

110 PRIZES !!

ENTER OUR GRAND "PUZZLE PICTURE PASTIMES" COMPETITION.

HOME
CRAFTS
WOOD
WORKING
MODEL
MAKING
AMATEUR
MECHANICS
ETC. ETC.

Hobbies

2nd

October 25th,
1930.

No. 1827.

Published every
Wednesday.

**ANOTHER
FREE GIFT
INSIDE!**
DESIGN CHART
for making a fine
**MANTEL
CLOCK.**

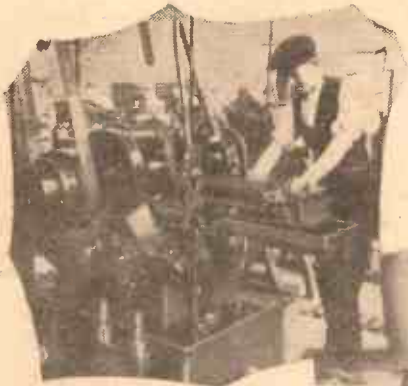
*Running a
Home
Cinematograph*



Think how a fretsaw is made

Such a tiny, delicate-looking little blade, but so strong and sharp! How could it be made? Why, only with the best machinery, special materials and skilled workers.

Do you know there are six distinct processes involved? And each one demands skill and experience if the blade is to be good and reliable. A little too much heat in tempering, for instance, and the blade is ruined. It certainly wouldn't pass the inspectors. This high standard means the *best* only are turned out by Hobbies Ltd. Woodworkers the world over use them.



**MADE IN HOBBIES
OWN FACTORY.**

**BLUE
LABEL**
4D. per doz.
3/6 per gross.

**YELLOW
LABEL**
6D. per doz.
.5/6 per gross.

**SILVER
LABEL**
9D. per doz.
8/6 per gross.



The saws are made of special steel in Hobbies own Factory. They are graded from fine to coarse (0 to 4) and easily distinguished by the coloured labels. Sold by ironmongers and Hobbies Branches everywhere. Or by post (1½d. extra), from Hobbies Ltd., Dereham, Norfolk.

Those who use

HOBBIES BRITISH FRETSAWS

know they are the best

“TAKE UP PELMANISM”

Sir John Foster Fraser's Appeal.

Sir John Foster Fraser, F.R.G.S., the well-known author and special correspondent, is a great believer in the value of Pelmanism.



E. H. Mills.

Sir John Foster Fraser.

“Pelmanism is genuinely scientific,” he says. “It brings swiftness to the young, and brightens and sharpens the man who thinks decay is laying hold of him. It will not make the dunderhead into a statesman, but it will and does provide a plan whereby we can make the best of our qualities.”

The Pelman Course, which contains the results of the latest Psychological discoveries, is fully explained in a book entitled **The Efficient Mind**,

a copy of which can be obtained, free of cost, by any reader who writes for it to-day, using the coupon printed below.

Pelmanism trains the senses and brings increased power and energy to your mind. It strengthens your Will-Power. It develops your Personality. It gives you Courage, Initiative, Forcefulness and Determination. It banishes Timidity and drives away Depression and harmful and morbid thoughts. It gives you a more cheerful and optimistic outlook on life. And not only does it increase your Efficiency and your Earning Power, but it enables you to cultivate an appreciation of the finer things of existence.

Applied to Every Phase of Life.

Pelmanism can be applied not merely to business but to every phase of life.

A short course of Pelmanism brings out the mind's latent powers and develops them to the highest point of efficiency. It banishes such weaknesses and defects as:—

- | | |
|-------------------|---------------------------|
| Depression | The “Inferiority Complex” |
| Shyness | Indecision |
| Timidity | Weakness of Will |
| Forgetfulness | Procrastination |
| Boredom | Restlessness |
| Unnecessary Fears | Brain-Fag |
| Indefiniteness | Morbid Thoughts |
| Mind-Wandering | |

which interfere with the effective working-power of the mind, and in their place it develops strong, positive, vital qualities such as:—

- | | |
|------------------|--------------------|
| —Concentration | —Organising Power |
| —Observation | —Directive Ability |
| —Perception | —Forcefulness |
| —Optimism | —Courage |
| —Cheerfulness | —Self-Confidence |
| —Judgment | —Self-Control |
| —Initiative | —Tact |
| —Will Power | —Reliability |
| —Decision | —Driving Force |
| —Originality | —Salesmanship |
| —Resourcefulness | —Business Acumen |

and a Reliable Memory.

By developing these qualities you add to your Efficiency and consequently to your Earning Power.

What is equally important (as a result of cultivating your senses, getting your mind in order and acquiring a healthy mental outlook), you also increase your happiness and develop a keener appreciation of the beauties of Nature, the Arts and Life generally.

In a sentence, Pelmanism enables you to live a fuller, richer, happier, and more successful existence.

This is borne out by the letters received from those who have taken the Course—

A Clerk writes: “The various efficiency methods have been applied to such good effect that I have received 50 per cent. increase in my salary.” (B.C. 117.)

A Shorthand Typist writes: “I take this opportunity of thanking you for your assistance throughout. In the last few months I have had two advances in salary.” (M. 24807.)

A Clerk writes: “It has been a very good investment, and I have derived a great deal from it, my memory alone being improved about 100 per cent.” (E. 21017.)

A Clerk writes: “I derived considerable benefit from your training, and I have no doubt that it materially assisted me to take first place in my final examination and the Gold Medal for the year.” (O. 27127.)

A Company Secretary writes: “I have recently been made Secretary to the Company which I work for, and I attribute my promotion to a very large extent to the benefits I have received from studying Pelmanism.” (W. 31123.)

Pelmanism is easy and simple to follow. It takes up only a short time daily. The books are printed in a handy “pocket-size,” so that you can study them when travelling, or in odd moments during the day.

The coupon is printed below. Post it to-day to the Pelman Institute, 63, Pelman House, Bloomsbury Street, London, W.C.1, and by return you will receive a free copy of **The Efficient Mind**, and particulars enabling you to enrol for the Pelman Course on specially convenient terms, paying for it, if you wish, by instalments.

Readers who can call at the Institute will be cordially welcomed. The Chief Consultant will be delighted to have a talk with them, and no fee will be charged for his advice.

POST THIS FREE COUPON TO-DAY.

To the **PELMAN INSTITUTE**,
63, Pelman House, Bloomsbury St., London,
W.C.1.

“Sir,—Please send me, gratis and post free, a copy of “**THE EFFICIENT MIND**,” with full particulars showing me how I can enrol for the Pelman Course on the most convenient terms.

NAME

ADDRESS

OCCUPATION

All correspondence is confidential. This coupon can be sent in an OPEN envelope for 1d.

Overseas Branches: **PARIS**: 35 Rue Boissy d'Anglas. **NEW YORK**: 71 West 45th Street. **MELBOURNE**: 396 Flinders Lane. **DURBAN**: Natal Bank Chambers. **DELHI**: 10 Alipore Road. **CALCUTTA**: 67 Park Street.

SPARE-TIME £££'s FOR ENTERPRISING MEN!

Start a Profitable Business with THE MACHINE THAT MAKES MONEY!

Supply the Big WEEKLY Demand for Printed Material in YOUR OWN District and make LARGE PROFITS in your SPARE TIME. The Possibilities are ENORMOUS—the Market HUGE. In small villages and large towns all over the country golden opportunities are going begging—simply waiting for Enterprising Men to take advantage of them. Tradesmen, Cinema Proprietors, Dance and Concert Organisers, etc., etc., all MUST have a regular supply of Printed Material from Week to Week. With the aid of my Wonder

Working "Adana" Printing Machine YOU could easily produce this! So interesting and wonderfully fascinating is, the work that it is just like a pleasant hobby. Many men, knowing nothing about Printing, who started with a 45/- "Adana" now own Profitable businesses. Why not YOU?

The Marvellous "Adana" All-Steel Super 1930 Model Automatic Self-Luking Printing Machine . . . especially designed for Commercial Use in all Large and Small Printing Establishments. Price

45/-

My epoch-making Machine (as Illustrated) will print anything from a Chemist's Label to an Illustrated Magazine.

EASY PAYMENT TERMS!

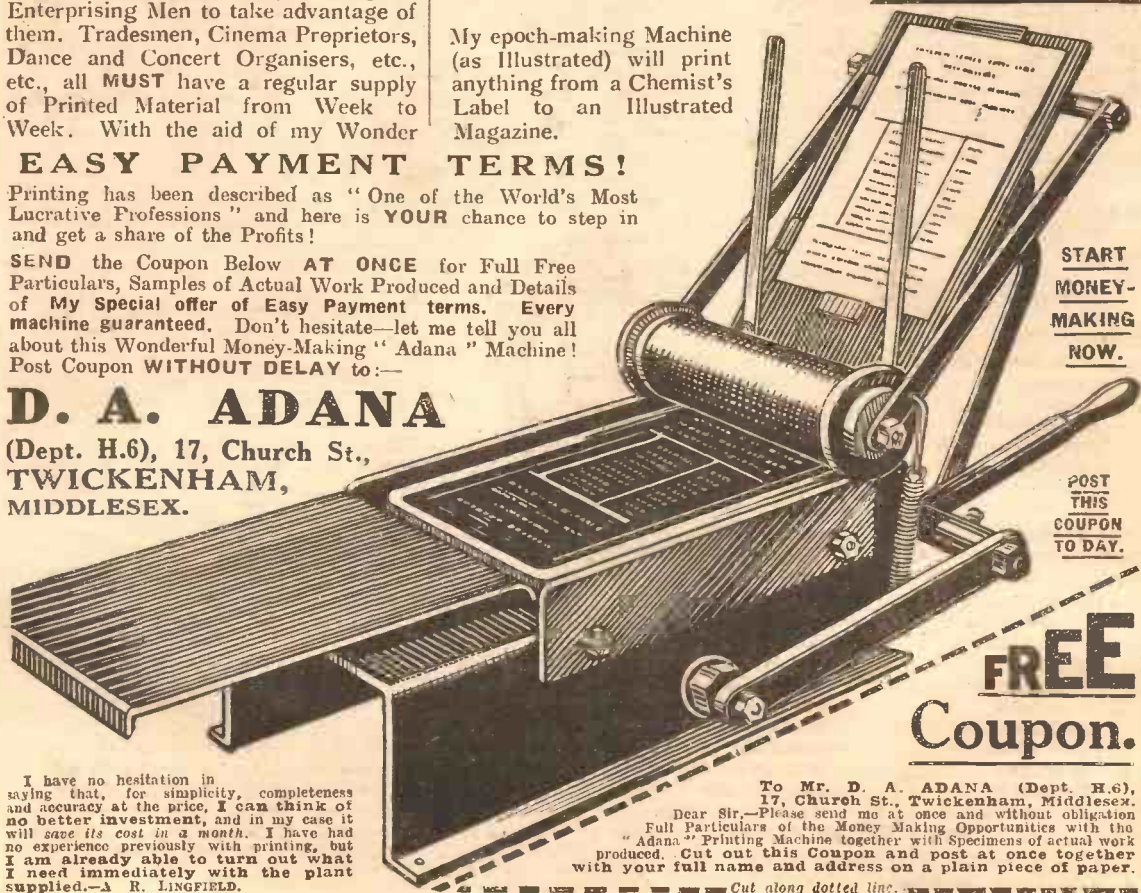
Printing has been described as "One of the World's Most Lucrative Professions" and here is YOUR chance to step in and get a share of the Profits!

SEND the Coupon Below AT ONCE for Full Free Particulars, Samples of Actual Work Produced and Details of My Special offer of Easy Payment terms. Every machine guaranteed. Don't hesitate—let me tell you all about this Wonderful Money-Making "Adana" Machine! Post Coupon WITHOUT DELAY to:—

D. A. ADANA

(Dept. H.6), 17, Church St.,
TWICKENHAM,
MIDDLESEX.

I have no hesitation in saying that, for simplicity, completeness and accuracy at the price, I can think of no better investment, and in my case it will save its cost in a month. I have had no experience previously with printing, but I am already able to turn out what I need immediately with the plant supplied.—A R. LINGFIELD.



START
MONEY-
MAKING
NOW.

POST
THIS
COUPON
TO DAY.

FREE
Coupon.

To Mr. D. A. ADANA (Dept. H.6),
17, Church St., Twickenham, Middlesex.
Dear Sir,—Please send me at once and without obligation Full Particulars of the Money Making Opportunities with the "Adana" Printing Machine together with Specimens of actual work produced. Cut out this Coupon and post at once together with your full name and address on a plain piece of paper.

Cut along dotted line.



Vol. 71. No. 1,827.

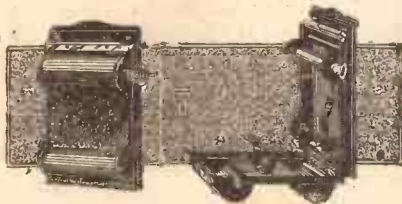
Published Every Wednesday.

OCTOBER 25th, 1930.

THIS WEEK'S CLEVER IDEAS.

Roll Film Adaptor.

THE owners of plate cameras will welcome a recent invention which enables them to convert their cameras for roll films. A film holder now on the market



Roll film adaptor for plate cameras. This illustration shows the adaptor open and closed.

takes standard day-light loading films, and it will fit most cameras designed for single metal-plate holders. The device fits into the back of the camera in exactly the same manner as a film pack-holder. It is also made in several fittings for use on cameras taking 3½ in. by 2½ in. and 4½ in. by 3½ in. plates, as well as in several fittings for quarter-plate size.

A Handy Tripod.

THE ordinary photographic tripod is a cumbersome though necessary part of the photographer's equipment. This defect has attracted the attention of an inventor, who has recently introduced to the market an aluminium tripod of telescopic construction. This device will give a tripod 4ft. in height when extended and when folded it may be used as an ordinary malacca walking stick, although it is actually made of compressed fibre.

Elastic Bootlaces.

FOR years leather and mohair have been exclusively used for making boot and shoe laces. Rubber now enters the field. Rubber laces allow the boot

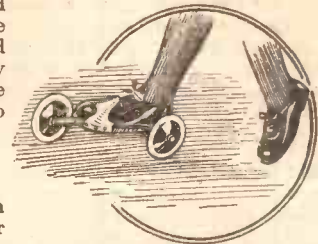


The "pop" from this gun is provided by the bursting of a film of paper.

or shoe to be removed without untying the knot or bow; they are sufficiently elastic to permit of this, and yet sufficiently tenacious to keep the shoe together during the action of walking. The rubber used for them is of a special compound.

A Scooter Skate.

AN inventor with an eye on the small boy who uses a single roller-skate to aid him in his daily peregrinations has marketed a skate of scooter-like construction. It is used exactly as an ordinary scooter, except that the skate is fastened to the boot.



The scooter skate.

A Colour-Changing Paint.

A PAINT which changes its colour according to the temperature has recently been marketed. At usual temperatures it is a bright red, but at 50 degrees C. it changes to a dark brown. On cooling it returns to its original colour. It is intended for use on the exhaust pipes of motors, and in other places where a visible indication of change of temperature provides a valuable guide.

Illuminated Eyeglasses.

ANOTHER eyeglass novelty for craftsmen who do much work at night consists of glasses which have a small electric bulb attached to each end of the frame, the current being supplied by a battery which is carried in the pocket.

An Automatic Trump Indicator.

THOSE readers fond of playing whist and bridge will welcome the automatic trump indicator illustrated on this page. By the simple action of pressing a lever the appropriate trump for the hand being played

is indicated on top of the box.

Detachable Shoe Heels.

CUSTOMS die slowly. For centuries boots and shoes have periodically received the attention of the shoe repairer, but now detachable heels are available, which can be changed to correct uneven wear.

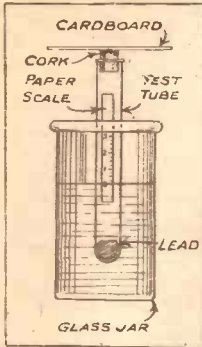


An automatic trump indicator.



A magnifying lens attachment for ordinary spectacles.

NOTES AND NOTIONS from our READERS



How to make a simple letter balance.

A Simple Letter Balance.

A USEFUL letter balance may easily be made from odds and ends. Any wide-mouth glass jar is used to hold the water in which the balance floats. A small glass test-tube, obtainable for a penny from the chemists,

is weighted with lead or iron filings so that it will float vertically in the water. The test-tube is plugged with a cork, and to the cork is glued a piece of cardboard about 4in. square. By borrowing some weights, a paper scale can be stuck to the side of the jar and corresponding graduations marked on it.

A Useful Lock-nut.

NUTS on bicycles and similar things which have a tendency to work loose can be quite effectively locked by cutting a hacksaw slot half-way through the nut, as shown in the sketch here; then tighten the nut in place, and hammer the nut to close the slot. This nut cannot work loose, but it can nevertheless easily be removed with a spanner.



Sharpening Woodworkers' Twist-Bits.

ONE way to sharpen wood bits is to use a fine file in the following manner. The scoring nibs, which are the two prongs which stick downward on either side of the gimlet point, are filed from the inside. The cutting lips are filed on the underside while the bit is held in the hand, chuck end down. At A is shown the scoring edge and at B the cutting edge. Use a fine file and take light cuts on the inside edge of A. If they were taken on the outside, the

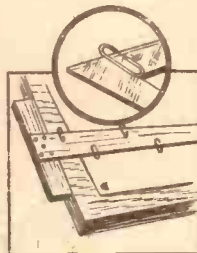
How to sharpen woodworkers' twist-bits.

THAT DODGE OF YOURS
Why not Pass it on to us?
We pay Five Shillings for every item published on this page.
Mark your envelope "Notes and Notions."

diameter of the bit would be made smaller at this point.

Paper Clips Prevent Blots.

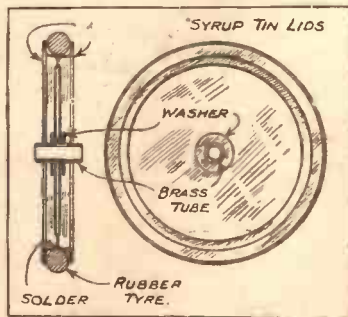
THOSE readers who use drawing ink know that it takes a considerable time for it to dry. In hurrying over a drawing, blots and smudges are likely to occur. This may be obviated by fastening several paper clips on the edges of the drawing instruments, as shown in the sketch. These clips will raise the instruments and so keep them from coming into contact with the drawing.



Using paper clips to prevent blots.

Making Toy Wheels.

FOR mounting toy carts, locomotives, etc., excellent wheels can be made from the lids of syrup and similar tins. For each wheel two lids are required, and some solid rubber rings for the tyres. The lids should be pierced with holes in the centre of sufficient diameter to take short pieces of brass tube. Each piece of brass tube should be slightly longer than the thickness of the wheels. Solder the side of the wheel to the tube, and also apply a little solder in the groove of the wheel. The rubber rings should be of such

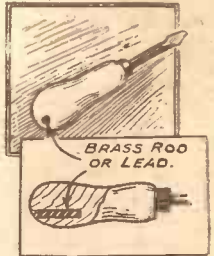


Easy method of making wheels.

size that they need to be slightly stretched to get them over.

To Prevent Tools from Rolling.

SCREW-DRIVERS, files, brad-awls, and other tools have a constant tendency to roll off the bench. This can be prevented by the simple expedient of weighting one side of the handle. A hole is drilled into the handle, as shown in the illustration, and plugged with a piece of lead or brass rod.



An idea to prevent tools rolling.

Non-tipping Ink Bottle.

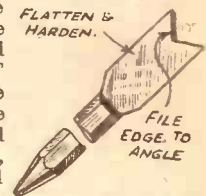
USED on the inclined surface of a drawing-board, the holder illustrated keeps the ink bottle level. It is made from two strips of light sheet-metal about 5in. long and 1/2in. wide, and two short strands of soft copper wire twisted together grip the neck of the bottle. It is almost impossible accidentally to knock the bottle over.



A non-tipping ink bottle.

Drilling Cement and Brick.

AMATEURS often find it necessary to drill a hole in cement or brick. A handy tool may be made from an old file or from the stump of an old woodworkers' chisel, in the manner here shown. The end is filed to a V, and such a drill used in a hand-vice will rapidly cut a hole in cement or brickwork.



A drill for brick and cement.

Your Watch as a Compass.

IF you have a watch with the correct time, place it on your hand with the hour hand pointing towards the sun. Half-way between this and twelve o'clock draw an imaginary line; this will be pointing due North, and will thus provide a simple substitute for a compass. This is a tip which Scouts no doubt already know!



A safety fuse holder.

A CHAT ABOUT WIRELESS GADGETS

Novelties to Help the Wireless Enthusiast

A Handy Circuit Tester.

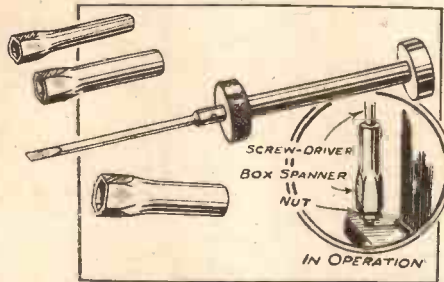
A WIRELESS experimenter has many occasions to test out his circuits or that of the wiring of various components, such as coils, transformers, etc. A very useful gadget has been produced for this purpose. The tool is designed to work in conjunction with a double-scale voltmeter. It consists of a bakelite cylinder $3\frac{1}{2}$ in. long and $\frac{3}{8}$ in. in diameter. Inside the cylinder is placed a small dry cell, which is connected on one side to a $16\frac{1}{2}$ in.-long insulated lead with a point contact at the end, while the other side of the cell is connected to a sunk-in socket. One of the voltmeter leads is inserted into the socket, so that the pointed terminal and the adapter lead provide the ends of the following circuit: a voltmeter and a cell in series. This combination applied to any circuit will give a voltmeter reading if the circuit under test is continuous, and no reading at all if there is a "dis." The dry cell can be replaced from time to time at a negligible cost. Since the dry cell will give only 1.5 volts, it is essential to use the lead of the 6-volt scale on the voltmeter.

Insulator Pins for Indoor Aerials.

ONE seldom sees a neatly fixed indoor aerial. The common practice is to use small egg-shaped insulators which are far too large for a room and spoil the general appearance of the indoor aerial. Now on the market, is a small black insulator pin which will fit into the picture rail. The insulator consists of an ebonite cylinder $\frac{3}{16}$ in. in diameter and $\frac{3}{16}$ in. long. The cylinder is drilled with $\frac{1}{16}$ in. hole, which will take comfortably a $7/22$ copper wire. Each insulator is provided with a $\frac{1}{16}$ in. pin. Such insulators are supplied in boxes containing six, the price being 6d. per box. A couple of boxes should do for an average room. Apart from the indoor aerials, such pin insulators can be adapted to a variety of purposes in connection with electrical work.

Look After Your Valves.

A NEW gadget now on the market is a safety fuseholder with a detachable bulb containing the fuse. The fuseholder is made of moulded

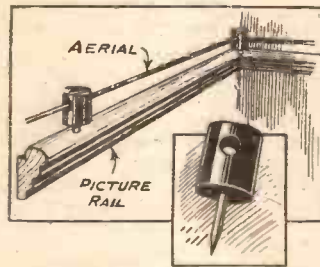


Screw-driver and box spanner combined. Once the blade of the screw-driver is in the slot of the screw; the screw can be driven in by turning the knurled ring. Three box spanners of different sizes are also supplied with the screw-driver and can be fitted on as shown in the diagram.

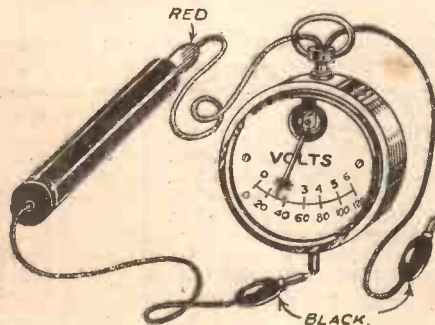
greenish bakelite, provided with two fixing holes and two terminals. The bulb is of the usual screw type. The whole thing measures $1\frac{1}{2}$ in. by $1\frac{1}{4}$ in. (with the bulb in position). The fuseholder is wired between the -H. T. and -L. T. terminals, which usually have a common connection. Should the current in this part of the circuit become excessive, the fuse will melt and the circuit will be broken. Placed in this part of the circuit, the fuseholder cannot affect the performance of the set. The bulbs are manufactured for use with 2, 4, and 6 volt valves, and will carry approximately 60 milliamps. The price of the fuse-holder is 9d., while the fuses are 6d. each.

Can We Hear Last Year's Broadcasting?

NOW, we all know that frequency equals velocity of light divided by wavelength. As the frequency increases the wavelength decreases and vice versa. Just suppose that the B.B.C. is broadcasting on 300-metre wavelength on the first of January, 1930. The frequency with which this electro-magnetic wave changes in intensity and direction is a million times a second. Next imagine that as time goes on the frequency of that wave becomes less and less and, say, six months later it is halved. Thus the frequency now becomes 500,000 and the corresponding wavelength is 600 metres. This may mean that if we listen six months after the broadcast we may hear the same broadcast on 600 metres. The idea is to find how fast the frequency slows down with the passage of time. Why not try some experiments in this direction? Choose a certain broadcast and search for it the next day on all sorts of wave-lengths. A wireless wave is a disturbance in the ether. Ether is supposed to be a very dense medium. It may be that ether disturbances do persist, and slow down with time.



Insulator pins for indoor aerials.



A handy circuit tester.

COMING SHORTLY!

Another Fascinating Picture Puzzle Competition.

Some Experiments with— "HOBBIES" SINGLE-VALVE LOUD-SPEAKER SET

By Ralph Stranger



Fig. 1.—Grid and Anode Isolated.

WHEN we have made sure that our single-valve will give us loud-speaking results, let us carry out a number of experiments so that we can find out what is happening inside our circuit. The PM3 valve with which we started our reception in No. 1825, is a three-electrode valve, the three electrodes being: the filament, the grid, and the anode. If we connect the filament to a four-volt accumulator a current will flow in, heating the filament. When a certain temperature is reached the surface atoms of the filament become so agitated that they start to throw off some of their electrons into space. This is known as the *electronic emission* of the filament. If the grid and the anode are left isolated as shown in Fig. 1 the electrons will jump into space and fall back upon the filament, there being nothing to attract them elsewhere.

The Purpose of the H.T. Battery.

If we were to connect the anode to the positive side of the filament accumulator, as shown in Fig. 2 we should make the anode positive (poor in electrons with the protons largely predominant), and since protons attract electrons, the electrons jumping off the filament would travel through space and land on the anode. Having reached the anode they would not stop there, but would continue along the outside wire and return to the filament. In this manner a continuous flow of electrons would be maintained from the filament to the anode, inside the valve, and from the anode back to the filament through the outside circuit. Since the filament accumulator cannot provide sufficient voltage to give the anode the necessary large pull, a separate battery of high voltage, known as the H.T. battery, is connected to the anode, as shown in Fig. 3. In this manner the anode of the valve is made very poor in electrons, and since there is great predominance of protons the anode is able to exert a large pulling force on the filament electrons.

The outside circuit connecting the anode of the valve to the filament is known as the *anode circuit*, and the current flowing through it is the *anode current*. It should be clear that the strength of the anode current depends on the number of electrons leaving the filament each second, and that this number of "run-away" electrons depends on the temperature of the filament, or in other words, the strength of the current flowing through it. The strength of the



Fig. 2.—Anode Connected to + L.T.

filament current depends on the voltage applied to the filament. Now let us find out how the voltage across the filament affects the strength of our anode current. Insert the valve, place the slider of the potentiometer in the middle of the resistance wire, so as to make the grid neutral, and disconnect the aerial and the earth wires from the set. Connect the anode to the H.T. battery socket marked 120 volts. Insert the plug into the jack. Press the left button of the voltmeter and adjust the filament regulator till the voltmeter reads .4 volts. The milliammeter should then read approximately 2.5 milliamperes.

The Simple Circuit.

Our active circuit is now reduced to its most simple form, as shown in Fig. 4. Now, with the help of the filament regulator, reduce the filament volts to 3.75 (you have to subdivide the voltmeter scale mentally), and you will find that the anode current has fallen to 2.4 milliamperes. Bring down the filament volts to 3.5, and the corresponding anode current will prove to be 2.2 milliamperes. Similarly you will obtain the following readings:

Filament volts.	Anode current.
3.25	2.1
3.0	2.0

The makers of the PM3 valve state that the filament current is 0.075 of an ampere, when the filament volts are 4. From Ohm's law we know that the resistance of the filament is $40/75$ or 53.3 ohms (near enough). When we reduce the filament voltage to 3 volts our filament current becomes $3/53.3$ or 0.056 of an ampere, instead of 0.075, with 2 volts on the filament 0.037 of an ampere. This shows clearly how the heating of the filament and its temperature diminishes and the electronic emission falls off. Hence the falling off of the anode current. Let us now return to Fig. 2, where we have connected the anode of the valve to the positive side of the filament accumulator. What would happen if the anode were connected to the negative side of the filament? From Fig. 5 we see that very few electrons would be able to pass from the filament to the plate. The plate is now negative, i.e., rich in electrons, and instead of attracting electrons it is repelling them. If we were to reverse the H.T. battery and connect its negative side to the anode we should cause it to exercise such a repelling force on the filament electrons that no electrons

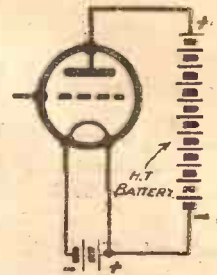


Fig. 3.—The H.T. Connection.

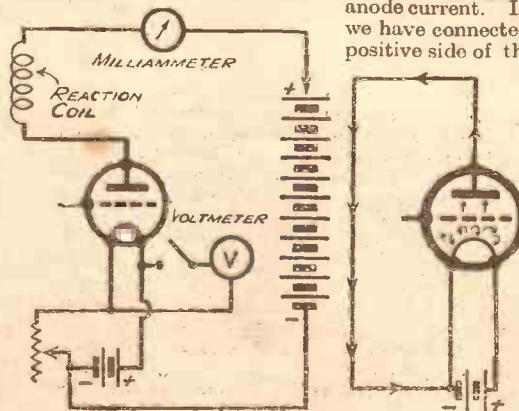
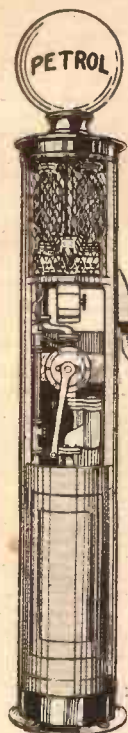


Fig. 4.—The Circuit Developed.

(Continued on page 114.)

This article clearly explains—

—How all types of Petrol Pumps work.



A typical petrol pump.

HOW A PETROL PUMP WORKS

By Fredk. Jace

TO the "man in the street" petrol pumps must appear to be of numberless kinds, shapes, sizes and hues. This in a sense is so, but from the point of view of the mechanical principle on which they work, they can be divided, broadly speaking, into three main types, viz., the Twin Container type, the Visible Bowl type and the Piston type.

Space does not admit of a detailed description of each of these types, and a popular model of the first-named type has been selected. This is the pump here shown, which readers will no doubt recognise as a familiar sight at garages and roadside filling stations throughout the country.

In the first place, it should be explained that the petrol is invariably stored in under-

ground tanks which may vary from a few hundred to several thousand gallons in capacity. The tanks are placed underground for reasons of safety, and no licence would be granted to a garage to install a pump if the tank were not so placed. As showing the immunity from fire danger of petrol stored in this way, there are many instances of garages having been burnt down with petrol tanks under the premises which have remained entirely unaffected by the fire.

The tank need not be situated in any particular position in relation to the pump. In exceptional cases it may even be as much as 100 feet away from the pump. It is usual, however, to place it as near as possible so as to reduce the necessary piping, and because the longer the suction line the greater the resistance in pumping the petrol from the tank.

Principle of the Twin-Container Pump.

The main principle on which this twin-container pump works is the alternate filling and emptying of two separate containers of a fixed capacity, so arranged that while one container is being emptied into the hose and so to the car, the other is being filled. The process is then reversed, and thus the filling of the car tank with the required quantity of petrol can be effected rapidly with a continuous flow. The two containers are of equal capacity, being either one gallon or half-gallon, the latter being used where it is desired to make deliveries as small as half a gallon at one time.

One of the advantages of this type of pump is its extreme and consistent accuracy, which cannot be affected by any working part or any wear, and is not dependent on any adjustment which could get out of order, however long the pump is in use. The containers are calibrated to hold an exact one-gallon or half-

gallon between the shut-off valve at the bottom and the small overflow aperture at the top. Once this calibration is set it cannot vary. The containers are made of glass, which is of a special quality to provide extra toughness and fire resistance.

The illustration shows the general layout and appearance of the pump. In the centre at a height convenient for operating the handle, is the semi-rotary pump which draws the petrol from the underground storage tank and delivers it to the containers.

Filtering the Petrol.

Below the pump, and to the right, will be seen the filter, which is a most important part of the apparatus. Whatever care is taken to keep the storage tank free of contamination and to deliver only clean petrol into it, the gradual accumulation of a certain amount of dirt and foreign matter cannot entirely be prevented, and it is essential that this should not get into the tank of the car, where it might easily lead to a choked jet in the carburettor and an irate motorist on the roadside. The filter is specially designed to prevent even the smallest particle getting by. It is easily dismantled for cleaning the gauzes.

From the pump the petrol passes into one or other of the containers through a two-way valve at the bottom. This valve alternately connects the container either with the pump or with the outlet to the hose, so that petrol can only be pumped into one container at a time, and only the other container at the same time can empty into the hose. While the petrol is rising in the container that is being filled, the air which is displaced is not allowed to escape but is compressed by the rising liquid and used to force out the petrol which is leaving the emptying container, thereby increasing the speed of delivery.

How the Valve Acts.

Having arrived at the stage where the petrol in the one container has been emptied into the hose and so to the car, while the other is full and overflowing through the small aperture in the top, it is then necessary to reverse the valve in order to open up the full container to the hose and to connect the empty container to the pump for refilling. This valve reversal, which in earlier models was done by hand, is now effected automatically by means of the liquid pressure which is set up by continuing to work the pump when the container is full, and only a small amount can get away through the overflow aperture. This pressure is made to operate a piston working in a cylinder which can be seen in the illustration below the containers. When and only when the filling container is quite full, the piston is moved across by the pressure generated, and effects the reversal of the valve. At this point an important provision is the synchronization of the filling and emptying of the containers, so that one is not filled before the emptying of the other is completed.

This process of measuring out through the containers could be continued indefinitely so long as the pump handle is worked, but in order to regulate the amount

asked for by the motorist on each occasion, there is a further refinement provided in the form of the indicator which is the square box-like fitting above the semi-rotary pump with the setting wheel at the side. Before a delivery is made to a car, the wheel is set to show at the small window nearest the wheel the figure for the amount required. Until this setting is made petrol cannot be pumped up, as the pump remains out of action by means of an air-release device. After setting the required amount, the pump is worked and as each gallon or half-gallon is delivered from the container the amount appears at the second window. When the required amount has been reached the pump is again automatically put out of action, and will not pump any more petrol until a new setting is made. Thus the motorist can only be given the amount for which he has asked.

The Overflow.

Another clever device is the method of disposing of the small amount of petrol which overflows through the top of the container when it is filled. This runs away to what is called the trap, which is seen to the left of the semi-rotary pump. It cannot be carried away through an open pipe, because this would not allow the displaced air to carry out its important function of accelerating the discharge of the emptying container. The trap, without the use of floats, which are always vulnerable and liable to give trouble, prevents the passing of any air.

One other feature of the pump calls for special mention. This is what is called the high-level discharge. It is possible to have the hose attached to the outlet from the containers at a point just below the bottom of the latter, but while this is quite suitable for many locations and for supplying most forms of vehicle, it is an advantage to have the hose connected at a higher point, to allow of the use of an overhead swing arm. The designers had been faced with the problem of making

the petrol, when it leaves the container, go "uphill" and then down again through the hose. The air pressure referred to above partly meets this difficulty, but this is not entirely sufficient to ensure that every particle of the measured quantity passes over into the hose. There is, therefore, an additional syphoning device in which a small internal syphon tube takes the last drop over, and puts it on its way to the tank of the car.

The accuracy of these pumps is almost uncanny, and they are tested to the last drachm—a minute amount which few motorists would think of taking into account in considering accuracy of measure. In addition, every pump selling petrol has now to be tested and stamped by the Weights and Measures authorities, and their test as laid down by the latest regulations is a very stringent one.

Other Types of Petrol Pump.

In conclusion, it might be of interest to give a very short description of the working principles of the other two types of petrol pump referred to above.

The essential feature of the visible bowl pump is a wide open bowl, either made of glass or of metal with glass windows, and usually with a total capacity of five gallons. This bowl is filled to a certain height by means of a hand pump, and then allowed to run out into the hose. The amount is regulated by a sliding overflow tube, which is set before filling is commenced, and after filling the bowl to the overflow point a valve is opened.

The amount that is delivered to the car can be watched by means of marks and figures on the side of the bowl.

In the case of the piston pump, the pump which draws the petrol from the storage tank is in itself a measuring device. The stroke of the pump is regulated by stops which can be set to different amounts.

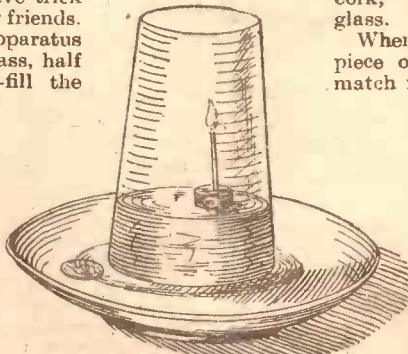
The piston of the pump is worked up and down by means of a handle operating a rack and pinion, and as each stroke is made the amount is indicated on a dial.

POTTED PRACTICAL PAR.

A U-shaped staple hammered down into the slot of a screw prevents the screw from working loose.
A blunt nail is not so likely to split wood as a sharp one.
Starting a saw-cut is rendered easy by filing small teeth on the front of the saw; make one tooth into two teeth.
For sawing soft metals with a hacksaw use two blades in the frame instead of one.
A waterproof glue may be made by dissolving gelatine in hot water and adding a tablespoonful of acetic acid.
To prevent splitting wood, the edge of the bradawl should be inserted at right-angles to the blade.
Rub beeswax on the head of a screw, the latter will then adhere to the screwdriver so that you can push it home in an awkward place.
A creased drawing may be flattened by laying it between two pieces of damp linen and applying a hot iron.

An Effective Trick.

HERE is a simple and effective trick which you can try on your friends. You do not require any apparatus other than a coin, a saucer, a glass, half a cork, and a match. Half-fill the saucer with water, and place the coin in it. By the side of the saucer place the glass, the half cork, and the match, and request your friends to remove the coin without placing their fingers in the water. It seems impossible, doesn't it? And that is what your friends will probably say after one or two futile attempts. Tipping the saucer is not allowed, nor is raking the coin out with the match, piece of



The lighted match placed on the cork will draw the water into the glass, enabling you to remove the coin without putting your fingers into the water!

cork, or scooping it out with the glass.

When they have given it up, place the piece of cork in the water, insert the match into the cork and light it. Then place the glass over the cork and the match and watch the result! You will notice that the water is gradually drawn up into the glass, thus enabling the coin to be removed without placing the fingers in the water.

For best results, the match should be bent so that the burning portion is horizontal. Of course, it is not necessary to use a coin, some small and shallow article will do equally well. It is a trick which never fails—try it on your friends.

Laying Model Railway Points and Crossings

By

HENRY GREENLY

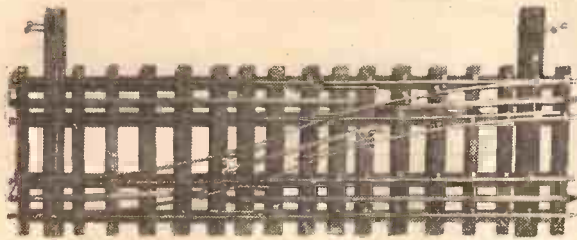


Fig. 1.—A trailing crossover.

Model chaired track units laid on battens with third conductor rail for electric traction.



Fig. 2.—A left-hand turn-out.

BEFORE a model railway man begins to make up his own points and crossings from one of the many variety of components now obtainable from our model shops he will doubtless have had experience in laying ordinary straight and curved tracks with the particular kind of material he has adopted as a standard for his railway.

The photographs on this page illustrate a left-hand turn-out and a standard trailing crossover made out of the solid steel rail and spring steel chairs sold by several well-known model dealers. These units also are arranged with the sleepers laid on longitudinal battens. This batten scheme is necessary only where the line

builders' yard and only quite recently I saw a notice posted outside a local shop—laths for trellis, "two a penny." Plasterers' laths are fairly even in thickness and usually measure lin. by $\frac{3}{16}$ in. full, in section.

When nailing down a battened track-length to a permanent foundation don't overdo the quantity of nails, and further, always knock them through the battens, not the sleepers. The best nails to use are the thin variety known as "panel pins." These do not split the wood and have quite small heads. Failing panel pins obtain oval wire nails, which can be got in quite small sizes, viz., below lin. in length.

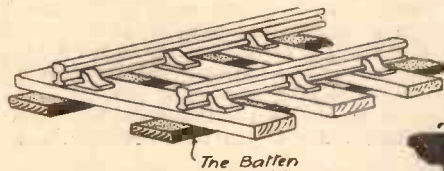
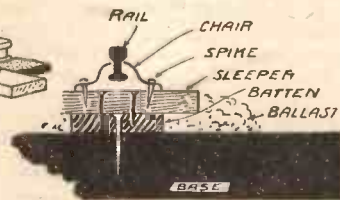


Fig. 3.—The batten scheme of laying chaired model permanent way.



Before considering the operations of point laying it is perhaps best to get acquainted with the names of the component parts. The diagram (Fig. 4) will explain these more easily than mere words. Another item to remember is that the basis of any set of points is the stock rail of the main line. This is laid down first and if the main is straight, great care must be exercised to get it dead straight from end to end and to take all measurements from it.

cannot be laid permanently on a fixed foundation and is required to be put down and taken up again every time the railway is used. It is also common practice in the trade to lay all tracks of the better quality made up of bull-head section rail, chairs, and wooden sleepers on these strips of wood, termed longitudinal battens. The reason is not far to seek. A track length without them would be quite unstable and could not be sent by post or handled in any way. The sleepers and chairs would slide about on the rails and the whole unit would soon become an entire wreck.

Viewing the track length as a unit, battens perhaps do not improve it. However, when it is laid down and the railway is ballasted with model shingle (chicken grit is excellent stuff for model railway ballast and has the virtue of being obtainable at any corn dealers) the battens are hidden. Further, should it be necessary to alter the line at a future date the batten scheme provides an easy means of removing the rails in completely laid sections without damage. This being so, I think that I can confidently recommend the use of battens even for the most permanent of model permanent ways.

The extra cost of the wood necessary to the scheme is infinitesimal reckoned per foot of track. A huge bundle of common plasterers' laths about 3ft. long, can be obtained for a few shillings from a

Another thing to consider is the "between tyre" dimensions of the wheels. Any point scheme in which the crossing portion takes the form of a V-shaped frog (see diagram, Fig. 4) will fail if the wheels of the trucks and engines are not all the same. This "between tyre" dimension should not vary a thirty-second of an inch in a No. 0 ($1\frac{1}{4}$ in.) gauge model. To get the best results the tyre section of all wheels used on the railway should also be alike.

In the cheaper toy the less careful manufacture of wheels and their gauge dimensions led makers to avoid points with frogs. Further, it is common practice to use wheels loose on axles in such models, which makes it difficult to maintain "between-tyre" dimensions to a given standard. Where this sort of rolling stock must be accommodated the positive crossing type of point has to be used. This system is employed in all tin-plate

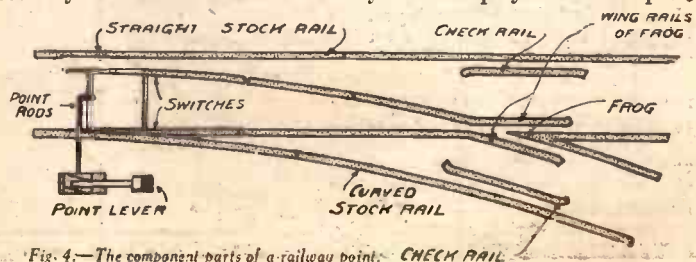


Fig. 4.—The component parts of a railway point.

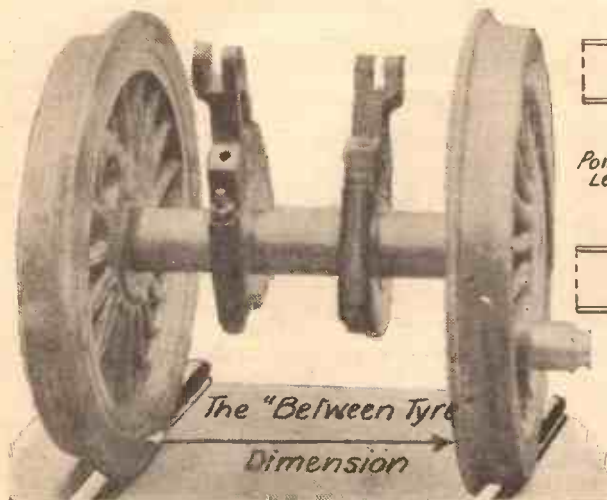


Fig. 5.—Photograph explaining the "between tyre" dimension.

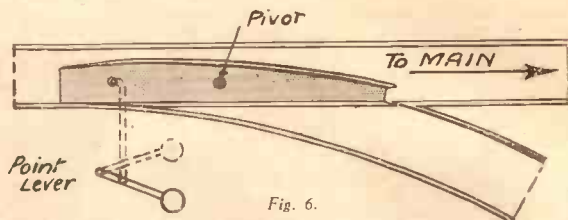


Fig. 6.

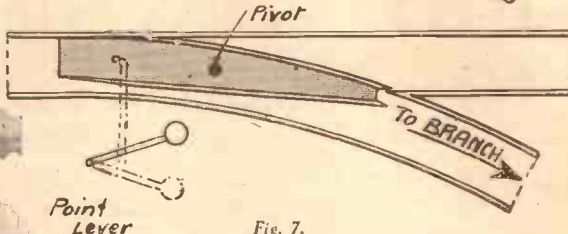


Fig. 7.

Figs. 6 and 7.—The positive frog system used for model tinplate points, shown in two positions.

track systems, and an example is illustrated by the two diagrams, Figs. 6 and 7 herewith.

In the "positive" crossing type the two switch rails are joined together permanently, and the component thus formed is pivoted near to its centre. It will be seen that when the switch is set over for a train to traverse the curved turn-out the end of the switch rail at the crossing engages the adjacent Vee and preserves the continuity of the track. The converse applies when the points are set over for the straight. The straight switch lays up against its stock rail and the other end butts against the Vee. Check rails and wing rails at the Vee are eliminated. So long as the wheels

are reasonably to gauge and do not tend to run off the line on a plain piece of track they won't do the same in passing through a set of points.

With the orthodox frog as used on the full-size railway—a system all model makers aspire to—it is absolutely necessary to use wheels fixed on their axles and also to maintain a certain degree of uniformity in the dimensions and flange sections of the wheels. In doing this satisfaction as well as realism is obtained and annoying derailments due to excessive backlash and sideplay are thereby avoided. It means extra work, but the results amply repay the trouble expended, and give added satisfaction in the working of your model railway.

"HOBBIES" SINGLE-VALVE LOUD-SPEAKER SET—(Continued from page 110).

would be able to pass from the filament to the plate. This is the reason why you do not get any signals when you reverse the leads to your H.T. battery.

How the Anode Current is Affected.

Now comes the question—how is the anode current affected by a varying pulling force on the anode? Adjust the filament volts once more to 4. Leave the potentiometer slider where it is, and leave the aerial and earth disconnected. Place the wander plug into the 150-volt H.T. battery. Press the right-hand button, and measure the H.T. volts. You may find that although you are supposed to have 150 volts on the anode, your voltmeter will give a higher reading, if the battery is a new one, so measure the voltage every time you alter it. Leave the filament voltage fixed at 4 volts, run through the H.T. voltages, shifting the positive wander plug from one socket to another, and you will find that your anode current varies, approximately, as in the table on this page.

Anode Volts.	Anode current in milliamperes.	Anode Volts.	Anode current in milliamperes.
162	4	75	1.2
150	3.7	63	1.0
136	3.4	54	0.9
129	3.0	42	0.9
120	2.6	30	0.6
108	2.1	21	0.3
97	2.0	10	0.1
87	1.7	6	0.05

Conclusions.

This shows clearly that as we reduce the anode voltage the anode current diminishes, and that the actual voltages as given by the voltmeter, differ from the battery stated voltages at each socket. Your figures may be quite different, as the voltage readings will depend on the age of your H.T. battery. During the second experiment our circuit is essentially as shown in Fig. 5.

The suggestions contained in this article will enable the reader to carry out many similar experiments on his own account, and by keeping a careful tabular record of the results obtained, the performance of various components such as valves can be checked against the claims of the manufacturer.

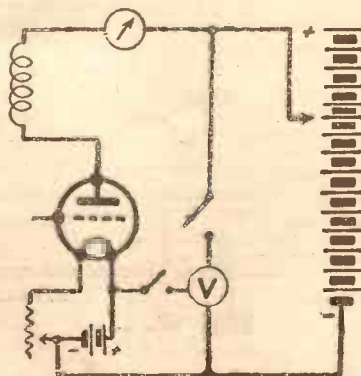


Fig. 5.—Circuit for second experiment.

COMING SHORTLY!
THE "HOBBIES"
WORKING MODEL AIRSHIP!!

A HOME-MADE TROUSER PRESS

The whole thing can be made in about an hour, at half the cost of a shop-bought article. Strong elm, planed ready to use, and all the plated and polished metal parts are supplied.

THE handyman who is keen about appearing smart every day needs a Trousers Press to prevent that baggy appearance which happens when trousers are thrown over the back of a chair. The cost of a press is usually rather high, but that is due principally to the labour involved in their manufacture.

If this cost of labour is cut out a trouser press can be made quite cheaply. And that is where the handyman comes in, because he can now buy a parcel of wood

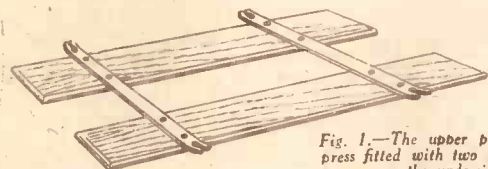


Fig. 1.—The upper part of the press fitted with two cross struts on the underside.

and all necessary fittings to make his own. The press illustrated is worth anything between 20s. and 30s, but actually the cost is only 10s. Let us see how any reader of these pages can make it.

The Wood and Parts Required.

Naturally, the fittings are the first consideration, but a complete set of these, nicely plated and polished, is obtainable with a parcel of planed elm already to put together. The baseboard is 24in. long and 13in. wide, and on the underside the position of the two cross struts has to be marked. These are the black metal strips which are screwed 4½in. from each end so that the threaded swivel pieces stand upright by the sides of the board.

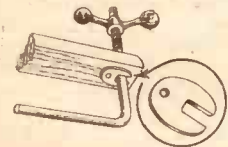


Fig. 2.—Showing how the slotted piece of metal is fitted to the stretcher piece.

Next, prepare the two pieces forming the upper portion of the press, and shown complete at Fig. 1. The two 4in. boards are laid on the base with the outer edges flush. Then lay the polished strips of metal across so that the slots in the end fit over the threaded swivel part previously fixed to the base. This gives the position in which the polished strip is to be fixed, and the screws provided are driven home into the two upper boards.

The Stretcher Piece.

To the press itself is added, the stretcher piece to take

the top of the trousers. The two pieces of wood supplied must have a ¾in. hole drilled in them 1½in. from each end. This hole is for the threaded turned ends. To prevent the lower one slipping right down, however, a little slotted piece of metal (see Fig. 2), is put in the accommodating slot in the metal stretcher piece, and then screwed to the underside of the piece of wood.

Rubber Feet Provided.

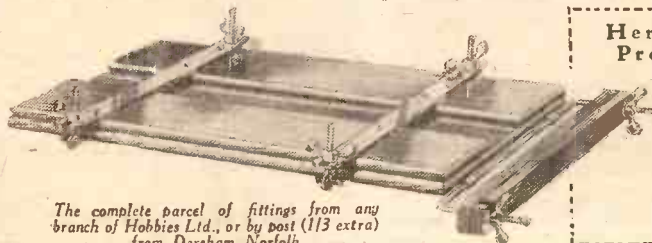
The upper board must be fitted so that it swivels on one end. Press home the metal plate round the hole in the end of the board, and at the other end cut the hole to the edge before fitting on the other split metal plate (see Fig. 3). The whole stretcher piece is now complete, and is held to the underside of the baseboard by means of the loose polished swivel strips, placed 1½in. inwards. The parcel also includes four rubber feet for which screws are provided to fix in each corner under the baseboard.



Fig. 3.—The top part of the stretcher piece

A Suitable Finish.

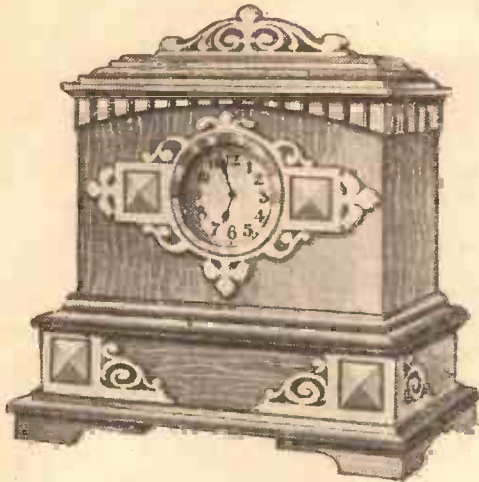
The wood, of course, can be left in its natural state, but if preferred can be made darker by a coat of spirit stain and finally polished with Hobbies' Lightning Polish. If this work is being undertaken, it is advisable to put on the fittings temporarily, and then to take them off again whilst the wood is being treated with the stain and polish. A coat of clean varnish, of course, can be put on instead of the stain.



The complete parcel of fittings from any branch of Hobbies Ltd., or by post (1/3 extra) from Dereham, Norfolk.

Here is the complete Press and Stretcher

The parcel supplied by Hobbies Ltd. to make one like this costs only 10s. It includes planed wood, cut the right sizes, all the necessary metal parts, plated and polished, as well as four rubber feet, and all the screws.



The completed mantel clock.

LAST week we gave particulars of how to make up an eight-day Mantel clock. This week we go one farther by actually giving you the design chart from which one can be made. The clock illustrated herewith, follows out somewhat the lines of the previous one because that has been found to be most generally popular amongst our readers. Anyone with a set of fretwork tools can make it and, with a parcel of wood supplied by Hobbies Ltd., the whole case can be completed for 2s. 6d. No one can deny that it is a good-looking clock, whilst a short study of the presentation sheet will prove the simplicity with which it can be made. The necessary patterns should be cut out and pasted down on to the pieces of wood contained in the parcel. As this is oak right through, the work of cutting is not hard, and in no case is the thickness more than $\frac{1}{4}$ in.

The Foundation Parts.

The body of the clock is raised on a plinth, which is built in the form of a box and raised on upright feet (See Fig. 1). The two sides are glued between the back and front and all of them stood on the planed piece forming the bottom. Below this an imitation base is formed by three pieces mitred at the front corners and left square at the back edge. The whole of it is raised

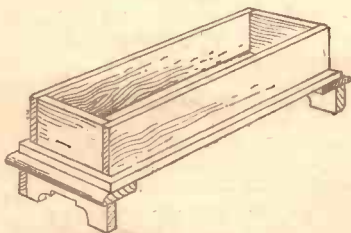


Fig. 1.—The base of the clock built in the form of a box and raised on upright feet.

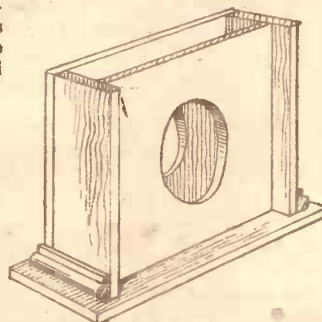


Fig. 2.—Showing the back, front and sides in position.



Fig. 3.—The top of the clock ready to be fitted on.

THIS WEEK'S GIFT SHEET.

No. 1827 Design.

A MANTEL CLOCK

Any Fretworker Can Make It.

on long fancy feet called the base. These take up the whole of the ends and are stood behind the shorter ones glued along under the front. The position of these various parts is indicated in every instance by dotted lines on the adjoining parts.

The clock case itself is next built of a front, back and two sides. The front should have its fretted overlay glued on, but the dentil course along the top should be left until later. The front is glued and screwed to the base $\frac{1}{4}$ in. inwards from the edge of the top of the plinth. Behind this front are stood the two sides, and in turn between the sides stands the back of the clock. This back is not flush with the back edges of the sides (See Fig. 2), but is glued $\frac{1}{2}$ in. inwards to allow the centre opening to be a support for the barrel of the clock movement. The position of this back should be marked off on the sides before these parts are put in place, in order that we may glue it up square all round and then screw it from beneath the floor. Small square blocks of waste wood can be glued in the corner of this support piece, and the sides, to provide further strength.

The Top and Overlays.

The complete case frame is glued on the top of the plinth with strengthening screws driven downwards into the back. The top is composed of three sections, one of which has a hollow frame of moulding (No. 21) mitred at the corners. This moulding is glued $\frac{1}{4}$ in. inwards from the edge of the top of the case, and then the plain rectangle which forms the top itself is glued above the moulding. A mortise has been cut in the uppermost piece, and the fretted pediment is stood in at A (See Fig. 3).

For those who wish to add them, fretwork overlays are provided round the base and immediately beneath the top. All these are cut in $\frac{1}{8}$ in. wood—which should be nailed to another piece during cutting to prevent breakage. The overlays are glued on the

(Continued on page 124.)

A parcel of selected oak boards the size and thickness required, with the necessary lengths of moulding and the oak ornaments, is supplied by Hobbies Ltd. for 2/6 (Postage 6d.). A suitable 30-hour clock movement (No. 5502) costs 5/-. A complete parcel of wood and fittings for 7/6 or 8/3 post free. Extra pattern sheets of this design, price 4d. All obtainable from Hobbies Ltd., Dereham, Norfolk, or their branches or agents.

ANY WOOD YOU LIKE SOFT OR HARD • •

JOHNSON'S WOOD DYES DO NOT RAISE THE GRAIN

THAT is one of the particular qualities of Johnson's Wood Dyes that you will appreciate if you have ever had the labour of rubbing down the grain after it has "come up" in staining the job. Johnson's do not raise the grain, because they are made from genuine oil and spirit and contain no water.

You simply apply them with a brush; one steady sweep floats the colour into the wood, but slowly enough to give you plenty of time for retouching and wiping to get special effects if desired.

Johnson's Wood Dyes are not just surface stains, they penetrate below the surface of the wood. They do not flake, and they retain their original colour, without fading, year after year.

There are eighteen shades to choose from — mahoganies, oaks, walnuts — even greens. Each shade is a standard, repeatable colour, which is a real advantage if you ever wish to match up a job.

● JOHNSON'S WOOD DYES

The trial size bottle costs 9d. and does 8 square feet of a soft wood and 14 square feet of hard wood. The next size, which contains double the quantity, costs 1/3d. Your dealer will gladly show you the Johnson Shade Card.

S. C. JOHNSON & SON LTD. Also manufacturers of Johnson's Wax Polish and a wide range of other wood finishes. West Drayton, Middlesex.

MAKE A GRAMOPHONE at Quarter Price.



PORTABLE
GRAMOPHONES, 15/6.

Order set as shown. Double spring motor, 12 in. Velvet Table, Swan Arm, Metal Sound Box, Horn, Needle Cups, £1-18-6, or buy Rifancophone, Pedestal 3 ft. high, complete for £4-4-0, carr. paid. Motors. 8/6. Repair parts. Lists Free. 64 p. Catalogue No. 218/219, Drawing and how to make Gramophones, 3d.

REGENT FITTINGS CO., Nobby,
120, Old Street, LONDON, E.C.1.

RADIO-GRAM CABINETS



No. 134. 79s. R.T.A.

MAKE YOUR OWN with our guaranteed R. T. A. Furniture Sets.

Send P.C. for Free Catalogue and Price List.

Woodworkers Supply Co., 199, High Road, Lee, London, S.E.13.

ASK ALWAYS FOR
ADVERTISED ARTICLES.

Better Work - Better Way
WITH THE NEW

"Croida"

AERO GLUE

CROID AERO GLUE, 2/6
CROID EXTRA AND STANDARD
STRENGTH in tins from 1 lb.
to 2 ozs.

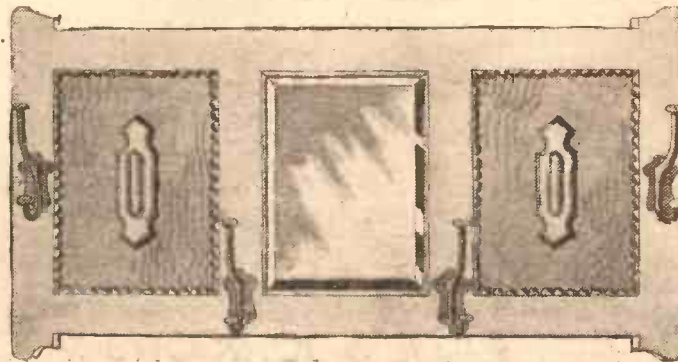
CROID No. 3, 2d. & 6d. Tubes.



EASIER · STRONGER · QUICKER

A HOME-MADE HATRACK

IN these days when houses are rather on the small side a hat rack and mirror is often found to be much more convenient than a large hall-stand because it occupies no floor space whatever, which is a very important consideration. The rack shown is one which any amateur wood-worker may make quite easily in a few hours, and at comparatively small cost. Although it is equal in appearance to the shop-made article, the construction is quite simple, the method adopted being to use a piece of three-ply wood



A Hatrack planned as suitable for the average hall—just the right size, quite reasonable in cost, and simple in construction.

shaped as shown at Fig 2. A hole is cut in the middle of the plywood with a 20in. fretsaw frame, as shown at Fig. 3. A small hole for the blade to be entered should be bored at one corner, and the cutting should be done with care as the piece removed will be used as a back for the mirror. The end slips are screwed

across the ends of the plywood (see Figs. 3 and 4), the slips being glued, and screws are driven through the plywood into them (see Figs. 5 and 6), while the edges of the plywood could be neatly chamfered as shown in

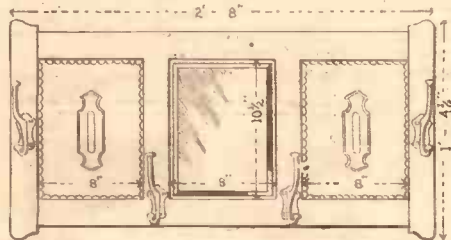
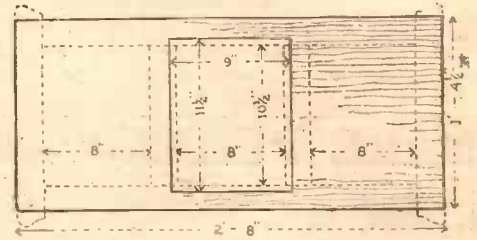


Fig. 1.—A helpful diagram giving the layout and necessary dimensions.

Fig. 3.—(Right) —The size and position of the hole in the back of the mirror.



as a foundation, and to add strips which form the sham framing.

The materials required to make the rack are: A piece of 3/8 in. oak-faced plywood 2ft. 8in. long by 1ft. 2 1/2 in. wide, which is sold in large panels at 8d. per sq. ft. A piece of 3/4 in. oak fretwood 2ft. 4in. long by 8 1/2 in. wide (1 1/2 sq.ft.) for cutting the strips which form the sham framing, and costing 1s. 3d. per sq. ft.; 4ft. of quarter round beading, No. 34, size 1/2 in.; 7ft. of quarter-round ball beading (No. 59), size 3/4 in.; two oak ornaments (No. 224), size 6in. by 1 1/2 in.; mirror (No. 5732), size 10 1/2 in. by 8in.; and four coat hangers (No. 6160).



Fig. 2.—The shape of the rail ends, and the position of the cross rail.

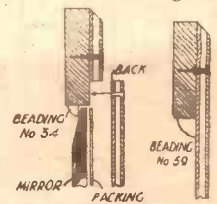
The sizes which should be followed in making the rack are shown at Fig. 1 and details which will be helpful in carrying out the construction at Figs. 2 to 6. The piece of fretwood should be taken first, and two top and bottom slips 2ft. 4in. long by 2in. wide, two end slips 1ft. 4 1/2 in. long by 2in. wide, and two inner slips 10 1/2 in. long by 2in. wide are cut from it. The edges of the slips should be planed smooth, and the ends of the two end slips are

the same illustrations. The top and bottom slips are next fitted between the end slips, and fixed. Finally the inner slips are fixed so that they overhang the edges of the opening in the back 1/2 in., and the opening between the top, bottom and inner slips should be just large enough to receive the mirror. The No. 34 plain beading is mitred around the edges of the opening to form a rebate for the mirror (see Fig. 5), and the mirror is held in place by screwing on the piece of plywood which was cut from the back. It may be necessary to



Fig. 4.—Another view of the back showing three of the outer rails in place on the large board which forms the back.

pack the mirror with a piece of felt or cardboard placed between it and the back. The No. 59 ball beading is mitred around the edges of the panels, the oak ornaments are glued in the middle, and the four coat hangers are screwed in the positions shown.



Figs. 5 and 6.—A section showing position of mirror, beading, rebate and backing. Note the chamfered outer edge.

For full particulars and illustrations of the fancy beading, moulding and wooden ornaments the worker should refer to Hobbies 1931 Catalogue.

Photography Without Camera or Lens

By OWEN WHEELER, F.R.P.S.

THE method about to be described cannot in one sense truly be said to be "without a camera," for any sort of box used for taking photographs is a camera. Again, a pinhole is really a sort of lens. For all practical purposes, however, the heading of this article is correct. Our equipment is going to be something very different from the ordinary photographic camera and the carefully-calculated combination of glasses of which a modern photographic lens is composed.

The Camera Substitute.

This is just a box—a cigar box will do very well—which may be almost any size, but preferably oblong in shape, 6in. or 7in. long, 5in. high, and 4in. or 5in. broad being convenient dimensions for quarter-plate pictures. The box must have a lid which can be made to fit closely. A tin such as is often sold to hold a pound of tea will answer well with a little contrivance. The inside of the box and lid must be painted black, or else lined with black paper or cloth. Ordinary black varnish is no good, as it is shiny and reflects quite a lot of light. Blackened corrugated paper, such as is used for packing, makes a very good lining, as the corrugations catch the unwanted light just as the folds in a camera bellows do. Before you start any lining cut a hole the size of a threepenny bit, or larger if the wood is thick, in the centre of one end of the box, and blacken the edges of the hole. At the other end you must make some arrangement for holding in position a plate of the size you are going to use. A simple and easy way is to buy a box of glass-headed push-pins—the small size—and to use four of these to secure the plate. If you lay a piece of plain glass the size of your sensitive plate on the end of your box, just where the sensitive plate will come, and pin this down at the bottom and sides so that it stands firmly, but will still slide out from under the glass heads of the pins, you have a ready-made plate-holder. All you need do is to remove the guide-plate and, when you are in your darkened room, slip a sensitive plate under the heads of the push-pins in the place which the guide-plate occupied.

The Pinhole "Lens."

Pinhole photography can be made "scientific" by grading the size of the pinholes for different camera extensions, and regulating the exposure accordingly.



A photograph of a church taken with a pinhole camera.

But with a fixed extension, such as our box affords, you will find a No. 6 darning needle will give very good results, and all you need do is to paste a piece of black card over the hole you have cut in the "lens" end of your box, and prick a hole in the centre of the card. A cap has now to be provided. This can be made by gluing black velvet to a little triangle of card with 1½in. sides, and pinning—with a push-pin—the apex of this triangle so that the centre of the latter covers the pinhole. This will exclude the light sufficiently, except during exposure for which the card is pushed aside, leav-

ing the pinhole uncovered. Care must be taken when the pinhole is capped that the lid is on to avoid any light entering the box. To ensure this, cut a piece of thick felt the exact size of the inside of the box, and glue it to the lid so that it just fits when the lid is on. The pinhole must be a clean one, and for that reason thin card only should be used.

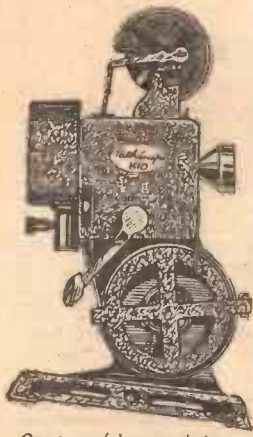
Focusing.

This is not needed so far as relative sharpness is concerned, since the definition, is not affected by the distance of the plate from the pinhole. As regards the amount of view included on your plate, you must simply take what you can get if you have only a fixed extension, and you can only get a general idea of your "picture" by looking along the top of your box before exposing. But after a little experience, a wire framework the shape of your plate fitted to the top or side of the box may serve as a useful "finder."

Exposure.

This is the main difficulty in pinhole photography, and consequently the beginner should use a slow plate possessing as much "latitude" as possible. For a photograph, taken with a box and pinhole, one may start by giving fifty times what would be the ordinary exposure at f/8 by way of trial, and regulate future exposures by the results one gets. Developing and fixing are just the same as with plates exposed behind an ordinary lens in an ordinary camera. Pinhole photography with an ordinary camera is well worth trying as a side-line. It is well to remember that for focusing on an ordinary screen you can use a pinhole much larger than the one employed here. Pinhole photography is fascinating, though simple.

HOW TO MAKE A PINHOLE CAMERA



One type of home projector—the Pathéscope "Kid."

either small or included in the price of the reels, and you can either pay a little extra for having your films titled professionally or do it yourself with very little trouble.

Ideal Home Cinematography.

Few amateurs can turn out films as good as professional ones, and many of the latter, prepared regardless of expense and in well-equipped studios, are quite beyond amateur capacity. An ideal home cinema show would include both sorts of films, three or four bought or hired ones—we will talk about these later—interspersed with a good few home-made movies, in which family, friends, schoolfellows, travel, sport and so on are featured tenderly, truthfully, absurdly, or otherwise, according to circumstances and the taste or fancy of the operator and his audience. A show of this kind, properly run, is sure to be popular, and will not infrequently extract from the family pocket a useful contribution towards "exes."

Cine-film Sizes.

Before you attempt to run a home cinema, either with your own or with bought or hired films, you should understand that there are two main kinds of cine-film, standard and sub-standard, the former being the 35 mm. gauge (about 25 mm. go to the inch), which is used in picture theatres, and with which, as it is both costly and extremely inflammable, very few amateurs are concerned. Of sub-standard film there are two varieties, both on a non-flam base, one 9.5 mm., the other 16 mm. wide. The first is that used in the Pathé Baby Cine and Moto-cameras, while the second is the gauge of the Kodak, Ensign, and a number of other amateur cine-cameras and projectors. In spite of the difference in width the size of the pictures on 16 mm. film (10 by 7½ mm.) is not much larger than that of the Pathéscope pictures, owing to the fact that the latter are more economically perforated. One or two more facts in connection with film sizes have to be grasped. Cine-film is reckoned in feet, but duration on the screen depends, not on "footage," but on the number of pictures shown. In a foot of 16 mm. film there are forty pictures, and in a foot of Pathé film about thirty-four. A hundred feet of 16mm. film will last a little over four minutes on the screen, and 30ft. of Pathé film about one and a quarter minutes, the number of pictures in the first case being about 4,000, and in the latter about 1,000.

Cine-film Projection.

Having digested these facts you can proceed to consider the purchase of a pro-



The lamp used with the Pathéscope.

YOU can run a home cinema very well indeed without making the films yourself. But, if you can afford it, "taking," as distinct from projecting, is both fascinating and satisfactory in that you can tackle a lot of subjects, family and other, quite outside the range of films that can be bought or hired. A cine-camera does cost money, and reels of cine-film "tot up," especially when a large proportion of them has been, as is often the case, wasted. But "taking" is great fun and, when you have learnt, as you can do in half an hour, how to load and unload your camera, and how to expose, you need have no further worry. The cost of developing your exposures and of converting them into positive transparencies is



How To Home

jector. You must decide for yourself whether it is to be Pathé size or 16 mm. If you are strictly limited to a small outlay, the Pathé system will probably be your "only way," and a good way, too. If, on the other hand, you can afford the costlier 16 mm. gear, you will be able to fill a larger screen, and, as far as showing in an ordinary room or small hall is concerned, practically everything that can be done with a professional outfit will be within your scope. Plenty of amusement can be got out of a Pathéscope "Kid" projector costing less than £3. You cannot get an efficient 16 mm. projector for much less than 10 guineas. But between these two facts lie a number of considerations of which you must yourself be, in the long run, the best judge.

Projector Models.

Let us take the Pathéscopes first. There are two of them, the aforesaid "Kid," costing 55s., and the Pathéscope Home Movie projector at £6. Both are hand-driven, and can be lit from either the electric light mains or from accumulators. There is a special "Kid" screen, silvered, measuring 24in. by 18in., and costing only 7s. 6d. For the more expensive model a 3ft. silver screen fitted with frame and stretcher at 25s. is recommended.

In the 16 mm. gauge there are a number of available models, the most moderately priced one being the new Q.R.S. De Vry at £10 10s., which you can get from the Westminster Photographic Exchange of 111, Oxford Street; 119, Victoria Street; and 62, Piccadilly. This is a very compact and useful projector but, like the Pathéscope, it is hand-driven, the motor-driven model costing seven guineas more, or practically the same as the Kodascope Model C (£18). Motor-driven projectors are naturally expensive, as they have to be extraordinarily well made to enable a single electrical connection to light the lamp, operate the shutter, and pass the film through the machine. There are a score of different models, British and foreign, mostly at prices far beyond the reach of any but the wealthy. But, if family funds will run to it, the Ensign "Silent Sixteen" at 25 guineas is really a first-class family investment, being very solidly built and throwing a brilliant, steady picture on a screen 4ft. square, or larger if a suitable lamp is used.



The Kodascope

The Kodascope Model C (£18). Motor-driven projectors are naturally expensive, as they have to be extraordinarily well made to enable a single electrical connection to light the lamp, operate the shutter, and pass the film through the machine.



A rigid-type cine



Install and Run a Cinematograph Show

Stands and Screens.

Most amateur projectors can be worked on an ordinary table, but a stand such as the special Jay-Nay Ciné (23s.) is handy. Screens should preferably be silvered, and for most purposes the 3ft. Pathé (25s.) already mentioned will serve. Messrs Dallmeyer, of 31, Mortimer Street, Oxford Street, also sell a useful 3ft. by 2ft. silver roll screen in canvas case for a guinea. A screen of this kind can easily be hung on a wall, but if you want the last word in screen convenience you should write to R. F. Hunter, Ltd., of 40, Doughty Street, W.C.1, for particulars of the new Self-Recta which opens with one grip, and stands rigidly in any position. The 30in. by 40in. size costs £2 10s.

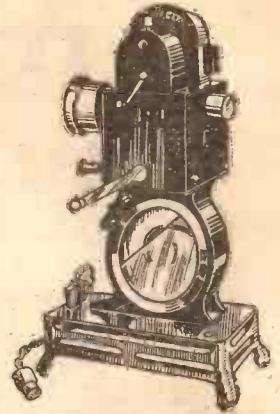
Buying and Hiring Films.

You can buy any number of professionally-made films suitable for showing in either Pathéscope or 16 mm. projectors. In both cases a wide range of subjects is covered, drama, natural history, comedy, sport, travel, and so on. The Pathé printed films cost 2s. 6d. and 3s. 6d. for 30ft., and 6s. for 60ft. reels. "Kodographs" (16 mm.), which are sold by Kodak Ltd., are more expensive, the price of 100ft. reels being 35s. each. At this rate an evening's entertainment with bought films only would be extremely expensive, and so hire systems, on the lines of circulating book libraries, have come into operation.

Film Libraries.

A typical institution of this kind is the exceedingly well-managed Kodoscope Library at Kodak House, Kingsway, which includes hundreds of films in 400ft. reels (equal to 1,000ft. of standard film), taking about 16 minutes for projection at normal speed. In this collection there are many quite up-to-date films, "featuring" Charlie Chaplin and other stars, and running sometimes to as many as five reels. The films are divided up into eight classes according to subject, and five categories in respect to hire charges. The latter vary from 2s. 9d. to 4s. per reel if collected from Kingsway one day and delivered back on the day following. An extra 6d. per reel, plus postage, is charged to postal subscribers, with 6d. per reel per day

added for each day the films are retained over and above the minimum period. There are special mid-week, week-end, and full-week rates. This excellent system makes the home cinema a pleasantly varied entertainment at no great cost. For about 12s. one can hire four reels—say, a 2-reel drama, a natural history reel, and a sports reel—which will last a full hour on the screen, and, of course, a good deal longer if interspersed with some home-made films or music. If, too, the show has been carried out with as little fuss and moving of furniture as possible, the home authorities will probably regard it more indulgently than some other hobbies in which readers indulge.



The Pathéscope home projector.

The Success of the Show.

The success of the show depends on the preliminary arrangements made. Have the screen ready, the projector loaded, and the other films handy so that the programme goes through without a hitch, for it is irritating to the audience to have to wait several minutes while you fumble for films and spend a lot of time changing them. Select your films according to the tastes of your audience. If their opinions on certain types of film are known, you will certainly fail to amuse or entertain them with home films of that type; and vary the style of your programme as much as possible.

Films which you have taken yourself should not be shown so often that they lose interest, for "family-arity" oft breeds contempt! If visitors are among your audience, it is certainly a wise plan to show such films last of all; they should be shown with a minimum of comment. Let them speak for themselves.

General Instructions.

Home Cinematography, to be really effective, needs less "patter" but more judgment than a "still" lantern slide entertainment. With cine-films, some of which are over and done with in not very many seconds, there is no chance of pointing out special features, or of glossing over defects by humorous comment. The film must stand or fall by its own merits and, if the subject has been ill-chosen, or the film badly produced, the fact of its being a "movie" will not save it from being a failure. Good titling makes a difference, and is preferable to verbal explanation in most cases. If it were not, you may be sure that it would not be the rule in picture theatres. In order to have all-dark performances your exhibition should be carefully planned in advance, with your films arranged in proper sequence so that they can be inserted in the projector with as little fumbling as possible. A friend to help you intelligently with a torch may be a convenience, but it is better to rely on yourself alone. Remember that a brilliantly lit small picture is far more attractive than a larger one which is pale and weak. If you can afford it, get a projector which will show a "still" when desired, and also reverse. A reversal, such as making divers come backwards out of the water, always creates merriment.



A camera for taking home cinematograph films.



projector, type A.



cinematograph screen.

IT WILL PAY YOU

to find out how

YOU CAN MAKE MONEY

and indulge in fascinating
hobbies at the same time

Just sign and send the coupon below and we will send you an interesting FREE booklet about a work that has helped thousands to make good money from their hobby. If you have never handled a tool in your life, or if you are an expert craftsman—this is the one book you positively need.

“The Practical Woodworker”

WITH ITS

**6,000 Working Plans and Drawings teaches how to
make nearly 1,000 Useful Articles.**

It shows you how to start woodworking and takes you from the earliest to the most advanced stages of this craft. There are valuable articles on woodcarving, veneering, inlay and marquetry work, upholstering, Period furniture, etc.

*TOOLS FOR WOODWORKERS.—To those requiring a full set of
woodworking tools we are prepared to make an exceptional offer of
a fine set on very easy terms. If interested, TICK COUPON.*

Send Coupon To-day for FREE booklet.

To The WAVERLEY BOOK CO., Ltd., Dept. H.1,

96-97, Farringdon Street, London, E.C.4.

Please send Free Illustrated Booklet containing particulars of “THE PRACTICAL WOODWORKER,” also information as to your offer to send the complete work for a small first payment.

NAME.....

ADDRESS.....

(Send this form, ½d. postage or a postcard.)

I am interested in your Tool Offer.....
H.I., 1930.

A LAMP OR PLANT

STAND IN MAHOGANY



THE pedestal shown here is designed primarily as a lamp pedestal, but also can be used as a pedestal for a fern or palm. The article is simple in construction and consists of four legs, connected at the top by four rails with shaped brackets beneath them, and at the feet by two cross rails which are in turn held by a shaped shelf. Hobbies ready grooved legs eliminate all mortise and tenon joints, and the merest amateur at woodworking may undertake the job without any fear of badly fitting and awkward joints. Fig. 1 shows the main dimensions of the pedestal. It stands three feet high and spreads to twelve inches square at the foot, while the top is ten inches square.

Making the Legs.

The legs as purchased are planed up and grooved. The positions of the small mortises should be marked out on all four at once, the length of eleven inches marking the top of the mortise (see Fig. 1, and in detail in Fig. 2). The mortises are cut in with a half-inch chisel and are made $\frac{3}{4}$ in. deep.

The top rails are prepared from $\frac{3}{4}$ in. wood and cut to the dimensions in Fig. 3, the dotted line indicating that portion which fits into the grooves in the legs. To obtain the taper accurately the best method would be to square up a panel 6 in. long by $4\frac{1}{2}$ in. wide. Then at the two top corners mark off a point $\frac{1}{4}$ in. in and connect these points with the lower corners. The necessary straight cutting may be done either with an ordinary fine hand saw or a fretsaw, and the panels thoroughly sandpapered and trued up with the plane.

Obtaining the Slope.

One pair of legs may now be taken and the panel fitted in temporarily to obtain the exact length of the rails connecting the legs farther down. This will give the exact slope of the shoulder of the tenons at the end of these rails. The length of the rails shown in the diagrams is 10 in. overall—a length allowing for a $\frac{3}{4}$ in. tenon at each end. They are $\frac{3}{4}$ in. deep and $\frac{1}{2}$ in. wide. Having cut and fitted the cross rails satisfactorily, each pair of legs may be finished by gluing up the rails. At Fig. 4 is given the outline of one of the four bracket pieces, with all necessary dimensions for obtaining a true outline. Each bracket is cut from a piece of wood 6 in. long and $2\frac{1}{2}$ in. wide. The correct slope for the back of the bracket must be obtained by trial by laying the piece



Fig. 2.—How the bottom rail is mortised into the legs.

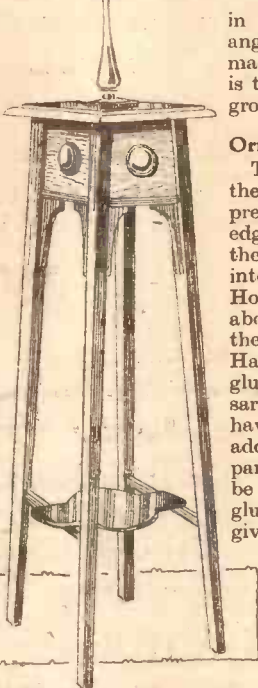


Fig. 1.—The complete stand.

in position on the leg and marking the angle which the lower line of the top panel makes with the edge of the leg. Allowance is then made for the wood which enters the groove.

Ornamental Moulding.

The brackets are cut from $\frac{3}{4}$ in. wood with the fretsaw, the gentle curve having been previously outlined in pencil. Clean up the edges and then, after coating the back and the top edge of each with glue, press gently into position in the grooves. Four pieces of Hobbies No. 18 moulding are now cut off about 5 in., and fitted over the joints between the rails and the brackets (see Fig. 5). Having obtained a neat fit, the pieces are glued, and if any extra fixing is found necessary small brass sprigs are driven in, holes having been previously drilled. To gain additional strength between the legs and panels Hobbies special triangular fillet may be used, pieces 6 in. long being cut off, and glued in the angles as shown by Fig. 6, which gives a section through the panels just below the top.

The Bottom Platform.

The bottom platform is cut from $\frac{1}{2}$ in. wood the shape shown in Fig. 7, viz., 12 in. long by 7 in. wide. To set out the true shape mark off 6 in. from one end and $3\frac{1}{2}$ in. from one long edge. This will give the centre point for describing the circle $3\frac{1}{2}$ in. in diameter. Now set out 2 in. each side of the centre and carry the lines to the ends. This will give the shape required, and the fretsaw will do the cutting out. At a distance of 1 in. from the ends, and with a spacing of $2\frac{1}{2}$ in. between each, bore the holes for the screws which fix the rail to the cross rails. The holes should be countersunk and the screws driven well in and afterwards filled level with stopping. Finally sandpaper and clean ready for polishing.

The Top of the Pedestal.

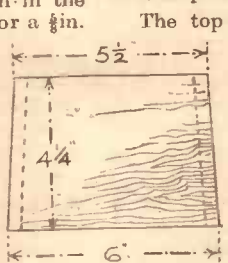


Fig. 3.—The dimensions and shape of the side panels under the top of the stand.

The top of the pedestal is formed of two pieces (see Fig. 5). A $\frac{1}{2}$ in. thick piece is cut 10 in. square, and a wide thumb moulding formed on the four edges. This is carried out with a rasp for the main shaping, the finishing off being done with a wood file and sandpaper. The member to be glued to this thick piece should be either $\frac{1}{2}$ in. or $\frac{1}{4}$ in. thick cut 9 in. square and with square edges. A sound piece of wood must be chosen

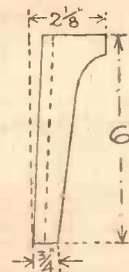


Fig. 4.—The shaped bracket and its dimensions.

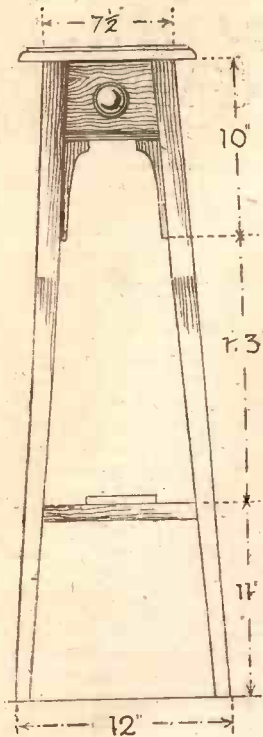


Fig. 1.—Side view of the stand with dimensions.

for both these top members, with straight and even grain so that there should be no fear of warping or twisting. Apply glue to the upper piece of wood and then, having got it into accurate position on the lower piece (with a 1/4 in. margin all round), lay weights upon them and leave for at least a day to harden. The completed top should be fixed in position with glued angle blocks to the rails, as in the detail, Fig. 5. The pedestal would look incomplete without the four turnings glued to the centres of the top rails. These ornaments (No. 215) are beautifully shaped, and may be purchased ready for fixing on from Hobbies Ltd. (1 1/4 d. each).

CUTTING LIST.

The wood required for the pedestal is as under:—

- 4 Mahogany grooved legs (4s. 6d. per set).
- 4 Turned button ornaments (No. 215), 6d. per set.
- 4 pieces of moulding (No. 18), 5in. long, 1d. per ft.
- 4 rails 6in. by 4 1/2 in. 3/4 in. thick.
- 4 brackets 6in. by 2 1/2 in. 3/4 in. "
- 2 rails 10in. by 7 in. 1/2 in. "
- 1 rail 12in. by 7in. 1/2 in. "
- 1 piece 10in. by 10in. 1/2 in. "
- 1 piece 9in. by 9in. 1/2 in. "

SUITABLE LIGHT OAK.

	Inch thick.						
	1/16	1/8	3/16	1/4	5/16	3/8	1/2
7 to 9in. wide ..	7d.	9d.	10d.	11d.	1/1	1/3	1/6
10 to 12in. wide ..	8d.	10d.	11d.	1/-	1/2	1/4	1/8
13 to 14in. wide ..	9d.	11d.	1/-	1/1	1/3	1/6	1/9
	Per sq. foot.						

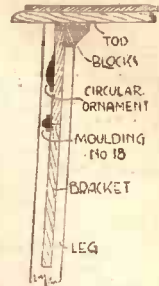


Fig. 5.—A side view of the position of top, legs, etc.



Fig. 6.—A section of legs, panels, etc., with the top removed.

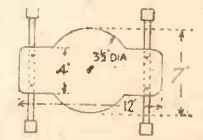


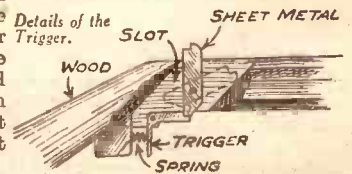
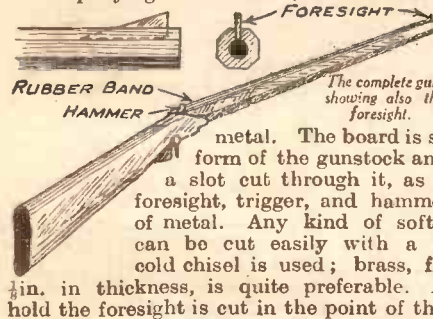
Fig. 7.—The shape and position of the platform and rails.

A Simple and Safe Toy Rifle

A VERY inexpensive and serviceable toy rifle, and one that is quite safe, is shown in the accompanying illustrations; it can readily be made

from a length of 1 in. pine board and a few pieces of sheet metal. The board is shaped to the form of the gunstock and barrel, and a slot cut through it, as shown. The foresight, trigger, and hammer are made of metal. Any kind of soft metal that can be cut easily with a back-saw or cold chisel is used; brass, from 1/16 in. to 1/4 in. in thickness, is quite preferable. A groove to hold the foresight is cut in the point of the barrel, and

the hammer and trigger are pivoted on pins driven through the stock. A small coil spring, set in a hole drilled in the butt, forces the trigger forward, so that the gun can be cocked like any other gun. A rubber band is hooked over the foresight and stretched back over the cocked hammer, and the gun is then loaded. When the trigger is pulled, the rubber band pulls the hammer forward and slips off, and the sudden release of the tension propels the band forward with considerable force. The length of the barrel and the strength of the rubber band determine the distance that the band is thrown. The gun can be used for target practice, and will shoot quite accurately.



A MANTEL CLOCK—(continued from page 116).

front, projecting a little beyond the end so that they cover the edges of the overlays glued there. The square opening in each—as on the overlay on the front of the clock—are to take the four pretty wooden ornaments supplied with the parcel. They are glued in the recess provided in the centre of the opening, and with a small space around them.

The tooth-like overlay beneath the top must be cut very carefully so that the dentil pieces do not get broken. Then glue it immediately beneath the top on three sides of the case. The final addition is placing three pieces of the smaller moulding (No. 24) where the clock case stands on the top of the plinth. This is mitred at the two front corners, but finished flush at the back edge. (See Fig. 2).

HOME CINEMATOGRAPHS

Call or write. Illustrated lists free.



FILMS AND ACCESSORIES.



PROJECTORS all prices from 5/- to £16

Sample Film 1/- and 2/6 post free.



Film Spools, Rewinders, Lighting Sets, Screens, Sprockets, etc.

FILMS ALL LENGTHS AND SUBJECTS.

FORD'S (Dept. H.), 276/7, HIGH HOLBORN, LONDON, W.C.1

HAVE YOU TRIED PEWTER WORK ?

An inexpensive, yet artistic and useful hobby. You will find complete instructions in **PEWTER WORK**, by F. R. Smith. Only 2/6 net from any bookseller or 2/9 post free from

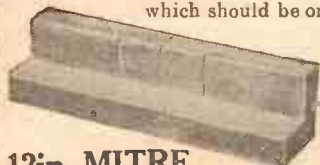
PITMAN'S, Parker Street, Kingsway, W.C.2.

THE SILENT METHOD of VOICE CULTURE.

THE SILENT METHOD produces amazing results. Builds up the voice that excels in volume, range and purity of tone; eradicates all vocal difficulties, weak voice, harshness, huskiness, limited range; infallible cure for **STAMMERING**. Send 3d. stamp for particulars and astounding testimony from delighted students the world over. **Prof. W. R. REID**, 541 (H), Wigan Road, Bolton, Lancs.

For cutting corners in woodwork—

Moulding, or beading, or any strips forming a frame in woodwork have their ends cut at 45 degrees to make a correct angle. This can only be done with a reliable mitre block. Here are two useful tools, either of which should be on any worker's bench.



9in. MITRE BLOCK

A practical and cheap block. Useful for any ordinary small work. **9d** Post 6

12in. MITRE BOX

The double-sided trough holds the sawblade dead true for left and right-hand cuts. Takes work 2ins. high.

2/9 Post 9d.



If you want the best, ask at any ironmongers for

HOBBIES MITRE TOOLS

Or from all Branches and Agents of Hobbies Ltd. By post direct from Hobbies Ltd., Dereham, Norfolk.

This is FIGHTING TALK



If you're a drifter you won't read far in this advertisement. If you're not—if you have the courage to face facts—you will want to know who is responsible for your not getting ahead faster. We'll tell you. It's YOU. The man who won't be beaten, can't be beaten.

If you're a fighter you will set about doing something. You'll get the special training that will qualify you for a better position and better pay.

In spare time, at home, you can acquire the training you need through the International Correspondence Schools. Thousands of other men have lifted themselves out of the rut and into well-paid, responsible positions by I.C.S. study. Are they better men than you?

The time for action is *this minute*. Find out about this practical educational method that lets you learn while you earn. Mark the subjects that interest you in the coupon below and post it to-day. It doesn't put you under any obligation to ask for full particulars, and, if you wish, for our expert advice, yet that simple act may be the means of making your entire life happier and more successful. *Do it now!*

COUPON FOR FREE BOOKLET.....

International Correspondence Schools, Limited, 85, International Buildings, Kingsway, London, W.C.2.

Please send me your Booklet containing full particulars of the Course of Correspondence Training before which I have marked X. I assume no obligation.

- | | |
|--|---|
| <input type="checkbox"/> Accountancy & Bookkeeping | <input type="checkbox"/> Poster Designing |
| <input type="checkbox"/> Advertising | <input type="checkbox"/> Poultry Farming |
| <input type="checkbox"/> Architecture and Building | <input type="checkbox"/> Railway Equip. & Running |
| <input type="checkbox"/> Chemistry | <input type="checkbox"/> Salesmanship |
| <input type="checkbox"/> Commercial Art | <input type="checkbox"/> Scientific Management |
| <input type="checkbox"/> Commercial Training | <input type="checkbox"/> Shorthand-Typewriting |
| <input type="checkbox"/> Draughtsmanship | <input type="checkbox"/> Showcard Writing |
| <input type="checkbox"/> French and Spanish | <input type="checkbox"/> Textiles |
| <input type="checkbox"/> Insurance | <input type="checkbox"/> Window Dressing |
| <input type="checkbox"/> Mining | <input type="checkbox"/> Wireless Engineering |
| <input type="checkbox"/> Plumbing | <input type="checkbox"/> Woodworking |

Engineering, all branches, state which.....

Professional Exams., state which.....

The I.C.S. teach wherever the post reaches and have nearly 400 Courses of Study. If, therefore, your subject is not in the above list, write it here.

Name.....Age.....

Address.....

This fascinating hobby will appeal to You.

CANVAS WORK

PETIT-POINT AND CROSS-STITCH

(Leach's Handcraft Series, No. 132.)

SIX
PAGES
IN
FULL
COLOURS



THE
MOST
UP-TO-DATE
BOOK
OF ITS
KIND

With the revived interest in this fascinating branch of needlework, this book is sure of a ready welcome. The cover shows an attractive coloured reproduction of a bird and fruit design worked in wools, suitable for a fire-screen or cushion; while inside are pochettes, bags, chair-seats, pictures, cushions, etc., six pages of which are in full colour. Instructions for working are illustrated by simple diagrams so that the beginner cannot go wrong.

Ask for
LEACH'S HANDCRAFT SERIES, No. 132

On sale at all Newsagents and Bookstalls, or by post 7½d. from
George Newnes, Ltd., 8-11, Southampton Street, Strand, London, W.C.2.

6^{d.}

PRINT YOUR OWN DESIGNS WITH BLOCKS MADE FROM LINOLEUM.



A silhouette design printed from a home-made lino block.

LINO printing is one of those hobbies that can be done without many tools, and it also offers a remarkable amount of scope even to the fellow who cannot draw.

The material required for the work is ordinary lino-leum, and there are usually oddments about the home; if not, any furnisher will be only too glad to give you his clippings.

The lino-leum selected should be not less than a quarter of an inch thick.

The tools are quite simple and consist of a sharp knife, a small U-gouge not less than 3-16ths of an inch in thickness, and a set of five cutting tools. There are just a few more accessories required to complete the lino printer's outfit; these comprise a rubber squeegee roller, four to six inches in width, a paint-brush, a tube of indian ink, and some carbon paper. The more ambitious will desire to have coloured inks instead of black, but it is suggested that black should be used for the preliminary printing and when experience has been gained, then is the time to pass on to the more elaborate undertaking.

Designs for the Lino Printer.

Before cutting down the printing blocks from the lino you should decide what your first batch of designs shall be. There is endless scope, but it is well not to attempt any but the simplest figures at the outset. Always start modestly, work carefully and the results will usually be highly satisfactory. The figures chosen should be of a block type, something after the silhouette fashion. Thus ships, engines, houses especially, and aeroplanes and airships make very good figures for your first series of designs. These will be first sketched on paper in outlines (see sketches), which show up boldly.

Spread out the lino and pin upon it the sheet with the design, taking care to place underneath the sheet a carbon paper. Use drawing pins; they will hold the design sheet firmly. Now with a stylo, or a sharp-pointed hard pencil, trace out the design, the carbon carrying it to the lino and leaving a clear outline of the house, ship or other items included in your design. The next step lies in making more permanent the

outlines upon your lino. Therefore, take either a mapping pen or a fine brush, and use the Indian ink to get permanent outlines.

The Cutting of the Design.

Now comes the next and most important step taken so far. This is the cutting out of the design. Taking the sharp knife, you cut into the lino a V-shaped trench for the outline. This is best accomplished by cutting two parallel lines about an eighth of an inch wide, and then arranging the next cut to get the shape indicated. It will be obvious that the V-shaped trenches themselves would not show up in the printing save as white lines. The black portions in the sketches must stand out boldly, and to attain this all the lino which makes the

background must be scooped out. Here the U-shaped gouge is employed and all the unwanted surface is removed. It will be obvious that what we will call the solid masses, such as a house or a ship, will be the untouched surface of the lino, whilst the sky, etc., will be the scooped-away portion. Windows in the house will also be scooped out. It is necessary to stress the point that the cutting should be cleanly done, or when printing is undertaken there will be rough edges which will not be satisfactory. The block should now be ready for mounting. This is best done by gluing the lino on to a block of wood, much in the same manner

as the half-tone block is mounted for printing. The lino is inclined to be pliable and unless mounted there is a strong probability of its moving whilst printing is going forward.



An outline design.



Another simple design printed from a lino block.

(Continued on page 132.)

HOBBIES' GREAT PUZZLE-PICTURE CONTEST

OVER 110 PRIZES! ONLY 24 PICTURES TO SOLVE!!

- FIRST PRIZE:** Fine £10. 10. Electric Model Railway, complete with electric locomotive, tender, two Pullman coaches, two goods trucks, station, siding, terminus, signal, station fittings and accumulator.
- SECOND PRIZE:** A Two valve Wireless Set, complete with loud-speaker, accumulator, battery and aerial.
- THIRD PRIZE:** Fine £7. 7. Model Aeroplane driven by compressed air, span 6ft., length 3ft. 6in.

107 other prizes, including Fretwork Machines, Silver Watches, Carpentry Sets, Construction Outfits, Model Sailing Boats and Steam Launches, Cameras, Steam Engines, etc., etc.

WHAT YOU HAVE TO DO.

Each of the pictures on this page represents one of the pastimes to be found in the list of words below. Study each picture carefully before filling in your Solution in the coupon. Remember there are 110 prizes and that YOU have as much chance of winning as any other reader.

PICTURE PUZZLE PASTIMES.—LAST SET.



THIRD SET.
Write your solutions very plainly in ink.

17 *Sailing*

18 *Caravanning*

19 *Dancing*

20 *Bathing*

21 *Singing*

22 *Hiking*

23 *Mountaineering*

24 *Punching*

Name.....

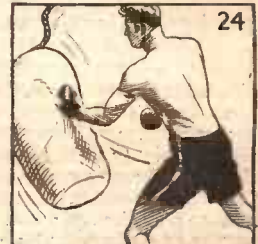
Address.....

All the names of the pastimes illustrated this week are included in the following list:—

- HIKING
- SINGING
- MOUNTAINEERING
- YACHTING
- PUNCHING
- DANCING
- CARAVANING
- WADING
- WALTZING
- COOKING
- TRAMPING
- SAILING
- PUMPELLING
- BATHING
- CLIMBING
- ENTERTAINING
- WALKING
- CAMPING
- ALPINING
- PLAYING



IMPORTANT.
Make a separate list for your own reference of each different set of Pictures for comparing with the correct list of solutions which will be published in "Hobbies" dated November 22nd, on sale November 15th.



YOU MAY SEND AS MANY COMPLETE SETS AS YOU LIKE.

Rules in Last Week's "Hobbies."

After you have filled in all your solutions for this, and the previous two weeks' pictures, fasten each set of three different coupons together. Place in an envelope, write your initials, name and address, plainly on the back of same, and post to reach us not later than Friday, October 24th. You need not send the pictures.

YOU MAY START TO-DAY by obtaining the last two weeks' issues from any Newsgent. or Bookstall, or by sending 2/6. in stamps for each copy required to The Back No. Dept., George Nevnes, Ltd., 8, Exeter Street, W.C.2. (Should either of these issues be out of print, a sheet containing only the pictures will be forwarded instead.)

HOBBIES CARPENTRY OUTFITS

Chisels that cut—Saws that saw
—Hammers that don't flatten out
—They are the tools an amateur
wants but doesn't get in a cheap
foreign set. Hobbies Carpentry
Sets can be relied upon to give
service and contain only practical
tools fit for any workman.

No. 1 Outfit.
Just the thing for
the handyman.
Contains a 10in.
Handsaw, Warrington
Pattern Hammer, 3in.
Chisel, Screw-
driver, 2ft. Folding
Rule, Bradawl,
Gimlet and Car-
penter's Pencil.
Price 7/6
Postage 9d.



EVERY
TOOL
BRITISH

Other Outfits 11/6,
27/6, 29/6, and
45/-.

Ask for Hobbies Sets at the leading Ironmongers, stores or any
Hobbies Branch. By post direct from

HOBBIES LTD., DEREHAM, NORFOLK

COUPON INSURANCE TICKET.

Applicable only within the United Kingdom.

GENERAL ACCIDENT FIRE AND LIFE

Assurance Corporation, Limited,

Chief Offices—

General Buildings, Perth, Scotland.

General Buildings, Aldwych, London, W.C.2.

F. NORRIE-MILLER, J.P.

Director and General Manager.

To whom Notice of Claims under the following conditions must be sent within seven days of accident.

£100 ONE HUNDRED POUNDS will be paid by the above Corporation to the legal personal representatives of any person who is killed by an accident causing material damage to any passenger train in which the deceased was travelling as a ticket bearing or paying passenger, or who shall have been fatally injured thereby should death result within one calendar month after such accident. Provided that the person so killed or injured had upon his or her person, this page, with his or her usual signature, written prior to the accident, in the space provided below, which, together with the giving of notice within seven days to the above Corporation, is the essence of this contract.

This Insurance only applies to persons over 14 and under 65 years of age, is subject to the conditions stated above and contained in the General Accident Fire and Life Assurance Corporation Act, 1907, and holds good for the current issue only.

No person can recover under more than one Coupon Ticket in respect of the same risk.

Signature

This Coupon must not be cut out, but left intact in Hobbies as that, being dated, forms the only evidence of its currency.

The MOST TRANS- PARENT STAIN MADE

Full richness of colour with one coat

SIX SHADES: Yellow Oak, Oak, Fumed Oak, Dark Oak, Black Oak and Mahogany

Use the Natural Grain

for the 'finish' of your next piece of work. It is so easy to bring out the hidden beauties of the wood with 'Colron.' 'Colron' Wood Dye provides the quick and easy way to sure satisfaction. A single coat, wiped out as far as it will go, and there is your chosen colour—bright, transparent, permanent. And in less than 3 hours it is dry—bone dry—ready for wax polishing with 'Ronuk' Floor Polish.

Result: A job you can be proud of—finished in an evening.



COLRON WOOD DYE

The 'Ronuk' Stain
does not
Raise the Grain

A 1/- bottle covers 40 Sq. Ft.

Write for leaflet to

RONUK, LTD., PORTSLADE, SUSSEX

SPECIAL OFFERS.

	Set	d.
1 Barbados 1/-, Script 1924 Mint, Cat. 17/6	4	8
6 Andorra (The Smallest Country)		6
6 Guyana Pictorials (Indian Warriors)		5
6 Kedah (Pictorials)		6
3 Maldive Islands		6
8 Morocco (Pictorials)		8
16 Nyassa Pictorials (Ship, Zebra, Camel, etc.)	1	3
9 Persia (Bi-Coloured)	10	8
6 Spain (Pope and King)		4
6 Spain (Columbus Voyage Commemorative)		8
6 Tanganyika (Giraffe, etc.)		8

3 Belgium, Independence, 1930 (3 Kings)	5d.
10 Greece, Independence, 1930	1/-
13 Italy, Historical, 1930 (Cassa Aeneas, etc.)	8d.
4 Italy, Francesco Ferruccio, Pictorial used	5d.
26 Liberia, 1906, Post and Service	6/6
5 Northern Mongolia, Pictorial	5d.
9 Nyassa, Triangular Stamps	9d.
13 Roumania, Boy King Michael, different	9d.
6 Persia, Air Post, large Pictorial (Flying Eagle)	9d.

PACKETS MAKE IDEAL PRESENTS—ALL GENUINE STAMPS

25 All diff. Air Post	1/6	100 diff. French Colonials	1/-
50 " " " "	3/-	100 " Portuguese	1/6
100 " " " "	7/6	100 " South America	1/6
500 " " Foreign	1/2	250 British Colonials	6/6
1,000 " " " "	3/-	500 " " "	18/6
2,000 " " " "	10/6	1,000 " " "	45/-

FREE.—A Pictorial Stamp, Catalogued 2/- with each order from above list. Postage extra. Approvals against reference.

Callers can inspect fine stock, British Colonials and Foreign, Entries, Colonial and Foreign. Air Mails. Want lists Solicited.

WINGFIELDS

(W), 24, CHANCERY LANE, LONDON, W.C.

BRITISH STAMPS

COLLECT STAMPS OF GREAT BRITAIN
FOR PLEASURE AND PROFIT.

We have the best stock of all issues in British stamps at absolutely the lowest price in the trade. Also stamps of all other Countries.

Selections on Approval.

WANTED TO BUY.

All kinds of collections, rare single stamps, proofs, essays and specimen stamps.

Let us know what you have to sell.

CHAS. NISSEN & Co., Ltd.,
63, High Holborn, London, W.C.1.

HOBBIES

LTD.

BRANCHES & AGENCIES.

Below are the addresses where Hobbies goods can be purchased. In addition all leading stores and ironmongers stock or can obtain your requirements in fretwork and woodwork, designs, wood, turned legs, moulding, polish, wireless accessories, etc., etc.

HOBBIES OWN BRANCHES—

LONDON - - 65 NEW OXFORD ST. W.C.
LONDON - - 147 BISHOPSGATE, E.C.
LONDON - 83 NEWINGTON BUTTS, S.E.11.
GLASGOW - - 326 ARGYLE STREET.
MANCHESTER - - 10a PICCADILLY.
BIRMINGHAM - - 9a HIGH STREET.
SHEFFIELD - - 214 WEST STREET.
LEEDS - 10 QUEEN VICTORIA STREET.
SOUTHAMPTON - 25 BERNARD STREET.
BRIGHTON - 68 LONDON ROAD.
CANADA - 844 YONGE STREET, TORONTO.

HOBBIES AGENCIES—

Aberdeen.—Jas. Mutch, Ltd., 47 Broad Street; Bedford.—Messrs. T. B. Carpenter & Co., 105 Midland Road; Blackburn.—Mr. H. Mercer, 68 Darwen Street; Bradford.—Messrs. T. Underwood & Co., 13 and 15 Manchester Road; Cambridge.—Mr. H. S. Driver, 28 Hills Road; Canterbury.—Mr. T. Goodman, 33 Burgate Street and 16 St. George's Street; Cardiff.—J. Halls (Tools), Ltd., 31 Morgan Arcade; Chiswick.—Messrs. Lucas & Co., 390, High Road; Croydon.—L. H. Turle, Ltd., 6 Crown Hill and 68 North End; Dover.—Mr. E. F. Bockham, 18 Worthington Street; Dublin.—Mr. J. J. McQuillan, 36 Capel Street; Dundee.—Mr. J. Phin, 45 Murray Gate; Folkestone.—Mr. W. Allsworth, 16 & 18 Guildhall Street; Hastings.—Mr. W. H. Mozley, 4 York Buildings; Hull.—Mr. O. F. Walker, 17 and 18, George Street; Leicester.—Mr. Frank Berry, 3 Losby Lane; Liverpool.—Mr. C. Lucas, 33 Manchester Street; London.—Messrs. H. Osman, 166 Aldersgate Street, E.C.; Newport, Mon.—J. Halls (Tools), Ltd., 81 High Street; Reading.—Mr. W. J. Sarjent, 44 West Street; Swansea.—J. Halls (Tools), Ltd., 8 Gower Street; Wigan.—Mr. Thos. J. S. Clephan, 22 Standishgate; York.—Messrs. J. H. Shouksmith & Sons, 132 Micklegate.

HEAD OFFICE & WORKS:
DEREHAM, NORFOLK.

|| **THE CHEAPEST AND MOST SATISFACTORY WAY OF BUILDING UP A COLLECTION IS TO BUY OUR SPLENDID PACKETS BY COUNTRIES.**

This week we are offering the following at specially low prices—

ICELAND 50 different stamps, all in fine condition. Including used and unused. **Price 4/6.**

GREECE 100 different stamps, all in fine condition, including scarce pictorial issues. **Price 3/-.**

ASK FOR OUR PRICE LIST, AND SEND US YOUR WANT LIST.

SEFI PEMBERTON & CO., LTD.,
12, SOUTH MOLTON ST., LONDON, W.1.
(Tel.: MAYFAIR 2780.)

Publishers of The Philatelic Journal of Great Britain, the oldest English stamp paper, now in its fortieth year. Annual subscription, 2/6 post free; single numbers, 2d.

FREE—12 Scarce Stamps

Which are missing from nearly every collection, and include Austrian Field Post (high values), Cuba 1898, unused (scarce issue), Set of 3 Hungary (unusual values), Paraguay Commemorative, Set of Philippine Is. (Boy King), Switzerland (1882 unused), Venezuela (1904 high value). To all stamp collectors sending 1/4d. postage (abroad 2/4d.) I will present this collection absolutely free. Only one gift to each applicant.

G. P. KEEF, Mortimer Lodge, Wimbledon Park, London, S.W.19.

BOYS and GIRLS can earn BIG MONEY

in their spare time simply by distributing cards to their friends. Write for full particulars, stating age, to

SEELIG PUBLICITY SERVICE, Dept. A.1,
123, White Street, Moorfields, E.C.2.



Mark all envelopes containing stamp queries with the word "Stamps" in the top left-hand corner.

THE original conception of a design for a postage stamp embraced only such subjects as were indicative of the national authority. The head of the Sovereign, the Arms of the country, or some national Emblem, were the most usual features. It was many years after the first stamps appeared, in 1840, that any extension of this idea took place, but very gradually it began to be realised that a stamp would perform the same functions whether or not the national insignia occupied the centre of the picture. After 1870, stamps from the more imaginative countries were decorated with pictures which did not, in themselves, seem to guarantee the authority of the State; but they served their purpose, and if there resulted any loss of dignity from substituting the cabbage for the King, it was no doubt felt that there were compensations.

After 1890 decorative stamps increased very much in popularity, and the issue of handsomely produced sets, commemorative and otherwise, became a confirmed habit with many of the smaller countries and colonies. Animals, birds, vegetation, local scenes, historical scenes, ships, and many other objects, flowed in on letters from distant countries, and of these one of the most popular was the "ship," to use the word in its widest sense. As those who go down to the sea in them know, "ships" should only be properly so called if they have three masts and are square-rigged,



Left: Newfoundland ten cents (showing an Atlantic schooner in full sail).



Right: Newfoundland thirteen cents.

Ships on the Stamps of the Empire

By P. L. Pemberton.

Let only the mizzen-mast carry the fore and aft rigging, and your boat is no longer a "ship" but a "barque."

The square rig on one or both masts of a two-masted vessel denotes the brig or brigantine. The schooner may have two, three, or even more masts, but these must be rigged fore and aft; with a square topsail



Newfoundland (Cabot's ship "The Matthew" leaving the Avon).

and topgallant sail on the foremast it becomes a topsail schooner. Such distinctions mean little to the land-lubber, for whom, as a rule, every type of craft afloat is a ship, whether it have mast or funnel, and the special significance of the word "ship" will soon be as extinct as the type itself.

American countries, and islands generally, provide the greatest number of examples, and this is no matter for surprise, since the history of these lands begins only from the day when some adventurous navigator from Europe first cast anchor off their coasts.

From the primitive but works

manlike vessel of the Vikings, and the Carthaginian galley, to the latest type of ocean liner, almost every sort of craft has been shown on stamps. Many have not been drawn with that fidelity to detail which would satisfy the

expert seaman, but taking them all round they are an exceedingly attractive group. The romantic age of the sea is passing, and the spreading canvas has almost entirely given way to smoke and petrol fumes, but the stamp album will always help to remind us not only of the frail craft which served the early adventurers in mapping out the world, but also of the material improvements in the means of communication which have been brought about by machinery.

I may fittingly begin my survey with a description of the several stamps of Newfoundland, our oldest colony, which come in this group. As early as 1866 there appeared the yellow 13 cents stamp, of which a topsail schooner is the main feature. Your landsman sees nothing wrong with this picture, yet sailors aver that the ship is shown sailing with head-sheets to windward. These niceties, however, do not disturb me; I am content to gaze upon a really beautiful stamp. Twenty years later Newfoundland repeated the idea on a 10c. stamp printed in black; the topsail schooner here shown is of a rather more modern type, and regarding this I have heard no adverse criti-



Barbados (showing the schooner "Oliver Blossom.")

Papua (a picturesque craft known as the "lakatoi," a unique trading vessel).



cism. In 1887 a set of stamps was issued to commemorate the discovery of Newfoundland by Cabot and on the 10 cents value is a picture of the good ship *Matthew*, on which Cabot sailed from Bristol on his fateful voyage. Cabot was a merchant born at Bristol of Italian



Turks and Caicos Islands.

parents. A patent was granted to him and his brother by King Henry VII, in 1496, empowering them to "seek out, subdue and occupy, at their own charges, any regions which before had been unknown to all Christians." It was further laid down that a fifth part of the gains of the voyage were reserved to the Crown. Evidently there were no gains, as the laconic entry "to hym that found the New Isle, £10." is found in the Privy Purse Expenses of Henry VII.

John Guy.

The next stage in the history of the island as shown on stamps is marked by the issue, in 1910, of another set, this time to commemorate the three hundredth anniversary of its colonisation by John Guy. This worthy was another Bristol merchant, who was sent out under a patent, granted by James I, to found a "plantation." He sailed from Bristol with the first settlers in 1610, in the *Endeavour*, which is depicted on the 4 cents stamps of the commemorative issue. More than three centuries were bridged by the representation, on a 2 cents stamp, issued in 1928, of a modern steamer, beneath which is the inscription "ss. *Caribou* 9 hours to Sydney, N.S." (Nova Scotia).

The Colony of British Guiana, though on the continent of South America, ranks as one of the West Indies. Nearly all its population is concentrated on the sea-board. It is shut off from the interior by

swamps and jungle, and is so dependent on shipping for communication with the outer world that it has adopted the ship—a real "ship," with three masts and square rigging—as its Emblem. This has been the main feature of the designs of nearly all the issues of British Guiana, and appears on the celebrated 1 cent, magenta, of 1856, of which only one copy exists, and

fig trees from which the name of the island is derived.

A ship with furled sails at anchor, off a rocky coast, features in the design shared by the small colonies of St. Helena and Ascension, but whether this is intended to represent Captain Cook's ship is not known.

Flagship of Columbus.

Many other British colonies provide examples of sailing ships and steamers of every conceivable type, but they are too numerous to mention. Attention should be drawn, among others, to the flagship of Columbus, which is shown on the 2½d. stamp of Grenada issued in 1898. It was in this ship that Columbus first discovered the island. Other good examples come from Turks and Caicos Islands, Dominica, and St. Kitts.

The most picturesque craft of all is that shown on the issues of British New Guinea—the colony which is now known as Papua. This is the *lakatoi*, the unique trading vessel which has been used for many centuries by the inhabitants of the little village of Hanuabada, for trading off their potteries in exchange for the produce of the neighbouring ports and islands. Composed almost entirely of bamboo and matting, these curious canoes have no counterpart in any part of the world. Dug-outs are made for storing the pottery in the holds of the boats, and huts with skeleton bamboo framework, covered with matting, are erected on deck. Sails shaped rather like the claws of lobsters are fixed on frames and swing freely from the masts, to which they are lightly attached. The wind does not fill the sails, as in all other types of sailing ships, but swings them about like rigid boards.

Other outstanding examples of curious ships must be discussed in some future issue.

Do You Know?

That Aitutaki, Penryn and Rarotonga will soon cease to issue their own stamps, and
That a general issue for Cook Islands will be provided for use in all these dependencies?
That the new customs tariff in Australia provides for a duty of 2½ per cent. on stamps, whether sent on approval or not?
That the so-called issue of stamps for Lundy Island has been enriched by three new values?
That these labels have no postal status whatever, and will not be included in catalogues?
That the Irish Free State has in preparation a special stamp to commemorate the completion of the Shannon hydro-electric scheme?

which was sold some years ago at auction to Mr. Arthur Hind, of Utica, U.S.A., for £7,500.

We come back to earth again when we consider the New Brunswick 12½ cents stamp of 1860, which shows one of the earliest steamships. It was in 1838 that the first steamer, the *Sirius*, crossed the Atlantic, and though that pictured on this stamp is no doubt an improvement, it is yet far removed from those of to-day.

Barbados.

Another stamp of most attractive appearance is that issued by Barbados in 1905 to celebrate the third centenary of the arrival of the first settlers. The ship which carried them, the *Olive Blossom*, is shown in the centre, and the frame on either side is composed of bearded



British Guiana.

PRINT YOUR OWN DESIGNS—(Continued from page 127).

Printing from the Blocks.

If you can obtain a sheet of glass, say, about a foot square, it will be useful now for inking purposes. Failing this, any smooth, hard surface will do. On the glass sheet pour a little indian ink, and then run your squeegee roller to and fro to get the ink well flattened out. The real objective here is to get the ink well distributed over the roller. Be sure not to get too much ink on the sheet of glass or upon the roller. A little practice will soon show the exact quantity needed and that is why the experimental printing is suggested. You can always

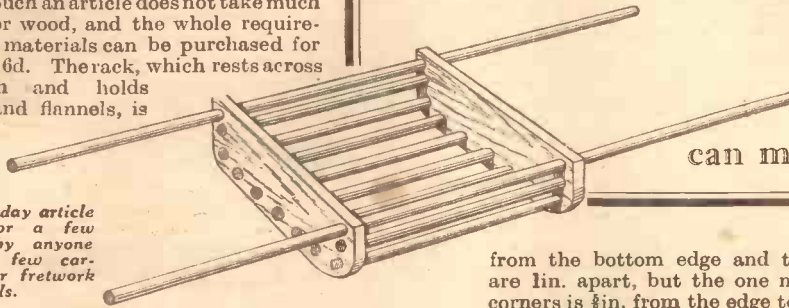
increase the quantity of ink, but it is difficult to get the excess away. The block is laid face uppermost on the table and the roller passed to and fro, firmly yet gently. The coating of ink upon the block should not be too thick, but it must be an even one.

This done, and your sheet of paper ready, turn the block over and press it evenly but firmly upon the white sheet of paper. Avoid moving it in the slightest degree as you press downwards. Then remove it sharply to prevent blurring and your prints should be made.

MOST houses could find a use for the simple bath rack shown herewith, and in consequence any handyman with woodwork tools should set to work to make it. Such an article does not take much in time or wood, and the whole requirements in materials can be purchased for about 1s. 6d. The rack, which rests across the bath and holds sponges and flannels, is

A SIMPLE BATH RACK

Any boy can make it



An everyday article made for a few pence, by anyone with a few carpentry or fretwork tools.

composed of a number of pieces of round rod, known as dowel rod, held by two pieces of wood which form the ends of the basket. These two pieces are cut from $\frac{1}{2}$ in. wood—plain deal, or oak, or sycamore being equally suitable. Each piece measures 8in. long and 3in. wide, and can therefore be cut from a single board 8in. by 6in.

The Rods required.

The other requirements are lengths of $\frac{1}{2}$ in. dowel rod, and all of it can be cut from five of the 3ft. lengths in which it is supplied (at 2d. a length) by Hobbies, Ltd. The length of the completed article as shown is 2ft. 3in., which is wide enough for a full-size bath. If, however, it is a smaller one, the rack can be proportionately shorter. The measurement of the bath (about half way down its length) should, therefore, be taken before commencing work. Providing the bath is full size, two rods 2ft. 3in. will be required for the longest supports. The actual basket rods can be made the same length, however, whatever the size of the bath. We shall require nine pieces measuring 10in.—that is, three cut from each of three 3ft. lengths.

Marking off the Wood.

Cut off all the lengths of dowelling as stated, and then rub down with sandpaper to take off any projecting shivers. Next prepare the two basket ends by marking on them the curve in the bottom corners and the eleven holes for the rods. The diagram at Fig. 1 shows how to set out the work. The corner curve has a radius of $\frac{1}{2}$ in., and the holes have their centre on a line $\frac{1}{2}$ in.

from the bottom edge and the two ends. The holes are 1in. apart, but the one nearest each of the round corners is $\frac{1}{2}$ in. from the edge to form the shape. Having marked out the wood, the curve is cut with a fretsaw or bowsaw, and the holes drilled with a brace and $\frac{1}{2}$ in. bit. Remember to drill the hole from one side only until the bit point is peeping through. Then turn the wood over, use the hole for the centre and drill the hole from that side. Thus you will get clean holes without broken edges.

Finish with White Enamel.

To fix the parts, find the centre of both long pieces of rod, measure off 5in. either way. Make a pencil mark, and slide on the pieces of wood so the outside face is just against the pencil mark. Glue in place, and run a fine nail through into the dowel to further fix it. Put the nine 10in. lengths through the remaining holes, and fix with glue. See that the ends of the rods are flush with the rest of the wood by sandpapering all the

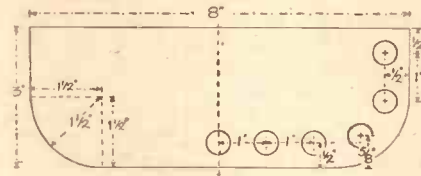


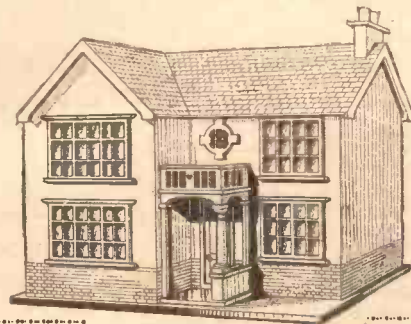
Fig. 1.—The shape and various dimensions are seen on this diagram of the ends.

ends level. The rack is now complete, and can be left with the wood in its natural state, or treated with an even coat of white enamel, which will withstand the heat and steam of the bath water.

The fellow with a box of tools can make this DOLLS' HOUSE

With next week's HOBBIES we are going to give every reader the opportunity of making the modern practical dolls' house illustrated. It is perfectly straightforward and all the patterns necessary are shown full size on the chart. Any fellow with a box of fretwork tools can make it, and it is surely just the thing for Christmas for some little pal who will be delighted with it. It stands 22in. high, and has two rooms and a hall downstairs with two rooms and a landing above. The whole of the back of the model takes out so that the dolls' furniture can be fitted. What an ideal toy to make up; what an excellent gift you will get!

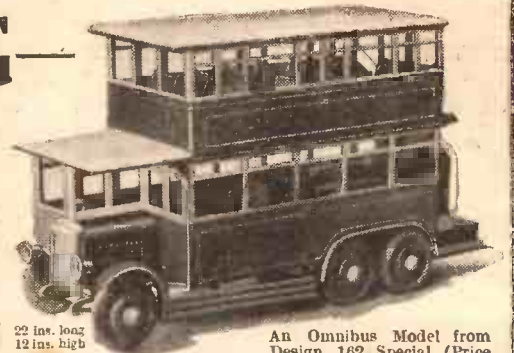
A free design of parts next week



MODEL MAKING—

IN WOOD FROM HOBBIES CHARTS.

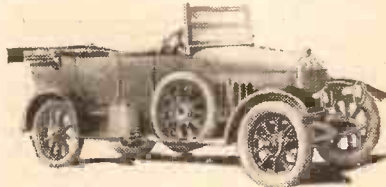
A fascinating pastime for any fellow. A set of Hobbies Fretwork Tools and Designs provide hours of enjoyment making accurate and realistic models. Built to scale, true to life, simply made from full-size patterns and special fittings. These are but three of the motor-car models which any keen worker can build.



22 ins. long
12 ins. high

An Omnibus Model from Design 162 Special (Price 9d.). A complete parcel of planed boards, axles, rubber tyres, glass, handrails, lamps, etc., for 17/- (Postage 1/-).

- AEROPLANES
- LOCOMOTIVES
- COACHES
- CRANES
- BIG WHEEL TRAMCARS
- WINDMILLS
- DOLL'S HOUSE



A Four-seater Tourer from Design 151 Special (Price 9d.). A complete parcel of wood, axles, five tyres, lamps, etc., for building this model for 5/3 (Postage 6d.).



16 ins. long.

This handsome Saloon Car from pattern on Design 124 Special (Price 1/6). Built in satin walnut from a parcel including wood, lamps, hinges, door handles etc., 10/6 complete (Postage 1/-).

Call at any Hobbies Branch and ask for further particulars or send 14d. stamp for an illustrated Book of Models you can make. Write to Dept. H 4,

HOBBIES LTD., DEREHAM, NORFOLK

THE BEST BOOK FOR COMPETITORS

Have YOU seen the "King's English" Dictionary? If not, you can examine one Free. Amongst other things this wonderful book contains the following: Definitions of 150,000 Words, English Literature, Humanised Geography with World Maps, Famous Men, World History, Wireless Telephony, Aviation, Motoring, Correct Speech, How to Write English, Names and Place Names, Bible Names and Places, Scottish Glossary, Foreign Phrases, Commercial Terms, Synonyms and Antonyms, Picture Teaching.

"F. B., Hendon," writes:— 16/9/30.
I beg to acknowledge the receipt of your "King's English Dictionary," and to proffer my profound thanks for same. There can be little doubt that this magnificent book is worth every farthing of its price.

Fill in the Coupon below and examine the book for five days FREE.

POST COUPON TO-DAY.

BRITISH BOOKS, Ltd., 86, STRAND, LONDON, W.C.2.

Please send to me the KING'S ENGLISH DICTIONARY (New Ed.), on approval, for 5 days' FREE examination. I will return it on the sixth day; or, if I decide to purchase, I will remit a First Payment of 2s. 6d., and ten further monthly payments of 3s. to complete the price of 32s. 6d.

Name

Address

Date.....H. 173a.

Assets exceed
£13,000,000



Claims Paid:
Over £45,000,000

"EVERYTHING in Life has its COMPENSATIONS."—(Emerson.)

Yes, but EVERY PERSON "in Life" should have a Policy to provide the "COMPENSATION"

IN THE

GENERAL

Accident, Fire and Life
ASSURANCE CORPORATION, LIMITED,

whose Policies cover every contingency.

Chief Offices:

GENERAL BUILDINGS, PERTH, SCOTLAND.

GENERAL BUILDINGS, ALDWYCH,
LONDON, W.C.2.

F, NORIE-MILLER, J.P., F.E.I.S.,
Director and General Manager.



Let Your Editor Help You. Address your letters and queries to The Editor, "Hobbies," Geo. Newnes, Ltd., 8-11, Southampton Street, Strand, London, W.C.2. All letters and queries must bear the full name and address of the sender.

IT is quite evident that the new HOBBIES has caught on. The most tangible evidence of this is the fact that we were completely sold out within two days of our publishing date! Repeat orders by telegram, telephone, and by post poured in from all parts of the country, but, unfortunately, we were not able completely to satisfy the demand in spite of the enormous number of copies we printed. A second piece of evidence, just as tangible and certainly more weighty, is the mass of letters of congratulations (hundreds of them!) which we received from serious hobbyists all over the country, and the further masses of queries from readers who wish to take advantage of our free-advice-to-readers' service. In spite of the diversity of interests evinced by these letters, my staff were able to send replies to the hundreds of questions set within a very short time. This free advice forms a strong part of our policy. Whatever subject you are interested in, when a snag crops up write, and leave the rest to me.

Building a Model Airship.

VAST strides have been made in the construction of airships; but it is a singular fact that little has been done with model airships. I have, therefore, put in hand for early publication an article explaining how to build a model airship. It will be elastic-driven and capable of long flight. More about this next week.

Fun on the Fifth.

THAT is the title of an article in next week's issue, which tells you how to arrange a firework display. The information given will enable you to arrange quite an effective show, and is planned to suit all pockets.

Your Last Chance!

YES! Your last chance of winning one of those 110 splendid prizes is on page 128 of this issue. The prizes and the competition staff are waiting. See that your entry is sent in without delay. If you were

unable to obtain copies of Nos. 1 and 2, wherein the first two sets of pictures were published, reprints of those particular pages are available by sending 2d. for each issue required to Back Number Dept., George Newnes, Ltd., 8, Exeter Street, London, W.C.2. And if you don't win this time, make up your mind that one of those to be offered in our next competition, starting shortly, is to be earmarked for you.



Using Glue.

W. A. T. (Lingwood) finds that on large pieces of woodwork the glue rapidly chills and fails to make a good joint. The remedy here is first to warm the woodwork and to apply the glue quite hot.

Making a Model Airship.

J. T. (Cardiff) wishes to build a model airship, and desires to know what size envelope he will require for a model weighing about 3lbs. Ordinary hydrogen is capable of lifting 70lbs. per cubic foot, so J. T. will require a model with a cubic content of 42 cubic feet. Elastic is quite suitable as motive power for model airships. For the envelope, gold-beater's skin should be used. This is a membrane prepared from the intestines of the ox, which gold-beaters lay between the leaves of the metal while they beat it.

Cleaning Polished Furniture.

A good solution for this purpose, B. N. D. (Weybridge) is made by dissolving a teacupful

of washing soda in a gallon of warm water. Immerse a piece of soft flannel in this solution, apply some powdered pumice-stone, and rub the piece of furniture in one direction.

Repairing Gramophone Sound-Boxes.

F. D. (Peckham) wishes to repair the diaphragm of his gramophone sound-box, which is cracked where the stylus is attached. Hold the sound-box with its diaphragm in front of the fire until the wax forming the attachment is melted, and then let it cool off. This will absolutely cure any screeching sound caused by the crack. In reply to a further question pure castor oil should be used for lubricating your gramophone motor. The average table speed of a gramophone is 78 revolutions per minute.

Preserving Eggs.

Waterglass is used, N. H. (Newcastle), for preserving eggs. Allow half a gallon of water to boil and cool off, then add a pint of water-glass and immerse the eggs.

Care of the Cycle Chain.

W. H. (Wraybury) desires to know the best method of lubricating a cycle chain. Place the chain in a metal vessel containing paraffin, and heat it slowly for ten minutes, then remove it from the paraffin bath by means of a pair of pliers and immerse it in a tin of vaseline. The chain being hot will cause the vaseline to penetrate through the rollers of the chain.

Repairing a Cracked Fountain Pen.

W. L. (Liverpool) wishes to repair a crack in the barrel of a fountain pen. This repair may be effected with ordinary rubber solution guided into the crack with an ordinary pin.

Who Has Made Most Airships?

The Zeppelin Company, A. T. F. (Alder-shot) has made more airships than any other. The *Graf Zeppelin*, which is the latest of the series, bears No. 118. It is 772ft. long, its diameter 100ft., and its volume 3,708,600 cubic feet; it can carry a load of 14 tons. Its maximum speed is 80 miles an hour.

Distance of the Horizon.

An observer on the seashore, W. A. T. (East Dulwich) whose eyes are 5ft. above sea level can see the horizon 3.16 miles distant, whilst from a cliff 100ft. high, the visible horizon is just over 14 miles distant.

Cement for Broken China.

You may repair the broken china dishes, D. H. (Yarmouth) with the following cement, which will stand hot water and ordinary usage. Mix a teaspoonful of alum in a tablespoonful of water, and place in a hot oven until quite transparent. Wash the broken pieces in hot water, dry them, and put them in the oven until warm. While they are still warm coat the broken edges thinly and quickly with the mixture. It sets instantly.

Removing Rust Spots from Cloth.

Place the affected part of the cloth in a saucer containing a mixture of one part of hydrochloric acid and three parts of water. After the rust spot disappears the cloth must be thoroughly rinsed out in soda water. This information is required by H. C. (Rochampton).

Loosening Tight Nuts.

Several methods, J. F. (Porlock), are available for loosening tight nuts. The most effective method is to squirt some paraffin over the nut and apply heat from a candle or blowlamp. When hot the nut will yield to the application of a spanner. If the nut is so situated that heat cannot be applied without spoiling adjacent parts, try lightly tapping each of the six faces of the nut with a hammer. This should result in the nut spinning off. If these methods fail, saw through the nut and open the sawcut with a cold-chisel and hammer. It may then easily be unscrewed in the ordinary way.

Advertisements are accepted for these columns at the rate of 1d. per word, prepaid.

SALE AND EXCHANGE

Address communications to the Advertisement Manager, "Hobbies," Southampton Town, Strand, London, W.C.2.

CINEMATOGRAPH FILMS. Machines, Accessories. Lists Free, Sample Film. Is.—Filmeries, 57, Laucaster Road, Leytonstone.

CONCERTINAS. Piano Accordions, Jazz Gramos., Mandolins, Violins, Banjos, Uke-Banjoes. All musical Instruments. Lists. Terms or Cash.—Vickers, Royal Hill, Greenwich.

GRAMOPHONES. Latest Horns and parts. Catalogue free. Cash or terms. Build £12 model for £3. Instructions 3d.—C. H. Burt, 185, High Street, London, S.E.8.

£2,000 worth of good, cheap photo material and films. 12 x 10 Enlargements, any photo or film, 8d. Samples Catalogue Free—Hackett's, July Road, Liverpool.

MAKE Money Picture Framing, Tray and Furniture Making. Grand Guide and List. Post Free 6d.—Watkins Provider, Newport, Mon.

BE TALLER!! Write—Ross, Height Specialist, Scarborough.

STANDARD CINEMA FILMS. Machines, Cheap. Lists.—Wayland, 100, Kenlor, Tooting.

ART.—MAKE MONEY if you sketch; write for free booklet. Art Studios, 12, 13, Henrietta Street, Strand, W.C.2.

ENGINEERING BOOKS. Booklet Free.—Bentley's Publishing Co. (Dept. H.), Halifax.

COMMON WOOD made to look exactly like genuine Mahogany, Oak, etc. Just use our Transfer Graining. Samples and Booklet 6d.

WOOD INLAYS. Why Not? Easy. Inexpensive. Postcard brings particulars. W.D. Axon, Jersey, England.

VENTRILOQUISM. Quickly Learned. Home, Anyone. Particulars, H. Thompsonco, Colwyn Bay.

FREE FUN. Ventriloquist's Instruments given free to all sending 6d. P.O. for latest Magic Trick and Catalogue.—H. Thompsonco, Colwyn Bay.

LEARN to Write Advertisements and earn from £5 to £20 per week.—Unique offer to those writing at once for our book "Advertising as a Career."—Dixon Institute of Advertising (Dept. 55), 195, Oxford Street, London, W.1.

STAMPS.

YOU can't collect Stamps successfully without "Stamp Collecting" (weekly). Specimen free from Publisher.—15, St. Bride Street, London.

STAMPS FREE! Twenty Unused Colonials "Neurope."—G. H. Barnett, Limington Somerset.

FREE Set 14 Ukraine Perforation Gauge and Stamp Mounts. 11d. Postage. S. Wackett, 242/4, London Road, Mitcham.


WHOLESALE PRICES. Lists Free. Turnings, Wringer Rollers, Bedstead and Furniture Fittings, Assembling Sets, Fully Finished Furniture. Edwards, Ingham Street, South Shields.

VACANCIES. Hobbies Club, Workshop. Inquiries, 51, King Street, Glasgow, C.5.

CASTING MOULDS for Lead Soldiers, animals, etc. Catalogue Stamp. Industries (below).

"WOOD TOYMAKING." A Practical Handbook, with 180 Illustrations of Effective Toys, 1s. 6d. posted. Industries, 13, Gordon Avenue, Twickenham.

You



need wood and polish for your woodwork needs. Let Hobbies supply them—good value—reasonable prices—sound material. Tools and accessories for the woodworker seen in Hobbies 288-page 1931 Catalogue. Price 9d. at any newsagent.

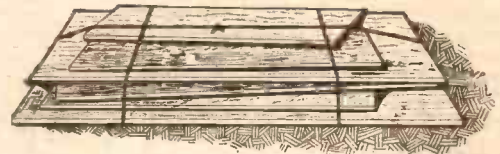
THE AMATEUR'S FRENCH POLISH



A french polish specially prepared for the amateur. A child can use it. Professional results guaranteed. Gives a polish to any natural wood. A complete outfit, with rubber, polish, sandpaper, and full instructions.

HOBBIES' LIGHTNING POLISH OUTFIT. Price 4/- Post 6d

A sample bottle, rubber and instructions. Price 2/- or 2/4 post free. Of all leading ironmongers. Hobbies Branches in London, Glasgow, Manchester, Birmingham, Sheffield, Leeds, Southampton, Brighton.

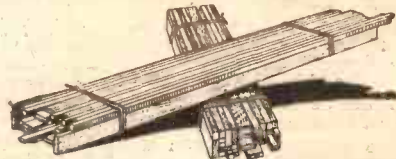


PARCELS OF PLANED FRETWOOD

You always need fretwood. Here are two special parcels of sound quality boards. The timber is supplied planed both sides in popular thicknesses and varying width. Lay in a stock now—this is the cheapest way to buy.

6ft. Assorted Wood 9ft. Assorted Wood
3/16in. thick .. 3/- 3/16in. and 1/4in. thick .. 4/6

Postage 9d. extra on each.



STRIPWOOD FOR MODELS

Stripwood is ideal for blocking fillets, stretcher pieces, etc., as well as for model making and toy construction. It is useful on lots of occasions and sold in bundles of planed strips 2ft. long. An assorted bundle of 50ft., 2/6. Post free 2/10½.

Write for particulars and free lists to Hobbies Ltd., Dereham, Norfolk.



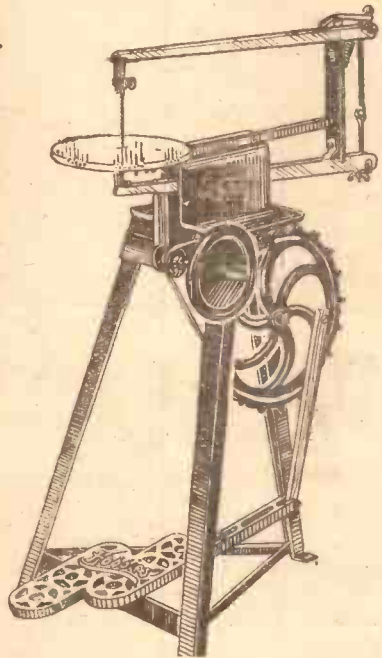
Why not spend your spare time profitably?

**THE 'POPULAR
A1. FRETMACHINE**

A serviceable machine for any woodwork up to 1in. thick. Long arms allow large work. The treadle is comfortable and easy; special spring grips hold the saw-blade tight. Work is done from an ordinary chair, and the machine is built of steel to be rigid and firm. Supplied ready to use, in a crate, with spare blades, designs, running instructions, spanners, etc. Side wings, as illustrated, 4/6 extra.

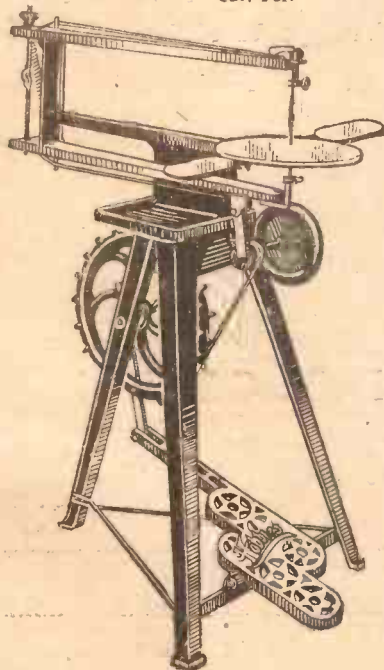
50/-
Car. For.

These machines will earn any handyman a useful amount of pocket money. They provide a factory at home for any worker in wood—Toys, Puzzles, Furniture, Gramophones, Musical Instruments, Models—practical articles for everyday use. Or why not make your own presents for Christmas? The cost of the machine will save you money on your gifts.



**HOBBIES GEM
MACHINE**

A new pattern machine incorporating latest improvements. A light steel frame makes it easily transportable. Bright metal arms which need no adjusting. New style of saw grip provides instant tensioning of the saw-blade. Easy running. Well balanced, supplied ready to use with accessories as the A1. **35/-** Car. For.



**HOBBIES
Woodcraft
MACHINES**

**READY TO USE.
A FACTORY AT HOME
FROM 35/- to £20.**

EASY PAYMENT TERMS.
The A1. is obtainable for 5/- down and 20 weekly payments of 2/6. Pay as you earn money with it. Write to Easy Payment Dept., Hobbies Ltd., for particulars of terms and an Order Form of simple conditions.

See the machines at Hobbies Branches, 65 New Oxford St., London, W.C.; 147 Bishopsgate, E.C.; 83 Newington Butts, S.E.11; 326 Argyle St., Glasgow; 10a Piccadilly, Manchester; 9a High St., Birmingham; 214 West St., Sheffield; 10 Queen Victoria St., Leeds; 25 Bernard St., Southampton; 68 London Rd., Brighton.

Hobbies, Ltd., Dereham, Norfolk

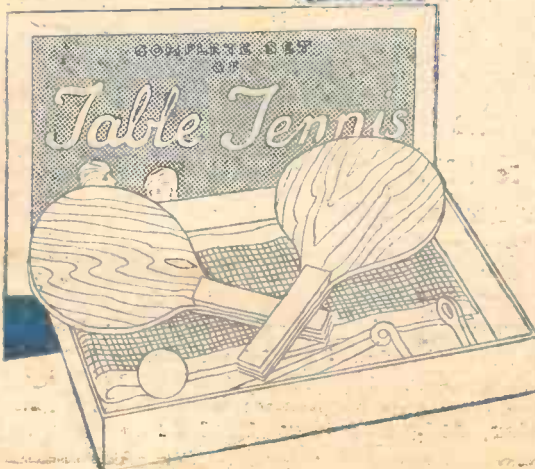
TABLE TENNIS SET



FREE!

Here is the game for winter evenings! A game that all the family can play. Table Tennis! A complete set containing two bats, ball, net and table fittings! And it's free! Forty-five coupons from Nestlé's Chocolate bring it to you. Only forty-five coupons required, and you'll find a coupon in every block, carton and 2d. wrapped bar of Nestlé's Chocolate. Start collecting your coupons to-day!

This offer does not apply to the Irish Free State.



NESTLÉ'S CHOCOLATE

5 FREE COUPONS

To Nestlé's (Gift Dept.), Silverthorne Road, Battersea, London, S.W. 8

Please send me 5 FREE COUPONS and the Nestlé's Presentation List. 79/25.10.30.

Name.....
IN BLOCK LETTERS

Address.....

1d. Stamp sufficient if envelope is unsealed.