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DECEMBER 1950

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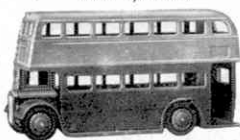
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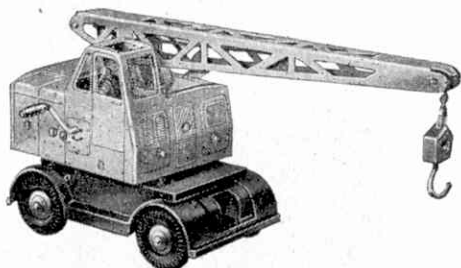


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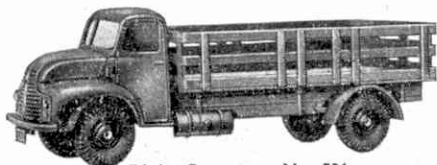
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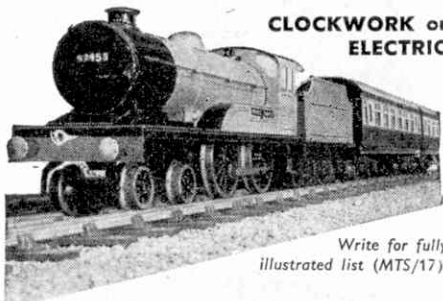
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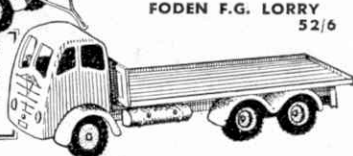


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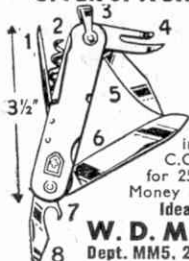
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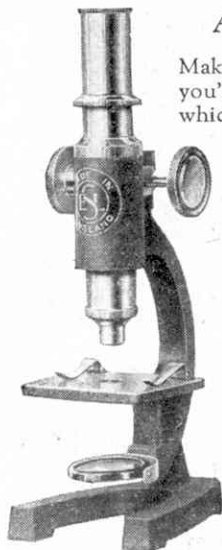


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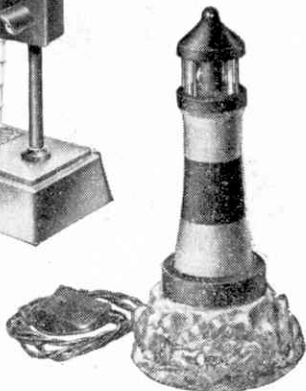
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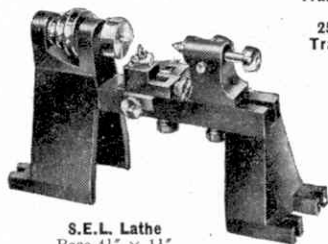
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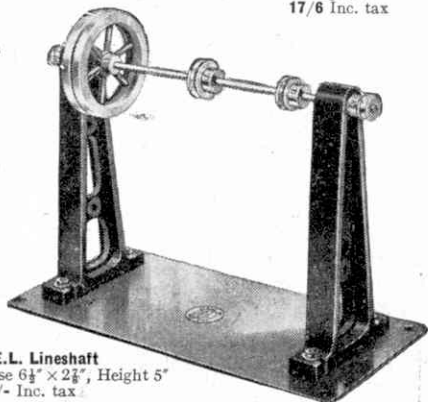
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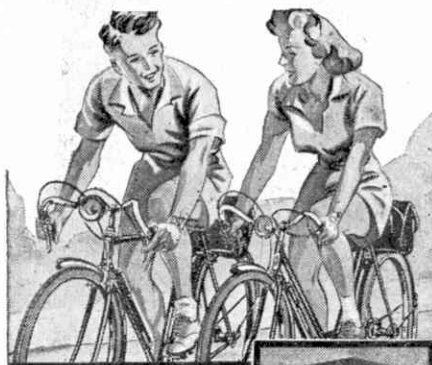
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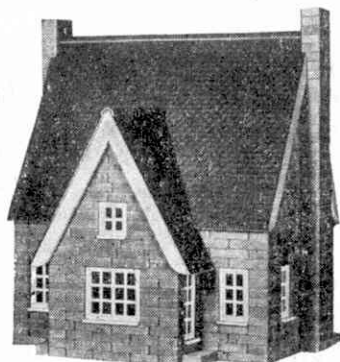
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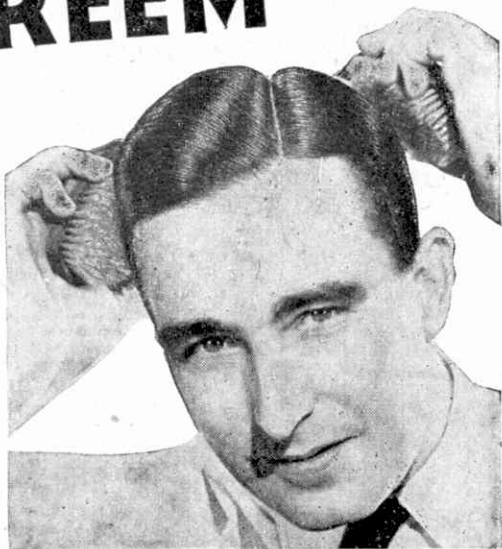
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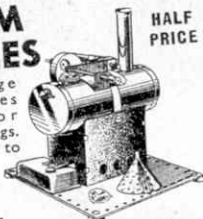
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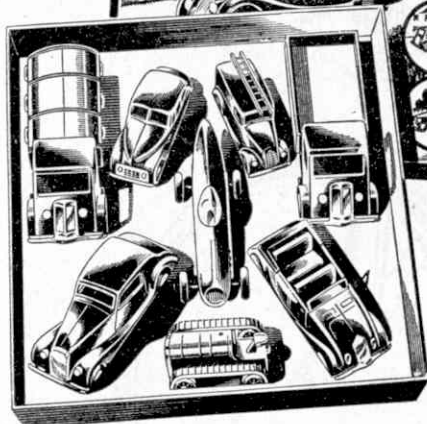
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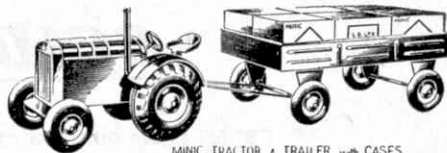
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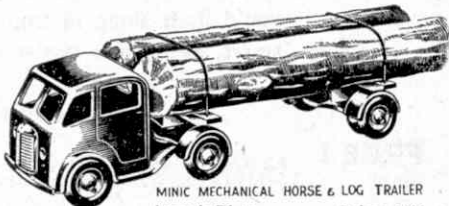
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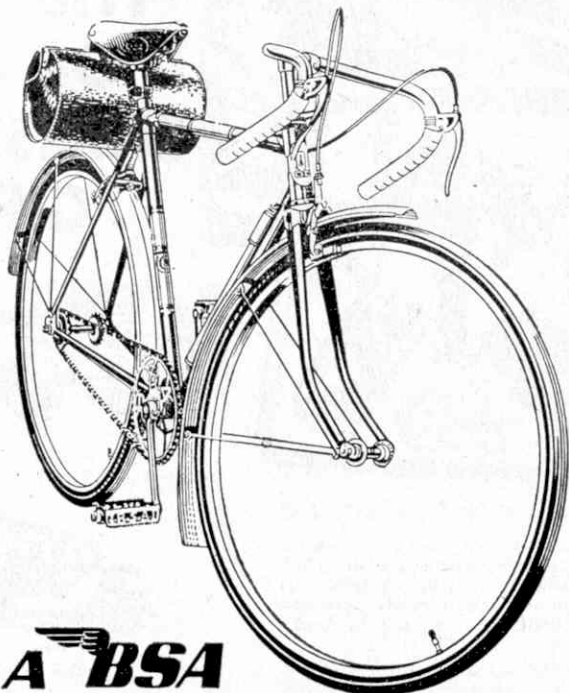


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CHRISTMAS GREETINGS TO ALL MY READERS!—From the EDITOR

MECCANO

MAGAZINE

Editorial Office:
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Vol. XXXV
No. 12
December 1950

With the Editor

The "M.M." in 1951

Only twenty-four days to Christmas, and in a month we shall have turned the corner into 1951. How the time flies!

Looking back over 1950 I realise that things have not turned out as well as I had expected. However, in spite of paper difficulties I have been able to make a small increase in the number of pages and to introduce a better quality of paper that has resulted in brighter illustrations and a general improvement in the appearance of the pages as a whole. The present paper outlook is distinctly grim; but I shall do my best to make further improvements in the "M.M."

I think the articles I have in preparation for 1951 will be more varied and interesting than those in any previous year. For instance, two well-illustrated articles will deal with the fascinating processes of making laminated safety glass and toughened glass. The saying "As brittle as glass" certainly needs qualification these days. Railway enthusiasts will have much to interest them in articles on training the engine driver; signalling curiosities and single-line working.

Of more general interest are articles on the operations of Customs and Excise and Trinity House, and on the remarkable running of mail coaches in their last days; while we shall go overseas in descriptions of the roads of China, the fascinations of Venice the city of canals, and the New Zealand hydro-electric power scheme at Lake Waikaremoana. All these and many more good things are on the way.

How the Shell Company got its Name

The article on page 534 of this issue describes the building of the "Verena,"

constructed by Harland and Wolff Ltd., Belfast, which is one of four new 28,000-ton vessels for the Shell tanker fleet. Its name is that of a shellfish, as are the names of all vessels of the Shell fleet. The choice of such names is appropriate, but I wonder how many of my readers know how the Shell Company itself got its name. The explanation is that Marcus Samuel, later Lord Bearsted, the founder of the Shell Company, began his career as the controller of an Eastern trading company, handling general merchandise that included highly polished sea shells; and later adopted a shell for the famous name and sign.

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Life in the Circus

By Alfred Greenway

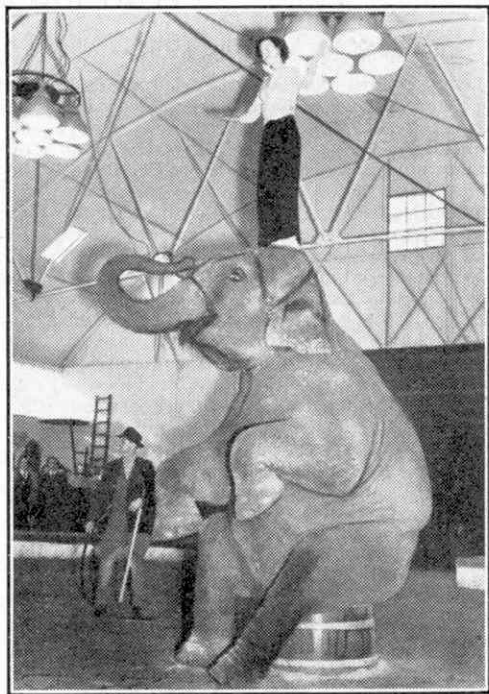
A CIRCUS without elephants sounds almost unthinkable. Yet when Philip Astley, the inventor of the circus as it is now accepted throughout the world, put on his show, performing elephants were unknown. Certainly Astley had no elephants. His show was founded on horses and riders, which is actually to-day the foundation of all circuses. He was an ex-cavalry sergeant major and his show dates back just over 180 years.

Another man whose name is associated with the development of training horses for circus work was Filis, the son of a London barrister. He did not take to the law as his father had intended, but devoted himself to the study of horses, their moods and their possibilities in regard to what is known as "high-school" (*la haute école* is the French for it). The high-school performing horse is taught nowadays to do many kinds of stepping, such as waltzing, tangoing and stylish movements to the accompaniment of tunes played by the circus band. Last year at Olympia a horse called "*Black Diamond*" moved accurately to the latest rumba. He was ridden by Roy Holt, a young man who had just served his two years in the army. They have been close friends since the rider was fourteen years old. Roy says that "*Black Diamond*" understands his work so well that he hardly needs any direction. The animal recognises the exact moment he is required in the ring by the music that is being played. They are such pals that Roy calls him "*Nigger*" and he answers to that pet name, and only in the ring to "*Black Diamond*." The point I wish to make is that every bit of training in this, and nearly all other high-school acts, is founded on the principles laid down by Filis, who insisted that such feats as pawing the feet strictly to time can only be achieved by a process of patience and reward.

All circus animals, including elephants, look for and get rewards for the feats they perform. In the case of elephants there is a special feed of carrots twice a week. It is said by experts that an occasional diet of carrots is good for the

eyesight. John Gindl, who has trained elephants for thirty years, says that their eyes are of the greatest importance. "I can tell an elephant's possibilities by his eyes and also by his, or her, moods," he says.

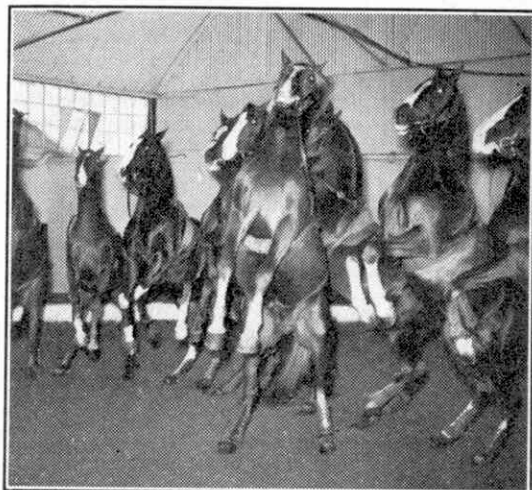
The most difficult animal of all to train is the bear, be it the polar variety or the



Peeps behind the scenes at Bertram Mills' Circus, London. An ex-programme seller learning to balance on "Jenny's" head.

brown kind. All bears are unpredictable in their actions and moods. Many trainers have been killed by bears—many more than have been killed by lions and tigers.

Perhaps the most docile among trained animals are the sea-lions, though they have been known to savage their trainers. A woman trainer in Switzerland, where there is a sea-lion training school, showed me twenty scars on her arms where she had been bitten. She it was who once



"Liberty" horses practising the finale of their act.

owned a single sea-lion that travelled all over the world with her and her husband. They exhibited "Leo" (that was his name) throughout Japan, China, India and Burma and made so much money that when he died they were able to live five years on the proceeds.

The lady told me that one of the most mistaken legends is that seals and sea-lions are natural balancers and jugglers. They have to be taught to balance balls on their noses, and sometimes it takes as long as three months to train one sea-lion to catch a ball on the nose. The trainer has to put the ball on his own nose hundreds of times before the sea-lion really understands what he is being asked to do.

One thing that every present-day experienced trainer of animals will tell you is that the worst thing one can do is to be harsh and cruel. Trained animals are twice as valuable as the untrained and if, as in the past, they are punished or beaten for not performing properly, they may become worthless as entertainers. Animals do not forgive, and many of them remember what they consider an injustice. They are very much like humans in some respects, in that they have their moods and cranky

moments. There has to be respect for the trainer, not, as some suppose, abject fear.

The trainers who have escaped trouble are those who build up a natural understanding with their charges. Circus men have been killed by elephants, bears, tigers, lions, hyenas, wolves, and in one case a camel. But in nearly every instance the cause could be traced back to some unkind treatment of the animal. Sometimes the blame could be placed on the trainer because he had not taken the trouble to note that the animal was in a sickly mood.

Apart from animals, the essentials in a circus are the clowns, "augustes," acrobats, trapeze performers and tumblers. The clown must not be confused with an "auguste," who is the fellow with baggy pants, ludicrous face and large, ill-fitting boots. "Coco," the famous "auguste," pays as much as £12 for a pair of his big boots, because, although they appear very sloppy, they must fit him comfortably. They are really two pairs of boots, one fitting inside the other.

All circus performers start training very



A group of clowns and "augustes."

young. Most of them are able to ride a horse at the age of four, and they are shown how to perform somersaults even at that age. They start learning to walk the wire when they can hardly toddle. Of course the wire is very close to the ground at the start. It is raised farther from the ground by degrees as they progress in their training until, often at the age of ten, they go aloft nearly to the roof of the big-top with their parents. In this country children are not allowed to perform in public until the age of fourteen. Last year a young American boy came over with his parents to work eighty feet up on a narrow wire. He cried when he was told that he wouldn't be allowed to do here what he had been doing for a year in America.

"Coco" has a grandson who is going to be a clown. He is four years old and is frequently made up in "Auguste's" clothes and a face painted like his grandfather's. Yes, they start early in the circus.

I am often asked what life is like behind the scenes. Well, on tour it is a very strenuous business. It is strictly speaking a community on wheels. You'll find nearly every type of modern wheel in a travelling circus like Bertram Mills, which is the largest mobile show of its kind in Great Britain. Ranging from ordinary motor-car wheels you have caravan wheels, tractors, the haulage machines with tyres like those used on airplanes, wagons, buggies, Cinderella's carriage, the Deadwood coach and pony traps. The chief saddler is one of the most important men on the ground.

Then there is the Tentmaster and his gang of picked men who can erect a big top and its attendant canvas tents in about a couple of hours. It is a very expert job, which has to be done in all kinds of squalls and dirty weather. Then there are the members of the fire brigade, the ring men, grooms, attendants, the dressmakers, dry-cleaners, valets, cooks, canteen workers and sewing women. They all go to make up a little town, in which water, gas and electricity are laid on at every stopping place, by arrangement with the local authorities.

At Olympia it is pretty much the same. About 250 people are engaged throughout

the six weeks of the Christmas and New Year show in London. In between the Tenting Tour and the bigger show, about 150 employees go into Winter Quarters where, after a rest (the performers mostly go for a short holiday), the riders, trainers and ringmen start practising new turns, while the electricians, engineers and tent-men put everything in order. There is repainting, costume designing and



Juggler practising outside the tent, with clowns looking on.

making to be done in readiness for the big production. Idleness in the circus is unknown. It is all hands to the pump. And therefore never a dull moment!

Meanwhile Mr. Cyril Mills has been busy flying to various parts of the world in search for new talent and Mr. Bernard Mills has been planning all the things that make for precise administration.

Half a million people will see the Olympia show. Over a million saw the Tenting Show on its travels from Luton to Aberdeen and, by a different route, back to Nuneaton.

Messrs. Cyril M. Mills and Bernard N. Mills took over the production of the Bertram Mills circus on the death of their father Capt. Bertram Mills, who was a famous four-in-hand expert. Neither of the sons was intended for the exploitation of the biggest British circus; Cyril was a civil engineer and Bernard an estate director.

Crewe's 7000th Locomotive

"THIS is the seven thousandth locomotive built at Crewe Works September 1950." So reads the neat plate on engine No. 41272 turned out from Crewe recently. A remarkable story of progress lies behind these few words, for it is 105 years since Crewe built its first engine, a 2-2-2 single driver No. 49 of the Grand Junction Railway. Fortunately this little pioneer, named "Columbine," is still in existence, being preserved among various other historic engines in York Railway Museum. How interesting it would be to see this patriarch of an engine alongside its 7000th descendant.

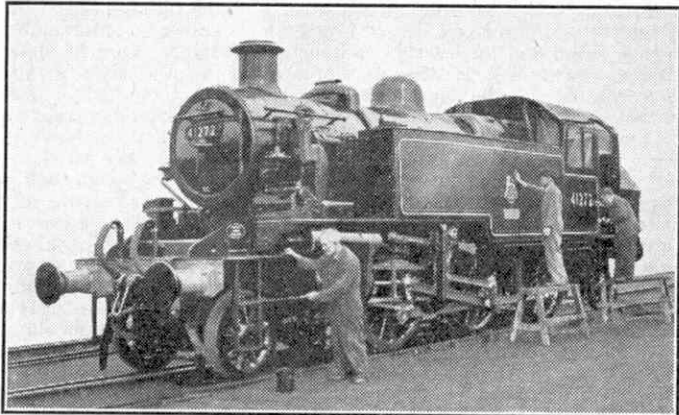
The latter, which is shown in the picture on this page, is of the light 2-6-2 tank class introduced by the former L.M.S. in 1946. These engines are intended to replace by a modern design the numerous and varied small tanks, often many years old, that have been a great stand-by for branch line and local traffic. Accessibility of working parts, cab accommodation, and a specially-shaped bunker to allow a good lookout when running in reverse are special features aimed at in the design, in addition to the use of superheated steam and an up-to-date front-end layout. Present-day members of the class are very smartly turned out in B.R. lined black with the lion and wheel emblem on the side tanks.

Since Crewe's first engine took the rails each successive 1000th locomotive built there has marked an interesting stage in design and practice. The 1000th locomotive, built in 1866, belonged to the Ramsbottom "DX" class of 0-6-0s of which 943 in all were built, probably the first serious attempt at locomotive standardisation and mass production. By 1876 the Webb regime at Crewe was

under way and the 2000th engine, which appeared in that year, was a neat but diminutive 2-4-0 tank.

The 3000th and 4000th engines were both compounds on the Webb system, the first being a three-cylinder tank with uncoupled driving wheels, and the other a four-cylinder 4-4-0 express. The tank lasted a few years only, but the express engine, rebuilt to a two-cylinder simple in 1922, lasted until 1931.

The next engine in this cavalcade was probably the best known individually of them all. This was "Coronation," of



Putting the finishing touches to Crewe's 7000th locomotive. This is a 2-6-2 tank, B.R. No. 41272. British Railways Official Photograph.

the "George the Fifth" class, a simple superheated 4-4-0 design that put up some amazing runs in its time. "Coronation" wore special livery in L.N.W.R. days, and with the unusual nameplate that it carried throughout its life it was a familiar sight until its regrettable breaking up in 1940. The nameplate had a crown above the title, while below it appeared "5000th Engine Built at the Locomotive Works Crewe June 1911."

Vast changes had taken place in the railway world and at Crewe by the time the 6000th engine appeared in 1930. The L.N.W.R., which had owned the Works since 1846, had become part of the L.M.S. and Crewe Works itself had been extensively reorganised. The 6000th engine, now B.R. No. 42878, is one of the earlier standard 2-6-0 class.

THE OIL TANKER



By Denis Rebbeck, M.A., M.Sc., Ph.D., B.Litt.

DURING the last sixty-odd years there have been enormous developments in the transport of oil across the oceans of the world. The needs of the oil-carrying trade, following on the greatly extended use of mineral oil as a fuel for raising steam and for internal combustion engines, have led to the development of a type of ship having special features suitable for the transport of oil in bulk.

It will be appreciated that for a great many years oil was transported in barrels and cases in the holds of ordinary cargo ships. Nor will the reader be surprised to learn that, on account of the risks involved, all proposals for carrying oil in bulk were viewed with suspicion for quite some time. The first vessels used for carrying oil in bulk on the Atlantic were ordinary cargo steamers converted for the new scheme by having large oil-tight tanks fitted in the holds. The experience gained from the operation of vessels so fitted proved that oil could be carried safely across the oceans in large quantities, provided certain precautions were taken to safeguard against the dangers of leakage, fire and explosion.

It was a very natural development from the separate tanks built in the holds to the designing and building of ships having the oil actually in contact with the "skin" or shell of the vessel, both at sides and at bottom. The oil compartments thus formed an integral part of the structure, and this practice has in principle remained a standard feature of tank-ship design.

Like most other carriers of bulk freight, oil tankers have their machinery aft, although some years ago certain tankers were built with their machinery amidships. However, for various technical reasons, this arrangement has never really been a

successful one, and naval architects consider that it is preferable to have the propelling and auxiliary machinery at the after end of the ship, separated from the oil-tank space by a pair of bulkheads known in shipbuilding circles as a "cofferdam." Forward of this cofferdam we find the oil tanks grouped, three abreast in nine consecutive rows in an average size of tanker, followed by another cofferdam, and then the bows of the ship.

Reference to the upper picture on the opposite page will indicate clearly the cellular structure of a typical oil tanker. The vessel shown in this photograph is a 24,000-ton deadweight tanker, building in the Belfast shipyards of Harland and Wolff for Norwegian owners. The picture is of particular interest in that the vessel, one of five sister ships building by Harland and Wolff as part of the country's export drive, is of ultra-modern design, on account of the large amount of welding, the introduction of the Norwegian practice of having "corrugated" transverse bulkheads in the oil compartments (thus saving space and weight), and, in addition, having the new Harland-B. and W. opposed piston single-acting two-cycle Diesel engine, which marks an important step forward in marine propulsion. This new engine is illustrated opposite.

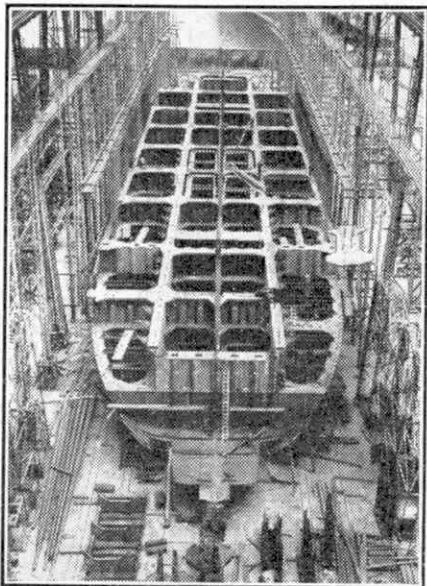
The liquid cargo which the oil tanker carries is removed from the ship by pumps positioned in two large pump-rooms situated at two points about one-third and two-thirds along the length of the ship. These pumps can transfer oil from one tank to another, and can pump it on deck and discharge it ashore as and when required. The loading and discharging of an oil tanker is carried out with practically no noise other than

We are indebted to Harland and Wolff Ltd., Belfast, for the photographs illustrating this article and for that on which our cover is based.

the subdued regular throb of the pumping machinery, and is certainly in marked contrast to the noise and bustle that invariably accompany the handling of other types of cargo.

The highly inflammable nature of the cargo of an oil tanker has resulted in special regulations being applied to this type of freight carrier. No naked lights are allowed, and electric current is generated in the engine room for all lighting and domestic requirements. In many respects the life on board is much more strictly controlled, and there is much less shore leave than is the case in other types of ships, but, by way of compensation, the standard of living is higher.

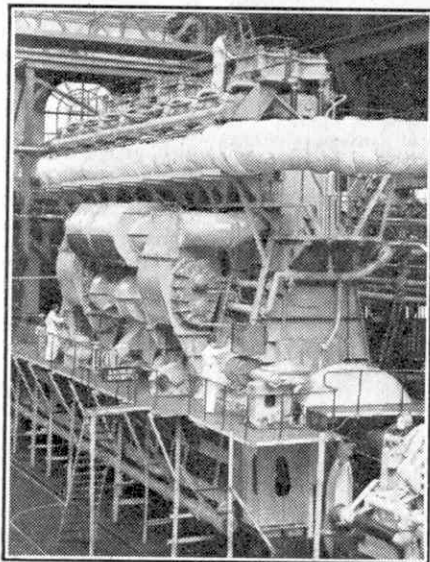
Tankers are ocean-going, sea-going, coastwise and even river craft. Undoubtedly the most impressive of all are the really gigantic fellows which are now being built in this country and in the United States of America. Typical of these monsters is the 28,000 tons dead-weight tanker "Verena" building at Belfast by Harland and Wolff for the Anglo-Saxon Petroleum Co. Ltd. A similar vessel is building in the same yard for the British Tanker Co. Ltd. The illustration on the next page shows the launch of the "Verena," but unfortunately gives no real impression of the size



A 24,000-ton tanker building at Belfast. The corrugated bulkheads and numerous oil tanks are clearly shown.

of these leviathans. The "Verena," which is a new class of ship, represents the largest type of tanker built in the United Kingdom shipyards.

The "Verena's" principal dimensions are: Length between perpendiculars 610 ft.; breadth moulded 80 ft. 6 in.; depth moulded to upper deck 45 ft.; deadweight approx. 28,000 tons. Built under Survey of Lloyd's Register to Class 100 A.1 "Carrying Petroleum in Bulk," the vessel is of the usual tanker design with machinery aft, poop, bridge and forecastle decks connected by fore and aft gangways, boat deck aft, and upper bridge, navigating bridge and flying bridge amidships. Having a raked stem and a cruiser stern, the hull is constructed on the combined transverse and longitudinal system of framing, and is divided by bulkheads into 33 cargo oil-carrying compartments. There are two main cargo pumprooms and a forehold pumproom, two cofferdams, a gastight cargo hold forward, and under this space a deep tank for oil fuel. A cross bunker and wing bunkers forward of the motor room, and the double bottom under the motor room, are also arranged for the carriage of oil fuel. The fore peak tank is arranged for water ballast, and the aft peak tank for water ballast or boiler feed water.



Harland and Wolff 7,500 B.H.P. Diesel Engine, for 24,000-ton tanker, on test bed.

Welding to Classification Society's approval has been adopted to a considerable extent in the construction of this vessel. Modern equipment for efficient and rapid working is installed, and includes steam-driven pumps for dealing with the cargo oil. Steam-driven winches, a windlass and capstans are fitted, and electric hydraulic steering gear controlled by telemotor from the wheelhouse. Ample and comfortable accommodation, including an officer's lounge, is provided amidships for the captain and officers, and on and under the poop deck for the engineers, petty officers and crew.

A large dining saloon with adjoining smokeroom, a petty officers' mess with adjoining smokeroom, and mess rooms for the crew and catering staff are arranged on the poop deck convenient to the galley and pantries, the crew's recreation room being situated under the poop deck. Accommodation for passengers is provided in three cabins each fitted with two cot beds, and in one cabin fitted with a single cot bed and a combined bed and settee, all four cabins having their own private bathroom.

A mechanical system of ventilation, in conjunction with warm air heating, is installed throughout the accommodation. The life-saving appliances include four steel lifeboats fitted under mechanical davits.

The propelling machinery consists of a single shaft arrangement of triple-expansion, double-reduction geared turbines, made by Harland and Wolff to the most up-to-date design, and is capable of developing 11,000 service s.h.p. ahead at a propeller speed of 100 revolutions per minute. Impulse blading is fitted for the H.P. ahead and the H.P. and L.P. astern turbines, while the M.P. and L.P. ahead turbines have blades of the reaction type.

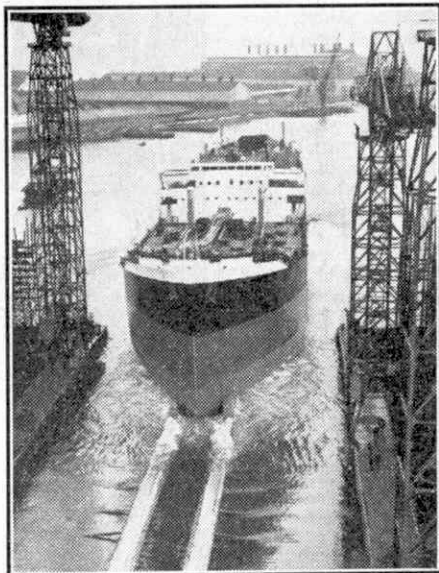
Astern turbines are housed in the M.P. and L.P. ahead casings. The gears are of the double-reduction articulated type, and the lower portion of the gear-case is of fabricated steel rigidly attached to seatings in the ship. The main condenser is slung underneath the L.P. turbine casing, and is supported from the tank top by springs. The condenser is of the regenerative type, and maintains a vacuum of 28½ in. Hg. when working under service conditions.

The propeller is made of manganese bronze, and has four blades cast solid with the boss. The thrust block is of the Michell type, and is fitted in the engine room just aft of the gearcase.

There are three oil-fired Foster-Wheeler "D" type water-tube boilers made by Harland and Wolff, complete with superheaters, air heaters and economisers, and the necessary fans for forced and induced draught. A special feature is the automatic combustion control. The steam pressure is 500 lb. per sq. inch gauge, with a steam temperature

of 750°F. The boilers are situated above the aft end of the engine room, the boiler room being separated from the engine room casing by a screen bulkhead. This arrangement makes a very compact machinery space. Regenerative feed heating is fully utilised in the main system, which includes air ejectors, condensate extraction pumps, drain cooler, and two-stage feed heaters. The auxiliary machinery, with the exception of the air ejectors, main feed pumps and harbour-use boiler feed pumps, is all electrically driven.

There are two B.T.H. turbo-generators, one working and one standby, each 400 kW., 220 volts, D.C., complete with its own condenser, air ejector, lubricating pump and cooler. Two B.T.H. motor-driven generators, (Continued on page 572)



Launch of a 28,000-ton tanker at Harland and Wolff's Belfast shipyard.

Christmas in the Air

By John W. R. Taylor

A FEW weeks ago I watched somebody doing a most unusual job—taking the cracks out of an enormous pile of Christmas crackers. But you need have no fear that the crackers on your table at home this Christmas will be crackless, for the ones I saw are destined to be pulled up above the clouds, high over the Atlantic, the jungles of Africa, and everywhere else that B.O.A.C. air liners will be flying at dinner time on the 25th.

International regulations forbid the carrying of fireworks aboard passenger aircraft, so the cracks stay on the ground, but this is hardly likely to worry the lucky people who have just had the Christmas dinner that B.O.A.C. plan to serve!

Like most other airlines, they will provide all the traditional fare during the festive season, including turkey, Christmas pudding, mince pies and wine. Even B.E.A., who have no facilities for providing hot meals aboard their shorter-range air liners, promise their passengers cold turkey.

Pan American World Airways will add a true international flavour to the Christmas dinners supplied to passengers on their extra-fare luxury "President" transatlantic service, by offering such additional delicacies as melons from the West Indies, coconuts from Hawaii, French wines and champagne, liqueurs or cognac. Nor do they cater only for the "inner man," for transatlantic "Clippers" will be decorated with holly, tinsel stars and paper chains. Most will also carry a sprig of mistletoe, but the location of this has to be chosen carefully, as Pan. Am. stewardesses are noted for their charm and a spray of mistletoe at the rear of the cabin might result in the "Clipper" becoming somewhat tail-heavy!

Christmas presents and toys naturally form a major part of the freight loads carried by air liners at this time of the year. Many of the toys are for children of airline employees stationed at airports

all over the globe; others are given by kindly crew members, sometimes dressed as Father Christmas, to young passengers travelling to spend Christmas with parents.

For the children of airport personnel there are parties, at which they are joined



A member of the crew deputises for Father Christmas aboard a B.O.A.C. "Speedbird" air liner. Photograph by courtesy of British Overseas Airways Corporation.

by Father Christmas. Nor are they disappointed if he arrives by aeroplane instead of on a sledge drawn by reindeer, for he always has a big sackful of toys.

Such festivities are by no means restricted to civil airports, and all over the world this year units of the Royal Air Force and the U.S. Air Force will invite groups of children to special parties.

Nor is the real message of Christmas ever forgotten, and religious services will range from a midnight celebration of Holy Communion in the station church at the Air Lift terminal of Gatow on Christmas Eve, to a Christmas Day service at Amman, capital of Transjordan, conducted by the Archdeacon of Jerusalem.

Despite the need for "business as usual," therefore, there will be plenty of happiness along the world's airways this Christmas. Happiest of all, perhaps, will be passengers flying on the trans-Pacific route from Australia to America, for by crossing the International Date Line they will have two Christmas days, and, hence two Christmas dinners!

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"THE RAILWAYS OF BRITAIN"

By W. H. BOULTON (Sampson Low 21/-)

The object of the author of this book, himself a railway man, is to relate how the railways of Britain started and grew into the separate companies of 30 years ago, and how these were first united in groups and finally nationalised. The well-presented volume in which he has done this is generously illustrated with half-tone reproductions, line drawings and diagrams.

Mr. Boulton begins with the introduction more than 200 years ago of new methods of transporting coal by Huntingdon Beaumont, who established a wooden way in the Newcastle area. Ways with iron plates followed, and this led eventually to such lines as the Surrey Iron Railway, and the Middleton Colliery line in Leeds, the world's first commercial railway on which a steam locomotive was used. Then came the Stockton and Darlington line, which began the growth of our public railways. There are excellent stories of the spread of the iron way in London and the provinces, with dramatic accounts of such events as the Railway Mania, with which the name of George Hudson, "The Railway King," is associated; "The Battle of the Gauges," and other outstanding events.

How the four groups of 1921 were formed is then told, and this brings us to the wartime importance of railways and the formation of the national system we have to-day. The smaller railways of Britain and various departments of railway engineering, equipment and working are dealt with in brief, and such matters as railway rates, tickets, timetables, station work and train control also are touched on.

The book covers a wide field in an excellent manner in the space available, and the inclusion of a good index makes it useful for reference.

"BIRMINGHAM CITY TRANSPORT"

Parts 1 and 2,
(Ian Allan, 2/6 each)

These two booklets together provide a useful summary of the development of municipal road passenger services in the Birmingham area. They mark the entry of the invaluable "A.B.C." series into the new field of municipal transport.

Part 1 deals primarily with tramway and trolleybus vehicles and services, starting with horse-drawn buses and trams, and describing various steam and electric services of earlier days as well as more modern developments. Part 2 is specially concerned with the motor bus, from the angular-looking solid-tired vehicles with open tops of pioneer times to the pneumatic-shod and more smoothly-rounded vehicles of to-day. Classified numerical lists are given of vehicles in service, with details of routes and types. There are many excellent illustrations, and Part 1 includes a folding map.

"TRAINS ANNUAL 1951"

(Ian Allan 7/6)

For the fifth edition of this popular annual the Editor, Mr. Cecil J. Allen, M.Inst.T., has assembled a talented team of writers. It is pointed out in the foreword that the nationalisation of British Railways will in time do away with the variety of practice and equipment that has always been the delight of railway observers. It is well, therefore, in a publication of this kind to set down some of the characteristics and practices of the past, alongside features and equipment of present-day working. How well this has been done is reflected in the splendid variety of the topics and illustrations in the present "Annual."

The book deals with such widely different subjects as the modern mechanised freight yard at Toton,

L.M.R., and a journey by the "Glacier Express" over its remarkable Alpine route. The Editor recounts some of his experiences in the earlier years of this century during his service on the former Great Eastern Railway. There is an entertaining chapter on "The Port Road" by David L. Smith, whose knowledge of the G. and S.W.R. is wide and deep, and C. Hamilton Ellis contributes an account of the former L.S.W.R., which in his youth he thought the best of railways.

There are many other informative and interesting articles on locomotives, famous trains, service travel, and so on. The usual coloured cover shows a converted "Royal Scot" in B.R. livery picking up water from a line trough.

"STUDIES OF BRITISH BIRDS" "BIRDS THROUGH THE YEAR"

By Fish-Hawk
(Duckworth, 7/6 each)

Mr. D. K. Wolf-Murray, who writes under the name of "Fish-Hawk," has been a naturalist and sportsman from his earliest years, and is equally happy with field glasses, sketch book and pen. In these books he has given us the outcome of many years of patient and devoted bird watching on hill and seashore in Great Britain.

The first book covers a very wide range, beginning with a section on migration and other bird problems and then describing the lives of gulls and other sea birds, eagles, hawks and practically every bird that frequents our coasts and countryside, showing throughout the intimate knowledge the author possesses of the birds themselves. In the second book he sets out to describe the birds that may be seen month by month by anyone who walks abroad. He avoids technicalities, but encourages his reader to take a precise interest in the birds and to acquire an exact knowledge of their ways.

The illustrations, which are by the author himself, are the result of many hours of sketching from life, and they will portray the spirit of the birds in both flight and repose.

"MOON MAIDEN'S TREASURE"

By J. IVESTER LLOYD
(Duckworth, 7/6)

Here is a breezy story of the sea and of a high-speed hunt for buried treasure in the Mediterranean. While sailing off the Cornish coast Jack Brinsley and George Weston are run down by the "Moon Maiden," a fast steam yacht commanded by Major Bradley that is bound for the Mediterranean on a treasure hunt. The boys are taken on board and join in the hunt. Needless to say, Major Bradley has a rival, an unscrupulous South American adventurer, and the struggle between the two parties, which proceeds with varying fortunes, provides a yarn full of thrills and surprises that will keep its readers alert and interested to the very end.

"ROPE SPLICING"

By P. W. BLANDFORD
(Brown, Son and Ferguson, 3/6)

There are many excellent books on knotting, but so far there has been no book dealing entirely with splicing. Mr. Blandford fills this gap, including at the same time sufficient information on knotting and other rope work to make the descriptions he gives self-contained.

The general principles of splicing and the simple tools required are first dealt with, and details are then given of the basic splices and their variations, some of which have not previously been described. Good diagrams illustrate the making of the splices dealt with.

Fun with Dinky Toys

A Combined Road and Rail Layout

THE Dinky Toys town seen in the picture on this page provides endless opportunities for real enjoyment, for it is combined with an excellent Hornby-Dublo layout designed to fit in with it. This inclusion allows for a wide variety of passenger and goods transport. The railway authority runs trains over its various lines, the bus company runs an intensive service, and the road haulage firm of Johnson and Sims have a large fleet of Dinky Toys lorries for the carriage of goods by road.

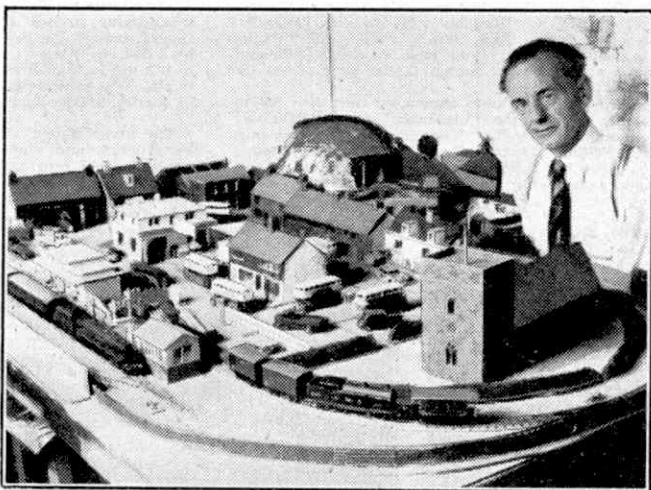
Suburbia, as this model town is called, has been designed and constructed by the members of the Johnson family, who live in Canterbury. It is carried on a baseboard 6 ft. 6 in. long and 3 ft. 6 in. wide. The buildings are nicely placed and are fully representative. They include three shops, one of which is a furniture store that has miniature suites in its windows, and there are also a church, a fire station, four garages and houses. All the buildings, including the two stations on the railway layout, are the work of Mr. Johnson, senior, who is as keen on the layout as the younger members of his family.

A run in a clockwise direction round the railway track is perhaps the best way of seeing how the town is laid out. Starting from the chief station, which is placed on the inside of the track, the main line passes over a level crossing alongside the bus depot and then bears to the right behind the fire station. It then enters a tunnel, from which it runs to the second station, which is a halt. The back of a row of cottages and the church are then passed, and the circuit brings us back to the main station. A separate line leads

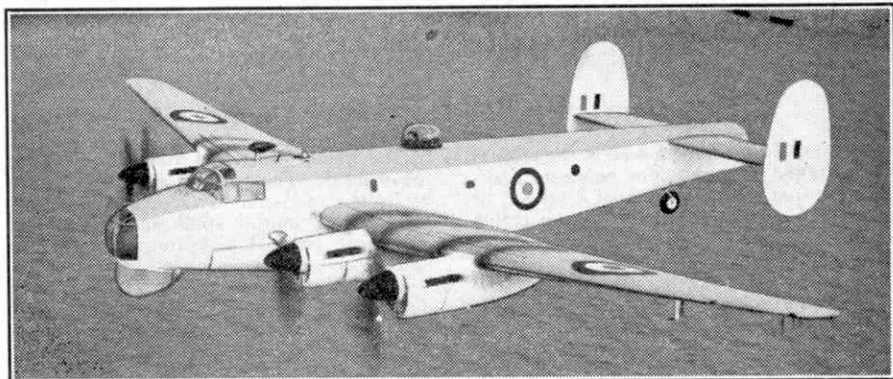
to the goods yard and there is a siding for coaches. The track is bordered partly by hedges and partly by a variety of fences, all made of lighter spills and wire wool. These are painted and are very effective and pleasing in appearance.

The bus company owns a fleet of nine double-deck vehicles and eight single-deckers, and seven timetable services are run, four with double-deckers and three with single-deckers. With the lorries of Johnson and Sims these keep the streets of Suburbia very busy. The open wagons and vans of the railway company also are fully employed in carrying goods, and the trains of L.M.S. coaches hauled by the "*Duchess of Atholl*" find plenty of passengers. An interesting feature is the running of a Petrol Tank Wagon which feeds the pumps of the four garages of the town.

A model layout such as this provides real fun, for both rail and road operations acquire a new interest when carried on in these realistic surroundings. Building up such a scene would provide a delightful occupation for any group of enthusiasts.



The striking Dinky Toys town and Hornby-Dublo Railway of F. Johnson, Canterbury. The shops, houses, fire station, church and other buildings were constructed by Mr. Johnson, senior, who is seen in our illustration, and many road and rail services are operated on the layout by the members of the Johnson family. Photograph by courtesy of the "*Kentish Gazette*."



Avro "Shackleton" patrol bomber. Photograph by courtesy of A. V. Roe and Co. Ltd.

Air News

By John W. R. Taylor

B.E.A. Names New Fleet

British European Airways have already chosen names for the fine new aircraft they are to receive in the next year or two. Their fleet of 20 Airspeed "Ambassadors" will be the "Elizabethan" class, bearing names of famous men of that age, such as Sir Francis Drake. The Corporation's 28 Vickers "Viscounts" will be named after great British explorers including Capt. Robert Scott and Sir Ernest Shackleton.

New names have also been selected for all B.E.A. "Rapides," and for the DC-3s which are being converted by Scottish Aviation into new-style "super-Dakotas." The "Rapides" will be the "Islander" class, including "Sir Robert Peel" and "Charles Dickens," while the "Daks" will become the "Pionair" class, with names of famous British air pioneers like Sir Sefton Brancker.

The Corporation have announced that their "Marathons" will be the "Clansman" class ("MacLeod," "Macduff," etc.); the "Vikings" are to be renamed after British Admirals ("Lord Nelson," "Lord Beatty," etc.); and the helicopters will be the "King Arthur" class, named after the Knights of the Round Table.

"Shackleton" in Service

The first production-type Avro "Shackleton" patrol bombers are due for delivery this month to the R.A.F. Coastal Command Station at Kinloss. As regular "M.M." readers will know, the "Shackleton" is a development of the well-known "Lincoln" bomber, and has been specially designed for long-range anti-submarine reconnaissance and attack from shore bases. Its search equipment includes a large radar scanner under the nose and radio sono-buoys, which can be dropped by parachute to pin-point the position of submarines travelling under water.

"Shackleton" squadrons will also be trained for air-sea

rescue duties, each aircraft being equipped to carry and drop a 30 ft. airborne life-boat, together with sets of Lindholme gear, which consist of a rubber dinghy and four supply containers linked together by rope to form a single floating "survival kit."

Scottish Prototype

The Prestwick "Pioneer" Mk. 2, which is shown on this page, is the first modern aircraft designed and built in Scotland. It is a stumpy, old-fashioned looking machine, but every feature of its design was chosen to make it safe and easy to operate with a heavy payload from small, unprepared landing grounds. Extensive wing flaps and leading edge slats, for example, help it to take off in only 80 yds., and it can almost hover in flight against a head wind. During its tests at Prestwick it has often taken off across the runway instead of down it, and its landing run is much shorter than the "Brabazon's" wing span.

The "Pioneer" Mk. 1 was a military three-seat communications aircraft with a 250 h.p. D.H. "Gipsy Queen" engine. The new Mk. 2 is a five-seater, powered by a 520 h.p. Alvis "Leonides" engine. Its top speed is 162 m.p.h., and it can cruise for 400 miles at 120 m.p.h. The prototype is expected to go into service in Australia after flight trials have been completed.

The first "Meteor" 8 jet fighter produced jointly by Belgium and Holland as part of the Western Union defence programme has been delivered to the Belgian Air Force. The airframe was built in Holland by Fokker and the "Derwent" engines by the Belgian F.N. Company.



The Scottish-built Prestwick "Pioneer" Mk. 2, shown here in flight, is a 5-seater. Photograph by courtesy of Scottish Aviation.

Aerial Rice Sowing

Following the shut-down of two rice mills in Sydney and one in Brisbane, the Rice Association of Australia is considering a plan to reduce costs in the industry by sowing rice seed from aircraft.

As a start an experimental aerial sowing of pre-germinated seed is being made, which should result in a much earlier harvest, as well as an immense saving in time over normal ground sowing. Cost of the service and subsequent profits will be shared between growers and millers.

Sweptwing Fighter for Australia

A contract has been signed in London between the Australian Government and Hawker Aircraft Ltd., for the production under licence in Australia of the new Hawker P.1081 single-seat sweptwing jet fighter. It will be built for the R.A.A.F. by the Commonwealth Aircraft Corp. at Fishermen's Bend, Melbourne.

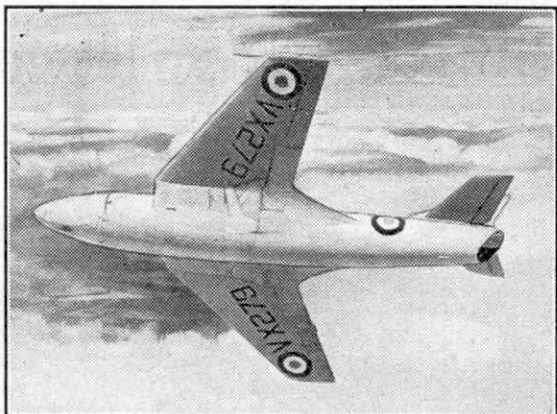
The P.1081 is the latest development of the outstanding Hawker P.1040—"Seahawk"—P.1052 series of jet fighters. The prototype is, in fact, a modified P.1052, differing from the standard version in its swept-back tail surfaces and "straight-through" jet pipe, which exhausts at the tail and so permits installation of an afterburner.

The P.1081 has a Rolls-Royce "Nene" engine, a type already being built by Commonwealth for Australian "Vampires," and is armed with four 20 mm. cannons. Its wings are swept at 35 deg. and have a span of 31 ft. 6 in.; and it is 37 ft. 4 in. long. When its afterburner is fitted, the P.1081 should prove to be the world's fastest operational jet plane.

Parachute Record

American paratroop Sgt. J. W. Swetch of Dillon, Montana, has set a new "world record" by making 123 parachute jumps in a single day at Fayetteville, North Carolina. He more than doubled his previous American record of 60 jumps in one day.

Sgt. Swetch, who is 32 yrs. old and a veteran of the U.S. 82nd Airborne Division, made the first



The P.1081, the latest type of Hawker jet fighter. Photograph by courtesy of "Flight."

"bale-out" by moonlight at 2 a.m. and completed his 123rd jump some 21½ hrs. later.

U.S. Helicopter Mail Service

Six Bell 47s, operated by Helicopter Air Service Inc., almost doubled the use of air mail by residents in the Chicago area of America in the 12 months ending 29th August 1950. In all, they flew 280,430 miles on shuttle services between Midway Airport, the roof of Chicago main Post Office and landing areas near 43 country post offices; they carried some 2,190,790 lb. of air mail.

Typical of the speed of this helicopter service is the case of a letter posted at a suburban post office at 10.30 one morning, which reached Midway Airport by noon and was delivered in Miami, Florida, 1,400 miles away, at 7.30 p.m. the same day.

The six helicopters now fly a total of over 1,200 miles a day, and are being modified to provide increased carrying capacity. New 200 h.p. engines will replace the 178 h.p. type; a lighter skid undercarriage will be fitted in place of wheels; and larger cargo bins will be mounted on the sides of the aircraft, to carry 533 lb. of mail compared with the present 343 lb.

B.O.A.C. Buy "Zero Readers"

British Overseas Airways have ordered a large number of Sperry "Zero Readers" from the British Sperry Gyroscope Company. Priority will be given to their installation in the Corporation's fleet of "Comets," but some other B.O.A.C. types will be using the new equipment early next year.

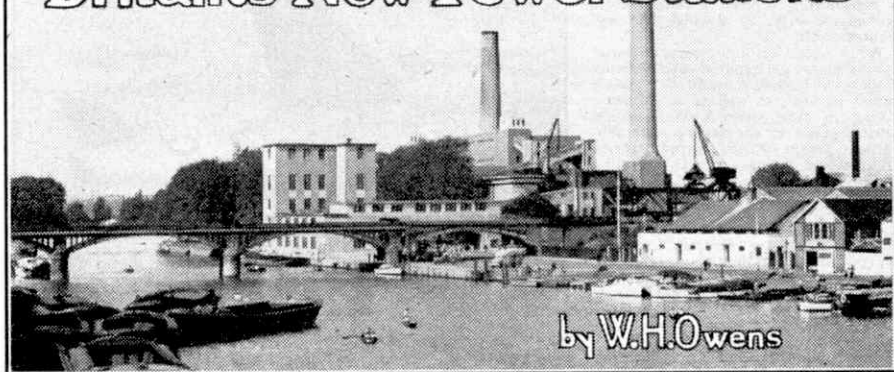
The "Zero Reader" is one of the most important advances ever made in aircraft instruments, and will help to make flying even safer and surer than it is now. In particular, it will permit services to be operated as regularly in bad weather as in good.

It is basically a small, incredibly rapid calculating machine, which absorbs messages from half a dozen separate flying instruments and gives the resulting instructions to the pilot in one simple picture. It tells the pilot how and when to operate his controls during "blind" flying or "blind" approaches to airport runways, in cloud, at night or in bad weather. It thus makes flying "on instruments" more accurate and at the same time less fatiguing for the pilot.



One of the six Bell 47 helicopters operating the U.S. helicopter air mail service referred to on this page. Photograph by courtesy of the Bell Aircraft Corporation, U.S.A.

Britain's New Power Stations



II—Kingston

THERE are few large industrial buildings that have such a pleasant situation as the new power station at Kingston-upon-Thames, Surrey, which was opened by the King in October 1948. This stands just behind the public gardens that extend along the riverside below Kingston Bridge. Here in the spring and summer months the pleasure steamers, river yachts and launches mingle with the blackened barges that bring up coal and other raw materials from the Thames estuary.

One of the first things that strikes the visitor to this power station, which serves a busy and populous area of south-east England, is its convenient position for a direct fuel supply by economical water transport. There are also adjacent railway sidings, but the bulk of the coal comes up the river. Another feature is the exterior appearance of the station itself. While the design of Kingston follows the same simple principle of proportional massing as is used for other modern buildings of similar purpose, special architectural treatment has been given to the riverside elevation here in view of the non-industrial surroundings.

The main buildings of the Kingston power station run north to south parallel

with the river. At the south end are the coal handling plant and reserve coal store. At the extreme north is a four-storey block of offices and departments, including the stores, workshops and chemical laboratories. Since Kingston has been selected as the headquarters of the South Eastern Division of the British Electricity Authority, the greater part of the station's offices has been allocated for this purpose.

Although this power station is actually one of medium generating capacity—when working at full capacity it will be capable of an output of 120,000 kW.—the plant installation is of the most up-to-date type and design. It includes all the newest methods of automatic control to ensure safe and efficient operation, and it has a number of special features

The second new power station to be described and illustrated in this series is that at Kingston-upon-Thames, at the head of this page. This is near the Thames below Kingston Bridge, and the bulk of the coal used in the station is brought up the river.

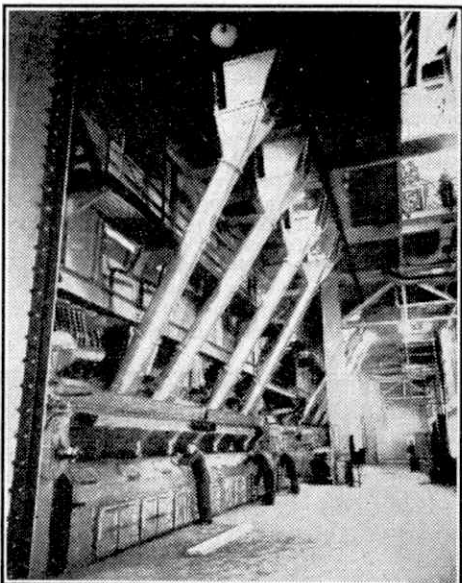
to minimise the nuisance caused by the emission of smoke and dust from the chimneys, and to avoid unsightliness.

The Thames affords a ready and abundant supply of cooling water for the turbine condensers and other lesser purposes, making the erection of cooling towers for this station unnecessary. The intake amounts to more than six million gallons an hour when the station is operating at full load. River water is

drawn in at the south end of the main building through an entrance culvert fitted with removable bar screens, and after it has circulated through the condensers it is similarly discharged into the river again at the north end. Fine mesh rotating screens automatically clear the water of floating leaves and other surface debris, while the water flow is controlled by a system of hand and electrically operated gate valves. Provision is also made for the complete reversal of the flow automatically this being necessary from time to time to assist in scouring the channels of accumulated silt.

Some very skilful engineering work was undertaken in the construction of these circulating water channels and screen chambers. An open reinforced concrete cutting some 20 ft. deep extends below ground floor level the full length of the power station. In constructing the river ends of this cutting, small areas of the river had to be enclosed with piling and pumped dry so that concrete flooring and side walls could be laid on the river bed.

The turbine room, which runs practically the length of the station at first floor level, contains four steam turbines and direct-coupled electric generators, each of which is capable of

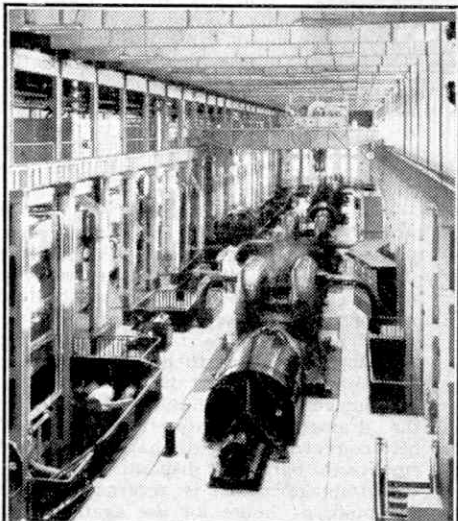


The boiler house of the Kingston power station. Each of the six boilers in it is capable of raising 260,000 lb. of steam hourly, at a pressure of 623 lb. per sq. in. and a temperature of 850 deg. F.

generating 30,000 kW., or sufficient power to light half a million 60-watt lamps. The turbines are of the two-cylinder type with duplex exhaust to twin condensers. A prominent feature of each machine is the pair of steel overhead pipes, of large diameter, which serve to link the high and low pressure cylinders. The revolving turbine rotor and the coupled generator rotor together weigh about 28 tons, and the synchronous speed of this complete rotating unit is 3,000 revolutions a minute.

The generating machines are linked to condenser units which are placed, with the auxiliary plant, below the floor level of the turbine house. Cooling water is circulated in each condenser through something like 8,000 copper alloy tubes at the rate of approximately 23,000 gallons a minute.

Each turbine plant includes main gear-driven and standby steam and electrical drive oil pumps for the lubricating system, with tubular coolers for the lubricating oil and the generator ventilating air. Motor-driven barring gear, used for rotating the machine at low speed before and after normal operation, is also fitted as an integral



The Kingston turbine house. Its four sets of turbo-generators are capable of producing sufficient current to light 2,000,000 60-watt lamps.

part of each turbine. Each pair of generators is controlled from an instrument and control board, which carries about 100 gauges and instruments for the two machines, together with starting and operating controls.

Kingston's boiler house has six boilers, each capable of raising 260,000 lb. of steam hourly at a pressure of 623 lb. per sq. in. and a temperature of 850 deg. F. When working on full load each unit consumes 16 tons of coal an hour, which is burnt on chain-grate stokers with automatic combustion control. Boiler feed and steam drums are 44 ft. long and 4 ft. internal diameter. These drums are

Apart from the individual control of boilers from adjacent operating boards, the working of the entire boiler plant and the maintenance of efficient combustion conditions are co-ordinated and controlled by automatic means. This automatic system includes control of the final steam temperature, and also of the steam-jet blowers which rotate within the boiler furnaces, gas passages and feed water heaters to remove accumulated soot and other solid deposits. Such cleansing action as is affected by the steam-jet blowers can be taken without any interruption to the operation of the boilers.

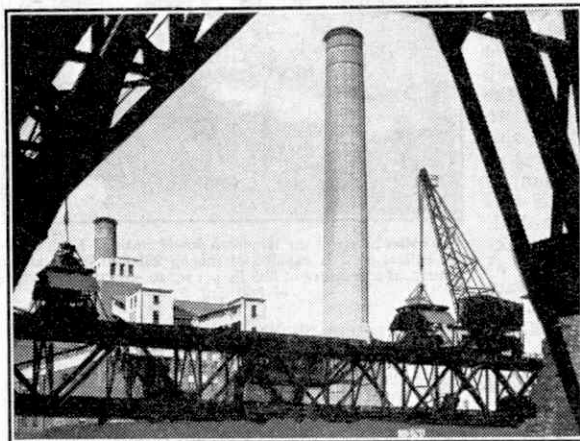
The coal handling plant at Kingston Power Station is designed to take in 1,000 to 1,200 tons of coal, which is the maximum quantity required for one day's operation under full load conditions.

Coal comes up the river in special barges and is unloaded in a covered wharf by a travelling grab crane lifting between five and six tons at a time. After passing over automatic weighing machines, it is discharged immediately to a system of travelling belt conveyors that transport it at the rate of 150 to 200 tons per hour. Altogether six conveyors deliver the coal direct to the boiler house bunkers, or into the reserve coal store. Automatic travelling trippers can discharge it at any selected point over the high-level bunkers, or at any point along one side of the 30,000 ton coal store.

Ashes from the six boilers are ejected by high-pressure water jets into a system of underground troughs, where the mixture of water and quenched ash is propelled along in a liquid flow until it reaches the ash pumping house at the end of the boiler house. There the heavy clinker is ground down, and then the ash mixture is pumped through to the concrete drainage bunkers near the coal wharf whence the drained ashes are transported by belt conveyor to be discharged into the empty coal barges for disposal. Meanwhile the drainage water is returned to the ash pumping house for use again in the water jet system.

The main control room of the new power station

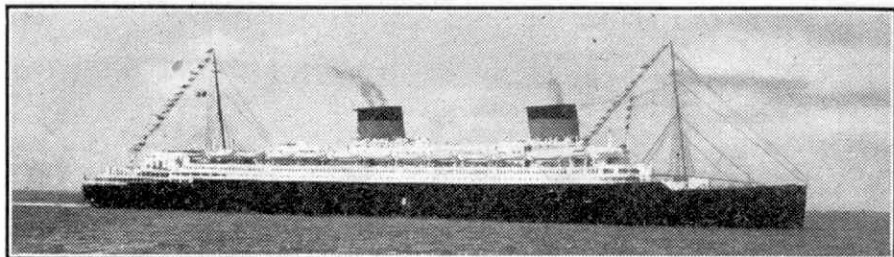
(Continued on page 572)



Coal for the Kingston station boilers is unloaded from Thames barges by travelling grab cranes and is carried to the bunkers by travelling belt conveyors.

of solid forged steel $3\frac{1}{2}$ in. thick. This thickness is necessary because the total steam pressure on each end of the drum is about 500 tons.

Pumping equipment for boiler feeding comprises seven pumps of 450 h.p. each. Five of these are electrically driven with automatic variable speed control regulated by the load, and the remaining two are driven by steam turbines. The two steam-driven pumps come into operation automatically in the event of failure in the electric pumping system. Gases are drawn through the boilers by pairs of motor-driven draught fans, the casings of which are 12 ft. in diameter; and the complete equipment of 12 fans, with their electrical control gear and supply transformers, is housed in a special building at the rear of the boiler house.



The "Liberté," formerly the German liner "Europa," which once held the Blue Riband of the Atlantic. This vessel has been refitted at a cost of £7,000,000. Photograph by courtesy of the "French Line," C.G.T.

Shipping Notes

AMONG the German ships handed over to France as reparations at the end of the war was the "Europa," the former holder of the Blue Riband of the Atlantic. On reaching France she was transferred to the French Line, C.G.T., and while at Havre awaiting this transfer she was damaged during a great storm and tidal wave. This made extensive reconditioning necessary and the opportunity was taken to carry out many improvements, particularly in regard to safety.

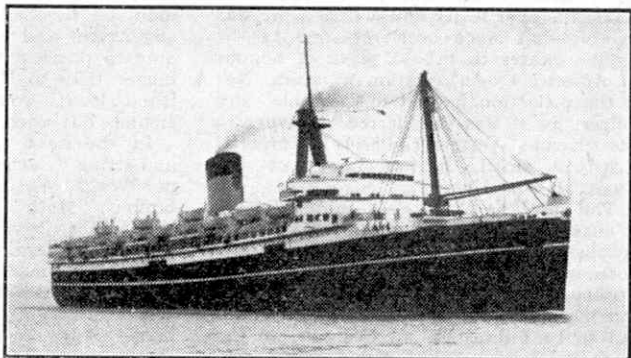
The refit was effected at the Penhoet yard at St. Nazaire, where during the past 85 years nearly all of the French Line's great vessels have been built. It resulted in the appearance of what is practically a new liner, splendid within and without, to which the name "Liberté" has been given.

This handsome vessel, which is illustrated at the head of this page, has an overall length of 937 ft. and a beam of 102 ft. Her gross registered tonnage is 49,746 and she is fitted with engines of 120,000 h.p. There is accommodation for 569 first-class, 562 cabin-class and 382 tourist-class passengers, a total of 1,513.

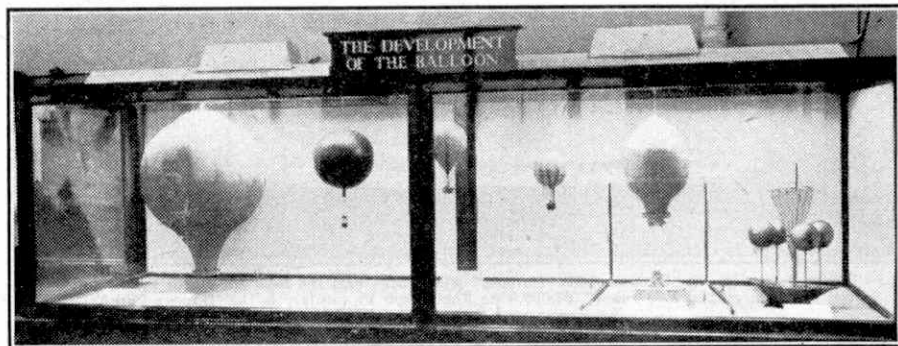
A refit of a far more extensive character has transformed the "Monarch of Bermuda," the former Furness Withy turbo-electric liner, into what is practically a new vessel, the "New Australia." The

"Monarch of Bermuda" was built in 1931 by Vickers Armstrongs Ltd., on the Tyne. During the war she served as a troopship, and while awaiting conversion on the Tyne in preparation for returning to her normal run between New York and Bermuda the whole of the passenger accommodation was gutted by fire. After careful survey it was decided that the machinery and part of the hull could be saved, and she has been reconstructed at Southampton by John I. Thornycroft and Co. Ltd., under the general supervision of the Shaw, Savill and Albion Co. Ltd., this company acting as manager of the vessel for the British and Australian Governments. Her first voyage in the colours of this company started on 15th August, carrying emigrants to Australia.

The vessel originally had three funnels and two masts. She now has two funnels, a main funnel about amidships and a forward funnel constructed in what is called dipod form, that is in two sections, which is surmounted by a topmast. The original aftermast has been removed and the foremast has been cut down.



The turbo-electric liner "New Australia." Photograph by courtesy of the Shaw Savill and Albion Company Ltd.



Typical "National Aeronautical Collection" showcase. This one demonstrates, in model form, the development of the balloon, with Lana's on the extreme right, then the famous "Montgolfier"—the first successful balloon. Photograph "Flight" Copyright.

The National Aeronautical Collection

By John W. R. Taylor

JUST before the outbreak of war in 1939 a leading American aviation expert made a special visit to London to see our National Aeronautical Collection, which was then crowded into a gloomy corner of the Science Museum. Every day for about a month he travelled to South Kensington, armed with a case of reference books, to gaze at the full-size aircraft and study the models through a magnifying glass. At the end of that time he went to the curator's office and proclaimed, almost with tears in his eyes: "You've got the finest aeronautical collection in the world here, and you keep it in a stable."

We still have the world's finest aeronautical collection at Kensington, although the original Wright biplane—first powered aeroplane ever to fly and a prized pre-war exhibit—has since been returned to the United States to take a place of honour in America's own aviation museum. Nor is the collection housed in "a stable" any longer, for it was transferred this year to the spacious Western Galleries in Imperial Institute Road, former home of the Imperial War Museum.

The result is a well laid-out exhibition of outstanding interest not only to aviation enthusiasts but to almost everybody, for here are the aircraft that made aviation history, not in the dim and distant past but mostly in our own age. No-one could fail to be interested, for example, in the flimsy triplane, covered with brown paper, in which A. V. Roe made the first flight by an Englishman in an English aeroplane;

or wonder at the courage of Alcock and Whitten Brown who conquered the Atlantic in the wood-and-fabric "Vimy" bomber, whose fuselage, centre wings and engines hang in a centre gallery. And who will not feel a thrill of pride on seeing the little Gloster-Whittle E28/39, first really practical jet 'plane, which introduced a new era of aviation progress?

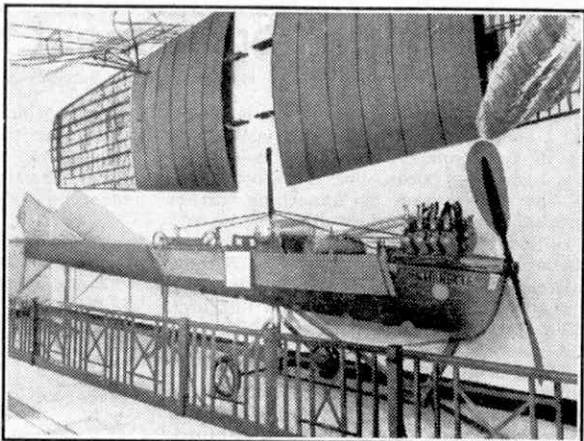
One can trace the whole development of British flying in these galleries. Original models made by Henson and Stringfellow—respectively the first design for a complete aeroplane and the world's first powered model to fly—are shown near an enormous 18 ft. propeller from Sir Hiram Maxim's giant biplane of 1894, in which he would certainly have been the first man to fly had he been more of an adventurer and less of a scientist anxious only to prove a theory. His aircraft was bigger than a "Lancaster," and actually lifted itself, complete with a half-ton engine, but with nobody aboard.

In the next gallery are Cody's stick-and-string "Cathedral," an S.E.5A fighter of World War I, and Amy Johnson's famous "Moth" "Jason," in which she made her wonderful 10,000-mile solo flight to Australia in 1930. Nor are the exhibits confined to British aircraft. The collection boasts the only complete example of the beautiful French Antoinette monoplane of 1910, and a stripped Fokker monoplane fighter of 1915; while in the same room as the Gloster-Whittle E28/39 there are two sinister reminders of the

second World War, in the shape of a sectioned German V.1 Flying Bomb and a Japanese "Baka" suicide aircraft of the type dived into our aircraft engines in the Pacific by fanatical Jap pilots.

Full-scale aeroplanes form only one section of the display which includes also a comprehensive collection of aero engines, from Sir Hiram Maxim's huge steam engine and the earliest Wright designs, to the 2,200 h.p. "Sabre" 24-cylinder piston engine and the very first Whittle jet. Equally interesting, and the envy of every schoolboy, are the hundreds of superb models illustrating every phase of aeronautical progress from the Montgolfier hot-air balloon to the "Brabazon" and "Princess."

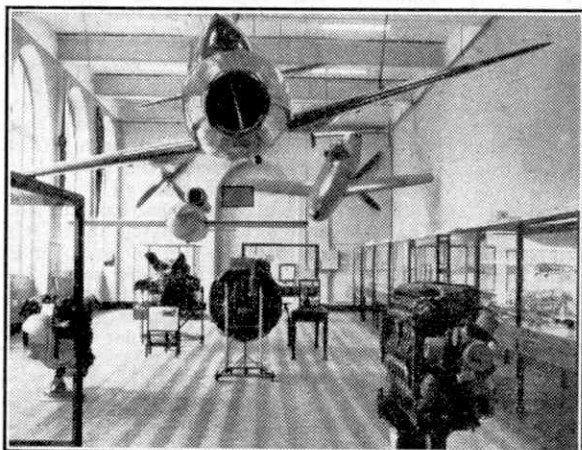
"Progress" is, in some respects, an unhappy choice of word, for when one compares the superb workmanship of the Antoinette with the shoddy, mass-produced sheet-metal shell of the "Baka," it is obvious that the pioneers, who regarded flying as a new and wonderful contribution to human enjoyment, created far more beauty than some modern designers, whose sole aim is to produce the greatest possible destructive power as cheaply as they can.



The only complete example of the French Antoinette monoplane still in existence. Photograph "Flight" copyright.

Nor were many of the designs conceived by the pioneers so primitive as we often tend to think. The Antoinette engine of 1905, for instance, had direct fuel injection, a feature only now being re-introduced in modern piston engines to improve efficiency. And for those who think that tailless, swept-back wing aircraft are the last word in present-day design, a glance at the model of J. W. Dunne's D.8 biplane of 1912 will shatter a few illusions. There is even a 37-year-old "Flying Saucer."

In addition to these items hundreds of other priceless exhibits from our National Aeronautical Collection can be seen in the Western Galleries. Admission is free, from 10 a.m. to 6 p.m. on weekdays, 2.30 to 6 p.m. on Sunday, and lectures are given at least once a week. Those unable to get to Kensington can read about the exhibits in two fascinating, well-illustrated descriptive catalogues published by H.M. Stationery Office, and which describe the "Lighter-than-air Craft" (5/-) and the "Heavier-than-air Aircraft" (3/-) respectively. But no amount of reading can produce the thrill that results from seeing "in the flesh" the actual aircraft that wrote British leadership in the skies.



General view of last gallery, showing, left to right, V.1 flying bomb, Gloster-Whittle E28/39 jet plane, and Jap "Baka" suicide aircraft. The engines include the original Whittle jet. Photograph "Flight" Copyright.

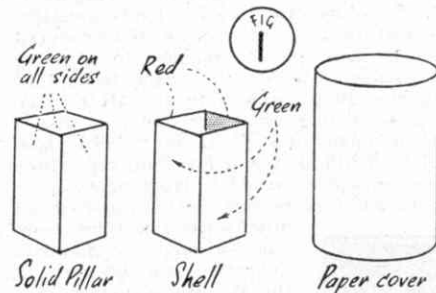
Conjuring Entertainment for Christmas

By Norman Hunter (from Maskelyne's Mysteries)

THE little helping of home-made magic I am going to describe this year starts off in the popular manner with one or two conjuring tricks, but the second half of the programme is something rather unusual. It is a shadow magic show and I believe this is the first time anyone has attempted a conjuring performance done entirely with shadows. It is very easy and, if neatly done, very amusing and puzzling.

To start the first half of the show here is a colourful, quick trick:

The Peculiar Pillar. You show a hat empty and place a tray across the brim. On the tray you stand a small wooden pillar, which you can first have examined. It is green in colour. You cover it with a paper tube and it changes to red, then it changes back to green again and finally vanishes altogether and is found inside the hat.



The Secret. The pillar, measuring about two inches square by four inches long, is just a piece of wood, painted green on the sides and black at the two ends. Fitting closely but not tightly over it is a tube made of thick paper, open at both ends. The tube is exactly the same height as the pillar. Two adjoining sides are painted green, to match the solid pillar; the other two sides are painted bright red (Fig. 1).

To begin with, the shell pillar is concealed inside an ordinary paper tube, made by rolling a piece of black paper and glueing or pinning the edges. You show the solid pillar and, if you like, hand it for examination. "You've heard of people being driven from pillar to post," you say. "Well this is the pillar. I can't show you the post because it's gone. The pillar is very green, very wooden and very solid and it

lives in this black tube." You place the tube over the pillar and remove it again, leaving the shell pillar over the real one. Take care that the green sides of the shell face the audience.



Holding shell and pillar in one hand, pick up the hat with the other, show it to be empty and stand it, crown down, on the table. Now pick up a small tray and as you hold it for a moment, flat on to the audience, just over the hat, allow the solid pillar to drop into the hat (Fig. 2). Lay the tray on the hat and place the shell pillar on the tray.

"I shall now put the pillar to bed" you remark, covering the pillar with the tube. You then give both pillar and tube a half turn, secretly, under cover of seeing that they are in the centre of the tray. Lift the tube and the red sides of the shell pillar are exposed. "The pillar has blushed. That's because you are looking at it. It's a very sensitive pillar. I'd better cover it again." You drop the tube over the pillar, then lift it again, pinching the sides so that the shell pillar is lifted too; squash both tube and shell flat and toss



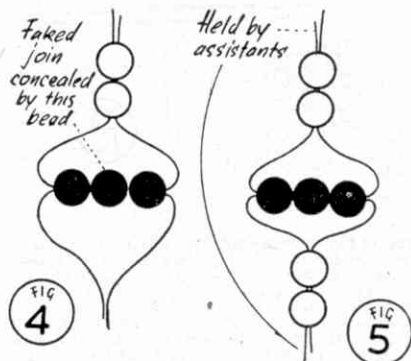
FIG 3 How the fake joint is made with the two laces

them aside and tip the solid pillar out of the hat. "It's no use," you go on, "You're still looking. The pillar can't bear it. It's gone. But it hasn't gone far. Just through the trav and into the hat."

Take Your Choice. For this trick you have seven large wooden beads, or wooden balls with holes through them. Four are white and three blue. You thread the beads on a double cord and get two members of the audience to hold the ends of the cord.

"Which is your choice?" you say to one of your assistants. "Will you have the white beads or the blue ones?" Suppose he chooses blue. You throw a large handkerchief over the beads and instantly remove the blue ones; the white beads remain threaded on the cord and everything may be examined.

The Secret. There are really two secrets. How the three blue beads are got off the cord and how you make your assistant



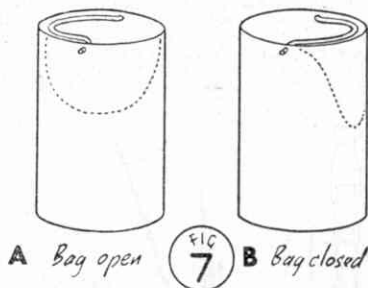
choose the blue beads. I will let you into these secrets one at a time. First, how to get the blue beads off the cords.

The beads are ordinary, so are the cords; in fact a pair of nice long bootlaces is just the thing as the tags make it easy to thread the beads. Hold the two laces by the centre. Now loop the doubled centre of one lace through the looped centre of the other, as shown in Fig. 3. You can do this quite easily without the audience knowing what you are doing, while the six beads are being examined. Now take a blue bead, thread it over the two laces and push it over the faked join. This not only hides the join but also keeps the laces together. Next thread the other two blue beads on to the laces, one on each side of the first one. Now take two opposite ends of the laces and thread two



of the white beads on, as shown in Fig. 4, then thread the other two white beads on the other ends so that the final appearance is as in Fig. 5. To the audience all the beads are now securely threaded on the laces, but you can remove the blue beads by just sliding them to one side and allowing the fake join to come apart, but the white beads will remain threaded. Of course you perform the business of releasing the blue beads under cover of a nice big handkerchief so that the audience do not spot the secret.

But how do you make your assistant choose the blue beads? Well the secret of that is that you don't. You ask him which beads he will have, blue or white. If he chooses blue you remove the blue



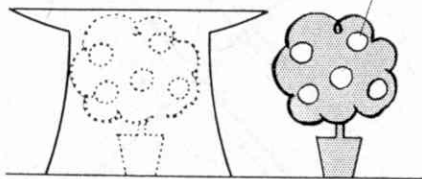
beads and hand them to him. But if he chooses white, you still remove the blue beads and say "You choose the white beads, so I will take the blue ones." You then remove the blue beads and he is left with the white—which he chose.

A Meccano Mystery. This is a very striking trick with which to conclude the first half of the programme. You show a short, wide tube and rattle a stick inside it, by way of demonstrating that it is empty. You place the tube on the table and drop into it several Meccano parts, taken from a boxed outfit.

Hat shape with pots of flowers behind it

FIG 8

Coloured cellophane stuck over holes



"Meccano is a wonderful invention" you explain. "Just a few pieces of metal, and the instructions" you pick up an instruction book and open it at a small model such as a windmill, "and making a model is as easy—as that." You wave the instruction book over the tube, lift the tube, and there is a model windmill made from Meccano parts, exactly as the illustration, with the sails turning merrily.

The Secret. First make your model and if you have a motor to drive it, connect this up all ready to switch on. Place the model near the back edge of your table and place over it a short tube of stiff black paper. Place the Meccano Outfit in front and open the lid so that the lid hides the tube containing the model. (Fig. 6).

The tube you show the audience is made of thick card; a short length of large size postal tube will do very well. It is fitted with a pivoted semi-circular device, either of thick wire or made from a Meccano strip, and fixed near the top of the tube so that it can be swung from one side to the other. A small bag of black material is fixed to the inside of the tube on one side and to the moving wire on the other. (Fig. 7). When the wire is at one side of the tube, as at A, the bag is open, but if the wire is swung to the other side, as at B, the bag is closed against one side of the tube.

Begin with the bag closed, as at B. Rattle a stick inside the tube, then put down over the concealed model, at the same time picking up the box. Take a few parts from the box—you need not be too particular about using the right parts for the model—and drop them into the tube, moving the wire frame over first so that the bag is open. Now go through

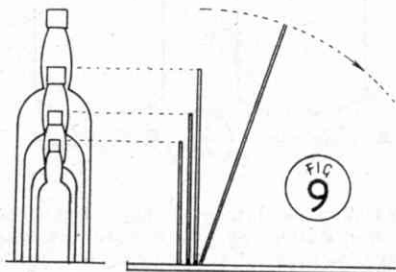


FIG 9

Bottle shapes hinged to tray

the business of holding up the instruction book and pointing to the picture of the model. Close the mouth of the bag and lift both tube and inner tube together, revealing the model. Switch on the motor and bow to the applause.

Now we come to the second half of the show:

Shadow Magic. For this you will need a sheet or a large white tablecloth stretched across an opening. French doors make an ideal spot for this, or the sheet may be hung across a bay window or across one end of a passage. Behind the sheet, about six or eight feet away if there is room, is your light. This is an ordinary table lamp with as powerful a bulb as you can get, say 100 watts. A reflector made from a piece of tin should be rigged up behind to throw as much light as possible on the sheet. The lamp is placed on the floor. You make your entrance by jumping over the light. This causes your shadow to appear on the sheet as if you had landed from above.

In working the various tricks, keep as close as possible to the sheet.

Here are several items ready for performance, and, once you see the principle of the thing you will be able to devise a great many more for yourself.

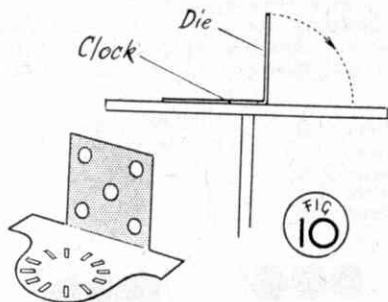


FIG 10

Pots of Flowers produced from a Hat. Very difficult in real conjuring but very easy in shadow magic. The hat is a piece of card cut to the shape of a top hat. About ten more pieces of card are cut out, each in the shape of a pot of flowers. These are clipped against the hat shape. Hold the hat shape in one hand and draw the pots out one at a time, keeping pots and hat flat on to the sheet to maintain good sharp shadows. As you produce the pots hand them to your assistant who fixes them in clips attached to a strip of wood. Although they are only shadow shapes, the appearance of so many pots of flowers from the hat creates quite an illusion of mystery.

The trick can be made extra effective by cutting out some rough circles from the flower shapes and filling them with coloured cellophane. The light shining through the cellophane will give the effect of different coloured flowers. (Fig. 8).

The Diminishing Bottle. A big bottle, about twelve inches high gradually grows smaller and smaller until it is a tiny bottle about two inches high.

All the different sized bottles are cut from flat card. They are all hinged with pieces of sticky tape, to a tray, one behind the other. Your assistant holds the tray and keeps all the bottle shapes upright with his fingers. You hold a cloth in front for a moment and he lets the back shape—the biggest one—drop flat on the tray. You whisk away the cloth and show the bottle diminished. Repeat the process until you get to the smallest bottle. (Fig. 9).

A Die Changed to a Clock. The die is a square of card, about four inches square, with holes cut out to represent spots. It is fixed at right angles to another piece of card cut out in the shape of a fancy clock, with the figures of the dial also cut out, stencil fashion. The device stands (Continued on page 572)

Camera Work in December

By John J. Curtis, A.R.P.S.

THIS is the month when wise amateurs make sure that their cameras are loaded with a fast film and ready for emergencies. By this I do not mean the possibility of waking one morning to find that all out-of-doors has become a huge snow scene during the night; such opportunities do sometimes come in December, but not often.

The subject in my mind is more personal or intimate and concerns Christmastime. In every home there is an atmosphere of preparation and anticipation, and finally realisation of a jolly and happy few days. During that period it is possible to secure "shots" in the homes of family and friends that will not only provide fun at the time of taking, but will have a lasting interest, giving pleasure every time they are looked at for many years to come.

In last January's "M.M." some hints were given for indoor photography—how by using a 250-watt lamp with the ordinary room lighting it is possible to expose for successful portraiture with a simple hand camera. If you have already made one or two exposures with this equipment, then try your hand on a few simple figure studies of the following type, keeping the suggestion of the Christmas spirit running through the whole series—Mother preparing the pudding and other



The Christmas party. A game of Oranges and Lemons. The photographs on this page are by the author.

good things, with one or two younger members of the family looking on with greedy eyes and open mouths; Father having a turn with a ladle at the mixture; someone coming up the front path with a bunch of holly over his shoulder; decorating the living room with holly; Father lifting the turkey out of the bag; the arrival of friends with Mum and Dad welcoming them in the hall.

Preliminaries of this kind can be followed during the evening by various groups of the family and guests. Always popular is a little group at the piano singing carols. Action in one of the parlour games can be "frozen" for a moment to provide a "shot."

Do your utmost to have everything ready beforehand. Make a note of where the camera is to be placed and the best position for the light. Delay on your part in fiddling with the camera soon becomes a nuisance and is very tiring to the others, who quickly lose interest. Tell the folks briefly what you want them to do and where they are to sit or stand, to smile, and look cheerful, and all should be well.



Making the Christmas decorations.

The "Cat" Flies Over "The Territory"

By Edgar Bee

(Illustrations from photographs by V. Gadsby)

THE scene is Kikori, in the Territory of Papua. Muddy waters swirl about the gleaming hull of the Catalina flying boat "Island Chieftain"—"The Cat" to her familiars. We are returning from the western run covered every fortnight by the Qantas Empire Airways "Cat" from Port Moresby—capital of the Territory of Papua and the Trust Territory of New Guinea, known together as "The Territory" because they are now under the one Australian Civil Administration. Air mileage each fortnight totals some 3,940—958 on the two-day western run to Lakes Kutubu and Murray, 1,277 on the two-day eastern run to the Trobriands, 1,705 on the four-day northern run to New Britain and Bougainville Island. These services were started in May 1949.

The New Guinea side of the Territory has been well serviced by aircraft for years, largely because of gold in the Wau-Bulolo area, but the Papuan side was rather neglected. Shipping is slow and, west of Moresby, difficult because of

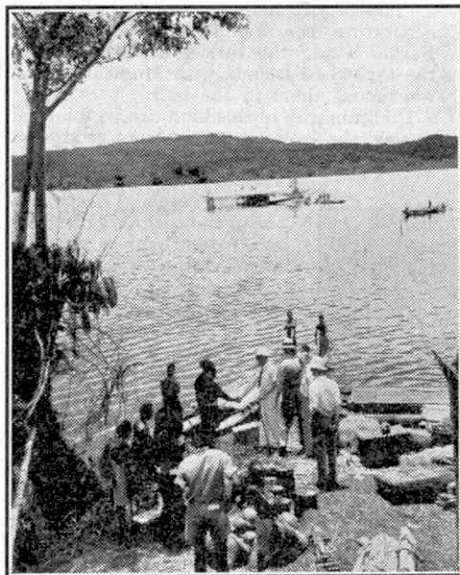
moving sand-bars across river mouths, lack of adequate charts and harbours. A service was needed for Government outstations, so Qantas stepped in.

Yesterday the cargo, spread over the floor between opposing rows of passengers, ranged through rifles, bunches of bananas and other tropical fruits, crates of stores, cameras, a radio set, baskets, hats, a pressure kerosene lamp, dogs in a box.

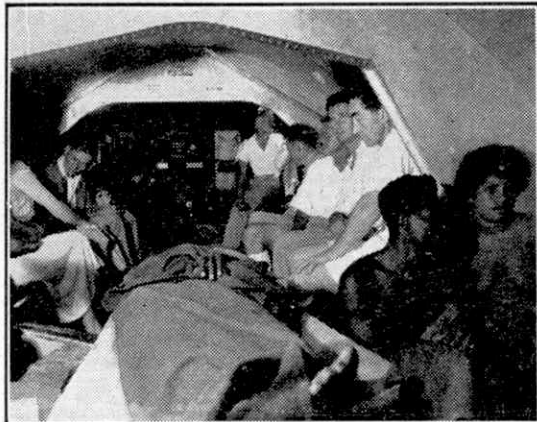
Near Moresby we flew over coastal plain with swamps and winding rivers, some of them quite broad—a foretaste of the Delta country to come. Some Territory rivers are navigable to fairly heavy craft for 300 miles. The sea was leaden, the early morning air hazy, vaguely obscuring the vast range of mountains, the Owen Stanleys, rising to 13,000 ft. inland. We flew over an oil-drilling rig in flat-hilled land, Oro; also over copra plantations right on the coast. About half an hour out we came down at lovely Yule Island. The noise was like landing on loose gravel; something of a shock to the unwarned and uninitiated. Yule is the site of a Government station and Catholic mission.

Another half hour's flight brought us to Kerema, centre for copra, cocoa and rubber plantations, and site of another Government station. From Kerema we flew over the Delta country, winding, crocodile-infested rivers. The reasons for the choice of a flying boat in this service seem pretty obvious now; for here rainfalls go up to 300 in a year, which makes it hard to maintain airstrips, even if you can construct them in swamp and jungle. Those broad rivers and estuaries, and the lakes in other parts, seem made for flying boats; but swift muddy waters can carry hidden hazards. Rivers like the Vailala and Kikori, both in the Delta Division, often have logs floating down them. "We usually have a pretty good look at the water first, to make sure it's fit for a landing," says Captain Hugh Birch.

Captain Birch went to England in 1939 as a member of the permanent Royal Australian Air Force to bring a "Sunderland" back to Australia. While there, war broke out, and he became one of the original members of the first



The "Cat" at Lake Kutubu. The picture shows typical cargo just landed by canoe.



Stretcher cases aboard the "Cat," which performs many errands-of-mercy of this sort on its travels.

Australian squadron in England, No. 10 Squadron. He was there until 1942 and became Group Captain at the age of 26. He was awarded the D.F.C. and was twice mentioned in despatches. On returning to Australia he was made C.O. and Flying Instructor of Rathmines Flying Boat Station at Lake Macquarie, New South Wales.

At Kikori yesterday we picked up about 4,000 lb. of cargo for Lake Kutubu, 90 miles inland to the north-west. To get there we flew at 7,000 ft. over "broken bottle" country—a series of great limestone ridges from 2,000 to 4,000 ft. high. West was Mount Bosavi, a 9,500 ft. volcanic peak cloaked in clouds. Below us were Beaver's Falls, which fall vertically for more than 300 ft. Near Kutubu we flew over a torrent foaming through a great limestone hill. The flight from Kikori took about 45 min.; to walk takes at least 56 days—a measure of the value of the "Cat" service in this country.

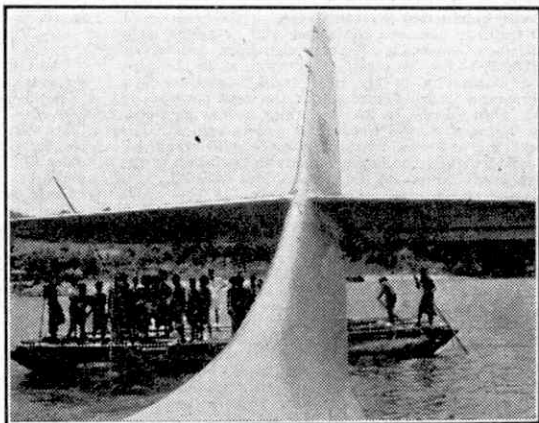
Lake Kutubu of the glorious blue was not discovered until 1936, and was not on the "Cat" schedule till a few months ago. Without the "Cat," maintenance of this Government station would be impossible, for this lake—11 miles long, $1\frac{1}{2}$ to 2 miles wide, 400 ft. deep, 2,600 ft. above sea level, and with mountains and jungle right to its edge—is in some of the world's most inaccessible country.

During the following hour-

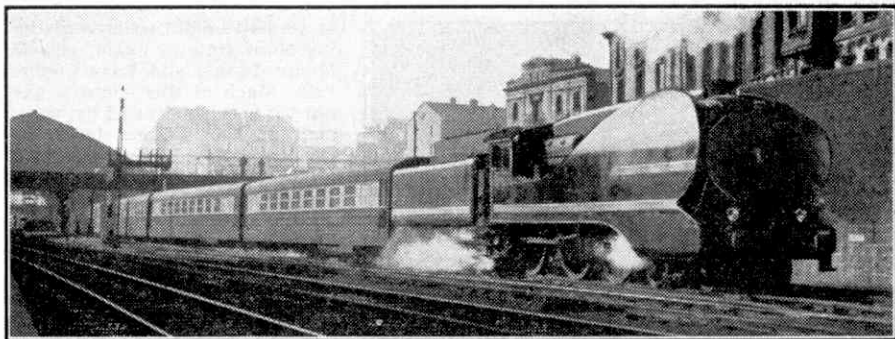
and-a-half's flight we crossed the limestone country again, passed Mount Bosavi and Lake Campbell. Much of this country has not yet been penetrated by white men on foot. Some tribes in this area are still cannibals, and others collect human hands (dried) and heads (stuffed with mud). And so we reached Lake Murray in the valley of the mighty Fly River, 200 miles inland and only 12 miles from the Dutch New Guinea border. Apart from the Assistant District Officer and Patrol Officer there is no white man within 100 miles. But for the "Cat" these two would have to travel 500 miles by water for supplies.

From Murray was another flight of about $1\frac{1}{4}$ hrs. across flat country, seemingly empty but for jungle and river. We touched down at Daru on a flat green island off a flat green coast. Here was once a port for pearling luggers from Thursday Island, off Australia's Cape York Peninsula, northernmost tip of the continent. We saw big canoes with sails and double outriggers, and the natives who came alongside the "Cat" in dinghies were obviously expert seamen.

Back east towards Kikori and the night's rest. We were flying again over typical Delta country. On the way we circled twice at low altitude a straight stretch of the Bamu River where a mission has been established. (Continued on page 572)



At Yule Island, the large double canoe comes out to the "Cat."



One of three rubber-tyred trains that run between Paris and Strasbourg. The train is leaving Nancy headed by a 4-6-0 engine of unusual outline. Photograph by courtesy of S.N.C.F. (French Railways).

Railway Notes

By R. A. H. Weight

London to Brighton Line Signalling Equipment

It was in 1946 that the Southern Railway announced a £1,750,000 scheme to provide continuous colour light signalling from London (Victoria and London Bridge) to Brighton. This is already in use along the main lines between Coulsdon and Brighton, a distance of 35 miles. The extensions to be put in hand during the next three years will cover the present gaps in the London suburban area. On Sunday, 8th October 1950, the mechanical and semaphore signals between Bricklayers' Arms and Norwood Junction, along a busy 6½-mile four-track section of the main line from London Bridge to Croydon, &c., were replaced by three and four aspect colour light signals. A number of these are entirely automatic; others are controlled from junction signal boxes, or can be when necessary in connection with the use of adjacent sidings or crossovers.

Eight signal cabins have been replaced by three new all-electric boxes situated at Bricklayers' Arms Junction, New Cross Gate and Forest Hill. Their equipment includes electric interlocking and miniature levers, illuminated diagrams showing the position of all trains in the area controlled, and magazine train describers by means of which signalmen can advise adjacent boxes, by pressing a button, as to the type and destination of the next train. Track circuits have been installed throughout the area covered by this latest scheme, so that the trains as they pass over the contacts control the signals and clearances. The signal box at Penge West will be opened when required.

Colour light signalling is already in operation in the neighbourhood of the London termini affected.

Six New Standard Locomotive Types

The first standard B.R. locomotives, designed for a wide range of use, will be under construction this winter, and some are expected to be in service early in 1951. About 160 engines, should be produced under next year's programmes. Construction is being shared between the railway works at Crewe, Derby, Swindon and Brighton, while other works will continue the building or repair of previous designs.

The best practices of all Regions have been studied with the object of embodying easy access for servicing and repair, economy of coal consumption, interchangeability of parts and best possible amenities for footplate crews. Roller bearings are to be fitted throughout on the largest types. All tenders will have roller bearings and the largest possible grate area

is being provided. It is understood that all locomotives included in this first series described will have two cylinders each, being mixed traffic classes.

Twenty-five 4-6-2 tender engines to be built at Crewe, numbered 70000-70024, for the Eastern and Western Regions, will be capable of undertaking the duties of present "Castle," "West Country," "Royal Scot," "Green Arrow" and other locomotives.

Ten lighter 4-6-2s for service in Scotland will be numbered 72000-9; they also are to be built at Crewe and are designed to cover the duties of present L.M.R. class "5" or "5X," or some of those now operated by W.R. "County" and L.N.E.R. "B1" types.

Of 4-6-0 tender engines, 30 are being designed at Doncaster for construction at Derby, numbered 73000-29. Of these five will be for the Scottish Region and 25 for the London Midland Region, for general main line mixed traffic work. Then there will be 20 lighter ones to replace obsolescent 4-4-0s of Swindon build to Brighton design for Western and London Midland use, numbered 75000-19.

Orders are to be given for 44 2-6-4Ts to be constructed at Brighton for use in various Regions, numbered 80010-53, and Nos. 80000-9 to be put in hand at Derby, making 54 in all. These will probably be similar to the class "4," 2-6-4Ts now in hand at Brighton and Derby, for residential and similar traffic working. In conclusion, there are to be 20 light 2-6-2Ts designed and built at Swindon for Southern and Western use, numbered 82000-19.

Eastern and North Eastern Regions

The last and only remaining 4-6-0 of Great Central origin remaining on the active list is one of the oldest, "Immingham" of the first 6 ft. 7 in. express series, now class "B4" and numbered 61482, built in 1906. Class "D9" became extinct with the withdrawal of No. 62307 "Queen Mary" and No. 62305. These were older G.C.R. 4-4-0 engines. Breaking up is taking place at Darlington of several ex-G.C. locomotives, as well as North Eastern 0-6-0s and 0-8-0s.

The latest "L1" 2-6-4Ts, completing the series of 100, are numbered and allocated as follows: Nos. 67797, 67799 and 67800, 34A, King's Cross; No. 67798, 32A, Norwich.

New L.M.S. type class "4" 2-6-0s built at Doncaster or Darlington are mostly stationed so far in the North Eastern Region. Nos. 43050-1, 43054-7 and 43071-5 are in the Darlington district; No. 43052, 50E, Scarborough; No. 43070, 52B, Heaton; Nos. 43053 and 43076-7, 53A, Hull (Dairycoats); and No. 43058 at 35A, Peterborough, Eastern Region.

Names lately affixed to "A1" 4-6-2 locomotives include No. 60124 "Kenilworth," No. 60127 "Wilson Worsdell," No. 60143 "Sir Walter Scott," No. 60145 "Saint Mungo," No. 60134 "Foxhunter," No. 60135 "Madge Wildfire" and No. 60153 "Flamboyant."

In the course of observations at King's Cross in October last the "Flying Scotsman" was seen headed by "A3" class engines, when arriving one evening and going down next morning. The locomotives were No. 60071 "Tranquil" (52A) southbound, and No. 60065 "Knight of Thistle" (34A) going north.

The following Glasgow trains were in charge of "A4" No. 60005 "Sir Charles Newton" (52A) and "A1" 60122, "Curlieu" (34A) respectively, being all through workings between London and Newcastle with a return run the same night. "A2/2" 4-6-2 No. 60506 "Wolf of Badenoch" double-headed the 5.52 p.m. semi-fast from King's Cross, leading "B1" 4-6-0 No. 61137. The latter engine would take the Cambridge (front) portion on from Hitchin, the "Pacific" afterwards backing on to the Peterborough coaches.

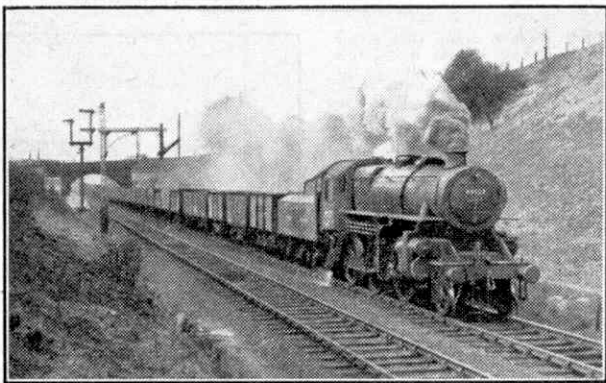
The G.E. Section Royal engine, "B2" No. 61671 "Royal Sovereign," also was in. This had hauled the special train conveying H.M. The King from King's Lynn to King's Cross a few days previously, presenting a shining green finish with bright red background to nameplate. Other "Sandringham" class engines retaining three cylinders in class "B17" also carry red-background plates.

Southern Tidings

On 30th September a special train, largely patronised by members of Railway or Locomotive Societies, made a comprehensive tour of London suburban lines and junctions, including several routes or sections not now regularly traversed by steam or any Southern passenger service. It was hauled by "C" class 0-6-0 No. 31722 (73A) from Cannon Street, with a 250-ton load. The train reversed at Plumstead, but by ingenious planning, involving traversal of all three Divisions of the S.R., forward running was possible thereafter through Brixton, Clapham Junction, East Putney, Wimbledon, Sutton, West Croydon, Balham and Battersea to Victoria (Eastern). An 0-8-2 freight tank, No. 32418, assisted over a steep climb along the suburban electric line between St. Helier and

Sutton, continuing at the head as far as West Croydon.

Shed number plates are now in position on a number of locomotives stationed in the Central or Eastern Divisions. A considerable number of engines are placed in store during the winter.



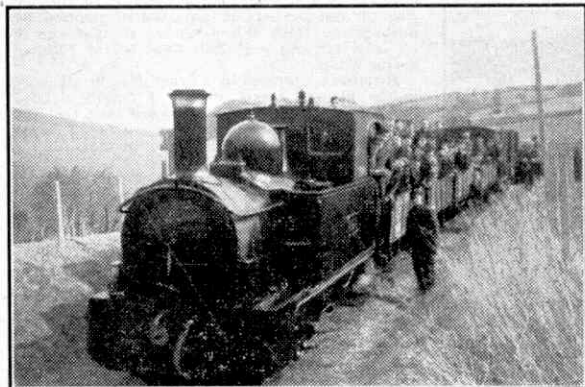
London Midland 2-6-0, No. 43027, the only engine of its class with a single chimney, passing Halton with an empty wagon train bound for Bickershaw. Photograph by R. Whitfield.

The first "Leader" class all-enclosed steam tank, No. 36001, was out on trial from Eastleigh recently after repair and renewal or alteration of certain parts. Three "E8" 0-6-2Ts, similar to No. 32418 and numbered 32409, 32412 and 32416, have been transferred to Eastleigh, mainly it is understood for working on the Fawley branch.

Several opportunities have occurred to travel behind new class "4" 2-6-4Ts built at Brighton and to experience their considerable powers of acceleration on steeply graded sections of Surrey and Sussex lines. No. 42105 completes the first 10 allocated to Tunbridge Wells (75F); following No. 42106 come Nos. 42068-9, which are being shedded at Ramsgate (74B), with No. 42106. At the time of writing they are being completed at the rate of about one per

week. First running-in turns from Brighton include the haulage of the 5.44 p.m. passenger train to Tunbridge Wells, followed after a day or two by the 11.5 a.m. Brighton-Victoria, returning with the 3.52 p.m., via Oxted. "Atlantic" No. 32425 "Trevose Head" has received general overhaul at Eastleigh. No. 2252, the last "D1" 0-4-2 passenger tank, has been withdrawn for scrapping, not quite attaining to the age of 70 years. The two ex-L.B.S.C. 4-6-2Ts, Nos. 32325-6, lately moved to Brighton shed, where Nos. 34035-40 of the "West Country" class are now stationed. When last seen No. 34036 was still unnamed.

Veteran rebuilt 4-4-0s of class "T9," the first of the principal Drummond L.S.W.R. passenger types, hauled a few Waterloo expresses on busy days last summer. One of these locomotives also deputised in October for a light "Pacific" on the through Brighton-Bournemouth fast train, which does not carry a heavy load during the winter service.



An unusual load on the narrow-gauge Welshpool-Llanfair section, Western Region, normally closed to passengers. Youthful enthusiasts fill the wagons headed by "The Earl," one of the two engines on this line. Photograph by J. Wyndham.

Using the Meccano Gears Outfit "A"

Mobile Crane

THE realistic crane that forms the subject of our model this month can be built with Outfit No. 4 and a Gears Outfit "A." The travelling movement of the model is operated by a No. 1 Clockwork Motor driving the rear caster wheels, which are also used to steer the crane.

The main frame of the model is formed by two 12 $\frac{1}{2}$ " Strips attached at each end by Angle Brackets to 5 $\frac{1}{2}$ " Strips 1 and 2. The 12 $\frac{1}{2}$ " Strips are extended downward by a 5 $\frac{1}{2}$ " \times 2 $\frac{1}{2}$ ", a 4 $\frac{1}{2}$ " \times 2 $\frac{1}{2}$ " and a 2 $\frac{1}{2}$ " \times 2 $\frac{1}{2}$ " Flexible Plate on each side. The front is completed by two 5 $\frac{1}{2}$ " \times 1 $\frac{1}{2}$ " Flexible Plates and the rear by two 2 $\frac{1}{2}$ " \times 1 $\frac{1}{2}$ " Flexible Plates.

The caster unit is carried by a platform formed by a 5 $\frac{1}{2}$ " \times 2 $\frac{1}{2}$ " Flanged Plate 3. This is bolted direct to 5 $\frac{1}{2}$ " Strip 1, and to a similar Strip 4 that is attached to the sides by Angle Brackets.

The floor of the driving compartment is filled in by a Hinged Flat Plate 5 supported by four 2 $\frac{1}{2}$ " \times 1 $\frac{1}{2}$ " Double Angle Strips. Two of these are bolted by their lugs to Strip 2, and the remaining two are fixed one to each side of the model. The shield at the front is assembled from two 2 $\frac{1}{2}$ " \times 2 $\frac{1}{2}$ " Flexible Plates and is attached by Fishplates to Strip 2.

The jib supports are Flanged Sector Plates extended at their narrow ends by Semi-Circular Plates. They are attached to Trunnions bolted to the Hinged Flat Plate 5 and to Fishplates bolted to Strip 4. Each side of the jib consists of a 12 $\frac{1}{2}$ ", a 5 $\frac{1}{2}$ ", a 3 $\frac{1}{2}$ " and a 2 $\frac{1}{2}$ " Strip bolted together as shown. The sides are

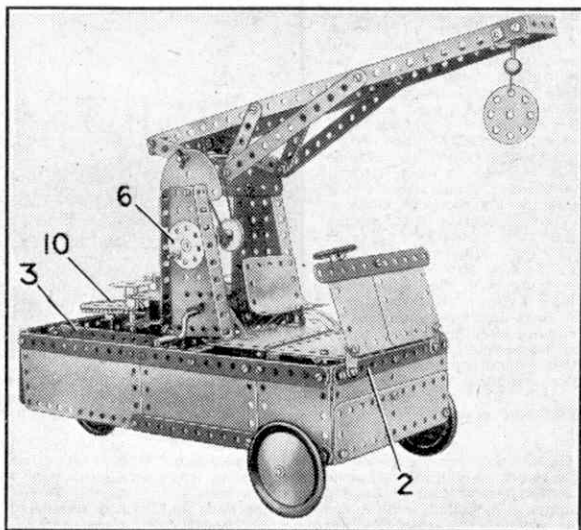


Fig. 1. A Meccano Gears Outfit "A" and an Outfit No. 4 are used in building this fine working model of a mobile crane.

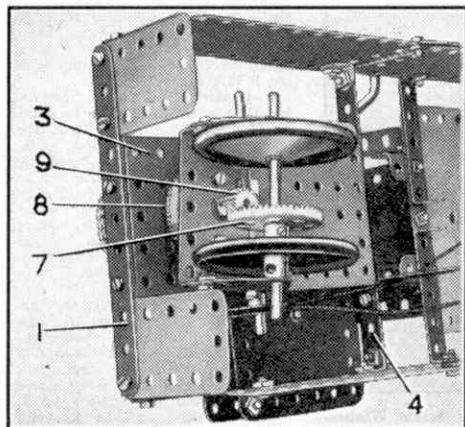


Fig. 2. The caster steering unit showing how the drive is taken to the wheels.

joined at the front and rear by a 1 $\frac{1}{2}$ " \times 1 $\frac{1}{2}$ " and a 2 $\frac{1}{2}$ " \times 1 $\frac{1}{2}$ " Double Angle Strip respectively, and the complete jib is pivoted on a Rod mounted in the Semi-Circular Plates. The jib is luffed by turning a Bush Wheel 6 that is fixed on a Rod mounted in one of the Flanged Sector Plates and in a Reversed Angle Bracket bolted to it. A length of Cord is fastened to the Rod and to the rear of the jib. The jib can be held in any desired position by pushing the Bush Wheel inward so that one of its holes engages a $\frac{1}{2}$ " Bolt fixed in the Flanged Sector Plate.

Hoisting is operated by a Crank Handle mounted in the Flanged Sector Plates. A length of Cord tied to the Crank Handle is passed over the Rod on which the jib pivots, and round a $\frac{1}{2}$ " Pulley free to turn on a $\frac{1}{2}$ " Bolt fixed by nuts to the jib head.

The caster unit is formed by two Flat Trunnions bolted to a 2 $\frac{1}{2}$ " \times 1 $\frac{1}{2}$ " Flanged Plate, and the wheels are fixed on a 3 $\frac{1}{2}$ " Rod mounted in the apex holes of the Flat Trunnions. The Rod carries a 1 $\frac{1}{2}$ " Contrate 7. A 57-tooth Gear 8 is attached to the Flanged Plate by $\frac{1}{2}$ " Bolts, but is spaced from the Plate by two nuts on each Bolt. A 2" Rod is free to rotate in the 57-tooth Gear and the Flanged Plate, and is fitted at its lower end with a $\frac{1}{2}$ " Pinion 9 arranged to mesh with Contrate 7. The Pinion is spaced from the Plate by three Washers. The upper end of the 2" Rod is passed through Flanged Plate 3 and through a Reversed Angle Bracket bolted to the Flanged Plate. The Rod is held in position by a 2" Sprocket 10.

A No. 1 Clockwork Motor is bolted to a Double Bracket fixed to one of the Flanged Sector Plates, and to a second Double Bracket attached to the side of the model. A 1" Pinion on the Motor

Cash Prizes for Model-Builders

CHRISTMAS "TOYS AND GAMES" COMPETITION

By the time this issue of the "M.M." makes its appearance the Christmas season will be close at hand, and most of our readers will be eagerly anticipating the annual festival, and the attendant goodwill, presents and parties associated with the season. Toys and games of all kinds are of course a prominent feature, and many humorous toys and exciting games can be built with Meccano. This month therefore we are giving readers the opportunity to try their skill at building models of this kind, and cash prizes will be awarded for the best models submitted. The Ball Game described in the "New Models" section and the Magic Box in the "Among the Model-Builders" pages of this "M.M.," are good examples of the type of models likely to win prizes in this competition.

Model-builders may use any number of parts in building their models, but the prizes will be awarded to the most interesting or humorous toys and games, and the mere size of a model will not affect the judges' decision in any way.

It is not necessary to send the actual model in order to take part in the Contest. A good sketch, or better still a photograph, is all that is required. This should be sent to "Christmas Toys and Games Contest, Meccano Ltd., Binns Road, Liverpool 13."

Entries will be divided into two sections, for Home and Overseas readers respectively, and the following prizes will be awarded in each section: First, Cheque for £3/3/-; Second, Cheque for £2/2/-; Third, Cheque for £1/1/-; There will be also five prizes of Postal Orders for 10/6 and five of Postal orders for 5/-.

Entries for the Home Section must reach Liverpool not later than 31st January next, but Overseas entries will be accepted until 31st May 1950.

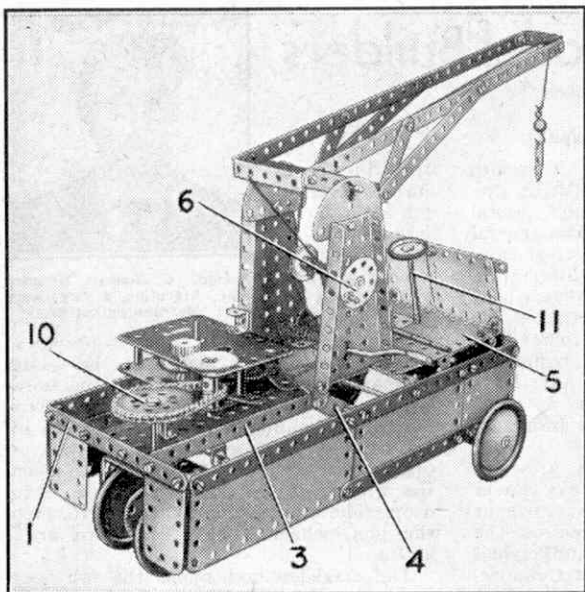


Fig. 3. The mobile crane is driven by a No. 1 Clockwork Motor, which is mounted as shown here.

shaft meshes with a 50-tooth Gear on a $1\frac{1}{2}$ " Rod mounted in the Motor sideplates. A $\frac{1}{2}$ " Sprocket fixed on this Rod between the sideplates is connected by Chain to 2" Sprocket 10.

Steering is controlled by a Rod 11 mounted in the centre hole of one half of the Hinged Flat Plate, and in a Stepped Bent Strip 12. The Rod carries a 1" Pulley 13, and an endless belt of Cord links this Pulley to a similar Pulley 14. The Cord passes over a 2 $\frac{1}{2}$ " Strip 15 bolted to one of the Planged Sector Plates. Pulley 14 is fixed on a $3\frac{1}{2}$ " Rod mounted in a 2 $\frac{1}{2}$ " x $\frac{1}{2}$ " Double Angle Strip bolted to Planged Plate 3. A Worm 16 is fixed on the Rod and meshes with 57-tooth Gear 8.

The front wheels are fixed on two $3\frac{1}{2}$ " Rods joined by a Rod Connector and mounted in Curved Strips. The seat is a U-Section Curved Plate bolted to a Formed Slotted Strip attached to Plate 5.

Parts required to build Mobile Crane: 4 of No. 1; 8 of No. 2; 2 of No. 3; 3 of No. 5; 4 of No. 10; 2 of No. 11; 8 of No. 12; 1 of No. 12c; 2 of No. 15b; 4 of No. 16; 2 of No. 17; 1 of No. 18a; 1 of No. 19g; 4 of No. 22; 1 of No. 23; 1 of No. 24; 5 of No. 35; 80 of No. 37; 7 of No. 37a; 7 of No. 38; 1 of No. 40; 1 of No. 44; 1 of No. 48; 6 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 54; 1 of No. 57c; 2 of No. 90a; 4 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 155; 1 of No. 176; 4 of No. 187; 2 of No. 188; 2 of No. 189; 4 of No. 190; 2 of No. 191; 2 of No. 192; 1 of No. 198; 1 of No. 199; 1 of No. 213; 2 of No. 214; 1 of No. 215; 1 Gears Outfit "A"; 1 No. 1 Clockwork Motor.

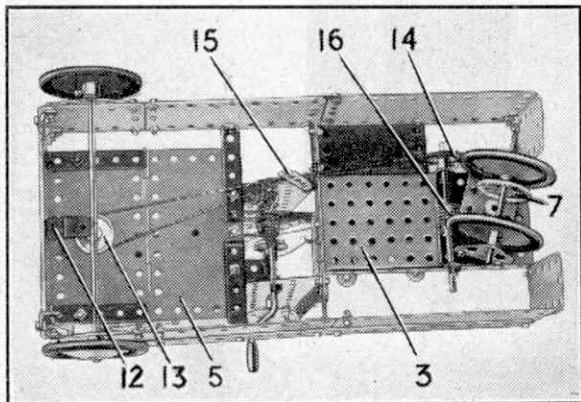


Fig. 4. An underneath view of the crane chassis, showing how the caster unit is operated from the steering wheel.

Among the Model-Builders

By "Spanner"

A Magic Box (by "Magician")

Meccano enthusiasts who are also amateur conjurers will find the Magic Box described here a welcome and useful addition to their equipment. The general construction of the box will be clear from the accompanying composite illustration Fig. 1. The $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates used in its construction are strengthened by $5\frac{1}{2}''$ Strips. The side doors are hinged by $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips bolted to the frame, and attached by $2''$ Axle Rods and Collars. The base is a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate attached to the frame by $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips.

The box is provided with a secret compartment that consists of a Cylinder bolted inside the back door as shown at 3 in Fig. 1. The nut is placed on the outside to prevent tearing a handkerchief or similar article placed in the Cylinder, and the use of this nut and bolt is disguised by the decorative Wheel Discs.

When completed the box rests on a supporting stand that has no connection with it, and the actual method of using it will depend on the ingenuity of the conjurer, but numerous presentations will occur to the ingenious boy. For example,

the box may be used to produce a handkerchief that has previously been vanished, and many small silk squares can be pressed into the small space it provides. The handkerchief is placed in the secret compartment of the box before the show begins. The conjurer shows the box empty by holding it flat in the palm of his hand. The rear door of the box is opened first by tilting the box back, when the weight of the door will cause it to drop. The audience can then see through the box, which is held as shown at 2 in Fig. 1.

The magician now opens the top door and passes his wand through the box to emphasise that it is empty. Then he closes the doors with his free hand, at the same time making sure that the front door is shut first. Finally, after pronouncing his magic words, he opens the top door and produces the handkerchief. Properly and skilfully presented this trick



Enrique G. Nouzart, Rosario, S.Fé, Argentine, a very keen Meccano enthusiast.

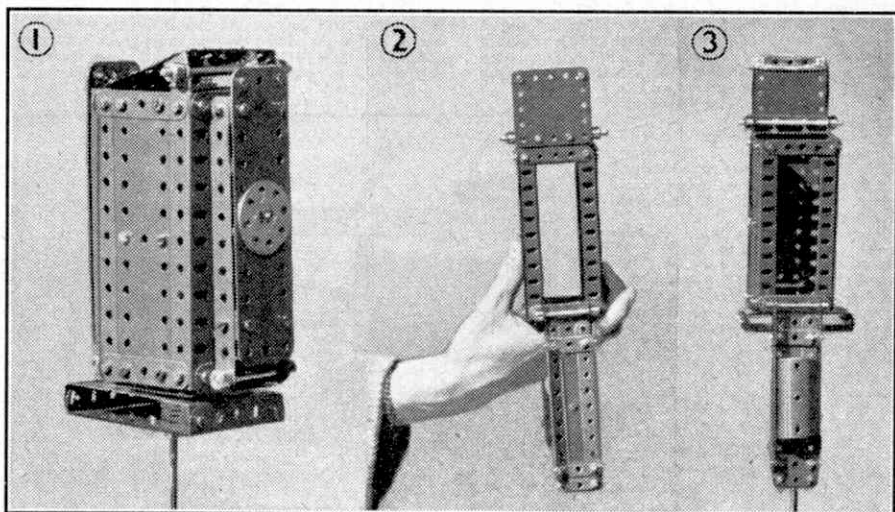


Fig. 1. These three views show the construction of the Magic Box described on this page. The secret compartment formed by a cylinder is seen on the right.

produces an excellent effect, and will enable the magician to add further to his reputation!

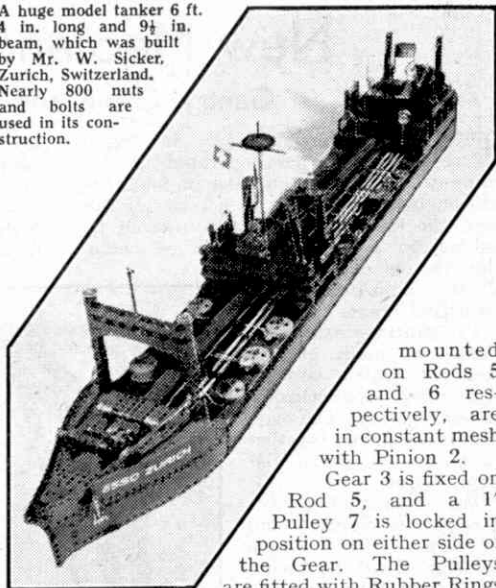
Constant Mesh Gear-Box for Cranes

The simple gear-box shown in Fig. 2 provides three separate movements, and is designed specially for model cranes or excavators. Two of the movements are arranged for winding or paying out Cord, and can be used for controlling the load and luffing the jib. Both winding barrels are fitted with independent brakes, and the drive to either of the two winding drums is brought into operation by moving a single control lever. The third movement is arranged so that a drive can be transmitted to slewing or travelling motions.

The outstanding feature of the gear-box is that all three movements are brought into operation by friction clutches. This avoids any possible damage to gears by forcing them into mesh with the teeth out of line, and also enables the drive to be taken up very smoothly without the jerk characteristic of gear engagement.

The gear-box housing is assembled by joining two $3\frac{1}{2} \times 2\frac{1}{2}$ " Flanged Plates together by $4\frac{1}{2} \times 2\frac{1}{2}$ " Flat Plates. The drive from the Motor is transmitted by the Chain and Sprockets to the input shaft 1, which is fitted with a $\frac{1}{2}$ " diameter, $\frac{1}{2}$ " face Pinion 2. The 57-tooth Gears 3 and 4,

A huge model tanker 6 ft. 4 in. long and 9 $\frac{1}{2}$ in. beam, which was built by Mr. W. Sicker, Zurich, Switzerland. Nearly 800 nuts and bolts are used in its construction.



mounted on Rods 5 and 6 respectively, are in constant mesh with Pinion 2.

Gear 3 is fixed on Rod 5, and a 1" Pulley 7 is locked in position on either side of the Gear. The Pulleys

are fitted with Rubber Rings that form the friction surfaces between the winding drums. Each drum is made from a Bush Wheel and a $1\frac{1}{2}$ " Pulley connected by four $\frac{3}{4}$ " Bolts, and they are loosely mounted on Rod 5. The drive is engaged by sliding Rod 5 so that one of the 1" Pulleys is pressed against its winding drum. The sliding movement of the Rod is controlled by a Crank 8 fitted with a Threaded Pin that engages between Collars on the end of the Rod. Crank 8 is fixed on a Rod mounted in a $4\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strip bolted to the housing, and it is controlled by a lever.

The brake on each drum consists of a length of Cord tied at one end to the housing and passed round the $1\frac{1}{2}$ " Pulley. It is then attached to a Crank 9 that can be connected to a spring-loaded foot pedal or lever.

The third movement is obtained by pressing Gear 4, free to turn on Rod 6, against a 1" Pulley 10 fitted with a Rubber Ring. The 1" Pulley is fixed on the Rod. The movement of Gear 4 is controlled by a Crank 11 on Rod 12 fitted with a Threaded Pin that engages the boss of the Gear.

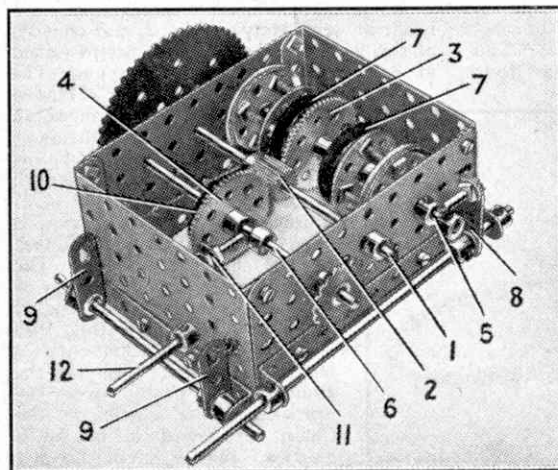


Fig. 2. -A useful constant mesh gear-box for model cranes.

New Meccano Models

Gantry Crane and Ball Game

THE sturdy model shown in Fig. 1 represents a hand-operated gantry crane of the kind often used in foundries and engineering shops. In a crane of this type the load is hoisted and lowered by pulling on an endless length of chain, and the model includes all the main features of an actual crane.

The gantry is assembled from two main girders, each of which consists of two $18\frac{1}{2}$ " Angle Girders bolted together. The main girders are joined together at each end by a $3\frac{1}{2}$ " Angle Girder.

The assembled gantry is supported at each end by four $12\frac{1}{2}$ " Angle Girders. These are bolted in pairs to form inverted triangles, the bases of which are bolted to the gantry as shown in Fig. 1. The lower ends of the Girders are bolted to a $9\frac{1}{2}$ " Angle Girder 1, which is extended upward by a $9\frac{1}{2}$ " Flat Girder 2. A further $9\frac{1}{2}$ " Angle Girder 3 is attached to Girder 1 by Double Brackets, and the travelling wheels are fixed on $1\frac{1}{2}$ " Rods mounted in Girders 1 and 3. The wheels are $1\frac{1}{2}$ " Pulleys, and the Rods

are held in position by Collars. The legs supporting the gantry are braced by $5\frac{1}{2}$ " and $3\frac{1}{2}$ " Strips as shown.

The hoisting mechanism is carried in a small trolley that is arranged to travel to and fro along the gantry. This trolley

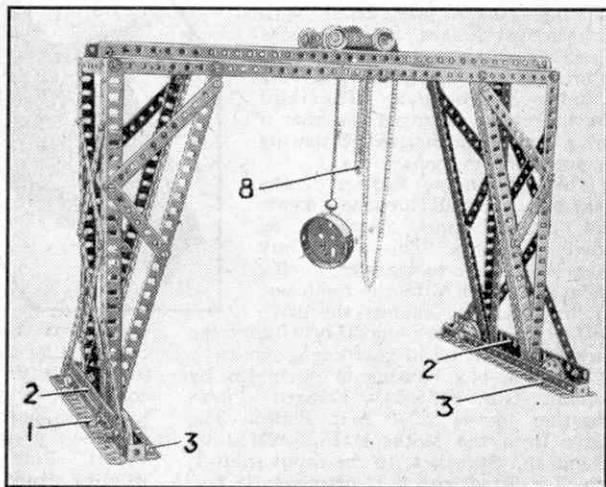


Fig. 1. A manually operated travelling gantry and traversing hoist that forms an interesting subject for a simple model.

is shown separately in Fig. 2, and consists of two $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips joined at each end by a Flat Trunnion. The trolley runs on four $\frac{3}{4}$ " Flanged Wheels fixed to 3" Rods mounted in the Double Angle Strips.

The hoisting movement is controlled by an endless length of Chain passed round a 2" Sprocket 4. This Sprocket is fixed on a $3\frac{1}{2}$ " Rod 6 mounted in the Flat Trunnions. The Rod carries also a Worm 5 that meshes with a $\frac{1}{2}$ " Pinion on a $2\frac{1}{2}$ " Rod. On this Rod is also a 1" Sprocket, and a length of Chain tied to the trolley at 7 passes over the Sprocket. The slack of the Chain is allowed to fall in a loop 8, and a small Loaded Hook is tied to the free end of the Chain.

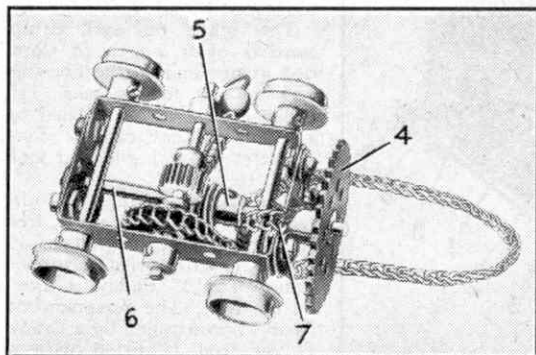


Fig. 2. The traversing hoisting trolley showing the arrangement of the gearing and chain.

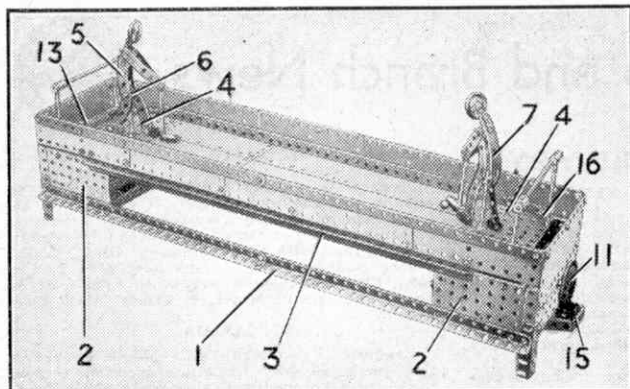


Fig. 3. Much good fun can be had from this easy-to-build mechanical ball game.

Parts required to build model Travelling Gantry Crane: 12 of No. 2; 4 of No. 2a; 4 of No. 3; 4 of No. 7a; 8 of No. 8; 4 of No. 8a; 4 of No. 11; 4 of No. 18a; 4 of No. 20b; 4 of No. 21; 1 of No. 26; 1 of No. 32; 59 of No. 37; 13 of No. 38; 2 of No. 48a; 2 of No. 48b; 1 of No. 57c; 11 of No. 59; 1 of No. 94; 1 of No. 95; 1 of No. 96; 2 of No. 103a; 2 of No. 126a; 1 of No. 162a.

Our next model, shown in Figs. 3 and 4, is a mechanical ball game based on the game of hockey. It is designed for two players, and consists of two pivoted figures mounted in front of goalposts and each provided with a hockey stick. The figures are so arranged that by turning a handwheel at each end of the model, they can be actuated and made to strike a Metal Ball. Each player tries to strike the Ball so as to direct it past the opposing player's goalkeeper and so score a goal.

Construction is begun by bolting a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate and two $2\frac{1}{2}''$ Angle Girders to the ends of the compound girders 1, which consist of two $12\frac{1}{2}''$ Angle Girders overlapped two holes. Two $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plates 2 are bolted to the sides, and these are connected by $18\frac{1}{2}''$ Angle Girders 3. The $5\frac{1}{2}'' \times 3\frac{1}{2}''$ Flat Plates 4 at each end of the model are attached to the sides by $3''$ Angle Girders, and are arranged so as to leave a space in front of the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate. The remainder of the floor of the table consists of three $12\frac{1}{2}''$ Strip Plates and three $5\frac{1}{2}'' \times 2\frac{1}{2}''$

Flexible Plates. The sides of the table are $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates and are attached to an $18\frac{1}{2}''$ Angle Girder which is bolted to Girder 3. The ends are enclosed by $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates fixed to the side plates by Angle Brackets and bolted to the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plates.

The figures of the two goalkeepers are identical in construction and are built up as follows. Two $2\frac{1}{2}''$ Curved Strips 5 forming the body and

two $2\frac{1}{2}''$ Strips representing the arms are bolted to a Double Bracket. At their other ends the $2\frac{1}{2}''$ Curved Strips, together with two similar parts forming the legs, are attached to a Collar 6 by a bolt that carries two Washers on its shank. A Rod and Strip Connector is bolted between the Strips forming the arms and in this is fixed a $2\frac{1}{2}''$ Rod fitted with a Coupling which represents the hockey stick. The head is a $1''$ loose Pulley, and is attached by an Obtuse Angle Bracket, to a Formed Slotted Strip 7, which is bolted to the Double Bracket forming the shoulders. A $4''$ Rod is held in Collar 6, and passed through Plate 4 and through a Double Bent Strip 8 bolted beneath the Plate 4. The Rod carries at its lower end a $\frac{1}{2}''$ Pinion that engages a $1\frac{1}{2}''$ Contrate Wheel 9. The Contrate is fixed on a $5''$ Rod, bearings for which are provided by a $5\frac{1}{2}''$ Strip 10 and (Continued on page 572)

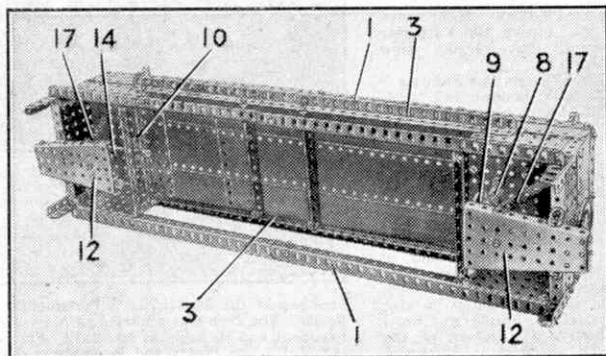


Fig. 4. An underneath view of the ball game.



Club and Branch News



WITH THE SECRETARY

MORE FUN AND MORE MEMBERS

We have now come to the time of year when the thoughts of members of both Clubs and Branches turn to the delights of Christmas. In practically all cases great progress has been made during the first Winter Session, now coming to an end, and the fun of parties and games has been thoroughly deserved. I hope that every Club and Branch member, and indeed all associated with the Guild and H.R.C. throughout the world, will have a really Merry Christmas.

A good Social can do much for a Club besides giving members an enjoyable afternoon or evening. At this time of the year it is very important to look out for new members among those who become Meccano or Hornby Train enthusiasts as the result of having Outfits or Train Sets given to them as Christmas presents. Practically all of these immediately join the Guild or the H.R.C., in many instances both; and the next thing they look for is a Club or Branch that they can join. All associated with one of these organisations usually know of newcomers to the hobby, and in many cases they have friends who have already become model-builders or train owners and have not yet joined a Club or Branch. Every effort should be made to get these boys to come along to meetings, and no better occasion can be chosen than the Christmas Party, where they can be given a suitable welcome by the Leader and other members.

MERIT MEDALLIONS

A final reminder to Leaders. Don't forget to let me have nominations for Merit Medallions for the Session just ending, if these have not already been made. It is a good plan to announce the winners of competitions spread over a Session at the Christmas Party, and the names of those who have earned this award can be given at the same time. If I receive nominations within the next week or so I will take care that Medallions are available for presentation at the same time.

BRANCHES RECENTLY INCORPORATED

B. 527—NEW ZEALAND—J. D. Lindsay, 185, Catherine Street, Invercargill, New Zealand.

B. 528—STALYBRIDGE—David W. Jackson, 117, Ridge Hill Lane, Stalybridge.

CLUB NOTES

HORNSEA M.C.—The usual activities continue. The Club's Magazine is making excellent progress. In addition to articles it gives details of Talks to be included in the programme and of Film Shows arranged. Competitions are also included. In that announced in one issue the observational powers of members of the Club were tested. Successful Meccano meetings continue on a good scale. Club roll: 15.

Secretary: R. Harris, Ty-Olaf, Victoria Gardens, Hornsea.

MORDEN M.C.—Model-building activities continue, and an outstanding production is a model of the latest type of London Transport Bus. Interesting operations have been carried out on the Club's Hornby-Dublo layout, with the "Duchess of Atholl" hauling a long passenger train. Visits have been paid to Nine Elms, Eastbourne and other Engine Sheds. **Leader:** Mr. H. B. Moyer, 9, Cherry Wood Lane, Morden.

CANADA

KIMOUNT (VANCOUVER) M.C.—Models entered in this year's Hobbies Exhibition included working models of a Locomotive Coaling Plant and a Transporter Bridge. Members of the Club in turn attended and kept the models in operation. Co-operation between members continues to be excellent, and entries in competitions are made on behalf of the Club instead of individual members. A large Merry-go-round was actually constructed during the Exhibition, providing a real attraction for visitors. **Leader:** B. Kershaw, 678, Homer Street, Vancouver, British Columbia.

BRANCH NEWS

STALYBRIDGE—Members have been busy with the construction of lineside buildings. These were on view at the Branch Exhibition. This was very successful, one very pleasing result being that membership of the Branch was nearly doubled. **Secretary:** D. W. Jackson, 117, Ridge Hill Lane, Stalybridge.

CHINLEY METHODIST—Regular track nights have been held. The Branch layout has been extended, and excellent operations are enjoyed with the Branch Dublo Tank Goods Set and additional rolling stock. As the layout cannot be left permanently erected, baseboards for sections are being made to save time in assembly. An Exhibition will be arranged when this work is complete, and Meccano models also will be on view. **Secretary:** David Farnsworth, "Peachurn," Princes Road, Chinley, via Stockport, Cheshire.



Members of the St. Michael's (Portsmouth) Boys Club M.C., Leader, Mr. A. A. Foster. The Club was affiliated in May of this year, with Mr. A. Verrechia as President and R. Selby as secretary. Fine models completed at meetings have included a bus, liners and locomotives, and large working models also have been constructed, each member building a section. A Football Team has been organised, and Visits and Excursions are included in the programme.

Fun with Hornby Clockwork Trains

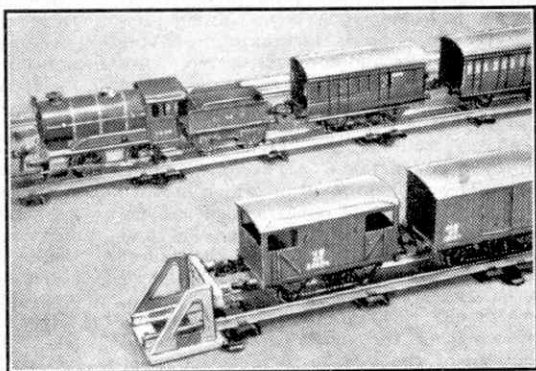
EXPERIENCED Hornby train owners know that to get the best results and therefore the greatest possible enjoyment from a Hornby Clockwork train it is important to follow the few simple instructions detailed in the leaflet included in each Train Set. Those who receive their first train at this time of the year do not always realise this. The notes on this page are intended to help these "new boys"—and some of the old ones too—to run their railways the right way.

Rails must be laid on a firm, level foundation, but not on the polished top of a table or there will be domestic trouble! If the floor must be used, be sure that the rails settle down nicely and do not pass from, say, a mat on to the lino and then back again. Rail joints should be closed up tightly and Connecting Clips or Plates, according to the type of track, should be fitted. They prevent any tendency for the rails to work apart at the joints and so help to prevent possible derailments.

Those who add extra rails to their Train Sets should be careful how the layout is built up. Any forcing of the track to attain a particular formation must be avoided. The mixing of curves and points of different radii is never advisable. The

correct radius depends upon the type of Train Set we have. For instance M1 trains require 1 ft. radius curves, points and crossings. All other Hornby trains, except the M0, require 2 ft. radius material.

A point regarding additions to standard

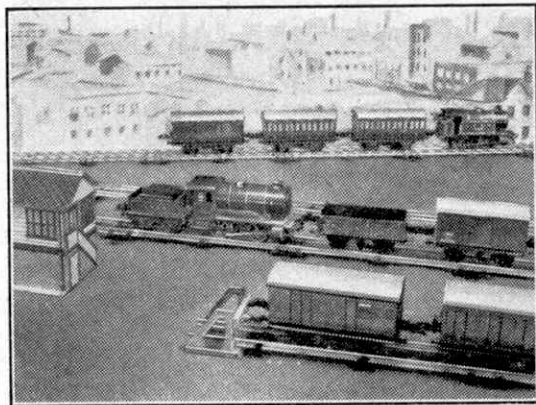


A passenger train on a Hornby clockwork layout passes goods vehicles standing in a siding.

train sets concerns the rolling stock. The Hornby vehicles that are available separately have the standard automatic couplings and therefore will link up with the stock in the Hornby No. 101, 201, 501 and 601 Train Sets. They cannot however be coupled satisfactorily to the rolling stock in the M1 sets. The vehicles of M0 sets, which have curves of 9 in. radius, cannot be coupled to vehicles of any other type.

Lubrication of the engine and train is important, but must not be overdone. Oil is essential, but in small quantities and in the right places; and the oil itself must be a thin oil of the kind used for sewing machines. It should not be flooded on to the axle bearings and gear wheels of the engine or the bearings of the stock. It should be applied lightly by means of a wire dipper or sharpened matchstick. An oil that has any tendency to become thick or gummy should be avoided.

Coupling pivots may need oiling lightly; stiff couplings are a nuisance on curves.



A local passenger train is shown in the background while a goods train hauled by a No. 501 Locomotive approaches the Signal Cabin.

A Hornby-Dublo Scenic Layout

MANY Hornby-Dublo layouts nowadays have to be of the portable kind, as it is very often difficult to find space for a permanent system. That this need not detract from the realism of such a railway is shown by the layout in the accompanying illustration. This has been arranged by Mr. B. J. Boyle, of Welwyn Garden City, for his son, who is fortunate in having such a realistic and compact system.

The railway occupies a space measuring 5 ft. by 4 ft. and the design is such that the best possible use is made of the space available without the layout having a crowded appearance. The system is arranged on a baseboard on which most of the electrical wiring is carried out on the underneath. This makes for a neat and tidy arrangement and allows the fullest advantage to be taken of the baseboard surface for scenic effects.

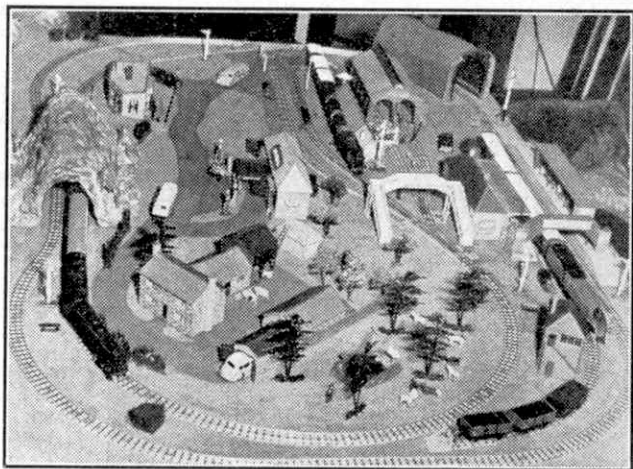
Although the main line is single track, following for the most part the general contour of the board, there is an inner track in addition that is connected to it by means of points. This inner track does not follow exactly the same course as the outer one, although it does run alongside it for a considerable distance. The inner track finally branches out and terminates in a three-road system of sidings that are useful for the storage of vehicles and for shunting, while there are in addition two engine roads leading to a locomotive shed. At the passing station there are two platforms, because the main line track here is supplemented by a loop, one end of which is prolonged to form a handy siding.

Where the points in the outer track join the inner circuit a strip of insulating material is placed between the centre rail clips. The inner track is thus electrically isolated from the outer one, each forming a separate main circuit with its own Hornby-Dublo Transformer and Controller. This allows shunting and marshalling of

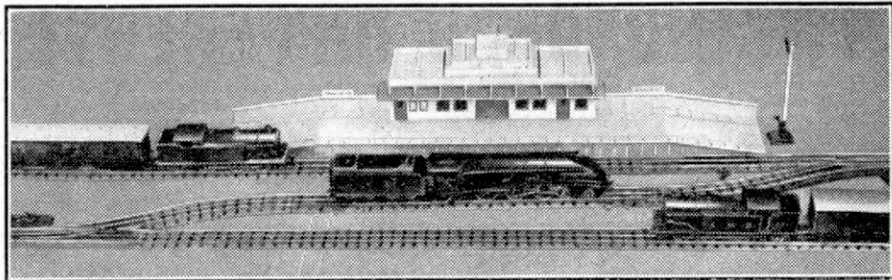
trains to be carried out on the inner track at the same time that another train is running on the outer track. When necessary, however, the connecting points can be set, and when the handles of the two Controllers have been adjusted to the same setting, an engine or train can run from the inner to the outer track or vice-versa. The receiving circuit must be unoccupied before its Controller is set. Isolating Rails and Uncoupling Rails are situated at suitable places on each main circuit.

Most of the buildings on the board have been made up at home and they are electrically lighted. Small bulb-holders are screwed in position on the baseboard, and the buildings are simply dropped over these when assembling the layout. It takes about ten minutes to assemble the layout or to dismantle it after use.

Road traffic is represented by several Dinky Toys motor vehicles of the smaller kinds. Their needs are met by a petrol filling station and garage, which displays appropriate advertisements cut from motoring journals. Further lineside effects include a tunnel through which both inner and outer tracks pass, and there is an attractive farmyard with neat buildings enclosed by a wall. Miniature trees are dotted about the property and some animals add to the realism of the scene.



An excellent view of the Hornby-Dublo layout assembled by Mr. B. J. Boyle, Welwyn Garden City. The lineside arrangements are a feature.



The "crossover-loop" described on this page in use on a Hornby-Dublo railway. The express engine is held on an isolated section while goods and passenger trains pass by on the main lines.

How to Use a "Crossover-Loop"

MOST Hornby-Dublo owners are familiar with the crossover between two tracks that can be formed of two Hornby-Dublo Points. Another standard scheme that is incorporated in many Hornby-Dublo layouts is the loop line running parallel with the main track.

An interesting variation of the two schemes, which we can call a "crossover-loop," is shown in the illustrations on this page. This was used in the prizewinning Hornby-Dublo railway referred to on page 519 of the "M.M." last month but it was not then specially mentioned. It has interesting possibilities when engine and track working schemes are being developed.

A crossover-loop in its simplest form is illustrated but the loop section between the points can be extended to any convenient length if necessary. Each of the Points has attached to its curved branch a standard Curved Half Rail; between these rails is a length of straight track with Isolating Rails to form a separate electrical section. One of these Isolating Rails is connected to a switch. It is assumed that each of the main lines in this system has its own power supply and Controller, so that complete independent control of a train is afforded on each main section.

The crossover-loop can be used in several ways. Its simplest purpose is to connect the up and down main lines; in addition it allows an engine to stand clear of the main lines, if necessary. The situation shown in the upper illustration is that the goods train approaching on the

lower main line will continue on its way out of the picture until it runs into a loop or siding that can be isolated. Meanwhile the passenger train approaching on the upper main line runs into the station and stops. Its engine is detached by means of the Uncoupling Rail shown, and then is worked away to an engine siding or shed. Here it in its turn is isolated. The express engine can now be moved from the loop, where it is standing, on to the upper main line. After backing on to the train it can work this forward when required.

Another scheme is to use the crossover-loop as part of the layout provided for

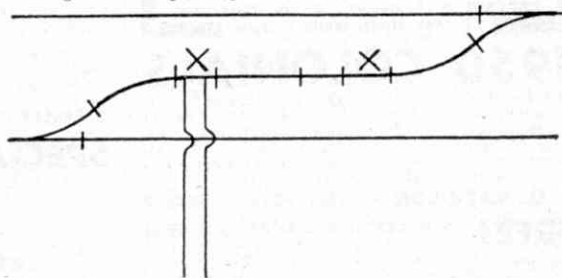


Diagram of the "crossover-loop" arrangement.

engines "running round" trains at a terminal point. A normal crossover can be used at one end of the station, and a crossover-loop can be installed at the other end. A Water Crane can be provided by the loop. Then an engine can "take water" there while waiting to relieve an arriving engine that may be finishing duty for the time being.

If the crossover-loop is lengthened, an engine and possibly a complete train can wait there in the course of operations.

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Stamp Collecting

Flowers in Stamp Designs

By F. Riley, B.Sc.

FLOWERS seem to be growing more and more attractive to stamp designers. About two years ago I illustrated stamps from a fine Austrian charity issue giving pictures of 10 different wild flowers of the country. There had been earlier flower stamps,



such as the Costa Rica orchid stamp, the British Guiana representation of the gigantic Victoria Regia Lily and the Bulgarian Rose stamps, and I referred to some of these in my previous article. Others have now followed. For instance, earlier this year a set of five values appeared in Hungary, the designs of which illustrated the peony, the anemone, the

geranium, the bluebell and the "Pheasant's Eye" Adonis. These stamps are excellent productions, each in three colours and similar in style to the Austrian stamps previously described. Switzerland too has taken to stamps showing flowers, particularly in the Pro Juventute issues. These are stamps, usually four in number, that appear regularly on 1st December and carry extra charges or premiums, the proceeds of which are devoted to the work of the benevolent societies of the country. The practice of using flower designs began in 1943 and continued until last year. This 1949 issue is a typical example. As usual the lowest value, 5c + 5c, shows a portrait of a Switzerland worthy, in this case Nicholas Wengi, Mayor of Solothurn in the 16th century, who played a notable part in settling differences between Swiss cantons. The higher values, 10c, 20c., and 40c., each with a premium of 10c., illustrate Swiss flowers. These are an anemone, Alpine clematis, and a pink, the first and second of which are illustrated here. In 1948 the foxglove and the Alpine rose provided the designs and previously the Alpine primrose, the Spring crocus and other flowers had been illustrated, among them of course the inevitable edelweiss.

Another Pro Juventute issue from Switzerland is due on the day on which this issue is published. This however will have insects as its subject, but there is an association between insects and flowers, so perhaps the new set can be put along with the previously issued flower sets. One stamp will illustrate a bee, and the other three butterflies. All will be in two colours.



certainly come from tropical countries. To most people therefore it comes as a surprise to learn that there are several species of orchids that are native to Great Britain. These are much smaller than their tropical relatives, and the fact that they are really orchids may easily pass unnoticed by those who think only of the flowers of this family they see in the shops of florists, which are grown in greenhouses. The orchid is one of the most romantic of flowers. It is remarkable for the fact that its blooms are adapted for fertilisation by particular insects. Another peculiarity is that the stalk of each blossom, which really is the ovary, is twisted, with the result that the flower is really upside down. In this position many of the flowers show strange resemblances to bees and other insects.

Fortunes have been spent in searching the tropical forests of South and Central America, Borneo and other places for new orchids. Until this year the best impression of one of these remarkable flowers, apart from the Swiss Lady's Slipper, was on the 1c. value of Costa Rica's 1937 National Exhibition issue. Now Colombia, in South America, has issued a splendid series of stamps with orchids as the subjects of their design. The series actually forms Colombia's contribution to the celebrations of the 70th anniversary of the formation of the U.P.U. The stamps were printed in photogravure by Waterlow and Sons Ltd., London. Each is in one colour, and the stamps therefore do not give any idea of the colouring of the plants and their flowers, but they are finely printed and from a really attractive set.

The number of stamps in the set is seven. Six of these show orchids, the seventh illustrating the Post Office, Santo Domingo. In addition there are two miniature sheets in the set, each of the value 50c. These are in grey and orange-yellow respectively, the first showing the American side of a globe and the second the eastern hemisphere.

Any reader who is looking for an opportunity for gathering together an interesting set of stamps with a special theme could not do better than decide to collect flower stamps. The issues referred to in this article will give a good start. Well arranged and neatly written up, they will give really attractive pages in the flower stamp album.



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For other Stamp Advertisements see also pages 566 and xv.

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Stamp Gossip

and Notes on New Issues

By F. E. Metcalfe

THE importance which the press of the world attaches to the collecting of stamps can be judged by the amount of space devoted to new postage stamps. The United States in particular leads in this respect and there is hardly a newspaper which does not have at least one weekly column by some philatelic expert. Some of those columns make good reading, not only for stamp collectors but for the ordinary public as well, and all this must be valuable publicity for our hobby. Here at home the newspapers are paying much more attention to philately than ever before. An instance of this was the way they dealt with the news regarding the switching round of the colours of several of our postage stamps to conform with Postal Union regulations.

No doubt several collectors will be wondering what these regulations are and what they have to do with stamp colours, so a word of explanation might not be out of place. A country can fix its postal rates as high or as low as it likes; it can use whatever designs it likes; and the wording employed can be in any language. But the public can put what stamps it likes on a letter, though any tax for shortage has to be collected from the receiver of the letter. The postal authorities therefore want a quick guide as to the correct franking, or otherwise, of a letter, so all members of the Postal Union agreed some years ago that stamps for the home letter or postcard rates, as well as foreign rates, would be of certain colours. Thus the ordinary foreign letter rate would have a stamp of a blue colour, and so on. When the foreign letter rate went up to 4d. in October last, the authorities decided to fall in line and change the colour of our 4d. stamps to blue. At the same time they announced that as they had fallen out of step and other values did not now conform to the agreement they had signed, all would be changed in the near future.

This means a lot of changing, for our British stamps are overprinted for many countries abroad, such as Bahrain, Kuwait, Muscat, Morocco Agencies, etc., and these stamps will also be changed. So if you collect these countries, don't overlook filling up the blanks before the new stamps render the old colours obsolete.

Speaking of these British stamps overprinted for use abroad, it is strange how little they are collected, considering their interest. A collection of G.B. K.G. VI stamps including these overprinted issues makes a colourful show, and you can be sure that

some of these stamps are exceedingly scarce, though most can still be bought at very little over face value. A stamp paper recently proved this scarcity when it issued official figures of a number that are now obsolete, and it is a certainty that these figures show what bargains there are to be picked up at present.

Our own stamps may continue with their dull uninspired designs, though technically they are equal to any in the world; but the colonies keep up the good work of providing issues that gladden the hearts of collectors. The new set for Cayman Islands, which was issued 2nd Oct., was well up to the standard

that this West Indian colony has set for many years. Our Crown Agents probably have a lot to do with the selection of our colonial stamps, and it must be admitted that they do a good job, for sets like the one under review really are attractive and help to keep colonial stamps of the present reign the most popular group in the world.

There has been a lot of talk about all the stamps our colonies are bringing out, but an examina-



tion of what any one colony has emitted shows how groundless these stories are. It must be remembered that in the Commonwealth there are about 50 countries using their own stamps, and naturally among so many quite a few stamps are always being emitted. But taking country for country, none issue fewer, none indeed so few.

Until Europe took a hand, the countries of South and Central America were a by-word for unnecessary stamp issues, but how puny their efforts seem now compared with the feats of countries like Austria, Belgium, etc. Collectors are actually turning to South America for a little peace. Argentina and Brazil are now printing their own stamps—Mexico has done so for a number of years—and the San Martin set of Argentina, about which we commented last month, shows what a high standard has been reached on the River Plate. But stamps that really do intrigue the philatelist are those turned out by Brazil, for while they lack the technical perfection of those printed in Buenos Aires, they are nevertheless full of interest and some of the designs, such as the one illustrated, are quite beautiful. The printing presses

in Rio de Janeiro are kept pretty busy turning out these colourful commemorative stamps. Fortunately most of them can be obtained for a copper or two, and what a show they make, tastefully mounted. They are strongly to be recommended as a change from our own colonials.

It was not thought that it would be necessary to refer again to the U.P.U. stamps, though odd countries still continue to bring out all kinds of weird and wonderful varieties. As they have some connection with the U.P.U. they are being snapped up in America, where the cult is much stronger than in our own country. The other day the writer of these notes received a letter that set this poser: "I want to make my nephew a present of about £10 worth of postage stamps. He is a keen collector, but I want to buy some stamps that will prove a good investment. What shall I buy?" For once it was easy to answer. The reply was: "A set of British Colonial U.P.U. stamps, and tell your nephew to take great care of them."



Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Advertisement Letter Square Puzzle

As usual in the December issue of the "M.M.," our first competition this month is concerned with the advertisements. These are always scanned with intense eagerness at this time of the year, in order to see what good things are offered in them.

On this page is a rectangle of 80 letters. These have been so arranged that the names, or parts of the names, of advertisers in this issue, or those of their products, can be read in them. This is done by starting at one point and passing at each move to the letter above or below it, or on the right or left. Diagonal moves are not allowed.

To complete the list of advertisers or advertised products every letter in the rectangle must be used at least once, but there is no limit to the number of times that each can be used. In certain cases initials may occur, but only where these

are distinctive and actually appear in the advertisements.

In addition to giving the names of the advertisers or products, entrants in this Contest are asked to state the number of the pages on which the advertisements appear. Entries should be addressed to: "December Advertisement Contest, Meccano Magazine, Binns Road, Liverpool 13."

There will be two sections, for Home and Overseas respectively, and for each there will be prizes of 21/-, 15/- and 10/6 for the best entries

in order of merit. In addition there will be consolation prizes for other good efforts, and in the event of a tie for any prize the judges will take the neatness and novelty of the entries themselves into consideration.

Closing dates: Home Section, 31st January, 1951; Overseas Section, 30th April 1951.

M	A	G	M	E	N	B	Y	A	B
A	I	D	U	E	R	S	H	O	O
G	C	S	N	R	S	H	A	N	N
E	P	O	L	C	I	T	C	C	D
A	S	D	Y	E	L	R	U	E	M
R	O	N	R	G	M	D	Y	K	J
R	W	I	B	D	A	H	E	S	U
I	G	H	T	I	R	F	L	O	D

Find These Nine Aircraft

For our second contest this month we turn to aircraft. It takes the form of an aircraft square, but the names of aircraft are required only on the horizontal lines.

The actual square is shown below, with clues to the names of eight different aircraft. If these clues are followed successfully and the square is completed, the diagonal from top left to bottom right will give the name of a famous flying boat.

1									
2									
3									
4									
5									
6									
7									
8									

CLUES

1. An American animal.
2. Decisive battle.
3. An assailant.
4. Long race.
5. Island group.
6. Insect.
7. A force seems to get dizzy.
8. A capital place.

Readers of the "M.M." who enter this contest are asked to send in the complete square, but not on the form given on this page. They must not cut the Magazine, but must make a copy of the square on a sheet of paper or card.

As usual, the contest is in two sections, one for Home readers and the other for readers Overseas. In each of these sections there will be prizes of 21/-, 15/- and 10/6 for the three best entries in order of merit, and if necessary the judges will take the neatness and originality of presentation into account.

Entries should be addressed "December Aircraft Square Contest, Meccano Magazine, Binns Road, Liverpool 13." Closing dates: Home Section, 31st January 1951; Overseas Section, 30th April 1951.

December Photographic Contest

The twelfth of our 1950 series of photographic contests is a general one, in which we invite readers to send in prints of any subject. There are only 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.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas Sections, and in each section prizes of 21/-, 15/- and 10/6 will be awarded. Entries should be addressed "December Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13." Closing dates: Home Section, 30th December; Overseas Section, 31st March 1951.

Competition Results and Solution

HOME

JUNE 1950 LOCOMOTIVE CONTEST

1st Prize: G. H. Brown, Huddersfield. 2nd Prize: S. Johnson, Hanley. 3rd Prize: R. Fackrell, Warrington. Consolation Prizes: N. M. Leitch, Musselburgh; A. Smedley, Darley Dale; J. McMillan, Hurlford.

JULY 1950 PHOTOGRAPHIC CONTEST

1st Prize, Section A: T. P. Taylor, Warrington; Section B: P. R. J. Vickers, Newcastle-on-Tyne. 2nd Prize, Section A: Mrs. I. Hardwick, Burnham-on-Sea; Section B: A. R. Higginbotham, St. Helier. 3rd Prize, Section A: J. R. Wooldridge, Stanmore; Section B: L. Wilkinson, Preston. Special Editorial Prizes, Section A: L. H. Hobbs, Dartmouth and C. W. Hart, Wembley; Section B: P. Taylor, Lydden and D. Livingstone, Glasgow S.4. Consolation Prizes, Section A: D. A. Brookies, New Eltham; H. A. Read, Ilford; J. McM. Neish, Glasgow C.3. W. R. H. Temple, Uppington; J. L. Langton, Bradford. Section B: P. R. Gledhill, Hornchurch; G. Bellamy, Brinsworth; K. J. Cureton, Edinburgh 9; R. H. Neill, Belfast; G. G. Salmon, Bradford; M. G. Ross, Leeds 6.

JULY 1950 CROSS NUMBER PUZZLE

1st Prize: T. M. B. Silcock, Woodford Bridge. 2nd Prize: C. E. Wrayford, Bovey Tracey. 3rd Prize: I. J. Smith, Davenham. Consolation Prizes: J. D. Ramsden, Wakefield; M. T. Green, Bideford.

JULY 1950 SHIP DRAWING CONTEST

1st Prize, Section A: I. MacFarlane, Stafford; Section B: B. Brooks, Barking. 2nd Prize, Section A: J. D. Mitchell, Aberdeen; Section B: V. Leslie, Llanrwst. 3rd Prize, Section A: D. G. Williams, Birkenhead; Section B: G. Jones, Rowlands Castle. Consolation Prizes, Section A: A. W. Leitch, East Dereham; L. J. P. Eadie, Milnathort; J. K. Ingham, St. Annes-on-Sea; B. Chapman, Leytonstone; B. S. Ireland, Gosport; I. G. Davies, Westbury-on-Trym. Section B: A. O'Dell, Cambridge; T. A. Davies, Wallasey.

AUGUST 1950 PHOTOGRAPHIC CONTEST

1st Prize, Section A: P. F. Chapman, St. Leonards-on-Sea; Section B: D. Hudson, Purley. 2nd Prize, Section A: C. H. Thomas, Aldershot; Section B: P. H. Lamb, Reading. 3rd Prize, Section A: J. F. Carter, Pangbourne; Section B: P. H. Bennett, Farnworth. Consolation Prizes, Section A: A. Henderson, Nottingham; G. Baker, Nottingham. Section B: M. Honey, Faversham; D. G. W. Smith, North Harrow; W. E. Roberts, Pwllheli.

OVERSEAS

FEBRUARY 1950 CODE PUZZLE

1st Prize: L. R. Dickson, Brooklyn, S. Africa. 2nd Prize: E. Hopkins, Wellington, N.Z. 3rd Prize: J. A. Hewson, Grahamstown, S. Africa. Consolation Prizes: B. R. Khatkhat, Bombay, 2, India; R. Cunningham, Bega,

Australia; L. C. Foo, Penang, Malaya; R. J. Boland, Cork, Eire.

FEBRUARY 1950 RAILWAY CONTEST

1st Prize: F. Yates, New Plymouth, N.Z. 2nd Prize: R. H. Stevenson, Calgary, Canada. 3rd Prize: B. Gordon, Rosario, Argentina.

FEBRUARY 1950 PHOTOGRAPHIC CONTEST

1st Prize, Section A: N. Candish, Christchurch, N.Z.; Section B: L. C. Saunders, Dublin, Eire. 2nd Prize, Section A: J. Russell, Sarnia, S. Africa; Section B: B. Hodgson, Kampala, E. Africa. 3rd Prize, Section A: W. E. E. Attwood, Wynberg, S. Africa; Section B: K. Flowers, Geraldine, N.Z. Consolation Prize: D. T. Sutherland, Dunedin, N.Z.

MARCH 1950 CROSSWORD PUZZLE

1st Prize: H. P. Chinoy, Bombay, India. 2nd Prize: H. Gardiner, Bloemfontein, S. Africa. 3rd Prize: L. Wordsworth, Auckland, N.Z. Consolation Prizes: B. Cheadle, Johannesburg; N. Jayaram, Bangalore, India; E. Saunders, Marlborough, N.Z.; J. Pope, Lower Mitcham, Australia.

SOLUTION

JUNE 1950 LOCOMOTIVE CONTEST

1. Cab Footstep. Facilitates climbing on and off engine. 2. Firedoor Lever. Opens and closes fire-box door. 3. Reversing Screw Handle. Controls reversing gear. 4. Brake Valve Handle. Applies vacuum brake on train and steam brake on locomotive. 5. Vacuum Gauge. Indicates vacuum in reservoir and train pipe. 6. Water Gauge Glass. Shows level of water in boiler. 7. Regulator Handle. Controls main steam supply from the boiler. 8. Injector Steam Valve Wheel. Controls supply of steam to injector in order to feed boiler with water. 9. Pressure Gauge. Indicates steam pressure in boiler. 10. Steam Heating Pressure Gauge. Indicates steam pressure in carriage warming system. 11. Drain Cock Handle. Allows water to be drained from gauge glass. 12. Washout Plug. When removed allows access to boiler for washing out purposes. 13. Sand Box. Contains sand for the tube cleaning sand gun. 14. Cab Door. Closes gap between engine and tender; prevents draughts. 15. Injector Drain Pipe. Allows overflow water to drain away.



Get set—go! The start of the women's egg and spoon race at the Indian Naval Sports Meeting, Bombay. Photograph by I. C. Dyer, Bombay. Awarded 3rd Prize in the May 1950 Overseas Photographic Contest, Section A.

The Oil Tanker—(Continued from page 536)

taking current from the turbo-generators, deliver 110 volt D.C. for lighting, compass, radar, etc. One Diesel-driven D.C. generator, 135 kW. capacity, supplies current at 220 volts to motor generator, galley and domestic motors when the boilers and turbo-generators are not in use.

An engineer's workshop, equipped with lathe, drilling machine and grinder, is arranged in the engine room casing. Engineers' and electricians' storerooms are also conveniently situated in the machinery space. The machinery is built and installed under the survey, and to the full requirements, of Lloyd's.

Finally, the vessel is fitted with complete wireless installation, electric whistle control, electric telegraphs, echo sounding gear, gyro compass equipment with gyro pilot, Walker's log and radar and rudder indicator.

Britain's New Power Stations:—(Cont. from page 544)

at Kingston is actually an extension of the previously existing control room in the old power station. From here are controlled the entire electrical operation and loading of the power station generators, and the distribution of supplies to outgoing feeders that connect with the main Grid. The main panel control board is over 100 ft. long, comprising 45 separate compartments. A separate central desk is provided for the control of the turbo-generators.

A Conjuring Entertainment for Christmas—

(Continued from page 550)

on a thin topped table with the die standing up, the clock lying flat in front. To effect the change you strike the die with a stick, knocking it over backwards, when the clock pops up in its place. The change should be accompanied by a stroke on a gong, followed by your assistant saying loudly "tic toc tic toc." (Fig. 10, page 550).

A ball can be made to vanish from one tray and appear on another. Both balls are flat discs of card, hinged to their respective trays. You make yours vanish by letting it drop flat while your assistant causes his ball to appear by pushing it up with his finger through a hole in the tray. The trays, of course, need be nothing but pieces of thick cardboard.

A plant can be made to grow from seed in a few seconds by having the plant, cut from cardboard, held behind a cardboard shape of a pot. Your assistant holds both together while you go through the movements of taking a seed from an envelope and dropping it into the vase. You then water it—with a flat cutout watering can—and your assistant pushes the plant up slowly. A comic effect can be obtained by having the plant attached to one of those steel rules which roll up into a small case. Your assistant holds this behind the vase and pushes it up bit by bit until it disappears out of sight at the top of the screen.

The effectiveness of these tricks, and of many you will invent for yourself, can be greatly enhanced by music and sound effects. The suggestion I have given for the die changed to clock trick is an example. Keep all your movements simple and fairly slow and watch your shadows so that you keep them sharp and definite.

Finally you end the show by making yourself disappear. To do this you hold up a piece of material so that its shadow hides yours, and attach the top corners to a piece of wood hanging by threads from above. Now duck down out of sight—there should be a dark margin at the bottom of your screen to conceal you as you crawl off—and make your secret way to the "wings." Release the thread and the cloth drops and you have vanished—to the accompaniment of a good wallop on the gong—and you step out from behind the sheet and bow to your audience.

The "Cat" Flies over "The Territory"—

(Continued from page 553)

The "Cat" was examining the river's suitability as a landing place.

At the day's end we had flown in 11 hrs., with seven stops, a total of 800 miles. And so the "Cat" refuelled—from 44-gall. drums in caano.

On the way from Kikori this morning we pick up three stretcher cases—all natives. The Matron at Moresby says: "Every time the 'Cat' comes back she brings more kittens"

We are indebted to the *Australian News and Information Bureau* for this article and the accompanying illustrations.

New Meccano Models—(Continued from page 561)

the 5½" x 2½" Flanged Plate at the end of the model. A 2" Pulley 11 on the end of the 5" Rod forms the handwheel by which the movements of the figures are controlled.

The uprights of the goalposts are 3" Rods and are connected to the 4½" Rod forming the crossbar by Couplings. The uprights are fixed in Rod Sockets attached to the Plates 4.

If either of the goalkeepers fails to stop the ball passing him, it falls into a receptacle formed by a Flanged Sector Plate 12 (Fig. 4, page 561). Formed Slotted Strips 16 bolted to the sides of the table at each end form guides that direct the ball to chutes leading to the Flanged Sector Plates, which are attached to the 5½" x 2½" Flanged Plate by Angle Brackets. The ball is guided into the Flanged Sector Plates by a 2½" x 1½" Flexible Plate fixed to the 5½" x 2½" Flanged Plate by an Angle Bracket 13, and by a similar part 14 attached to the Flanged Sector Plates. The 3½" Strips 17 also prevent the ball from falling outside the Flanged Sector Plates, and the 1½" x ½" Double Angle Strip 15 holds the ball in place for use.

Parts required to build Ball Game: 4 of No. 1; 6 of No. 2; 4 of No. 3; 4 of No. 5; 4 of No. 7a; 4 No. 8; 4 of No. 9c; 4 of No. 9d; 4 of No. 10; 2 of No. 11; 12 of No. 12; 2 of No. 12b; 2 of No. 15; 2 of No. 15a; 2 of No. 15b; 2 of No. 16a; 4 of No. 16b; 2 of No. 20a; 2 of No. 22a; 2 of No. 26; 2 of No. 28; 108 of No. 37; 8 of No. 38; 2 of No. 45; 2 of No. 48; 2 of No. 48d; 2 of No. 52; 2 of No. 52a; 4 of No. 53; 2 of No. 54; 6 of No. 59; 2 of No. 63; 8 of No. 90; 4 of No. 188; 10 of No. 189; 5 of No. 192; 3 of No. 197; 2 of No. 212; 6 of No. 215.

**MANCHESTER MODEL RAILWAY SOCIETY
SILVER JUBILEE EXHIBITION**

Members of the Manchester Model Railway Society are now working at full pressure to make the forthcoming Annual Exhibition worthy of the Society's 25th Birthday Year. Seven working layouts will demonstrate the running of scales and gauges from 2½ in. to "000."

There are the usual array of Cups and Awards for members' work and competition appears to be keener than ever. The Stephenson Locomotive Society, and the Birmingham, Merseyside, Derby and Leeds Model Railway Clubs have been invited to participate.

The Exhibition will be held at The Corn Exchange, Hanging Ditch, off Corporation Street, Manchester, on Friday, Saturday and Sunday, 15th, 16th and 17th December 1950. The opening times are 11.0 a.m. each day, and the closing times are 9.0 p.m. on 15th and 16th December and 7.0 p.m. on the 17th.

"M.M." SPRING BACK BINDERS

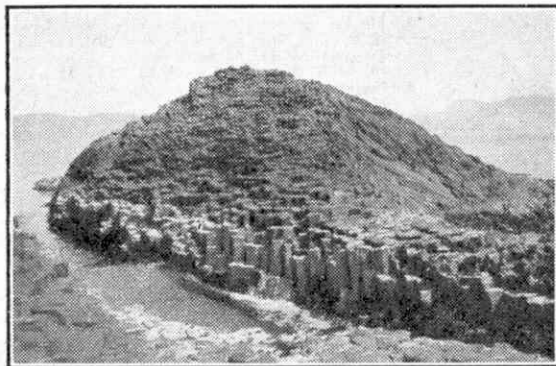
Spring back binders to hold 12 copies of the "M.M." are available from Meccano Ltd., Binns Road, Liverpool 13. These are in full bound black rexine, lettered in gilt on the front with the title "MECCANO MAGAZINE." Price, including purchase tax and postage, 5/- each.

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.

THE ISLE OF STAFFA

While on holiday at Oban, Scotland, I went on a steamer excursion round the Isle of Mull and visited the uninhabited Isle of Staffa, which is called "The



A colonnade of octagonal lava pillars rising from the depths of the ocean off Staffa. Photograph by G. Oates, Doncaster.

Isle of Staves or Columns." I was greatly impressed by the fantastic rock formations wrought by nature in this island, which lies to the west of Mull in the Inner Hebrides. Staffa is about a mile long and quarter of a mile broad, and consists of one mighty basaltic mass, with pillars having from five to nine sides. It is reputed that there is only one square stone on the island, parts of which resemble the Giant's Causeway in Ireland.

It is on Staffa that the world-famed Fingal's Cave is situated and this is reached by walking along a causeway formed by columns. The roof of the cave, which penetrates 227 ft. into the isle, rises 60 ft. above high water level and rests on basaltic pillars. Most of the other caves are only accessible in small boats.

About half way along the causeway there is Fingal's Chair, which is a rocky throne fashioned by nature. Another very striking feature is a great colonnade of octagonal lava pillars rising from the depths of the ocean to a height of 30 ft. This conical pile, which is separated from the isle by a very narrow channel, is called Buchaille, or the Herdsman.

GEOFFREY OATES (Doncaster).

BERSHAM

It is difficult to credit that the tiny hamlet of Bersham, near Wrexham, seen in the accompanying photograph, once played a very important part in the iron

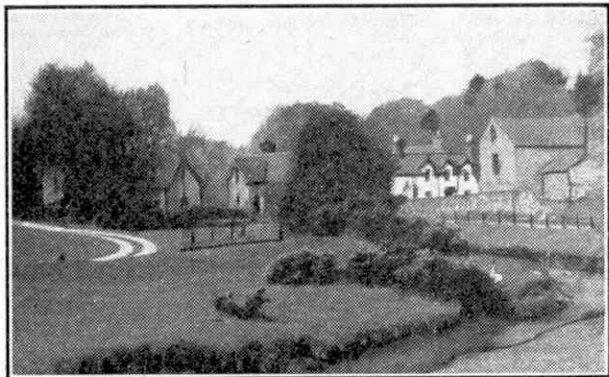
industry. Yet it was in this very hamlet that the Wilkinson family, famous ironmasters of the eighteenth century, established their foundry.

John Wilkinson, the outstanding member of the family, was a Cumberland iron worker who invented a box iron for laundry purposes. Later he erected the forge at Bersham, and among the specialities manufactured there were shells and cannon. It is recorded that the Bersham works supplied these for the British forces during the Seven Years War.

Wilkinson was particularly celebrated for castings and borings, and himself invented and introduced a new boring machine. It was he who supplied cylinders for the newly-patented steam engines of James Watt, who could never get cylinders of sufficient accuracy until Wilkinson made them for him; and he actually installed the first of Watt's engines made at Soho in his ironworks at Broseley, where it was used for blowing the bellows of his forge. In addition he and his brother, who in partnership were the largest ironmasters of their day, built the first iron vessel. John Wilkinson himself was largely concerned in the building of the first iron bridge, erected across the Severn at Coalbrookdale in 1777. When he insisted on the use of iron for this bridge he was said to be iron mad, but its success proved the soundness of his vision.

As one walks along the pleasant stream which runs through Bersham, noting the trim little cottages, there is nothing to suggest the hive of industry it once must have been. Later Wilkinson transferred his works to Brymbo, a few miles away, and he built ironworks in Merthyr Tydvil and other places. The Brymbo works are still in production, the only iron and steel works in Denbighshire.

T. J. JONES (Old Colwyn).



In the hamlet of Bersham, near Wrexham, the home of a famous 18th century ironworks. Photograph by T. J. Jones, Old Colwyn.

Fireside Fun

"Why don't you wash your face, boy? What you had for breakfast this morning is marked on it."
 "What is it, dad?"
 "Why, boiled egg, of course."
 "Then you're wrong, dad. That was yesterday."



"Does your Ma let you wipe your knife on the cloth at home, Terence?"
 "No, we have clean knives!"

"Don't wait for me. I'm going back for something I've forgotten."
 "But how do you know what it is if you've forgotten it?"

"Waiter! There's only one piece of meat on this plate."
 "Sorry, sir. I'll send it back and get the cook to cut it in two."

"I haven't been able to find work for ages. There seems no call for window flower box weeders these days."

"Nobody wants men in my profession either. I sweep chimneys in all-electric houses."

Boss: "I don't want a lazy boy. I want one who can get a move on."

Boy: "I'm just what you want, sir. I've moved out of six jobs in the last month."

"Hi, you two boys, stop fighting at once."
 "We're not fighting, mum. We are just defending ourselves against each other."



"Don't fly faster than sound, Pilot . . . We want to talk!"

BRAIN TEASERS

STILL THEY RUN

Do you recognise the following motor cars? In each case the name has been disguised by altering the order of the letters in it.

IDLEMAR; TELYNEB; NATSIU; DORF;
 DARKCAP; MINHALL; and RELSTANCHE.
 B.V.

SQUARE THIS UP

Here is a square made up of 16 small squares, in each of which a letter is to be placed so that the following clues are satisfied.

In each case the square in which the letters of the words are to go is indicated by its number:

- To be on one's feet (7, 8; 2, 3, 16).
- To care for (4, 5, 6, 10, 13, 7, 5).
- Magical, mysterious (10, 11, 12, 13, 4).
- Small golf accessory (14, 9, 15).
- It is as good as a mile (1, 13, 7, 7).

The square will then reveal the name of a famous Football League club. What is it? G.C.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

MATCH THIS

With seven matches make up eight triangles. No match is to be broken.



"Would you like the shoulders padded, sonny?"
 "No thank you, Pad the seat!"

TURN ABOUT

The following are clues to words that if read forward answer the first description, and if read backward have the second meaning. What are the words?

- A deceiver becomes part of a railway.
- A mechanical contrivance becomes a feast.
- Attraction becomes part of a lock.
- Measure reversed fills an opening.
- A disposition changes to destiny.
- One who is diseased changes to drive back.

S.A.W.C.

SOLUTIONS TO LAST MONTH'S PUZZLES

The diagram at the foot of the column gives the solution to the first of our November puzzles.

The seven "words" to which the clues of our second puzzle led are 1. Glaring; 2. Pluck; 3. Ate; 4. L; 5. Hat; 6. Fancy; 7. Renders. The middle letters of these words spell Rutland. Don't tell me that the letter L is not a word. I know.

1	4	1
4		4
1	4	1

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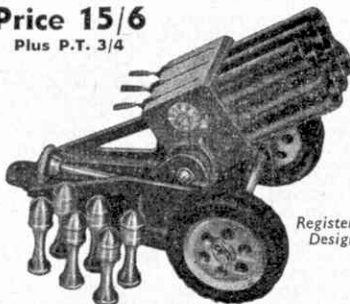
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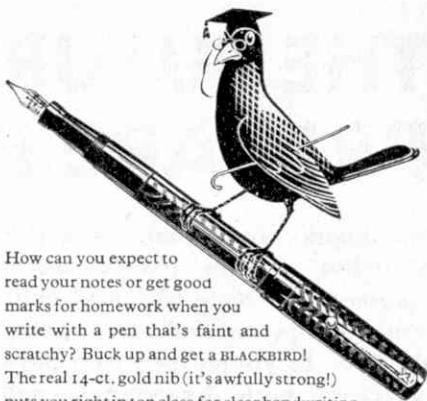
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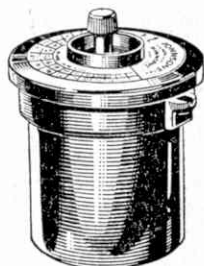
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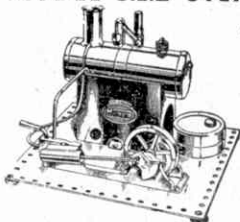


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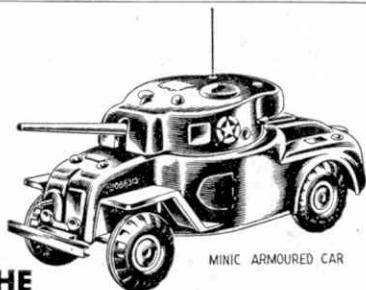
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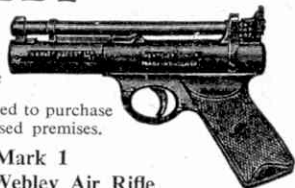
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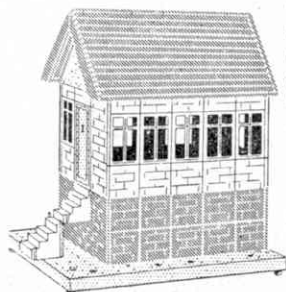
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