


## FREE design inside <br> MUSICAL <br> BARIBEL ORGAN <br> (FOR USE AS A TOY, CIGARETTE BOX, ETC.)

TTHIS design for a musical barrel organ should prove sery popular. It has been designed for use as a toy for a chitd. but also incorporated beneath the hinged lid is a small compartment in which can be contained cigarettes, trinkets, etc., thereby making it also a very practical proposition for use in the home.
Incidentally the musical movement is hand wound and has been specially designed to play while turning either backwards or forwards. It therefore cannot easily be broken with mishandling by a child. As a novelty this should
have a very popular appeal, and the moake-up is casy if the instructions are followed closely in connection with the various parts indicated on the design sheet.
For a start, trace off the parts from the design sheet and transfer their shapes to the correct thicknesses of wood indicated. Then cut them out with the fretsaw and clean up with glasspaper.
The first step in the construction is the body of the barrel organ, as shown in Figs. 1, 2 and 3. Fig. 1 show's the construction minus the front (piece 1). Note that piece 8 is broken away to show the
shape of pieces 7. Piece 8 consists of thin plywood. which is formed round pieces 7 to make the receptacle for the cigarettes, ete. (as shown in Fig. 2). The position of the musical movement is also indicated in Fig. 2, and in Fig. 3 there are shown the front (piece 1) and piece 9 in place.
The first sequence of assembly is with pieces 2, 3, 4 and 5 of the body, which are glued together. Next remove the handle of the musical movement, locate the shalt through the hole in piece 1 , and screw the movement down to piece 5 , at the same time adding pieces 1 and 9 in
position. Finish off the interior by
gluing in position pieces 6,7 and 8 giuing
(Fig. 1 )

- Piece - Piece II is the top or lid of the barrel
organ to which is glued piece 12 The hinge is serewed to piece 12 and the slot in piece 3 (shown in Fig. 4).


## KIT FOR $6 / 11$

$\left\{\begin{array}{c}\text { KIT FOR 6/11 } \\ \text { All the wood and materials needed for }\end{array}\right.$ making the Barrel Organ are In Kit No. 3212, price only 6/1. From
branches or Hobbles Lid., Dercham $\left\{\begin{array}{l}\text { Norfolk (post frec). } \\ \text { A speclal hand-turn }\end{array}\right.$
$\left\{\begin{array}{l}\text { A special hand-furn musical movement } \\ \text { (No. 3) costs } 17 / 6 \text { extra }\end{array}\right.$ able are "Clementine" or "Here we \{ go round the Mulberry Bush"."

The monkey is shaped from Jin. wood. Two pieces of tin. wood glued together with the grains running in opposite The monkey can mee shaped if ner job. and it is glued into the slot provided in the lid (piece 11). The monkey's tail can be fashioned from a piece of string. thin wire.
The wheels are cut from tin. wood and the spokes shaped. Screw the wheels to the front and back in the positions shown on the design sheet.
Countersink the screws with hub caps (pieces 15). If the wheels are required to move, use longer screws and glue backing pieces of wood inside the front and back to take these screws. made a loose fit on the screws.
 ise design sheet. Note that one of them is dritled to slip over the shaft of the
musical movement. Replace the handle and the model is now ready for the finishing touches.
If it is to be used as a toy, the subject If it is to be used as a toy, the subject nation of colours to suit the individual
or the recipient. For instance, if it is and yellows, ace., should be used if it is to be made for an adult for more practical use as a cigarette box or rinket box, then a more sober finish is ricated.

## Hooles to Read

Complete Home Improvement Handbook
by M. Evans Associates
W to concede or not we are prepared 'Do-1t-Y ourself' movement originated in America. we are well aware of the vast and growing practical interest taken by a high percentage of Americans in and the number of 'how-to' handbooks' is legion. The Complete Home $/ \mathrm{m}$ provemtht Hondbook, however. is not complete library in one volume of is a 1,000 pages. and is about the most comprehensive textbook the home handyman could wish for. Its wealth of many times over in the course of the average handyman's domestic year. There are more than 2.000 illustrations.
covering every job. from roof to basement, and it is put over in the big way side of the Atlantic expect from the other Published by McGraw-Hill Housc. ${ }^{95}$ Farringdon Sireet. London, E.C.4Price $£ 25$ s.

Photography
by Eric De Maré
THIS is essentially a book for the hensive - from the history of photegraphy to the latest ideas in colour ystems - that it offers as much to the beginner. Whilst the to the veriest press is liberally illustrated by leterdrawings, a most attractive feature of his work is the inclusion of a 64-page the work of some of the potes depicting

162 Wrid's most
renowned photographers, past and Presentished by Penguin Books, Harmonds Publishied by Penguin Books, Harmonds

## [Pets of Today] Series

No. 3 - Pigeons, Doves and Pigeon Racing
No. 4 - Town Dogs
by David Le Roi, M.A., B.Sc.
THESE are two very welcome ad and each contains Pets of Today Series, tion. from the history of the pet to management and feeding, breeding and handbooks can be highly recommended especially for anyone proposing to keep a pet for the very first time.
Published by Nicholas Vone (Publishers) Lid., 194-200 Bishopsgate, London wrappered. $6 /$ -

## Mechanised Television Roundabout

READERS of Hobbies Weckly Who have made the clarroing No. 3179, may be interested in this photograph of a novel and effective display cabinet made to house the TV clock. measurements of the open-back cabine and shows positions of components. A simple gadget consisting of a small base piece (B) upon which is mounted wood
pulley assembly ( $P$ ) and wood or metal arm (A) is built up from oddments. The clock fits tightly into the hole cut out for it through the front panel. The $81 /$
clock slopes back slightly due to the 8 clock slopes back slightly due to the
sloping panel. Under and slightly to the sloping panel. Under and slightly to the
ight of the clock is screwed the pulley assembly. A rubber band pulley belt is passed around the pulley and brought key. A slot is cut carefully half-way down one of the sides of the musical box nearest to the position of the musical movement's stopper arm. A ength of wire is passed through this stopper arm inside the box. This lever (L) reaches to the arm on the pulley, as


The ohnildroents: fatvoturite
This is Hobbies model of the TV Roundabout which has become such a great favourite among childrea.
 If Iciorporated is a musical movement which also rotates the platform. Movements cost $18 ; 3$ and turess can Single Bells
OMPY Prap
Bue Danut
Yienna


Sitent Night
Limelight Limelight
Mrulin Rouzs
Gremaleeve Grreagients
Thisen from the Vienas Woods
Homi Swet Home

Novel setting
described by
T.S.R.
shown in the drawing. The wire should e casily bendable for adjustments. The roundabout is wound up in the rom turning by the lever held prevente pulley arm. The alarm clock is wound
up and set to go off at chosen time release the nusical pulley will drop and Mahogany lin. plywood was used in construction, and after being well glass papered, the natural grain of wood was brought out with wax polish and "elbow
grease'. Radio-speaker cloth was glued grease. Radio-speaker cloth was glued clock face. It will be noted from the photograph that the roundabout pro andes at the front or the cut-out screen place by a frame of stripwood as shown he diagrant.


Bioe Bech of Seothad


## SOME NEW ISSUES

By L. P. I. Ieale
together are of very different designs. together are of very different designs.
Canadian stamps of she small size are printed in shects of 400 stamps divided into four panes of 100 . These larger stamps are printed in sheets of 200
divided into panes of 50 each. They are divided into panes of and each. They are stamps are ordered it will usually be quite easy to tear off four, giving one of each design. There is also one line in the
pane which allows four different stamps pane which allows
to be torn off as a vertical strip. The 50 in a pane are in ten rows of five and the
to have a block of four stamps of There is no doubt that stamp coltect ing keeps one up to date, that is if one is uilling to be reminded of cients by stamps, and one looks at the designs and takes in what in given. For example how about the independence of Ghana? When "as that? How many collectors
would remenber this if they had not hould itmenber put clearly in front of them by stamps? There are two sets to assist in remembering this date. first the special set issued by Ghana. Four salues 2d.
2Id., 4d. and 13 . The design of each is the same, a tish eagle fly ing over the map of Africa with a snall dot to show where Ghana is to be found. There is a snall Dr. Kwame Nkrumah.
There are also the current designs of Quen Elizabeth stanips overprinted Ghana Independence 6th March 1957'

1957 CANADA 1957


GANADA 5 $\quad$ CANAD




Swimming Hunting
Scouts will not have to be reminded
have an excellent portrait of the founder rom the Netherlands Antilles which has issued a set of
memorate this.
vertical strip is the middle one The stamps were designed by Lawrence generally in the co:ners - top left for the shooting, bottom left for the skiing. bottom left for the fishing and bottom right for the swimming, and you can see the date 1956, although the first day of
issue is the 7 th March, 1957. This is shown quite clearly on the cover illustrated.
It is not often that one comes across this type of printing, that is to say four of course, they should be collected as a block if possible - or as a vertical strip of four different as mentioned above. 300th anniversary of showed portraits of King Christian IV and also King Christian $X$ on different stamps. The portraits were printed right, so that in this case it was possible.

## A Novelty <br> Holder for Matches

- OU can make attractive little novelty match box holders from
two pieces of cardboard and some urplus wallpaper.
Take two pieces of stout cardboard each measuring 4ins. square. and cover
them on one side oniy with sone fancy wallpaper, so that the edges are slightly overlapped as shown in Fig. 1. Fold over and bind the edges with strips of passe partout to improve the apWith the top and bottom thus pre-
pared, ordinary match boxes are glued PAPER

to the covers according to the manner shown in Fig. 2. Fix to the base portion a weight until firm. It should be noted that in each instance the boxes are outside.
Take out the drawers (emptying the matches and laying aside for the moment) and affix small pieces of ribbon as draw-
pulls. First cover the outside front ends of the drawers with a piece of matehing paper or the passe partout binding.
After this operation, cut a slit across the

front of the drawer the width of the ribbon. Trim the ribbon as shown in the sketch by folding in two and cutting fraying. Push the other end of the ribbon through the slit with the tip of your knife, fastening by glue to the inside surface of the drawer and further strengthening with a strip of passe
partout. The matches may then be returned and the holder is complecte. Instead of cardboard, hardboard may be used for the top and base of the holder, finishing with paint and decorader, finishing with paint and decora-
tive transfers. the edges being treated with a coat of gold paint. A picture or a photograph may be attached to either the cardboard or hardboard lype. but do tance may scratch table tops unless a piece of baize is attached to the bottom. Another detail to note with hardboard holders is in the finish at the corners. It is ad-
visable to file to a rounded corner to improve the appearance.

WITH A
CAMERA


AVE you ever thought of train
spotting with a camera? You do
not need any expensive instruit for first class results, and there is a ot of fun to be had from exchanging snaps with pen friends in different parts Do country.
Do not expect to snap an express in hour, especially if it is moving across the path of the camera, but there are slow goods trains you can capture while in With a
able to establish a position in the station for the photography of all kinds of angines, but make sure that you select a view of the full length of an engine showing valve gear and coupling rods you will find the best viewpoint on the opposite platrorm. And usually all outyour task quite easy. At such points there are also ample opportunities for snapping incoming trains which enter at ,
Vantage points
Outside the stations you will find many good vantage points on bridges,
or footpaths alongside the railway, but or footpaths alongside the railway, but select a position where there is an up gradient. There are tivo reasons for this. The trains are never travelling quite so fast on the rising gradient for one thing,
and the other reason is that the engine has to work much harder, emitting lots
of steam and smoke, making your picchimney, formed in a billowy line, also breaks the sky area of your picture on it is not at all difficult to take a head camera quite still, resting it on the fence. press the trigger gently, and you will be really surprised at the good results. travelling across your line of vision is quite another matter, but not impossible. Frequently you will have seen pictures
of motor cycle racing, or motor car racing. These are taken by a photographic technique we term 'panning'.

TBAIN SPOTTING

The camera is held in position and swung in an arc with the movement of
the train, so it will be appreciated that your camera must have a type of view finder enabling the motion to be ollowed through. As a trial of this, place your hands to your eyes as though
holding a pair of binoculars. Look at some approaching car and keep it in your vision as it gradually approaches to close range. You will find that this demands an even, steady movement almost the same with photography.

By S.H.Longbottom Admitted, it is wise to practise a sood deal, but it is a trick worth trying. Star on something a little easier at first like bicycle or a motor car not travelling too An approaching train is sighted in the viewfinder when it is about $200 y d s$ away, and you follow it up with the press the trigger and a moment or so after. That is, until you have completed the arc. Or in other words, the camer is swinging round with the motion o the train and the trigger is pressed during that swinging and when the train is
nearest. This swinging must be even and constant - neter jerky or you will only get a blurr.
If you act correctly, the engine will appear quite sharply deflned in your pia


## TRIMMINE YOUR PRNTS

D
oyou like your prints to hase a ones produced by the tike the isher? Then here is the commercial method to ensure the best possible ap pearance of your pictures.


Trimming the priut with a knife held lose to the edge of the glass

It does not matter how careful you may be when printing your own snap. hots, hey always seem to have uneve borders, or are a little out of square.
This simple method will give good results. We require a piece of clear glass about 4 fins. by 3 tins. (larger if you wish to deal with bigger prints), which whots. Two of the edges must be smooth mainly to avoid the danger of cutting your fingers when handling. This smoothing may be done by rubbing the edges with a carborundum stone, plus as a lubricant. Do not work on the glass so vigorously that the straight edge is damaged. The intention is to remove the sharp edge where the glass has been cut. so that you have two working edges. It is also a wise precaution to smooth off the corners. The other two sides may be bound with strips of Sellotape for protection
We now require a guide line for our borders, using a strip of Sellotape attached to the glass on one side either
$1 / 10 \mathrm{in}$. or tin . from, and parallel with, the edge.
the edge. The best way of achieving this is to take any newspaper where the columns
are separated by long, vertical lines.

Rule a line parallel with such a vertical at one of the selected distances, that is laid on the or tin. The glass is now perfect alignment with the printed lin


BORDER
OR $1 / 10 "$
and you have only to stick on your strip of Sellotape so that it coincides with the prepared line. This gives us our guide In the foregoing it has been suggested that two edges of the glass were prenarrow border. You may prefer to make a border slightly wider on the other edge. or leave it free until the occasion arises, but if you wish to make, say, Two methods of cutting are available and it is up to you to choose the one which suits you or produces the bette results - it costs no more to try both!
We take a print in the left hand superimposing the glass so that the edge

## continued from page 160

Train Spotting
Always keep a careful eye on backpole emerging from the engine boiler A shutter speed of $1 / 50$ or $1 / 100$ second is quite adequate for pictures of trains moving towards you, or for viding you use a panchromatic film like HP3 or Super XX .
Train spotters are not now exactly unwelcome visitors to railway stations, and a platform ticket will allow acces warned against climbing railway fences or stone bridges. Trespassers are likely

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of the Sellotape on the glass coincides exactly with the edge of the picture area.
Holding the two quite firmly, the print underneath, the waste paper is quickly rimmed away with the assistance of a ion. Keep the blades in close contact with the edge of the glass while making the cut.
The se
The second method calls for a sharp nife or a razor blade and is, perhaps, knife or a razor blade and is, perhaps,
more usefut when the waste material is very slight. If a razor blade is used it is much safer to invest in one of those you may buy the type of razor blade you may buy the type of razor blade
having a piece of stecl down the spine and only one sharp edge.
With the knife or blade, the print is laid on to some old cardboard - never not only because of the danger of damage but because you cannot produce a clean cut owing to the grain. The glass is laid on top of the print, with the with the edige of the picture area. Hold the glass gently, but firmly, while the surplus is trimmed away with the knite. It may also be mentioned has inwards, making a sloping undercut on the print. This also helps to keep the blade against the glass. Each side is similarly treated and on completion you the way round your picture. -There is just one other point. Remember that the face of the glass which quitc clean, and if you keep the trimming guide in an envelope it will last for
many years.
(S.Ḩ.L.)
to invite trouble and danger. Morekeeping the camera steady. Stay on the right side of the fence and you will also
be on the right side of the law!

SOLUTION TO CROSSWORD NO. 6





A Sea Scout uses jeathered paidles as he enters a small rapid. The catrec is a P.B.K.IO.

,will want to get the most out or 'it. A
canoe of this type is a surprising canoe of this type is a surprising wet, and there are several points about its equipment and management that will help you to take advantage of all its possibilities.
If you are going touring you will soon
find the value of good painters. The one on the bow should be rather longer than the canoe, then you can turn the craft right round from the bank after taunching if necessary. If you tackle rivers with quently, the best stern painter is quite short, with a loop to grasp as you step out (A). Loop the painters to thei fittings so that they are easily removed
$(B)$, then if you need an extra length on the stern you can remove the bow painter and tie it to the stern one. Strip brass hooks on the coaming keep your painters
ready for use (C).
The double bladed paddie
The only satisfactory paddle for a 8 r . long canoe is a double-bladed one ing to the instructions with the canoe plans (D). Bought paddles usually have brass tubular joints at the centre, but nothing is provided to locate the two parts correctly. This can be done by
putting a round-head screw partly into the inner piece and filing a notch to fit it in the other piece (E).
The obvious
The obvious way to have the paddle
blades would seem to be with in line ( $F$ ), but most enthusiasts have
have spooned blades you will have to discover for yourself which way you If you uish to pull anything, you have our wrist straight. If you wish to push a The difference between these wrist back. tions is about a right-angle and the

## By P. W. Blandford

mount you wish to twist the paddle. You use this action with one arm and let the loom of the paddle twist in the eft arm: when the left blade is with the your wrist is straight $(H)$, after the blade

is lifted from the water you dip you urist before the ond keep it like this while pushing forward that side and pulling back the other. Hold your paddle with your hands rather more than the width of your shoulders apart. Dip each blade jus the loom of the paddle as low as you can without touching the cockpit coaming Beginners tend to dip too deeply, and as they get tired, their hands come close together
coaming.

## Pace and time

In a two-seater, the front person sets However and the rear one keeps time. Howeser. the rear one is the skipper,
because he is in the best position for steering, which he does by pulling harder one side or the other while keeping in time with his mate. If that both pull one side only. or one pulls torward while the other paddles backwards.
You will have to experiment for your-
self to find your natural length or stroke,
but for touring a long slow stroke is less tiring and actually more effective than a short fast one. Give a good thrust forpull back with the other one.
Avoiding a ducking
When you are sitting in a canoe there is very little fear of capsizing unless you
do something really silly - it is getting in and out that fun has been known to happen! The eassiest way to get in is from wading in shallow water. Put one of the scat, reach across, well forward of the seat, reach across to the other
coaming and flop into the seat, letting the water from the plimsoll drain over the side before bringing in the second When
When getting in from a bank avoid and the bank - int between the canoe splits over an ever-widening gap may be the prelude to a splash. If there are two
of you, one holds the canoe while the other gets in. Face the way you are other gets in. Face the way you are reach down to the far coaming, well other hand, while you but the second

Next week's issuc will describe an easy way to make a portable picnic tabic. Also competition, hips model pattern and 'cise of transistors in radio
foot behind the first and sit down ot behind the first and sit down. D oth feet go in centrally. Canocing in bad weather need not be ncomfortable. Spray covers should be ased, as supplied with the canoe or made canose plans. The nornal canoein cothing below the waist should b horts, bare legs and old plimsolls, in any weather. The best waterproof garmen hich fastens down the front tends to eak, aithough there are some good hort plastic or oilsk in coats. Whateve ng and spray cover so that rain runs on to the decking. If there is no hood to th coilt, a sou wester makes the best head gear. For wear ashore a pair of wate

Strip by T. S. Richmond


## EXPERIMENTS

 ON PAPERMARBLING EFFECTS

YOU can make all kinds of fancy coloured papers by means of the
marbling method. As implied by the name, the resulting effects are
similar to the grain in marble, but with a little modification we can produce other original patterns, and after making, the paper can be used for booknovelties.
We need two reasonably large trays of



FIG 3
some description, and if you have no suitable pie dishes, biscuit tin lids are Other materials required are glue size, water, small painting brushes. a comb,
oil colours, turpentine and white paper oil colours, turpentine and white paper,
preferably glazed on one sufface. The preter can most often be procured at any artists materials shop in sheets measuring 20ins. by $25 i n s$. Note that white ordinary household paint can be used,
the modern synthetics, lacquers or nish paint will be unsatisfactory and it is better to purchase small tubes of Mix two tablespoonfuls of glue size
with a pint of warm water, stir until
dissolved, then slowly add anothe quart of cold water. This makes the size to be poured into the marbling tray. The rinse after marbling. It will be apprecialed that smaller quantities of solution must be mixed in the same proportions. newspaper to avoid with sheets of old colours to the table. Place the marbling
mixture, gradually lowering until the entire surface is in contact with the colours which will be transferred. Fig. shows how the paper is laid on top of
the solution. After a moment remove the sheet, transfer to the rinsing bath, where it is placed face upwards underneath the water, agitated for a moment to remove
surplus colour, removed, drained and surplus colour, removed, drained and ready at hand.


It will be appreciated that the foregoing describes the method of producing
what is termed a marble finish the product of merely dropping oil colours on to the size solution. The modification of the arrangement of these drops in our ference to the result.
If you drop in the colours as just described, and taking a stick, move it duce a pattern as shown in must be warned not to stir the mixture too vigorously, or to break them unduly, or you will lose the swirling pattern. Finally, we may produce a combed pattern as revealed by Fig. 4. Here you comb by hammering nails through a piece of wood. Keep the nails at least in. apart, or, again, the colours will before, stir very gently as for the swit pattern, then draw the comb slowly through the mixture. Draw the comb once only and be ready to take the since the patern is on the move all the time. will be realsed arite a few It will be realised that quite a few prints may be made with the same
preparation, although they will differ a preparation, although they will differ a
little, but after the first half dozen, the ransfers will become fainter. You may - Continued on page 172

## Made this yet?

## BOOK-REST

Kit contains all wood and fittings

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Simple science experiments

## MODEL ARCHIMEDEAN SCREW

0
NE of the earliest mechanical methods of raising water was by
the Archimedean Screw, a model of which is shown in Fig. 58. The spiral is made from tin. diameter copper tubing which can be pulled into shape round a wooden cylinder, about in a vice. The axle and handle are made from in. diameter brass rod which passes through a length of Meccano strip (A) fixed to one end of the trough
with Meccano nuts and bolts, and then

(58)
through the centre of the wooden cylinder which holds the spiral tube.
This wooden cylinder is part of the cylinder on which the spiral was formed. The other. end of the rod rests in a soldered to the inside of the other end of the trough.
The trough should be partly filled with water, so that the open end of the spiral dips into the water each time it is

Model hydraulic lift
The transmission of pressure by liquids is made use of in the hydraulic press, the principle of which is illustrated in Fig. 59. If the area of the piston (B)
is 100 times larger than that of the piston (A), a small weight on (A) will balance a weight on (B), which is 100 times greater.
Find a wol Find a wooden box (A) with a lid another wooden box $(B)$ as shown. On the bottom of the box (B) place a water and through a hole in one with the box fix a long glass tube into the neck of the bladder. Stand gently on the upper surface of the box (A) and you Will be able to raise yourself up before pouring water from a beaker into the funnel and so into the logn glass tube.
A water turbine
You can drive your working models
with this model water turbine (Fig 60 )


You will require a circular piece or wood about lin. thick and bins. in diameter through its centre: iwelve pieces of tinplate, lin. by 2ins., each curved at one end and drilled with two

- Continued from page 170


## Marbling Effects

then replenish with more drops of paint in the same positions as before. When the colours are stirred or combed there is a tendency for them to
mingle, and any subscouent additions of colour may give drab effects. It is better $t 0$ empty the tray, clean with newspaper. refiling with te size solution for a completely new start.
You will be aware
ary colours, red, yellow, and blue will combine to form almost any colour you will desire. If you have to buy small tubes, which are only a few pence eacb, these
three will suffice. Moreover, there is always a tendency for the edges of the colours to merge a little in the solution, and this factor should be considered hen forming the arrangement. Avoid extremely violent combinations in the same order
bush-wheels; large Meccano pulley and axle rod: tin. brass round-headed
screus; rectangular wooden box with screus; rectangular wooden box with circular hole in one end, a longer rectangular hole in the other end. and small holes for the Meccano axle on the sides; glass tube, one holed rubber ring; rubber Divid
Divide the circumference of the circular piece of wood into twelve equal parts and fix each of the pieces of tin in position with two screws. Fix with serews a Meccano bush-wheel at the
centre of each face of the wooden wheel and a Meccano bush-wheel over each of the small holes in the sides of the wooden box. Push the Meccano axle-
rod through the bush-wheel and sides of rod through the bush-wheel and sides of
the wooden box. placing the large the wooden box, placing the large
Meccano pulley-wheel on the rod as you Mo so. Fix the bush-wheels (A) and (B)

of colour if you wish to produce tastefully patterned papers. For example, autumn tints are best produced by using only red, yellow and a little green. On contrasting colour when making the combed pattern, particularly where the pattern repeats, as shown by the thicker lines in the diagram. You should also regular order for the full length of the ray for this method as for example. repetition of, say, yellow, red and blue
Always allow the papers to dry weight, or before using. Although the water may dry out, it may take a little longer for the oil colours to become
perfectly dry.

Simple science experiments

## MOIDEL ARCIMMEDEAN SCREW

0NE of the earliest mechanical
methods of raising water was by methods of raising water was by
the Archimedean Screw, a model of which is shown in Fig. 58. of which is shown in Fig. 58 .
The trough consists of a shallow tin. The spiral is made from 4 in. diameter copper tubing which can be pulled into 11 ins. in diameter, and held at one end in a vice. The axle and handle are made from tin. diameter brass rod which passes through a length of Meccano
strip (A) fixed to one end of the trough strip (A) fixed to one end of the trough
with Meccano nuts and bolts, and then

(58)
through the centre of the wooden This wooden cylinder is spiral tube. cylinder on which the spirall was formed. The other end of the rod rests in a length of brass lubing (B), which is the trough.
The trough should be partly filled with water, so that the open end of the spiral dips into the water each time it is

Model hydraulie lif
The transmission of pressure by liquids is made use of in the hydraulic press, the principle of which is illustrated
in Fig. 59. If the area of the piston (B) is 100 times larger than that of the piston (A), a small weight on (A) will balance a weight on (B), which is 100 times greater.
Find a $w o$ Find a wooden box (A) with a lid another wooden box ( $B$ ) as shown. On the bottom of the box (B) place a water and through a hole in one with the box fix a long glass tube into the neek of the bladder. Stand gently on the upper surface of the box ( $A$ ) and you
will be able to raise yourself up befo the eyes of your amazed audience by pouring water from a beaker into the funnel and so into the logn glass tube

## A water turbine

You can drive your working models
with this model water turbine (Fig. 60).

bush-wheels: large Meccano pulley and axle rod; tin. brass round-headed screws: rectangular wooden box with circular hole in one end, a longer rectangular hole in the other end, and small holes for the Meccano axle on the sides: glass tube, one holed rubber ring, rubber subing. Divide the circumference of the circuand fix each of the pieces of tin in position with two screws. Fix with
screws a Meccano bush-wheel at the screws a Meccano bush-wheel at the
centre of each face of the wooden whel centre of each face of the wooden wheel
and a Mecano bush-wheel over each of the small holes in the sides of the wooden box. Push the Meccano axle-
rod through the bush-wheel and sides of rod through the bush-wheel and sides of
the wooden box. placing the large the wooden box, placing the large
Meccano pulley-wheel on the rod as you do so. Fix the bush-wheels (A) and (B)


You will require a circular piece of and the large pulley-uheel (C) to the wood about lin. thick and 6ins. in axle with the fixing screws, place the diameter, with a hole about an tin. in pieces of through its centre: twelve curved at one end lin. by 2ins., each holes near the other end; four Meccano

Continued from page 170
Marbling
then replenish with more drops of pain in the same positions as before.
When the colours are stirred or combed there is a tendency for them to
mingle, and any subsequent additions of colour may give drab effects. It is better to emply the tray, clean with newspaper. refilling with the size solution for a completely new start.
ary colours, red. yellow, and blue will prombine to form almost any colour you will desire. If you have to buy small tubes. which are only a few pence each, these
three will suffice. Moreover. there is always a tendency for the edges of the colours to merge a little in the solution, and this factor should be considered Avoid extremely violent cont.

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f colour if you wish to produce taste autumn tints are best produced by using only red, yellow and a little green. O contrasting colour when making e combed pattern, particularly where the pattern repeats, as shown by the thicke lines in the diagram. You should also regular order for the full length of the ray for this method as for example repelition of, say, yellow, red and blue in the same order.
Always allow the papers to dry weight, or before using. Although under water may dry out. it may take a littic longer for the oil colours to becom perfectly dry.

OUT of the BLUE



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Special Photo Frames


A
N $\begin{aligned} & \text { AKE up two pieces to form the } \\ & \text { frame. Piece (A) is the main }\end{aligned}$ frame. Piece (A) is the main
piece tin. thick, and to the frons of this is glued piece (B) tin. thick. Piece $(A)$ is cut to the dotted line and
piece (B) overlaps all round as shown in the section at the top of the page.
The glass, which is stins. by 34 ins. goes behind piece (B), then comes the and finally a piece of brown paper pasted over to keep out the dust and hold everything in position.
The strut at the back is glued in position pieces of tape, as shown in the detail. Alternative method of fixing is to hinge to the thin wood backing by means sunk screws and filc flat where they protrude.
de. overlays MOTHER FATHER are cut from tin. wood, and are glued to the make up the pair.
Finish the frat coats of wax polish.
(M.p.)


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The main piece (A) is cut from \}in. or lin. thick wood to the shape shown, and tin. diameter holes are drilled at (B) are lin. square and are glued on each side of piece (A). On top of these should be glued pieces (C) which are shaped wood
When the glue has set the whole

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