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MECCANO MAGAZINE

WINTER SUNSHINE

6d.

FREE £10 IN CASH PRIZES WAITING TO BE WON

Follow Michael and Monica in their adventures, and fill in the missing words.

THE SPY-CLISTS.

"That's to-night," said Monica. "What on earth does it mean? Is Miss Skinner the —(1)—?"

"No," said Michael thoughtfully, "because the —(2)— came by parachute. Is Auntie Mary *certain* she saw the new schoolmaster come off the train?"

"No," said Monica, "She only —(3)— it must be him. Do you mean *he's* the spy?"

"Looks like it," said Michael, "And Miss Skinner's helping him."

"Of course," said Monica excitedly. "Don't you —(4)— she said the school house had been —(5)— over by the R.A.F.? It must be some of their —(6)— he's going to steal. What are we going to do?"

Michael looked up at the sky. "It'll be dusk very soon. You get on your B.S.A. and ride to the police station and tell Sergeant Bailey what we've —(7)—. I'm going to watch the school house to see that the spy doesn't escape. If he does I'll follow him on my B.S.A. and —(8)— white paper signals at cross roads to show the police which way he's gone."

When Monica had ridden off to the police station Michael got on his B.S.A. and rode to the school house, where he kept watch —(9)— behind a hedge.

All you have to do is to supply the 9 words which have been left out of the story. Write each one against the proper number in spaces provided on this form. Fill in your name, address, and date of birth, cut out, paste on the back of a postcard (Postage 2d.) and post to B.S.A. Cycles Ltd., Missing Word Competition, Dept. M.5, Small Heath, Birmingham, 11, to be received not later than Jan. 1st. 1944. There are 3 prizes of £5, £3 and £2 for the best and most apt sets of answers. If two or more entrants tie for any one or more prizes, the prize or prizes will be divided equally between those entrants. Not more than one solution may be submitted by an entrant. The competition is limited to boys and girls under the age of 15 on the 1st December, 1943. The decision of B.S.A. Cycles Ltd. is final and no correspondence can be entered into. Names of winners will be published later in this paper.

Name.....

Address.....

.....

Date of Birth.....

And don't forget to get your parents to put your splendid new B.S.A. Bicycle on order for you. They're scarce because of wartime, but you'll get your B.S.A.—if you're patient.

BSA THE BICYCLE YOU CAN'T BEAT

(M.5)

ENTRY FORM No 5

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CHRISTMAS GREETINGS TO ALL MY READERS!—From the EDITOR

MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

Vol. XXVIII
No. 12
December 1943

With the Editor

Two Years of "Pocket" Size

This issue brings us to the end of the second year of our "pocket" size, and I feel that on the whole we have not done so badly. In spite of the small number of pages available, the regular features have been kept going and the special articles have covered a wide range of interesting topics. That is my view; now I want to know the views of my readers.

The most interesting and valuable letters an editor receives are those in which readers express their likes and dislikes about the contents of his paper. I receive many letters of this kind, but not enough. So I now ask every reader to take his pen in his hand and tell me in his own words three things—what he likes in the present "*M.M.*"; what he doesn't like; and what changes he suggests. These letters will be of immense help to me next year in planning features and articles that will appeal to the thousands of readers in the British Isles, the Dominions, India, the Colonies, and every place to which the "*M.M.*" continues to find its way in spite of war conditions.

Now, readers all, don't let me down. Get busy with those letters!

Air Marshal Sir John Cotesworth Slessor, K.C.B., D.S.O., M.C.

Leaders in the War

Air Marshal Sir J. C. Slessor

Air Marshal Sir John C. Slessor was born in India in 1897, and educated at Haileybury. In 1915 he joined the Royal Flying Corps and served in France, in Egypt, and in the Sudan. He was mentioned in despatches, wounded, and awarded the M.C. In 1921–2 he served in India, and afterwards held a succession of important home appointments, including three years as commander of No. 4 Squadron. In 1935 he made his second visit to India, and for a time commanded No. 3 India Squadron, Quetta. He was mentioned in despatches and awarded the D.S.O.

Back in England in 1937 he became Director of Plans at the Air Ministry, and gave up this post in 1941 to become head of 5 (Bomber) Group, R.A.F. He returned to the Air Ministry late in 1942, as Assistant Chief of the Air Staff (Policy). Last Spring he was appointed to his present job of Air Officer Commanding-in-Chief, Coastal Command, in which capacity he has been largely responsible for the great success of the R.A.F. in defeating the U-boat menace.

Motor Cars that Run and Swim

The Jeep in Service

BY this time most of us are familiar with the jeep. This strange looking car, in which the passengers appear to be perched on top rather than to sit inside, seems to be capable of climbing any hill and making its way through any rough country, with or without roads. Thousands of jeeps have been manufactured in the United States. They are now to be found in all theatres of war, and have certainly earned the official name of General Purpose War Truck. This is usually indicated by the initials G.P.W.T., the first two of which have been brought into use in a shortened form to give the now familiar "jeep."

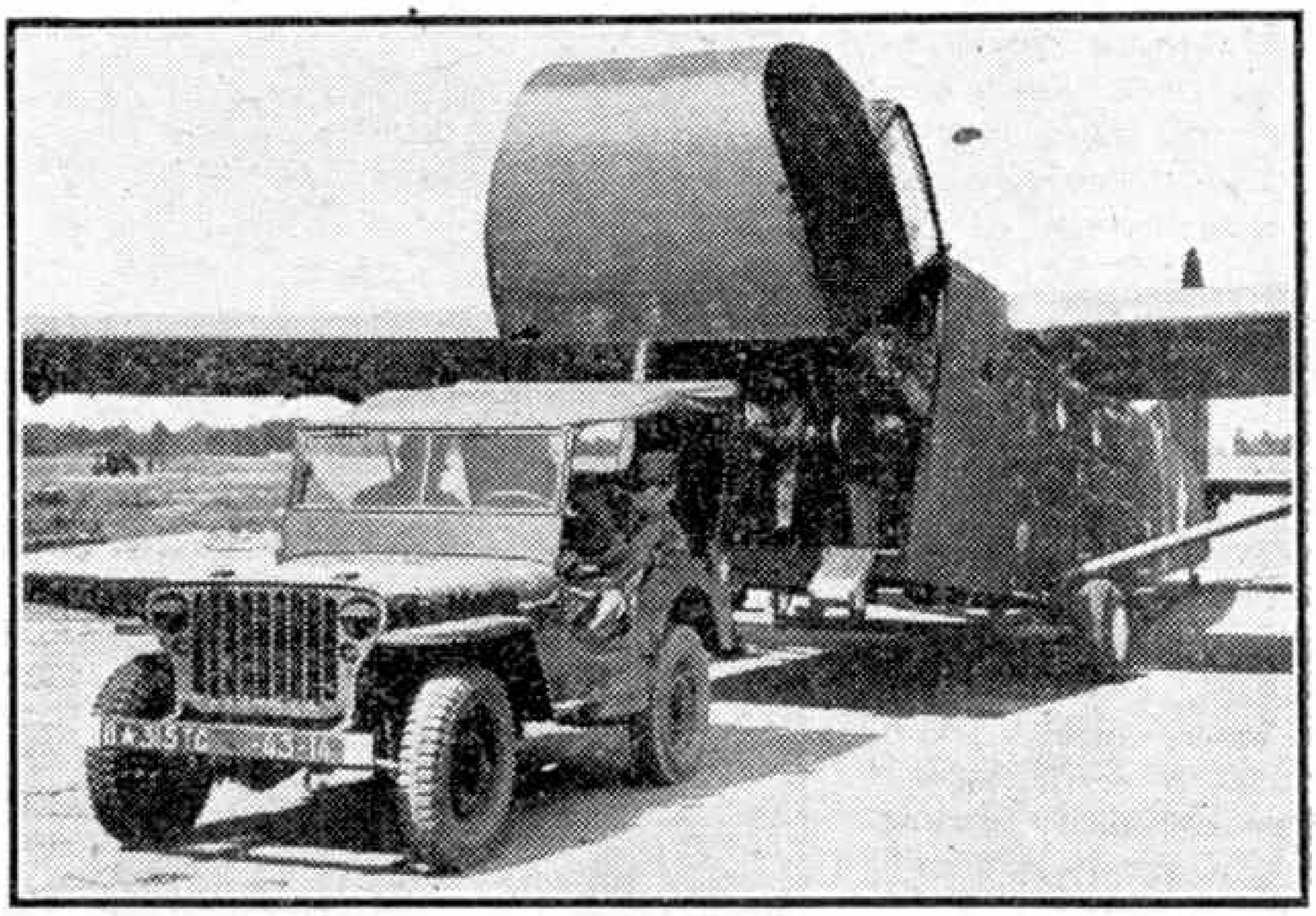
The jeep is small, its wheelbase being only 6 ft 8 in. but it has a large and powerful engine for its size and weight, and it is provided with a front wheel drive that allows it to grip the ground with enormous power on slopes as steep as 1 in 3, or even 1 in 2, which it climbs steadily and without fuss. The body is remarkably simple, with low sides. The headlamp housings are incorporated in the metal work of the bonnet, and while there are wide mudguards over the front wheels, there are none over the back wheels, the overhanging bodywork being shaped to serve in this capacity itself.

The engine has four cylinders, with side valves, and is of 2199 c.c. capacity. The nominal h.p. is 15.6, but the engine is capable of producing 60 b.h.p. at a speed of 3,600 r.p.m. The highest "permissible" speed on the road is 65 m.p.h., and the jeep cruises along easily and comfortably at 50 to 55 m.p.h.

The front wheel drive of this remarkable little car is not always necessary, and indeed is not engaged for ordinary running, the gears provided by the ordinary box being sufficient. In this there are three forward gears and one reverse, but in addition there is what is called a transfer gear-box, which has two levers, making three gear levers in all for the driver to handle. One of the two transfer bear-box levers provides supplementary high and low gears, and as these can be used in conjunction with each of the gears in the normal gear-box, the effect is to provide six forward gears, a sufficiently wide range to cover all requirements. The second lever is used to bring the front wheel drive into action, when steep slopes have to be encountered, or when the surface conditions call for the extra grip and driving power. How effective this drive is can be gauged from the fact that a jeep can be extricated under its own power from mud reaching to the top of the wheels. Even bomb craters offer no real obstacle to its passage, for in low gear with its brakes applied it can run safely down almost any slope and its enormous power will bring it out of the crater, provided of course that it is not faced with something in the nature of a precipice. It can also be driven safely through water if the depth of this is not unreasonable. The chief difficulty that has to be allowed for is the splashing of water on to vital engine parts by the cooling fan, and with this in mind the fan belt is made easily detachable, so that the fan can be put out of operation when water splashes have to be negotiated.

Altogether the jeep is a powerful handy car, running well in almost any condition. As if this were not sufficient it has now been transformed into a boat, capable of all the usual jeep performance on land and able also to cruise on water at about 10 knots while carrying five men. So fitted the vehicle can ford a river, navigate a lake and even operate in seas that any boat of comparable size can negotiate.

Our illustrations show this amazing development and it is easy to realise from them that the miracle has been performed by enclosing the jeep itself in the hull of a boat, with only the wheels projecting. The sea or amphibious jeep does not look out of its element on land, in spite of its boat-shaped form, and the only additional complication for the driver is the greater overhang of the vehicle at each end, in comparison with the normal jeep. This means that a little extra care has to be taken in negotiating bends and corners. In the water it looks decidedly at home, with ventilators on its deck, and a hood that can be raised to give protection from water splashing over it. The engine is automatically sealed off from water penetration when waves or rough water break over the bows.



Making ready to back a jeep into a Waco glider after raising the binged nose. The tail of the glider is lifted so as to bring the short ramps to the ground.

The Ford engineers who designed this swimming jeep have introduced many ingenious contrivances. The hull is built complete and independently of the chassis. It is of light weight, welded to give strength and to make it watertight at the seams where the panels are joined. At the same time it is suitable for mass production, and a new frame or hull can be fitted as easily as a new body can be put on a lorry. The design is such that not only can a normal type of chassis frame be retained, but the controls are identical with those of the ordinary land jeep, and on plunging into water the steering wheel continues to be used in exactly the same way as on land.

In the water the drive must be transferred from the wheels to the propeller, which is housed in a recess at the back of the body in order to protect it from possible damage. The transfer is made through

Sea jeeps on land. These vehicles are motor cars and motor boats in one, and on the road or in rough country are as capable as the ordinary jeep.

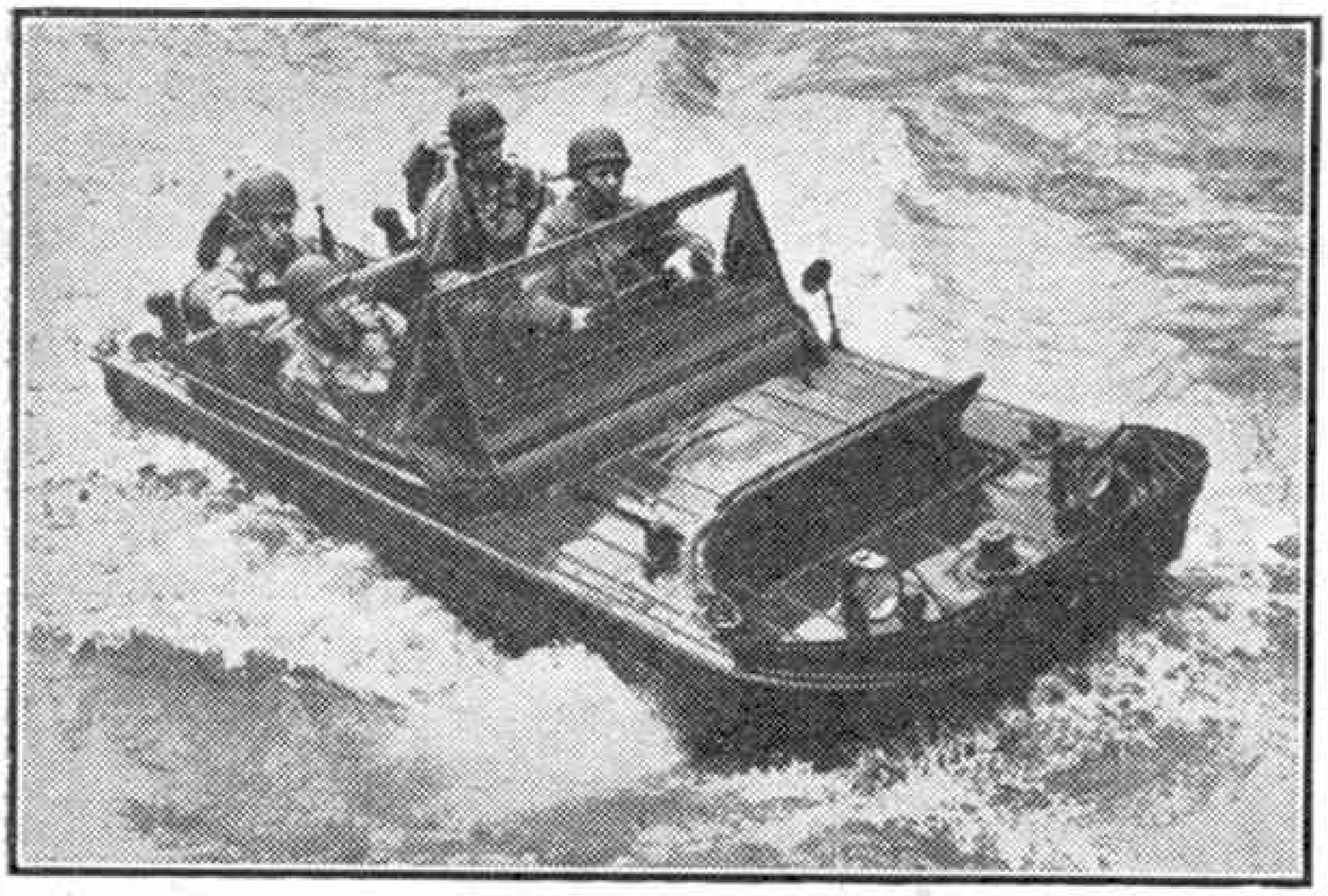
yet another supplementary gear box with two levers, so that the driver of the amphibious jeep has five levers to play with. One of the two additional levers is for the water-propeller drive, and the other is used for bringing into action the bilge pump, which gets rid of any water finding its way into the hull. The development of a satisfactory bilge pump that is self-priming, that is capable of working immediately it is switched into action without having water poured into it, was a very important part of the task of designing the sea jeep. The pump installed is light in weight. Its controls are conveniently placed and it is easily accessible for repairs and service. Front wheel drive is engaged before the water is entered, to enable the vehicle to deal with the wet and muddy conditions. The water propeller shaft is also engaged, so that the propeller is ready for work immediately the jeep floats. When this happens the drive to the bilge pump is engaged, and the gear lever for the wheel drive is put into neutral. It is said that some drivers leave the road wheels turning in the belief that they help the jeep along by acting as paddle wheels.

Leaving the water is as easy as getting into it, operations with the gear levers being carried out in reverse order. There may be special difficulty at times, when the banks are steep and very muddy, so that even the four wheel drive does not give sufficient grip, but this has been provided for. On the boat there is a powerful little winch, and all that is necessary is to take a rope from it to the shore, pass it round a convenient tree or post and back to the boat. The winch is then put into operation and the jeep is steadily hauled out of the water, ready for running on the roads immediately. The brakes are then wet and ineffective, so that they should be dried out. If a jeep driver is in a hurry, and in war operations he usually is, he just drives on and applies the brakes from time to time, in order to dry them by making use of the heat developed by their friction with the brake drums.

The wonderful jeep appears to be capable of doing everything but fly. It can be flown, however, and Waco gliders built on mass production lines by the Ford Company are capable of carrying a jeep and six men in addition to two pilots. A special feature of this glider is its hinged nose, which swings up to allow a jeep, a tractor or a gun to be run up a folding slope into the glider itself, the tail of which is lifted to bring the nose down to the ground for this operation. Other aeroplanes also are capable of transporting jeeps by air to any place where they are needed, for instance a Douglas transport machine, the jeep running under its own power up ramps leading into the body of the machine.

Giant Waco gliders are now being built on mass production lines by the Ford Company, and two-way radio sets fitted to the jeeps enable their crews to guide fighters and bombers to the attack after the little scout cars have been landed from the aircraft in an advance position. This is but one example of what the development of the gliders and of the jeeps will eventually mean. It is as easy for an amphibious jeep to be carried by glider as one of the land variety, and thus lack of bridges or fords is no handicap to advance parties taken forward in this manner. These little craft can also be carried on board ship. When lowered over the sides they can make the shore under their own power, and as they are armed with light cannon they are formidable offensive craft and certainly the most versatile unit developed during this war.

In building Waco troop-carrying gliders the parts are glued together in specially designed fixtures, in which there are networks of rubber tubing that are in contact with the joints. The tubing is linked to the heating system of the building, and swells as it is heated, the combined pressure and high temperature reducing the drying time for the joints from six or eight hours to 10 min. Other new methods have considerably hastened production of the gliders.

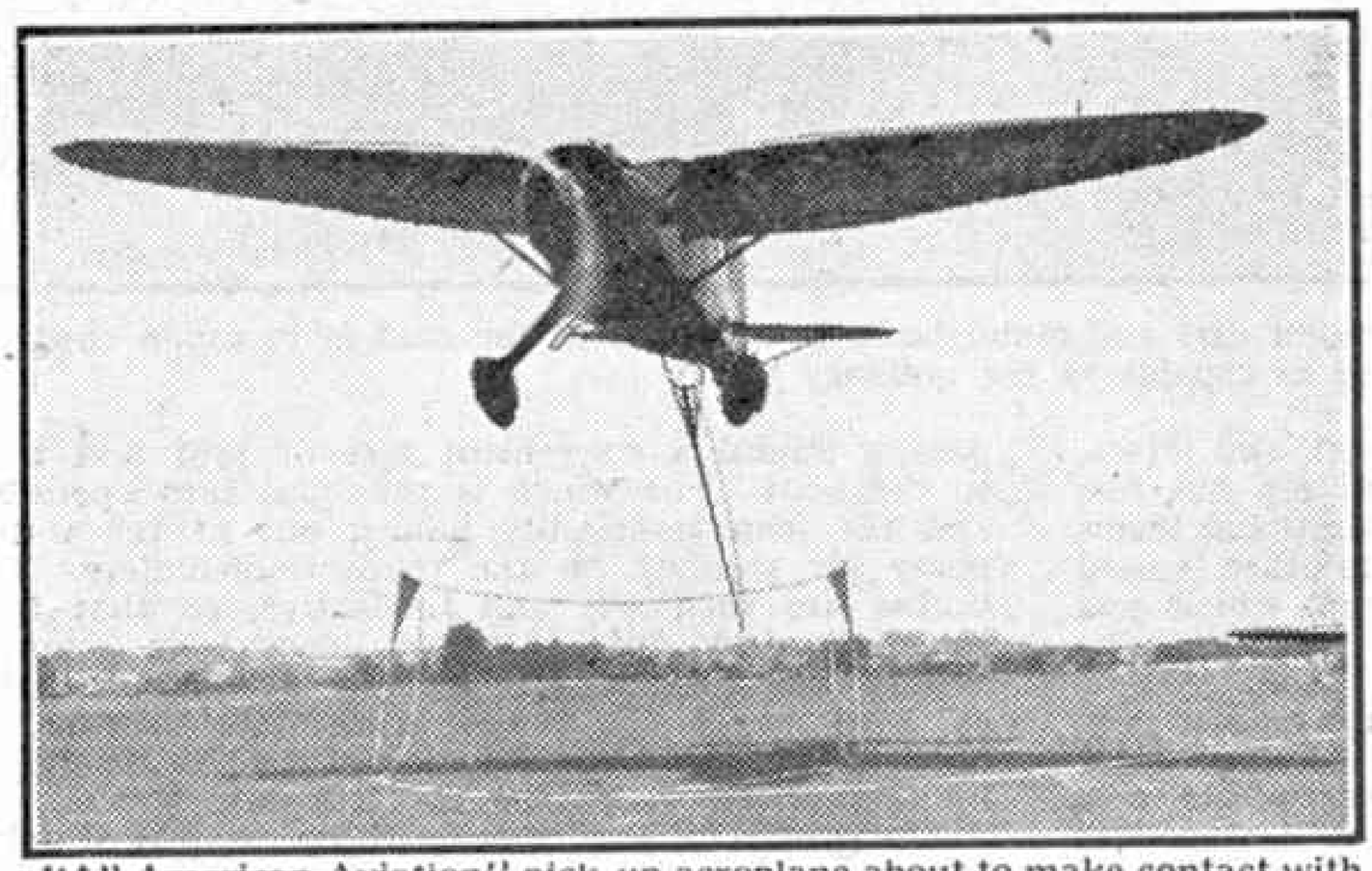


The sea jeep afloat. It can readily cross rivers, and lakes, and can negotiate seas that can be used by ordinary boats of comparable size.

American Pick-Up System for Army Gliders

By Michael Lorant

PICKING up gliders from the ground by an aeroplane flying at more than 100 miles per hour has just been successfully demonstrated at the U.S. Army Air Forces Material Center, Wright Field, Dayton, Ohio.



"All American Aviation" pick-up aeroplane about to make contact with glider tow-line suspended between ground station poles.

Using the pick-up system, gliders can be picked up from a stationary position on the ground by an aeroplane in flight and towed until they gain sufficient altitude to be released by the glider pilot. The aeroplane then circles and makes another pick-up of a waiting glider. In this way, gliders can be picked up at the rate of about one every three minutes.

The equipment used at Wright Field was designed by "All American Aviation" for picking up light gliders, and the demonstrations so far have been limited to gliders of this type.

The inauguration of the non-stop glider pick-up system will greatly simplify and speed up an important phase of the new programme of training glider pilots urgently needed by the U.S. Army Air Forces, by eliminating the need for an aeroplane to take off every time a glider is taken aloft for a training flight.

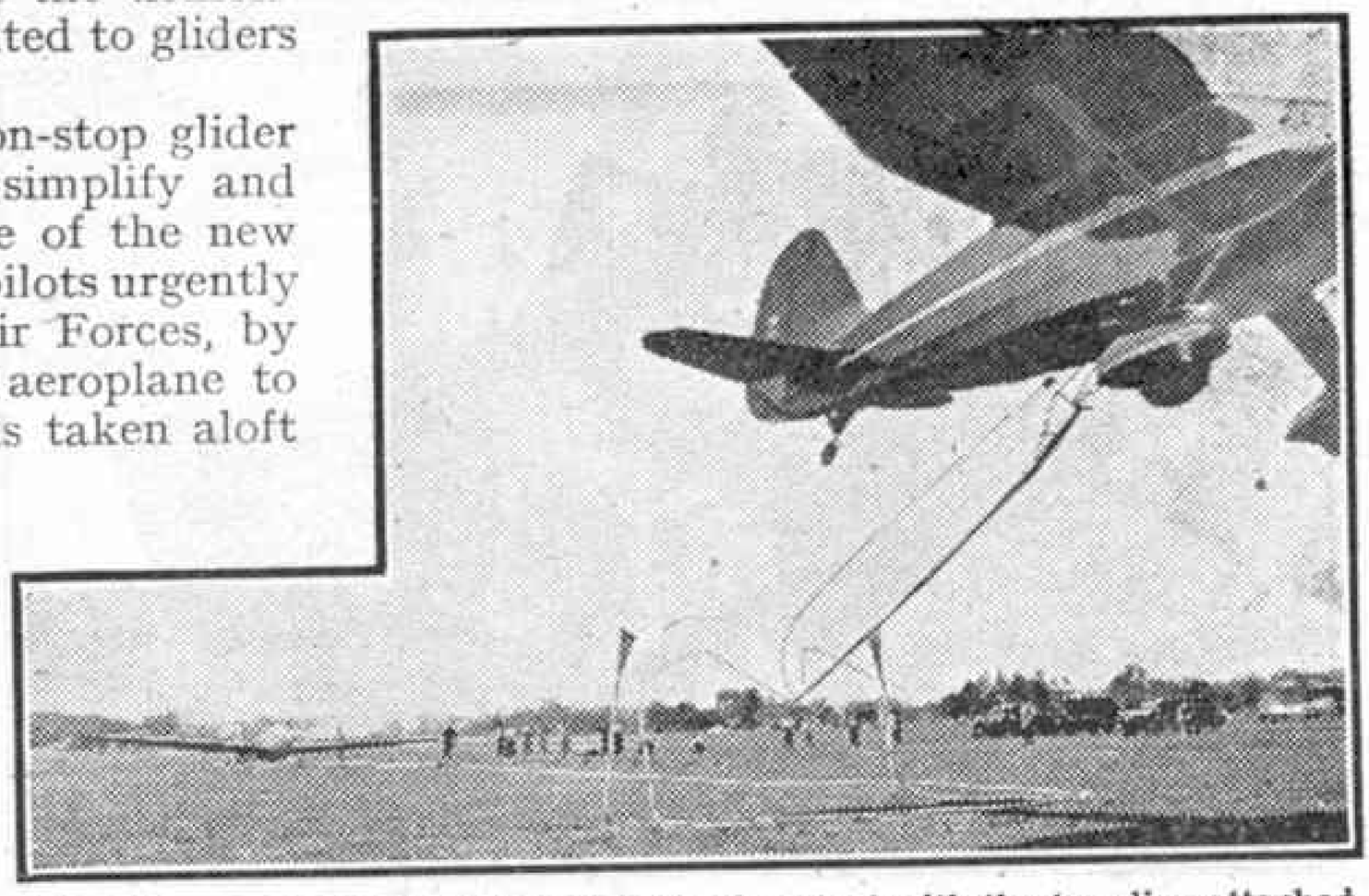
The glider used in the Wright Field demonstrations was an XTG-3, and the pick-ups were made by a Stinson light monoplane.

At the controls of the glider during the first non-stop pick-up was Colonel F. R. Dent, U.S. Air Corps, Chief of the Experimental Glider Unit at Wright Field, who expressed himself as being entirely satisfied with its operation.

Under the pick-up system the glider is placed about 200 ft. behind two uprights, between which a tow-line is placed. Inside the cabin of the aeroplane that is making the pick-up is a revolving reel, equipped with a built-in brake that carries a tow-line cable and the grapple-hook.

The tow-plane comes in, and as it approaches the pick-up ground station the pilot levels off much in the same manner as he would in making a landing, except that his speed is greater, anywhere from 95 to 120 miles an hour. He lowers the pick-up arm and the hook at the end catches the suspended tow-line. At the moment of contact, with the aeroplane from 12 ft. to 14 ft. from the ground, the cable reel inside the aeroplane is permitted to spin freely to pay out additional tow-cable to cushion the initial load imposed by the dead-weight of the glider on the ground. Some of the shock is also taken up by the tow-line itself, which is made of mylon to give maximum strength with great resilience.

Gradually the reel-brake is applied, the glider accelerates smoothly, and by the time the speeding tow- (Cont. on page 430)



The pick-up aeroplane at the moment of contact with the tow-line attached to the waiting glider.

Have You Ever Thought About This?

How is a Railway Train Stopped?

"WHAT makes a train go?" This is a common enough question and one that most boys, and certainly most "*M.M.*" readers, can answer reasonably well. Probably not so many could answer equally well the question "*What makes a train stop?*" Their first thought would be to say that the driver puts on the brakes. Quite a good answer as far as it goes, but how does he put on the brakes, and how do they work?

These are questions worth answering, for our safety when travelling depends very largely on the brakes, quite apart from the fact that they provide the only satisfactory means of pulling up a train at the exact place at which passengers wish to get out. Trains would be liable to crash into the buffers at larger terminals, or to overrun the platforms at wayside stations, if they were not provided with good brakes. Yet we seldom think about brakes until they are put on violently when we are standing up pulling down baggage from the racks and are thrown on to the unfortunates seated opposite, or perhaps when they tell the world they are there by squealing or grinding.

Let us look a little further into this braking question. Somehow the wheels of a train have to be prevented from turning when the train has to be stopped, and the best way to do this is to press something on to them. The "something" applied to each wheel is the brake block, which is pressed on the tread to make it harder for the wheel to turn, and eventually to stop it altogether. The same thing happens in a motor car, only there the brake blocks press, not on the treads of the wheels, which would waste rubber and would give rise to other troubles, but on special drums fixed to the wheel centres. Most of us know how these are applied. The driver pulls a lever or presses a pedal, and an array of cranks, rods and levers then moves the brake blocks in the desired direction. Cranks, rods and levers are there in the brake mechanism of a train, but the engine driver does not himself pull a lever or press on a pedal. It is easy to stop a motor car weighing perhaps 30 cwt. that way, but it would need a Samson to tackle the job of pulling up a train weighing hundreds of tons if he didn't get help from somewhere.

How the driver is helped to apply the brakes is a really interesting story. His assistant is nothing, literally nothing, for the type of brake that is used almost as a standard throughout Great Britain makes use of an automatic vacuum. To be strictly accurate, the vacuum helps by holding the brakes off while the train is running, obligingly getting out of the way when required so that the brakes can be applied.

This sounds mysterious, but is easy to understand. The array of rods and levers from each set of brake blocks works back to a piston in a cylinder. A vacuum is maintained by means of an ejector or a pump driven by the engine, so that the piston is continuously kept at the bottom of the cylinder. When it is in this position the levers and return springs hold off the brakes. All that the engine driver has to do to apply the brakes then is to let air into the vacuum system, the result of which is to push the piston up its cylinder, a movement that through the connecting levers applies the brakes.

The brake blocks themselves can easily be seen, and another part of this ingenious arrangement also is visible. This is the connection between the train brake pipes of adjoining coaches, which consists of flexible hose protected by a spiral wrapping of metal wire inside a canvas cover, forming a sort of armour. Special coupling arrangements are made so that the end of the train brake pipe of one coach can be securely fitted to that of the next. This is important, for no air must leak into that brake pipe, which is continuous from the front of the engine to the guard's van at the tail. If it did the effect would be the same as if the engine driver let air in; that is, the brakes would go on and the train would stop.

An accident to a brake pipe, such as the breaking of a coupling or of a length of flexible hose, would stop a train, for then air would enter and the brakes would be applied. This seems like asking for trouble. Actually it is the reverse, for a moment's thought will show that it is no bad thing at all that a train should stop if something goes wrong. Another interesting point is that if a train breaks in two, so that the couplings part, then both the portion under the driver's control and the remaining part will stop. In fact each separate coach would be pulled up if all broke loose. So the automatic vacuum brake is a splendid safety measure, ensuring that there will be no runaway sections of a train in the event of an accident.

The engine driver wishing to apply the brakes does not simply open the train pipe to the air. Instead he turns the handle of his brake valve, which gives him control over the rate at which air will enter, so that he can brake a little or brake hard, just as is needed, and a gauge tells him what degree of vacuum there is in the brake system. The guard can do the same, because he too has a brake valve and a gauge, but he only uses his valve in emergency.

There is another way of letting air into the train pipe, but it is rather a costly one. We often hear people wondering how the communication cord or chain that stretches temptingly across the ends of the compartments can bring a train to a stop. The answer is that when the chain is pulled down the train pipe is opened sufficiently to allow air to enter to make a partial application of the brakes. The driver feels this, and sees his vacuum gauge go down, and can then do what is necessary. One thing that he or the guard always does is to go down the train looking at the ends of the coaches, for on these are indicators that tell him in which coach the chain has been pulled. He then goes through the compartments until he sees the chain pulled down—it can't be pushed back to its ordinary position—and unless there has been a sound reason for pulling the chain the end of the story is a fine of £5 or so and costs for somebody. This way of stopping a train is not to be recommended.

This is not the whole story of the braking of railway trains. Many engines and tenders are fitted with steam brakes, in which the piston in the brake cylinder is moved by means of steam pressure. Release of the steam and the action of return springs takes the brake off. In the case of engines that haul continuous-braked trains, either passenger or fast goods, matters are so arranged that the application of the steam brake to the engine synchronises with the effective action of the vacuum brake on the train merely by the operation of the driver's brake valve. The driver does not have to operate each brake separately.

Another system that is standard in many countries, including the United States, is the Westinghouse compressed air brake, in which compressed air is admitted to the brake cylinder to move the piston. In this case the train pipe is full of compressed air, and the brakes are applied, not by letting air leak in, but by letting the compressed air leak out. There is an ingenious triple valve on each coach that together with a compressed air reservoir makes this possible, and another very important result of its use is that the brakes would be applied immediately if the train pipe were broken by any means, just as in the case of the vacuum brake. So with a compressed air braked train too there can be no runaways.

Sydney Camm, creator of the "Hurricane."

The Hawker "Hurricane"

By J. W. R. Taylor

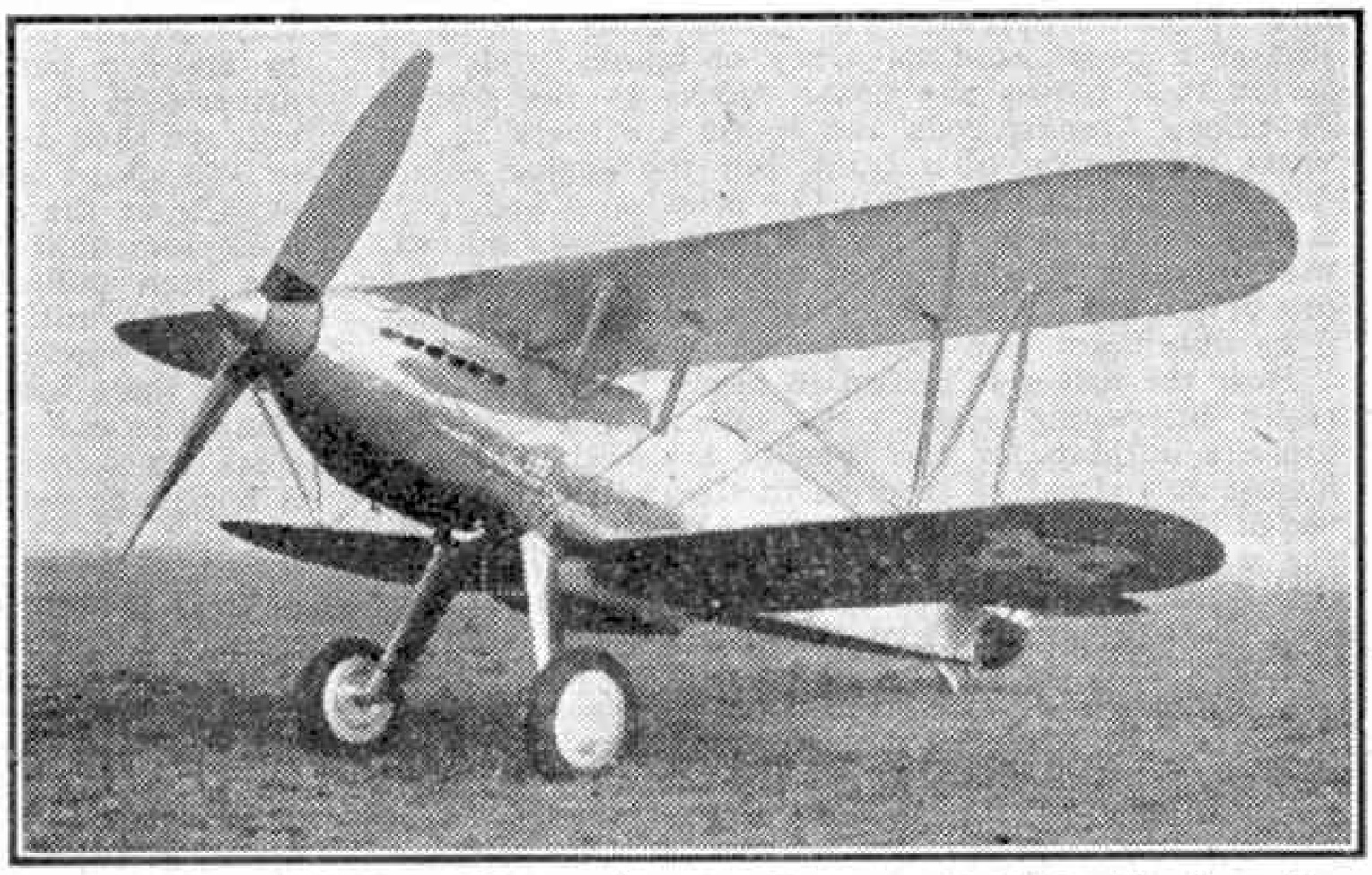
THIS is the story of the greatest fighting aeroplane that the world has ever known—the Hawker "Hurricane."

Although it lacks the glamour of the faster and more beautiful "Spitfire," its companion-in-arms, the "Hurricane" has built up for itself a record that is unlikely to be surpassed by any fighter in this war. During the Battle of Britain in 1940 "Hurricane" pilots destroyed more aircraft than the total number shot down by all the other types in that Battle—"Spitfires," "Messerschmitts," "Defiants," "Junkers," and the rest. Even to-day, with the "Hurricane" no longer in the first-line fighter class, the R.A.F. Squadron with the largest number of Huns to its credit is equipped with these aircraft,

To discover the reason for the phenomenal success of the "Hurricane," we must go back to the last war. One of the first British fighter machines was the fast little Sopwith "Tabloid," which went to France with the Royal Flying Corps in 1914. The "Hurricane's" descent can be traced back in a direct line to that aeroplane, for the Sopwith Aviation Company after its voluntary liquidation in 1920 emerged as the H. G. Hawker Engineering Company, which was to become Hawker Aircraft Ltd. in 1934.

Many of the greatest single-seat fighters of the 1914–18 War were designed and built by Sopwith's. Who has not heard of the "Pup," and the "Camel," the most successful single-seat fighter of the Great War in spite of the fact that it was very tricky to fly.

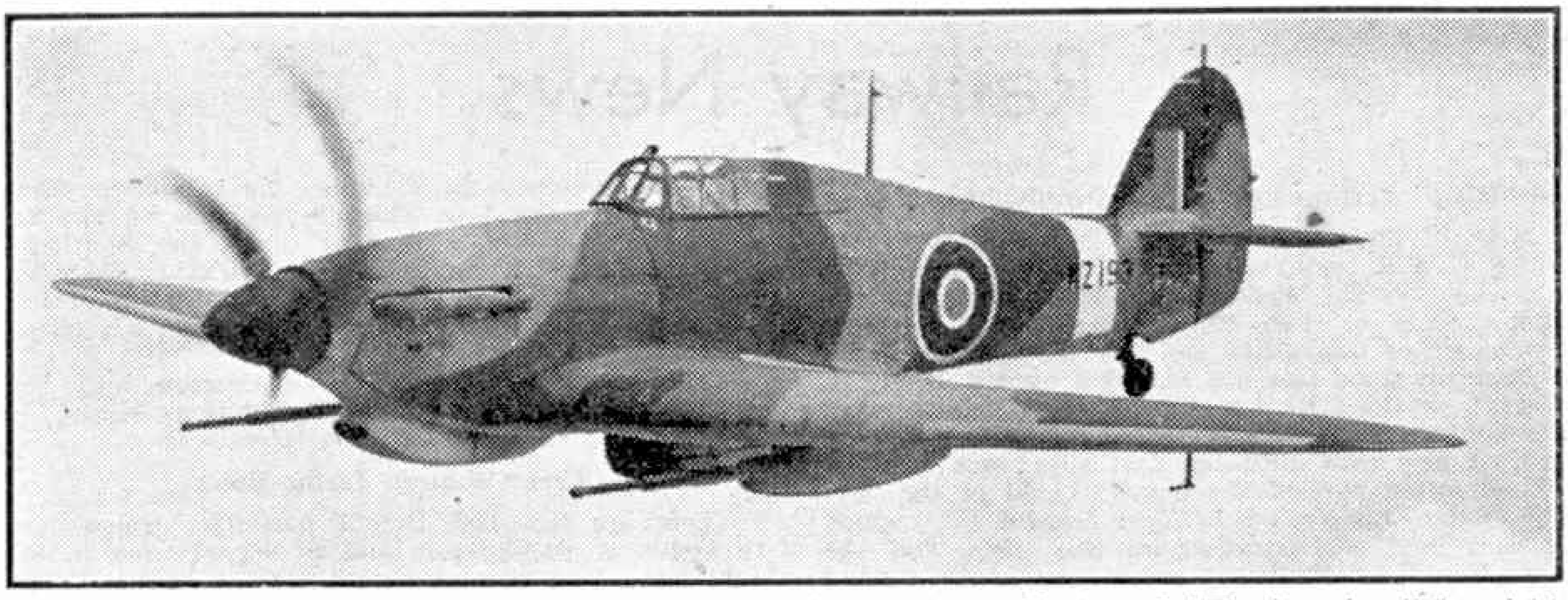
In the days of peace that followed 1914–18 many fine aircraft appeared to carry on the traditions established by the "Pup" and "Camel"—the Hawker "Woodcock," "Heron," "Hawfinch" and "Hornbill," each supreme in its day. Then in 1929 an aeroplane made its appearance that was to set the world a new standard in fighter design. At first named the "Hornet," this type went into production as the "Fury." It was a beautiful machine in every way. Fast—it was capable of well over 200 m.p.h.—its sleek silver form thrilled spectators at aero shows throughout the world for eight years. It was a delightful machine to fly, as can be realised from the fact that three of these aircraft, tied together, carried out a perfect display of aerobatics at one of the R.A.F. Air Pageants at Hendon. "Furies" were sold to foreign governments all over the globe, including



Hawker "Fury" fighter. The version seen here was built for the Jugo-Slav Government. This photograph and the lower one on the next page are by courtesy of Hawker Aircraft Ltd.

Iran, Spain, Portugal, Yugoslavia, Iraq, Norway, and China.

But Sydney Camm, Hawker's Chief Designer, realised that the days of his fast, beautiful biplane were numbered. While other firms were content to go on building biplanes he decided to start work on a monoplane fighter. The first drawings



Hawker "Hurricane" IID "tank buster" showing the two 40 mm. cannon. Photograph "The Aeroplane" Copyright.

showed a very neat low wing monoplane with a fixed, spatted undercarriage. It had an enclosed cockpit and was to be fitted with the 660 h.p. Rolls-Royce "Goshawk" engine. When Rolls produced their sensational new P-12 engine, however, Camm at once realised that this was the engine of the future, and so the "Hurricane" was the first aeroplane to be specially designed for the engine that we now know as the "Merlin."

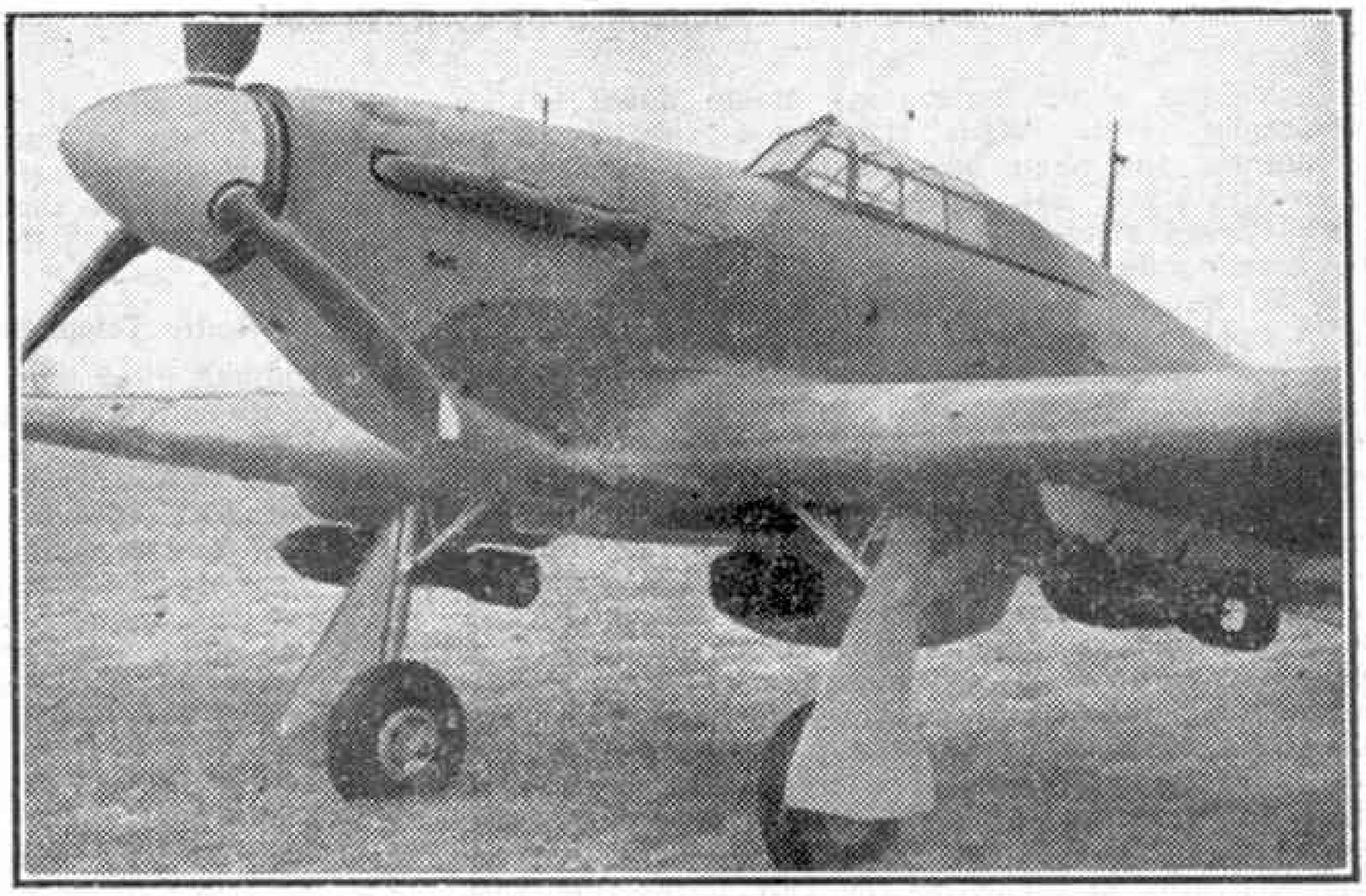
The "Hurricane" first flew in 1935. It had by that time acquired a retractable undercarriage, and its appearance, resplendent in polished silver cowling and silver dope, created a sensation at Brooklands. It flew perfectly from the start, and it was soon obvious that in the "Hurricane" Hawkers had produced a world beater.

And so the first low-wing monoplane eight-gun fighter of the Royal Air Force went into production in 1936.

In 1938 Squadron-Leader Gillan demonstrated to the world the capabilities of the new aeroplane when he flew from Edinburgh to Northolt at an average speed of well over 400 m.p.h. Although the flight was assisted by a northerly wind it was a remarkable performance for a standard operational aircraft.

When the War started in 1939 "Hurricanes" formed the spearhead of the R.A.F. Wing in France, where they were highly successful and soon proved themselves superior to Germany's best fighters. Flight-Lieut. (Cobber) Kain flew a "Hurricane" and became the first "ace" of this war. Later, during the Battle of Britain, the "Hurricane" was still England's foremost fighter and went from success to success. The first fighter-pilot to win the Victoria Cross in this war, Flight-Lieut. Nicholson, was flying a "Hurricane" at the time. Other famous "Hurricane" pilots are Bader, Whitney Straight, Malan, and Stanford-Tuck.

Although no longer a first-line fighter, the "Hurricane" is still going strong as a "tank buster," fighter-bomber and night-fighter, and is at sea on our aircraft-carriers helping to win the Battle of the Atlantic. When the day of the final offensive dawns the "Hurry" will still be there, in the forefront of our armies, to finish the job it started so well four years ago.



Bomber version of the "Hurricane," with a 250 lb. bomb slung under each wing. Now two 500 lb. bombs are carried.

Railway News

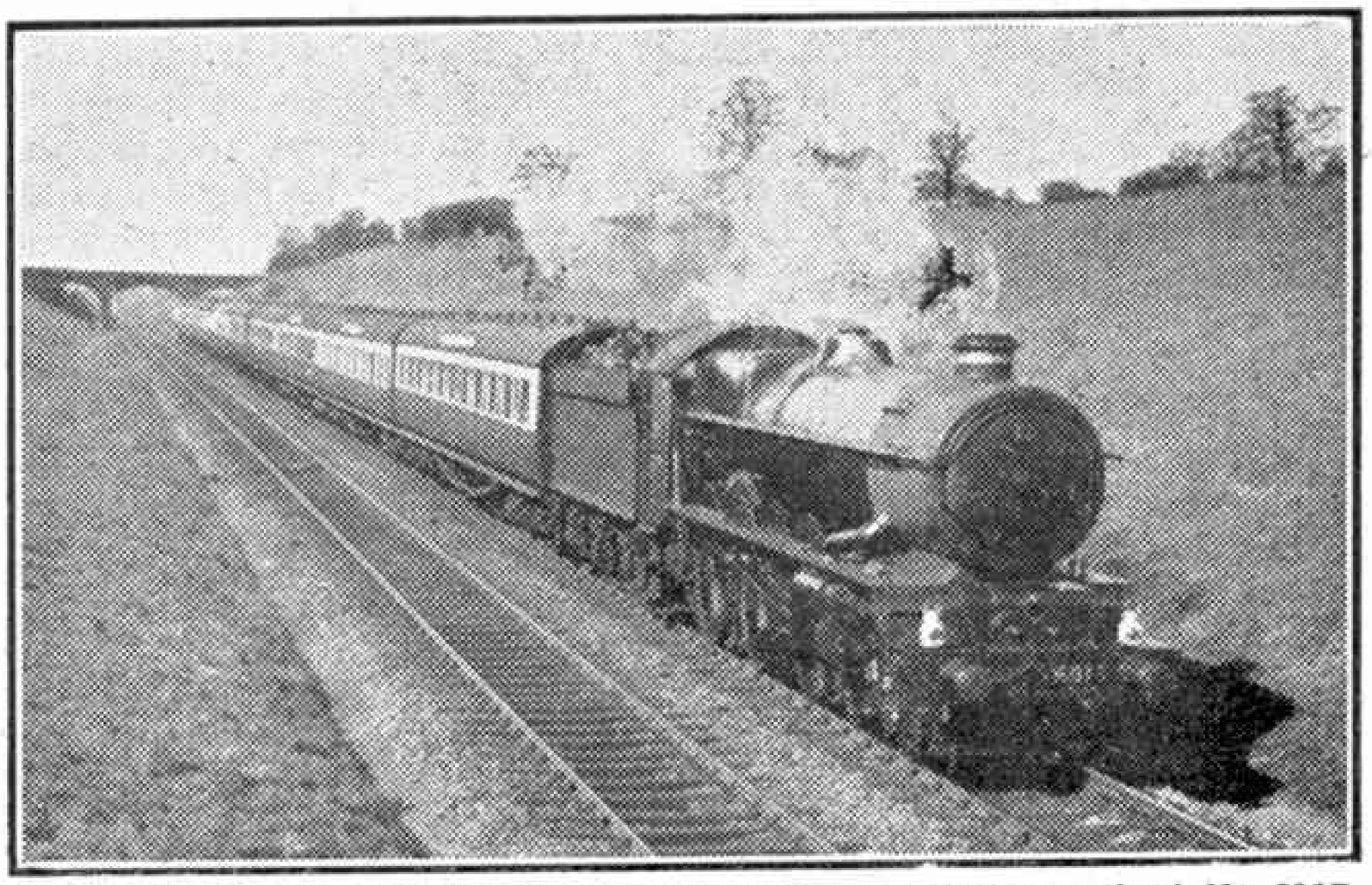
"King" Performance on the Birmingham Line

Some of the finest work done by the "King" class 4–6–0 G.W.R. express locomotives in normal times was seen on the Paddington-Birmingham expresses making one or two stops, as the road presents a number of difficulties and the timings were fast. A typically good run was recorded by Mr. R. A. H. Weight on the 6.10 p.m. down, which had to reach Birmingham in two hours with a Leamington stop and, at any rate until the first slip coach was detached, often carried the heaviest load of the day. The engine was No. 6017 "*King Edward IV*," which appears in the illustration on this page, and the start from London was a minute late with a good 405 tons behind the tender.

After branching off the main line to the West at Old Oak, speed worked up to 64 m.p.h. beyond Denham and was maintained at 54–55 up the 1 in 175–254 past Gerrards Cross. This was followed by a maximum of 68 under easy steam down to the Wycombe level. With the usual caution High Wycombe, the chair town, was passed in 31 min. from the start, 26½ miles, allowed 30 min. On a very curved stretch, which is immediately followed by a four-mile climb, mainly at about 1 in 170, all but 50 m.p.h. was averaged to the summit. The tight booking of 39 min. to pass Princes Risborough had been exceeded by nearly 2 min., but fine travel now ensued through rural country. Following a downhill maximum of 75 before Haddenham, a slack to 53 was made over Ashendon Junc. and then 60 was maintained over the 1 in 200 of Brill hump, rising to 74 before Blackthorn on 1 in 200 down.

Slipping a coach at Bicester, in the heart of Oxfordshire, reduced the gross load to about 383 tons and the next 3 miles at 1 in 200 up to Ardley were surmounted at a minimum only fractionally below the mile a minute rate, so that Banbury, 67½ miles, was passed at 64 m.p.h. in 71½ min., the allowance being 71 min. The second slip portion of two vehicles dropped off the tail there brought the total train weight down to 325 tons. There was no difficulty now in regaining the min. late start and the arrears noted when passing Banbury, as the final 19¾ miles to Leamington Spa, allowed 20 min., actually required only 18½ min.; the minimum after Cropredy, on the 1 in 330–179 rise, was 64 m.p.h.; then comes a lovely descent down the Southam "galloping ground" amid pretty Warwickshire country, along which after attaining a steady 79 m.p.h. steam was shut off and the arrival made to time, 87¼ miles in 90 min. exactly.

The recorder alighted at Leamington and his exciting return journey to Paddington behind a "Castle" will be described in a later issue.



G.W.R. Birmingham two hour express near Denham. The locomotive is No. 6017 "King Edward IV." Photograph by C. R. L. Coles.

Great Western Traffic Notes

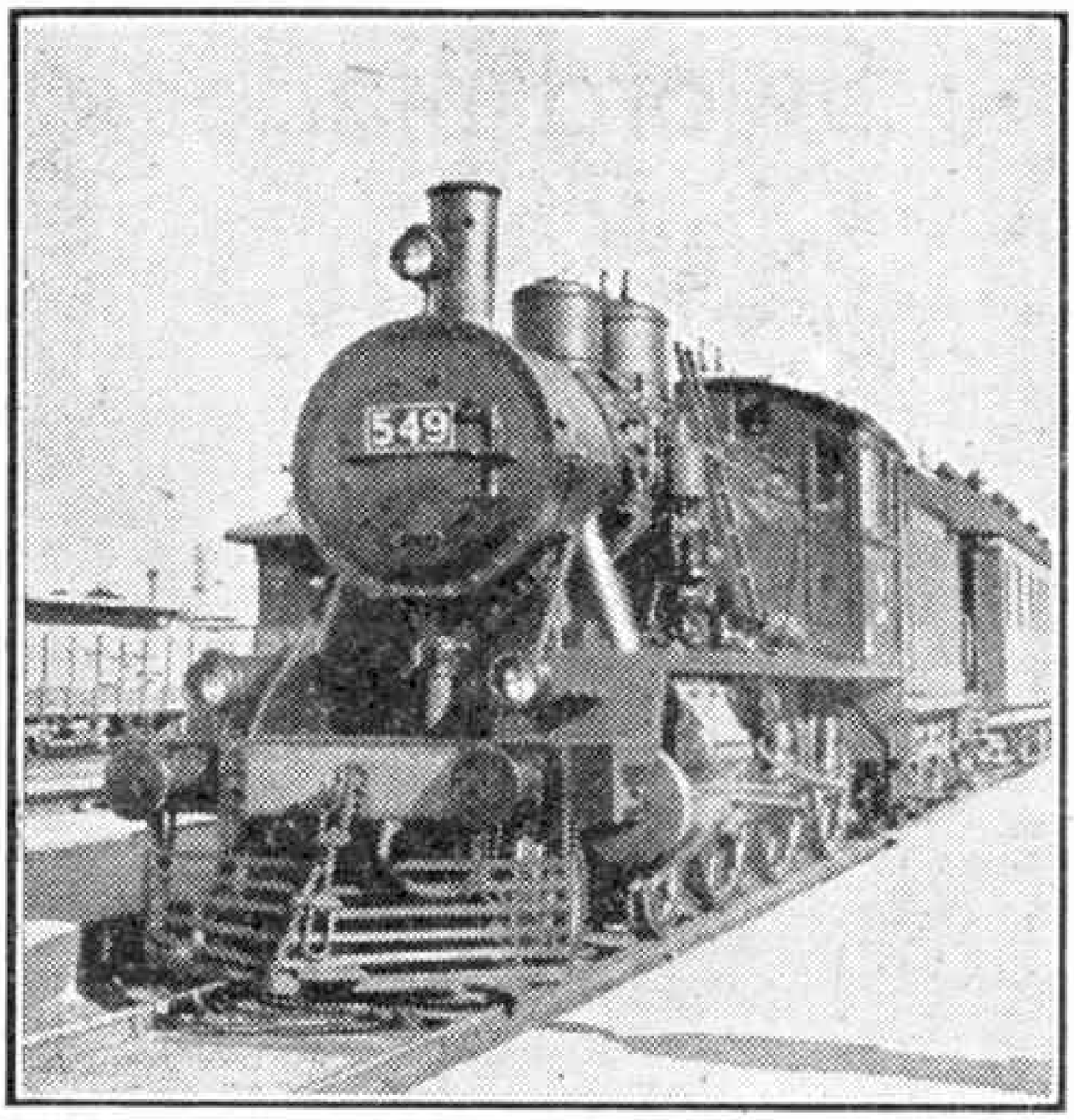
There are semi-fast Didcot passenger trains due to arrive at Paddington, and to depart from it, at 5.37 p.m. One evening recently by a strange coincidence they were hauled by "Hall" class 4–6–0s consecutively numbered, 4961–2, and both engines were far from their home shed at Laira (Plymouth). On other occasions 4–6–0 locomotives stationed at Worcester, Tyseley (Birmingham), Banbury, Newport, Cardiff, Reading and Didcot have been noted on these trains.

Other observations this autumn have included "Bulldog" 4–4–0 No. 3443 "*Chaffinch*" from Taunton, piloting "Castle" 4–6–0 No. 5070 "*Sir Daniel Gooch*," which hails from Wolverhampton, on the up Torbay express; "Castles" on the up Cornish Riviera, which on occasion have been in Paddington before time with substantial loads, and a traveller's report of a run on this express reaching London at 5.30 p.m. when an engine of that type had 15 coaches, weighing over 500 tons full, through from Plymouth. "Bulldog" No. 3383 assisted over the tremendous gradients to Newton Abbot, whence "*Llandovery Castle*" worked forward unaided to Exeter. There another "Castle," No. 5060 "*Earl of Berkeley*," came on as pilot as far as Savernake, which is more than half way to Paddington, and at the top of the last adverse gradient; so energetic was the running by the two 4–6–0s that notwithstanding the additional stop at Savernake, the arrival in London was several min. early.

Radio Telephone Tests on Goods Train

Although most long distance passenger trains have a corridor throughout, and in the case of some L.N.E.R. expresses the engine tenders have a corridor through them as well, thereby enabling the guard to make contact with the driver and fireman, it is a very different matter with long goods or mineral trains. On these the locomotive men and the guard may be separated by more than a quarter of a mile of wagons, but for some time the railways have realised the advantages of intercommunication facilities on moving trains and between moving trains and ground staff.

It would appear that radio telephone methods are the most likely to be effective for this purpose. Successful tests have been carried out on a goods train of 52 wagons between Hornsey and Hitchin on the L.N.E.R. main line, the apparatus being of such robust design that it withstood continuous vibration, while its simplicity rendered it suitable for



A typical locomotive at the head of the Helsinki-Abo express on the Finnish State Railways. Photograph by J. D. Robinson, Darlington.

use by anyone accustomed to an ordinary telephone. Development of the idea on general lines may not be possible until after the war, but this was an interesting proof that even in the midst of present day problems the railways are still continuing their plans for post-war efficiency.

Platelayers' Huts in Modern Style

The familiar old-style platelayers' huts built of disused wooden sleepers are apt to become unsightly and damp in course of time, and a notable improvement introduced by the Chief Engineer of the L.N.E.R. is a more commodious cabin constructed of concrete, pre-cast and transportable in parts. These neat little buildings, one of which we illustrate, are rectangular in shape and well equipped with lockable door, window, stove, cupboard, lockers and shelves.

Emergency Electrical Supply on Wagons

In order that emergency electricity supplies may be made available for operating works machinery, or for other lineside purposes, mobile transformer sets and rectifiers have been rigged up on 12-ton wagons that can be conveyed in goods or ballast trains or worked specially if necessary. We recently noted one of these sets, the wagons painted dark blue with white lettering in the style adopted for L.N.E.R. service vehicles, being worked along the East Coast main line. Two wagons carry the electrical apparatus and a third is loaded with high and low tension cables, jointing material and accessories.

Southern Tidings

2–6–0 locomotives of the former London, Brighton and South Coast Railway and Maunsell types also are now more familiar on the steam-operated Sussex cross-country lines, such as the Horsham-Shoreham branch and the Oxted routes to the South coast through Uckfield and East Grinstead.

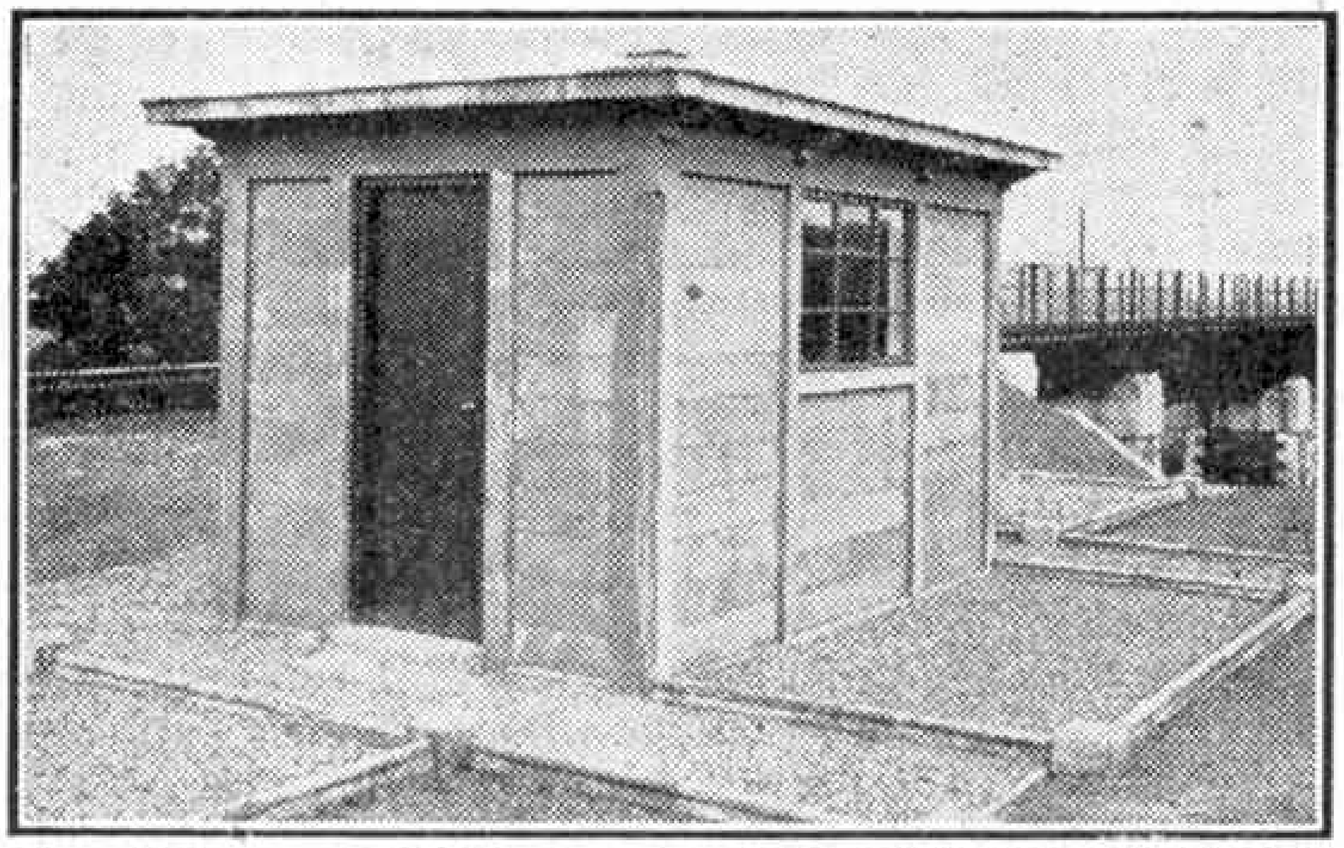
"*A. S. Harris,*" the former Plymouth, Devonport and South West Junction Company's 0–6–0T, now S.R. No. 756, long familiar as a shunter at Nine Elms, London, has recently been working in one of the Brighton yards. She was built by Messrs. Hawthorn Leslie in 1907 and has small 3 ft. 10 in. driving wheels, two outside cylinders of 16 in. diameter and 22 in. stroke, and boiler pressure of 170 lb. per sq. in. No. 555, the last of the first series of "Jubilee" 0–4–2 mixed traffic engines built by the London and South Western Railway from 1887 onwards, and now class "A12," with 6 ft. driving wheels, is stationed in the West of England. This engine is fitted with Westinghouse brake for operating "foreign" stock as well as the customary vacuum. In 1901 she hauled the late Queen Victoria's funeral train over branch lines from Gosport, Clarence Yard, to Fareham, where No. 54 "*Empress*" took over for a fine run via the difficult mid-Sussex route to Victoria. This engine is one of the Billinton "B4" 4–4–0 class, just lately emerged from shops refitted and painted black, but not rebuilt as "B4x." She is now S.R. 2054. For a time she was named "*La France*" and in later years "*Princess Royal.*" With few exceptions all former London, Brighton and South Coast names have now been removed.

All the engines loaned to the G.W.R. in 1941 are now back on their home territory. "I3" class 4–4–2 express tanks numbered 2021–30 are all working on the Tunbridge Wells West and Oxted line services.

On the privately-owned Kent and East Sussex Railway locomotive variety has been provided by the appearance of a Dean G.W.R. 0–6–0 on loan to the Government, numbered W.D. 197; No. 1426 of the S.R. "01" class, a former South Eastern Stirling design; and No. 3440, Adams type former L.S.W.R. The two last named veterans are 0–6–0 tender engines of light axle weight. Stroudley "Terrier" 0–6–0T S.R. No. 2678 also is in service.

L.M.S. Locomotive News

Converted "Royal Scots" so far noted are Nos. 6103, 6108–9, 6112, 6125, 6132 and 6146. Of the new streamlined "Pacific" series, painted black, Nos. 6246 "*City of Manchester*" and 6247 "*City of Liverpool*" have been named by the respective Lord Mayors of those cities and placed in service. No. 6248 "*City of Leeds*" is also at work. Standard "8F" 2–8–0 locomotives built at S.R. works, numbered 86xx, and at Swindon, G.W.R., numbered 84xx, are now familiar at Willesden and elsewhere. A further L.M.S. built series numbered 83xx is appearing, partly constructed at Horwich, the former Lancashire and Yorkshire plant. New class "5P5F" 4–6–0 6-ft. mixed traffic locomotives noted in service include Nos. 5479–80. "Prince of Wales" class 4–6–0s are still often seen on passenger work in the Midlands.



One of the new L.N.E.R. concrete platelayers' huts referred to on this page. Photograph by courtesy of the L.N.E.R.

Those Wonderful Sword Blades

By C. G. Grey

ONE of the many legends which used to puzzle me when I was a youngster was that which kept on turning up about the wonderful sword-blades that would cleave the anvil on which they had been forged, and thereafter would cut a down-filled cushion, if the owner of the sword took a swing at it while it was thrown in the air. I could never believe that any sword-blade would cut a chunk of cast iron, such as an anvil is, or take such an edge as to slice through a down pillow.

Only within the past few years have I come across the explanation of that legend. And yet one met the story all over the place. There was a story of Richard Cœur de Lion and Saladin doing stunts of that sort to show off the relative merits of an English sword-blade and a blade of Damascus. And one comes across it in the old Nordic legends, and in quite a lot of English stories.

Really the explanation is quite simple. In the first place the anvils were chunks of oak. Generally they were a section of a tree sawn off to about the height of an iron anvil. I do not suppose that they were used for making horse-shoes and such things, but certainly sword-blades were forged on them.

The blacksmith took his piece of cast iron—if English it was probably mined and cast in Sussex—heated it white hot, and then hammered it out until it was roughly the shape of a long sword-blade. In the process naturally the hot iron burned the top surface of the anvil, which probably had been turned into hard charcoal before the smith started on the job; so the iron absorbed a certain amount of charcoal.

Then the blade was heated again and turned over on itself, and the double fold of steel was hammered into one mass, again taking up charcoal, which was thus deposited between the layers of iron. Again and again the process was repeated, hammering the blade out again and doubling it back on itself, and each time it absorbed more charcoal.

By the time the smith had done doubling it over and hammering it, the blade had become a series of laminations of very high grade carbon steel, and the carbon was pure charcoal with that curious "life essence" in it which can never be produced by any synthetic product.

The systematic turning back and hammering produced those pretty ripples which you see on very old sword-blades when the light falls on them in a certain way. And those high-carbon steels would take and hold an edge which seems impossible to get in these days.

When I was a youngster, some 50 years ago, one could go into any ironmonger's shop and buy for a shilling a two-bladed knife which would take an edge like a razor. Our farmhands on my father's place used to judge the edge on a knife by seeing whether it would shave the hair off the backs of their hands. And the curious thing was that the blades held their edges.

A few years ago I had considerable argument with some friends in the Sheffield Steel Trade on this subject of knives. I told them rudely that they had forgotten how to make knives. Stainless steel, or rustless steel, definitely will not hold a razor edge, but it has its uses in other directions. One of my friends sent me a beautiful knife with about half a dozen blades and tools in it and a mother-of-pearl handle. But the edge on the blades was ludicrous.

Then, months later, one of them sent me a pocket-knife which, he said, had come off a showcard which had been returned by the executors of their deceased agent in Buenos Aires, Argentina. And it had been in South America for 30 years.

The blades on that old knife had razor edges. I have had it for about ten years. The small blade has been used for sharpening pencils and such work. And it only needed sharpening about a year ago.

Further enquiries in Sheffield discovered the fact that very few firms in these days make what is called "double-shear steel"—that is to say steel which has been folded over on itself as those old sword-blades used to be. For modern knives, plain straight-drawn steel, stamped out to shape and sharpened, is supposed to be good enough. But I discovered one of those firms which still make double-shear steel, and I got a couple of carving knives which will nearly split hairs.

The moral is that, no matter how magnificent machinery may be, or how accurate its products, at the finish first-class handicraftsmanship will always beat it.

Photography in December

By A.R.P.S.

THERE are so many opportunities for making records of happy and intimate family incidents in the average home this month that I feel I must ask you to reserve at least part of a spool of film for securing some Christmas items.

To start with, I cannot suggest any better medium for this class of subject than a carton of Johnson's Flash-powder. It is still obtainable, and is most efficient and perfectly safe so long as the instruction leaflet is read carefully and followed.

For taking either a single portrait or a group you should make all the preliminary arrangements, such as position of camera and flash, distance between these and the individuals, removal of any piece of furniture that might interfere, etc., before asking your friends to get into position.

I am very fond of taking a fireside group; it is always a source of fun and amusement and only requires a few seconds' arranging. Draw a settee to the front of the fireplace and the easy or smaller chairs to the side. The camera should be facing the centre of the back of the settee, but you must see that there is no open space between the legs of this piece of furniture revealing the fireplace. Do not attempt to put the charge of powder in the fire for that would be dangerous. Place it in a heap on a shovel on the hearth, then insert the touch paper, turn down the light by which you have been focussing, set the shutter to time, ignite the touchpaper and take your place in the group. After the flash go to your camera, shut the lens, turn up the light and then change the film. In such a group some members can only be recognised by their backs, others are sideface to the camera; but despite this you will have got a jolly record of the evening.

"A Christmas Carol." Photograph by John J. Curtis, A.R.P.S. The upper photograph, "The Future Bandmaster," is by T. D. Tasker, Barnsley.

Bringing home the bird and the holly—but not this year! Photograph by S. S. Pethybridge.

Just a remark or two about developing and printing flashlight shots. Sometimes the results are very harsh, too black and white. To avoid this I strongly advise a developer that is known to give "soft" negatives, such as "*Azol*," using the development tables to ensure correct development.

I have suggested the use of flashpowder, but those of you who have high power electric bulbs will find that many of these happy snaps can be taken with these lamps.

Puzzle Your Sharp-Eyed Friends

By Norman Hunter (From Maskelyne's Mysteries)

OWING to the shortage of such conjurable objects as eggs, oranges and watches, not to mention alarm clocks, the tricks I am going to describe this year will once again be the kind of tricks you can do with objects that even a world war still leaves lying about the place. Utility magic, and no coupons; but, let us hope, plenty

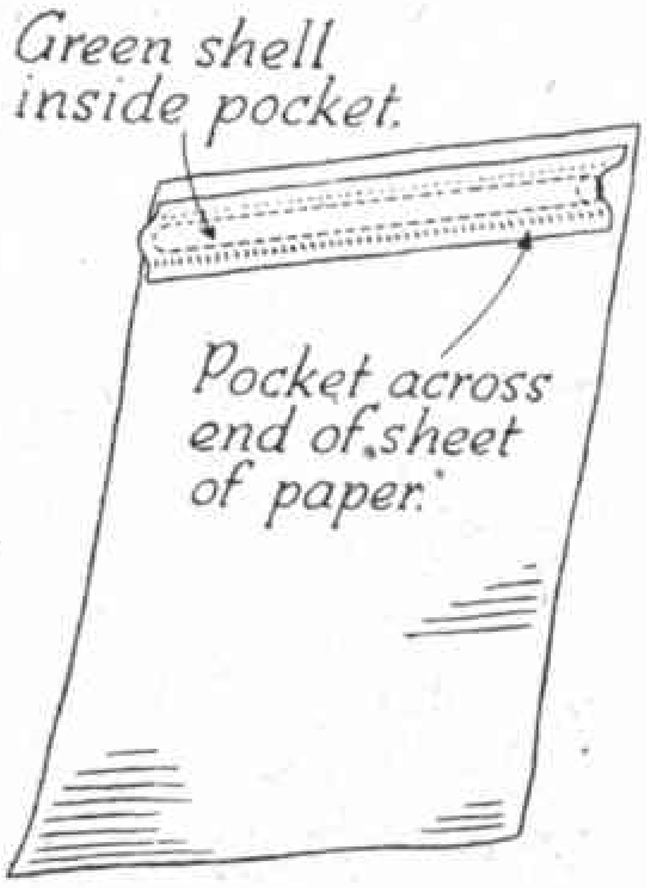


FIG. 1

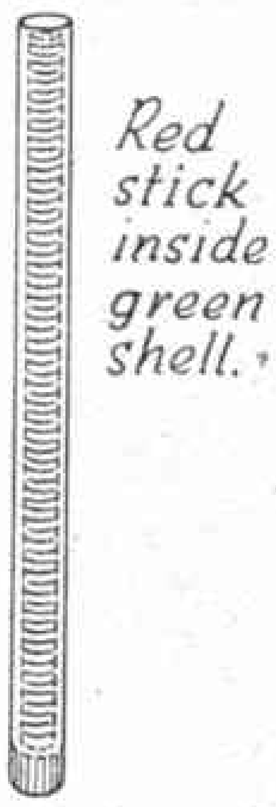


FIG. 2

of applause. But to be sure of this unanimous beating together of hands in appreciation of your efforts, don't forget to have a few rehearsals in private before launching your attack on an audience.

A TRICK WITH A STICK

You show a red stick about half an inch thick and twelve or fourteen inches long. "This is a Quisling stick," you explain. "Always eager to adapt itself to circumstances." With a sheet of paper you make a tube, by just rolling the paper into a loose roll. You put the red stick inside the roll, then with the roll you touch lightly some green object, such as the leaves of a plant or a green curtain. You then tip the stick out and the audience see that it has turned green. The paper is crumpled and thrown aside.

The Secret. The paper, a sheet of newspaper will do, is prepared by having a strip cut from another newspaper pasted along one edge, making a sort of long pocket with both ends open. The red stick is quite unprepared except that the ends are black. Inside the tube in the newspaper is a paper shell which fits easily over the red stick (Fig. 1). This shell is made by rolling a piece of green paper round the stick and pasting down the edge. Plug one end of the shell with a piece of wood about half an inch long. The shell should be just long enough for the stick to go right inside (Fig. 2).

When you show the red stick you can, if you like, give it to someone to hold while you roll the paper into a tube. This will convince the audience that the stick is unprepared in a much more natural way than asking someone to examine it. Also, as you cannot let them examine the paper, it is wiser not to talk about examining things. Take the stick back and push it into the paper roll. Of course you push it also into the open end of the shell, so that when you tip up the roll the stick comes out clothed in a green overcoat.

MAGIC WITH MONEY

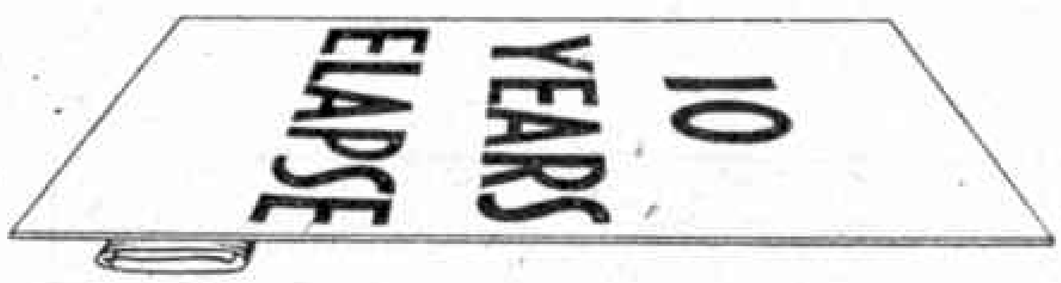
This is a very patriotic piece of prestidigitation. You count out the sum of fifteen shillings on to a piece of paper that has printed on it an advertisement for National Savings Certificates. You wrap the coins up into a neat packet and deposit them in a glass tumbler.

"For the completion of this feat of magic," you say, "you must now wait ten years. But as that is rather a long time, and the trains don't run very late nowadays, I think we might as well wait the ten years in the approved theatrical manner." You pick up a card on which are printed the words "Ten years elapse." After holding this card in front of the glass for a moment, you unwrap the paper and, instead of the coins, you show that the paper now contains a crisp one pound note.

The Secret. The only conjuring in this trick is not having to wait the ten years. In order to do that you must, I am sorry to say, have a pound note as well as the fifteen shillings. You must also have two National Savings advertisements, both alike. You will be able to find these in the newspapers quite easily. Prepare for the trick by wrapping the pound note in one of the advertisements, then place the packet just under the edge of the printed card which should be lying on your table (Fig. 3). This should be on your right with a glass tumbler on the same table.

Begin by showing the duplicate advertisement, count the coins on to it and wrap them into a compact, flat parcel. You can use half-crowns to make up most of the amount if you find them easier to handle than shillings. Now comes the only difficult move in the trick. And really it isn't difficult at all, but you must do it with apparent unconcern. If you come out in a cold perspiration, shake at the knees and gasp for breath as you do it, the audience will probably guess that something is up!

Hold the packet of coins in your left hand and pick up the card with your right, picking up with it the packet containing the pound note. Now place the card in your left hand, on top of the packet of coins, and



Packet containing £1 note under edge of card.

FIG. 3.

Card placed in left hand, covering packet of coins.

FIG. 4.

Right hand moves away showing packet containing £1 note.

move your right hand away with the pound note packet now showing. To the audience it looks as if you have changed over the packet of coins and the card. (See Fig. 4). You now place the packet in your right hand into the tumbler. The whole movement looks so natural that nobody will suspect that a change has been made, especially as you have not told them what you are going to do.

The rest of the trick is just a matter of showmanship. The packet of coins remains under the card when you put it down. Another way to finish the trick is to keep the card in your left hand and tip the packet out of the tumbler on to it. Offer the card like a tray to a member of the audience and ask him to unwrap it and see what a little patience does to your money if you put it in the right place.

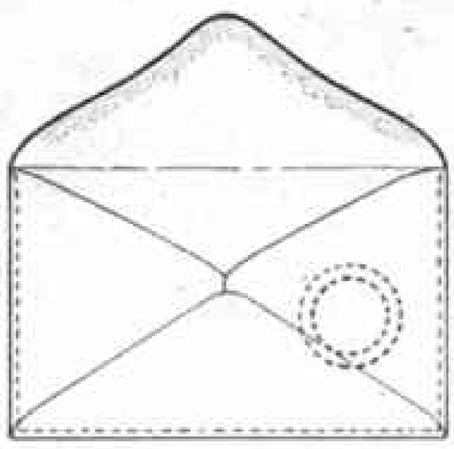


FIG. 5

Duplicate ring concealed between double fronts of envelope.

NECROMANCY WITH NOTHING

This is real utility conjuring. You do it with nothing at all. "Nothing in my right hand," you say, "nothing in my left hand. I put the two nothings together and this is the result." You put your hands together and produce a large silk scarf. "That," you remark, "is two mysteries in one. Where did the scarf come from, and where did the coupons come from?"

The Secret. It is most convenient to do this trick first in your programme, but if you want to do it half way through the show you will have to go behind your screen a moment to prepare.

Take the scarf and roll it into a compact ball, then place it under your left armpit, outside your jacket. Walk forward with your hands lightly clasped together. This position enables you to keep your elbows close to your sides and so prevent the silk scarf from falling from its hiding place. Extend your right hand and show it empty as you say "Nothing in my right hand." As you do this, with your left hand draw back your right coat sleeve, grasping the sleeve near the shoulder. Now reverse the position, draw back the left coat

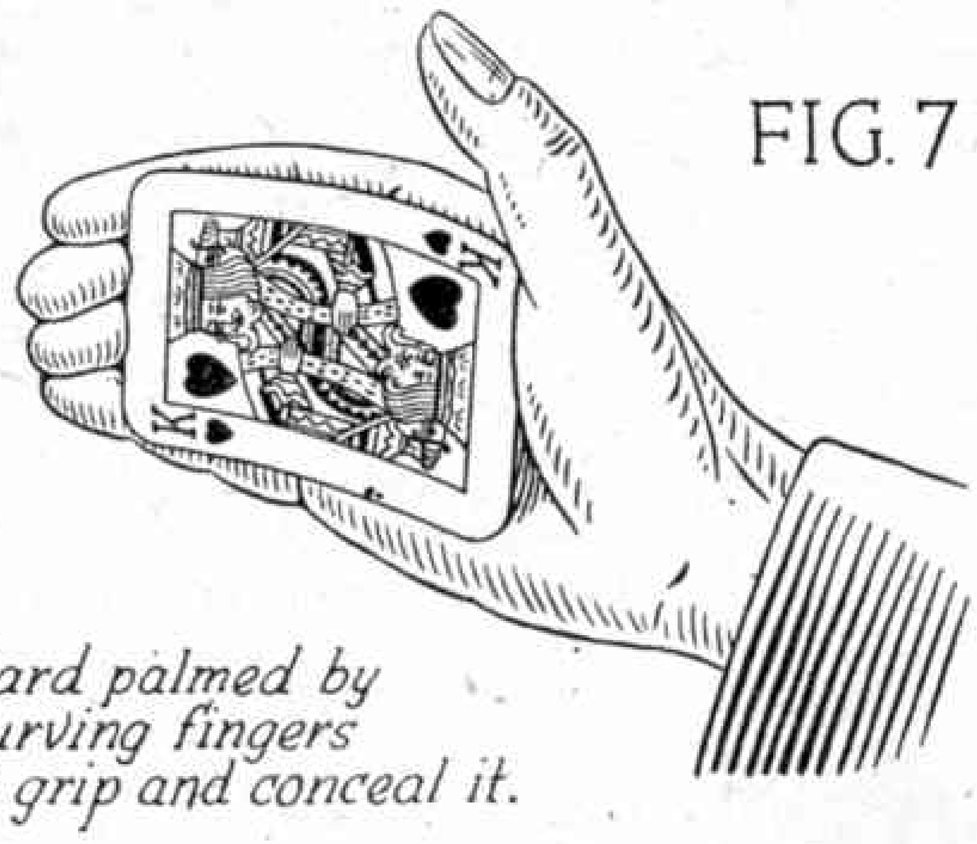


FIG. 7

Card palmed by curving fingers to grip and conceal it.

sleeve with your right hand while you show your left hand empty. This will bring your right hand into just the right position to secure the rolled-up scarf and conceal it in your right hand. You have now shown both hands empty and drawn up each sleeve in the approved conjuring manner. Put your hands together and shake out the scarf. A nice neat, quick little surprise to start the magical ball rolling.

CONJURING WITH CORD AND A RING

A piece of thin cord or string is threaded through a bodkin. An envelope is then shown empty and the bodkin is thrust through the centre of it from front to back so that the envelope is threaded on the cord. An ordinary small curtain ring is now dropped into the envelope, which is sealed. The two ends of the cord are given to two members of the audience to hold.

"As you will see," you remark to the audience, "the ring which I have put into that envelope is quite separate from the cord. It cannot be threaded on to the cord unless one of these gentlemen lets go of the cord. All very nice and satisfactory. All a conjurer wants is something that can't be done." You take hold of the envelope, tear it away from the cord, and

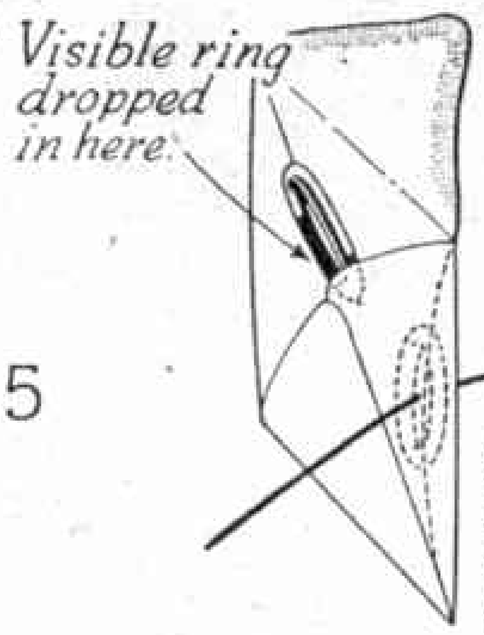


FIG. 6

there is the ring genuinely threaded on the middle of the cord. Ring and cord may be left with the audience to examine to their heart's content.

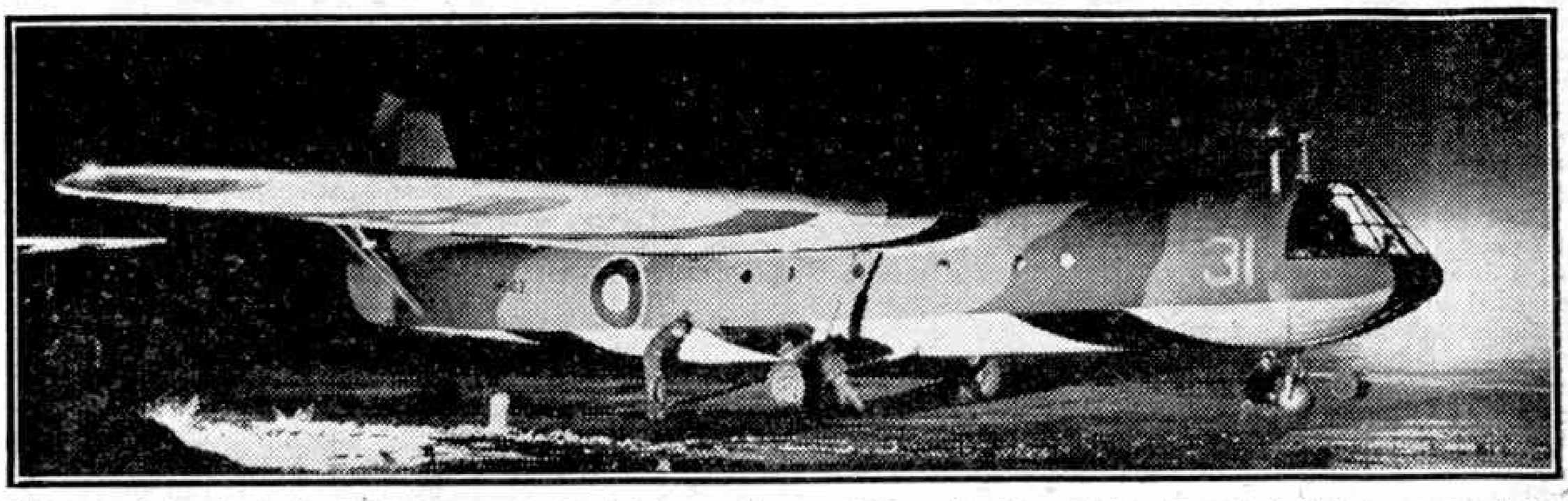
The Secret. This trick is arranged so that the small amount of preparation is completely destroyed at the end of the performance, leaving the apparatus quite innocent. There are two curtain rings, both alike. The envelope is prepared in a very simple manner. Take two envelopes of the same size and kind, cut the front and flap from one envelope and insert it into the other. You now have an envelope with a double front. Between these two fronts place one ring, then stick the two flaps together (Fig. 5). The envelope, even at close quarters, appears to be quite ordinary.

To perform the trick, show the envelope empty. Take the bodkin with the cord threaded through it, and thrust it through the centre of the envelope, taking care also to thrust it through the hidden ring (Fig. 6). You can feel its position quite easily with your fingers as you hold the envelope. Give the ends of the cords to two spectators, then openly drop the duplicate ring into the envelope and seal it. At the end of the trick, the mere act of tearing the envelope off the cord destroys the envelope, and with it all evidence of how the trick was done. The duplicate ring remains inside the envelope, which is crumpled and thrown aside.

CONCLUSION WITH A PACK OF CARDS

You give a pack of cards to a spectator, ask him to count down a few cards, remember the number he has counted and the name of the card he arrives at. You can go out of the room while he does this, yet as soon as he gives you the pack you are able to extract the card he chose and put it in your pocket.

The Secret. The pack is an ordinary one and there are no gadgets of any kind used. When you receive the pack, put it behind your back, take the bottom card, hold it up with its back to the audience so that they cannot see what card it is, and say "Here is the card you chose. I will put it in my pocket." You put the card in your trouser pocket, but immediately palm it and place it on top of the pack. Don't be afraid of that word "palm." It isn't as difficult to palm a card as it sounds. As you put the card in your pocket, simply place your hand flat over it and curve your fingers (Fig. 7). You will find it quite easy to conceal the card in your hand. If you have small hands, try to get hold of a pack of patience cards for the trick. As, however, you have to palm the card for only a moment, while you take your hand out of your pocket and lay it on the pack, there is very little likelihood of the card being seen, especially (*Continued on page 430*)



Glider training includes both day and night flying. Here a "Horsa" glider of the R.A.F. is being prepared for towing to the runway, in readiness for night flying.

Air News

Avro "York" Transport

Some details of the Avro "York" I, the first of the new British 4-engined transports to go into service, have been issued. In design the "York" is based on the famous Avro "Lancaster" heavy bomber, but the fuselage is larger, with deep, flat sides, and the tail unit has three fins. The wings are the same as those of the bomber, and together have a span of 102 ft., and the arrangement of the four Rolls-Royce "Merlin" engines is similar, the inboard engines being underslung. These engines drive 3-bladed, constant-speed airscrews.

The internal equipment of the "York" has been planned so that the machine can be easily and quickly adapted for use as an all-passenger, all-freight, or mixed-cargo transport. As a passenger air liner operating over short stages it can accommodate over 50 passengers. Large hatches in the fuselage facilitate the loading and discharge of bulky freight. No details of weight or performance can be given.

Glider Training in the A.T.C.

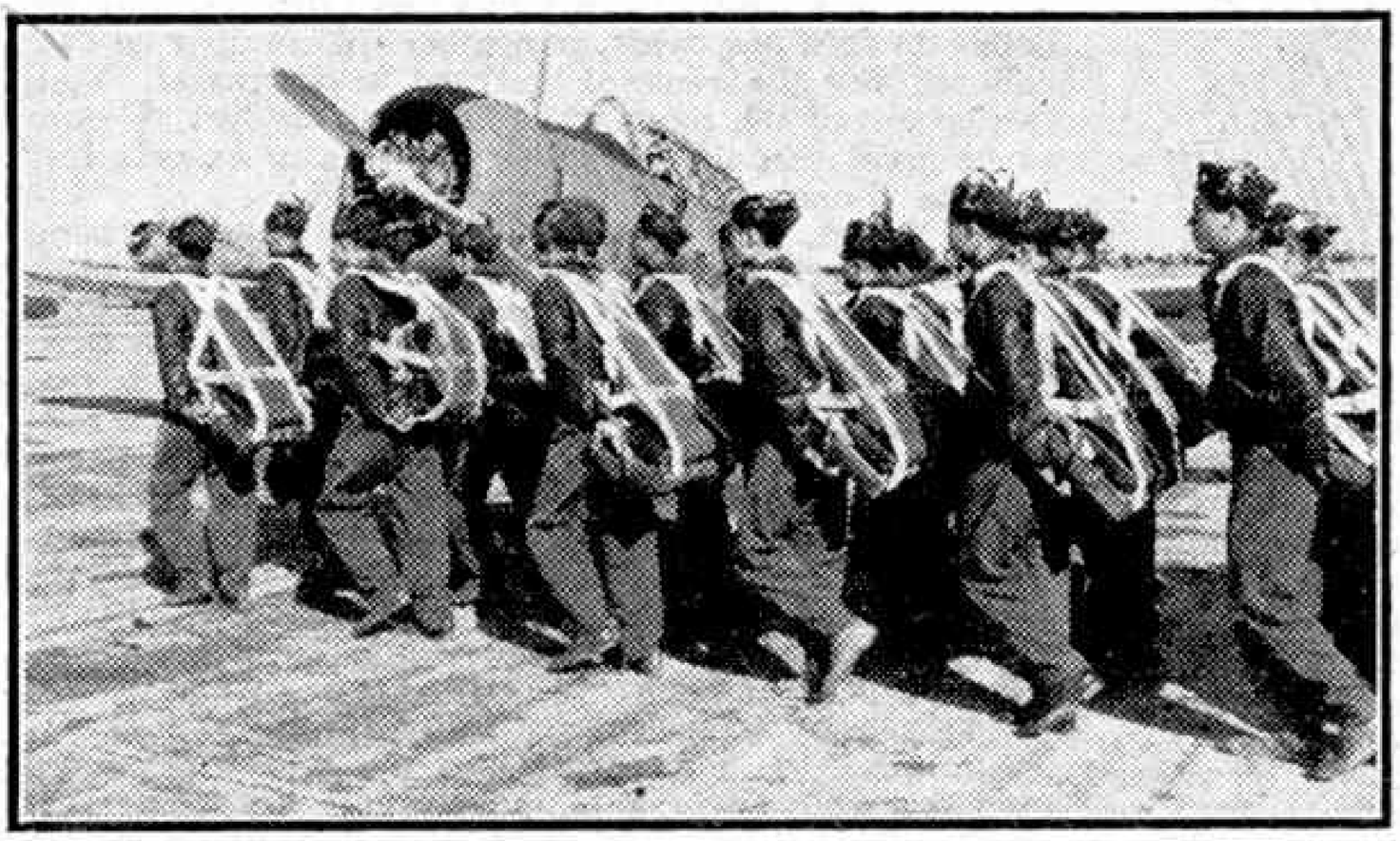
Excellent progress in glider training has been made in the Air Training Corps during the past 18 months, and about 64,000 glider launches have been given to A.T.C. cadets in that time; and about 2,000 cadets have also had dual instruction in 2-seat gliders. Glider launches to instructors and prospective instructors during the same period totalled roughly 14,000. There are now 29 elementary glider training schools for cadets and two special schools for instructors. In ordinary flying, over 200,000 cadets have been taken up for flights in R.A.F. aircraft.

British Overseas Airways News

Capt. Gilbert Rae, the British Overseas Airways pilot whose thrilling encounters with German fighter aircraft were related in the October 1943 "*Air News*," has been awarded the O.B.E., and Radio Officer S. Payne, who accompanied him on his adventurous flights, has received the M.B.E. The official notice states that the awards have been made "in recognition of their high courage over an extended period in flying unarmed aircraft on the civil wartime air service between the United Kingdom and Stockholm." They have also received British Overseas Airways' Certificates of commendation. Several other employees of the Corporation have been awarded similar Certificates in recognition of acts of courage while on duty.

A total of 11 Short "Sunderland" S.25 flying boats have been converted for civil use by British Overseas Airways, and they are operating on the Corporation's England-West Africa air service. All armament has been removed from the aircraft. The Corporation also have in service about six D.H. "Mosquitoes," which, similarly stripped of their armament and other military equipment, are doing good work as fast air mail and freight transports.

During the first nine months of this year B.O.A. aircraft carried almost double the amount of cargo and 27 per cent. more passengers than during the same period in 1942.



Chinese air cadets, wearing full equipment, marching to their respective aircraft. They are being trained in the United States.

British Winter Air Services

The winter air service between Liverpool and the Isle of Man consists of three flights in each direction, on weekdays. It is operated by Isle of Man Air Services Ltd.

The jointly-operated Liverpool-Dublin air service this winter consists of two trips daily in each direction. The morning flight from Dublin and the afternoon one from Liverpool are made by Aer Lingus Teoranta, the Eire company, and the morning trip from Liverpool and the afternoon one from Dublin are made by West Coast Air Services Ltd.

Scottish Airways are operating their weekday air service to the Hebrides throughout the winter.

Paper Fuel Tanks for Aircraft

One of the many interesting wartime purposes for which salvaged paper is being used is the production of long-range fuel tanks for aircraft. The Hawker "Typhoon" and other R.A.F. fighters engaged on long-distance operations carry their fuel in detachable cigar-shaped tanks made from paper, gelatine, and animal glue, so that when these tanks are jettisoned after being emptied there is very little metal thrown away.

The tanks are made in three sections, each built up of layers of paper moulded to the required shape and bound together by glue. The sections are then dried, sandpapered, and assembled to form the tank, and the whole is lined with gelatine to make it petrol-proof. After the joints have been bound with wood, and metal support fittings fixed, the tank is "doped," and finally it is coated with cellulose paint.

Faster Night Fighters

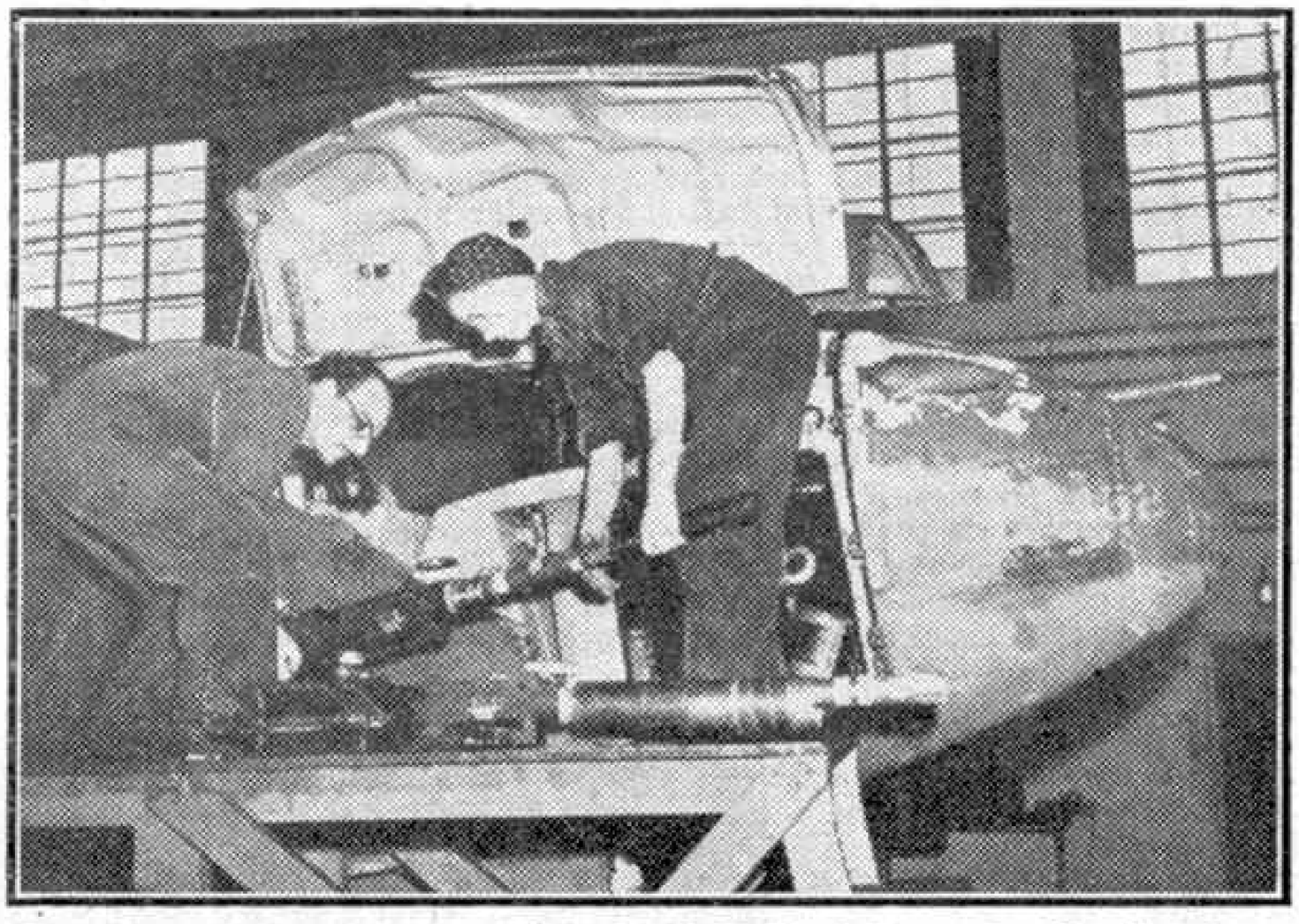
The D.H. "Mosquito," so much in the news these days as a successful night "nuisance raider" of Berlin and other enemy targets, is now in service on the home front as a night fighter. In this capacity it has proved itself a worthy opponent of the fast Focke-Wulf Fw 190 and the new Messerschmitt Me 410 fighter-bomber that Germany is now using for night raids over Britain. Thus the challenge of speed is being met by speed.

One of three enemy night raiders shot down during a "nuisance" raid over this country last month was an Me 410, and it fell to the attack of a "Mosquito" night fighter pilot who already had four night "kills" to his credit. The first Me 410 encountered by the R.A.F. was pursued back across the Channel one day last June and was shot down over the French coast.

The Messerschmitt Me 410 is a development of, and almost identical with, the well-known Me 210 twin-engined fighter, but it has more powerful engines and is more heavily armed. In addition to two 20 mm. shell-guns and two fixed 7.9 mm. machine guns firing forward, it has two 13 mm. machine guns in "blisters" on the fuselage and worked by remote control. As a fighter it is reported to have a speed of about 390 m.p.h.

R.A.F. Mountain Rescue Service

The splendid work of the R.A.F. Air-Sea Rescue Service is by now well known, but not so that of the Mountain Rescue Service whose job is the rescuing of airmen who crash in mountainous territory in Great Britain. The units of this Service are commanded by men who are experienced mountaineers, and the equipment of a unit includes a special ambulance van with material for rescuing, and attending to, the crashed airmen when found. A wireless set in the van enables the unit to keep in touch with an aircraft searching for the wrecked machine, and with the ground parties who continue the search on foot when the "going" becomes too difficult for the van to proceed any farther. This contact with the ground force is made possible by the leaders of the search parties carrying small portable radio transmitters. The wireless set in the van also enables the unit to keep in touch with the base.



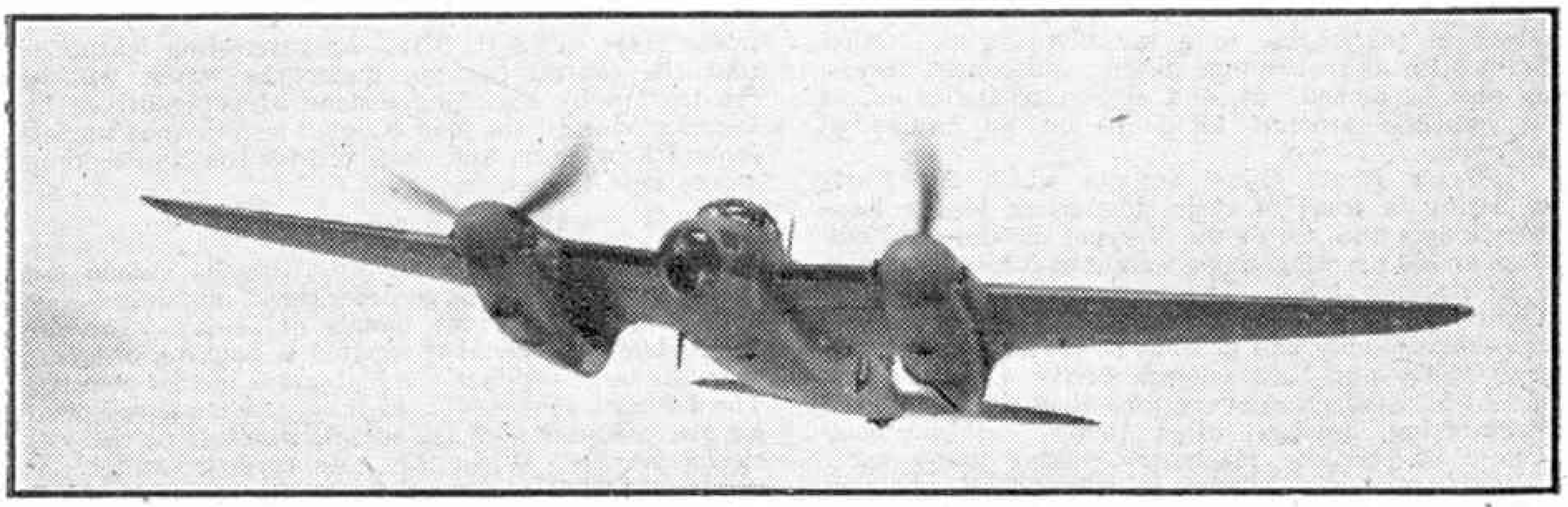
Installing the guns in a "Lightning" P-38 fighter at a Lockheed re-assembly base in the West of England. The work done at this base includes re-adjustments or alterations to American aircraft of all types to make them suitable for service in the European theatre of war. Photograph by courtesy of the Lockheed Aircraft Corporation, U.S.A.

* * * *

The commander of the Picatinny Arsenal, New Jersey, U.S.A., has stated that bombs and aircraft cannon of new design, and more deadly than those now in service, have been produced by the U.S. Army Ordnance Department, in co-operation with the U.S. Army Air Forces.

* * * *

A 4-bladed airscrew 16 ft. 8 in. in diameter and claimed to be the largest of its type in the world, has been on view at a U.S. Army Air Forces display in the Museum of Science and Industry, New York.



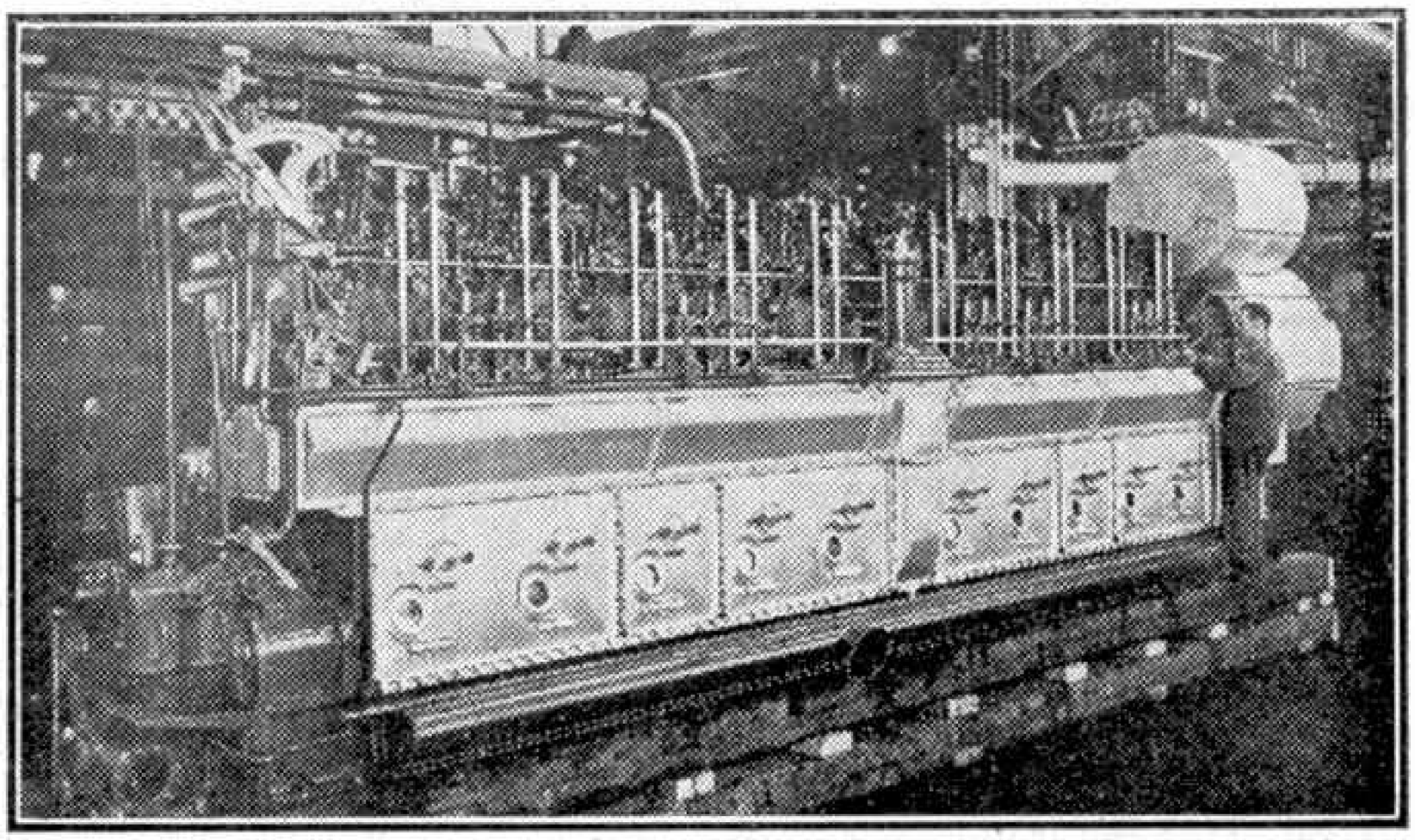
A fine flying view of a D.H. "Mosquito" bomber. Photograph by courtesy of de Havilland Aircraft Co. Ltd.

Engineering News

Submarine Diesel Engines

During the last war Diesel engines became widely used in submarines by the Germans and ourselves, and proved that in this particular sphere they had no equal. Their compact design and high output, coupled to the high safety factor as regards immunity from fire, have from the first had a particular appeal to navies throughout the world. After the war was over some manufacturers of these heavy oil engines concentrated on perfecting their designs in order to increase the range and reliability of their units, and great advances were made. Only seven years after the war was finished, a certain Swiss firm of Diesel engine manufacturers had produced a submarine engine which developed 7,000 h.p. Four years later the well-known firm of Fiat in Italy built a submarine for the Brazilian Navy and sailed it unescorted from Italy to Brazil, a distance of 5,000 miles, without a single stop, thus breaking the existing world's distance and speed records for submarines. This vessel, the "*Hymayta*," had two engines developing a total of 4,400 b.h.p. at 380 r.p.m.

In submarines, where a low engine is naturally essential, the ratio between the bore and the stroke must be kept small, and in order to increase the output of the engine the r.p.m. must be put up. An interesting example of a modern high output submarine Diesel engine with a stroke to bore ratio of 1.2 to 1 is shown in the accompanying illustration. This particular unit is one of several built in the Copenhagen Diesel engine works of Messrs. Burmeister and Wain for the Turkish Navy, and fitted in hulls constructed at Krupp's in Germany in 1939. The engine as shown is a 10-cylinder single acting 2-cycle Burmeister and Wain Diesel of 350 mm. bore and 420 mm. stroke, having two poppet type exhaust valves for each cylinder and developing 2,400 b.h.p. at 480 r.p.m. The total weight of the engine is only 27 tons or 25 lb. per b.h.p.



A submarine Diesel engine, one of several built for the Turkish Navy. It develops 2,400 h.p. at 480 r.p.m. and its total weight is only 27 tons.

The illustration shows the control handles at the left hand end of the engine, the blower at the other end and the 10 sets of push rods for operating the exhaust valves on each cylinder in between. Aluminium has been used extensively in order to reduce the weight of the engine to a minimum figure. Other details such as fuel pumps, piping and control levers, can also be picked out, and give some indication of the immense amount of detail on an engine of this type.

The new Deutz Diesel engines which the Nazis are fitting in some of their submarines to-day have 16 cylinders and are of the V type, developing 1,600 b.h.p. at 700 r.p.m., giving a weight of 5.5 kilogrammes or 12 lbs. per b.h.p. The Germans claim that the weight of the Diesel machinery in their modern submarines is only half of what it was in the last war. Nevertheless our Navy should derive a tremendous amount of satisfaction every time they sink a U-boat, remembering, amongst other things, the enormous amount of precision machinery, taking many man-hours to produce, which has been sent to the bottom of the sea.

D. REBBECK.

New Road Tunnel for New York

The waterways on the eastern and western sides of the city of New York are already famous for the tunnels driven under them to provide both road and railway access. Now another great tunnel is projected, this time under the harbour of New York, at its narrowest point between Staten Island and Brooklyn. The designs have been made under the direction of Mr. Ole Singstad, the engineer who was responsible for the completion of the Holland Tunnel, the highway under the Hudson River that was described in the "*M.M.*" when it was built some years ago.

The new tunnel will be 9,635 ft. in length between its portals and it will take the form of twin tubes, each providing for traffic in one direction. It is believed that in the first year after its completion it will be used by 6,000,000 vehicles, and that in time this will rise to a maximum of 16,000,000. Construction of the tunnel will require four years and will cost more than £17,000,000.

Each tube will have space for two lines of traffic. The full diameter will be 31 ft. 9 in. and the twin tubes, side by side, will be surrounded by clay, rock and sand, with an outer steel shell enclosing the whole. On top of the steel shell there will be a blanket of clay. Ventilation will be provided for by means of fresh air ducts at the base of the bore and exhaust air ducts at the top, leaving a height for the traffic lanes of 13 ft. 6 in. An interesting feature is that the central portion, under the water, will be constructed by trenching instead of being driven by means of shields, the plan adopted for previous tunnels around New York, and projected for the land sections of the new tunnel.

Aluminium from Australia

There seems no reason why Australia should not eventually become a large producer of aluminium, one of the most important metals of to-day. The ore from which this metal is smelted is bauxite, of which there are large supplies of a high grade in that country. The difficulty at present is to obtain the necessary plant for the production of the metal, which is carried out electrolytically. When this does become available it is believed that a scheme for producing 10,000 tons of the metal a year can be taken up.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With the exception of those issued by the Scientific and Children's Book Clubs, which are available only to members, and certain others that will be indicated, we can supply copies to readers.
Order from Book Dept., Meccano Limited, Binns Road, Liverpool 13, adding 6d. for postage.

"THE SHOEMAKER'S SON"

By CONSTANCE B. BURNETT (Harrap. 10/6 net)

Which of us does not know the wonderful fairy stories of Hans Andersen? They have given all of us the greatest delight in our childhood days, when we were thrilled by the fortunes or misfortunes of the Ugly Duckling, the little Tin Soldier, the Snow Maiden, the Ice Queen and the many other wonderful people of the fairyland that he opened up for children of all ages. Older people too see life in these wonderful stories, which they never forget as they grow up, and in this book we have an opportunity of learning something of the man who wrote them for us. His story is itself as wonderful as one of his fairy tales. He himself was an ugly duckling, tall and ungainly, in ill-fitting clothes and with a stove-pipe hat that was too large for him, when he left his home and burst upon the astonished gaze of the citizens in Copenhagen, the capital of his country. But this ugly duckling also turned out to be a swan, and eventually was revered throughout Europe.

Hans Andersen was the son of a poor shoemaker in the provincial town of Odense, who dreamed more of books and learning than of making really good shoes. After the father's death efforts were made to get the boy to take up a trade of some kind, but the idea appalled him, for he wanted to be an actor, to dance or to write. Eventually he had his own way, leaving his home for Copenhagen to see what he could do. There at first he met with nothing but bitterness. He was laughed at by those who saw him trying to dance, or bursting unasked into recitations, but at length those who laughed began to respect him and to encourage him. He was given what he needed, a thorough education, and he began to write novels, plays and poems that were appreciated.

All this is told graphically by the author, who makes us live through Andersen's disappointments and triumphs, and tells us how he came to write the fairy tales that brought him his greatest fame. It is strange to read that he did not himself realise how much finer and more appealing these were than the books and plays that he regarded more seriously. In his triumph he remained as simple and lovable as he had always been, and in particular children were always happy with him, listening to the wonderful tales he told and even acted for them, and watching him cut out paper figures for them. The whole story is as delightful and full of imagination as one of his own fairy tales.

The book is well illustrated by 16 full page plates.

"ATLANTIC ADVENTURE"

By CONOR O'BRIAN (Harrap. 6/– net)

We have met two of the Atlantic adventurers before in "The Runaway" by the same author. One of them is Maggie Fraser, who here is one of six boys and girls escaping from revolutionaries in Estremera. The other, Thady Nolan, a born pirate and a real yachtsman, is escaping from the same uproar along with a companion who goes by the name of Frank Smith. All the refugees make for the harbour of Estremera's capital and there board the "*Tijuca*," a brigantine that has been left without crew. Thady becomes the skipper, Smith his mate and Maggie the fore-top man, and off they sail into the Atlantic with the idea of making their way to safety. But they have many adventures before they reach their haven. First they help Frank Smith, who proves to be King of Estremera, to regain his throne, and then they fight a pirate who is after valuable contraband that they had already discovered stowed away in their brigantine. The excitement grows as the story proceeds, especially when they join a homeward-bound convoy fighting against enemy raiders, both under water and in the air, and shoot down an attacking aeroplane. Even then the thrills are not exhausted, for they sink a submarine that attacks the "*Tijuca*" just as their Atlantic adventure is about to reach a peaceful end.

The story is fine and will be followed with keen interest by readers of the book. There is more in it than thrilling fights, however, for there are storms and other dangers at sea to be vanquished, and how these were met and how the little vessel was handled will prove as exciting as the story itself. There are four full page illustrations.

Owing to wartime difficulties, it is impossible to guarantee prompt delivery of books ordered as described at the head of this page, but every effort will be made to ensure speedy despatch.

"A.B.C. OF SOUTHERN ELECTRICS"

By IAN ALLAN

This is a useful addition to Mr. Allan's now well-known series of A.B.C. booklets. In it he has performed the same service for the electrified section of the S.R. as he has in a previous booklet done for the steam-operated section of the same company. Besides giving details of the numbers of the various S.R. motor units he has included descriptions and explanations of the sets in use for both suburban and main line traffic, with diagrams showing their make-up. Notes on the electric locomotives of the S.R. also are included.

Other useful information that is given in the booklet comprises the headcodes of the S.R., and there is a diagrammatic map of the S.R. electrified lines. In addition there are several half-tone illustrations. The book should be obtained direct from Mr. Allan at 225-7, Laleham Road, Staines, Middx., the price including postage being 1/2.

MAKING AN ENLARGER

By H. VAN WADENOYEN, F.R.P.S., F.I.B.P. and J. HOLTAM (Focal Press Limited. 3/6 net)

For making the utmost of his pictures a photographer needs an enlarger. At the moment it is practically impossible to buy one, so that there is a good reason for the publication of a book explaining how to make one at home. Although the enlarger described may lack external polish, and in parts may be a little crude in construction, it is certainly efficient. An explanation of the general principles of the enlarger is followed by detailed descriptions of the actual construction of each part of the enlarger itself. This is of the vertical type, and appears in three forms. The first is described as a popular model, and the second and third are improved enlargers based on it. In addition it is explained how to adapt the enlarger for negatives smaller than those for which it is designed, and notes are given on various refinements, such as a masking frame and screens. Excellent use is made throughout of dimensioned diagrams. These will prove a sufficient guide for the home constructor, who can build the enlargers described with a limited array of tools, and needs no special skill to carry out the work in a satisfactory manner.

German Aircraft Design Numbers

By R. H. Warring

MUCH confusion has existed in the past in regard to allocation of design, mark, modification and often (as in the United States) Service numbers and letters, to various types of aircraft. As the types have multiplied, so have the modifications and variants, and in many cases this has tended to lead to complete chaos. For example, there are well over 200 variants of the Hawker "Hurricane."

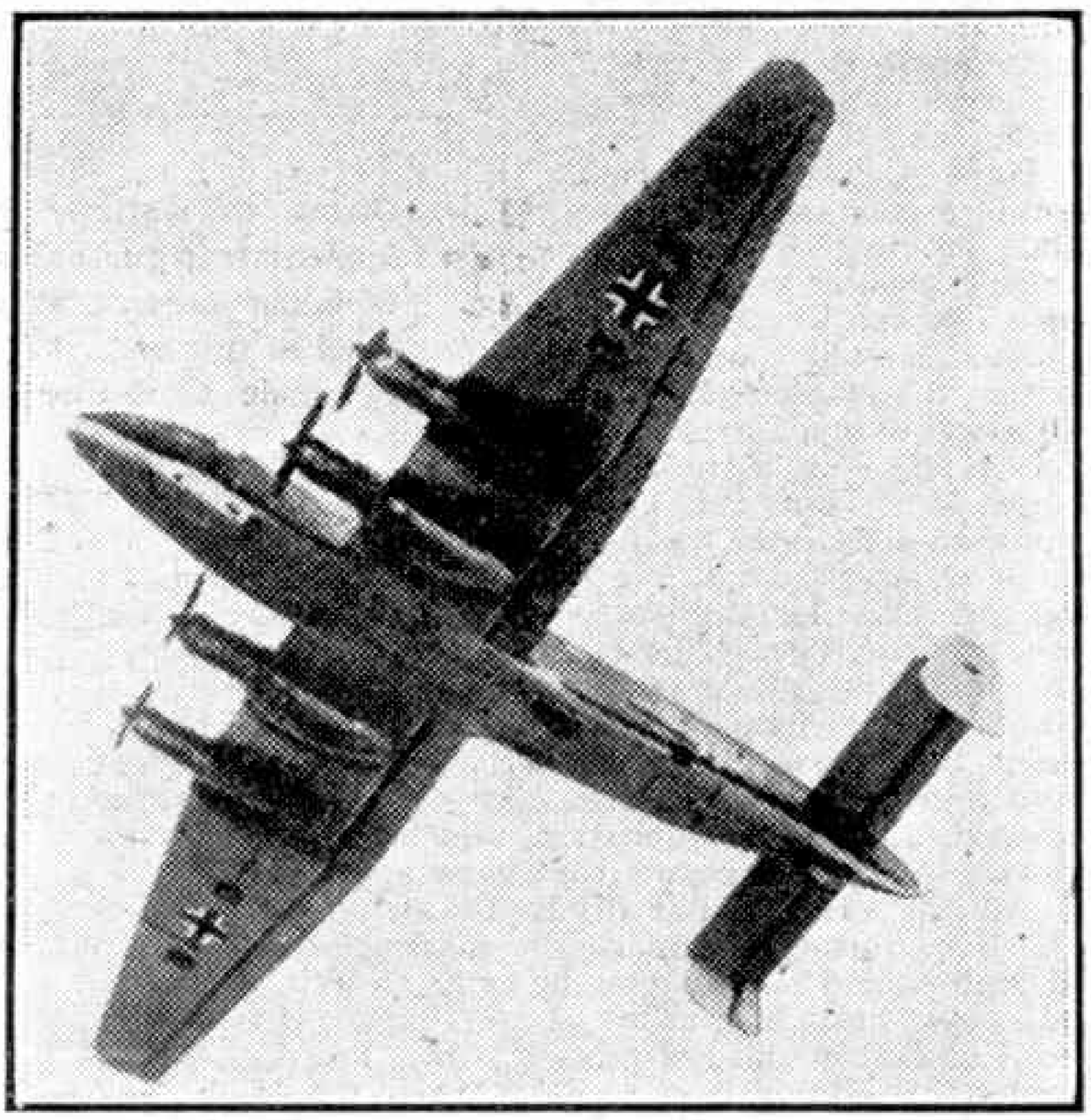
In order to start classifying such variants it is necessary to understand the basic system around which the designations are made. Some countries are notoriously haphazard in this respect, and at times do not appear to know themselves which of several designations is correct for a particular machine. This often leads to duplicity or multiplicity of types, and even design numbers, and presents a most baffling problem to sort out. It may be done deliberately in some cases to confuse the enemy, but often it is the rapid expansion of war outstripping the existing system.

Let us take Germany. In spite of their many failings the Germans are a methodical race, and their system of allocating design and mark numbers, with variants, now appears reasonably clear. Whereas in Britain most aircraft firms started their design numbers from No. 1 so that successive designs became, say, the de Havilland I, de Havilland 2, etc., the Germans have allocated groups of numbers, generally five at a time, or more, to each firm, so that no two firms have the same design number.

Neither the British nor the German systems are without their exceptions. The Avro design numbers, for example, started from 500, and Short Bros. suddenly started from No. 1 again in the early 1920's. The standard German system was started with the formation of the Luftwaffe in 1933; prior to that date manufacturers appear to have been left to their own devices. Thus machines designed before 1933 may carry a design number which has now been re-allotted to another firm, but as the older types fade out this overlapping will disappear.

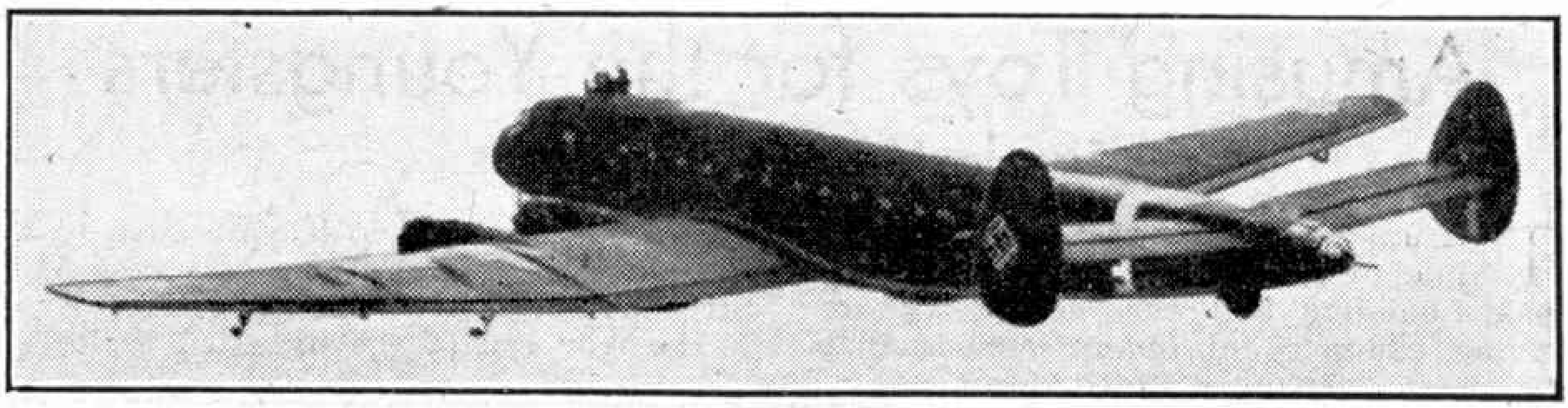
The basic German system is as follows. Each manufacturer is allocated certain groups of design numbers, each group being different. With very few exceptions each aircraft is known by its design number, only two or three, such as the Focke-Wulf "Condor," Messerschmitt "Taifun," etc., having names. The correct designation is thus the manufacturer's name, followed by abbreviation of the name, usually the first two letters (or in the case of double-barrel names the initials of the two names), followed by the design number. Thus we get Messerschmitt Me 109, Heinkel He 111, Focke-Wulf Fw 190, etc. This is then followed by the mark and modification code.

In the first place Germany, after the



Junkers Ju 90 bomber-transport. It is armed with both cannon and machine guns.

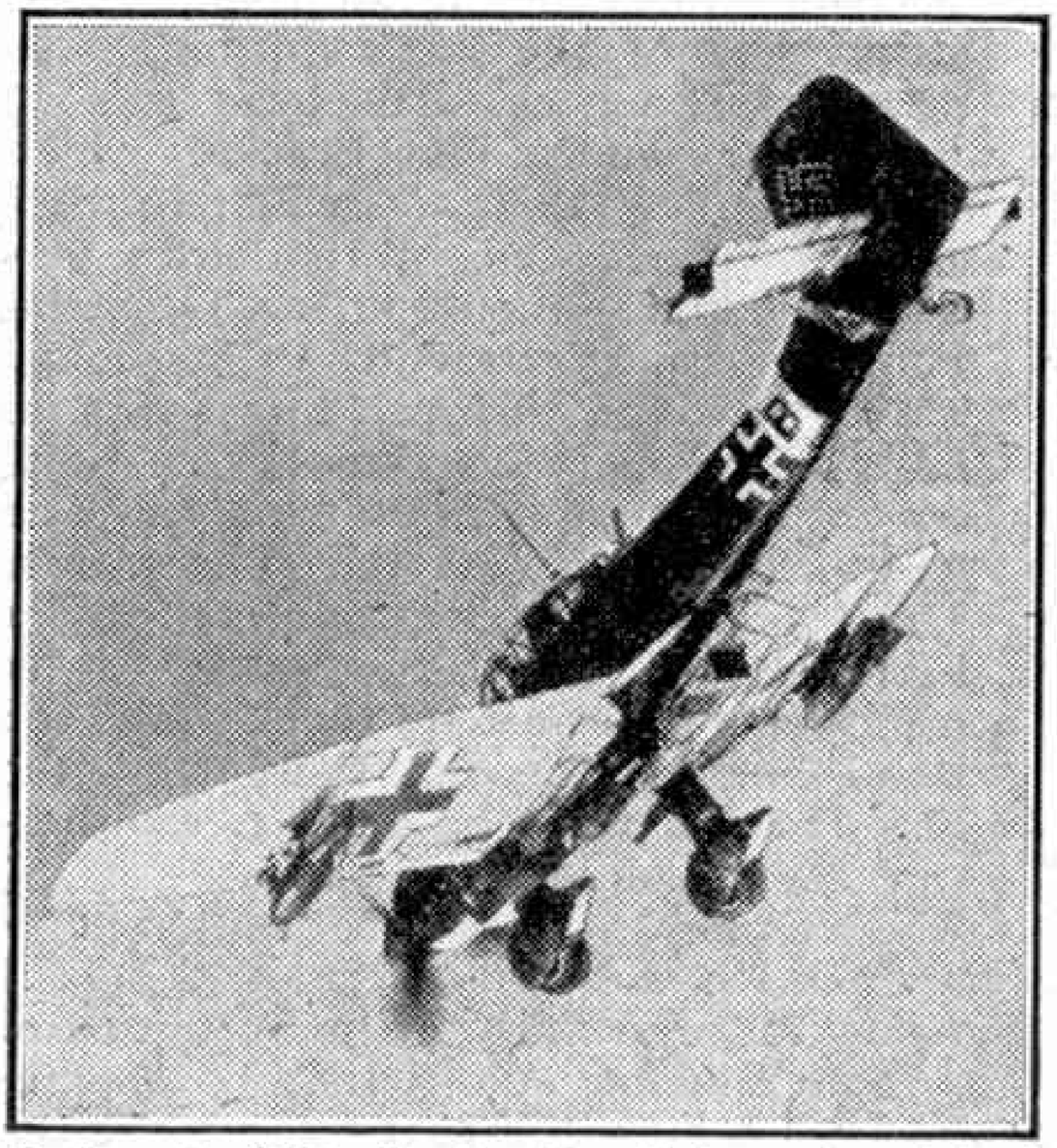
Versailles treaty of the early 1920's, was not allowed to produce military aircraft, and so she developed military types under the thin guise of civil aviation. When converted to war use, after the cloak of "respectability" had been dropped, the civil design number was followed by the letter "K," denoting "Krieg," or War. Thus the first military Junkers Ju 88, developed from the civil version, was known as the Junkers Ju 88K. This system has been superseded by that at present in force to take into account all the ensuing modifications that naturally follow. The mark number is denoted by



A Ju 90 with the rounded fins and rudders now common to this type.

the letters of the alphabet, starting from A. Now each mark in itself is subject to many modifications, and so the modification number, in numerals starting from 1, is added to make the machine description complete. Thus the Junkers Ju 88 A–1 means the first version of the first basic mark of the Junkers Ju 88 design; Junkers Ju 88 A–2 the second version of the first basic mark, and so on.

To make this clear let us examine the Junkers Ju 88 series in detail. The basic design is the Junkers Ju 88, and this was, as we have seen, ostensibly a civil machine. The first military version became the Junkers Ju 88K, changed to Junkers Ju 88 A–1 under the final system. (Prior to this there was actually produced an experimental military version with end-plate fins and rudders, but this may be considered as just an experimental prototype). In service many modifications were found necessary, such as increased defensive armament, modified outer wing panels, etc., and thus progressively appeared the Junkers Ju 88 A–2, Ju 88 A–3, Ju 88 A–4, Ju 88 A–5 and Ju 88 A–6; six variants of the basic first mark of the Junkers Ju 88 design.



Junkers Ju 87D1 dive-bomber. It has external bomb racks, and twin rearward-firing guns in the cockpit.

The Ju 88 was also converted into a long range fighter, and this was actually the mark II—hence the designation Ju 88B. Similarly followed the Ju 88C, Ju 88D, Ju 88E and Ju 88F, still basically the Ju 88 but differing in various respects. In the Ju 88F, for example, the whole nose portion has been redesigned and 1,600 h.p. BMW 801D radial engines replace the 1,200 h.p. Junkers "Jumo" liquid-cooled engines of previous versions.

During this time the Junkers Ju 89 and Ju 90 had also been produced, and the firm had used up all their design numbers in this particular batch. No. 91 is a design number allocated to Arado. Hence a new design, essentially a development of the Ju 88, took a number from another batch and became the Ju 288. It appears that the system is so arranged that machines which, although new designs, are essentially developments of an existing design, take their new number 100 or 200 above that of the original. Apart from the Junkers Ju 88 and 288, we also have the Messerschmitt Me 109 and the Me 209, the latter bearing the same relationship to the 109 as the "Typhoon" does to the "Hurricane"; the Messerschmitt Me 110, Me 210, and Me 410.

Mistakes are often made in quoting new design numbers, and therefore an understanding of the German system is very useful. The Russians, for example, have reported that a new Messerschmitt Me 115 is being used on the Eastern front. Now 115 is a Heinkel design number, and hence this report is almost certainly in error. In actual fact the machine referred to is probably the Messerschmitt Me 209, one of their latest fighters, which has not yet gone into service in great numbers.

Thus manufacturers' (*Continued on page 430*)

Amusing Toys for the Youngsters

Simple Meccano Novelties

THE approach of Christmas is a good time to turn to the amusing side of model-building and this month we are giving examples of quaint models that require no driving motor and contain only a few parts. Building and operating them will be found good fun. The first of these models is the "Bucking Broncho" shown in Fig. 1. This can be set in action merely by pushing and pulling the Strip 1, when the "horse" performs all the antics of which it is capable in an endeavour to unseat its rider.

The model is built up on a base formed by a $5\frac{1}{2}'' \times 3\frac{1}{2}''$ Flat Plate bolted to Angle Girders and the details of the horse and man will be clear from the illustration. The man's head, a 1" Pulley, is fixed to his body by means of a Corner Angle Bracket. It should be noted, however, that the Bolts fixing the horse's hind legs, and those attaching the man's limbs to his body, a Trunnion, are all lock-nutted, so that the parts are free to pivot. The Bolt fixing the $2\frac{1}{2}''$ Curved Strips forming the rider's arms to the horse's neck also is lock-nutted.

The Curved Strip forming the horse's front leg is lock-nutted so that the part is free to pivot. The Bolt fixing the $2\frac{1}{2}''$ Curved Strip forming the rider's arms to the horse's neck also is lock-nutted.

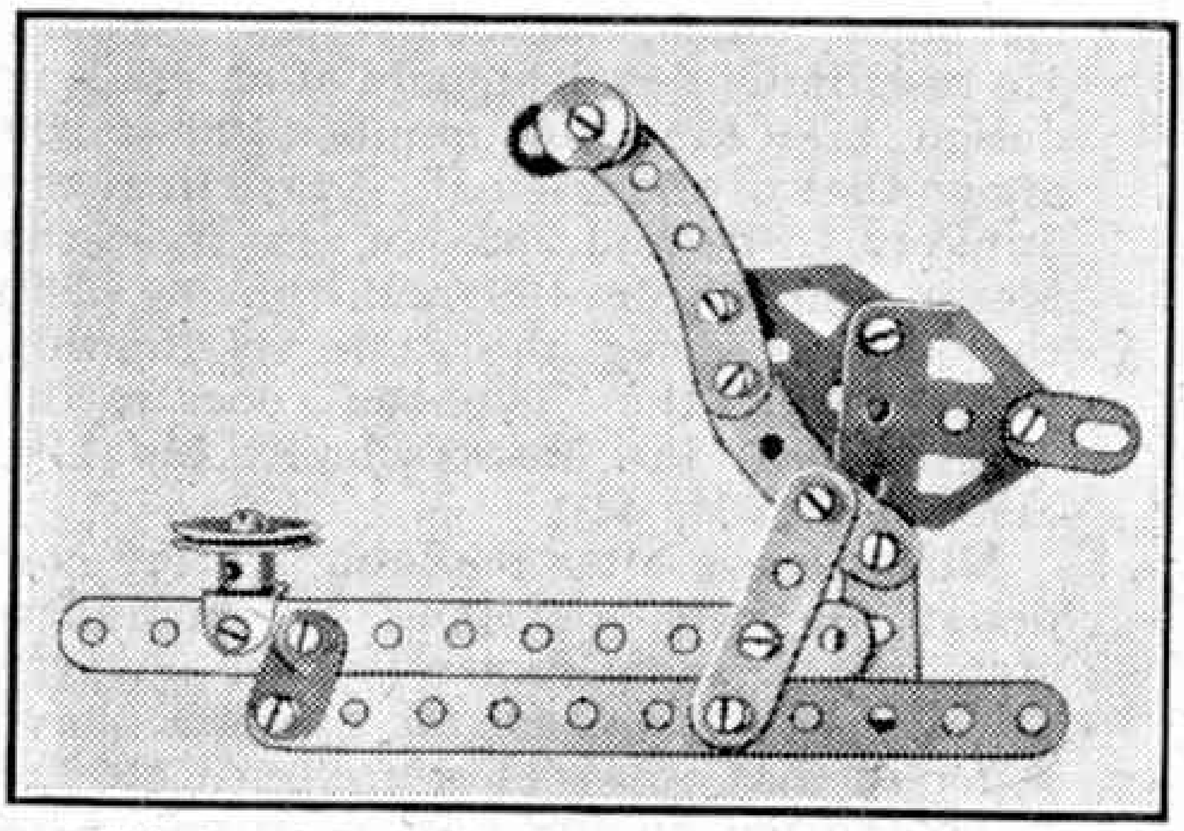


Fig. 2. A hen that pecks hard for its living.

The Curved Strip forming the horse's front leg is lock-nutted to a $1'' \times \frac{1}{2}''$ Angle Bracket bolted to the Flat Plate and this Bolt holds also a 3" Strip 2. At the other end this 3" Strip is connected by a Flat Bracket to the centre hole of a $5\frac{1}{2}''$ Strip that forms the operating lever 1.

The rear end of the $5\frac{1}{2}''$ Strip is lock-nutted in the position shown to the horse's fore-leg.

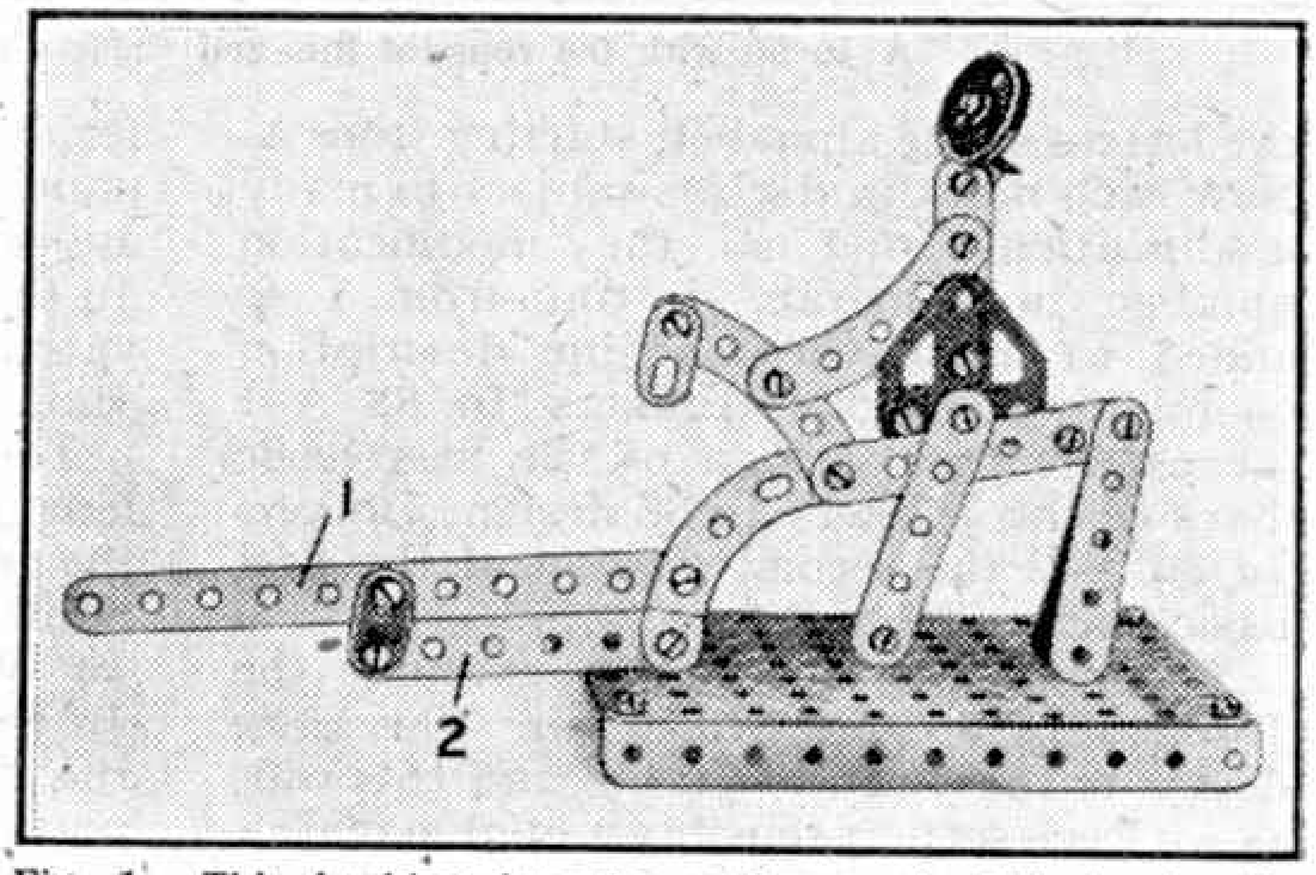


Fig. 1. This bucking broncho performs splendidly in frantic efforts to get rid of his rider.

Parts required to build the "Bucking Broncho": 1 of No. 2; 2 of No. 4; 5 of No. 5; 2 of No. 9; 2 of No. 10; 1 of No. 12; 1 of No. 22A; 31 of No. 37a; 22 of No. 37b; 1 of No. 52a; 3 of No. 90; 1 of No. 126A.

The "Pecking Hen" shown in Fig. 2 operates in a similar manner to the "Bucking Broncho." The hen's body consists of two Trunnions and two Curved Strips, one of the latter forming also the creature's neck. The head is a $\frac{1}{2}''$ loose Pulley and a Flat Bracket, which are held on a $\frac{1}{2}''$ Bolt, and a Flat Bracket forms the tail. One of the bird's legs is a 2" Strip and the other is a $1\frac{1}{2}''$ Strip. The 2" Strip is attached at its lower end to two $5\frac{1}{2}''$ Strips, by means of Bolts fitted with lock-nuts, the Bolts passing through the Strips in the positions shown in the illustration. These Strips are also connected by a Flat Bracket bolted to the Strips by means of lock-nutted Bolts. All the Bolts holding the bird's leg and the Flat Bracket must be quite free; otherwise the model will not work.

A 1" Pulley is used to represent a container for the bird's corn, and this is fixed to the upper $5\frac{1}{2}''$ Strip by means of an Angle Bracket and Bolts. To operate the model it is only necessary to move the $5\frac{1}{2}''$ Strip backward and forward, when the bird will commence to peck vigorously

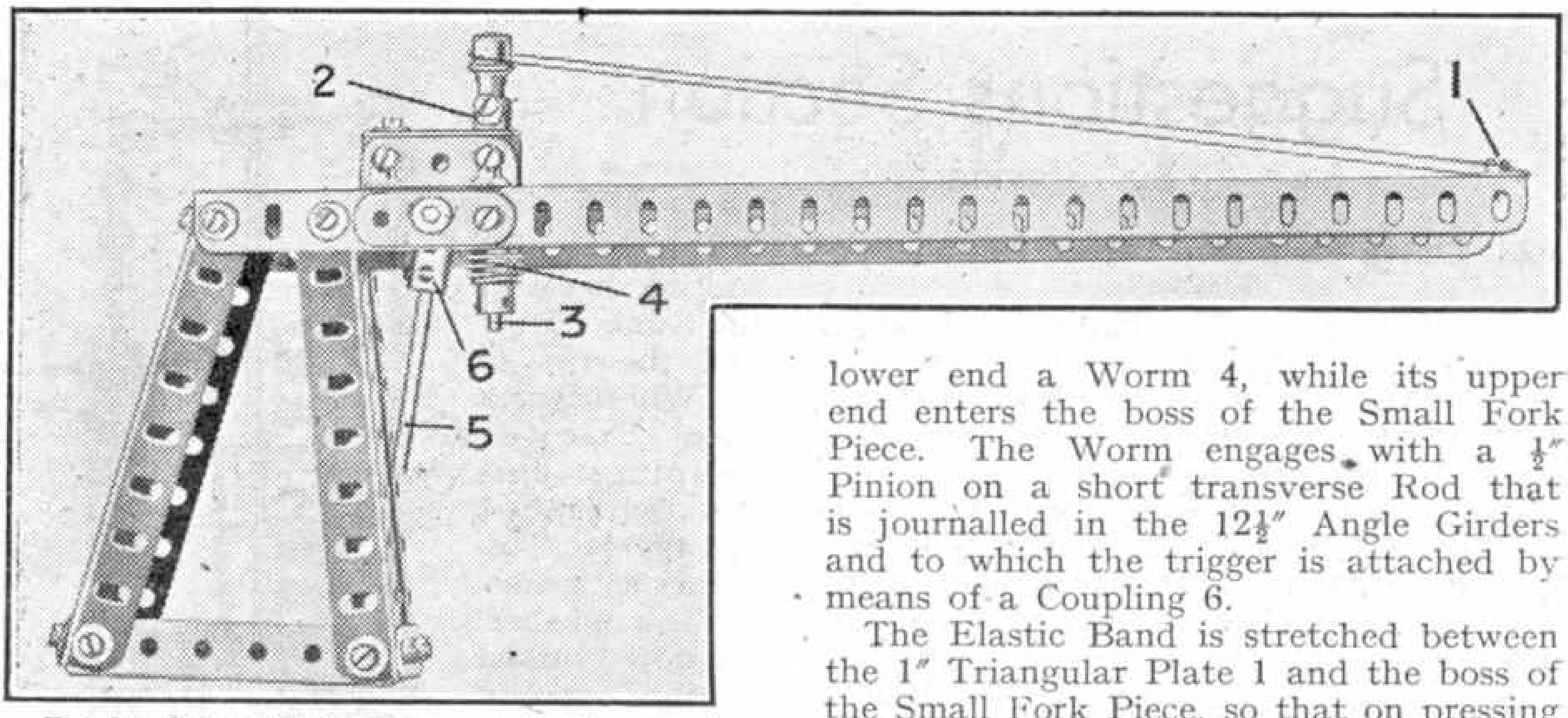


Fig. 3. This pistol shoots elastic bands and will provide real but harmless fun.

and with amusing realism for its food!

Parts required to build the Pecking Hen: 2 of No. 2; 1 of No. 6; 1 of No. 6a; 3 of No. 10; 1 of No. 12; 1 of No. 22; 1 of No. 23; 16 of No. 37a; 12 of No. 37b; 2 of No. 90; 1 of No. 111a; 2 of No. 126a.

An unusual type of toy pistol is shown in Fig. 3. Instead of firing bullets this simple novelty shoots elastic bands, and for this reason it is particularly suitable for young children, as it cannot hurt them in any way.

The actual construction of the toy should not prove difficult if the illustration is examined carefully. It will be seen that the handle is composed of four $4\frac{1}{2}''$ Angle Girders fixed to the rear end of the "barrel" of the pistol, and that the barrel consists of two $12\frac{1}{2}''$ Angle Girders. The front ends of the latter are secured to a 1" Triangular Plate 1.

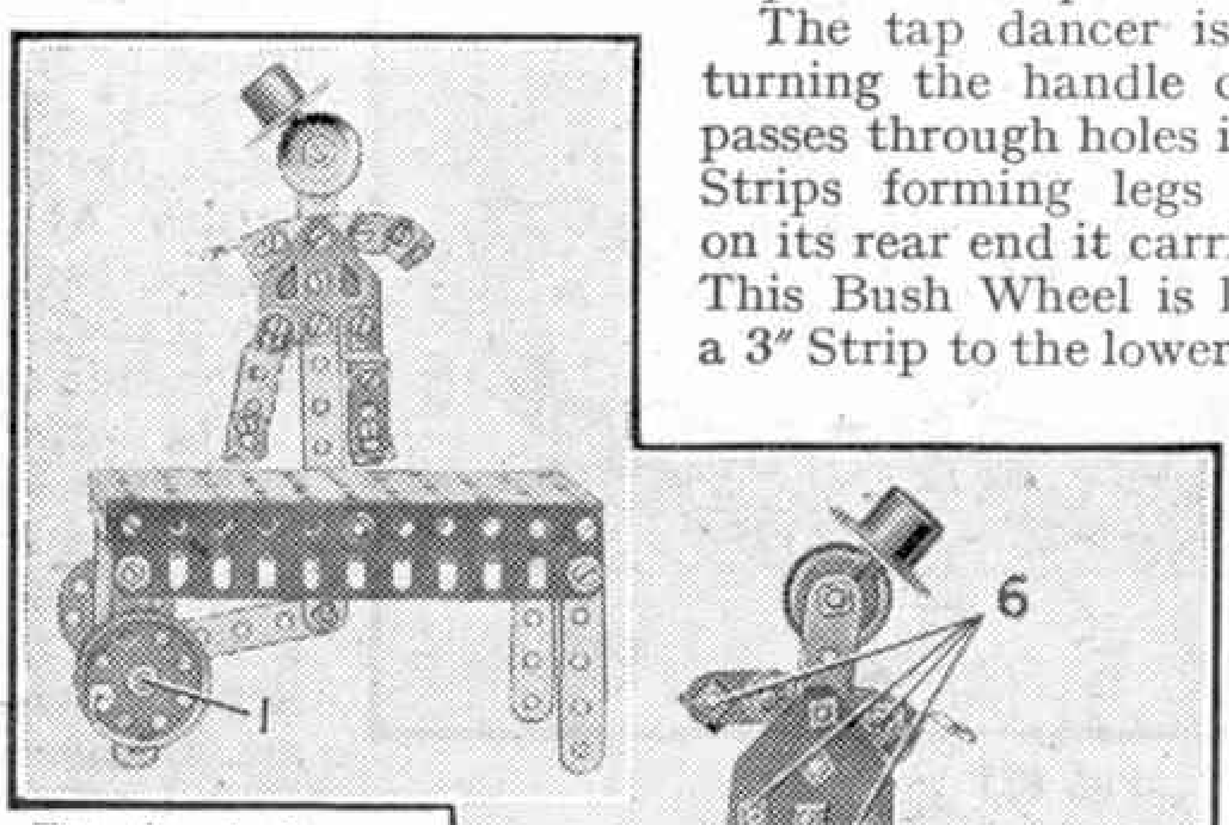
The release mechanism is consructed as follows. A Small Fork Piece is mounted pivotally on Bolts that are inserted in the grub-screw holes of a Crank 2, which is attached to the barrel by Double Brackets and $1\frac{1}{2}''$ Angle Girders. A Rod 3, sliding in the boss of the Crank carries at its lower end a Worm 4, while its upper end enters the boss of the Small Fork Piece. The Worm engages with a $\frac{1}{2}''$ Pinion on a short transverse Rod that is journalled in the $12\frac{1}{2}''$ Angle Girders and to which the trigger is attached by means of a Coupling 6.

The Elastic Band is stretched between the 1" Triangular Plate 1 and the boss of the Small Fork Piece, so that on pressing the trigger 5 the Rod 3 moves downward out of contact with the boss of the Small Fork Piece, which then falls forward and releases the missile.

Parts required to build Pistol: 4 of No. 9a; 2 of No. 9c; 2 of No. 9f; 2 of No. 8; 3 of No. 6a; 2 of No. 62b; 1 of No. 62; 2 of No. 11; 1 of No. 133a; 1 of No. 165; 2 of No. 16a; 1 of No. 17; 1 of No. 63; 1 of No. 32; 1 of No. 26; 29 of No. 37a; 29 of No. 37b; 2 of No. 59; 1 of No. 186b.

The fourth toy shown is Fig. 4. It represents a tap dancer, whose antics will give rise to much amusement. Constructional details of the figures and the box-like base on which it is mounted will be clear from the illustrations, and it is only the operating device that requires description.

The tap dancer is set in motion by turning the handle of the Rod 1, which passes through holes in the two left-hand Strips forming legs for the base and on its rear end it carries a Bush Wheel 2. This Bush Wheel is linked by means of a 3" Strip to the lower end of a $4\frac{1}{2}''$ strip 3, to which the figure of the dancer is bolted. Locknuts are used throughout.



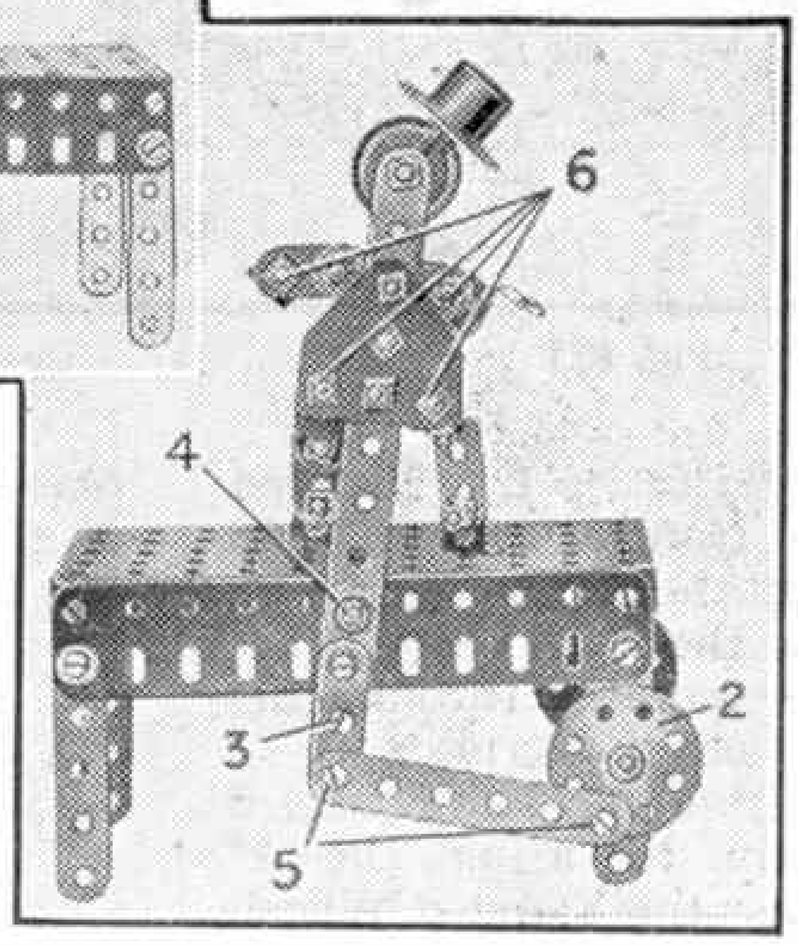


Fig. 4. A fine model of a tap dancer that is easy to construct and to work.

Parts required to build Tap Dancer: 1 of No. 52; 2 of No. 103; 2 of No. 6a; 2 of No. 126a; 1 of No. 22; 1 of No. 217a; 1 of No. 164; 1 of No. 111; 1 of No. 15b; 1 of No. 16b; 4 of No. 12; 4 of No. 4; 1 of No. 2; 1 of No. 24; 1 of No. 20a; 1 of No. 115; 2 of No. 10; 1 of No. 12b; 1 of No. 125; 1 of No. 154a; 29 of No. 37a; 24 of No. 37b; 1 of No. 111a; 4 of No. 59.

Suggestions Section

By "Spanner"

(623) Clutch-Controlled Drive Transmission
("Spanner")

Fig. 623 shows a simple mechanism suitable for controlling a drive transmission and allowing the drive to be started and stopped at will without interrupting the motion of the primary shaft.

It is constructed as follows. A Rod 1 carries a 1⅛" Flanged Wheel and a Socket Coupling that has a 1" Pulley held in its boss at one end and a 1" Gear Wheel at the other end. The Rod is mounted in suitable bearings and the Flanged Wheel is fixed to it, but the Socket Coupling unit is quite free to rotate independently of the Rod. The 1" Pulley is fitted with a Rubber Ring and on the Rod, between the face of this Pulley and the Flanged Wheel, is a Compression Spring 2. Engaging in the groove of the Socket Coupling is a Threaded Pin, which is locked in a Threaded Boss 3 that travels to and fro along a Screwed Rod 4 when the latter is rotated by turning the 1" Pulley 5. Owing to the Pin engaging in the Socket Coupling the rotation of the Pulley 5 causes the 1" Pulley to be brought either

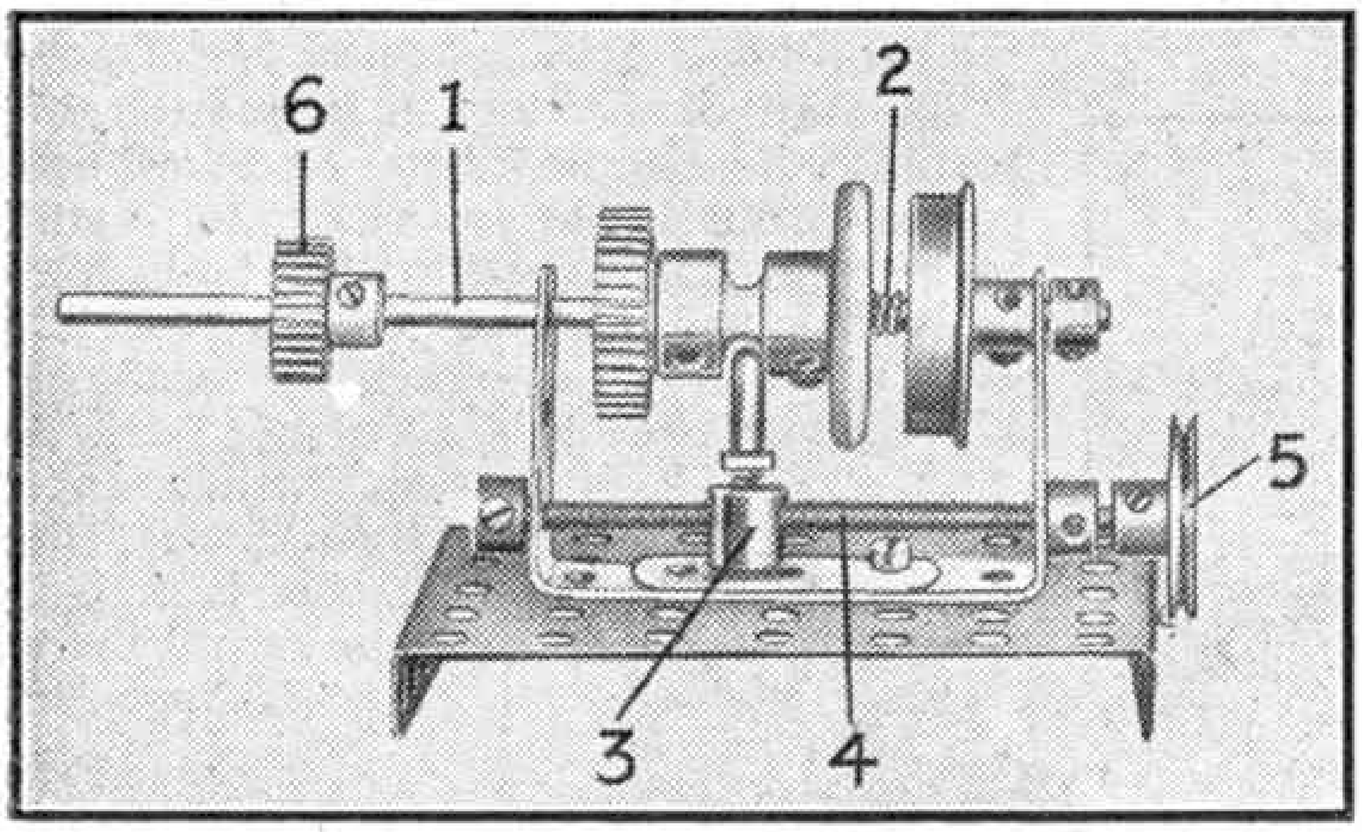


Fig. 623

hard up against the rim of the Flanged Wheel or withdrawn from it, according to the direction in which the Pulley is turned.

The drive is led to the Pinion 6 and the shaft to be driven is operated through the 1" Gear held in the Socket Coupling.

To transmit the drive the handwheel 5 is turned sufficiently to bring the 1" Pulley hard up against the Flanged Wheel, so that the friction between the Rubber Ring and the rim of the Wheel causes the Socket Coupling unit and the shaft 1 to revolve together as a unit. If the handwheel is now turned in the opposite direction the Rubber Ring is withdrawn from contact with the Flanged Wheel and the Socket Coupling unit comes to rest. The 1" Gear should be arranged to mesh with a ½" × ¾" Pinion fixed on the secondary shaft.

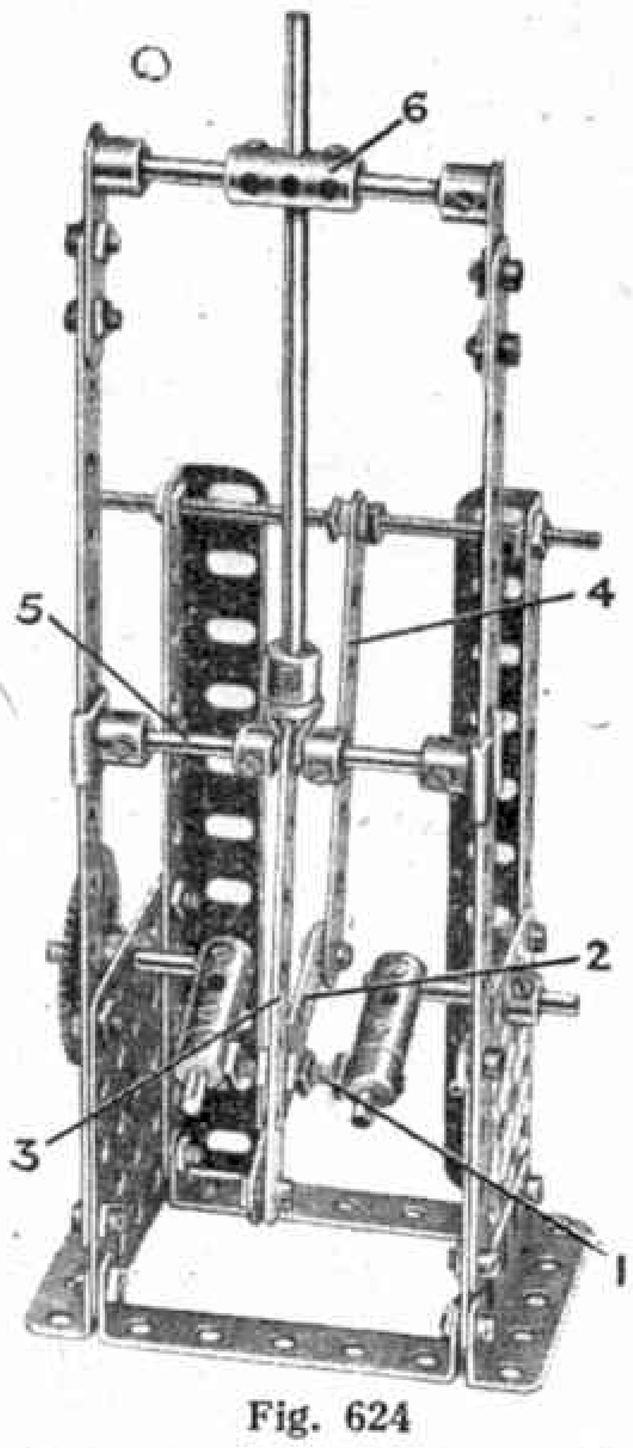


Fig. 624

(624) Interesting Crank Device
("Spanner")

The ingenious mechanism shown in Fig. 624 gives a stroke almost double the length of the actual crank stroke. A suitable frame is first built up from two 2½" × 2½" Flat Plates spaced apart by 2½" × ½" Double Angle Strips. At one side of the Flat Plates two 5½" Angle Girders are placed vertically and at the other side are two 7½" Strips.

The crankshaft is built up from two 1½" Rods, and on the inner end of each is a Coupling placed transversely and carrying a 1" Rod. Each of these Rods is fitted with a Collar and these are connected by a 1" Screwed Rod 1. The 2½" Strip 2 is fitted on the Rod 1; and is held in place by locknuts on each side. One end of the Strip is pivoted to a 3½" Strip 4, the upper end of which is held loosely on the Screwed Rod connecting the vertical 5½" Angle Girders. The connecting rod is a 3½" Strip 3, and a 2½" Rod 5 is passed through its end hole.

The Strip is carried in an End Bearing and is centred on the Rod by two Collars.

Eye Pieces fixed at the ends of the Rod slide up and down on the 7½" Strips, which are spaced apart at the top by two 1" Rods held in Cranks, and a Coupling 6. This Coupling forms a guide for the piston Rod that is fixed in the End Bearing.

(625) Intermittent Rotary Motion
("Spanner")

The device shown in Fig. 625 is designed to convert continuous rotary motion to intermittent rotation. Rod 1 is the driven shaft. The drive from the Motor is led to a Worm 2 that meshes with a 57-teeth Gear Wheel 3, in which two Threaded Pins 4 are screwed.

As the Gear 3 slowly rotates the Threaded Pins 4 alternately press against the end of a Rod 5, which is held in a Coupling mounted on a Pivot Rod 6, as shown. A Swivel Bearing forms a pivotal connection between the Rod 5 and a short Rod 7, and the latter carries a Crank 8, in the end hole of which the driven shaft is journalled. The driven shaft slides in its bearings and carries at its inner end a ¾" Contrate Wheel 9. A second ¾" Contrate Wheel 11 is fixed to the driving shaft on which the Worm 2 is mounted, and the two Contrates normally are held in engagement by means of a Compression Spring 10 mounted on the driven Rod and pressing a Collar against the Crank 8.

When one of the Pins 4 strikes the lever 5, the Rod 7 is pushed back in its bearings, the Spring 10 is compressed and the two Contrates are disengaged. The Motor drive then rotates independently until the Gear Wheel 3 has carried the Threaded Pin far enough to allow the Rod 5, through the action of the Spring on Rod 1, to slip back to its normal position, when the Contrates re-engage. The cycle of operations is repeated when the second Threaded Pin strikes the Rod 5.

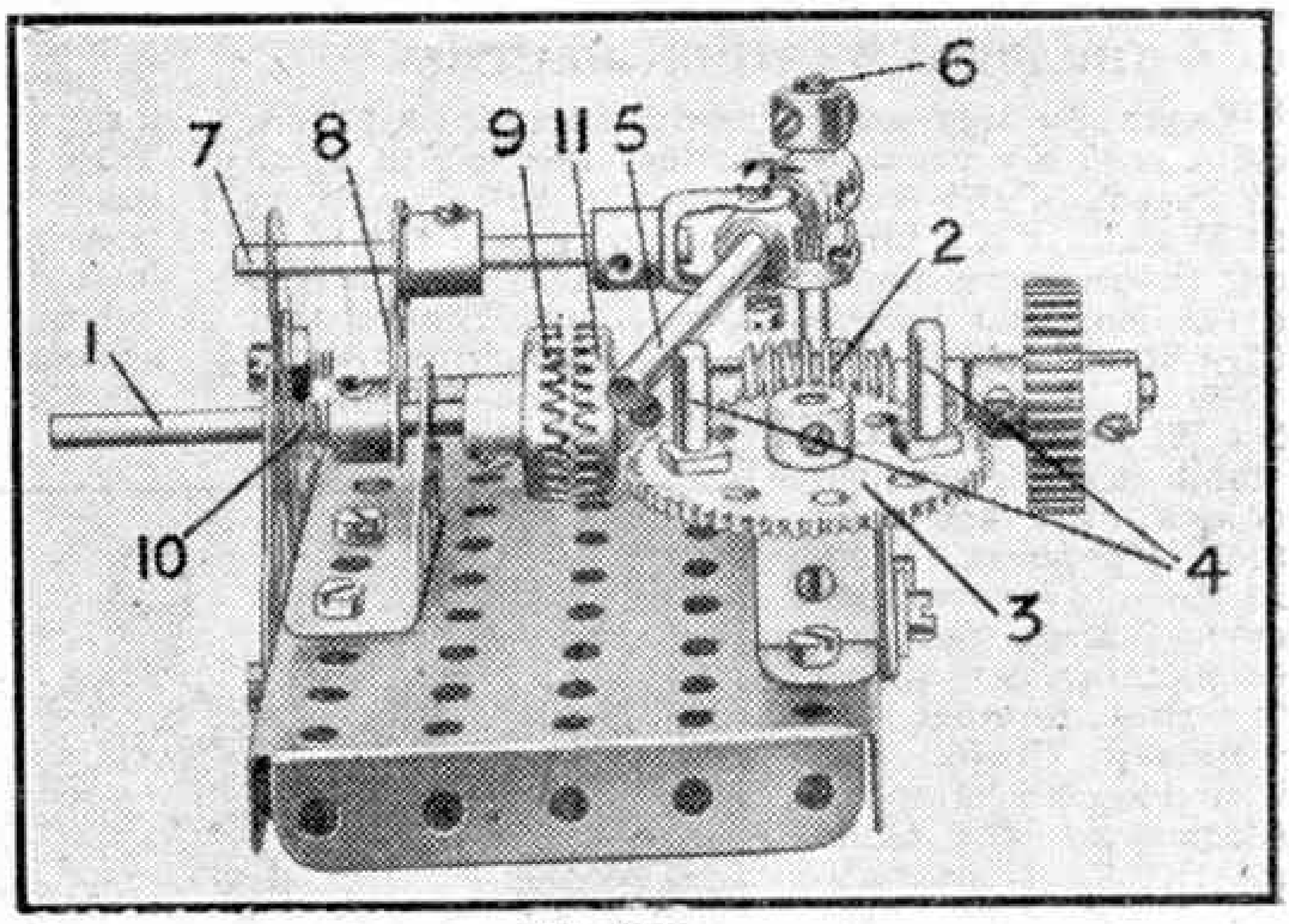


Fig. 625

A Fine Holiday Contest

Would you like to celebrate the Christmas holiday season by winning a fine cash prize? Of course you would. Then here is your opportunity. The jolly contest announced on this page gives you a chance to win such a prize, and you will find it great fun to prepare your entry. All you have to do is to make up a short humorous story of not more than 50 words, written round names of Meccano Parts or terms used in Meccano model-building.

Here is a sample story that illustrates what is required. "Go and *Ring Frames* for some *Rollers*," said the *Boss*, one morning. "*Washer* want them for?" asked *Pawl*, the clerk, thinking to *Pulleys* leg. "Never mind, you *Worm*," replied the *Boss*. "*Cone* do as I tell you or I'll stop your *Grub Screw*."

It will be seen that spelling is not the Boss's strong point, or Pawl's either! But there is no doubt what they mean, and the variations they introduce add to the humour of this sample story. You can do the same so long as each Meccano Part name is correct. The usual model-building terms, such as pivot, bolted, journal, etc., also can be introduced. The prizes will be awarded to the competitors whose stories are considered by the judges to be the most humorous, and which include the greatest number of Meccano part names or model-building terms.

There will be two sections in this holiday competition, for Home and Overseas readers respectively, and in each cash prizes of £2/2/–, £1/1/– and 10/6 will be awarded for the best efforts. Entries should be addressed "*Christmas Holiday Contest, Meccano Ltd., Binns Road, Liverpool 13.*" Every reader can enter and even if you think your own entry is not as brilliant as you would like you should send it in, for there will be other prizes besides those announced. Do not forget to put your name and address on your entry. Closing dates: Home Section, 31st December, 1943; Overseas Section, 30th June, 1944.

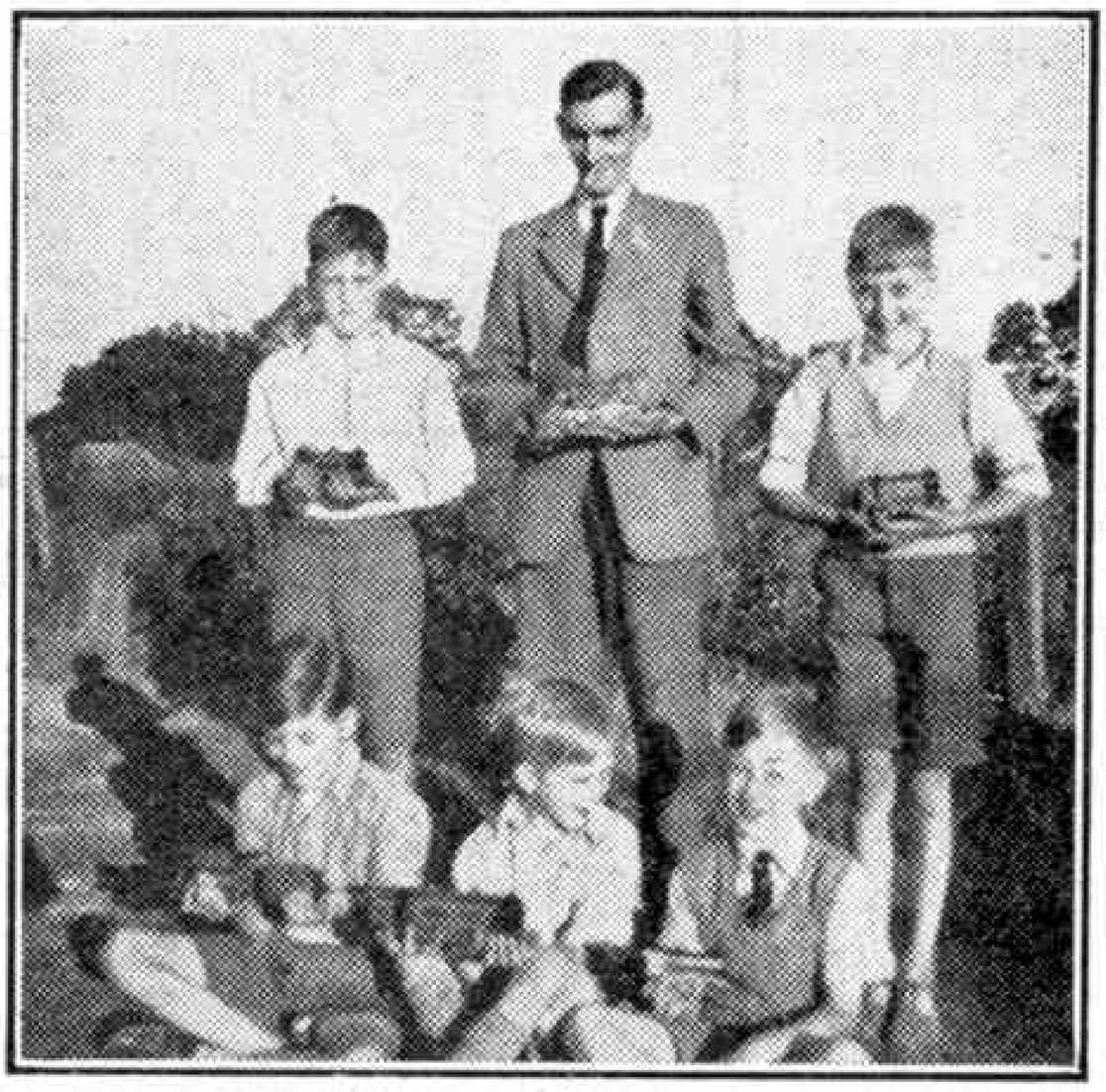
Club and Branch News

WITH THE SECRETARY

THE FIFTH WARTIME CHRISTMAS

We are now approaching our 5th wartime Christmas, and I send my warmest greetings this month to all my friends of the Guild and of the H.R.C. all over the World. It is a brighter Christmas than any of its four predecessors, for we can begin to see the end of the long and terrible struggle, and I hope that you will all enjoy it as much as war conditions allow.

The holiday season brings us to the end of the first Winter Session, and I think it is a good time to look back and take stock of progress. There has been a remarkable revival during the past few months, as is shown by the number of proposed Clubs and Branches, and of incorporations in the Guild and H.R.C. I congratulate those who have done so much to increase Club and Branch activities, but we must go ahead with even more courage and confidence. This applies not only to those organisations that are comparatively little disturbed by the war effort, but also to those whose senior members are scattered because of service calls, or whose junior members are for the moment lost through evacuation. I know that in all these Clubs the spirit of the Guild is truly alive, and it is never too soon to make plans for the busy times that will come later.



Members of the Warnham, Sussex, Branch, No. 449, which has recently become incorporated with the H.R.C. Mr. T. Armstead, Chairman, is in the middle of the back row, with S. Delves Broughton, secretary, immediately in front of him. The Branch has a very fine track, on which timetable services are run with the aid of six locomotives. Excellent use is made in planning operations of Hornby Railway Company articles in copies of the "M.M." included in the Branch Library.

Now more than ever a special point should be made of encouraging younger members, who should be sought through a recruiting campaign in which every one interested in the welfare of his Club should play a direct part by finding at least one recruit himself.

* * * *

In September of this year I wrote of the splendid booklet *"The Club That Boys Built,"* written by H. W. Govan, of the Edinburgh Hobbies Club M.C. Club Leaders or Branch Chairmen who are interested in this can obtain a copy from Mr. C. S. Morrison, 28, Wellington Street, Edinburgh 7, price 2/-.

Recently Incorporated Branches

449. WARNHAM—S. Delves Broughton, Home Farm, Pondtail Road, Horsham, Sussex.
450. WINFRITH—W. J. Plummer, "Alton," School Lane, Winfrith, Dorset.
451. ROMANBY—D. Gamble, 4, Ainderby Road, Romanby, Northallerton.
453. THREE BRIDGES—O. J. Baldwin, 27, St. Marys Drive, Three Bridges, Sussex.

CLUB NOTES

LONG ITCHINGTON M.C.—This newly affiliated Club is making excellent progress. Meccano cranes and a signal gantry have been built for use on the Hornby Train layout of the associated Branch. A Club theatre has been constructed and several stage shows have been presented. Club roll: 7. *Secretary:* J. Gaskins, 3, Model Village, Long Itchington.

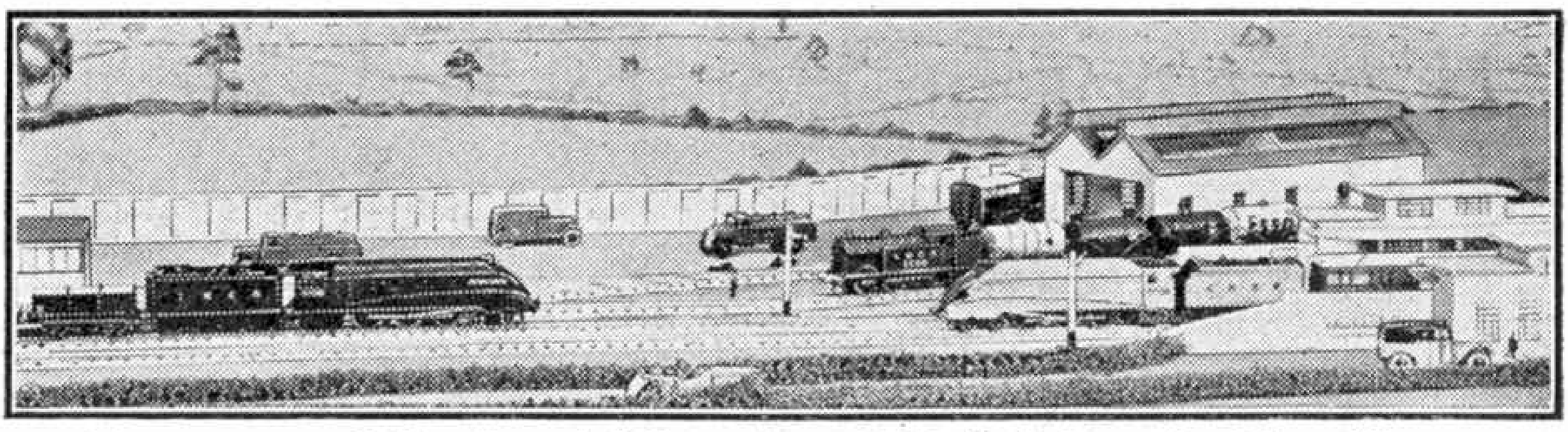
KESWICK M.C.—The Club's Exhibition was very successful and an appreciative report appeared in the local press. In addition to Meccano models and model working engines the display included stamp collections and white mice. There was a Lantern Show, and tea and cakes were kindly provided by Mr. and Mrs. Lees. Three new members enrolled as a result of the Exhibition, which realised £2/5/- for British Red Cross funds. *Secretary:* J. Lees, Woodside, Chestnut Hill, Keswick.

GRASMERE M.C.—Great activity prevails at Grasmere, where several new members have been enrolled. Cycle runs were enjoyed while the weather was favourable, and indoor meetings have been devoted to model-building and competitions of all kinds, members being asked to build Meccano models of locomotives in one of these. The outdoor railway has been dismantled and relaid in the Club room. The Club Library now includes over 300 books. Club roll: 21. *Secretary:* I. H. Hardman, "Greenburn," Wansfell Road, Ambleside, E. Lakes.

KILROOT M.C. — The outdoor session was very greatly enjoyed and now members are taking part with equal zest in indoor activities. These include preparations for an Exhibition. Model-building and Woodwork are the chief activities, the most interesting models built including cranes, lorries, a roundabout and an electric drill. Observation and General Knowledge Tests, Games and a Hidden Stamp Hunt have added to the fun. Club roll: 15. *Secretary:* J. C. Mulvagh, Dobb's Cottage, Kilroot, Carrickfergus, Co. Antrim, N. Ireland.

BRANCH NEWS

KINGSTON-ON-THAMES—An excellent layout has been constructed, with ample accessories. Shunting operations were carried out at one meeting, while the Branch locomotives were tested and haulage trials made. At further meetings express passenger and munition trains were run. The layout is being extended and new rolling stock brought into use. Improvements include the provision of new engine sheds and a signal box. *Secretary:* J. Hathaway, 6, Cromwell Court, Kingston Hill, Kingston-on-Thames.



A busy scene on a Dublo railway, including various special traffic features referred to on this page.

Special Freight Working in Dublo

THERE is always an attraction in the working of special traffic by rail, and the model railway owner is quick to seize the opportunity for the reproduction in miniature on his own system of any special working that he observes in real practice.

In the Hornby-Dublo System there is ample scope for the working of special freight trains, for there is a fairly good range of vehicles that can be employed in the composition of "special-purpose" trains. We have often referred to the operation of what we may term "regular special" freight trains such as perishables, coal and so on. Trains of this kind are fairly well known to the lineside "train watcher" who in most cases keeps a keen look-out for "*The Up Meat*" or whatever the local or made-up title of the train may be. There are Meat Vans and Fish Vans in the Dublo System and if a complete train of them is not at the disposal of the "Operating Manager" he can perhaps run one or two of each together in the same train and add a few of the Standard Goods Vans to complete the formation. These latter are general-purpose ventilated vehicles, similar in build and style to the perishable traffic Vans, so that their use is quite reasonable.

The length of fully-fitted express goods trains is limited in actual practice, and on the average Dublo layout a short train will be quite in keeping with the general conditions so that the shortage of stock that is the result of present circumstances will not be so severely felt. Again, the addition of one or two Vans, where these are the only ones available, to a passenger train is quite in order. Similar working can be followed with cattle or horsebox traffic as the number of Cattle Trucks or Horseboxes is not usually great on a model system.

Coal, minerals, bricks and other rough traffics are always handled in open wagons and for these there are the standard Open Wagons of both normal and high-sided types. For coal the model Coal Wagons have a most realistic representation of the load. It is not difficult either to make up dummy loads, using a false bottom of card, like the lid of a box, made to fit inside the wagon body and having its surface covered with small pieces of coal or stone glued on. Coal traffic is usually moved in bulk loads but where this is not possible in miniature it is still possible to reproduce the haulage of a few wagons from big yards to smaller ones for distribution purposes, and of course the corresponding returning of empty wagons.

With coal, and indeed with general traffic also, we can run a "pick-up" train, starting with the locomotive and brake van only. These call at the siding and pick up say a couple of vehicles; then a circuit or two of the main track is made and further wagons or vans are attached. This continues till we have a full load, each stop representing a different colliery or general traffic siding or yard. Now the complete train makes a run supposedly to a larger yard. The work so far will have been done by a Standard 0–6–2 Tank. We may then change engines, a Dublo Streamliner being attached for a more or less lengthy through run, but if we have no other engine but the tank we shall have to use this. The through run being completed, we can now follow a reverse process to the "picking-up" with which we started, a succession of calls being made at the siding to set down different vehicles each time.

Bricks are in great demand nowadays for a variety of building purposes, and the handling of brick traffic is made the more interesting on a Dublo line if there is available a High Capacity Brick Wagon of the type used by the L.N.E.R. This is a splendid model running on bogies and its inclusion makes even an ordinary freight train look quite distinguished! If we run a "brick special" we can add several ordinary open Wagons to the Brick Wagon to make up our train. Similarly we can if necessary press the Brick Wagon into use on a coal train. A load of bricks small enough to suit the Dublo scale can perhaps best be reproduced by the false bottom scheme referred to previously, the top surface of the card shape being painted and ruled up to represent bricks. Large stone blocks are easier to model and there is the advantage that perhaps one only or two at the most can be carried in the average four-wheeled wagon. Blocks of wood painted stone colour will do quite well or it may be possible to make use of one or two pieces from a set of building blocks such as is found in most toy cupboards.

One point in connection with the Brick Wagon is that as it represents a vacuum brake fitted vehicle it should for preference be run near to the engine. In this position in actual practice it would add to the braking power available for controlling the train. In miniature naturally its use in this position would merely be for the sake of correct appearance.

The transport of petrol and oil generally is of such importance in these times that we can make a feature of Tank Wagon operation on our Dublo railways. Ordinarily these wagons when loaded are conveyed about the middle of a mixed train, this being considered the safest place for them. If we have a special load of them, however, or the tanks are returning empty it may be necessary to form the complete train as shown in the illustration on this page, where an engine is busy shunting a load of supposed empties. In this same illustration the standard Engine Shed appears, this time used as an oil depot. This is an unusual but also interesting use for it either alone or in connection with some other lineside feature. The two Cattle Trucks that appear beyond the building will be noticed; these are supposed to be in use for the carriage of oil drums, a practice that is quite common on some lines.

Headlamps on Hornby Railways

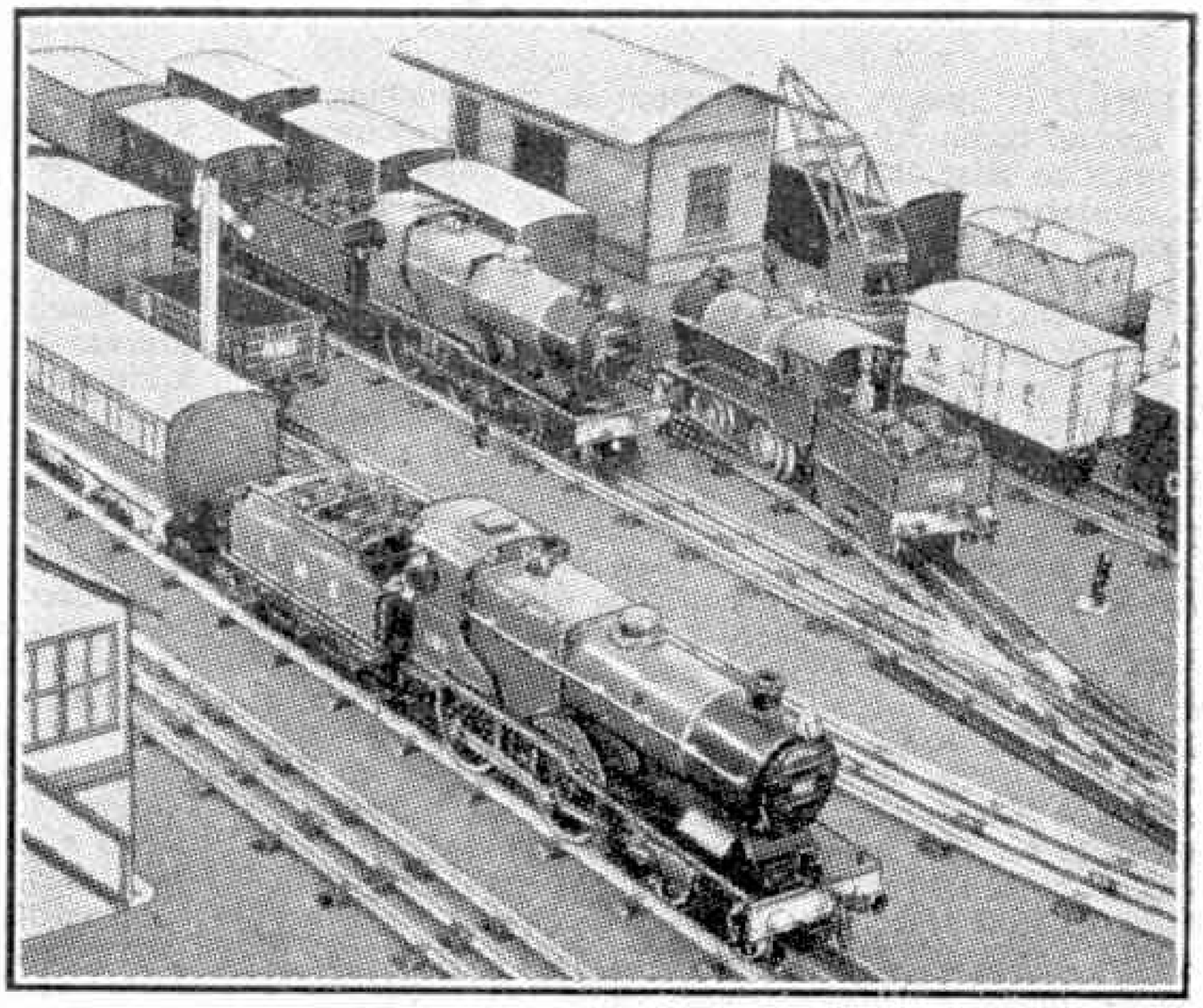
OF the various accessories and "odds and ends" that help to improve the appearance or increase the realism of a train on a miniature railway none perhaps is more fascinating than the detachable headlamps with which most Hornby Locomotives are provided.

Generally speaking the headlamps displayed on the front of a locomotive indicate the class of train that it is hauling. The indications of the lamps in different positions were laid down a good many years ago in a standard headlamp code to which a number of the principal companies agreed. Nowadays the standard code is in general use on the G.W.R., and on the L.M.S. and L.N.E.R. but with certain exceptions. Thus on the Caledonian and G.S.W.R. sections of the L.M.S. route indications are the rule and special indications are used, details of which are outside our present subject. Again on the main and branch lines of the Great Eastern section of the L.N.E.R. headlamps are replaced in daytime by white discs or boards, their indications, however, being the same as those of lamps in corresponding positions in the standard code. The London suburban trains on the same section in and out of Fenchurch Street and Liverpool Street stations have their own particular indications in view of the complex nature of the traffic. On the S.R. the standard code is not used at all; route indications by means of the characteristic white discs are used. These are known officially as "engine head signals."

Readers will be familiar with the position of the four brackets that are provided to hold the lamps at either end of a locomotive. A single lamp can be displayed in any of these positions; certain indications require the use of two lamps, so that the number of possible indications is increased. Let us suppose that we are to run an ordinary passenger train; before our train leaves the starting point we place a single lamp on the front of the engine, in this case on the bracket in front of the chimney, or on the upper part of the smoke-box front. If the engine is of the tank type and is running bunker first the corresponding top bracket on the bunker is used. At the destination we may perhaps require to run the engine round the train for the return trip. As a rule the lamp is placed in position ready for this journey before the engine is uncoupled and run forward clear of the train. It is in these "lamping" operations that the fascination of the detachable headlamps becomes apparent; the operator feels that he is doing one at least of the lesser duties of the enginemen!

Since two headlamps is the maximum number required under the standard code we will allow our locomotives two each as part of their normal equipment. So when any of the "one-lamp" indications is in use we have one spare lamp. This can be carried "back to front" on one of the front end brackets not in use at the moment. Alternatively on a tender engine the "spare" can be kept on top of the tender tank if the engine is one of those with the larger and more elaborate tenders with internal fittings. Another scheme that is favoured by some operators is to hang any spares on the handles of the brake or water scoop standards on the tender front. Brackets for spare lamps are sometimes fitted on the tender "front" in real practice so that there is some justification for the scheme. If our railway is short of lamps—unfortunately these little accessories can be lost and under present conditions they cannot be replaced—we may have to "ration" our engines to one lamp! Additional lamps required for engines actually at work will have to be borrowed from those standing by in the sheds or elsewhere.

Had we been going to operate an express train we should have fitted up two lamps at the front of the engine, one on each of the brackets above the buffers. This is a well-balanced and business-like arrangement that somehow always gives an air of importance to the engine at the head of a model express. Journey's end to an express engine usually means a trip running light to a turntable or triangular layout for turning round. This is a light engine movement and so the engine must be suitably indicated. A single lamp is placed on the centre bracket above the buffer beam of the engine or tender whichever happens to be leading. The same indication would also be used if several engines together were moving down the line, as they sometimes do when going to or from the sheds on to the works for overhaul. An engine with a brake van going down the line to pick up a train is similarly indicated.



An express goods is being made ready to leave the yard. Note the headlamp indication.

For a moment let us turn our attention to the other end of the train. It is a rule that every train must carry at the rear end of the last vehicle a tail lamp to indicate that the train is complete and that no vehicles have broken away from it. The signalmen have to satisfy themselves by noting the tail lamp in position that all is correct. In miniature as a rule not much attention is paid to this point, but the Hornby No. 1 Coaches and Guard's Vans, also the No. 2 Coaches both corridor and compartment types, are provided with lamp brackets on which the standard tail lamps supplied with the larger vehicles can be displayed. While attending to the "lamping" of our locomotives therefore we should not neglect to see that the tail ends also of our trains are correctly indicated.

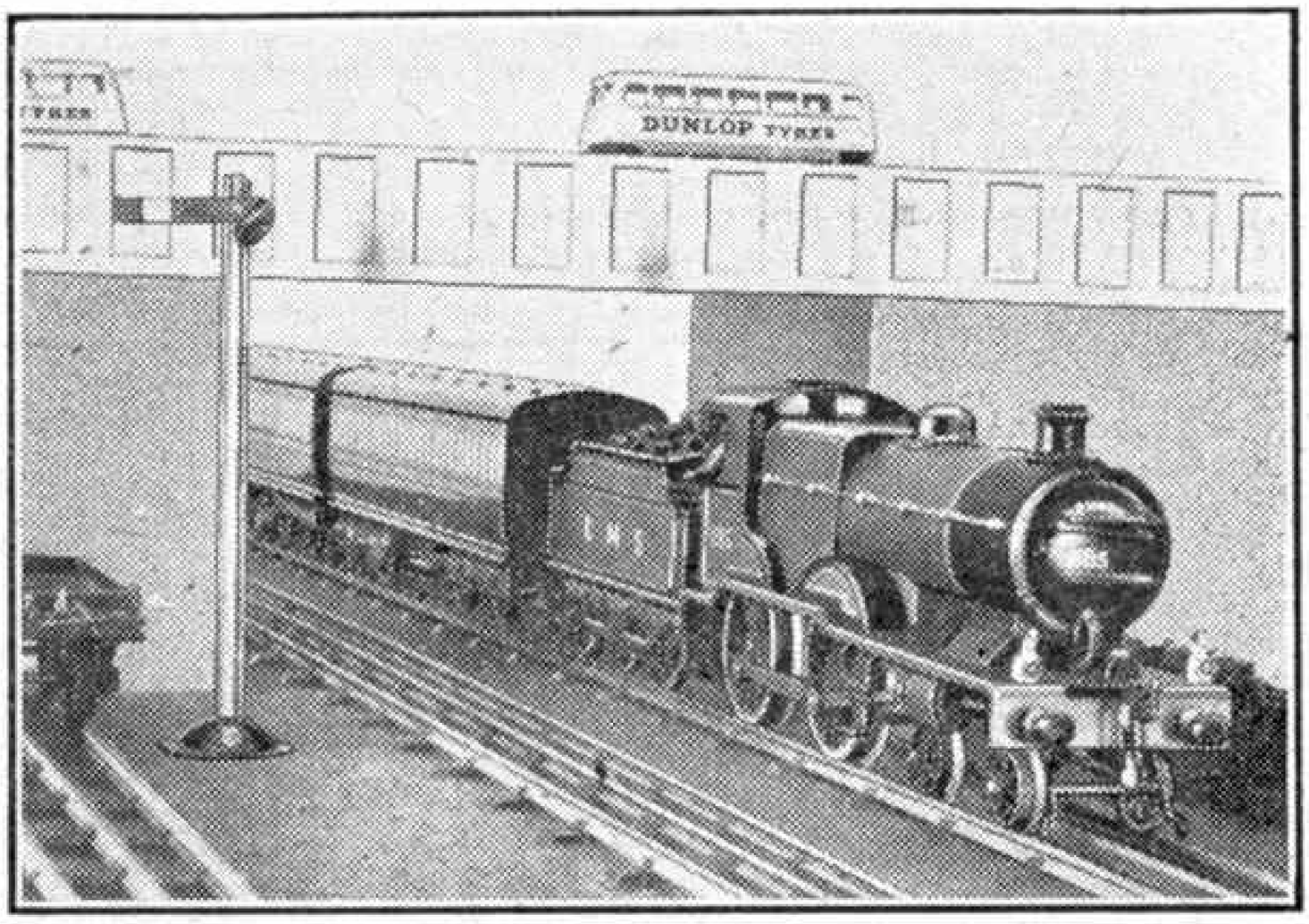
Normally a single tail lamp is sufficient although the L.N.E.R. "*Coronation*" express does carry two. Apart from this particular instance an additional tail lamp at the rear of one train indicates that a "special" is to follow that has been arranged without the usual printed notice owing to lack of time. Here then is a good chance to use an interesting tail lamp

indication; special trains in miniature are often arranged at a moment's notice and we can warn the "staff" to expect one by placing two tail lamps on the end of the train before.

An interesting point that may not have occurred to some readers is that a light engine moving down the line to the turntable or to the sheds should carry a tail lamp. Generally the real engine lamps are provided with a red slide that can be slipped into position to provide the normal red indication of a tail lamp. We cannot do this in miniature but we may perhaps have sufficient tail lamps on hand to provide our engines with one when necessary. Alternatively a dab of red paint on the "glass" of a headlamp will make it suitable for this particular purpose. As a rule too when a train is backed out of a terminus to the carriage sidings the engine of course becomes the tail of the train and displays a tail lamp. We can therefore follow this practice in miniature; it is not really important from the normal operating point of view but it does add to the realism and the fun when these and similar operations are correctly carried out. Generally the particular position in which the tail lamp is placed for backing out does not appear to matter; it will probably be placed on the handiest bracket to reach from the station platform, unless in particular districts it is usual to use one or the other position according to the route the train will follow or the siding for which it is destined. There are often local rules, or at least customs, in such matters that can be observed by the keen enthusiast.

There are some interesting differences in the lamp positions on the engines of the various types of freight trains. Taking first parcels, newspaper and perishable trains composed of coaching stock such as brake vans, parcel vans and the similar vehicles used for milk traffic, two headlamps are used; one is placed over the right hand or "off" side buffer and the other is fitted up on the centre bracket over the buffer beam. Empty coaches on the other hand are indicated by the right-hand lamp as before, but the centre one is moved to the upper bracket before the chimney.

The same indication is employed when a brake fitted train for cattle or perishable traffic is run, provided that not less than one-third of the vehicles are brake fitted. As model vehicles on Hornby railways are not fitted with any brakes the miniature railwayman must determine which of his wagons and vans are supposed to be continuously braked. Generally speaking we may take it that Refrigerators, Meat, Fish and Milk Vans are so fitted. In addition, if necessary, the No. 2 Luggage and Cattle Truck can be included.



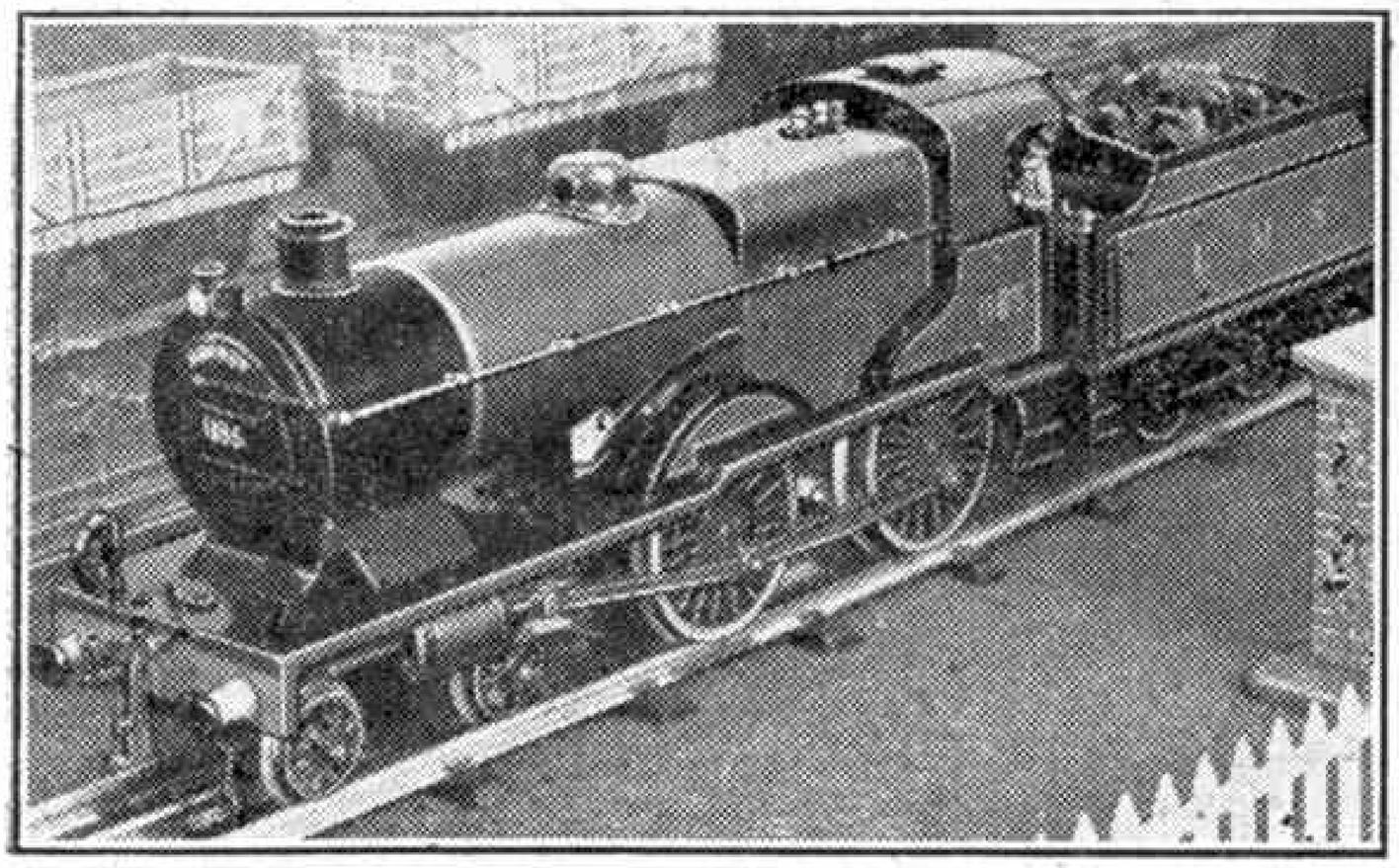
An express train hauled by a Hornby No. 2 Special Standard Compound passes under a road bridge.

Express freight trains with less than one-third of the vehicles brake fitted display a slightly different lamp code. The centre lamp remains in front of the engine's chimney but the lower one is transferred to the left-hand or "near" side of the buffer beam. This is the indication shown on the freight train in the illustration on the previous page. Many through freight trains, and quite important ones too, do not include brake fitted stock; or if they do these vehicles are not coupled together in a group with the brake pipes connected as is necessary with the two classes of express freighters just considered. So they have their own special indication; again using two lamps, one before the chimney and the other in the centre above the buffer beam.

Two indications now remain, each using one lamp only. A through mineral or empty wagon train is indicated by a lamp over the right-hand buffer of the engine. One lamp over the left-hand buffer distinguishes our old friend the local or "pick-up" goods calling at intermediate stations.

The only standard indication using more than two lamps is that carried by the engine of a Royal train. Then the engine carries four lamps, one on each bracket. So when "Royalty" travels in miniature we must be careful to use the correct headlamp indication! This use of all four brackets also applies of course to the Great Eastern section of the L.N.E.R. which is frequently concerned with Royal journeys in normal times. Following the practice mentioned previously in this article, white discs are used in daylight instead of the lamps employed on other lines. The use of four discs together looks quite imposing.

Whether for "Royal" journeys or not, if our line represents Eastern Section practice we shall require some discs for our engines. These are easily made at home.



A stopping train on a Hornby layout.

From Our Readers

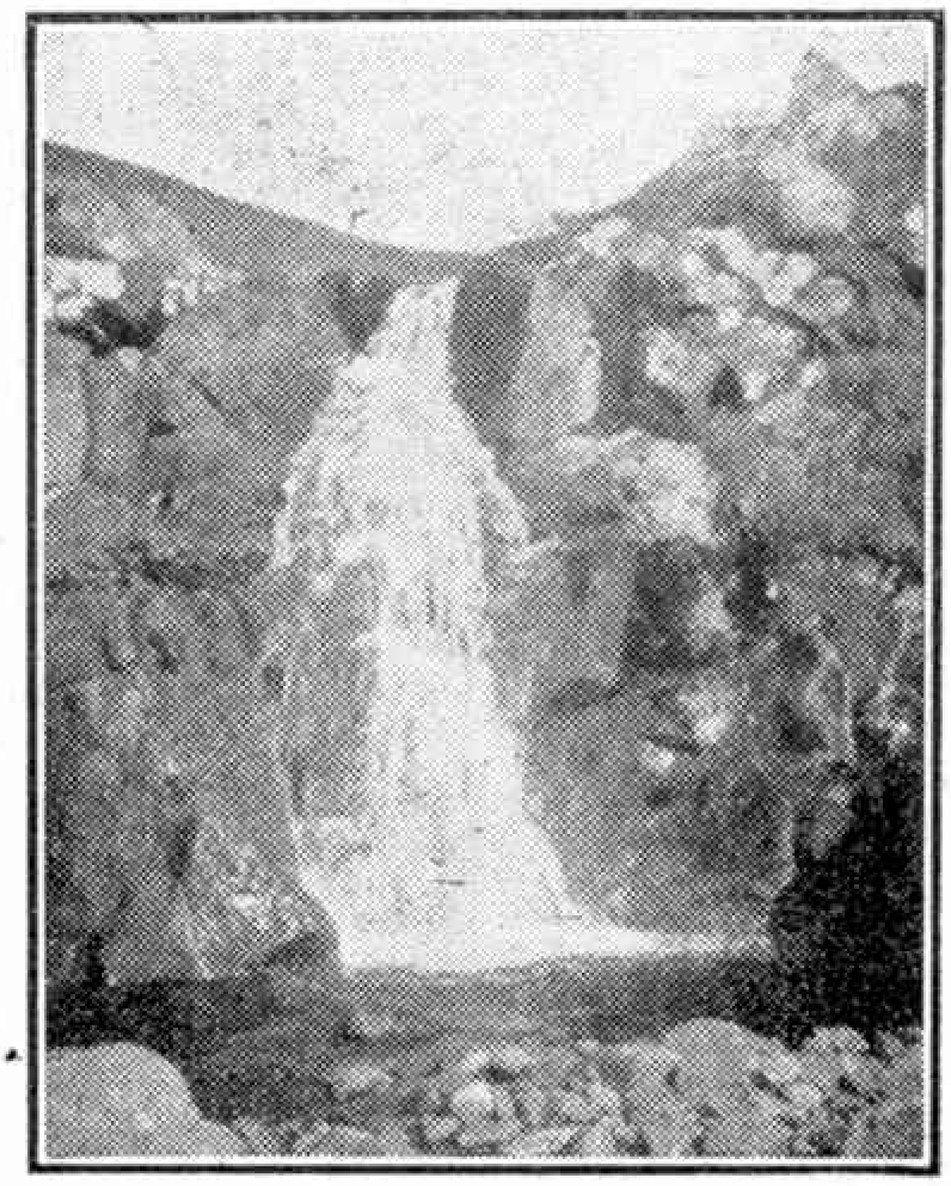
This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A WELSH MOUNTAIN ADVENTURE

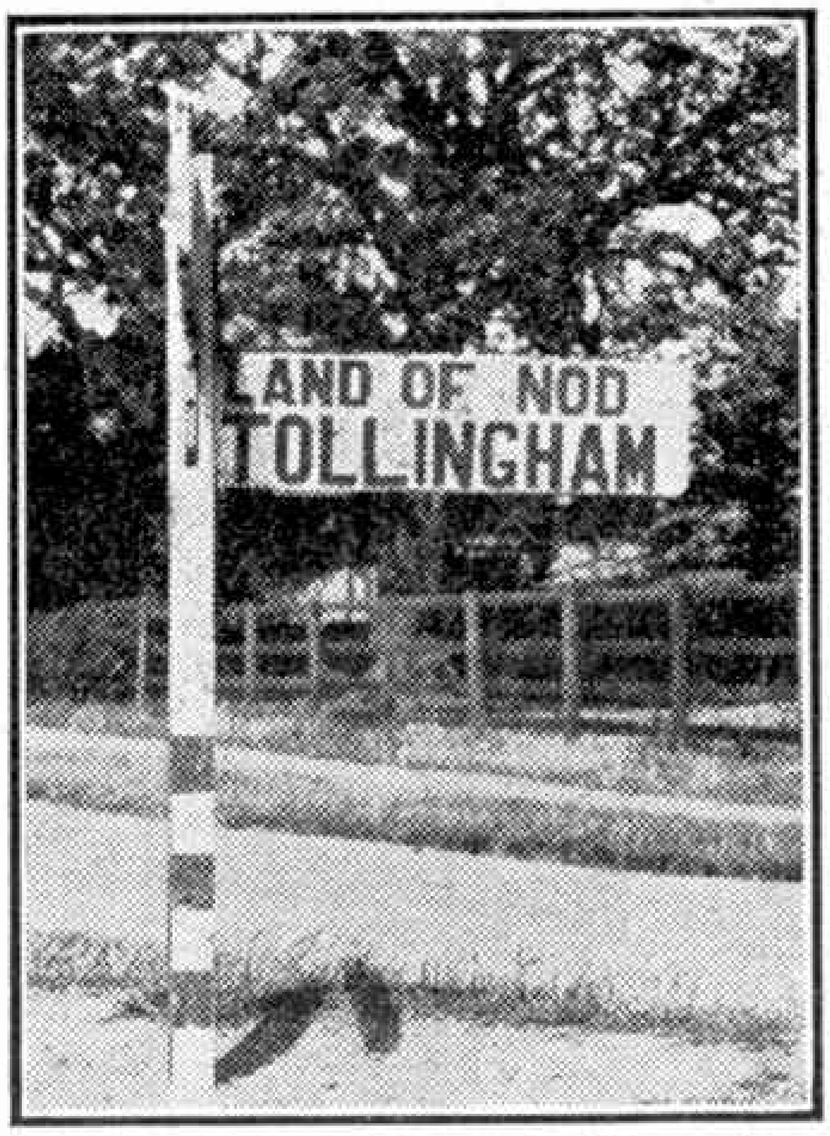
Here is a story of an exciting day that my sister and I spent among the Welsh Mountains lying behind Conway. Starting from Llanfairfechan station, on the coast, on a bright summer morning we climbed successively Drum, a huge rounded mountain 2,558 ft. high, and Foel Fras, 3,091 ft. At the summit of Foel Fras visibility was only 10 yds. and it was as cold as winter, terrific wind forcing us to take cover in a rocky shelter partly underground. At length we left a note under a seat, and clambered out into the elements again. As soon as we could see beneath the mist, we headed down the rock slope and made for Aber Valley and the stream leading to Aber Falls. On the way we saw the wreck of a German bomber that crashed into the mountain. There we wasted a valuable hour looking about the remains, and then had to climb up again over the shoulder of the mountain to the other side. Wild country indeed, with miles of shattered rocks to traverse in the descent to the river, and many lovely waterfalls, rarely seen owing to their inaccessible situation.

On arriving high above Aber Falls we hurried along to find an easy way down the precipice. We saw a gully and started down it, but 300 ft. lower down we came to a dead end in mid air, 200 ft. above the trees in the valley, and had to go up again, nearly exhausted. We sat down for a short rest and then went over the shoulder of the mountain and across the top of the slope leading to the second Aber waterfall. We were now 1,000 ft. up and very short of time. There was an improvement in the weather, but we were too excited to notice it. We slid hundreds of feet down a steep slope, crossed the top of the second fall and descended to the foot of cliff, but could not find a path. We climbed a wall only to find bracken 7 ft. high, but at last we crossed the rocks at the base of Aber Falls and were able to make for the station. We were too late for any trains and had to walk back to Llanfairfechan.

H. A. COLEMAN (Leicester).



An 80 ft. waterfall at Aber in North Wales. Photograph by H. A. Coleman, Leicester.



A signpost that tells a bedtime story. Photograph by J. Chettleburgh, London N.W.2.

A SUFFOLK TIDE MILL

When visiting some old mills in Suffolk I was interested to realise to what extent the native woods of England formerly took the place now occupied by metal for heavy duty work. The mill gearing by which the power was transmitted from the waterwheels to the millstones often consisted entirely of wood, the cogs being made of apple or hornbeam. The central spindle was usually adzed from the trunk of a tree and banded with thick hoops of wrought iron. Wood was used in place of metal for outside work to a very great extent, even where it was exposed to constant moisture, as in the paddles, spindle, and spokes of a waterwheel. The wooden spindle of the wheel of Woodbridge Mill, Suffolk, is about 2 ft. in diameter, banded with iron and centred with a small four-inch spindle. This mill is operated not by a river, but by the tide. This is allowed to fill a pound above the mill during the flow, and the water turns the wheel in flowing back to the sea on the ebb tide.

J. R. G. CLOVER (Kempston).

IN THE "LAND OF NOD"

Throughout the ages mothers have lulled their children to sleep with lullabies of the beautiful "land of nod," and believe it or not, the Land of Nod is very much a reality. It is a hamlet of a few cottages and a farm, lying several miles from Holme-on-Spalding Moor, a village near Market Weighton, in the East Riding of Yorkshire. The hamlet is cut off from the outer world except for the one road, which comes to an abrupt end in it, and it has neither trains, buses, shops nor telephones. There isn't even a church or an inn. It once did have an inn, which bore the name of "Land of Nod," but this has long been closed and the sign has gone.

The good folk of this hamlet are very proud of their unique position. They declare that there is no other place like the Land of Nod, where all is at peace and no murmur of the outer world can reach and disturb them.

J. CHETTLEBURGH (London N.W.2).

Competitions! Open To All Readers

What Names are Hidden Here?

Although so many old favourites are missing, readers are sure to go carefully through the advertisements in this issue, and on these we are basing our chief competition this month. In the panel on this page is a letter square in which the names of "*M.M.*" advertisers or, in some cases, of their products, can be read, and entrants are asked to find these.

The names are traced by starting anywhere and passing at each move to the letter on the left or right, or to that above or below. No diagonal moves must be made, and every letter of the square must be used at least once. There is no restriction on the number of times that a letter can be included in a name, and indeed many letters appear in more than one name.

C	O	G	L	S	D	N	S	H
A	X	N	I	O	B	O	U	M
Z	L	A	W	N	I	T	R	A
O	R	I	R	A	D	S	U	S
L	E	C	T	C	I	X	O	B
E	L	A	S	C	M	A	H	B
S	L	H	Y	E	L	R	E	I
M	I	O	B	M	B	B	S	S
S	C	R	N	W	E	U	T	T

In their solutions competitors must give the names of the advertisers concerned and the numbers of the pages on which the advertisements appear. Their entries should be addressed "*Advertisement Letter Square, Meccano Magazine, Binns Road, Liverpool 13.*" There will be two sections in the contest, for Home and Overseas readers respectively, and in each prizes of 21/–, 10/6 and 5/– will be awarded, with consolation prizes for other good efforts. The judges will take neatness and novelty into account in making their final decision if there is a tie for any prize. The closing date in the Home Section is 31st January, 1944, and that in the Overseas Section, 31st July, 1944. Competitors must not omit their names and addresses on their entries.

A Railway Errors Contest

When those who are not railway enthusiasts begin to write about railways they often fall into remarkable errors. There have been many instances of this in books, in some of which travellers proceed by routes that are utterly impossible, and railwaymen do curious things. This gives us a suggestion for a contest that readers will find both interesting and amusing. Below we give a series of short extracts in which there are definite mistakes, and we ask entrants to spot the errors and to correct them.

1. As we approached the "Distant" signal, we noted it was "off," or at the "Clear" position, and when we drew near the "Home" signal this was at "Danger."
2. In the signal cabin was a long row of levers, some painted red, others yellow, blue and white, and some black. The red ones marked the "Distant" signals, the yellow the "Stop" signals. The blue levers were for points, the white ones for facing point locks and those painted black were spares.
3. At the head of the train was a large and powerful 0–8–0 express passenger locomotive, with six coupled wheels and a leading bogie.
4. In the siding were coaches of four railways. Some painted red were lettered S.R., while there were green ones lettered C.L.C.; the brown and cream of the L.M.S. and the varnished teak of the G.W.R. also were seen.
5. The new engine is a 4–4–0 with 7 ft. diameter coupled wheels, and is for heavy freight traffic over a steeply graded section of track.
6. The L.M.S. "Royal Scot" class engines are two cylinder 2–6–2 Tanks, and are all named after cities and classed 2 F.
7. In peacetime "*The Flying Scotsman*" slips coaches at Grantham, York and Newcastle.
8. The S.R. trains from Waterloo to Brighton are notable examples of British express trains.
9. Private owners' bogie wagons are a feature of L.M.S. coal traffic from the Midlands.
10. Signals were operated and points set by the signalman; then a few minutes later the up express dashed through the station.
11. At the next stop a gunpowder van was attached to the rear of the local passenger train.
12. The "Princess" 4–6–2s on the L.M.S. have cylinders both inside and outside the frames; that is, they are compounds.

As usual, there are two sections in this competition, one for Home entries and the other for those from Overseas, and in each case there will be prizes of 21/–, 10/6 and 5/–, with consolation awards of 2/6 each, for the best entries. If necessary in the event of a tie the judges will take neatness and novelty into consideration. Entries should be addressed "*December Railway Errors Contest, Meccano Magazine, Binns Road, Liverpool 13.*" Closing dates: Home Section, 31st January, 1944; Overseas Section, 31st July, 1944.

December Photo Contest

This month's contest is the 12th of our 1943 series, and in it, as usual, prizes are offered for the best photographs of any kind submitted. There are two conditions; 1, that the photograph must have been taken by the competitor, and 2, that on the back of each print must be stated exactly what the photograph represents. Unsuccessful entries will be returned if a stamped addressed envelope is sent in with them.

Entries will be divided into two sections, A for readers aged 16 and over, and B for those under 16, and all entries must be clearly marked with the section letter. They should be addressed "*December Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.*" There will be separate sections for Overseas readers, and in each section prizes of 15/– and 7/6 will be awarded. Closing dates: Home Section, 31st December; Overseas Section, 30th June, 1944.

For other Stamp Advertisements see pages 428 and viii.

Stamp Collecting

More Empire Mediterranean Stamps

By F. Riley, B.Sc.

AS promised in last month's "*M.M.*" we now turn to the stamp stories of Malta and Cyprus. There have been posts in Malta G.C. for a very long time, and under British rule there was a packet agency, payment for the despatch of letters being made in cash and the word Malta appearing in the postmark. Then in 1857 a supply of British stamps was sent to Malta and their use was made compulsory in 1858. So we find British stamps used in Malta, distinguished by special postmarks such as "M" in an oval of parallel bars, or the serial number "A25" in a circle or oval.

The first Maltese stamp, the "Malta Yellow," appeared in 1860. This was of ½d. value and carried a portrait of Queen Victoria. It continued to be Malta's only stamp until 1885, when the Colonial Government took over control of the post office and British stamps were no longer accepted. In their place came a new set with values ranging from ½d. to 1/–. The ½d. stamp of this 1885 issue was of the same design as before. For other values three new designs, each bearing the Queen's head, were introduced, and a year later came the first stamp to show the famous Maltese Cross, which had the Queen's head in a circle set inside the Cross.

So far the stamps of Malta had been of the formal variety, with the Queen's portrait as the central feature, but in 1899 there was an interesting change, for in that year the first Maltese pictorial stamps were issued. The designer of these stamps is believed to have been a post office clerk. Three of the values, ranging from 4½d. to 10/–, showed a Gozo fishing boat, an ancient Maltese galley, and a vivid representation of the shipwreck of St. Paul; while the fourth carried an emblematic figure of Malta.

This was the beginning of a series of pictorial stamps that has culminated in the handsome specimens current to-day and illustrated on this page and in last month's "*M.M.*" A ½d. stamp that appeared in 1901 and remained in use for 14 years was the first to give a picture of the famous harbour of Valletta.

For a time the sequence of pictorial stamps was interrupted by the issue of portrait stamps of Edward VII and George V, and then in 1914 there was a re-issue of pictorial stamps that had already appeared, with some changes in colour. About this time too came an interesting sidelight on Maltese history. In 1921 Malta was granted a constitution, and in the following year the entire stock of stamps in hand was overprinted with words "*Self-Government.*" These were on issue for slightly over three months, and later in the year a special issue was made to commemorate the great event. The design for this was made the subject of a competition that was won by two Maltese artists, whose stamps were issued in August of that year in a wide range of values. One of the designs shows Melita, a symbolic figure, taking the helm, and the other, used for the higher values, shows her embracing Britannia.

The Silver Jubilee and Coronation issues of Malta correspond in design to those of Gibraltar and the Crown Colonies. They were followed in 1938 by a splendid set of pictorials that has made various historic features of Malta familiar to all of us. Two of these were illustrated last month. One was the Castle of St. Angelo, which appears on the ½d. value. There it is labelled H.M.S. St. Angelo, as it is a naval station. It stands on a projecting ridge on the north shore of the Grand Harbour of Valletta, and its history goes back more than 1,100 years. On the 2d. value is Victoria, the capital of the island of Gozo, and its citadel. The Palace of Verdala, built in 1586 by a Grand Master of the Order of St. John, and now the country residence of the Governor-General, is pictured on the 1d. value, reproduced on this page. There are two cathedrals in the series, those of St. John, built in 1553, and Mdina, six miles from Valletta, and evidence of the great antiquity of civilisation there is given by the 1½d. value, showing the remains of a structure of the stone age, which also is reproduced here. Colour changes that have been made in these stamps since their first appearance add to their interest, and altogether those who keep an eye on Malta's stamps and acquire examples when they can will find that they have a bright and attractive series representative of the George Cross Island's story.

There is little room left in which to deal with the stamps of Cyprus, the third British Mediterranean stronghold. Cyprus is much larger than either Gibraltar or Malta, and in fact is more than twice the size of Lancashire. It has been in the track of civilisation for thousands of years, and has seen Phœnicians, Persians, Greeks, Romans, Saracens, Crusaders, Venetians and Turks. Few know how it came into British hands, or when. It was first occupied by us in 1878 by arrangement with the Turks, who leased it to us in return for an annual tribute. This continued until November 1914. Then Turkey entered the first World War on the opposite side, and we promptly annexed the island.

As in the case of Malta, British stamps were first used in Cyprus, for which purpose they were overprinted with the name of (*Continued on page 429*)

For other Stamp Advertisements see pages 426 and viii.

Stamp Gossip
and Notes on New Issues

British Colonial Reprintings

Last month we illustrated the new 2d. Gambia stamp. This is lake and scarlet in colour instead of the former blue and black, but there is no change in design, the familiar elephant continuing to be the chief feature.

This is a typical example of British Colonial issues, which form a magnificent series that should be appreciated by all collectors. Reprints of a very large number of these, including Aden, Bahamas, Gibraltar, Kenya, Northern Rhodesia and Nyasaland, are reported to be on order, and a further note of interest is that the colour of the current 2d. Gibraltar stamp is to be changed from grey to carmine.

Russian Commemoratives

The greatest of recent war events has been the successful conclusion of the conference in Moscow of Mr. Eden, Mr. Hull and M. Molotoff. It is too much to hope for a commemorative British stamp on this occasion, but our Russian friends are more enterprising in regard to commemoratives, and they are to issue a special stamp showing the flags of Russia, Great Britain and the United States to mark the event.

Other recent Russian stamps are illustrated on this page. One of them, carmine in colour, celebrates the 150th anniversary of the capture by assault in 1790 of Ismaila, then a Turkish stronghold in what is now Bessarabia, by the famous Russian General Suvaroff, and has on it the words of Suvaroff himself: "*Death flees the sabre and bayonet of the brave.*" Another, chocolate-brown, commemorates the crossing of the Alps by the same general after victories over the French in Northern Italy in 1799, and apparently is a reproduction of a picture by V. I. Surikoff. The third, a lighter chocolate brown in colour, celebrates the battle of Perekop in 1920, when Soviet forces overcame the White Russian army and penetrated into its last stronghold, the Crimea.

A Stamp Contest

Here is a short stamp "Quiz" that readers should find easy but interesting. Prizes of 10/- and 5/- will be given for the best lists of answers received on or before 31st December, and there will be consolation prizes for other deserving efforts. Entries should be addressed "*December Stamp Contest, Meccano Magazine, Binns Road, Liverpool 13.*"

1. Which is the smallest British postage stamp ever issued, and which is the largest?
2. On which stamp are there a few bars of music?
3. What are i, "Bull's Eyes"; ii, "Missionaries"?
4. Which countries have issued stamps with the following values on them: i, 20 kon; ii, 25 bani; iii, 3 kurus; iv, 3 Zt.; v, 3 din; vi, 5 aur?
5. How many queens have been portrayed on the stamps of Great Britain and who are they?
6. Who originated the Penny Post, and on which stamps has his portrait appeared?

Stamp Collecting—(*Continued from page 427*)

the island. Then came other stamps specially printed, with portraits of Queen Victoria, Edward VII and George V successively, until 1928, when the first pictorial issue appeared. This series was issued in commemoration of 50 years of British occupation.

The stamps of this series illustrate the general history of the island. One shows a silver coin of the 5th century B.C. Another bears the portrait of Zeno, a famous Greek philosopher who was born in Cyprus. A third shows the discovery of the body of St. Barnabas, St. Paul's companion in many journeys, who was a native of Salamis, then capital of Cyprus, and suffered martyrdom there. The cloister of an abbey, a famous Moslem shrine, and a statue of Richard Cœur de Lion, who once was King of Cyprus, also are included in this fine set.

For a time "King's Head" stamps were again issued, and then came more pictorials. One lengthy set appeared in 1934, and another in 1938. In both the subjects are various scenes in the island, illustrating its story. Most of the second issue bear in one corner an inset portrait of King George VI, two values, the 90 piastre and £1, carrying a portrait only. All are really handsome stamps, well worthy of the young collector's attention. We illustrate four of the 1938 set in this issue. The ¼ p. value shows the ruins of the Vouni Palace, built about 50 B.C. when Cyprus was under Persian rule, and brought to light by excavation in 1928. More ruins appear on the ½ p. value, and the 1½ p. value is a link with the Crusades.

Puzzle Your Sharp-Eyed Friends—

(*Continued from page 409*)

as nobody knows or expects that you are going to take it out again.

You are now holding the pack in both hands with the card that was originally on the bottom, now on the top. Now say: "I have put your card in my pocket without asking you any questions that might help me to know which it was. Now I want you to tell me, not the name of the card, but how many it was from the top of the pack." You receive the answer, say six. As you have transferred one card from the bottom of the pack to the top, the chosen card will now be seventh instead of sixth, but the audience do not know this.

You then proceed: "Perhaps you don't believe that it really was your card I put in my pocket? In that case it must still be in the pack, so we will count down to the sixth card and you shall see for yourself." You count the cards on to the table one at a time, counting out loud as you do so. Throw the sixth card down face upward. Of course it is not the chosen one. But the next card is the chosen card, and while all eyes are directed for a moment at the card you have just put down, you simply palm the next card and immediately thrust your hand into your pocket. Do not remove it but say to the gentleman who helped you: "Now will you tell us the name of your card?" Suppose the answer is "King of Hearts." You very slowly draw out the card from your pocket, holding it by your finger tips. Of course it is the King of Hearts.

Although this trick needs a little practice to enable you to do it neatly, it well repays the trouble. Neatly performed it has the appearance of a most astounding piece of magic. And it needs no preparation. You can do it anywhere, with any pack of cards, at any moment.

It is a good thing to memorise a few jokes and witty sayings, as they come in useful for distracting the attention of the audience at critical moments in the performance of a trick. It requires a great deal of technical skill to carry through tricks successfully in dead silence while all eyes are fixed on one's hands!

American Pick-up System for Army Gliders—

(*Continued from page 400*)

'plane has levelled off, the glider is airborne. Then the brake is fully locked and the glider is in full tow. When the glider has gained sufficient altitude the glider pilot cuts himself loose. If at any time while the glider is in tow the acceleration exceeds the safety limit an automatic shock absorber goes into action.

During the demonstrations at Wright Field, although the aeroplane made the pick-ups at about 100 miles an hour, there was no noticeable shock or strain on either the aeroplane or the glider.

With further developments of this launching technique, using multi-engine aeroplanes as tow-planes, and employing heavier reels, tow-cables, and brakes, its application to the U.S. Army Air Forces' heaviest transport gliders is contemplated. Similarly, the system may eventually be adapted to the pick-up of large commercial freight and passenger glider trains.

German Aircraft Design Numbers—

(*Continued from page 415*)

and design number allocation is fairly well established and should present no special difficulties. There are many discrepancies, but confirmation of certain details is difficult to obtain in wartime. The point to bear in mind is that no two different machines bear the same number (except in the pre-1933 era). The interested reader is advised to start collecting German design numbers and check for himself how the system works. This, besides being most interesting, will materially aid his knowledge of enemy aircraft types. It will also help in clearing up a number of common errors in existence. For example, the so-called Heinkel He IIIK Mk Va, a designation accepted for a considerable time, is quite wrong, and should be Heinkel He III K6.

COMPETITION RESULTS

HOME

June Photographic Contest.—1st Prizes, Section A: Miss M. Emerson, Mitcham; Section B: D. Berry, Culter. 2nd Prizes, Section A: Mrs. L. M. Booth, Richmond; Section B: C. Sansom, Godalming. Consolation Prizes: F. Barr, Birkenhead; A. Nicol, Dingwall.

June "Railway Vehicles" Contest.—1. R. J. Tredwell, Wolverham on. 2. H. Brown, Glasgow W.4. 3. T. D. Tasker, Barnsley. Consolation Prizes: W. A. C. Smith, Glasgow W.1; F. Nailer, Wembley.

July "Howlers" Contest.—1. R. P. Hussell, Freefolk, Nr. Whitchurch. 2. F. G. Beare, Newport. 3. R. Luke, Southampton. Consolation Prizes: L. Williams, Liverpool; R. Dann, Bradford.

July "Locomotive" Contest.—1. E. G. Smith, Chorlton-cum-Hardy. 2. R. P. Walford, Newton Abbot. 3. J. Young, Bournemouth. Consolation Prizes: N. Crossley, Slaithwaite; W. Cadwell, Marple; D. Cowmeadow, Chester.

August Crossword Puzzle Contest.—1. C. E. Wrayford, Bovey Tracey. 2. J. E. Mason, London N.W.6. 3. M. R. Nathan, Chiddingfold. Consolation Prizes: J. F. K. Hinde, Malvern; M. Munden, Surbiton; A. J. Lilley, Thornton Heath.

August Photographic Contest.—1st Prizes, Section A: A.C.1 Atkins, Eccles; Section B: A. Morris, Cheadle Hulme. 2nd Prizes, Section A: B. Chulindra, Rock, Nr. Wadebridge; Section B: P. Milne, Whyteleafe. Consolation Prizes: D. C. Finlay, Glasgow W.4; G. Tierney, St. Leonards-on-Sea; D. H. Sandeman, Whitburn.

September Photographic Contest.—1st Prizes, Section A: H. S. Holden, Abergele; Section B: H. Jones, Cardiff. Second Prizes, Section A: E. Shrewsbury, Stockport; Section B: T. F. K. Hinde, Harrow-on-the-Hill. Consolation Prizes: J. Coupertwait, Leicester; P. H. J. Sandom, Dartford.

"Locomotive Cross-Number" Contest.—1. R. P. Walford, Newton Abbot; 2. D. J. W. Brough, Cheam. 3. B. D. Hemmings, Northampton. Consolation Prizes: C. E. Wrayford, Bovey Tracey; R. King, Chorlton-cum-Hardy; A. G. Ford, Leicester.

"War Names" Contest.—1. B. W. Smith, Oundle. 2. E. Barker, Grantham. 3. E. G. Smith, Chorlton-cum-Hardy. Consolation Prizes: J. F. Warwick, Bucknell; A. R. Pearce, Minehead; M. Cosgrove, Darlington.

BACK NUMBERS OF THE "M.M."

A few copies of each of the following back numbers of the "*M.M.*" are available for disposal. The cost is 8d. each, including postage, etc., and early application is advisable. Orders should be sent to Publishing Department, "*Meccano Magazine*," Binns Road, Liverpool 13, and should be accompanied by the necessary remittances. Issues not included in the list are not available.

1940. April, May, June, December.
1941. May, June.
1943. June, October.

Readers of the "*M.M.*" should place a regular order with a dealer or newsagent in order to prevent disappointment. They should write to the Editor at once if any difficulty arises.

RESULTS OF SEPTEMBER BSA MISSING WORD COMPETITION

For the best and most apt sets of answers, of equal merit, the judges have awarded prizes to the following 5 entrants:—

Miss L. Cutler, Enfield Lock; Miss S. Armstrong, Rugby; Master A. Fellows, Tipton; Master Wm. Stewart, Hetton-le-Hole; Master Wm. Hyman, Glasgow; each receiving an equal share of the £10 in prizes.

Fireside Fun

AN ARMS PROBLEM

"How can guns kick if they haven't any legs?"
"Don't be silly."
"But have guns got legs?"
"Of course not."
"Then why do they want breeches?"

* * * *

"Is that picture a sunrise or a sunset?"
"A sunset, of course. I knew the artist and he couldn't get out of bed in time to see a sunrise."

* * * *

"What's your idea in working a steady 10 hours a day?"
"It's not my idea. It was the boss who thought of it."

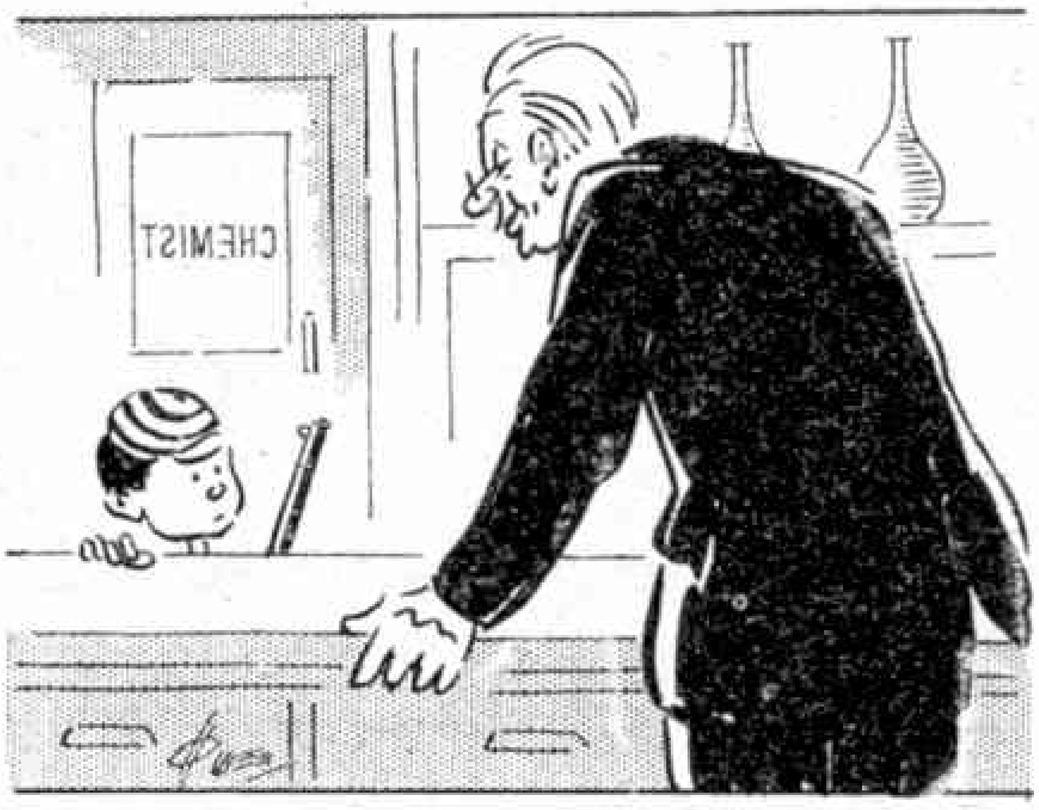
* * * *

Butcher: "I shan't be killing myself to-day, but you can have Mrs. Brown's liver. She won't need it this week."

* * * *

Teacher: "How did you get that black eye, William?"
William: "I sprained it doing my homework, miss."

* * * *



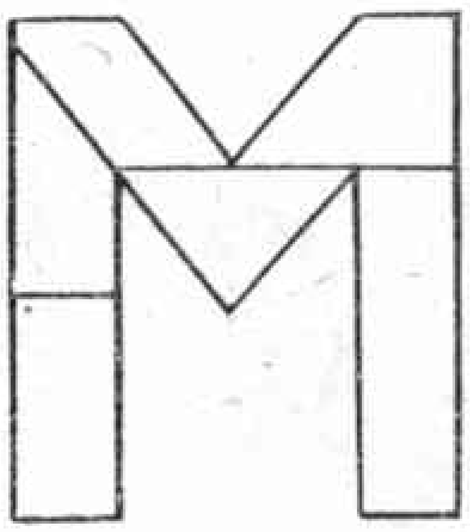
"Another box of those pills I got yesterday."
"Certainly. They did your mother a lot of good, did they?"
"I don't know, but they're just right size for my gun."

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

Our first puzzle was almost too easy, but it is surprising how many fail to see through little problems of this kind. The conductor handed the second man a 2d. ticket without question because he was offered one penny and two halfpennies.

The nine words forming the word circle of our second puzzle are: Serve, Verge, Genus, Usher, Erase, Seven, Enter, Erode and Dense.

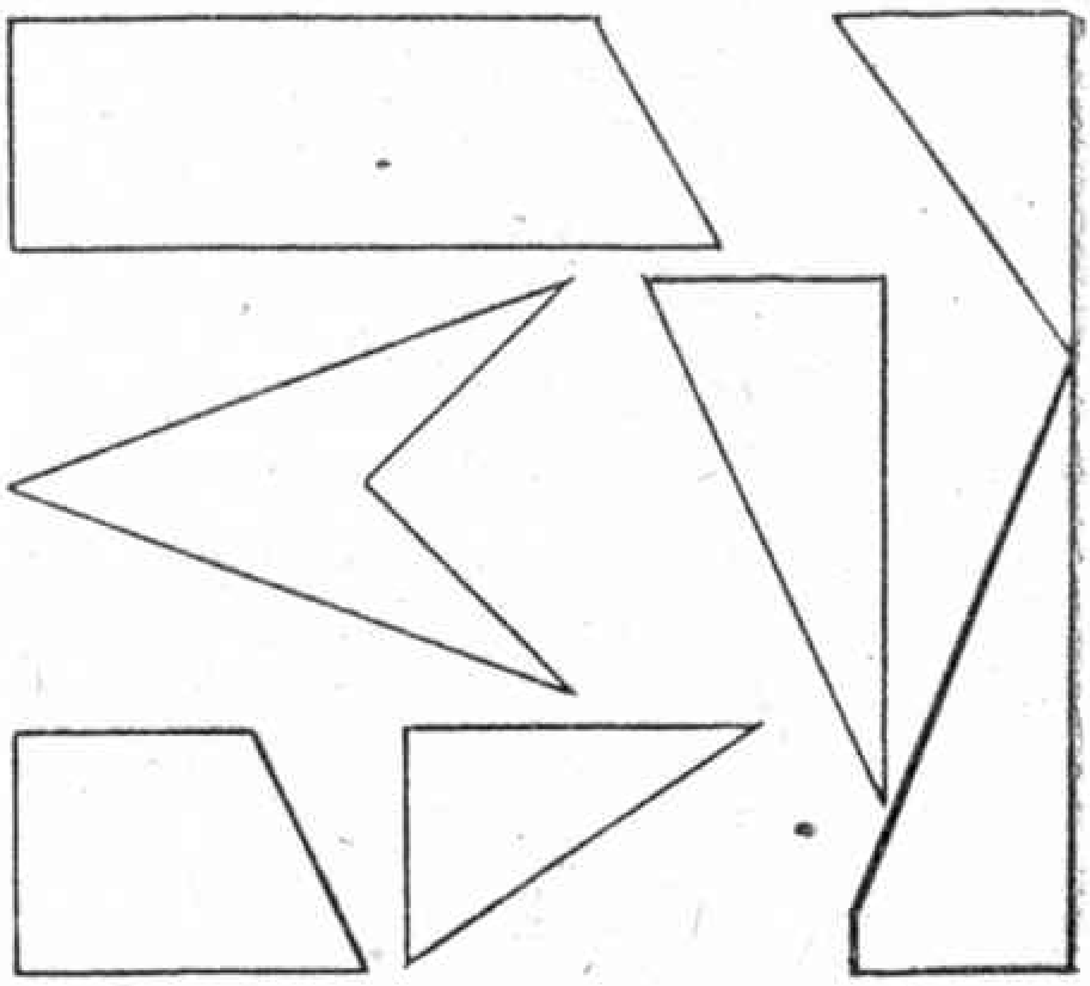


The letter built up with the parts shown in last month's "*M.M.*" is M, put together in the manner shown in the accompanying figure. Some of those who tried the puzzle produced a T and others an F, but in each case the letter was very much misshapen and out of proportion, so these can only be regarded as near misses.

THIS MONTH'S HOWLER

The wife of a Duke is a Ducky.

BRAIN TEASERS
WHAT LETTER WILL THESE MAKE?



Here is another capital letter to build up from fragments. Do not cut these out and so spoil your Magazine. The fragments can easily be traced or copied on a separate sheet of paper.

* * * *

TWO IN A ROW

Draw a square and divide each side into six equal parts so that by drawing lines parallel to the sides you divide the square into 36 smaller squares. Can you arrange 12 coins or buttons on these squares so that there are only 2 in each row, vertical, horizontal or diagonal?

* * * *

DO THEY LOOK BETTER THIS WAY?

Each of the following is the name of a country that has had its letters mixed up: LODAPN; UTERYK; ZARLIB; REGINAI; LIYAT. What are these countries? T.K.C.

* * * *

A USEFUL NOTE

After these easy ones here is something a little more puzzling. A man walking along the street saw a 10/– note on the pavement. He picked it up and on reaching home laid it on his desk. His wife saw it and when the washerwoman called she thought it a good idea to pay the bill with it. The washerwoman used it to buy more soap from the grocer, who almost immediately went to the neighbouring tobacconist and bought a pipe with it. The finder of the note also made a purchase from the tobacconist that day, and received the same 10/– note in his change. Next day he tried to pay it into his bank, but it was refused because it was a counterfeit note. Now who gained and who lost in all these dealings? T.K.C.

* * * *

AN EASY MATCH PUZZLE

Place eight matches side by side at a distance of about half an inch from each other. Now group them in four pairs, moving one match at a time and making it pass over two matches. If you can't find matches, coins or buttons will do just as well

* * * *

WHATEVER IS IT?

The first of first is first, and the last of last is last and there is twice nothing, which is still nothing, in between. What is it?

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Vol. XXVIII
Jan.–Dec., 1943

This Month's Special Articles

MECCANO MAGAZINE

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Readers' Sales and Wants. Private advertisements (i.e., not trade) are charged 1d. per word, minimum 1/–. Cash with order. Editorial and Advertising matters should not be dealt with on the same sheet of paper.

Readers' advertisements are published as soon as possible; inclusion in the first issue after receiving them cannot be guaranteed.

Small Advertisements. 1/8 per line (average seven words to the line), or 20/– per inch (average 12 lines to the inch). Cash with order.

Display. Quotations for space bookings, and latest net sale figures, will be sent on request.

READERS' SALES AND WANTS

SALES

Dinky Toy Ships and Aeroplanes; good condition. Stamp for list.—Berry, Furain, Peterculter, Aberdeenshire.

Almost new No. 7 Meccano; many sundries. Also No. 1 Motor. Offers.—Duffy, 78, Pilling Lane, Chorley, Lancashire.

"Meccano Magazines," July 1935–December 1936, Jan. 1939–July 1940; perfect condition, 9/–.—Warburton, 84, Vera Avenue, London N.21.

Complete Hornby gauge "0" Layout; as new. Write for list to—M. Lane, White House Farm, Foulridge, Nr. Colne, Lancs.

"Meccano Magazines," Jan. 1934 to Dec. 1942, inclusive, excepting November 1940; as new; all covers; £4/10/– or offer. Also "Modern Wonder," Vols. 1 to 4, Nos. 1 to 98, 10 copies missing only; all clean; 12/6 or offer to—W. Daniels, Jr., 160, Eccleshall Road, Stafford.

Two large Model Yachts for sale; Schooner Rig, 4 ft.; Sloop Rig, 3 ft. Offers.—"Bank House," Hunts' Cross, Woolton, Liverpool.

Six "Modern Boys' Annuals," perfect condition, years 1931–39, 25/–; 10 "Red Indian," "Detective," "Great War"; average 600 pages per book, £1.—Ward, 191, Baker Street, Enfield, Middlesex.

WANTS

Trix Rails and Points (hand or electric); good condition.—Welsh, 23, Manor Road, North Edgbaston, Birmingham 16.

Wanted in good condition, "Meccano Magazines" March 1933, September 1936 and February 1937.—Clayton, 6, Holt Mill Road, Waterfoot, Rossendale, Lancashire.

"M.M.'s" for January, February, March, May, July, 1942.—A. Atkinson, "The Nest," Kettering Road, Moulton, Northants.

500 Meccano Nuts and Bolts, 250 of each.—O. Goodman, Lower Court, Chadlington, Oxon.

"Hotspurs," "Wizards" and "Rovers." Send numbers to—Pringle, 24, Laurence Avenue, Malden, Surrey. Good prices.

Hornby-Dublo Controller (Electric). State price and condition.—Stevens, 35, Southend Avenue, Newark.

In good condition, One Hornby Brake-third Corridor Coach, L.N.E.R. Particulars—"Hannants," Lowestoft, Suffolk.

"M.M.'s" for Dec. 1942 and April 1943; must be clean and in good condition.—N. Hall, 24, The Avenue, Sheriff Hill, Gateshead, 9.

Trix Tank or Tender Locomotive; also Controller and Rails.—Cooper, Kenelms, Whatstandwell, Matlock.

One pair of Dublo Electric Points (hand operated) and one or two Dublo Passenger Coaches. Write—Dash, 12, Mill Road, Waterlooville, Hants.

Hornby Gauge "0" "County of Bedford" with Tender, Electric.—Rees, 62, Flower Lane, N.W.7.

Trix Remote Control Points, also Rails, etc.; state price and condition.—B. R. Ceams, Greenfield House, Pemswell Road, Minehead, Somerset.

Large Twin-Trix or Hornby-Dublo Railway; also Small Lots acceptable to form Model Railway.—F. Ridley, 39, Wimborne Avenue, Hayes, Middlesex.

Urgently. Hornby-Dublo Electric Straight Rails and Points in good condition.—Hall, "Woodlands," New Hutte Lane, Halewood, Nr. Liverpool.

Hornby Clockwork Gauge "0" Parallel Points. Must be in good condition.—Barnard, Noss Mayo, Bridgefield, Farnham, Surrey.

"Meccano Magazines" No. 1 to December 1934, good condition with covers; also No. 7a Meccano Accessory Outfit. Write—Melville, Kingswear Lodge, Kingswear, S. Devon.

HISTORY OF THE ROYAL AIR FORCE

The History of the Royal Air Force makes interesting reading at any time, but particularly so in these days when their stirring deeds thrill everyone. This book briefly outlines the story of the R.F.C., which later became the R.A.F. We are too close to current events for the history of the present-day exploits to be told, but the book outlines the work of the R.F.C., and R.A.F. and the R.N.A.S. and F.A.A. in the last War, and many of the 1914–18 warplanes are illustrated. The development of wireless communication and aerial photography, bombing, and aircraft armament are also dealt with, as are some of the notable R.A.F. flights. The whole ground is covered accurately and the book is generously illustrated with interesting photographs from our range. Price 3/–.

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