. L.W.L. 49 ins. L.W.L. Beam 10.6 ins., draught 11.75 ins. Displacement 29 lbs. The drawings are half full size.  
MM/821 \* \* \* \* 7/-

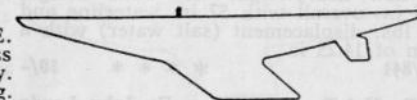
## HIGHLANDER

By B. H. Priest, M.I.Mar.E.  
Winner of the British and International Championships on a number of occasions, this design incorporates some remarkable characteristics and is an excellent sailer under all conditions. Particularly easy to handle during racing. L.O.A. 79 in., L.W.L. 54 in., beam 13¼ in., displacement 52 lb., sail area 1,550 sq. in. Fullsize lines throughout.  
MM/482 \* \* \* \* 21/-

## "A" Class



**SAXON** By B. H. Priest, M.I.Mar.E.  
Full-size lines drawing for an A-class yacht equal to any contemporary. Developed over seven years' hard racing. L.O.A. 81 in., L.W.L. 55 in., L.W.L. beam 14.6 in., sail area 1,560 sq. in., displacement 56.5 lb. One of the finest "A" boats ever.  
MM/452 \* \* \* \* 15/-



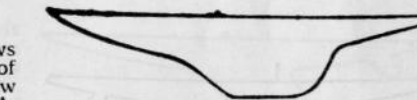
**WINDFLOWER** By H. B. Tucker  
"A" class of boat moderate beam and round easy section. L.O.A. 78.4 in., L.W.L. 56 in., displacement 57½ lb., sail area 1,479 sq. in. Three sheet plans giving all lines, full-size sections, dimensioned sail plan, etc.  
MM/320 \* \* \* \* 15/-



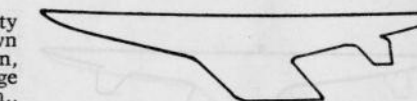
**CIRRUS** By S. Witty  
An attractive "A" class design featuring narrow beam. L.O.A. 78 in., L.W.L. 54 in., beam 14 in., displacement 53 lb. Designed for good all-round performance but at best in light weather.  
MM/464 \* \* \* \* 12/6



**BOLERO** By H. E. Andrews  
A proved full-keel "A" Class yacht of most attractive appearance; one of the few successful full-keelers L.W.L. 54.2, L.O.A. 79½ in. Max beam 15.2 in., displacement 55.5.  
MM/559 \* \* \* \* 12/6



**NOVA** By S. Witty  
An "A" class design by a well-known model yachtsman. Not an extreme design, this boat should excel over a wide range of conditions. Length 79.8 in., beam 14 in., displacement 52.9 lbs.  
MM/783 \* \* \* \* 10/6



**MOONSHINE** By J. Lewis  
An extremely powerful "A" Class design of very handsome lines, employing many of this designer's successful 10-R features. L.O.A. 84 in. L.W.L. 55 in. Draught 12.2. Displacement 59½ lbs.  
MM/606 \* \* \* \* 15/-





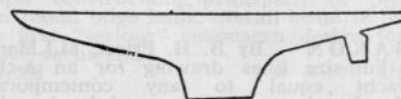
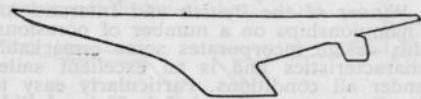
## "A" Class

**MOBY DICK** By John Lewis  
A really heavyweight "A" class yacht. Drawings are half-size with reduced sail-plan. L.O.A. 90.6 ins. L.W.L. 60 ins. Beam 15.5. Displacement 76.1 lb.  
MM/817 \* \* \* \* 10/6

**BOREAS** By John Lewis  
A new heavyweight "A" class design, 74.35 in. overall with 57 in. waterline and 61.8 lbs. displacement (salt water) with a beam of 14.25 in.  
MM/841 \* \* \* \* 10/-

**TOP HAT** By John Lewis  
Developed from 'Moonshine', incorporating modifications learned from a season's racing with this top class A design. L.O.A. 81½ ins., l.w.l. 55 ins., displacement 60 lbs. on l.w.l. beam of 14½ ins.  
MM/670 \* \* \* \* 15/-

**VITAL SPARK** By John Lewis  
54 in. W.L. A class of 51.7 lbs. displacement. W.L. beam 13.6, l.o.a. 79.5, sail area 1545 sq. ins. Maximum sail area for minimum waterline and displacement.  
MM/684 \* \* \* \* 15/-



**KUBERNETES** By John Lewis  
A big "soft profile" A class yacht, l.o.a. 86.75 in., l.w.l. 60 ins., l.w.l. beam 15.5 ins., draught 13.1 ins., displacement 79.36 lbs. Half size lines throughout.  
MM/914 \* \* \* \* 12/6

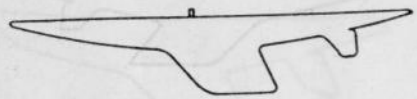
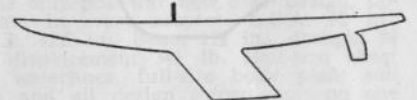
**S.Y. 38 "ACTIVE."** An "A" class yacht. By A. W. Littlejohn. Overall length 79.2 in. (54 in. W.L.), beam 14.2 in., draught 12.05 in. Displacement is 59.36 lb. (lead 45.6 lb.) and sail area 1,648 sq. in.  
7/6

**BLUEFIN** By S. Witty  
74 in. overall 10-rater with 54 in. waterline and 30.2 lb. displacement. Features a shallow hull section on 12 in. beam.  
MM/547 \* \* \* \* 10/-

**WHIRLWIND** By J. Lewis  
A development from a long and famous line of 10-R's. Powerful low bilged sections give an attractive and fast craft. L.O.A. 72.3 L.W.L. 55. Beam on W.L. 11.3. Displacement 31.3 lbs.  
MM/582 \* \* \* \* 10/6

**SIX-FIVE** By S. Witty  
A pleasing 10-rater on conventional lines, but embodying all known advances. L.O.A. 75.35 in., W.L. 55.5 in., beam 11.1 in., displacement 30 lb.  
MM/315 \* \* \* \* 10/-

**MAREE III**  
A 10-rater sharpie which has won many races. Extremely simple construction and particular emphasis on portability with split mast, detachable keel, etc. Complete fullsize drawings with structural detail, L.O.A. 66½ in., L.W.L. 52 in., displacement 234 lb.  
MM/504 \* \* \* \* 12/6



## 10 Raters

**SORCERESS** By S. Witty  
Lightweight 10-rater of attractive lines. L.O.A. 73½ in., L.W.L. 54 in., beam 11.6, displacement 25 lb. Full-size body plan and fin lines, half-size sheer and water lines, etc.  
MM/427 \* \* \* \* 8/6

**HALCEYON** By John A. Lewis  
A successful design on latest modern principles. Complete drawing with half-size sheer and waterline plans, and full-size body plan. Sail plan with three suits fully dimensioned. L.O.A. 69 in., L.W.L. 52 in., beam 11½ in., displacement 30.6 lb.  
MM/229 \* \* \* \* 12/6

**BARRACUDA**  
Classic 10-rater design by S. Witty. L.O.A. 72 in., maximum beam 11½ in., S.A. 1,142 sq. in. Weight 26½ lb. Half-size sheer and water line plans, full-size body plan, sail plan, on one sheet, size 38 x 28 in.  
MM/313 \* \* \* \* 9/6

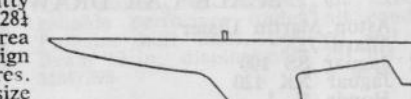
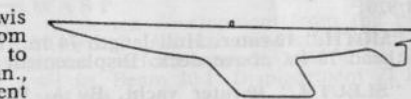
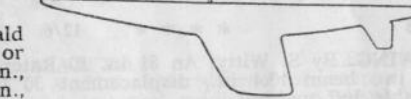
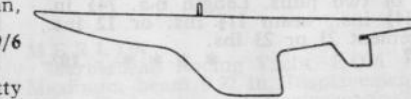
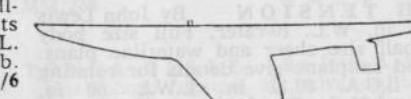
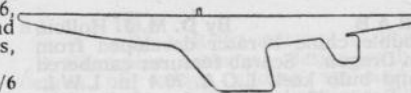
**IMPALA** By S. Witty  
An elegant 10-rater with a displacement of 28½ lbs. and draught 14 in. Performs well under all conditions. L.O.A. 73 in. L.W.L. 54 in. Beam 11.1 in.  
MM/565 \* \* \* \* 8/6

**DECIMA** By D. A. MacDonald  
A dual purpose design to 10-rater or American X class rules. L.O.A. 80½ in., L.W.L. 60 in., maximum beam 10 in., displacement 28½ lb. Half-size sheer and waterlines, full body plan, sail dimensions, etc.  
MM/329 \* \* \* \* 9/6

**HYPERION** By John Lewis  
Long water-line 10-rater developed from Halceyon; fully contemporary and easy to build by any usual method. L.O.A. 72½ in., L.W.L. 55 in., beam 11½ in., displacement 28½ lb. Full body plan, other lines half-size.  
MM/336 \* \* \* \* 6/-

**TOLTEC** By S. Witty  
54-in. waterline 10-rater displacing 28½ lb. Beam 12 in., L.O.A. 76½ in., sail area 1,110 sq. in. A straightforward design embodying all proved desirable features. Half size sheer and waterlines, fullsize body plan and fin lines.  
MM/479 \* \* \* \* 9/6

**MONOCAT** By S. Witty  
An advanced 10 rater design, yet with a hard chine hull. Bulb keel. L.O.A. 76, l-w-l 60, beam 11.65, draught 13.95, displacement 27 lbs., sail area 993. Full-size lines, double luff mainsail details.  
MM/1006 \* \* \* \* 10/6



# 10 Raters

## SCARAB

By D. M. J. Hollom

A double chine 10-rater developed from "Green Dragon." Scarab features cambered deck and bulb keel. L.O.A. 70.4 in. L.W.L. 56 in. Beam 12 in. Draught 15 in. Displacement 27.7 lbs.

MM/839

\*\*\*\*\*

8/6

## HIGH TENSION

By John Lewis

A 60 in. W.L. 10-rater. Full size body plan, half size sheer and waterline plans. Reduced sailplans give details for rotating mast. L.O.A. 80.12 in. L.W.L. 60 in. Draught 1.25 in. Displacement 34.8 lbs.

MM/801

\*\*\*\*\*

12/6

## EXCALIBUR

By S. Witty

A 10-rater featuring a flying fin and a choice of two hulls. Length o.a. 74½ in., l.w.l. 54½ ins., beam 11½ ins. or 12 ins., displacement 21 or 23 lbs.

MM/637

\*\*\*\*\*

10/-

## RED HERRING

By John Lewis

A very fine 10-rater of 34.4 lbs. displacement on a w.l. of 55 ins. and beam of 11.4 ins. L.o.a. 76 ins. This yacht is a close sister to the highly successful 'Sirocco' design.

MM/663

\*\*\*\*\*

12/6

**WINDWING.** By S. Witty. An 81 in. 10 Rater design with a waterline of no less than 66 in., beam 10.4 in., displacement 30 lbs. A modern bulb keel design with a double luff mainsail.

MM/954

\*\*\*\*\*

10/6

**WARLORD.** By R. Stollery. A most unusual and advanced 10 Rater, with a 60 in. L.W.L., 74 in. L.O.A., beam 11.6 and displacement 28 lbs. Winner of the 1966 10 Rater Championship.

MM/920

\*\*\*\*\*

12/6

**S.Y. 12 "MOTH."** 10-rater. Hull length 74 in., L.W.L. 48 in., beam 12 in., draught 10 in., masthead 78 in. above deck. Displacement 29 lb.

25/-

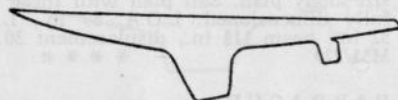
**S.Y. 37 "SLEUTH."** 10-rater yacht. By A. W. Littlejohn. Overall length 73 in. (53 in. W.L.), beam 11.8 in.; draught 11.4 in., and displacement 28 lb. (lead 19 lb.) and sail area 1,132 sq. in.

7/6

## 1/32 SCALE CAR DRAWINGS (continued from page 75)

MM/981 Aston Martin Ulster  
Allard J2X  
MM/982 Jaguar SS 100  
Jaguar XK 120  
MM/983 Honda F. 1.  
Honda F. 1.  
MM/984 5.L. Delage  
2.L. Delage  
MM/985 Healey Silverstone  
Bentley Sport  
MM/986 Repco Brabham  
3L Ferrari F.1.  
MM/987 Maserati A6 GCS  
Alfa Romeo G.T.A.  
MM/988 Lola T 70 Mk. 111  
Ford Mk. 1V

MM/989 Ford G.T. 40 Mk. 11  
MM/990 Chaparral 2E  
MM/991 Lotus 48  
B.R.M. 83  
MM/992 Matra F2/3  
Chevron G.T.  
MM/993 Maserati Tipo 61  
Maserati Tipo 65  
MM/994 S.T.P. Paxton Turbine  
Peugeot Diesel  
MM/995 Fiat G.P.  
Iso Grifo 365  
MM/996 Broadspeed Anglia  
Ferrari 246 Dino  
MM/997 Chaparral 2C  
MM/998 Chaparral 2D



## CALLER HERRING

By John Lewis

A bulb keel 10-rater with very high aspect ratio sail plan. Disp. 32.5 lbs., L.W.L. 56 ins., L.W.L. beam 11.4 ins., l.o.a. 74 ins.

MM/896

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8/6

## FLAMINGO

By S. Witty

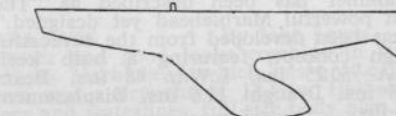
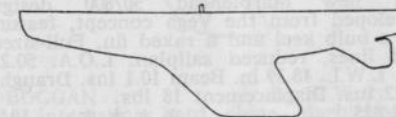
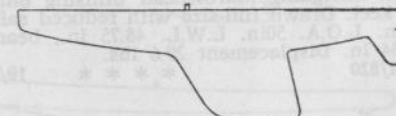
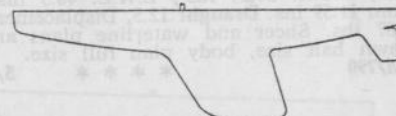
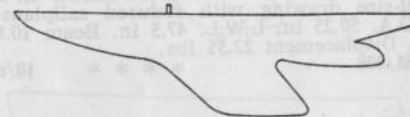
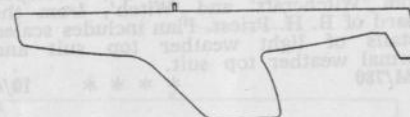
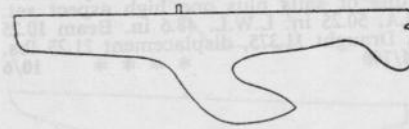
10-rater of 74 in. l.o.a., 57.5 in. L.W.L., 12 in. beam, draught 13.5 in. displacement 28.5 lbs. The latest design trend of deep draught bulb keel giving more power for lighter weight and hence greater speed.

MM/916

\*\*\*\*\*

12/6

# Marbleheads



## SUN KISS

By A. R. Lassell and T. Thorsen

A Champion American design with full details of unique sliding rig and the designer's own sailing instructions. Sliding rig details full-size as are all other drawings for the hull. Sailplan reduced size with 2nd and 3rd suit areas given. Beam 9.7 in., displacement 18.75 lbs.

MM/268

\*\*\*\*\*

9/6

## TONGA BELLE

By John A. Lewis

Marblehead design to advanced principles, employing high aspect ratio sails, thick fin, etc. 10.6 beam, 22.4 lbs., displacement. Full-size lines and reduced sail plan complete on one sheet.

MM/323

\*\*\*\*\*

9/6

## MERLIN

Marblehead Racing Yacht. L.O.A. 50 in. Maximum beam 9.92 in. Displacement 17.6 lbs. Designed on metacentric shell principles based on Admiral Turner's theoretical balance equations. Complete with all hull lines, half-sail plan for three suits.

MM/106

\*\*\*\*\*

10/6

## MANTA

By S. Witty

A 22-lb. Marblehead of narrow beam (9.4 in.) and medium/heavy displacement of 22 lb. Draft is unusually deep at 11.6 in.

MM/551

\*\*\*\*\*

10/6

## WASP

By S. Witty

A design development from the popular "Hornet". An attractive craft of good all-round performance. L.O.A. 50 in. L.W.L. 48½ in. Beam 10.1. Displacement 21 lbs.

MM/574

\*\*\*\*\*

10/6

## SAIDA

By D. A. McDonald

An excellent Marblehead 50/800 design, well suited to beginner or expert. A reliable performer under all conditions. Full-size hull lines, reduced sail plans. Beam 10 in., displacement 20½ lbs.

MM/295

\*\*\*\*\*

7/6

## WITCHCRAFT

By B. H. Priest

Winner of the 1954 'Model Maker' Trophy on its first outing, this design is probably the most popular Marblehead ever. Easy to sail, top flight performance, still up with the best. Features seal-flipper fin, forward flare, aft tumblehome. L.W.L. 47 in., maximum beam 11 in., displacement 22 lb.

MM/342

\*\*\*\*\*

10/6



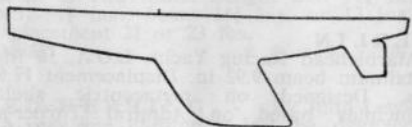
# Marblehead



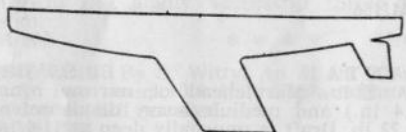
**HUSTLER** By S. Witty  
Full size plans with reduced sailplans for 3 suits of sails plus one high aspect set. L.O.A. 50.25 in. L.W.L. 48.6 in. Beam 10.25 ins. Draught 11.375, displacement 21.25 lbs. MM/740 \* \* \* \* 10/6



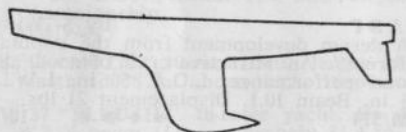
**BEWITCHED** By B. H. Priest  
A 23½ lb. Marblehead design, developed from 'Witchcraft' and 'Witch', from the board of B. H. Priest. Plan includes scaled details of light weather top suit and normal weather top suit. MM/780 \* \* \* \* 10/6



**BOSUN** ... By S. Witty  
A powerful new Marblehead shown on a full-size drawing with reduced sailplans. L.O.A. 50.25 in. L.W.L. 47.5 in. Beam 10.8 in. Displacement 22.55 lbs. MM/808 \* \* \* \* 10/6



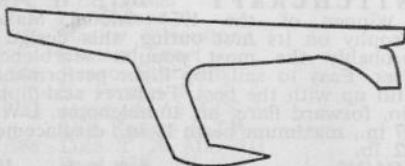
**FLAMENCO** By D. M. J. Hollom  
A double chine, deep draught Marblehead, L.O.A. 50.24 ins., L.W.L. 48.5 ins., Beam 11.59 ins. Draught 12.5, Displacement 20.87 lbs. Sheer and waterline plans are drawn half size, body plan full size. MM/790 \* \* \* \* 5/6



**DAREDEVIL** By R. Stollery  
An intriguing Marblehead utilising bulb on keel. Drawn full-size with reduced sailplan. L.O.A. 50 in. L.W.L. 48.75 in., beam 10.34 in. Displacement 20.6 lbs. MM/820 \* \* \* \* 10/-

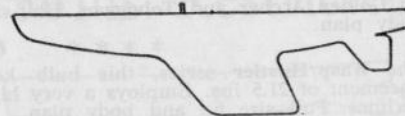


**KINGFIN** By S. Witty  
A new Marblehead 50/800 design developed from the Vega concept, featuring a bulb keel and a raked fin. Full-sized hull lines, reduced sailplan. L.O.A. 50.25 ins. L.W.L. 48.39 in. Beam 10.1 ins. Draught 15.22 ins. Displacement 18 lbs. MM/825 \* \* \* \* 10/-

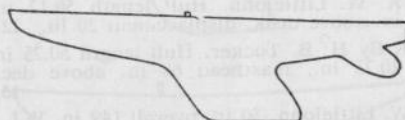


**HAMMER** By S. Witty  
Hammer has been described as "The most powerful Marblehead yet designed." It has been developed from the successful design concept, featuring a bulb keel. L.O.A. 50.25 ins. L.W.L. 48 ins. Beam 10.85 ins. Draught 13.6 ins. Displacement 21.5 lbs. MM/832 \* \* \* \* 10/-

# Marbleheads



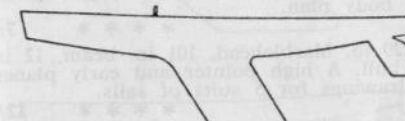
**HORNET** By S. Witty  
A modern and attractive Marblehead with design features to assist planing in hard weather. Beam 10.3 in., displacement 21 lb. MM/472 \* \* \* \* 10/6



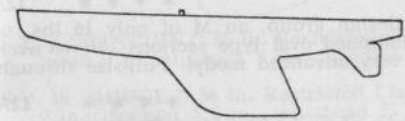
**FESTIVE** By W. J. Daniels  
Complete with full-size hull lines, reduced size sail plans for three suits, and 12-page illustrated instruction booklet. Beam 10 in., displacement 20 lbs. (Note special Vane Gear suitable for this yacht is also available.) MM/201 \* \* \* \* 10/-



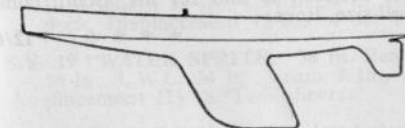
**MITHRAS** By D. A. Macdonald  
A tried and proved heavyweight Marblehead with top-class performance in any weather, for planked or carved construction. Full-size waterline, sheer, and body plans, etc. Beam 11 in., displacement 23½ lb. MM/408 \* \* \* \* 10/6



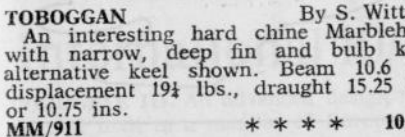
**WITCH** By B. H. Priest  
An attractive Marblehead of very modern design featuring flattish floors and powerful sections, specially suited to sliding rig. L.W.L. beam 10½ in.; displacement 23½ lb. Full-size body, sheer and waterline plans with reduced sail plan on one sheet. MM/462 \* \* \* \* 10/-



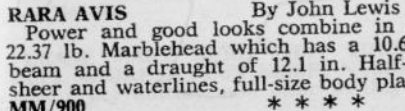
**DYNAMO** By S. Witty  
A powerful Marblehead of attractive shape. 22½ lb. displacement, 10.1 in. beam. Keynote of design is careful attention to dynamic balance. MM/508 \* \* \* \* 10/6



**CHINABOY** By D. A. MacDonald  
A top performing sharpie (hard chine) Marblehead which has won many regattas and is also excellent for radio control. All construction detail included on the plan. Beam 11½ in., displacement 16½ lb. MM/501 \* \* \* \* 10/6



**TOBOGGAN** By S. Witty  
An interesting hard chine Marblehead with narrow, deep fin and bulb keel; alternative keel shown. Beam 10.6 in., displacement 19½ lbs., draught 15.25 ins. or 10.75 ins. MM/911 \* \* \* \* 10/6



**RARA AVIS** By John Lewis  
Power and good looks combine in this 22.37 lb. Marblehead which has a 10.6 in. beam and a draught of 12.1 in. Half-size sheer and waterlines, full-size body plan. MM/900 \* \* \* \* 7/6

**NORMA** By S. Witty  
A new, relatively lightweight Marblehead design featuring an unusually deep draft. A pleasing design measuring 50.25 ins. by 10.4 ins.; plan gives full size lines and reduced Sail plan. Displacement 20.65 lbs. MM/701 \* \* \* \* 10/-

**GOLDEN ARCHER** By S. Witty  
One of the most attractive Marbleheads from this designer's board, and one that proved instantly popular on publication. Beam 10.85 ins., draught 12 ins., displacement 22.5 lbs., with deceptive power. MM/905 \* \* \* \* 12/6

**SPRINT.** By S. Witty. A bulb keel Marblehead with a beam of 9.9 in. and a displacement of 21.5 lbs. Canoe body evolved from **Golden Archer** and **Toboggan**. Half-size sheer and waterlines. Full size fin and body plan.

MM/931

\* \* \* \* 6/-

**TYPHOON.** By S. Witty. Developed from the **Wasp/Hustler** series, this bulb keel Marblehead has a 10 in. beam and a displacement of 21.5 lbs. Employs a very high aspect ratio rig. Half-size sheer and waterlines. Full size fin and body plan.

MM/932

\* \* \* \* 6/-

**S.Y. 7 "FALCON."** An "M" Class Yacht. By A. W. Littlejohn. Hull length 50.12 in., beam 9.30 in., draught 9.60 in., masthead 66 in. above deck, displacement 20 lb. 12/6

**S.Y. 20 "WATER NYMPH."** An "M" class yacht. By H. B. Tucker. Hull length 50.25 in., L.W.L. 47.5 in., beam 10.625 in., draught 10.75 in., masthead 68 in. above deck. Displacement 22½ lb. 15/-

**S.Y. 36 "KESTREL."** Marblehead yacht. By A. W. Littlejohn. 50 in. overall (49 in. W.L.), beam 10½ in., draught 10 in., displacement 24½ lb. 10/-

**V E G A.** By S. Witty. An unusual new Marblehead which has been built and sailed to prove its practicability, this design features bulb keel giving normal power despite a total displacement of only 16.51 lbs. Length o.a. is 50.25 ins. and beam 9.8 ins. Plan includes sail plan to smaller scale. MM/759 \* \* \* \* 10/-

**WING.** By S. Witty. A bulb-keel Marblehead, 10.5 beam, 12.1 draught, 21 lbs. displacement, with traditional, well developed hull. Half size sheer and waterlines, full size body plan. MM/958 \* \* \* \* 7/6

**ELF.** By S. Witty. Conventional hull Marblehead, but with bulb keel, beam 10.35, draught 12.1, displacement 21 lbs. A partner to "Wing", but with a slight advantage in very light winds. Half size except body plan. MM/959 \* \* \* \* 7/6

**MARCH HARE.** By Roger Stollery. Modern 20 lb. Marblehead, 10½ in. beam, 12 in. draught, with rounded deck merging into hull. A high pointer and early planer, even on a reach. Full-size lines, reduced drawings for 5 suits of sails. MM/964 \* \* \* \* 12/6

**WHITE RABBIT.** By Roger Stollery. Streamlined Marblehead with rounded top-sides and bulb keel, 9 in. beam, 12½ in. draught, and 18½ lb. displacement. Particularly good downwind and on a reach. Full-size lines. MM1001 \* \* \* \* 12/6

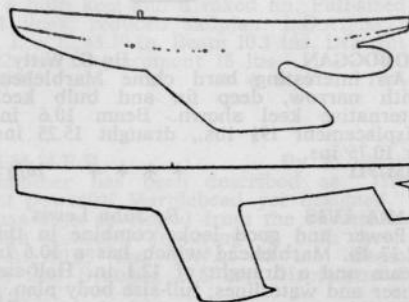
**MAD HATTER.** By Roger Stollery. Third of a design group, an M of only 16 lbs. on 11 in. beam and 12 in. draught. Bulb keel, flattened oval type sections. Above average performance, especially to windward. A very advanced model. Full-size through-out, 9 reduced sail plans. MM/1002 \* \* \* \* 12/6

**M QUARTET** By R. E. Dunster. Full-size plans of a double-chine Marblehead with four different fins/leads for the same canoe body giving draughts from 11 to 12.9 in. on a 1-w:1 beam of 10.2 and displacements between 19 and 20½ lbs. Good, competitive performance from all versions. Full-size lines. MM/1008 \* \* \* \* 12/6

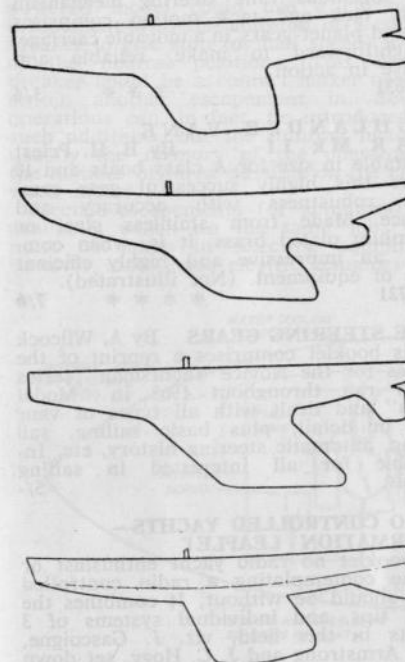
## 36 ins. Restricted

**LANCET** By T. J. Lance  
36-in. Restricted Class Hard Chine Sharpie. Capable of meeting the best racing today, and an economical boat to build. Intended for kit production, parts are few and together with sails and fittings can be obtained at competitive prices. Complete with building instructions on two sheets, size 40 x 30 in. and 20 x 15 in. MM/266 \* \* 9/6

**FIREBIRD** By D. M. J. Hollom  
This hard-chine Marblehead features a high aspect ratio sailplan and a bulb keel. Half size lines, full size body plan. MM/828 \* \* \* 5/6



## 36 ins. Restricted



### HARLEQUIN

By Bernard Reeve, M.S.N.R.  
A 36 in. Restricted Class Yacht. For "bread-and-butter" type construction. On two sheets, including sail plan with three suits, and all fittings details, size 47 x 28 in. and 33 x 29 in. MM/276 \* \* \* 9/6

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### WINDBIRD

By H. B. Tucker  
Low free-board and easy lines characterise this design which exploits to the full the M.Y.A. 36 in. rule. Excellent for bread-and-butter construction. Details for four suits of sails, full-size lines, etc. MM/349 \* \* \* \* 9/6

### RAZORBILL

By W. J. Daniels  
A 36 in. Restricted Class Yacht designed as a hard chine sharpie for easy construction. Full size lines, detailed step-by-step instructions and sail plan. One sheet, size 47 x 36 in. MM/284 \* \* \* \* 7/6

**S.Y. 6 "PENGUIN."** 36 in. Restricted Class Yacht. By A. W. Littlejohn. Hull length 36 in., beam 9 in., draught 8 in., masthead 52½ in. above deck, displacement 12 lb. 10/-

**S.Y. 10 "MIDGE."** 36 in. Restricted Class Yacht. Hull length 36 in., L.W.L. 34 in., beam 9 in., draught 8.4 in., masthead 55 in. above deck. Displacement 12 lb. 15/-

**S.Y. 15 "SLIPPERY SAM."** By H. B. Tucker. 36 in. Restricted Class Yacht. Hard Chine. Hull length 36 in., L.W.L. 34 in., beam 9 in., draught 9½ in., masthead 59 in. above deck. Displacement 11 lbs. 4 oz. Two sheets. 12/6

**S.Y. 19 "WATER SPRITE."** 36 in. Restricted Class Yacht. By H. P. Tucker. Hull length 36 in., L.W.L. 34 in., beam 9 in., draught 8½ in., masthead 57 in. above deck. Displacement 11½ lb. Two sheets. 12/6

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## BOAT RADIO CONTROL

Radio control of model boats is probably the most rapidly expanding branch of both radio and model power boats, since there are so many advantages and so few snags. Weather is far less of a consideration than it is for aircraft, space required is far less, and many stretches of water are to be found in or near towns which are excellent for boating and do not involve long trips.

In addition, equipment weight is not so critical (except where high speeds are the aim) and a failure or loss of control does not so often result in a lost or broken model.

Radio, in itself, is divided into single channel and multi-channel equipment. The simplest and least expensive is single channel, and in its most basic application

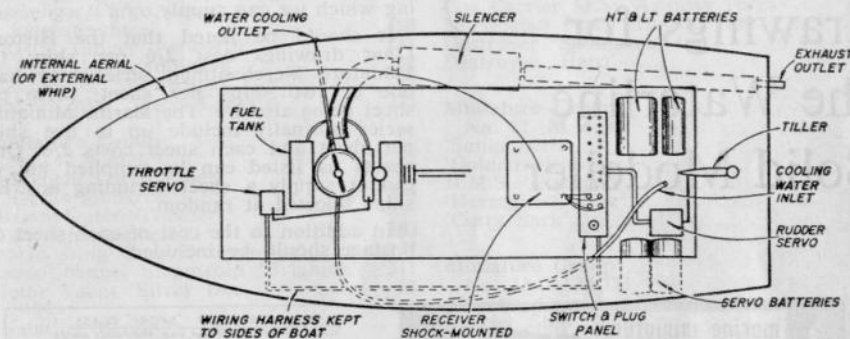
this gear is used just as a switch to operate a sequence of rudder movements by means of an escapement or actuator.

A typical installation in an electric powered model could use a clockwork escapement with the addition of a contact breaker to give stop (or half speed) in one of the neutral positions. This contact breaker could be a contact maker used to switch another escapement in. Several operations can, in fact, be introduced by such additions, but the limiting factor is usually the memory of the operator or the number of turns possible on the clockwork motor.

Electric escapements (or actuators) are available, which do the same job. Care must be taken in selecting equipment, however, since some electric actuators will

not work from — or will damage — all-transistor relayless receivers. Transistor receivers, too, may be sensitive to interference from motor sparking, and may not work if mounted close to the main motor. Your dealer should be able to advise on suitable equipment.

Rudder movement is divided into four classes—sequential, (sometimes called "escapement-only" or, more simply, "bang-bang rudder"), optional or selective (full rudder, left or right at will), progressive (the rudder moves gradually and may be stopped at any intermediate position; this is usually movable in either direction, i.e. optional progressive), and proportional, in which the rudder "follows" the control exactly and can be moved to any position from any position.



The average boat, especially as used in competition, is fitted with four-channel radio. In normal multi-channel equipment the single-channel carrier wave is sent continually and when a control is selected, a "tone" is superimposed on the carrier. Up to ten different tones can be sent with most model radio outfits but with a four-channel set provision for selecting only four is made. The receiver responds to the appropriate tone sent, and the four tones normally provide optional self-neutralising left and right rudder and progressive open and close throttle.

The sketch shows a typical installation for a four-channel receiver in a model fitted with an i.c. engine with throttle, and most of the important points are illustrated. On the engine side, note fuel tank—ahead of but close to the motor, fuel level when full approximately level with intake spray-bar. This position is the best under normal circumstances. Note water tubes, from intake behind prop, through cylinder jacket, and out over side or through transom. A silencer is essential and should act as an oil trap, to prevent fouling the water.

Radio-wise, the receiver should be mounted on a block of foam rubber or suspended by springs or rubber bands, or packed in foam rubber in a plastic box, so

that high frequency vibration is damped out. Everything should be slightly off the floor of the boat to prevent damage from water in the bilges. Invisible soldered joints, such as under the switch panel etc., should be boxed in to prevent splashing and subsequent corrosion. Wires should be anchored near joints, so that an inadvertent pull is not taken by the joint. All wires should be braided or slipped through tubing and tucked neatly out of the way along the sides of the boat. A whip aerial is slightly more efficient but less convenient; keep the aerial away from HT wires and electric motors. Insulation is desirable between the tiller and the rudder actuator or servo, a plastic link being best. Adjustment must be provided in the tiller linkwork so that the rudder can be neutralised precisely. A clutch on rudder and, particularly, throttle servo is an advantage.

Clean and check the boat after each day's running, and check everything immediately before the next outing, particularly batteries—a little damp can ruin a battery or corrode a vital contact. By following these simple rules, plus the rules of good soldering and the instructions supplied by the radio manufacturer, you can expect long and trouble-free service and many hours of enjoyable running.

# marine miniatures

R.A. SWEET

## SHIP DRAWINGS

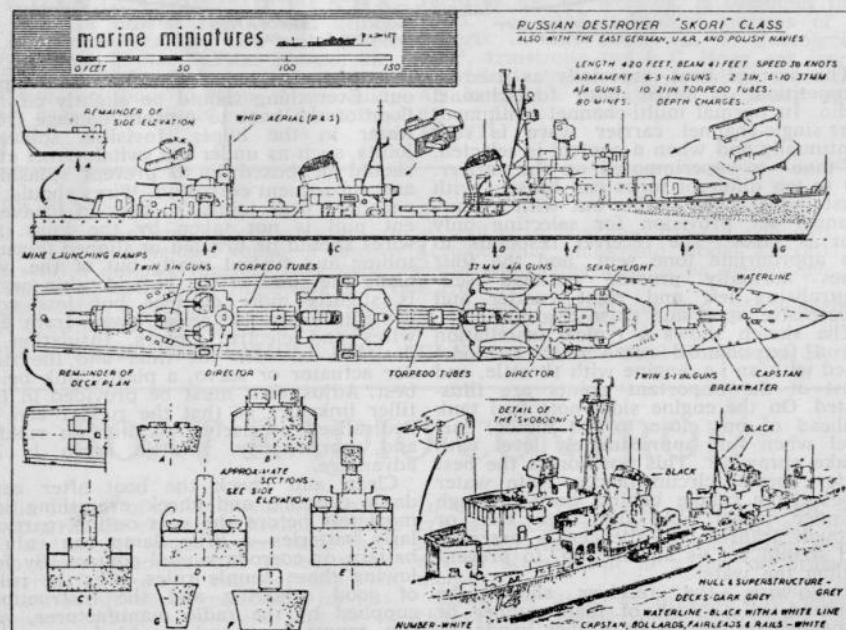
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The drawings listed overleaf comprise the complete range of 50 ft.—1 in. ship drawing which we can supply.

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Miniature Group	Length feet
No. 1 M.M.576	490
Cargo Liner 'Rio de Janeiro'	...
Manchester Ship Canal	...
Grab Hopper	142
Grand Banks Fishing Schooner	120
Motor Ship 'Tarawera'	292
Bulk Cargo M.A. 'Susan Constant'	351

Miniature Group	Length feet
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Motor Tanker 'British Fulmar'	...
Passenger/Cargo Motorship	...
'Jens Bang'	341
Cargo Ship 'Wakefield'	244
Yawl 'Seal'	37
Thames Sailing Barge	80

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'Leicestershire'	233
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Coaster 'Le Scandinave'	95
Manchester Ship Canal Tug	225
Coaster M.S. 'Fred Everard'	...

Miniature Group	Length feet
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Distant-water Trawler	...
'St. Christopher'	180
Ocean-going Tug 'Barentz Zee'	134
Cross-Channel Steamship 'Brighton'	311
Motor Yacht 'Silver Dee'	58

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'Carisbrooke Castle'	191
Mersey Tug 'Foylemore'	103
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Bulk-Sugar Carrier M.S. 'Sugar Producer'	395

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Norwegian Ferry 'Harald Jarl'	362
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'Orbita' and 'Orduna' ...	569
No. 10. M.M.638 'Balmoral Castle' ...	591
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No. 13. M.M.653 'Mulbera' ...	482
No. 14. M.M.665	
'Viceroy of India' ...	612
No. 15. M.M.673 'Majestic' ...	956
No. 16. M.M.683 'Paris' ...	773
No. 17. M.M.693 'Aquitania' ...	901
No. 18. M.M.705 S.S. 'Cavina' ...	442

No. 19. M.M.712 'Andre Lebon' ...	530
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No. 28. M.M.787 S.S. 'Ranchi' ...	545
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M.S. 'Worcestershire' ...	502
No. 33. M.M.813	
S.S. 'Empress of Britain' ...	760
No. 34. M.M.818 S.S. 'Virginian' ...	538
No. 35. M.M.824	
M.S. 'Winchester Castle' ...	655
No. 36. M.M.827 S.S. 'Athenia' ...	536
No. 37. M.M.833	
S.S. 'Kaiser Wilhelm II' ...	705
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No. 42. M.M.888 S.S. 'Hanoverian' ...	617
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Bedford' ...	601
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No. 22. M.M.815 S.S. 'Fordsdale' ...	520

## Space Models

Amusing novelties designed by Peter Holland for the beginner. They employ unusual application of simple mechanical principles and are easy to make.

**THE SLIDER AND THE FLY**

An ingenious pair of models of simple balsa construction, 'Slider' being an air-screw driven hydroplane for up to 1 c.c. motors to which is attached an identical hull fitted with an autogyro unit. This rises clear of the water when the model is in action.

MM/454 \* 3/6

**TEAL**

Described as a Tripedal Electronic Ambulatory Locomotive, this is a futuristic space model powered by a small electric motor, and it actually walks. Simple construction with wire cranks, etc.

MM/380 \* 3/-

**WR. ROBOTHAM**

An ingenious 2 ft. high walking robot, powered by two small electric motors (TG18 or similar). Balsa and card construction; causes a sensation whenever it appears in public!

MM/406 \* 5/-

**SPIDER**

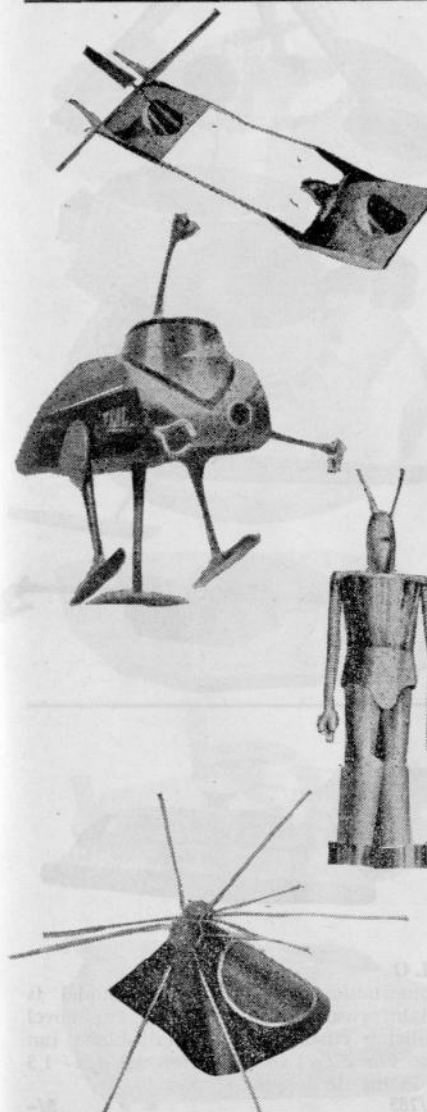
Unusual model running on two six-armed intermeshing rotors, employing rubber drive. Capable of covering considerable distances at high speed.

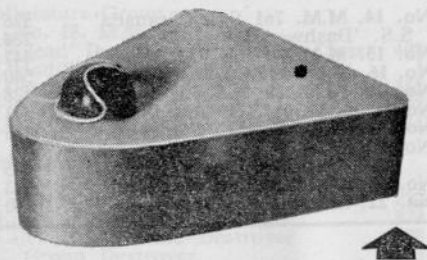
MM/413 \* 3/-

**FLOPALONG**

An ingenious boat propelled by vibrating plate, which is quite capable of holding its own against normal propulsion. All balsa construction, for small electric motors, length 19 in.

MM/402 \* 3/6



**SNOOPER**

This remarkable 3-wheeler finds its way around obstacles, and resumes its original course once clear. Easy to build, using any small electric motor.

MM/436

\* 3/-

**CAMEL**

Cosmic Ambulatory Medium Elevation Look-out for survey on other planets. Inexpensive model, using simple and ingenious rubber drive mechanism, walks 50 yards on one winding. Bristol board and balsa construction.

MM/394

\* 3/-

**TURTLE**

Novel tricycle vehicle employing reaction propulsion obtained with T.G.18 motor or similar. Balsa and card construction.

MM/419

\* 3/-

**E-SKI-MO**

An airscrew-driven ice sledge comprising one central ski with outriggers. Can be used on snow, ice, water, or even wet grass! Balsa construction. For up to 1 c.c. motors.

MM/450

\* \* 3/6

**SLITHA**

A track-laying vehicle which shoots its track forward, lowering it in place, runs forward, lifts the track and repeats. Any small electric motor, balsa construction.

MM/420

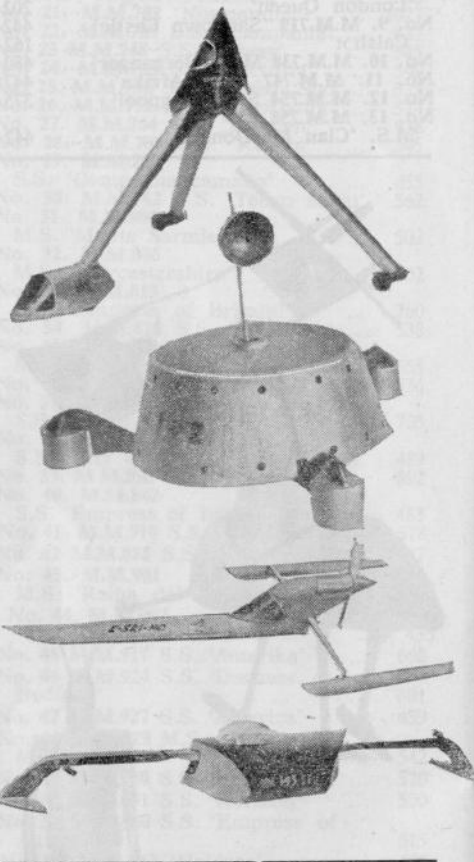
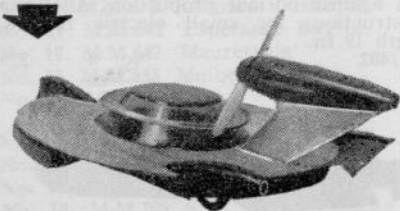
\* 3/6

**PLUTONIAN PLATE**

This saucer is amphibious and will perform equally well on land or water. Simple construction, mainly of balsa. 13 in. in diameter, for up to 0.75 c.c. motors.

MM/390

\* 3/6

**LILLO**

Construction of this scallish model is straightforward and features a novel stabilising curtain and a multi-blade fan drive. For diesel motors from 0.8 c.c.- 1.5 c.c. 15 ins. in length.

MM/755

\* \* 5/-

# Hovercraft

**HOVERER**

A model of futuristic design employing balsa for the main structure with ply engine mount, etc. Suitable for diesel and glow engines of 1½-3½ c.c. Diameter 24 in.

MM/591

\* \* 5/-

**HOVERPLATE**

This simple ductless machine follows basic hovering principles and is a cushion craft of amusing performance. Can be used over water or any flat surface and, simple though it is, you will learn a lot from this model. 18 in. long, 1-1½ c.c. motors.

MM/717

\* \* 6/-

**ORBIT**

A revolutionary spin-stabilised electric hovercraft for tethered running. All balsa construction, an interesting and attractive model of "flying saucer" appearance. 8 in. Diameter. Tether pylon detail on plan.

MM/614

\* \* 3/-

**HOVERTRON II**

This hovering-craft works on the true air curtain principle and is suitable for single-channel proportional radio control. Power on the prototype was 1.5 c.c. Sabre but any motor from 1.5 c.c. to 2.5 c.c. can be used. Length 25 ins.

MM/736

\* 7/6

**S. R. N. - 1**

A semi-scale model hovercraft. Powered by any 2½-3½ c.c. engine. The model gives a spectacular performance over land or water, hovering at 1-2 in., while moving forward at 5-10 m.p.h. Suitable for R/C. Size 40 in. x 30 in., all-balsa.

MM/583

\* \* 8/6

**BUZZIN BEE**

A simple all-balsa hovercraft for tethered running, using a 12 v. electric OO railway motor. An attractive project for the modeller who prefers the unusual type of model. L.O.A. 14½ in.

MM/602

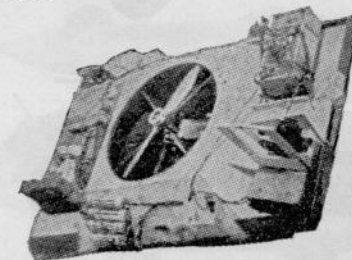
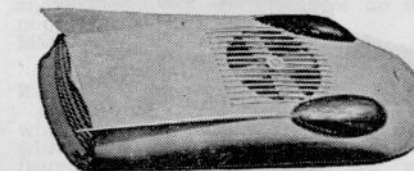
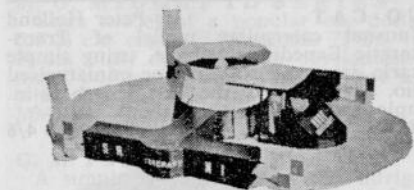
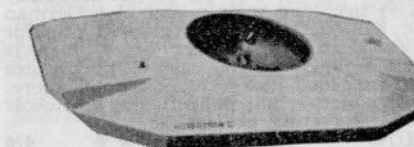
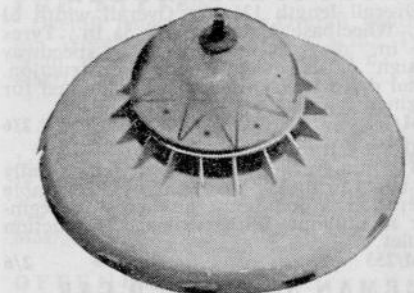
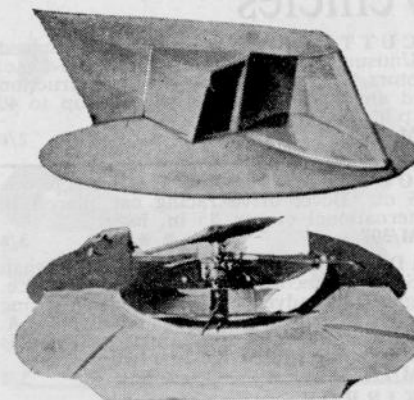
\* 3/6

**HUMMING BIRD**

Radio controlled or free running hover vehicle. Simple construction of balsa with hardwood mounts, etc. Any engine of .5-1 c.c. Basic size 10 in. square. R/C if required carried on outriggers. Lifting capacity 27 ozs.

MM/570

\* \* 5/-





## Vehicles

### SCUTTLE

By Vic Smeed

Unusual airscrew driven car for 5-1 c.c. motors, using all-balsa-ply construction and any 2-2½ in. wheels. Speeds up to 40 m.p.h. on tethered circuit.

MM/325

\* 2/6

### MOORE NUMBER ELEVEN

5 c.c. Bevel drive racing car placed in International events. 15 in. long.

MM/307

\*\*\* 3/6

### PADDA

By Bertil Beckman

Swedish record-holding car for 2.5 c.c. engines of advanced construction, using two cast pans. Conforms to all M.C.A. rules. Similar to top American models with trailing knife-edge rear wheels, etc.

MM/296

\*\*\* 3/6

### SKIROW—

#### MIDGET SPEEDWAY CAR

Overall length 12½ in.; Overall width 6½ in.; Wheelbase 8½ in.; Track 5½ in.; Tyres 2½ in. dia. Popular British speedway design of all wood body construction. Final drive by friction. Can be adapted for engines 1-3 c.c.

MM/165

2/6

### NOVICE'S 50

A miniature model car especially designed to utilise ½ c.c. engines. For cable operation. Wood body, suitable for beginner to attempt. With two-page instruction leaflet.

MM/255

\* 2/6

### GERMAN ARMOUR CAR

By M. A. Hundleby

A 9½ ins. long scale model of a German S.D. K.F.Z. 231 8 rad Armoured Car for either electric or rubber drive. Plan is detailed down to the last item; pickaxe and axe, tool boxes, etc., are all there. Construction is not difficult and the whole is an interesting project.

MM/745

\*\* 4/6

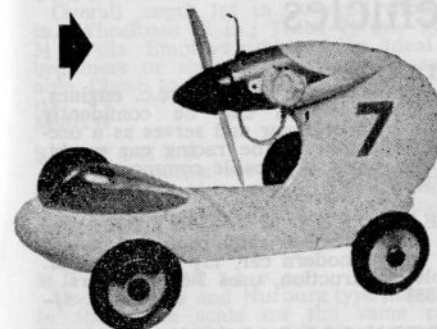
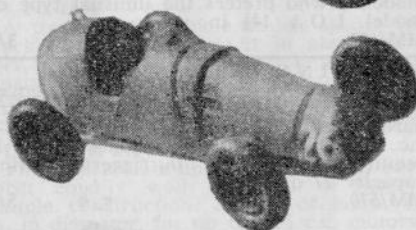
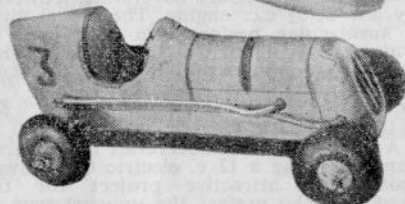
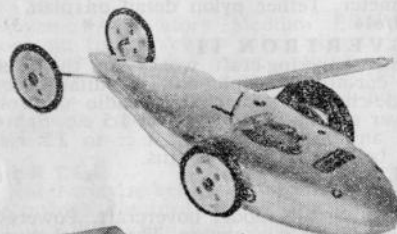
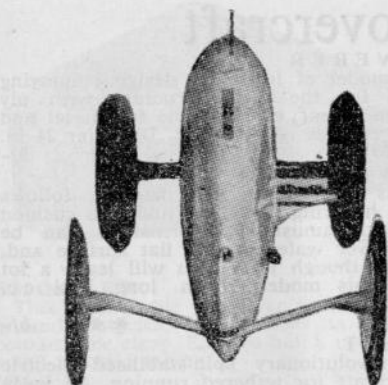
### SNO-CAT

By Peter Holland

Unusual caterpillar model of Trans-Antarctic Expedition vehicle, using simple electric drive and suitable for miniaturised radio. Scale ¼ in. to the foot, length 14 in. Simple construction throughout.

MM/529

\*\* 4/6



### THE KITTEN

Overall length 12½ in.; Overall width 6½ in.; Wheelbase 9½ in.; Track 5 in.; Tyres 2½ in. dia. For engines .75 to 2.4 c.c.

MM/168

\* 5/-

### DATPRINCE

A very simple race car design of Japanese origin for Javelin or similar 1-1½ c.c. motors. Commercial parts for motor adaption are available, pan and body, etc., are all wood.

MM/385

\* 2/6

### OFFENHAUSER SPEEDWAY CAR

Overall length 15 in.; Overall width 7½ in.; Wheelbase 9 in.; Track 6½ in.; Tyres 3 in. dia. Built for M.G.M. Film Model Building Contest. Elegant finish, clutch driven. For E.D. Bee 1 c.c. or similar engines.

MM/199

\*\* 2/6

### M. G. MIDGETTD SERIES

Scale model of a popular car designed for 1½ c.c. engines, Wheelbase 7½ in., track 3½ in. Fully detailed with development of metal bodywork. Bevel drive to rear wheel with clutch detail.

MM/277

\*\* 5/-

### G. M. FIREBIRD

A simple 12 in. model of this intriguing jet powered car, constructed from hollow block balsa and accommodating a Jetex 50 and augmentor tube. Speeds of up to 20 m.p.h. tethered or free.

MM/378

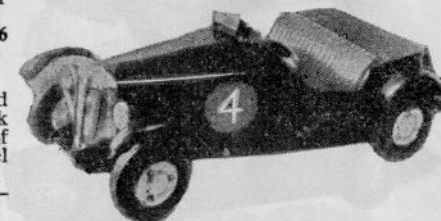
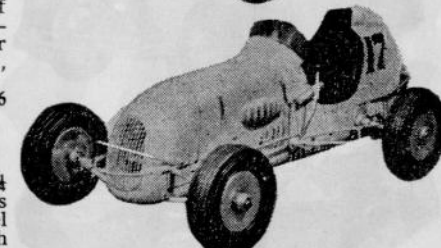
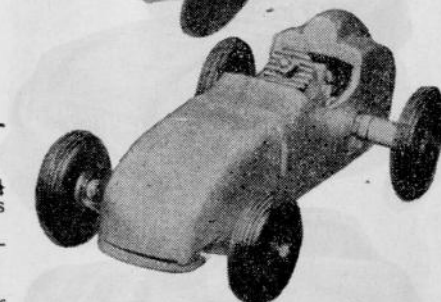
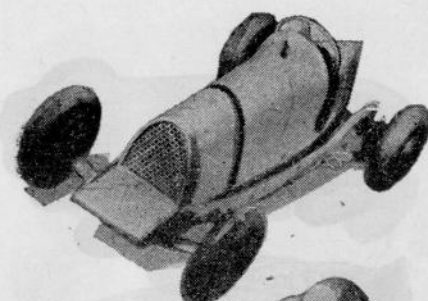
\*\* 1/6

### RECOVERY

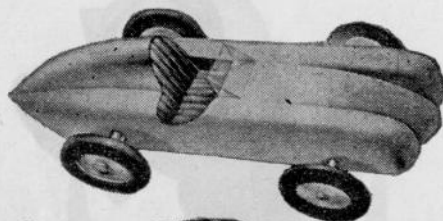
An unusual amphibian model with both wheels and waterscrew continually driven with 1-2 c.c. motor. Construction mostly from sheet balsa. Suitable for radio control adaptation. Lo.a. 19 in.

MM/554

\*\* 5/-



## Vehicles



### QUICKIE

An all-balsa race car for 1 c.c. engines, this simple model can be confidently tackled by a beginner and serves as a useful introduction to the racing car world. All parts easily obtainable commercially.  
MM/305 \* 3/-

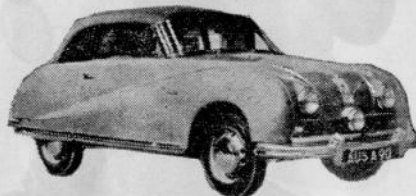


### CHEVROLET CORVETTE

An all-balsa electrically propelled model of a smart modern car, 13½ in. in length. Simple construction, uses 3-6 v. motors.  
MM/353 \* \* 3/-

### AUSTIN A90 SALOON

Length 14½ in.; Overall width 5½ in.; Wheelbase 8 in.; Track 4½ in.; Wheels 2 in. dia. One-twelfth scale, electrically powered model.  
MM/248 \* \* 5/-

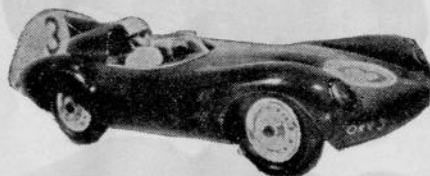


### LE MANS JAGUAR D

Scale model for up to 2½ c.c. motors using easily obtained commercial clutch and rear axle unit. Wooden body clipped to aluminium chassis, needs no workshop equipment.  
MM/367 \* \* 4/6

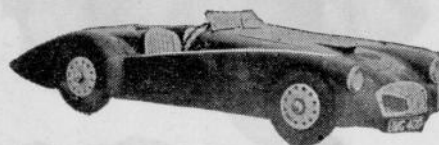
### LE MANS TD MG MIDGET

By G. H. Deason  
A scale model car for .75 c.c. or similar engines that can win Concours d'Elegance and put on a good track performance.  
MM/232 \* \* 5/-



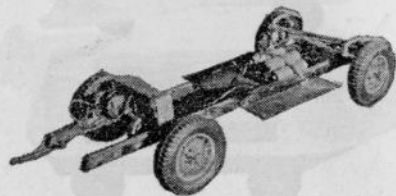
### ELECTRIC REMOTE CONTROL CHASSIS

An ingenious unit which will fit many of the Prototype Parade drawings; gives full hand steering, reverse, stop and headlights, etc. Easily built and great fun to operate. Suitable body construction suggested on plan.  
MM/369 \* \* 2/6



### SQUIB

A very simple airscrew driven car for up to 1 c.c. engines using Meccano wheels, etc. Capable of a good turn of speed. Exceptionally strong.  
MM/553 \* 3/-



### CISITALIA

Overall length 16½ in.; Overall width 8½ in.; Wheelbase 12 in.; Track 7½ in.; Tyres 3½ in. dia. Employs rubber drive. Ideal for beginners or those without engines available. Cheap to build, easy to construct and run.  
MM/158 \* 2/6

### SCORCHER

By Vic Smeed  
An ultra-simple car model for 1-1.5 c.c. engines, using Meccano gears and inexpensive wheels. Total cost (less engine) roughly 30/-.  
MM/448 \* 3/-

### MERCEDES 2½ c.c.

Both Rheims and Nurburg type Mercedes in the same scale on the same plan. Simple construction with any standard bevel gears, etc. Both models complete on one drawing.  
MM/391 \* \* 4/6

### MECCANO CHASSIS

A simple plan showing the construction of a chassis from standard Meccano parts to suit up to 1 c.c. diesel. An Aston Martin body to fit (length 10½ in.) is also detailed on the plan. For tethered or, where space permits, free running.  
MM/592 \* 3/-

### DELLOW TYPE SPORTS CAR

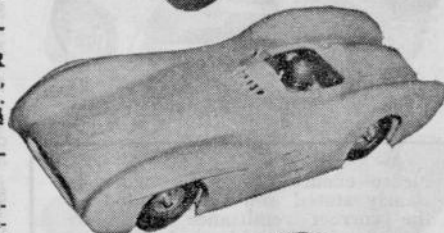
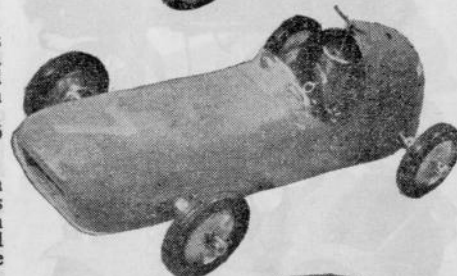
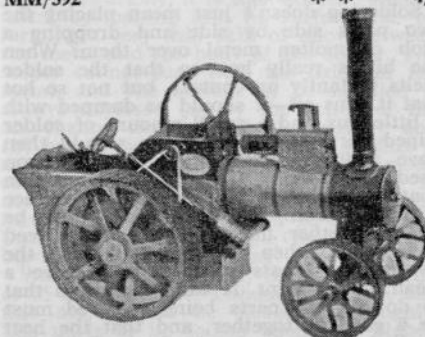
Miniature electrically powered model, highly authentic detail, realistic operation. Soldered tinplate construction. Length 6½ in.; Overall width 2½ in.  
MM/253 \* \* 3/-

### MERCEDES BENZ 300-SL

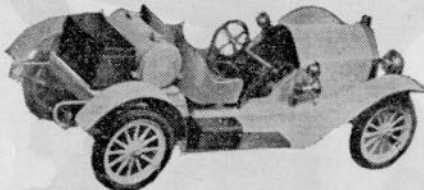
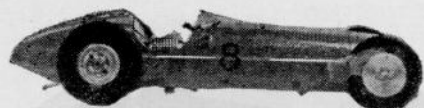
A radio-controlled scale car using a belt-drive 2.5 c.c. motor, may also be electric-powered. Radio installation details (not circuit) illustrated on plan. Sheet metal pan, balsa coachwork. Length 17 in.  
MM/322 \* \* \* 3/6

### SIMPLICITY

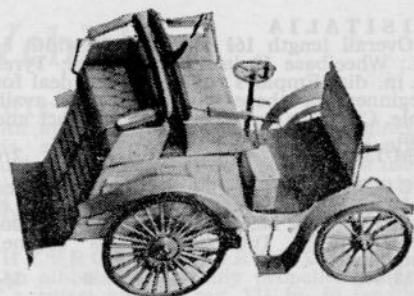
By G. H. Deason  
Novel electric traction engine to free-lance design, using Mighty Midget or similar motor. Overall length 10½ in. All card construction.  
MM/392 \* \* 4/-







Please ensure that your order is clearly stated and accompanied by the correct remittance and your name and full address in BLOCK LETTERS.



#### 1898 BENZ DOGCART

By G. H. Deason

A simple card and balsa working model employing any stock small electric motor. Entirely self-contained and amusing both in construction and performance.

MM/387 \* \* 2/6

#### B.R.M.

By Ken Procter

Designed for 2½ c.c. twin-shaft engines (Oliver, etc.). A "kitchen table" version of this British Racing design. Wooden body. Simple construction for those lacking workshop facilities.

MM/209 \* \* \* 3/6

#### 1900 DEDION

A really outstanding working model veteran car for .5 c.c. diesels. All metal construction, entailing some brazing, etc.

MM/375 \* \* \* 3/6

#### STUTZ BEARCAT

Simplified scale model of a popular vintage American roadster. Excellent as a decoration to be incorporated with a table-lamp, etc.

MM/324 \* \* 2/-

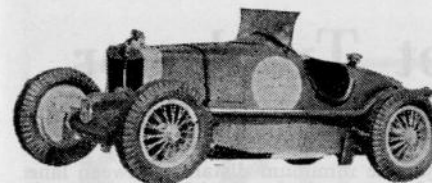
## How to Solder

MOST MODELS call for only the simplest of tools and can be built throughout with razor blade, glass-paper and pliers—until it comes to soldering. Even if it be only wheel retaining washers, most designs incorporate some metal-to-metal join which can only be made by solder.

The secret of soldering is cleanliness, and, for model work, the use of a flux such as "killed spirits" (Baker's fluid), in conjunction with tinman's solder. Cleanliness means filing, scraping, or abrading the metals to be joined until they are bright and free from grease, and also

using a clean soldering bit. Essential, also, is an iron suitable for the job—it's no good trying to solder 10 g. wire with a 10 d. instrument iron!

Soldering doesn't just mean placing the two parts side by side and dropping a blob of molten metal over them. When the bit is really hot—so that the solder melts instantly on contact, but not so hot that it runs off—it should be damped with a little flux and a small amount of solder wiped on. The cleaned parts should then have a little flux applied and the iron used to tin them; this means that a thin coat of solder is run on to the surface with the iron. The parts can then be placed together, fluxed and the iron placed in contact, when its heat will fuse the two tinning coats together and leave a clean, sound joint. It will be obvious that to do this the parts being soldered must be a good fit together, and that the heat applied to tinning must be sufficient to



#### M. G. MAGNETTE

Overall length 15 in.; Overall width 7 in.; Wheelbase 10 in.; Track 6 in.; Tyres 3 in. dia. An intermediate model based on Bira's racing car used in 1934. Simple construction. For engines 1-2 c.c.

MM/164 \* \* \* 5/-

#### VOLKSWAGEN

Simple all-wood scale-model of the well-known German car, designed for electric propulsion. Block balsa body-work, etc. 15 in. overall length.

MM/299 \* \* 2/6

#### AUSTIN SINGLE SEATER

Overall length 12½ in.; Overall width 5½ in. Wheelbase 8½ in.; Track 4½ in.; Tyres 2½ in. dia. Easily built and satisfactory to run. For engines 1-3 c.c.

MM/166 \* \* 2/6

#### JETMOBILE

Overall length 11½ in.; Overall width 5½ in.; Track 4 in.; Wheelbase 7 in.; Tyres 2 in. dia. Jetex propelled. Fast and simple to build.

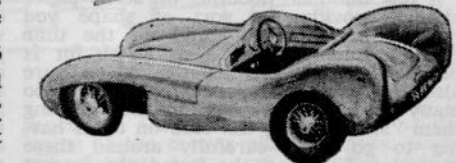
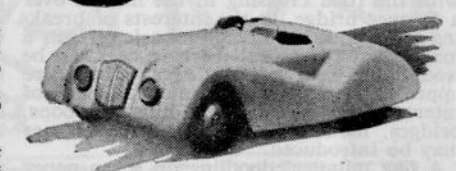
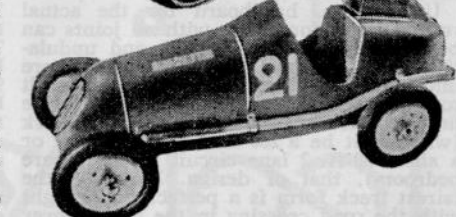
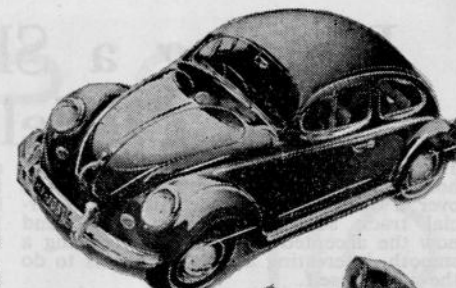
MM/167 \* \* 2/6

#### LOTUS Mk. 9

By Vic Smeed

1/12 scale model for ½-1½ c.c. engines, for rail or cable track. Simple construction with wooden body and dural sheet chassis. Drive through bevel gears.

MM/434 \* \* 3/6



form a good bond between the surface of the metal and the solder.

The function of the flux is rather complex, but, briefly, it is this. Solder "sticks" metal by melting into its surface, i.e. by forming a very thin skin of alloy between the metal and the body of the solder. The solder cannot fuse with the oxide of the metal, and the surface to be handled is always oxidised (a) by the action of the air (hence cleaning off thoroughly) and (b) by the heat from the iron. The flux is an agent which, broadly, enables the metal oxide to fuse with the solder, rather in the same way as soap enables a certain mixing of grease and water to take place. Understanding this simple principle is a big aid to sound soldering.

When binding a joint, thin copper wire or 15 amp. fuse wire should be used, and this also should be cleaned thoroughly. The parts to be joined should be tinned before assembly, then bound and heated.

To form a fillet of solder, the iron should be held beneath the work and the solder stick applied on top. To localise heat, lay the work on heavy metal blocks, but don't attempt to solder actually over a block, as too much heat is conducted away. Use a wooden support at the point of working. Heat shunts, to prevent heat travelling to another previously soldered part, or damaging a delicate radio part, can be metal clips, wet rag wrapped round, blocks of metal clamped on, etc.—anything that will absorb heat and prevent it from travelling. Always clean a joint thoroughly after using a flux as mentioned above, and do not use this type of flux for electrical joints; these should be made with Fluxite or other non-corrosive flux. For long joints cover a little anhydrous zinc chloride with methylated spirit and paint on. The meths. will evaporate to leave an even coat of zinc chloride. Do not use anything but methylated spirits with this chemical.

## Building a Slot Track for Your Model Race Cars

THE SUPERIORITY of a purpose built, home made circuit for club or private use over a circuit put together from commercial track sections is indisputable, and now the accepted method for producing a smooth, interesting and fair track is to do the job oneself.

Using  $\frac{1}{4}$  in. hardboard for the actual road surface, long runs with no joints can be achieved, smooth banking and undulations designed, and what's probably more important, the circuit can be custom built to fit a required space. This leads us to the first problem in building any sort of track (whether it be a 200 ft. 6 lane monster or a short 50 ft. 2 lane circuit for the spare bedroom), that of design. Basically, the fairest track form is a perfect figure eight with the road crossing in the middle over a fly-over bridge. In the interests of breaking the monotony of such a basic circuit, a long straight is essential where cars can be wound up to if not full revs, somewhere approaching this, and as many features of interest, e.g., banking, hills, swoops, bridges, mountain sections, even chicanes may be introduced.

A few minutes' doodling on scrap paper should provide the sort of shape you require—but keep in mind all the time that an important thing to watch for is physically equal lap lengths. Make sure also that particular lanes don't have too many tight radii to negotiate thus making them "slow lanes", the cars on them having to go more carefully around these obstacles. This may be found the largest problem of all and should be tackled patiently, re-designing all the time until a fair solution is reached.

Having arrived at the final design, a small scale model of the finished track can be built using ordinary stiff notepaper and balsa wood strip for the supports for inclines, bridges etc. If done, this may bring to light an important fault which you may have missed which can be ironed out by a slight design change before any expensive timber has been cut. Now down to construction.

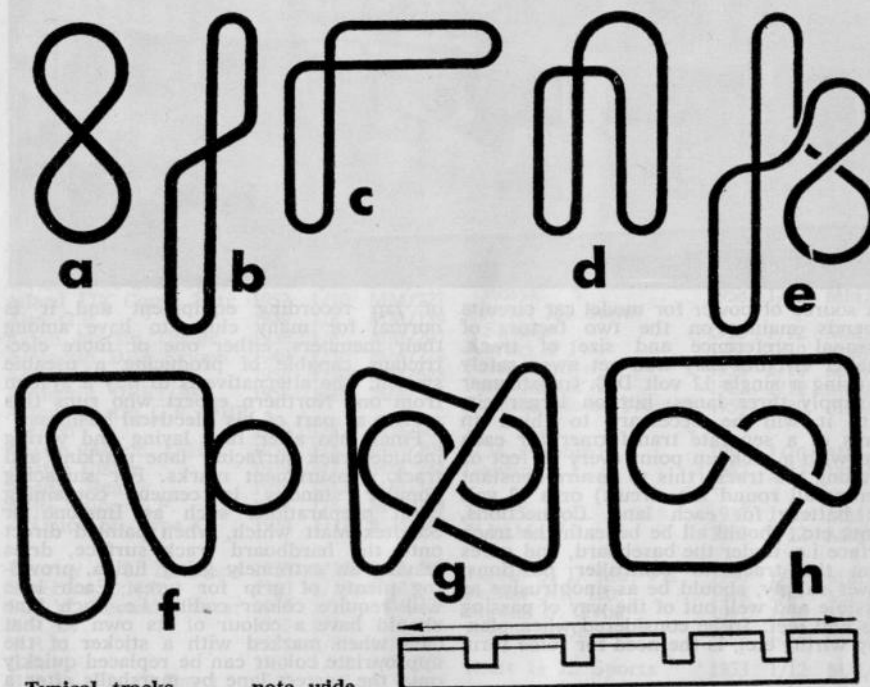
First requirement for any track is a firm base of the correct height above the ground. For comfortable driver operation and marshalling this would seem to be between 3 ft. and 4 ft. off the ground and should comprise a table (or number of tables) with a good, firm base board fixed onto them. For the roadway itself,  $\frac{1}{4}$  in. hardboard, available now in large, moderately priced sheets, is the popular answer. For the straight sections, it is possible to get the hardboard sliced into strips of the required size by the timber merchant from whom you buy it. Nowa-

days, the minimum distance between lane is 3 ins., and those wishing to run the larger 1/24th scale models together with 1/32 scale cars, should bear in mind and increase lane spacing to  $3\frac{1}{2}$  ins. to 4 ins.

The popular way of securing track to baseboard is by means of battens ( $\frac{1}{4}$  in. by 1 in. strip hardwood) with slots cut into these to accept the slot guide of the cars. These battens can be pinned or glued (or both) to the baseboard at a minimum of 9 ins. spacing between them, and the hardboard strips pinned and glued down onto them. For long straights, it would be advisable to discard the batten system and use 3 in. x 1 in. strip timber laid lengthwise along the straights of each strip of hardboard. This is to ensure a good smooth run where the use of battens might cause slight irregularity and undulations.

The cutting of curved track sections from hardboard often causes some difficulty and a safe way is to design the circuit so that all curves are of constant radius. This then makes the routing or slicing up of the hardboard sections easy with the use of a power saw mounted on a central pivot. Slightly more ambitious but well worth the extra effort is to incorporate a few non-constant curves (i.e. curves that start slow and tighten up as the cars travel through them) which add interest to driving. For this, as initially for the power saw system, the complete width of curved track should be hand sawn using a pad saw from the stock hardboard. The slots themselves can now be marked onto the sections of hardboard as a single line in soft pencil. Now each pencil line can be cut down again by hand using the pad saw. When pinning such sections onto battens on the baseboard, a certain amount of brute force will be required to prevent the slots closing up as the rather less than  $\frac{1}{4}$  in. cuts attempt to overlap but it has been found completely practical to force strips down so that an accurate  $\frac{1}{4}$  in. slot is maintained right through the curve. One would expect buckling of the track due to this, but we repeat, this system has been tried and has proved wholly successful.

The climb up to hills or bridges over base board level track can be as steep as you require, but remember that the track will require support at constant 9 in. intervals while "in the air". For this, battens can be built into a form of frame of the correct height, this frame being pinned to the base board and the track pinned to the batten at the top. In the same way, banking can be embraced by simply making one side of the frame



Typical tracks . . . note wide sides in section, right.

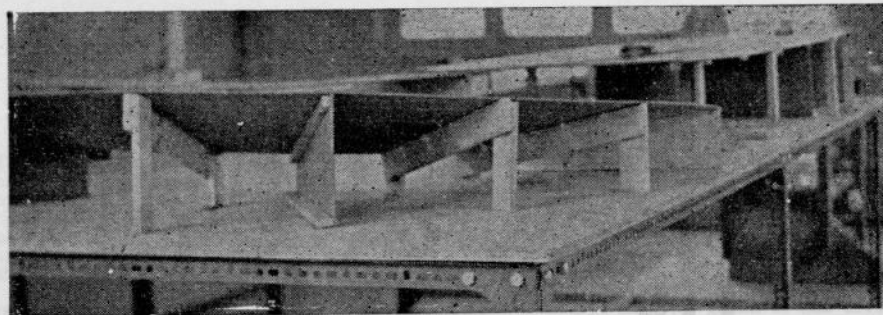
higher than the other—just like a wedge.

Bridges etc., should be firm using  $\frac{1}{4}$  in. timber for the sides and their design should be as modern as possible taking a tip from the bridge styles of some of the new motorways. Avoid building bridges too low—remember that it will be required that a marshall can get his hand under a bridge to replace a crashed car.

Once the basic track is completely laid, and all section joints are flat giving a completely smooth transition, thoughts can be turned to initial scenic work and an idea of what the completed circuit will look like should be formulated. Crumpled newspaper, old boxes, old tins, hessian or sacking, wire chicken mesh and cardboard are all useful items when tackling scenery and hills, banks, valleys etc can be produced by laying the wire over collections of such assorted rubbish, then plastering with hessian strip soaked in plaster over this. It will be found that any required feature of landscape can be easily produced. Powder paint and water are an accepted method of colouring scenery and these should be applied initially with a fairly slapdash attitude introducing more care into final coats to give light and shade etc., and the impression of grass or earth as the case may be.

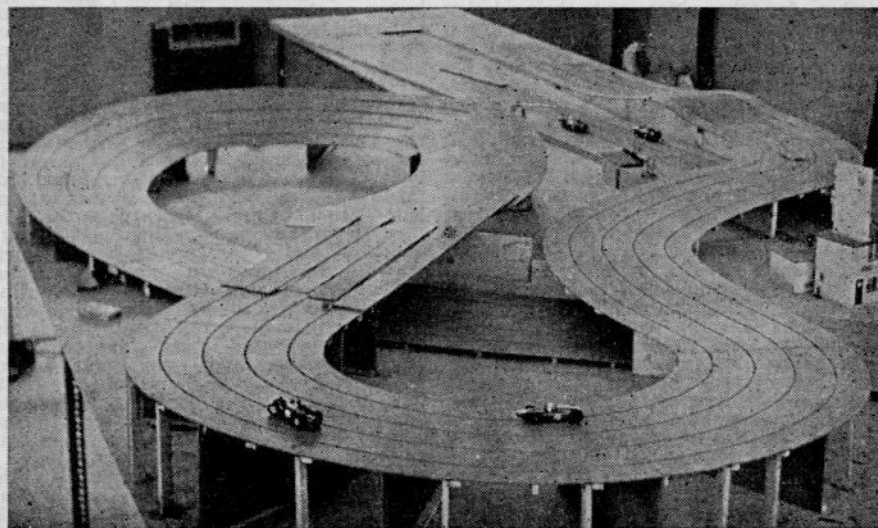
One of the largest jobs (particularly if yours is a 6 or 8 lane circuit) will be the laying of the copper pick up tapes. Some self-adhesive sorts are available which merely require ironing onto the track where on they stick down, but the surest method is to use plain  $\frac{1}{4}$  in. copper strip (available from many model shops as advertised regularly in Model Cars magazine (which when positioned with Evo-stik contact adhesive can be relied upon to behave itself. The accepted method for tape laying is to attack one lane at a time, with part of the tape laying team working ahead with adhesive and the rest moving slowly putting the tapes in place. The best method of coaxing straight tape around tight bends is to hold the inner edge down a little at a time and stretch the outer edge, if this is not done the inner edge wrinkles and may not adhere properly. Tape on the bends must be really well fixed; for the inside edge of the outer tape receives much punishment when the car de-slots. It is a good idea to go over newly cemented tapes with a roller applying as much pressure as the construction of the circuit will stand (which should be a lot), to make perfectly certain that they will dry smooth and flat.





A source of power for model car circuits depends mainly on the two factors of personal preference and size of track. Smaller circuits may well get away safely by using a single 12 volt D.C. transformer to supply three lanes, but on larger circuits it will be necessary to think in terms of a separate transformer for each lane with a pick up point every 30 feet or so along the track (this to ensure constant current all round the circuit) or a 12 volt car battery for each lane. Connections, joints etc., should all be beneath the track surface i.e. under the baseboard, and wires from the track to controller positions, power supply, should be as unobtrusive as possible and well out of the way of passing legs and feet. To be considered when planning wiring etc., is the need for some form

Part of the M.A.P. "Clarendon Circuit" under construction, showing battens under banked section above and general view below.



of lap recording equipment and it is normal for many clubs to have among their members, either one or more electricians capable of producing a useable system. The alternative is to buy a system from one Northern expert who runs this service as part of his Electrical business.

Final jobs after tape laying and wiring include track surfacing, lane marking and track measurement marks. For surfacing popular standby is cement containing paint preparations such as Imstone or Sandtex Matt which, when painted direct onto the hardboard track surface, dries leaving an extremely gritty finish, providing plenty of grip for tyres. Each lane will require colour coding i.e. each lane should have a colour of its own so that cars when marked with a sticker of the appropriate colour can be replaced quickly onto the correct lane by marshalls after a crash or flip out. The entire track should be marked out in tenths of laps and arrows or similar can be marked direct onto the road surface with a felt pen.

## Prototype Car Plans

This series covers a representative selection of classic and modern racing and sports-racing cars, interesting modern, vintage and veteran types to suit all tastes. Plans comprise accurate scale three or four-view outline drawings and are particularly suitable for the solid scale enthusiast.

### PLANS AT 2/6 PER CAR.

A.C. Aceca	1955	1/8	MM/438	Ferrari 4½ L.	1950	1/12	MM/239
A/Romeo Disco Volante	1953	1/8	MM/283	Ferrari F.2.	1952	1/12	MM/262
A/Romeo P3 Monoposto	1932	1/8	MM/132	Ferrari 2½ L. G.P.	1955	1/10	MM/360
Alfa Romeo 158	1946	1/8	MM/184	Dino Ferrari			
A/Romeo 6c Gran Sport	1925	1/12	MM/397	Standard Model	1958	1/12	MM/584
Allard J2X Comp 2-str.	1952	1/10	MM/227	Ferrari Testa			
Alta G.P.	1949	1/8	MM/139	Rossa	1958	1/12	MM/517
Aston Martin Ulster	1936	1/8	MM/207	Ferrari 555 Super			
A/Martin DB2 Saloon	1949	1/10	MM/224	Squalo	1955	1/12	MM/707
Aston Martin DB4	1958	1/10	MM/628	Ferrari F.1.	1961	1/10	MM/658
A/Martin DBR1/300	1958	1/10	MM/527	Ford Zephyr	1953	1/10	MM/275
Aston Martin G.P. DBR				Ford Model T	1922	1/12	MM/373
4/250	1959	1/12	MM/562	Fordson Major Tractor	1955	1/10	MM/414
Austin 744 c.c. O.H.C.	1936	1/8	MM/205				
Austin Ulster	1929	1/12	MM/288	G.M. Firebird	1955	1/10	MM/371
Austin Healey	1955	1/12	MM/341	Gordini 2 L.	1952	1/12	MM/259
Auto Union G.P.	1938	1/8	MM/134				
A/Union 6L Type C.	1934	1/12	MM/569	H.R.G. 1½ L.	1937	1/8	MM/200
				H.W.M. F.2.	1951	1/12	MM/257
Bentley 4½ L. Le Mans	1928	1/10	MM/202	Jaguar 3½ L. Mk. VII	1950	1/12	MM/298
Bluebird C.N.7	1960	1/10	MM/618	Jaguar XK 120	1948	1/8	MM/171
B.M.W. Record Sidecar	1955	1/10	MM/425	Jaguar D. Type	1957	1/10	MM/519
B.R.M.	1950	1/8	MM/196	Jaguar Type E	1961	1/12	MM/643
B.R.M.	1956	1/8	MM/453				
B.R.M.	1959	1/12	MM/555	Kieft 1½ L. Sports	1953	1/12	MM/290
B.R.M. F1 (R.Eng.)	1960	1/12	MM/615				
Bugatti 35B	1927	1/8	MM/128	Lago Talbot ½ L. G.P.	1947	1/8	MM/179
Bugatti 40	1927	1/8	MM/210	Lancia Ferrari F.1	1956	1/12	MM/509
Bugatti 3.3 L. G.P.	1934	1/8	MM/243	Lotus F.1	1958	1/12	MM/532
Bugatti 251 F.1	1956	1/10	MM/633	Lotus XV	1958	1/12	MM/534
				Lotus 20	1961	1/12	MM/668
Cisitalia G.P.	1948	1/12	MM/691	Maserati 1½ L. 6c	1936	1/8	MM/145
Citroen Cloverleaf	1922	1/10	MM/411	Maserati 4CLT	1948	1/8	MM/177
Connaught Comp. 2 Str.	1949	1/8	MM/194	Maserati 250F	1957	1/12	MM/548
Connaught Dart	1957	1/12	MM/557	Maserati Type 61			
Connaught F2	1952	1/12	MM/246	Birdcage	1960	1/16	MM/697
Cooper Climax	1958	1/12	MM/514	Mercedes Benz 1½ L.	1939	1/8	MM/149
Cooper Record Car	1951	1/10	MM/230	Mercedes	1908	1/10	MM/186
Cooper Bristol	1952	1/12	MM/249	Mercedes 300 SL	1955	1/12	MM/388
Cooper Bristol Mk. II	1953	1/12	MM/280	Mercedes Benz G.P.	1938	1/8	MM/130
Cooper Norton				Mercedes Benz 2½ L.			
Mk. VII	1953	1/12	MM/287	G.P.	1954	1/12	MM/345
Cooper 1100	1955	1/8	MM/421	Mercedes Benz 163	1939	1/12	MM/623
				Mercer Raceabout	1910	1/12	MM/368
D.A. Lubricant				Mercedes Benz W. 196	1954	1/12	MM/674
Special	1958	1/12	MM/558	Mercedes B. 300 SLR	1955	1/12	MM/648
Daimler	1886	1/12	MM/477	M.G. Gardener			
Daimler 3.F.250	1960	1/12	MM/639	Record Car	1939-46	1/10	MM/131
Darracq	1904	1/12	MM/315	M.G. Midget T.D.	1950	1/8	MM/213
Delage 1½ L. G.P.	1925	1/8	MM/140	M.G.A.	1955	1/8	MM/404
Dellow Mk. V	1954	1/8	MM/383	M.G. EX181	1957	1/8	MM/671
Dyna Panhard Jnr.	1954	1/9	MM/333	Morris Bullnose	1924	1/12	MM/502
E.R.A. D Type	1938	1/10	MM/129	Novi Special	1947	1/12	MM/379
E.R.A. E Type	1938	1/8	MM/133				
				Pegaso	1953	1/12	MM/328
Ferguson F.1.	1961	1/12	MM/661	Porsche Spyder	1958	1/12	MM/525
Ferrari 125 G.P.	1949	1/8	MM/197	Porsche F.2	1959	1/12	MM/571

Railton Special	1938	1/16	MM/192	MM/596	Cooper Climax 1958
Reo	1904	1/12	MM/399		Aston Martin F.1 1959
Rhindo Trimax	1950	1/8	MM/198	MM/597	Jaguar Type D
Rolls Royce Silver Ghost	1907	1/12	MM/291	MM/598	Ferrari Testa Rossa
Brooklands Riley	1927	1/12	MM/233	MM/599	D. A. Lubricant Special
Scarab F.1	1960	1/12	MM/604		B.R.M. 1959
Sunbeam G.P.	1924	1/8	MM/273	MM/605	Vanwall 1958
Sunbeam Rapier	1956	1/8	MM/441		Ferrari Dino (basic) 1958
S.S.100	1937	1/12	MM/193	MM/678	B.R.M. 1956
Sunbeam Talbot 90	1951	1/12	MM/237		Connaught Dart
Sunbeam Alpine	1953	1/12	MM/297	MM/685	F.1 Ferguson
Sunbeam Alpine	1959	1/8	MM/681		1961 Lotus 20
Sunbeam 350 h.p.	1924	1/12	MM/163	MM/686	1961 Ferrari F.1
Triumph T.R.2	1955	1/8	MM/359	MM/687	Bugatti 251
Triumph T.R.4	1962	1/8	MM/710		F.1 Scarab
Vanwall	1956	1/8	MM/446	MM/688	1960 B.R.M.
Vanwall	1958	1/12	MM/552		Aston Martin DB4
Vauxhall	1905	1/12	MM/474	MM/729	Daimler S.P. 250
Vauxhall 30/98E	1913	1/12	MM/351		Ferrari Berlinetta
				MM/730	E. Type Jaguar
				MM/731	Mercedes Benz 300 SLR
				MM/732	Mercedes Benz 38/250 SSK
				MM/733	Mercedes Benz W.196
				MM/734	Cisitalia G.P.
				MM/735	Sunbeam Alpine
				MM/736	Triumph TR4
				MM/737	Maserati 61 Birdcage
				MM/738	Ferrari 555 Super Squalo
				MM/739	1962 V8 B.R.M.
				MM/740	1962 F1 Porsche
				MM/741	1962 Lola F1
				MM/742	1962 Lotus 25
				MM/743	1962 Cooper Austin FJ
				MM/744	1961 Lotus 4-cyl. F1
				MM/745	Harvey Aluminum Spl.
				MM/746	Lotus Ford 1963
				MM/747	1935 A/Romeo Bimotore
				MM/748	1934 Maserati 2.9 G.P.
				MM/749	1963 F1 V6 Ferrari
				MM/750	1963 F1 A.T.S.
				MM/751	1955 Maserati 300S Sports
				MM/752	1962 Maserati 151 G.T.
				MM/753	1937 Mercedes Benz W.125 G.P.
				MM/754	1935 M/Benz W25 B
				MM/755	1914 44 L. M/Benz
				MM/756	1913 Black Bess Bugatti
				MM/757	1922 Vauxhall T.T.
				MM/758	1911 Vauxhall Prince Henry
				MM/759	1963 Chevrolet Corvette
				MM/760	Stingray. G.T. & Sports Versions
				MM/761	1962 2 L. Porsche Sports Coupe
				MM/762	1962 Tojeiro Climax
				MM/763	1926 3 L. Bentley
				MM/764	1963 Rover B.R.M.
				MM/765	1963 F1 Brabham
				MM/766	1963 F1 Cooper
				MM/767	1963 Speedwell G.T.
				MM/768	1963 Lola Mk. 6 G.T.
				MM/769	1910 Blitzen Beuz
				MM/770	1922 3L Benz Tropfenwagen
				MM/771	1962 Ferrari 250 Coupe G.T.O.
				MM/772	1963 V8 Ferrari
				MM/773	1961 Allard Dragster
				MM/774	1963 Saab F.J.
				MM/775	1964 Porsche 904 GT
				MM/776	1964 Chevrolet Corvette Sting-Ray
				MM/777	1925 MG "Kimber Special"
				MM/778	1928 MG M Type
				MM/779	1934 Bugatti Type 57 SC
				MM/780	1921 Bugatti Brescia Type 13
				MM/781	1964 Lotus 30
				MM/782	1961 Lotus 18

## 1/32 SCALE: PRICE 2/- PER SHEET

NOTE that each sheet contains

TWO Cars\*

MM/457	M.G. Type M.G.A.
MM/458	Mercedes Benz 300 SL
MM/459	Triumph T.R.2.
MM/460	Austin Healey 100
MM/461	B.R.M. 2½ L. G.P.
MM/462	Cooper 1100 Mk. 1.
MM/463	Ferrari 2½ L. G.P.
MM/464	Mercedes Benz 2½ L. G.P.
MM/465	Vanwall
MM/466	Connaught F.2
MM/467	1904 Darracq
MM/468	Ford Model T.
MM/469	H.W.M. F.2.
MM/470	Lago Talbot 4½ L. G.P.
MM/471	Mercedes 1938 G.P.
MM/472	Auto Union 1938 G.P.
MM/473	ERA D Type
MM/474	Alfa Romeo 158
MM/475	Bugatti 3.3 L. G.P.
MM/476	H.R.G. 1½ L.
MM/477	Maserati 1½ L. G.P.
MM/478	Alta G.P.
MM/479	Ferrari 4½ L.
MM/480	Maserati 4CLT/48
MM/481	A/Romeo P3 Monoposto
MM/482	Bugatti 35B
MM/483	Sunbeam G.P.
MM/484	Delage 1½ L. G.P.
MM/485	Rolls-Royce Silver Ghost
MM/486	Mercer Raceabout
MM/487	Vauxhall 30/98E
MM/488	Bentley 4½ L. Le Mans
MM/489	Novi Special
MM/490	Gordini 2 L.
MM/491	Ferrari Dino 246
MM/492	Lancia Ferrari F.1
MM/493	Cooper Climax
MM/494	Lancia D.50 F.1
MM/495	A/Martin DBR 1/300
MM/496	Porsche Spyder 718
MM/497	Ferrari Dino 246 1958
MM/498	Lotus F.1 1958
MM/499	A/Union 6 L. Type C 1938
MM/500	Porsche P.2 1958

MM/848	1964 BRP F/1	MM/967	1954 Lancia D.24 Sports
MM/849	1964 Cooper F/1		1953 Bristol 450
MM/850	1933/4 Magnette K3	MM/968	1965 Shelby Daytona Cobra
MM/851	1964 Indy-Novi-Ferguson		1965 Felday 4
MM/852	(Studebaker S.T.P. Special)	MM/969	1964 Husseini Mk. 1
MM/853	1964 Vollstedt-Offenhauser		Porsche Carrera 6
MM/854	Bryant Heating & Cooling Special	MM/970	Messerschmitt 500
MM/855	1929 Birkin's Bentley 4½ L.		Mini Moke
MM/856	S/L Brooklands Car	MM/971	1965 Chaparral 2E
MM/857	1964 Ford Galaxie		1965 Ford G.T.
MM/858	1935 Riley Imp	MM/972	1965 Chaparral 2D
MM/859	1964 Lotus 33 F/1		1966 Anglo American Racers Eagle
MM/860	1925 Alfa Romeo Type P2	MM/973	1926 Amilcar G.6.
MM/861	1964 Ford G.T.		1923 Voisin G.P.
MM/862	1963 Ferrari Berlinetta Type	MM/974	1966 Ferrari 330 P3
MM/863	250 LMB		1967 Ferrari 330 P4
MM/864	1955 Lancia D50	MM/975	Lamborghini 350 G.T.
MM/865	1956 Lancia-Ferrari		Lamborghini P400 Mulra
MM/866	1964 A.C. Cobra GT	MM/976	1956 Renault "Shooting Star"
MM/867	1964 Ford Mustang	MM/977	1929 Morgan Sports
MM/868	1964 Ferrari V8/F1		1929/32 Austin Ulster
MM/869	1965 V12 Honda F1	MM/978	1929 Brooklands Riley
MM/870	'A35 Rocket' Stock Car		Bugatti Type 40
MM/871	1907 Itala G.P.	MM/979	1923 T.T. Replica Fraser Nash
MM/872	1964 Thomas Cheetah GT		1948 H.R.G. 2 Seater Sports
MM/873	1964 Marcos 1800 GT	MM/980	Lotus 7
MM/874	1914 Peugeot 4½ L. G.P.		Lotus Super 7
MM/875	1906 Renault G.P.		(Continued on page 50)
MM/876	1964 Repco Braham B.T.8.		* A few larger cars require a complete sheet.
MM/877	1964 Honda F/1		This range is regularly increased
MM/878	1958 Lister Jaguar		1½ in. equals 1 ft.
MM/879	1959 Cooper Climax 2½ L. F/1		Morris 8 2 door saloon MC 1 2s. 6d.
MM/880	Corvair Monza GT		E.R.A. 1½ L. MC 2 2s. 6d.
MM/881	1964 Mercedes Benz 230 SL		Bugatti Type 51 MC 11 2s. 6d.
MM/882	McLaren Oldsmobile Mk. 1		Bentley 3 L. MC 15 2s. 6d.
MM/883	1964 Cooper Zerech Oldsmobile & Cooper Climax Zerech		1/12th Scale
MM/884	1939 1½ litre Mercedes-Benz W165		T.T. Replica Frazer Nash MC 3 2s. 6d.
MM/885	1942 Alfa Romeo G.P. Tipo 512		Lancia "Aprilia" Saloon MC 6 2s. 6d.
MM/886	1964 Lotus 24		Gardner Record M.G. MC 7 2s. 6d.
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## MODEL CAR RACING STANDARDS AND RULES

An extract from the E.C.R.A. Handbook.

### TRACK STANDARDS

1. The slot dimensions must be a minimum of  $\frac{1}{4}$  inch and a maximum of  $\frac{3}{16}$  in. wide and there must be one point on each lane where the depth of the slot does not exceed  $\frac{3}{16}$  in. The remainder of the slot may be open bottomed.
2. The contact surfaces on each side of the slot must not be less than  $\frac{1}{4}$  in, or more than  $\frac{1}{2}$  in. in width (metal sprayed track excepted) and at all points on the track there must be pickup contact  $\frac{3}{16}$  in. from the centre of the slot.
3. Looking in the direction of travel the positive contact must be on the left of the slot and the negative on the right.
4. Clubs must provide accurate lap recording equipment without additional fittings to the cars being necessary.
5. Track voltage must not exceed 16 volts D.C. off load nor drop below 12 volts D.C. when each lane is drawing 4 amps per lane.
6. It is the responsibility of all clubs to ensure the minimum amount of A.C. 'ripple' in the power supply at the track.
7. Tracks must be wired for dynamic braking.
8. No personal external power supplies intended to enhance the performance, or improve the braking, of cars are permitted.
9. Controller plugs to be B.S. 546, 3-pin, 2-amp. wire as follows:-  
'L' to controller wiper,  
'N' to controller resistance coil,  
'E' to controller brake terminal.
10. Clubs wishing to have a (third) lighting tape on their track should install it on the right hand side in the direction of travel so that the centre of the tape is  $\frac{1}{2}$  in. from the centre of the slot.
11. for 24th scale racing the distance between lane centres must not be less than  $\frac{3}{4}$  ins.

### CAR STANDARDS—32nd Scale

1. All models to be built to 1/32nd scale of a full size prototype with a tolerance of plus or minus  $\frac{1}{16}$  in. in track and wheelbase. Bodies must also be within reasonable limits and a reasonable representation of the prototype. The onus of proof of dimensions rests with the competitor. The manufacturers quoted dimensions with commercial kits are accepted as correct.
2. The overall diameter of wheels (including tyres) must be to scale with a tolerance of plus or minus  $\frac{1}{16}$  in.
3. The maximum permitted tyre tread width (tyre on track) is  $\frac{1}{2}$  in., providing that:-  
(a) track dimensions are as stated in Para. 1 above,  
(b) tyres do not protrude outside the enveloping body or wings.
4. No car to exceed a maximum overall width of  $2\frac{1}{2}$  in.
5. No projections downwards capable of guiding the car, other than the steering guide and pick-up are permitted.
6. Maximum length of guide in slot, measured extreme front to extreme rear, must not exceed  $\frac{1}{2}$  in. nor must the part of the guide in the slot project, at any point, more than 1 in. forward or rearward of a straight line drawn between the centres of the front wheels.
7. All cars must carry clearly legible racing numbers in at least two places.
8. All cars must have transparent wind-screens and windows where found on the prototype.
9. All cars must start a race with a driver securely fixed and the 'driver' shall consist of a minimum of head, shoulders and arms.
10. All cars must be suppressed against TV interference.
11. It is recommended that cars should carry visible major appendages such as steering wheel, mirrors, exhaust pipes, identity badges, etc.
12. Clear plastic bodies must be painted.

Similar rules exist for 1/24th scale, competition running, etc., all in the E.C.R.A. Handbook.

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