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THE ORIGINAL
'DO-IT-YOURSELF'
MAGAZINE

HOBBIES *weekly*

FOR ALL
HOME CRAFTSMEN

INSTRUCTIONS TO MAKE



DIVAN

FOR RESTING
OR SLEEPING

Also in this issue:

DISC BREAK
WITH ELVIS

NEW STAMPS
ILLUSTRATED

MODEL RAILWAY
FEATURE

AIDS TO EASIER
GARDENING

'COLLECTING' WITH
A CAMERA

MAKE A MODEL
WIND METER

PLANS FOR RHINO
BOOK-ENDS

ETC. ETC.



A further list
of readers seeking
PEN FRIENDS



Up-to-the-minute ideas

Practical designs

Pleasant and profitable things to make

5^D



I HAVE mentioned in these notes before that certain stamps become fashionable, and also it follows that some of them go out of fashion. It often happens that when a country comes into the news in some way or other then the stamps of that country become fashionable.

CANADIAN ISSUES

By L. P. Veale



As an example of this, I was in a stamp dealer's and two young collectors were asking for the current Tristan da Cunha stamps. Those stamps had obviously become fashionable due to the volcanic eruption which took place there. Generally one can be safe in thinking that the stamps of British Colonies will remain in favour. There always seems to be a demand for these. Although you naturally only buy those stamps that you want, yet it is nice to think that you would be able to obtain at least the same amount as you paid for them. If you can sell at a profit, so much the better.

It is not always the stamps of a country that are in fashion. It may be stamps showing a particular theme, or perhaps the stamps of one particular reign, such as those of King George V or VI or those of Queen Elizabeth.

Popular theme

One of the countries that always seems to be popular is Canada and this week we will have a look at the issues from that area and attempt to find out why they should be so sought after.

The early stamps are very valuable. Canada started her stamps using pounds, shillings, and pence but this introduced a difficulty. The Canadian pound was not of the same value as the British (sterling) and so they had to print two values on the stamps. For example, there is a stamp showing a portrait of Jacques Cartier

with 'ten pence' below the portrait; above there is printed '8d. stg.' Another is marked 'six pence sterling' and in the corners '7½d. cy.' There is also a twelve penny stamp, not as one would normally call it a shilling, and this is quite valuable, catalogued at £2,500.

In 1859 Canada changed its currency to cents and dollars. The designs of the stamps remained the same. The ½d.

became one cent, the 3d. five cents, the 6d. ten cents, and the 10d. became seventeen cents. The only new design introduced was for the two cents. Well, it is hardly likely that many of you will have many of those stamps as they are all rather expensive items, particularly if they are in good condition.

Most people are quite prepared to accept that in England there was a postal service before the introduction of postage stamps, yet for some reason they do not think of that in connection with other countries. In Canada there was a post established between Montreal and Quebec as long ago as 1721, but in those days there were no roads so that the letters had to be carried on foot or by canoe. The official messengers took letters for other people as well as their employers. The charge was fixed according to the number of sheets, the weight and the distance the letter had to be carried. They had to take account of the weight otherwise one could have sent a very large sheet of paper and so defeated the proper price.

No envelopes were used; they would be called a second sheet. So one folded the sheet of paper, tucked the flap into the fold and sealed it with sealing wax. There were no postage stamps to show that the money had been paid, so what they did was to write the amount of the cost of sending the letter on the sheet. If the money was paid at the time of send-

ing then they wrote it in red. If, however, the money had to be collected when the letter was delivered then they wrote it in black.

To give some idea of the time and the frequency of the mail in 1788 a letter from Halifax to Quebec would take about seven weeks. By 1791 there were eleven post offices in Canada and there was a weekly mail between Quebec and Montreal. Although stamps were introduced in 1851 it was not until 1875 that prepayment was made compulsory.

Look for watermark

Now the first stamps of Canada that most of you will have are those like the first illustration (3 cents). Generally speaking Canadian issues are printed on unwatermarked paper, but some have a watermark and these are good. See if you

can find any. Then again most are perforate 12 but some are perforate 11½ by 12. That means that the edge along the top is perforate 11½ and the sides are both 12. These again are better than the others. Some of the cancelling devices are worth finding — leaves, letters, numbers and so on.

A fine design

The famous Diamond Jubilee issue of 1897 (second illustration) provides two portraits of Queen Victoria. This is a beautiful set and the high values are quite valuable too. Just look for a minute at the design. Notice how the two portraits balance; how the 'Canada' and 'Postage' and the two dates below the ovals all seem to fit into place. One could hardly wish for a better design.

A stamp printed in two colours in 1898 was somewhat of an achievement, but it is rather interesting to look at two or three of these and notice how badly the red coincides with the land outline. This of course refers to the stamp issued to celebrate the Imperial Penny Postage, the map of the world.

The change in the rate for letters from 3 cents to 2 cents meant a great increase in the demand for 2 cent stamps and a corresponding decrease in the demand for 3 cent, so the 3 cent stamps were surcharged '2 cents'.

(To be continued)



A new 'Sports' set of stamps on official covers was issued by Czechoslovakia on 15th February. As shown above the designs include: 30h Cyclists; 1.20K Footballer; 1K Woman Bowls Player; 40h Girl Gymnast; 60h Figure Skaters; 1.60K Discus Thrower



We couldn't resist showing our readers this happy smile from **JENNIFER MORTLEY**, 32 Essetford Road, Ashford, Kent, whose hobbies are music, swimming, and collecting stamps and labels. Jennifer would like pen friends throughout the world.

Other readers seeking pen friends:

J. BAYANOR, 2/1, Russakovskaya Street, Flat 69, Moscow, B.140, Russia. Age 40. Books, stamps, labels.

LOUIS F. TORTELL, 2 Ghar Lenbi Street, Sliema, Malta. Postmarks, stamps.

IDRIS BIU YUSOFF, Lao Reme., 75 Coy. R.A.S.C., G.P.O. Singapore. Age 20. Interested in all hobbies.



A 4 Kopek value has been issued from Russia marking the 125th anniversary of the death of A. S. Pushkin, the Russian poet. On 26th January another stamp of the same value marked the achievements of Soviet women



Russian 'Dance' anniversary



Russian centenary, Dolivo-Dobrovolsky

Advertisers' Offers

125 DIFFERENT STAMPS catalogued over £1 free. Request bargain approvals — Walker (A), 11 Camphill Avenue, Glasgow.

C.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 — 4rd. catalogue — Mint at face — **K. Hoye**, 6 Merriden Road, Macclesfield.

100 DIFFERENT stamps free! Request 4d. upwards discount approvals. — **Bush**, 53 Newlyn Way, Parkstone, Dorset.



Bulgaria folk-song centenary

Gun Collecting

by Geoffrey Boothroyd

GUN collecting in any of its varied aspects is a fascinating subject, and this book will be of great value to those who are interested.

Since the aim of the serious collector should not merely be the amassing of a large number of firearms, but also their restoration and preservation, sections dealing with the many problems that confront the collector when he comes to dismantle and clean his most recent acquisition are discussed.

Published by **Arco Publications**, 29 Great Portland Street, London, W.1. Price 12s. 6d.



RAILWAY MODELLING

TO help you to get an idea of perspective, and the finish to look for in your own buildings I am showing this week photographs of various sections of my own Maryville, Fredricton and Westbury Railway, which has been built over the past twenty years or so.

BUILDINGS

By F. A. Barrett

In Fig. 1 you will see part of the main station of the layout, with a back view of myself in the distance. You will see part of the main entrance building of the station with the clock tower, and also the detail of the roof work over the platforms and tracks. This station is quite a length. The platforms are 6 ft. long, and they are fitted with seats on which people are sitting. You will also see some of the rolling stock on the

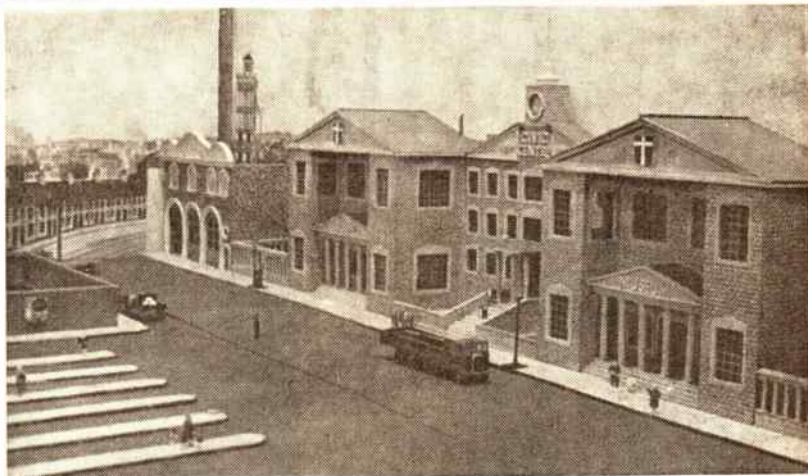


Fig. 2—The civic centre

situated on the model opposite the station entrance. You will see that there is a Museum on the near side, and a Library on the other. There are gardens at each end, and to the left there is the Fire Station. This layout is 3 ft. long, and

is made entirely of cardboard, similar to the projects mentioned in my last article. You will see here the result of window frames put on with paint and a ruling pen. The actual window surrounds were cut individually, and glued into place. The clock lights up, and I have yet to fit the interior of the model with models and lighting. The road disappearing into the background is painted on the back cloth, and I will tell you more about this sort of thing in a future article.

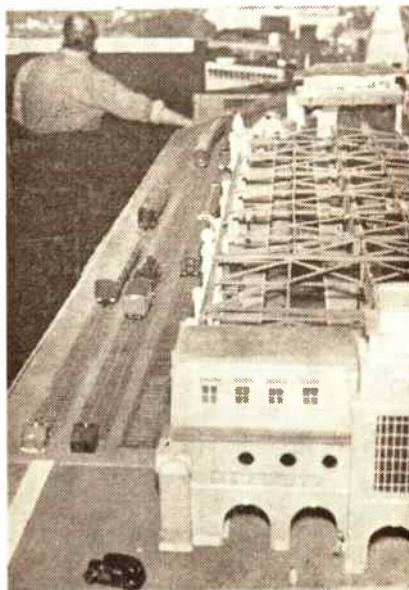


Fig. 1—The station

A photograph taken at the Model Railway Hobby Show is shown in Fig. 3. This will give a general idea of the buildings and also the model as seen by the viewer. Starting at the right there is the end of the station, the signal cabin, the coaling stage, the engine shed, and in the background at the far left the cathedral. In the left foreground is the switch console, and along the back the scenic buildings and backgrounds. Everywhere you will see coaches and locomotives of all sorts. Perhaps you will think it is too cluttered with stuff, but I have tried to make the model as realistic as possible. All the buildings you see on the railway are made from card, designed by myself to suit the surroundings. All the buildings are fitted with lights, and the shops are fully fitted with the goods they have to offer to the public. The height to the top of the cathedral steeple is 18 in. It is

 ★ **MODELLERS' NEEDS** ★
 ★ Wherever there is a Hobbies ★
 ★ Branch, modellers are invited to ★
 ★ call in and seek the friendly advice ★
 ★ and help of the manager and his ★
 ★ assistants. For instance, at ★
 ★ 81 STREATHAM HILL, ★
 ★ LONDON, S.W.2 ★
 ★ the manager, Mr A. R. C. ★
 ★ CHIPPING, is always willing ★
 ★ to discuss the problems and needs ★
 ★ of model railway, aircraft, and ★
 ★ boat enthusiasts. ★
 ★ Why not be guided by the ex- ★
 ★ perience of our staffs? ★
 ★
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sidings to the left. In the background other buildings include a Signal Cabin, and behind that is the Coaling Plant. I am operating the new switch console.

Fig. 2 shows the Civic Centre,

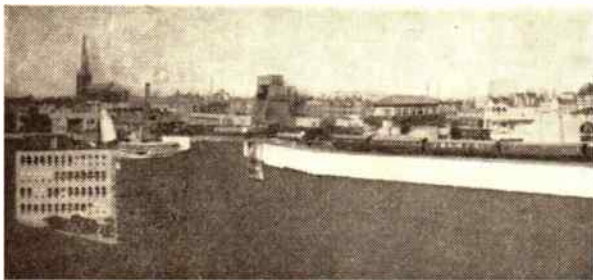


Fig. 3—General view

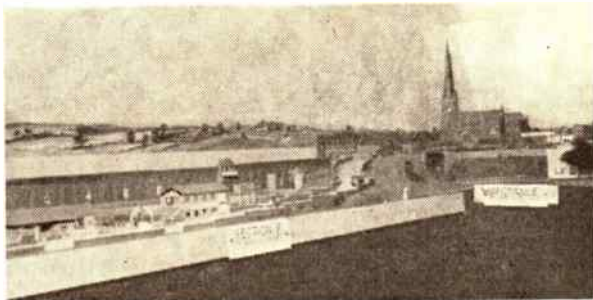


Fig. 4—The market garden

fitted with stained glass windows, and lights up. It is fitted for sound effects and you can hear the organ playing, the choir singing, and the bells ringing.

Fig. 4 gives the other view of the Cathedral and the Market Garden. You will see the road coming down the hill, and an excellent view of the scenic backgrounds. The wall along the back is the backwall for the main lines of the railway which come round the corner, past the turntable, under the road, and then start a climb up to the next section. The tracks rise until they are 3 in. above baseboard level. About halfway down

the road hill are two towers. This is a tunnel mouth where the Underground lines come up to the surface after passing under all the other main boards. The models to the left of the picture are the market garden buildings. Greenhouses have been modelled in Perspex.

At the far left is an attractive little bungalow, which has among other features a picture window. In the garden there is a dog's kennel, also made in card. A small signal cabin is for the observation of trains coming round the curve. A wall in the background is made of hardboard with an overlay of card,

scribed to represent stonework.

If one has the space there are many such features that can be modelled which give an interest to the layout — coal mines, cement works, factories of all sorts. They give a reason for the existence of the railway, and help to make the scenic picture complete. Perhaps you do not agree with me. There are some folk who just like to see trains running. But to my mind one should try to create a picture, to put the railway into its correct setting.

I hope these new photographs and description will serve to show you the type of result that can be achieved if one has the time and the patience — both very essential in this work. It is not necessary to spend a lot of money. Most of the buildings shown were built from scrap materials. In the main it was old packing cartons obtained from my grocer and tobacconist — thick stuff which can be cut with a knife or fretsaw.

In my next article I am going to leave the subject of buildings for a short time, and will tell you something about locomotives, how to build them, and some of the products that you can use.

METAL CASTING KITS

THERE is an excellent range of kits by Messrs. Wills (Scientific Hobbies) Ltd of 14 Green Lane, Thornton Heath, Surrey. These kits consist of actual metal castings, and are very clean and perfect in every way. There is a complete range of locomotives, tank engines and tender types.

I expect some of my readers, writes F.A.B., will be thinking that metal engines require the expert use of a soldering iron, and whilst this is very true for some types, the kits under review are simply glued together. I have made one of them up with Durofix, and a really strong job resulted.



These kits have many advantages. They are heavy, and that means that they will pull long trains, and another point is that they are made to be used with the mechanism of existing stock. For instance, one of the latest kits is an L.M.S. Mogul The 'Crab'. This model is to be powered by the use of a standard Triang 2-6-2 Chassis. Some of the other types use a Hornby Dublo standard chassis.

There are many prototypes in the range, such as engines of the L.M.S., L.N.E.R., G.W.R., and Southern Railway. Prices are reasonable. The L.M.S. Mogul, for example, is 66s. 0d., plus 12s. 1d. P.T. A Southern E.2 Class is 34s. 0d., plus 6s. 2d. P.T. It should be remembered that these are accurate scale models.

Apart from locomotives there is also a range of wagon kits, also die-cast in OO scale. A Track Cleaning Wagon, sold ready to run, houses a tank in which you put the cleaning fluid, and there are a couple of replaceable cleaning elements that clean the tracks. Just push one of these over your trackwork, and you have clean tracks. A great boon for perfect running. This wagon is available for either Triang or Hornby Dublo, and costs 11s. 0d., plus 1s. 11d. P.T.

Locomotives of British Railways

by H. C. Casserley & L. L. Asher

THIS book is intended for railway enthusiasts of all ages with clearly arranged information and illustrations embracing all steam locomotives owned by British Railways since Nationalization in 1948 up to the time when construction of this type was stopped in 1960.

Information is given on the history and origin of all classes. For easy reference, the classes are laid out in order of British Railways numbering. There are 350 pages of illustrations showing photographs of hundreds of locomotives and presenting a permanent record of a fascinating but fast disappearing era in steam locomotion.

Published by Spring Books, Spring House, Spring Place, London, N.W.5 — Price 21s. 0d.

AIDS TO EASIER GARDENING

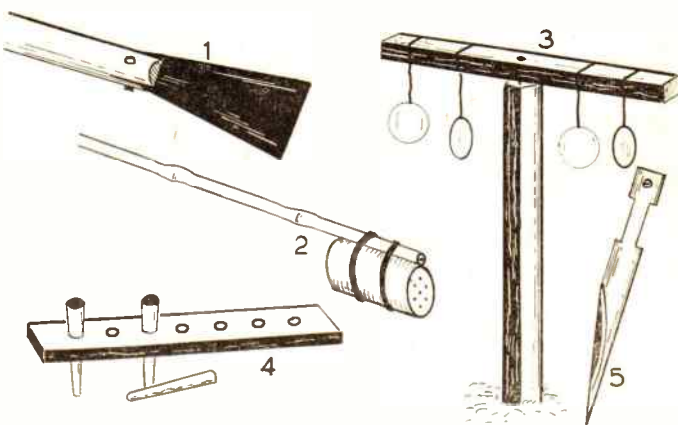
THERE are many jobs in the garden which can be tackled without bending or kneeling if you equip some of your tools with longer handles. For example, small handforks, trowels, and the like will be much kinder to the back if a long handle is fitted. And not only do these prevent the necessity for bending or kneeling, but also help to reach awkward places.

In Fig. 1 we show a small hoe useful for working in restricted places, and made from an old paint scraper. Remove the original handle, cut a slot in a broom handle, and bolt together as shown, filing the cutting edge to sharpen.

Another handy device for removing grass from between crazy paving stones without bending down is a nail knocked into the end of a long rod. Saw off the nail head, and bend at right angles, thus making a hook which will dig in the cracks, and pull out the weeds.

Some people find that their hands become sore or blister easily when using a rake, hoe or fork, and to remedy this we suggest either a rubber handgrip as used for tennis racquets or cricket bats. The grips used for bicycle handlebars or pieces of an old inner tube can also be used successfully. Slide on to the handle to a convenient position to suit yourself, and if there should be any movement, fix with a suitable adhesive.

Fig. 2 shows what we would term a 'long distance feeder' to provide an easy method of applying fertiliser to those plants which are difficult to reach, and without risking damage by treading on others. All you require is a small con-



tainer such as a cocoa tin. Punch a few holes in the *bottom*, and fasten to a long cane with strong rubber bands or twine. Do not make the holes in the lid, or this might shake loose.

A small handfork fitted with a longer handle will make a most useful gadget for stirring the soil after a rain.

Birds nibble the young fruit buds, and attack the young peas and lettuces, so another gadget I find extremely useful is the bird scarer shown in Fig. 3.

You will need to collect as many tin lids as you can. Cocoa tin lids, boot polish tins, and the like are all ideal, and only need a hole making near one edge or through the rim. A piece of string is fastened to the lids, and these can then

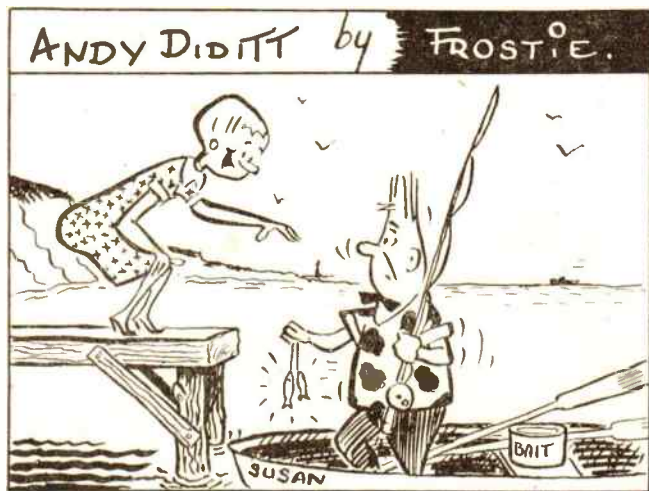
be suspended from the branches of the fruit trees, so that they rattle in the breeze, and glitter in the sunlight. The lids may also be fastened to canes, and distributed among rows of peas or lettuces, or you can make the revolving scarer illustrated. Fit a washer on top of the upright so that the arm revolves freely in the wind.

While dealing with tin cans we should mention that one of suitable size is just the thing for holding twine. Punch a hole from the *inside* of the lid, otherwise the string will catch on the jagged edges.

In Fig. 4 we illustrate a novel dibber for rapid, mass planting. You will require a crossboard of 2 in. by $\frac{3}{4}$ in. material with holes drilled at suitable intervals, and then fitted with pegs. If the holes are made about 3 in. apart, the pegs can be fitted to suit different types of plants according to planting requirements, but see that they are knocked in tightly.

Another type of dibber is shown in Fig. 5, which is made from a 1 ft. length of 1 in. iron tubing. One end is cut off at a shallow angle, and above this two slots are cut — one on either side. These slots allow the soil to clear itself, and the resultant hole is not compressed at the sides. Allow a further 2 in. above the slots for fitting a long handle.

Are you bothered by cats scratching up your plants? From your local chemist buy a bottle of methyl salicylate (also well known as wintergreen). Pour a little of this on about half-a-dozen pads of cotton wool, or woollen cloth, and leave in different parts of the garden. Repeat every few days, and once a cat has had one sniff, it will not visit you again. Incidentally, the wintergreen will not harm the cats in any way. (S.H.L.)



"SHALL I GIVE YOU A HAND WITH THE FISH, ANDY?"

INSTRUCTIONS FOR MAKING

A COMFORTABLE MODERN DIVAN



FOR sleeping or sitting you will find this modern divan extremely comfortable and inexpensive to make. The construction is very simple and the sturdy legs give ample support for the plywood top.

The top is suitable for a standard latex foam or plastic foam mattress 6 ft. by 2 ft. up to 6 in. thick. Prices vary, but a latex foam mattress 4 in. thick with calico cover would cost about £6 and plastic foam about £5.

Cushions for the back can be cut to any size to suit your requirements, but a standard 4 ft. by 2 ft. mattress (cost about £4) could be cut in two to provide real luxury, or you could use smaller standard size cushions 18 in. by 18 in. at 15s. or £1 each depending upon thickness.

There is no back to the divan, it is merely placed close to the wall with two or three loose cushions forming the back-

rest. For sleeping it is turned round, end on to the wall.

Choice of wood depends upon what is obtainable locally, but birchfaced plywood for the top and pine for the legs and struts will be quite suitable.

The main dimensions are shown clearly in the diagrams in Fig. 1. Piece A should be $\frac{5}{8}$ in. or $\frac{3}{4}$ in. plywood, the corners

THE LADY OF THE HOUSE WILL ADVISE ON SUITABLE COVERINGS

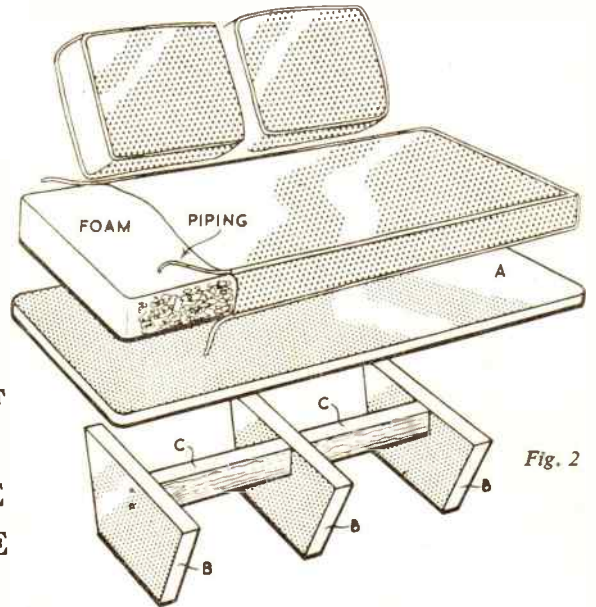
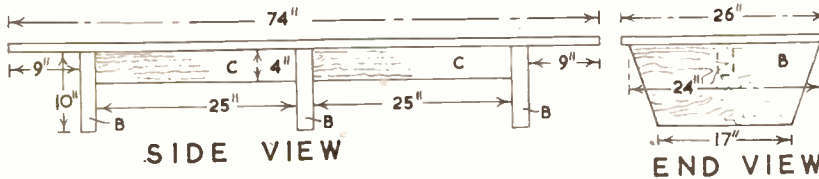
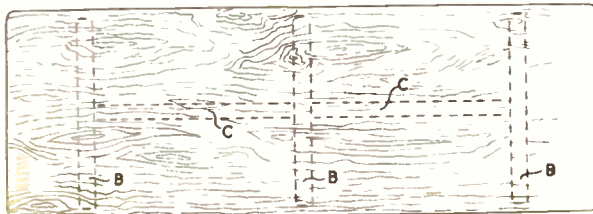


Fig. 2



SIDE VIEW

END VIEW



PLAN

Fig. 1

being rounded slightly to improve the appearance. The legs B are solid pieces of 2 in. thick wood screwed in the positions shown. The struts C are also 2 in. thick and serve to prevent the end legs from splaying outwards. These pieces are not only screwed to the top but to the end legs also. Fig. 2 shows the relative positions of the various pieces.

The mattress and cushions will of course be covered with suitable material and the edges piped as suggested in the diagram Fig. 2.

Finish can be stain and polish or clear varnish. In both cases however the final finish will depend upon the preparation of the wood. The grain must be adequately filled and rubbed down to a smooth finish before applying polish or varnish. (M.h.)

'COLLECTING' WITH A CAMERA

THERE are many hobbies which are pursued by collecting various items or specimens; stamps, coins, bus tickets, birds eggs, to mention but a few. There are also many subjects where it is not possible to collect the original object, and it is here where photography can play a major part.

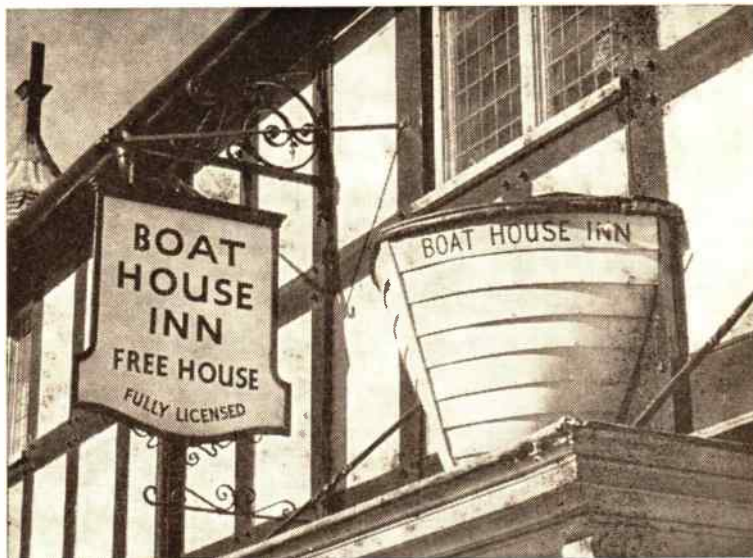
For example, it can be most difficult to describe a decorative or beautifully painted inn sign to a friend or, perhaps, convince him about the incredulous notice you have seen on your travels.

By C. Robinson

But an actual photograph can do all the explaining. There are, of course, many other examples — strange place and street names, unusual forms of transport, the many forms of decorative art which people apply to the exteriors of their houses and property, etc, can all be quite easily recorded with a fairly simple camera. You may, of course, wish to start a collection of pictures of church fonts, carved pulpits, and pew ends, stained glass windows, and many other such objects which can be done, but will require a little more photographic knowledge.

Reverting to the simple items, almost any type of camera can be used for taking these, but a certain amount of care must also be used. As nearly all the subjects mentioned involve being able to read words on them or study pictures it is essential that your pictures be sharp. This means that if the camera is a focusing one, the distance between the camera and the object to be photographed must be accurately determined to make it possible to set the distance scale on the camera.

If your camera is a 'fixed focus' such as a box, or very simple type, the object should not be approached closer than



Sign over door of Boat House Inn, Chester

6 ft., which is usually the minimum distance at which any such camera can be used to produce acceptably sharp results.

Sharpness, of course, also relies a great deal on keeping the camera still at the moment of exposure. Should any form of support for it be available this should be used. It is not always practicable to carry a tripod, but railings, walls, seats, etc, can be very useful for steadying the camera. If no support is available care must be taken to stand steady, and press the shutter release smoothly without any jerking action.

I have already mentioned that one should not go closer than 6 ft. to the subject with a fixed focus camera, and it is usual for the focusing cameras to be adjustable down to 3 ft. only. For

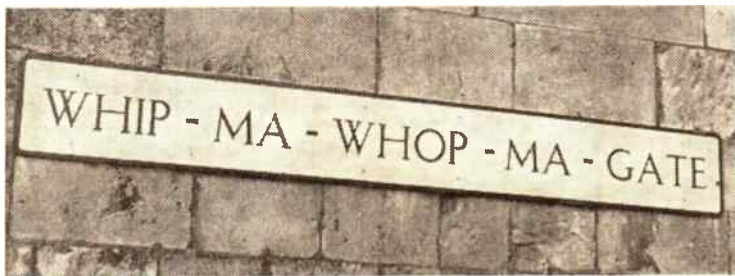
recording very small objects even this will not be near enough, and we must make use of a supplementary lens. These can be purchased for all types of cameras in varying strengths allowing an approach of as little as 9 in. to be made.

Supplementary lenses cost between 5s. 0d. and 15s. 0d. according to the type of mount necessary for fitting them to the camera. A table is supplied with each giving the method of using, and distances at which the camera should be set. When working close-up distances between camera and object must be extremely accurate, and should be measured with either a rule or steel tape.

For many of the subjects which come within the heading of 'Collecting with a Camera', black and white photographs will be adequate, and to enable any legend on them to be readable I would suggest you have prints made at least half plate (6½ in. by 4½ in.) in size. These can then be mounted in any suitable album.

Some subjects, beautifully painted inn signs for example, can, of course, be better appreciated if seen in their natural colours, and with the increasing use of 35 mm. reversal film which will give superbly rendered transparencies in colour in the most reasonable priced of cameras, I would suggest you also give some thought to this aspect.

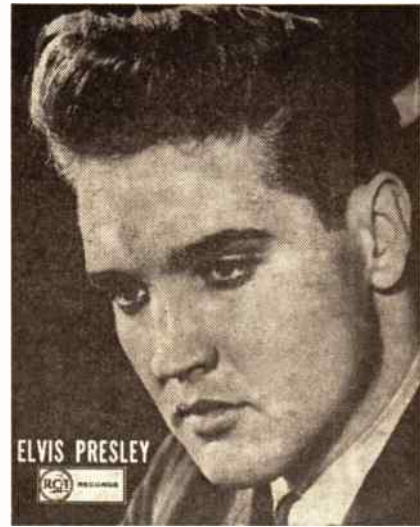
Collecting with a camera can be fun, and will certainly give added interest to your hobby throughout the year.



One of the many unusual street names to be found in the City of York



ELVIS PRESLEY



THREE of Elvis Presley's last four releases — *It's Now or Never*, *Are you Lonesome Tonight*, and *Surrender* — have each topped the 4,000,000-sales figure throughout the world.

What chance is there of Elvis coming to Britain in the foreseeable future? According to Mr Freddy Bienstock, Aberbach Music executive, and the man who selects the songs for Presley to sing on disc and screen, chances are now increasing.

Says Mr Bienstock: 'After *Kid Galahad*, which he starts shooting in September, Elvis will cut down his film-making to two a year for the next four years. This means that from next year on Elvis will be able to devote more time to personal appearances, of which he has been able to make only two (both of them benefits) since leaving the army.

'I can tell you that Elvis would very much like to come to Britain and do maybe two or three concerts', he adds.

Elvis, who made his last road tour in 1957 just before joining the army, is currently at work on the fifth film he has made since his release. Title is *What a Wonderful Life*, and in it he will sing his version of the old Vaudeville favourite, *I Want a Girl just like the Girl that Married dear old Dad*.

THE G-CLEFS



A YEAR or two ago the G-Clefs vocal fivesome — Teddy, Chris, Timmy and Arnold Scott, and their friend Ray Gibson — had two big recording hits in *Ka-Ding-Dong*, and *Symbol of Love*. They became one of the

most sought-after vocal groups in America, went on the telly, sang at night-clubs, and record hops. Suddenly they abandoned their singing career — and went back to school.

Explain the boys, who have been

singing together ever since they were members of the church choir in their hometown of Roxbury, Mass. (they still sing there even now): 'We were still attending school at the time. Then our TV and club dates began to interfere seriously with the education, which we

A top American singer who also features on piano, guitar and drums. See next week's Disc Break.

figured would be of importance to us some day. We decided to give up singing there and then, and we went back to Boston to finish our schooling'.

Then the youngest brother, Arnold, left school. Back to the recording studio went the boys, and waxed the oldie *I understand (Just how you feel)* for record chief Jack Gold, the man who had first discovered the group singing at a local hop.

Now the G-Clefs are back on the success-trail again. *I Understand*, into their vocal arrangement of which is cleverly woven the melody of *Auld Lang Syne*, leapt up the U.S. hit parade, and was quite a favourite with British listeners.

HOW TO DISTINGUISH CRABS

ONE of the commonest groups of animals found on our coast is the crab family. These animals possess ten legs and are thus classed as the *Decapoda*, a sub-group of the Crustacea. Everybody is familiar with crabs but how many people are able to distinguish between the various species.

By John Fisher

Many varieties exist around the British coast but two of the more common species are the Edible Crab and the Common Shore Crab, which are found on all types of shore usually between the lower and middle shore. On the rocky shore they can be found under rocks or amongst the seaweed, whereas on a sandy beach they are able to burrow into the sand by the use of their five pairs of legs. They feed on other small crustacea and debris.

The hard shell or carapace, as it is called, does not allow for growth and it is shed from time to time to allow a new but larger shell to form. This accounts for the large number of empty shells which are washed up by the tide.

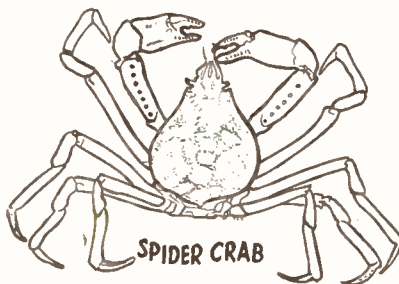
The Edible Crab (*Cancer pagurus*) is pink-brown in colour with darker legs. When handled this crab tends to loop its legs beneath its body giving the species a distinction from the Common Shore Crab. The shell is granular and mostly between 2 and 11 in. across with three small teeth between the eyes and ten rounded teeth on either side of the eyes. The legs are hairy. The female crab may deposit as many as 30,000 small red or yellow eggs which she carries about until hatching takes place. As in all crabs the loss of a limb is only a temporary handicap because the victim is able to grow another to replace it. This adaptability illustrates the primitive nature of

this particular group of marine animals.

The Common Shore Crab (*Carcinus maenas*) is a smaller species, varying from 1 to 4 in. across the shell, which is greenish-brown in colour. It has three blunt teeth between the eyes and five sharply pointed teeth on either side of the eyes. In the young specimen bold markings are present on the shell but all the patterns are symmetrical about the middle line.

The spider variety

Spider crabs, although not quite so common as the Edible or the Shore



SPIDER CRAB

crab, tend to be plentiful in many areas where the shore is slightly rocky. They are usually found in or amongst seaweed, in rocky crevices or pools or areas on the lower shore which are exposed at low tide.

The commonest of all our spider crabs is a species known as *Hyas araneus*. This also has five pairs of legs, the front pair being in the form of large pincers. The legs are long and relatively narrow, and it is these which give the crab its spider-like appearance. Hence its family name.

The shell is triangular in shape and can vary from $\frac{1}{2}$ in. to $2\frac{1}{2}$ in. across, although larger specimens have been found. It is red-brown and is often covered with

differing varieties of red seaweed, which provide camouflage. Thus it often goes unnoticed.

The shell has numerous tubercles but is completely void of spines. The eyes are stalk-like and can be withdrawn into its two sockets on each side of the head. Between the eyes are two projections which converge and may actually touch. Its food consists mainly of small particles of debris and micro-organisms.

Many species of swimming crabs occur around the British Isles, being mostly confined to deep water. These can only be obtained by dredging. However a few



SWIMMING CRAB

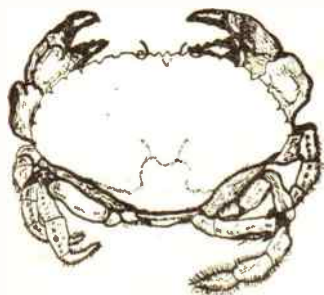
species may be found on the lower shore.

The main distinction between these and other crabs is that the back pair of legs are adapted for swimming, the last joint being very flat and broad.

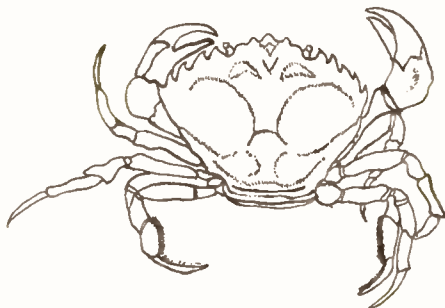
The Velvet Swimming crab or Fiddler crab (*Portunus puber*) besides being one of our more attractive species is by far the most common of the swimming crabs. It inhabits rocky shores and may be found under stones, in rock pools or amongst seaweed. It has striking purple markings on its legs and nippers which distinguish it from the other swimming crabs.

In spite of its attractive appearance it is by far the most vicious of the British crabs. When disturbed it sits on its tail and opens its powerful nippers ready for attack.

Its shell is about 1-4 in. across, occasionally larger, and is covered with a mass of very fine hairs which give it a velvety appearance. Between the eyes are seven to ten small irregular teeth, the centre ones being larger than the others. On each side of the eyes are five sharp regular teeth. In the identification of many crabs these teeth on the front of the shell play an important part.



Edible Crab



Shore Crab

Next time you visit the coast and see one of these crabs, don't just pass it over but look for the difference between these frequently confused species.

To measure wind velocity

MAKE A MODEL ANEMOMETER

By A. Liston

The wind-speed measuring part of the anemometer consists of two 3 in. diameter metal discs, which can be made from tin lids. The upper disc has four holes punched in its rim and a hole in its centre. It is soldered to the shaft just below the upper bracket, so that it rotates with the shaft. The lower disc also has four holes punched in its rim, and one hole in the centre. A 1 in. long tube, wide enough for the shaft to slide inside it, is made from a strip of tinfoil and soldered to the disc. The lower disc must be able to slide freely up and down the shaft.

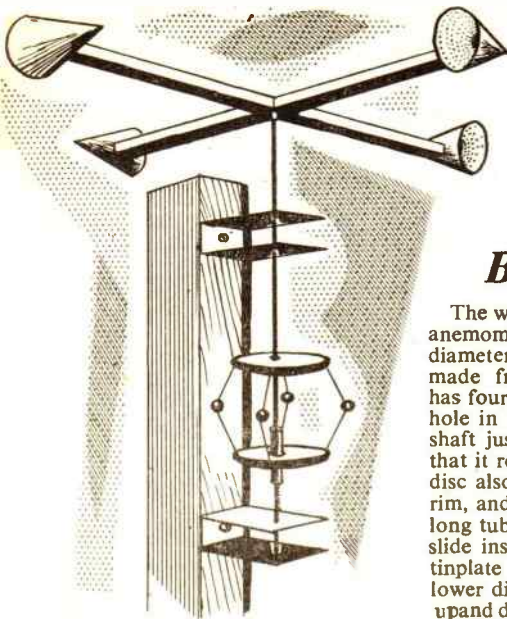
Four lengths of thin cord are tied to the holes in the upper disc and four small weights, such as beads, are threaded on to the cords and held in place by knots. The weights should hang approximately 2 in. below the disc (F).

The lower disc is fitted on to the shaft and the ends of the four cords tied to the holes in the rim of the disc.

The two discs should be about 4 in. apart.

The complete instrument is replaced in position, and when the arms rotate, centrifugal force drives the weights outwards, causing the lower disc to slide up the shaft to a greater or lesser degree, according to the force of the wind. Thin lines painted on the shaft form a scale from which a record of the wind force may be kept (G). The more lines there are visible, the greater the wind force will be. It is best not to paint the lines on the shaft until the best size of weight has been found, for it may be necessary to experiment with these to achieve the maximum sensitivity of the device.

(An alternative method of checking wind velocity on this piece of apparatus is to dispense with the lower disc, cords, and weights, and to substitute an attachment similar to a cycle mileometer or speedometer fixed to the main upright so that a pin fitted to the top disc actuates the speedometer rotator with each revolution of the wind vane. By this method a direct reading of revolutions per minute could be made).



A MODEL anemometer, a gauge which will indicate the force of the wind, is a simple instrument to make, using easily-obtained materials.

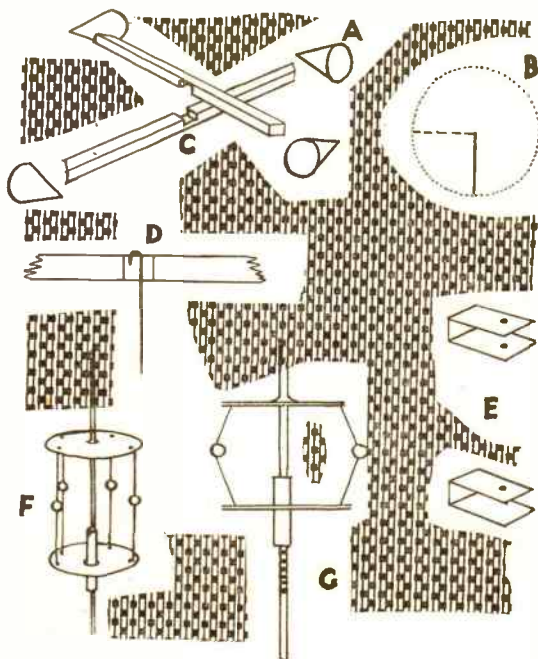
The four wind-collecting cups (A) are made from 6 in. circles of tinfoil, which may be cut from empty food tins. Two radii are drawn at right angles to each other, on each circle, (B), a cut is made along one of these, then the area between them overlapped to give a cone shape.

The arms on which the cones revolve are two 12 in. lengths of $\frac{3}{8}$ in. square stripwood. They are joined as shown at (C) and their ends are cut at an angle of 45 degrees.

A hole is punched in the side of each cone which is then screwed to the end of its arm. A hole is drilled through the centre of the cross-piece and a steel shaft, such as a long knitting needle, is inserted. The top of the shaft is bent over (D) and pressed into the cross-piece to give a positive anchorage, for the shaft must revolve along with the arms.

The shaft is supported on two wooden or tinfoil brackets (E) which are screwed to an upright firmly positioned in the ground, or fixed to the side of a garden hut or fence post. The length of the brackets should be sufficient to hold the shaft about 4 in. away from the upright, to allow enough room for the wind-speed measuring device to operate.

After ensuring that the arms rotate freely in the wind, the lower bracket is removed so that the wind measuring device can be fitted, or the whole assembly can be removed and taken indoors for this purpose.



FUN WITH SOAP BUBBLES

CHILDHOOD is incomplete without the game of blowing bubbles. Few pastimes provide more pleasure than the creation of these ephemeral objects. There is an indescribable grace and airiness about the delicate spheres, as they are caught up by little breezes and swept away and aloft to noiseless destruction when they 'pop' into nothingness.

By A. E. Ward

Soap bubbles can be regarded as more than mere playthings. Molecular forces are vital to their formation, gases are enclosed under pressure within their thin elastic walls, natural geometrical principles are seen in action and they reflect, refract and interfere with light waves to produce lovely displays of rainbow hues. An elementary study of soap bubbles will be a very rewarding experience and will repay the patience and care needed for success with some of the more difficult experiments. Satisfactory bubbles can be blown, using a solution made by dissolving about a dessertspoonful of Lux flakes in a saucer of water. You are advised to leave the solution standing for an hour before use.

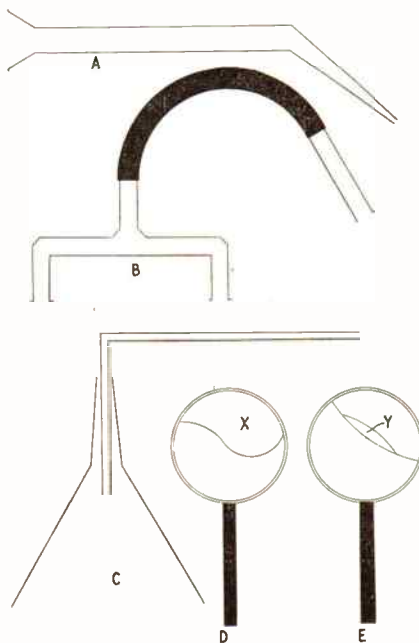
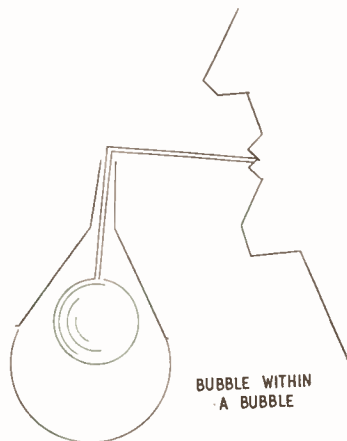
For the experiments to be described, you will need a selection of simple apparatus improvised out of glass tubing, wire, penholders and cotton, along the lines suggested. The blowpipe shown at A is made out of $\frac{3}{8}$ in. internal bore glass tubing. To form the narrow jet, heat a length of the tubing in the top part of a hot Bunsen flame, until the glass becomes soft, then withdraw the tubing from the flame and pull it out gently to produce a fairly narrow 'neck'. At the same time allow the softened tubing to bend gracefully through 45°. When the glass is cool, break the curved neck in the middle by first filing a 'nick' with a sharp edged file and then breaking the glass apart. The broken edge should be regular. Form the wide rim of the pipe by first heating the unworked end of the tube whilst twisting the glass between your fingers, until the glass is red hot. Then work round a hot nail inside the opening to achieve a satisfactory flange.

The Y piece B, is adapted from a laboratory T piece, using similar techniques to those described for making the blow pipe. A funnel with a 3 in. diameter mouth, which is preferably made of

the arrangement at C. The thin glass tube with the sharp bend is easy to fashion, if you begin by heating the glass in the middle until it becomes soft, whilst you rotate the tubing between your fingers. To form the bend, remove the glass from the flame and release one end so that it can slowly 'fall' through the required angle. D and E are 3 in. diameter wire rings shaped around cylinders and mounted upon penholders. Both will be seen to have loose cotton threads tied across them, but note that the middle of the thread in E is double. Stout fuse wire or bare copper wire will both be suitable materials from which to make the rings.

It will be convenient to begin your experiments by investigating the considerable strength of soap films. Cover the end of the plastic funnel with a finger and dip the mouth of the funnel into the soap solution to obtain a good film. Hold the funnel sideways on to the light and remove your finger from the aperture. Tension between the molecules inside the film will cause the layer of soapy water to contract and travel down to the bottom of the cone. This was not possible whilst your finger was held in position, owing to the presence of air trapped inside the funnel. Dip loop D into the solution and obtain a film on either side

of the loose thread. Touch side X with a corner of blotting paper or a stick of chalk and observe how the remaining side of the film instantly pulls the cotton into a perfect curve, which, if completed, would form a circle. Repeat the experiment with loop E, but on this occasion soak away the liquid from between the doubled thread at Y. The large opposing sides of the film will pull the loop into a flawless circle. The latter two experiments will help to explain why soap bubbles and raindrops tend to assume spherical shapes.



Apparatus needed

Use the glass blowpipe to blow a bubble at the wide end. Hold the narrow jet opening near a candle flame and observe how the flame flickers and bends as the soap bubble contracts and drives the air out through the apparatus. If you join the narrow part of the pipe, via a rubber tube, to a gas tap, you can inflate a bubble with coal gas. Let the bubble contract and expel the gas through the jet as before. If you hold the opening near a candle flame, the gas will be ignited. The effect is neat and pretty to see. Now, if you inflate some bubbles with coal gas and permit them to float up to the ceiling, you can perform an exciting stunt which will illustrate how terrible aerial tragedies may have occurred in the days of sporting balloons. Light a splint or taper and try to touch an ascending bubble with the flame. The bubble will explode in a beautiful halo of green fire. But do take sensible precautions against a dangerous accident when you perform this experiment.

● Continued on Page 62

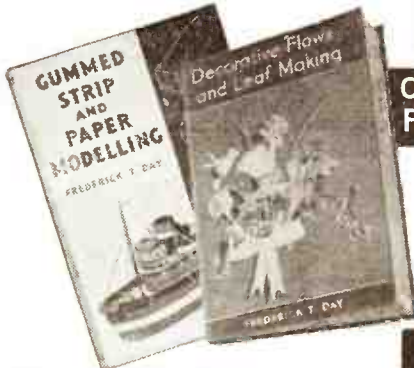
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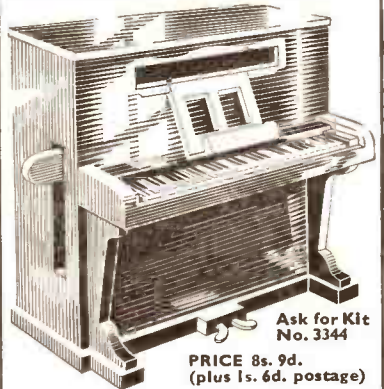
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order the total weight was 58.6 tons, of which the coupled wheels carried 29.27 tons.

In order to allow access to the outside trailing springs which like the leading

the 2-4-2 side tank engine for passenger working was in the past always a popular design, and almost every railway in this country adopted the type. The first locomotive to be built at the Horwich



No. 1090 was one of the 'C32' class, which comprised fifty engines all outshopped from the Company's Stratford Works between 1893 and 1902. They were employed principally on the outer suburban services, of which there was a considerable amount at the time, and for the period they were a large design for a 2-4-2 tank, being powerful and fast-running engines. Towards the end of their careers they were put on the semi-fast trains between Liverpool Street and Southend, and they were also used on secondary main line duties between Ipswich, Norwich, King's Lynn, Cromer, and Yarmouth, whilst in their earlier years they ran principally in the London area, for which some of them were provided with condensing apparatus.

In designing the 'C32' class Mr Holden provided them with both inside and outside bearings for the leading and trailing wheels (instead of radial axle-boxes), the outside axle-boxes having a total lateral play of 1½ in. The cylinders were 17½ in. diameter and 24 in. stroke, with slide valves below. Wheel diameters were leading and trailing 4 ft., coupled 5 ft. 8 in. The valves were operated by Stephenson link motion. Wheelbase was 7 ft. 6 in. plus 8 ft. 9 in. plus 7 ft. Total 23 ft. 3 in. The boiler was made in two rings, both being 4 ft. 4 in. outside diameter, the barrel having a length between the tube plates of 10 ft. 4 in., and containing 254 tubes of 1½ in. diameter, the heating surface of which was 1,116.18 sq. ft., the total heating surface being 1,217 sq. ft. Working pressure was 140 lb. per sq. in. in the earlier engines, and 160 lb. in the later engines. In working

springs were situated above the footplate, but were behind the bunker sides, hinged flap plates were provided on each side of the bunker, which could be lifted up by two knobs. It is interesting to note that

Works of the Lancashire & Yorkshire Railway was a 2-4-2 tank, No. 1008, and this locomotive has now been restored in its original livery, and preserved by British Railways. (A.J.R.)

● Continued from page 60

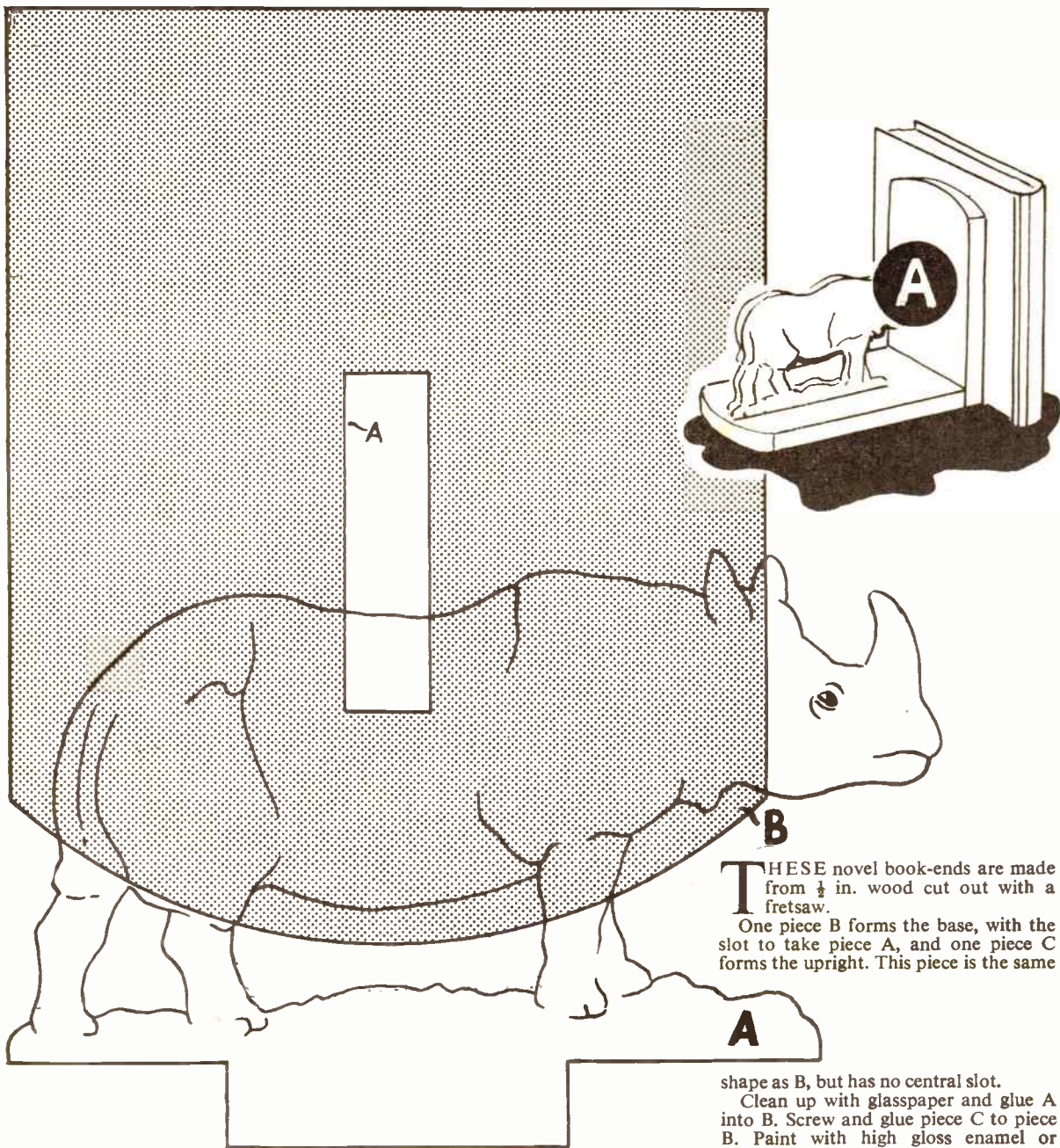
FUN WITH SOAP BUBBLES

Dip the funnel into the soap solution and blow a large bubble. Perhaps you will be able to produce a 'monster' many inches in diameter. Observe how, as the bubble grows larger and great strain is put upon the soap film, a display of spectrum colours occurs over the shining surface. This phenomenon is partly caused by the breaking up of reflected white light into its different constituent wavelengths and may also be noticed upon petrol films floating upon puddles of water on rainy days.

Use the apparatus shown at B to compare the pressures in two bubbles of unequal size. Dip the wide apertures into the soap solution and blow into the glass mouthpiece. Two bubbles will form and the chances are that they will be of unequal dimensions. Place a finger over the mouthpiece and observe the bubbles closely. Surprisingly, it is the smaller bubble which is under the greatest tension and consequently it contracts, causing the larger bubble to expand. We learn that pressure inside a bubble is related to its surface curvature. The greater the curvature, the greater is the internal pressure.

To conclude our experiments, we shall perform an amusing juggling trick with bubbles, and a curious experiment reminiscent of those magical illusions wherein a conjurer appears to drive spikes through the body of his assistant. Use the apparatus shown at C to blow a bubble within a bubble. First blow a large bubble with the funnel, then after dipping the 'lower' end of the angular tube into the soap solution, insert the tube through the 'spout' of the funnel and blow a small bubble within the larger one. Shake the tube gently, until the internal bubble drops free. When you have done this and removed the narrow tube from the funnel, you will be able to jerk the large bubble up and down and watch the little sphere bounce prettily within the body of its very elastic 'parent'. And finally, blow a large bubble upon the funnel and proceed to push a soap wetted drinking straw right through it. Amazingly, the bubble will remain unbroken when completely impaled upon the straw. You will actually be able to pull the straw clean down through the bubble without causing it to burst.

THE 'RHINO' BOOK ENDS



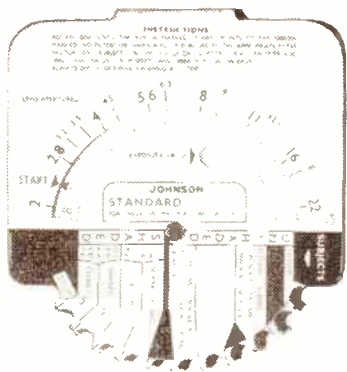
THESE novel book-ends are made from $\frac{1}{2}$ in. wood cut out with a fretsaw.

One piece B forms the base, with the slot to take piece A, and one piece C forms the upright. This piece is the same

shape as B, but has no central slot.

Clean up with glasspaper and glue A into B. Screw and glue piece C to piece B. Paint with high gloss enamel or carve and stain. (M.p.)

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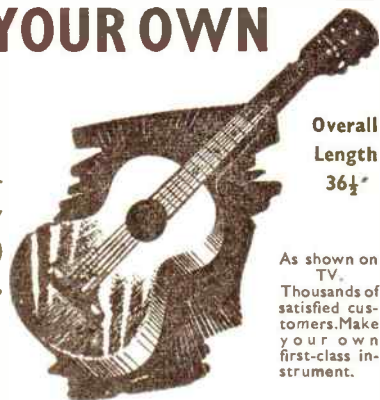
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