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THE ORIGINAL
'DO-IT-YOURSELF'
MAGAZINE

HOBBIES *weekly*

FOR ALL
HOME CRAFTSMEN

Also in this issue:

BONUS PLAN:
'LITTLE MISS'
CLOTHES HORSE

MODELLING THE
'CANBERRA'

NEW RUSSIAN
MATCH LABELS

PHOTOGRAPHING
MODERN BUILDINGS

DISC BREAK WITH
LENA MARTELL

AMPLIFYING
WITH TRANSISTORS

CAMPING NOTES

ETC. ETC.



**NOVEL
MATCH
HOLDER**



SEASIDE RAFT



Up-to-the-minute ideas

Practical designs

Pleasant and profitable things to make

World Radio History

5^D



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In recent years there has been increasing interest in signed cards — at least those of certain artists. Some of the more popular are Ellen Clapsaddle, Frances Brundage, 'Dwig', Kate Greenaway and C. Bernhardt Wall.

Very little information is available about most of the artists who designed postcards. There is, however, considerable history of a few, such as Kate Greenaway, Katherine Gassaway, well-known comic artists such as Dwiggin ('Dwig') who died recently, and T. Opper who created the comic character, Happy Hooligan, and R. F. Outcault, the creator of Buster Brown. The latter two may be remembered for their comic strips which were regularly syndicated some years ago.

Frances Brundage designed cards for Tuck as well as other publishers and Ellen Clapsaddle painted a great many designs for International Art Publishers. Many of these International cards have her signature but others, unsigned, are definitely her work. She is also represented on 'Wolf Bros.' cards both signed and unsigned.

There is an ever increasing interest in John Winsch cards and it seems strange that no one has ever come up with any authentic information on him. Some consider him as a card manufacturer, believing that he published the cards bearing his name on the face. No evidence has been found to support this, however. There is no evidence either that he was the artist who designed the cards with his name. The imprint merely shows that the design was copyrighted by him. It is quite possible that other artists designed the pictures which he bought and had copyrighted.

Signed cards of a number of other artists are much slower in catching the fancy of collectors although many of them are equal or better than some of those whose work is widely collected. Catherine Klein, whose cards are signed O. Klein, was the painter of many beautiful designs published by Rotograph of New York and by Meisner & Buch of Leipzig, Germany. However, few collectors seem aware of the beauty of these cards except other artists who use them for the fine details of the designs.

Comics are overlooked by many although they are the work of some of our best known artists or cartoonists. There is quite a demand for the cards of 'Dwig', Opper and Outcault, but cards by Bernhardt Wall, which were published by at least five different publishers, are almost entirely overlooked. Gobb Shinn cards, published by Majestic Publishing Co., are slowly increasing in

Postcardially Speaking SIGNED CARDS AND BROMIDES

popularity but many still pass them by. Lance Thackery and Tom Brown are other artists of signed comic cards who are slowly becoming known to collectors.

C. H. Twelvetrees had some very nice cards published by Edward Gross and Gibson Art published some beautiful ones by Rose O'Neill, who was famous for her 'Kewpies'. Gibson also published other signed cards as did Ullman, Dutton, Valentine, German-American, Illustated, Campbell, Detroit, Stecher, etc.

No doubt as Clapsaddle and other well-known artists become more scarce, collectors will begin to turn to the lesser known artists. Some collectors even now

are quietly gathering in these lesser known names and these are the ones who will have an outstanding collection in later years.

Perhaps you have noticed certain cards by some of the old publishers, such as the Rotograph Company, which are marked with the words, 'Genuine Bromide'. Some of you may have wondered what the term meant.

This refers to the paper on which the cards were printed and the method by which they were produced. They get their name from the 'bromide paper' on which they were printed. Bromide paper is sensitized with bromide of silver and is also known as photographic paper. The picture was printed on the paper by exposure to light and then treated with a chemical to make the picture permanent. Some of these bromide cards were hand tinted while others are found in black and white only. Others were treated to give them a smooth, glossy finish very much like the gelatin cards. The untreated ones have a soft finish.

The process was evidently not used extensively for view cards but quite a few greetings cards of this type may be found. We believe the process was primarily used on cards printed in Germany, but this is probably due to the fact that most of the cards sold during the period when this process was used were imported.



A delightful Plastichrome snow scene on a card by Colourprinter Publishers, Boston, U.S.A.

RUSSIAN MATCH LABELS



This 2½c commemorative appeared on March 1st and marks the 50th anniversary of the start of Volkspele (folk dancing) in South Africa

* * *

Continuing our series of illustrations of Russian Match Labels for 1962 we show here those depicting 'Famous Russians'

* * *

PEN FRIENDS



This young man is GRAHAME MILLER, 20 Hillcrest, Chryston, Glasgow, Scotland. Aged 12, his hobbies are stamps, coins, cigarette cards, records and postcards

'My hobbies are tape recording, radio, records, models, fishing and sport,' — J. FIGG, 10 Open Fields, Headley, Bordon, Hants.

'I am 13 and would like pen friends who collect match box and cigarette labels,' says HOWARD MARSHALLSAY of 20 Humber Street, Cleethorpes, Lincs.

'My hobbies are reading, sport and photography,' writes J. ARENT, KINGSLEY-KINOFIE of P.O. Box 12, Benchema, Via Sefni Nlawso, Ghana. 'I am 17 and seek friends from everywhere.'

'Can you find my daughter a pen friend. Here is her address: MRSM. THORNLEY, 140 Trent Boulevard, West Bridgford, Nottingham. I enclose her photo, also one of myself, which shows some of the stamps, labels, cards, etc, I have collected since becoming a regular reader of Hobbies Weekly — So writes Mr Leonard Morton, 26 Sceptre Street, Sherwood, Nottingham



* * *

In accordance with the existing policy of withdrawal from sale of commemoratives issued approximately one and a half years from date of issue, the stamps honouring UN day 1960 will be withdrawn on 24th April, and the stamps honouring The International Bank for Reconstruction and Development will be withdrawn on 9th June.

Advertisers'

Announcements

50 STAMPS FREE — Ask to see my approvals. — GBN(H), 41 Collins Road, Wednesbury, Staffs.

100 STAMPS FREE. request approvals — Nunn, 80 Chantry Road, Chessington, Surrey.

100 DIFFERENT stamps free! Request 1/d. upwards discount approvals. — Bush, 53 Newlyn Way, Parkstone, Dorset.

£. S. D. COLLECTING all stamps in 'Collector' booklets. When completed booklets purchased for cash. Instruction booklets 1/6 posted. — D. H. Elliott, 636A, Bristol Road, Northfield, Birmingham 31.

APPROVALS by countries and reigns — 1/d. catalogue — Mint at face — K. Hoye, 6 Merriden Road, Macclesfield.

'TAKING' MODERN BUILDINGS

WE must all be well aware of the vast changes being brought about both in London and the large provincial cities and towns by modern building. On first sight many of the structures going up are thought 'ugly', but should we study their design, lines, and shape more closely, it often becomes necessary to reverse our opinion as their beauty is revealed to us.

By C. Robinson

By far the best way to make such studies is to take photographs of them, as in the past we have photographed old and historic buildings. To do this authentically, as would be required by an architect, a special technical camera with many various lens movements is required. But when the results are merely to please ourselves, almost any camera, used with care, will suffice.

The most common fault in amateur architectural studies is that the buildings often appear to be leaning backwards, and have converging verticals. This is brought about by the camera being tilted upwards, often to enable one to get the top of a high building in when it is impossible to move further back. When this is done unintentionally, the result always looks wrong in the print. But



Modern layout of New Technical College, Police Headquarters, and Public Gardens in the Centre of Hull. Adox R17. 1/125th, f/8. Orange filter.

there are times when exaggerated perspective, brought about by purposely tilting the camera, makes an effective picture. This is often the case in respect of the modern 'skyscraper' type of buildings.

Should we, however, wish to correct any converging verticals which we have unintentionally obtained in our negative

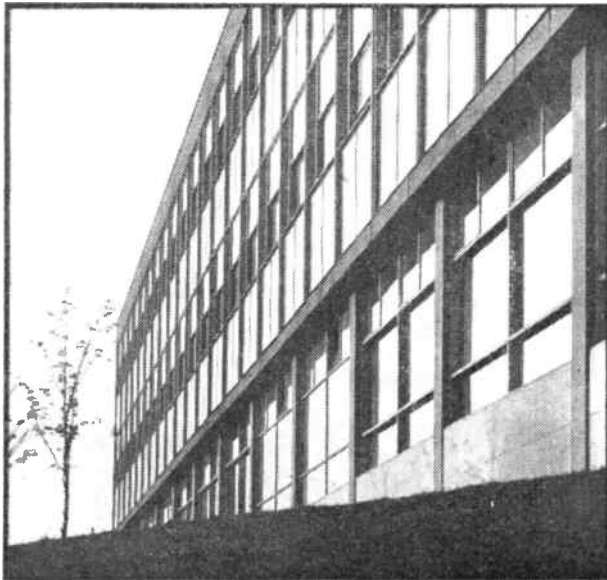
when taking the picture, it can be quite easily accomplished in the darkroom at the printing stage. We must merely tilt our paper on the enlarger baseboard in the opposite direction until the perspective appears correct. This is more easily done when the paper is being held in a masking frame.

This makes the print more acceptable to our eyes, but it also alters slightly its proportions, so it would not be acceptable for authentic record purposes where one may wish to scale it in any way.

By tilting the paper in this way during printing we also create two other photographic problems. By bringing one edge of our paper nearer to the enlarger lens it naturally receives more light; also it cannot be in the same plane of focus. We can correct the former by 'shading' with either our hands or a piece of card while exposing; and the latter must be corrected by getting the image in the centre of the paper in sharp focus, and stopping the lens down to its minimum aperture to increase its depth of field. In practice the longer exposure required by stopping down helps one to control the 'shading' better, and a first-class print can be obtained.

To get the best possible results, of course, some thought must be given to other factors *before* taking the picture. I would strongly advise waiting for a bright sunny day. Make sure that the sun is lighting the building you wish to photograph from either one of its sides, and not shining directly on to it from

Continued on page 37



Study in Perspective and Glass

*Paper was tilted considerably in printing to keep verticals from converging.
HP3 film: 1/250th, f/11. I.D.11 developer*



LENA MARTELL

THIS is a modern fairy tale — except that it is true. It is the story of Lena Martell, the Scots lass named after brandy, and with a voice to match — warm, mellow, potent and worth a five-star rating. Lena is the girl being tipped by experts for stardom in 1962, and with contracts with the BBC and HMV she's already heading in the right direction.

The story begins in Glasgow where, once upon a time, there lived Helen Thomson who wanted nothing better from life than to sing.

Top of the Pops for disc after disc; also a singing group who went back to school. See next week's Disc Break.

Her father played trombone, her brother saxophone and from their influence and encouragement developed her love of music. With her brother's band she sang on gigs and taught herself to play drums.

After leaving school she worked for a printing firm by day, in an ice cream parlour at night and then often joined the band for a dance date.

'But it seemed that I was making no progress as a singer', says Lena. It was as though Fate was against me. Even when I was hired for a regular job in a dance hall, the place was burned down before I could start. I tried for television, but didn't even manage an audition. I was so angry because my own people wouldn't take any notice of me that I decided to go to London.'

In 1958 she arrived — with £50, three dresses made by her mother and without knowing a soul.

'If it was difficult to find work in Glasgow, it was one hundred times worse in London. I had jobs in a printing

works, as an usherette, delivering circulars — in the evening so that I could visit agents during the day — and in a coffee bar. But I wasn't doing any singing. Many times I felt like going home, but I didn't. I was determined to make it.'

In the coffee bar she became friendly with the dancers from 'The Bagatelle' night club and one advised her to attend a Friday audition there. 'The first week I didn't have any music,' Lena recalls. 'The second, I didn't dare go forward. It was the same the third week and I was sitting eating my sandwiches when the owner, Mr Jack Fox asked me if I wanted to sing'.

Although Lena's two numbers lacked presentation and polish, the quality of her voice was unmistakable and Jack Fox, with his experience of acts from all over the world, realized she had the potential to become a star. He offered her a job with the band. Under Jack's watchful and critical eye, Lena worked hard for nine months, smoothing off some of the rough edges and improving her singing. Her playing developed too, and she became relief drummer.

One night, during Jack's introduction, the name 'Thomson' slipped from his mind. He had got to the awkward moment of announcing, 'Ladies and gentlemen, Lena . . .' when a man at a front table shouted, 'Come on, hurry up' and waved a bottle of brandy. On the spot Jack named her Lena Martell.

She has also operated the lighting for other artistes and besides singing with the band, she continued to play drums, took up guitar, bass and trumpet (which she doesn't play now because it was damaging her lips) and added impersonations to her act. Eventually she became the star of the cabaret. So Lena, in a stunning white gown and with a new act made the debut she had dreamed of.

Intent on broadening her repertoire — she already sings in Italian, Spanish,



French and Hebrew — Lena has a collection of some 200 LPs, with a special 'cabaret cupboard' reserved for live recordings of the world's top entertainers. Favourites are Sammy Davis Jnr., Frank Sinatra, Joe Williams, and Keely Smith.

Spare time occupations include cycling tennis and long walks with her West Highland terrier 'Whisky'.

Lena, born on 22nd November 1940, is 5 ft. 7 in. tall, with dark hair and brown eyes. Her ambition is to top the bill on 'Sunday Night at The London Palladium' and have a record at No. 1 in the Hit Parade. Her first record for H.M.V. was *Love Can Be and The Night The Sky Fell Down* (45-POP958).

● **Continued from page 36**

Photographing Modern Buildings

beyond the camera. This 'side lighting' as it is called, will reveal beautifully all its lines, detail, and texture, and give the building shape.

As the majority of new buildings are light in tone, and are often seen against a blue sky, it is necessary to use a filter over the camera lens to separate the two; a 2x yellow filter will give adequate separation for normal results, but should we wish a more dramatic sky and more pronounced effect of sunlight on light stone, it can be obtained by using a 4-5x orange filter. As these filters require extra exposure to be given — the amount depending on their factors — care must be taken to allow for this.

'Biting definition' is also essential in a good picture of a building, and this is easier to obtain by the use of a tripod. However, one does not always wish to be so burdened on one's travels, and if reasonable care is taken, such as by using the highest possible shutter speed, and holding the camera perfectly still, good results can be obtained.

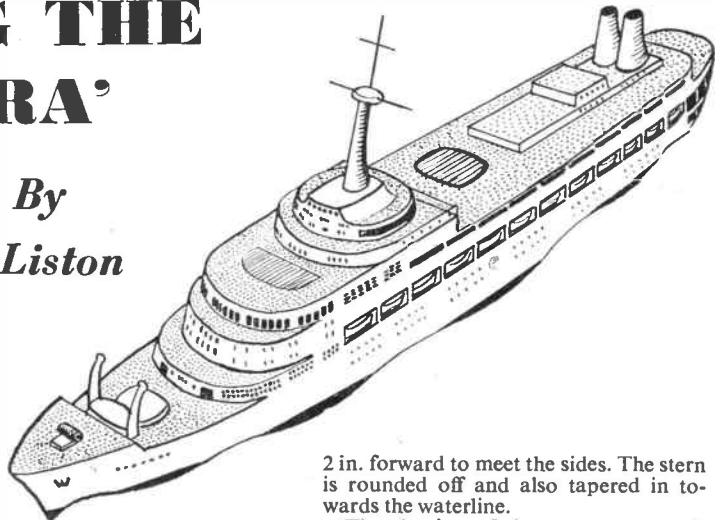
MODELLING THE 'CANBERRA'

By
A. Liston

THE 45,000 ton *Canberra* is not only the largest liner to be built in Britain for twenty years, but is also one of the most revolutionary in appearance. Despite its many curves, it can be modelled in wood very easily, with only a slight simplification of some features on the actual ship.

The hull is cut from a 12 in. length of 2 in. by 1 in. wood. The bows are shaped by first making two saw cuts extending back from the front of the block for 2 in. The resulting 'shoulders' are filed off to give a rounded finish to the line of the bows, and the sides of the bows are sloped in towards the waterline, so that they flare outwards towards deck level. The lower edge of the bow is cut away by $\frac{1}{2}$ in. to give a raked stem.

The stern is shaped by making two saw cuts, each starting $\frac{1}{2}$ in. in from the rear edge of the block, and extending



2 in. forward to meet the sides. The stern is rounded off and also tapered in towards the waterline.

The shaping of the superstructure is shown in Fig. 1. First, a $\frac{1}{2}$ in. deep and 1 in. long section is cut in the hull (A) 1 in. back from the bows. The rear face of this section is then cut away in a 2 in. diameter semi-circle as shown.

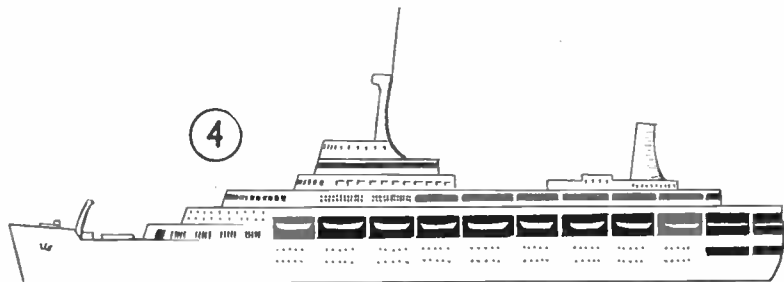
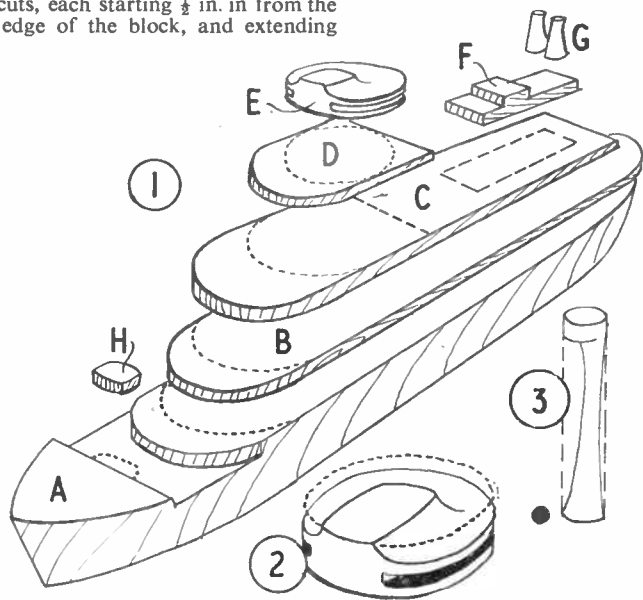
Section B of the superstructure is a $9\frac{1}{2}$ in. length of 2 in. by $\frac{1}{4}$ in. wood. The front of this section is also rounded in a 2 in. diameter semi-circle, and the rear is trimmed to the shape of the hull. This section is then pinned and glued in place $\frac{1}{4}$ in. back from the semi-circle cut in the hull.

Section C is an 8 in. length of 2 in. by $\frac{1}{4}$ in. wood, and it is also rounded off at the front end. It is pinned and glued in position with its rounded front $\frac{1}{4}$ in. back from that of section B. It should be trimmed away at the rear to follow the line of the deck below it. Section D is a $2\frac{1}{2}$ in. long piece of 2 in. by $\frac{1}{4}$ in. wood, rounded as before at its front end. It should be positioned $1\frac{1}{2}$ in. back from the front of section C.

The bridge superstructure (E) is basically a 2 in. diameter disc of wood, $\frac{1}{2}$ in. thick. A 1 in. square is marked on this at the front edge, and the wood round this square is cut away to a depth of $\frac{1}{2}$ in. as shown in Fig. 2. The sides of the raised square should slope away on three sides. A saw cut, $\frac{1}{2}$ in. deep, is made in each side of the disc, and it is placed on top of section D so that its sides and rear touch the edges of section D.

Section F, on which the funnels are mounted, is a 2 in. long and 1 in. wide piece of $\frac{1}{4}$ in. thick wood. Two $\frac{1}{2}$ in. deep 'steps' are filed in this section, the front one being $\frac{1}{2}$ in. from front to back and the rear one 1 in. This section is then placed $1\frac{1}{2}$ in. behind the rear of section D.

The two funnels (G) are 1 in. lengths

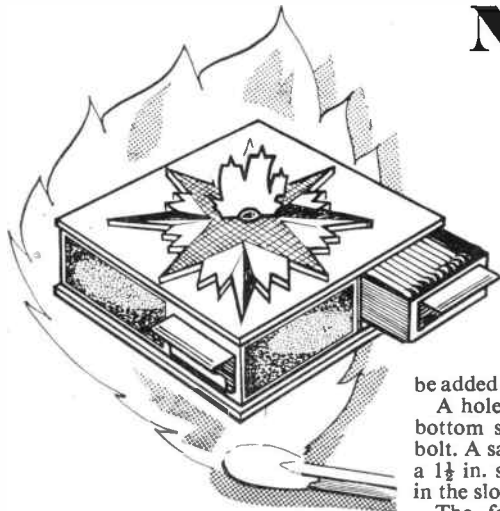


● Continued on page 39

Novel Match Holder

By

A. Liston



A DECORATIVE match container which is large enough to be really useful in the home means that hunting for a box of matches is a thing of the past. The novel holder shown here is easy to make. It accommodates four matchboxes and being easily dismantled, can be refilled when necessary.

The top and bottom of the box are made from 4 in. squares of $\frac{1}{8}$ in. thick plywood, A, and a suitable motif, also made of plywood, is glued to the top. The design illustrated, B, shows the points of the compass, and is made by marking a 1 in. circle on a 2½ in. plywood square and drawing lines to the corners as shown, C. Other compass points may

be added as desired in the same way.

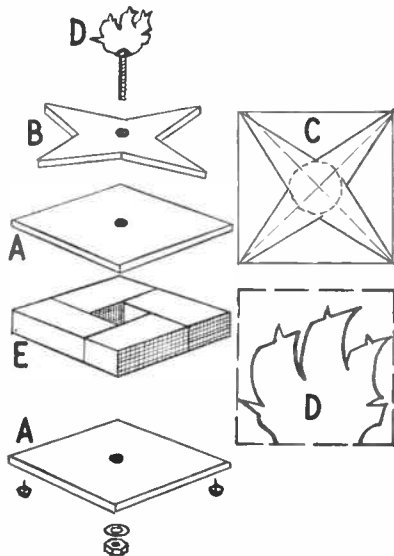
A hole is drilled through the top and bottom sections to take a 1½ in. long bolt. A sailing ship motif, D, is cut from a 1½ in. square of tinplate and soldered in the slot in the head of the bolt.

The four matchboxes required are arranged as at E, with their striking faces to the outside, and the holder is held together by passing the bolt down through the holes in the top and bottom sections, then tightening the nut which is placed on the underside, together with a washer. The holder stands on four rubber studs fixed to the corners of the underside.

After a trial assembly, the holder is dismantled and painted, red, white and black enamels being especially effective. Smart grips for the matchbox trays are made from 1 in. lengths of L-shaped plastic edging, but small cubes of wood or cork may also be used. The grips are glued in place and the holder reassembled. A spot of adhesive on the top and

bottom of each matchbox will help hold it in position but will not prevent its being removed and replaced on a future occasion.

The motifs suggested for the top of the holder and the screw-head can, of course, be changed. Other suitable ideas are bird and flower shapes, or designs suggested by the hobbies and interests of the person for whom the holder is intended.



● Continued from page 38

MODELLING THE 'CANBERRA'

of $\frac{1}{8}$ in. diameter dowel rod, filed away to an oval section, and tapering to $\frac{3}{8}$ in. at the top, on their rear edges, so that the front edges are left quite straight. The bottoms of the funnels are filed away at the rear so that they are glued in place side by side on section F at a slight angle.

The single mast is cut as shown in Fig. 3 from a 1 in. length of $\frac{3}{8}$ in. diameter dowel rod. A hole is drilled across the 'crow's nest' to take a 1 in. long spar of stiff wire. The upper section of the mast is a 1 in. long pin mounted on the top of the wooden section. A $\frac{1}{2}$ in. long pin is soldered to this section as the upper spar. The complete mast is then glued to the top of the bridge at its rear edge.

The deck-house (H) is a $\frac{1}{2}$ in. by $\frac{1}{2}$ in. piece of wood, $\frac{1}{8}$ in. thick, and the two king posts which flank it are $\frac{3}{8}$ in. long pins, slightly curved. Alternatively, thin

cane may be used for these. A $\frac{1}{2}$ in. square hatch cover with rounded corners is cut from matchwood or thick cardboard and glued to the deck to the rear of the deck-house. A $\frac{1}{2}$ in. long piece of cane or matchstick, glued to a $\frac{1}{2}$ in. square of cardboard, forms the windlass which is glued to the fo'c'sle.

The completed model is then painted. Enamel may be used, but emulsion paints, with their flat finish, look much more realistic. First, the whole ship is painted white, with buff decks and funnels. The details are then added. Fig. 4 shows the position of the detail painted on the sides. The openings in the sides which house the lifeboats are best painted as follows. Two strips of adhesive tape are placed along each side, $\frac{3}{8}$ in. apart, as masking strips, and the band between them painted black. The tape is removed and when the paint is dry,

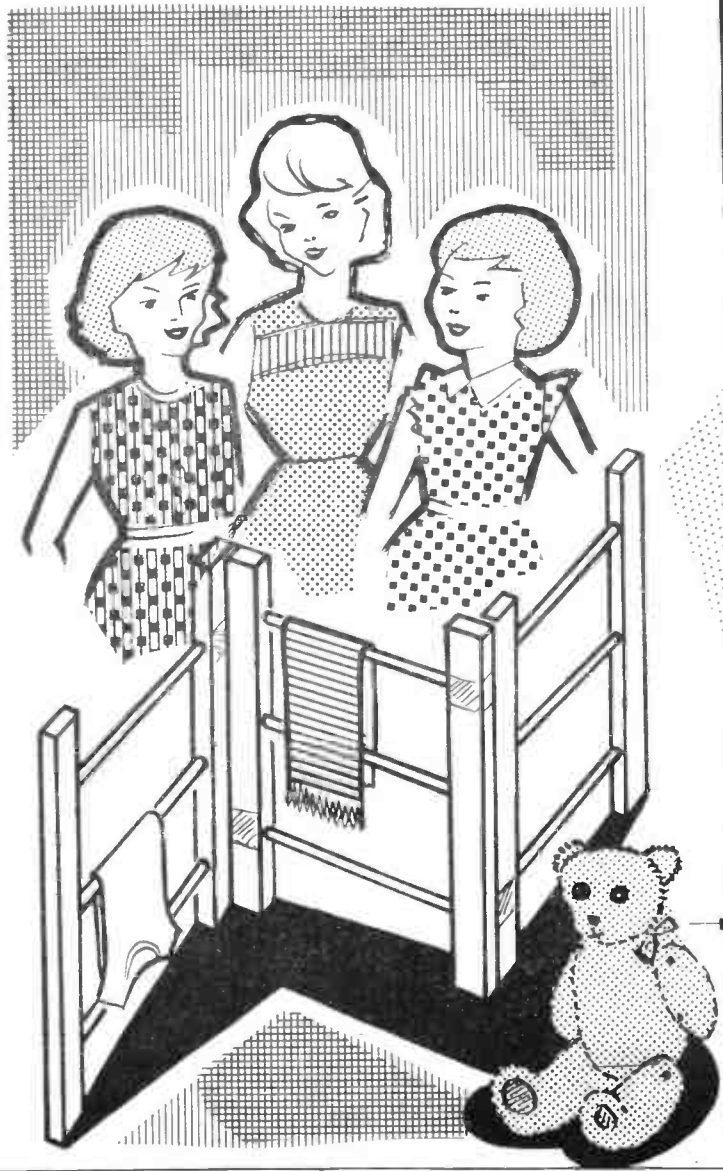
vertical white paint strokes at $\frac{1}{4}$ in. intervals are made along the black band, and a white lifeboat is painted in each section.

Blue enamel is the most effective to use for the portholes and windows, and this should be applied with the end of a matchstick, following the pattern shown in the illustrations. The model is finished off with a thin red line along the waterline.

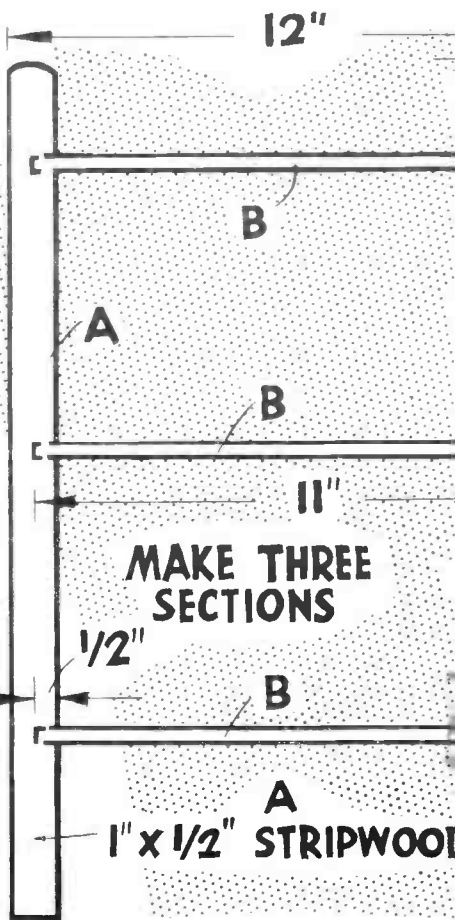
H.M.S. 'BROKE'

Mr N. V. Maycock, 169a West End Lane, Hampstead, London, N.W.6, is anxious to make a waterline model of H.M.S. *Broke* which took an honoured part in the activities of the Dover Patrol during the 1914-18 war. Readers who can help with photographs or details are invited to get in touch with Mr Maycock at the above address.

"Little Miss



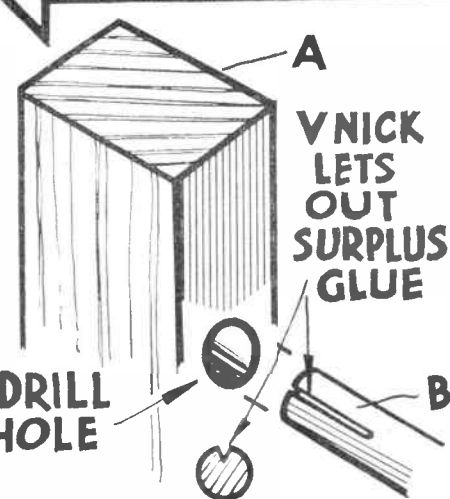
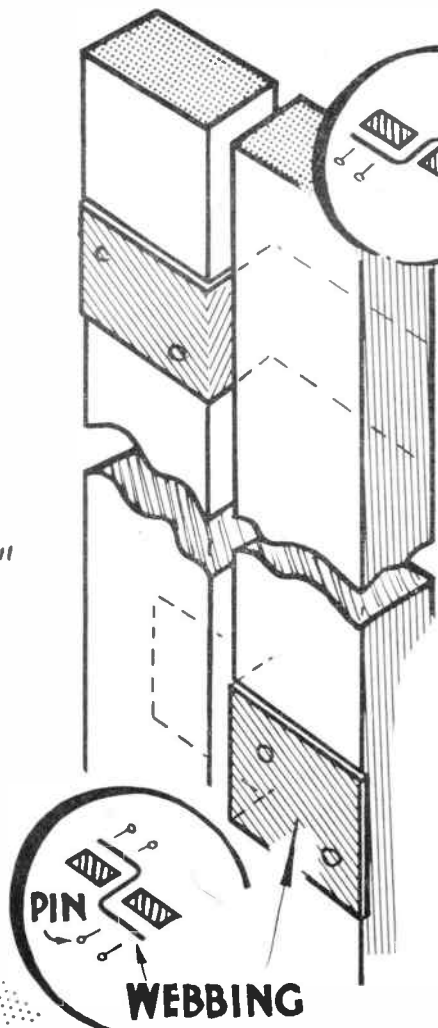
THREE PIECES STRIPWOOD
 36" x 1" x 1/2"
 NINE 11" LENGTHS 1/4"
 ONE 12" LENGTH WEBBING



SS" CLOTHES HORSE



SHOWING HOW SECTIONS ARE JOINED



HOBBIES STRIPWOOD IS SO HANDY FOR ALL KINDS OF JOBS PER 3 ft. LENGTH

$\frac{1}{16}$ in.	2½d.	$\frac{1}{4}$ in.	4d.	$\frac{1}{2}$ in.	10d.
$\frac{1}{8}$ in.	3½d.	$\frac{3}{8}$ in.	5d.	$\frac{3}{4}$ in.	1/-
$\frac{3}{16}$ in.	4d.	$\frac{1}{2}$ in.	6d.	1 in.	1/3
$\frac{1}{4}$ in.	5d.	$\frac{5}{8}$ in.	8d.	$\frac{5}{8}$ in.	1/3
$\frac{5}{16}$ in.	9d.	$\frac{3}{4}$ in.	11d.	$\frac{3}{4}$ in.	1/4
$\frac{3}{8}$ in.	4d.	$\frac{7}{8}$ in.	7d.	$\frac{7}{8}$ in.	1/10
$\frac{7}{16}$ in.	$\frac{3}{8}$ in.	1 in.	1/6		

DOWELS — PER 3 ft. LENGTH

$\frac{1}{16}$ in.	3d.	$\frac{1}{4}$ in.	5d.	$\frac{3}{8}$ in.	9d.
$\frac{1}{8}$ in.	3d.	$\frac{5}{16}$ in.	6d.	$\frac{1}{2}$ in.	1/-
$\frac{3}{16}$ in.	4d.	$\frac{3}{8}$ in.	7d.	$\frac{5}{8}$ in.	1/3

1 in. 1/6

Postage and packing 1/6 extra any quantity.
HOBBIES LTD, DEREHAM, NORFOLK.

AMPLIFIERS TO USE

SOME further guidance on using the amplifier and other circuits previously described should be helpful. This can most easily be done by means of block diagrams. Such diagrams show the particular amplifier or other part of the circuit in simple form, actual details being taken from the wiring and other diagrams, as needed.

Units connected

As a first example, Fig. 51 shows a crystal set, followed by the amplifier in Fig. 19, and loudspeaker. The crystal set could be a ready-made one, or an old receiver of this kind already to hand, or it could be made up from a circuit such as that in Fig. 17. It may be separate, so that the amplifier can be used alone for other purposes. Or the crystal set circuit and Fig. 19 circuit may be built as one unit, for radio reception only.

In the same way, the speaker may be separate, in its own cabinet. Or it may be built into the amplifier, or receiver, in the way shown in Fig. 43.

It is very easy, indeed, to experiment

Many of the older types of pick up have a large output, and will be satisfactory.

To convert an old type gramophone, it is only necessary to fit the crystal pick-up in place of the old tone arm. It should generally be fairly easy to find space for the speaker. The amplifier will be very small, and can easily be accommodated.

Most of the other circuits can also be

used for record playing. The one in Fig. 26 (3 transistors) will give a larger output, even if the output from the pick-up is not so great.

By 'Radio Mech'

used for record playing. The one in Fig. 26 (3 transistors) will give a larger output, even if the output from the pick-up is not so great.

Phone listening

All the 1 transistor receivers and amplifiers described are suitable for headphone listening. For this purpose, a very large output is not wanted. A single transistor in a circuit such as that in Fig. 8 or Fig. 30 is thus ideal.

Portables

Simple loudspeaker portables will require a minimum of three transistors. A suitable arrangement employing 4 transistors can be the transistor detector in Fig. 33, followed by the 3 transistor amplifier in Fig. 26. The latter is a push-pull circuit which takes only a moderate current, so the whole 4 transistor set can be run from a miniature 9V. battery.

A good form of construction for this type of receiver is that shown in Fig. 43. The amplifier section may, of course, be used for other purposes, as well as for radio reception.

The reflex circuit in Fig. 48 requires a few more parts than the detector in Fig. 33, but gives a greater output. It could thus be employed with the Fig. 26 amplifier.

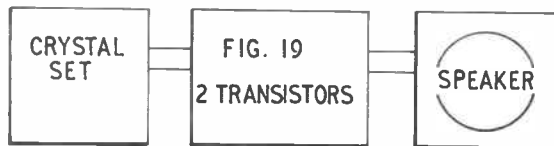


Fig. 51—Circuit for loudspeaker listening with crystal set

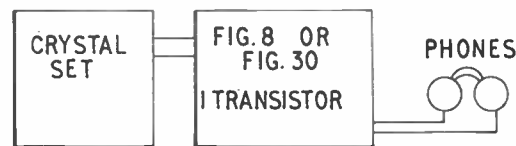


Fig. 53—Using a small amplifier for loud headphone results

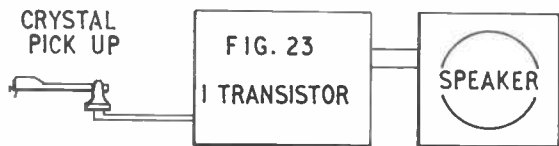


Fig. 52—Simple arrangement for record playing

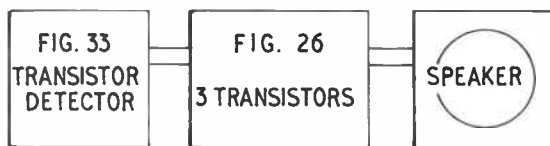


Fig. 54—A circuit using four transistors in all

with receiver and amplifier units in this way. The amplifier in Fig. 19 uses 2 transistors, and can be run from a 7½V. cell battery, or from two 4.5V. flashlamp batteries in series, or from a miniature 9V. battery. Connecting points for the crystal set and speaker will be seen from Fig. 19.

Record player

Fig. 52 shows the simplest form of record player amplifier, and full details of the 1 transistor amplifier are given in Fig. 23. This amplifier is extremely simple, and should be used with a 9V. cell type (e.g., not miniature) dry battery.

The amplifier will give good results with a fairly large speaker. A high output type of crystal pick-up is required.

When a crystal set is already in use, the small transistor amplifier is added, as in Fig. 53. Quite often the few parts needed can be wired together on a small panel, as in Fig. 30 or Fig. 32, and accommodated in the crystal set cabinet, with the required battery. Such an amplified crystal set will give very much louder results than the crystal set alone.

The battery can be anything from 3V. to 9V., and will have an extremely long working life. Some novelty miniature receivers are of this kind. The crystal set portion can then be made up with miniature parts, in a similar way to Fig. 41, and using a midget coil. The amplifier is assembled on the same panel, with miniature battery.

It is also satisfactory to use the 1 tran-

Another arrangement satisfactory with the Fig. 48 reflex circuit is shown in Fig. 55, the 2 transistor amplifier in Fig. 19 being added. In general, any of the detector circuits can be used with any of the amplifiers. The amplifier output can then be used with either phones or a loudspeaker, according to the volume, which will depend largely on how many transistors are fitted.

Sensitive amplifier

The most sensitive amplifier described was that in Fig. 44, which had 4 transistors. This amplifier will give good loudspeaker outputs with a very small input, so it can be used with microphones, pick-ups, or a radio tuner, as in Fig. 56.

It is easily understood that the amount of amplification obtained from a circuit depends on the number of transistors used. When the amplifier has only one or two transistors, a fairly strong signal must be fed into it. But as the amplifier is fitted with an increased number of transistors, it can give more amplification or 'gain', and can thus prove suitable with a smaller input signal.

The amplifier in Fig. 44 easily provides enough amplification for any normal purpose. It does, in fact, have more 'gain' than the amplifier circuits generally fitted in commercially-made receivers and similar equipment.

Other uses

Various novel or special applications can be made, in addition to using an amplifier for radio reception with a speaker, or record playing. Some of these can be described briefly.

Baby Alarm. This has a microphone near the cot, and a loudspeaker downstairs in a living room, or elsewhere. A transistor amplifier such as that in Fig. 44 will do very well, indeed, for this purpose, because the current drain is small, when no signal is coming through. It is thus practical to leave the amplifier switched on for long periods, during those times when listening to radio or TV would prevent sounds in the bedroom being heard.

Loudspeaking Telephone. A microphone, amplifier, and loudspeaker connected in the usual way will allow speaking from one room to another. To permit 2-way speaking, a 2-pole 2-way change over switch may be fitted at the amplifier. This switch transfers either of two small loudspeakers to either input or output circuit. The switch should be marked 'speak' and 'listen', so that it can be manipulated by the person at the amplifier. It is then possible to hold loudspeaker conversation over any dis-

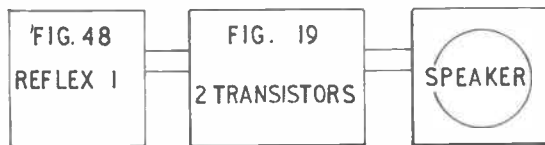


Fig. 55—Three transistor circuit for a receiver

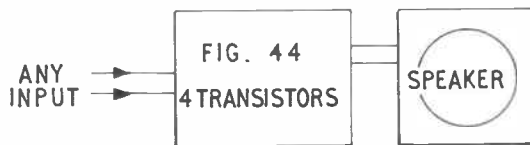


Fig. 56—Amplifier suitable for any type of input

tance. Such systems are used in offices, etc. Here, push-button switches are often employed.

Home Phone Amplifier. Simple home telephones are sometimes made from spare earphones, and have the disadvantage that volume is not very good. This can be overcome by using a simple amplifier, and one or two transistors will give a very great increase in volume. Very few parts are needed for a single transistor amplifier.

Morse. Single transistor Morse Code oscillators have been described in past issues. The addition of a small transistor amplifier will allow a speaker to be worked. This is very handy when two or more persons are learning the code together, and it avoids the awkwardness of wearing phones, or needing several pairs of these.

Radio Probe. This device is used by radio servicemen and experimenters, to test equipment. It is simply a small amplifier, with phones or speaker. A

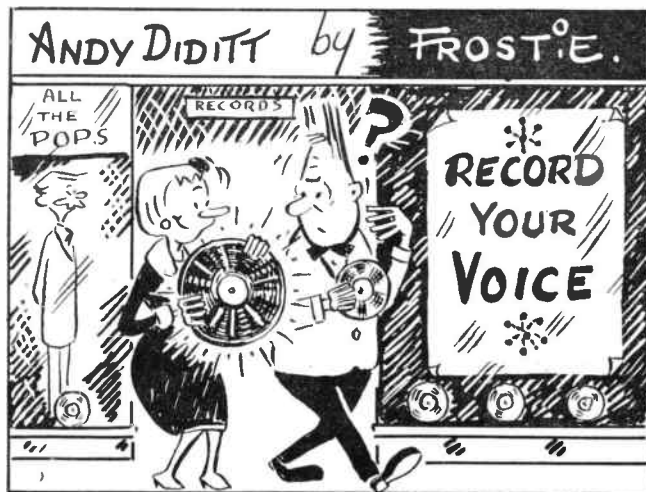
crystal diode and isolating condenser are wired to the amplifier input. When this probe lead is applied to any point in a receiver where a signal is present, the signal is heard. Checks are made point by point, beginning at the aerial. When the stage in the receiver where the defect is present is passed, signals cease. Detailed investigation is thus confined to a small portion of the set. The isolating condenser can be 0.01μF 150V. or similar for battery equipment, but should be rated at 500V. or higher if tests are made with mains equipment. Dangerous voltages are present in mains receivers or amplifiers.

A transistor amplifier and large speaker may be fitted in a car or other vehicle, to amplify the output of a transistor portable. A 2-watt power stage (Fig. 24) for 6V. or 12V. accumulator supply, is often used for this purpose. A much lower power amplifier is sufficient for a 2-way inter-com for motorcycle and sidcar.

Underwater Camera

I WISH to take underwater photographs, but am wondering whether an ordinary folding camera will be suitable. (D. P. — Newport).

ROLLIE make a watertight case for underwater photography, and indicate that exposure depends on depth, angle of sun to the water, and other factors, so that an exposure meter should, preferably, be used to check lighting. Normal kinds of film are suitable. If you are to obtain consistent results, some type of exposure meter will be almost essential. A miniature meter would take up little space in the case. If you have any form of extension control for speed or aperture, these could be adjusted under water, to suit.



Make This Seaside Paddle Raft



SEASIDE holidays will soon be upon us, and now is the time to prepare for the fun. This can be had in abundance with the paddle craft described here, which will carry a total weight of 150 lb. It is propelled, preferably from a kneeling position, by a paddle, and for safety reasons your trips should be kept close in, and parallel with the shore, and within your own depth.

The paddle raft can be built in a few hours, and is of quite simple construction. It can be easily carried by one person, and transportation to the coast is easy by means of a car rack.

In essence, it is a self-contained float formed by fixing a plywood top and bottom to framing pieces. Naturally, the plywood to be used should be of the water-resisting type, and a good fir grade is marked P.M.B.C. Exterior, which can be obtained through timber merchants. Marine plywood is also suitable, but is, perhaps, more expensive.

Quite a good job can also be made with oil-tempered hardboard, but in all cases a suitable finish of sealer, undercoating, and enamel or marine varnish would have to be employed. Any good quality hard gloss exterior paint would give sufficient protection, because obviously the raft would be taken from the water after each session.

To make a start cut out the 1 in. by 3 in. framing cross pieces to the measurements shown on the plan. Nail these pieces on edge, temporarily, to a bench or workshop floor. The two sides, which are also of 1 in. by 3 in. material, are then bent round the cross pieces, which will be bevelled as appropriate to ensure a good fit. An 18½ in. length of 2 in. by 4 in. wood, rounded at the corners as shown, forms the nose piece.

When all shaping has been done to get accurate fitting, the framing as assembled is glued and nailed together. A waterproof adhesive such as Cascamite resin glue should be used. It will be

noted that because the 2 in. by 4 in. nose piece on its side is not as thick as the 1 in. by 3 in. cross pieces, one surface of the paddle raft will be flat, and the other will be tapered slightly at the bow. This tapered side will be the underside of the finished craft.

Note also that notches are provided in the bottom centres of the cross pieces to allow for any drainage made necessary through seepage, and for this purpose a drain hole with plug is provided in the back cross member. Simply stand the raft on end, and allow to drain through these channels.

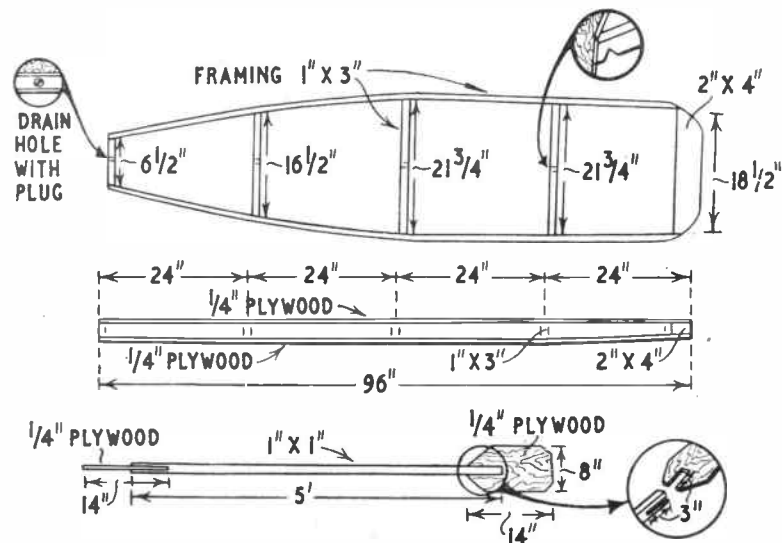
Both surfaces can be cut from a single 4 ft. by 8 ft. panel of ¼ in. plywood or hardboard. This should be cut lengthwise into two pieces measuring 2 ft. by 8 ft. Fit both top and bottom carefully into place on the framing, then glue and nail them into place, and trim off the surplus.

An efficient double-ended paddle can be made from a 5 ft. length of 1 in. by 1 in. material or round rod. Odd pieces of plywood or hardboard will form the blades, which are jointed to the handle as shown in the inset diagram. Note that the blades will be at right angles to each other.

If a larger raft is required to carry heavier loads, the same design can be employed by adding an extra 24 in. section to the centre of the plan. Another 1 in. by 3 in. cross piece should also be added to provide additional nailing surface for the top and bottom pieces. As these will now be more than 8 ft. long, sufficient extra material must be bought and butted to the 8 ft. lengths. Take care to seal all joints, and make them waterproof before adding the finish.

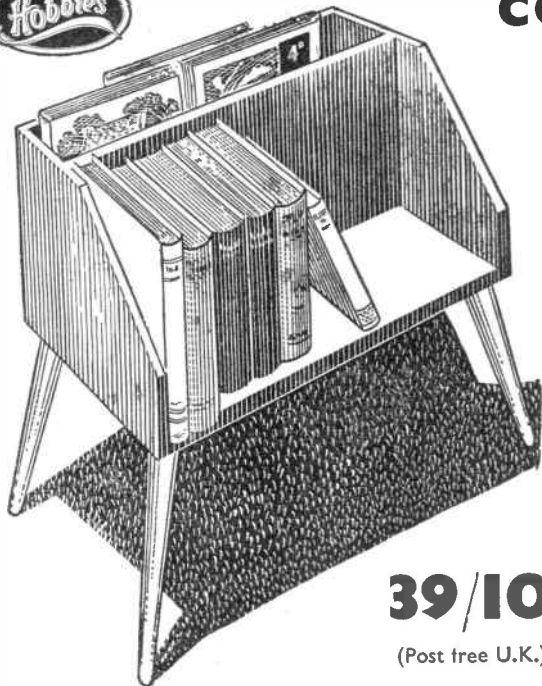
All round the sides of the craft hand ropes can be attached as a safety precaution. (E).

In a forthcoming issue we shall give details of other rafts to build for use on rivers etc.





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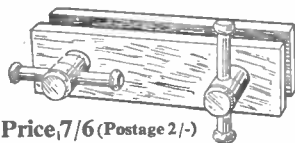
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CAMPING Notes

by Ed Capper

MUCH of the fun of a camping holiday is in exploring the countryside. Nothing is better than to pack a lunch and start off early on a long hike.

If you roam further afield than intended there are many ways of finding your way back. In olden days, people took their bearings by orientation, which means simply, 'directing oneself to the East'. It was the direction of the rising sun; Solomon's Temples were in that direction, so were the Roman temples.

In this country, Early Christian churches had their entrances facing east, for 'Christ is the Light of the World'. Later, entrances were built facing West, but a compromise was arrived at by building the chancel facing East. Here then, is your first clue; any old church you see will have its chancel facing East Fig. 1.

Most of you will know that moss growing on a tree trunk is always facing

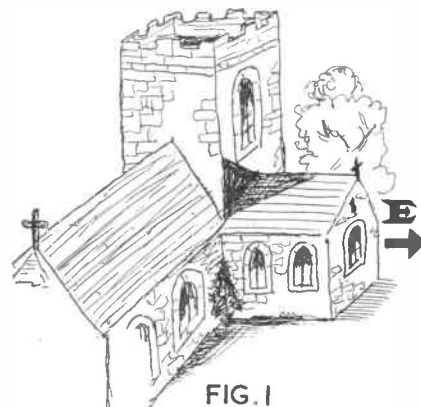


FIG. 1

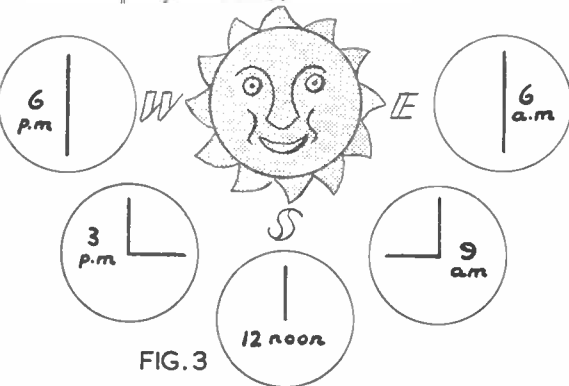


FIG. 3

N.W. On the other hand, trees bend their tops in a N.E. direction. If you find a tree stump, study its year rings. You will find that the rings are closest to-

HOMING GUIDES

gether on the North side. Other signs to look for are frost cracks on tree trunks; they will be found mostly on the East side. Or study a bird's nest; the open or exposed side will face South but the side will be covered as much as possible.

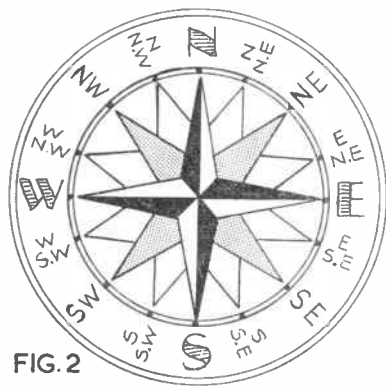


FIG. 2

Now for a few mechanical aids in finding your direction. First there is the compass. There are thirty-two points on a compass but we need not bother ourselves with the full complement. Fig. 2 shows the main points, which are divided as: The Cardinal Points (North, South, East and West), Important Intermediate Points (North-east, etc), and Intermediate Points (North-north-east, etc.)

But what happens if you forget to pack the compass? You can still establish North by the position of the sun. As we know, the sun rises in the East and sets in the West, or in other words, describes a semi-circle. If you follow the diagram

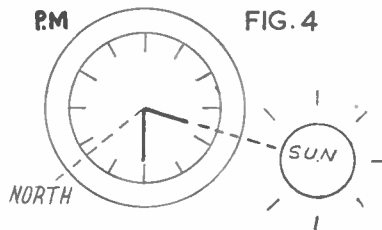
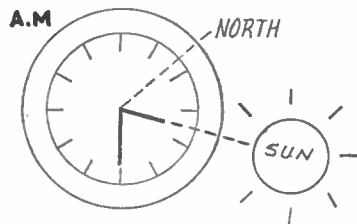


FIG. 4

shown in Fig. 3, you will see that the sun is in a direct East position at 6 a.m., at due South at 12 noon and at due West at 6 p.m. Therefore, to find your direction, consult your watch, face the Sun and estimate the direction according to the clock chart faces shown.

Another way to use your watch in order to find your direction is shown in Fig. 4. You hold the watch horizontal and with the small hand pointing towards the sun. Let's say the time is 3.30 a.m. Take half of this time, i.e. 1½ hours, and imagine a line from the centre of the face to the 1½ hours indication. This line points towards true North. After noon you will have to add 12 hours to your time. Needless to say, it must be correct Greenwich Mean Time and you will have to adjust during Summer Time when the clocks are changed.

Finally, what happens if you get lost during the hours of darkness? The stars are certain pathfinders and the best to these is the Pole Star (Fig. 6) which indicates nearly precisely True North.

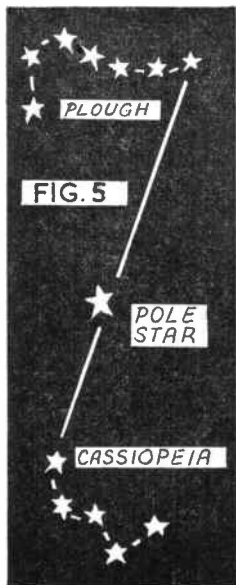
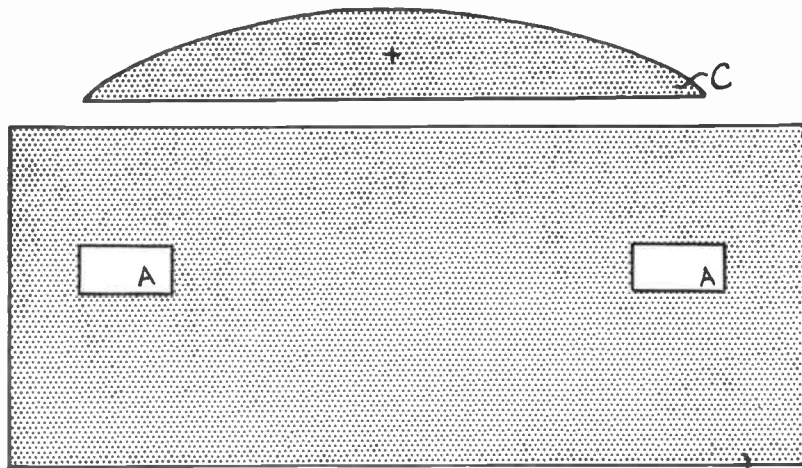


FIG. 5

MOTORIST'S KEY RACK

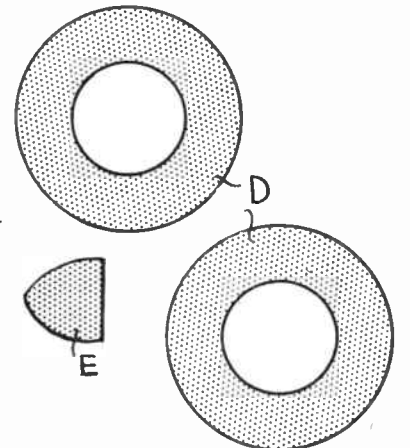
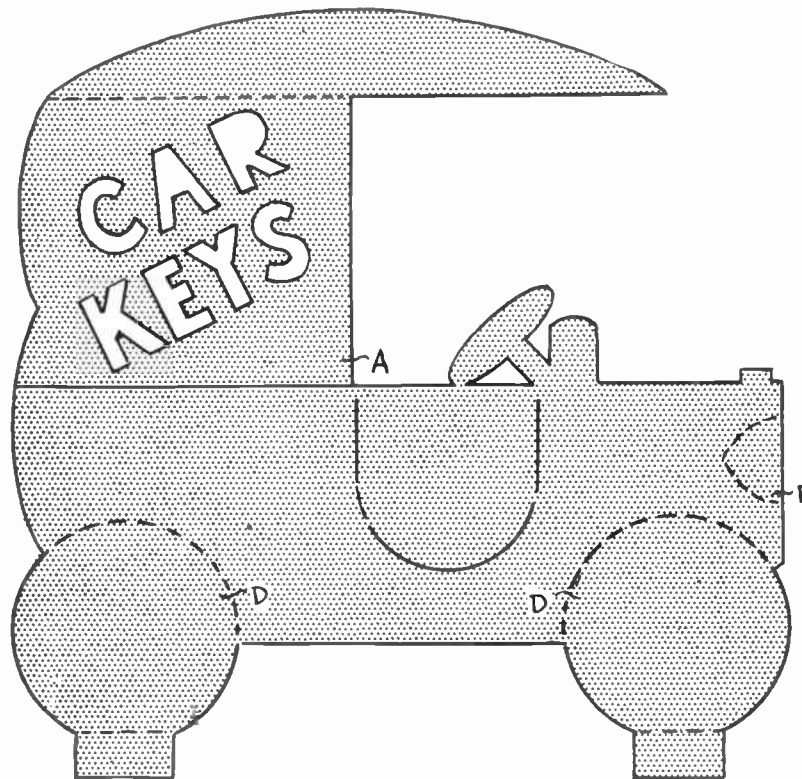


PAINTED in gay colours this little rack will make an ideal gift for the motorist.

Use the fretsaw to cut out the various parts after transferring them to wood by means of carbon paper.

Cut one of pieces A, B and C ($\frac{1}{4}$ in.), two of D ($\frac{1}{8}$ in.) and one of E ($\frac{1}{4}$ in.). Glue the wheels D to piece A and then glue A into the base B. Glue piece C to piece A.

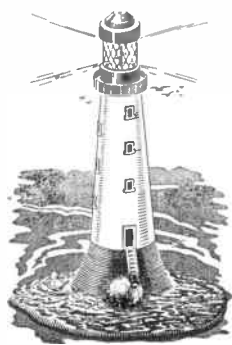
Clean up with fine grade glasspaper before painting with high gloss enamel. A dresser hook is screwed into piece C. (M.p.)





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