VOL. XL. No. 4 APRIL 1955

MECCANO MAGAZINE

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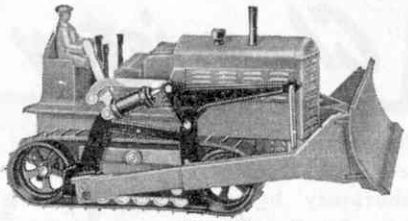

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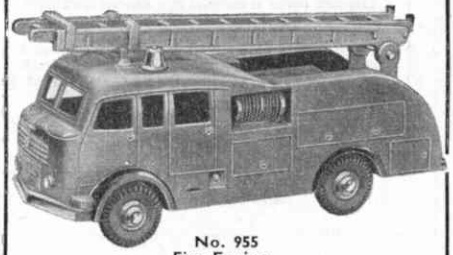

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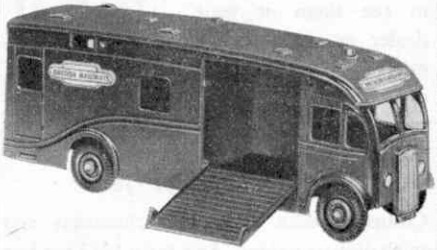

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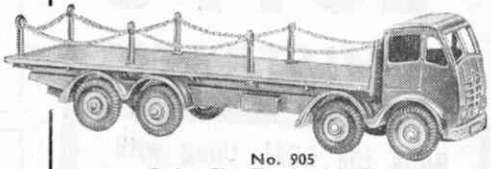

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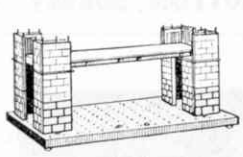

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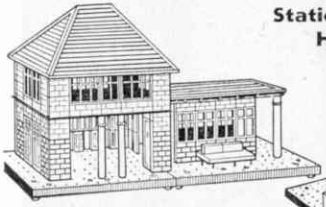

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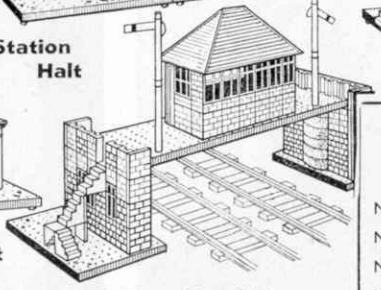

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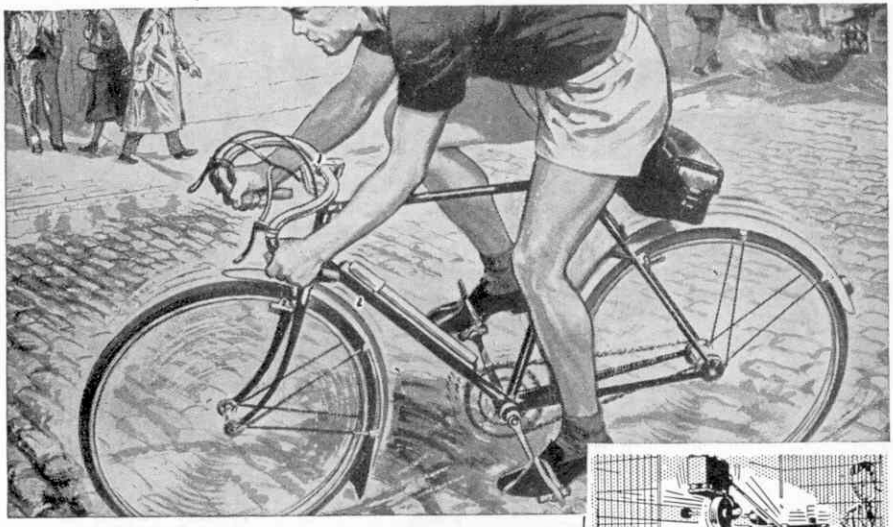

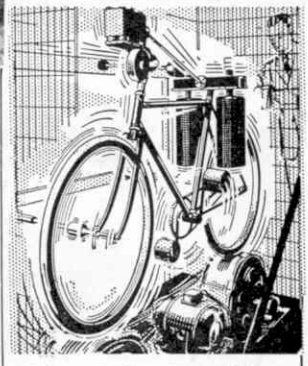

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The above set of 12 Leaflets in an imitation book cloth wallet costs 15/- (plus 1/1d. post if ordered direct).

NOTE
The postage rates indicated apply only in the United Kingdom.

Next Month: "IN THE ROCKET AGE"

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EDITOR : FRANK RILEY, B.Sc.

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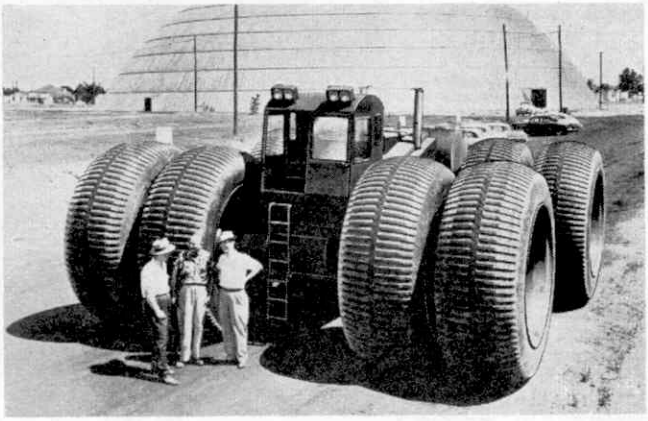
Size is Not Everything!

The *M.M.* is not the only thing that grows bigger, as a glance at the giant tyres in my picture this month will show. I do not know if these are the largest in the world, but they must have few rivals, for they stand 10 ft. in height and each of them measures 4 ft. across. They were specially designed by the Firestone Tyre Company to carry the enormous vehicle shown in the illustration, which is the 33-ton Sno-buggy made by the firm of R. G. Letourneau, of Texas, for use on snow and in swamps and deserts.

I wonder if bigger tyres than these will come along. Probably not, for it is a curious fact that most things during their currency seem somehow to reach only a certain maximum size because of difficulties that arise as they get bigger. The references in the *M.M.* to the Folland Midge seem to confirm this as far as certain aircraft are concerned. The idea of Mr. Petter, its designer, was that fighter aircraft have grown too big, and his Midge is as speedy as the fastest modern fighters, but much lighter. Perhaps his effort will lead to a new fashion for smaller aircraft. By the way, I have no intention of making the *M.M.* smaller!

It is perhaps worth remembering that in the past certain animals also appear to have grown too big. The giants of the Reptile Age are good examples. Some of them became too big to carry their own weight about, and their kind then just died out.

In spite of all this, I am coming back next month to something that is planned and created on an enormous scale. This is the modern dam, which stores water behind it to provide hydro-electric power. It is not a dam that will be the principal topic of the article I have in mind, but an aerial cableway, which strides across valleys and provides ways and means of bringing constructional material to the site of a dam. The May cover will illustrate the building of a dam by means of one of these cableways.



On its giant tyres 10 ft. high and 4 ft. wide, the Sno-buggy can travel over deep snow or loose sand at a speed of eight miles an hour.

The Editor

Propellers—Past, Present and Future

By John W. R. Taylor

IN this jet-propelled age it is easy to forget the important part that propellers have played in the story of powered flight. Yet, if the Wright brothers had not hit upon a surprisingly efficient design for the propellers of their original biplane, the story would not have started in 1903. If British companies had not produced a much improved type of propeller in 1940, the R.A.F. might have lost the Battle of Britain. And if those same companies do not continue to produce even better propellers in the years ahead, we may lose the peacetime "battle" for leadership on the world's civil air routes; because jet propulsion is by no means ideal for every kind of aeroplane.

Not the very first propeller—but almost! The pioneers of flying had to "make do" with all sorts of materials in constructing their crude machines. This Guillon and Clouny biplane, with its improvised "prop" and "tricycle" undercarriage, was a good example.

Before I go any further however, do you know why we now use the word "propeller" in preference to "airscrew"?

In the pioneer days of flying, propellers were usually mounted behind the engines of the early stick-and-string biplanes, so that they pushed (or propelled) the aircraft.

By 1914, designers had learned that the best place for a propeller was out in front, on the nose, so that it pulled the aircraft along, instead of pushing it. And gradually the name "propeller" was dropped in favour of "airscrew".

Everyone was happy about this until early in World War II, when an R.A.F. engineer officer cabled urgently for six spare airscrews. A telephonist mis-read the message and the officer was horrified when half-a-dozen newly-trained *aircrews* marched into his office. Since when the term "propeller" has returned to favour.

The easiest way of understanding how a propeller works is to imagine two skaters standing facing each other on the ice. If one pushed the other backwards, the pusher would also go backwards. The energy he exerted would, in fact, be divided equally between them. Newton explained this in more technical terms in his law of motion, which states that every action has an equal and opposite reaction.

A propeller, therefore is simply a means of pushing something rearward, so that the aircraft will be propelled forward by reaction. For convenience, aeroplanes use the fluid in which they travel—the air—as the "something" that is pushed rearward.

To go faster, one simply pushes more air rearward. This can be done by turning the propeller more quickly, making it bigger or finding a more efficient shape for the blades. Most important of the three is to improve efficiency, because it results in higher speed or longer range without any increase in weight.

In terms of pounds, shillings and pence, an increase of only one per cent. in propeller efficiency on a four-engined air liner would enable one extra passenger to be carried. The fares paid by passengers occupying this extra seat during the lifetime of the air liner would add up to more than the aircraft's original cost.

A typical Fairey-Reed metal propeller on an Auster lightplane. These propellers are made from a single piece of metal, machined and twisted to the correct shape.

Going back to the Wrights again for a moment—they had no doubts about the importance of well-designed propellers. Fully loaded, their biplane weighed 750 lb. Its home-made engine developed 12-16 h.p. Unless their propellers were efficient, they knew that this would not be sufficient to lift their aeroplane off the ground.

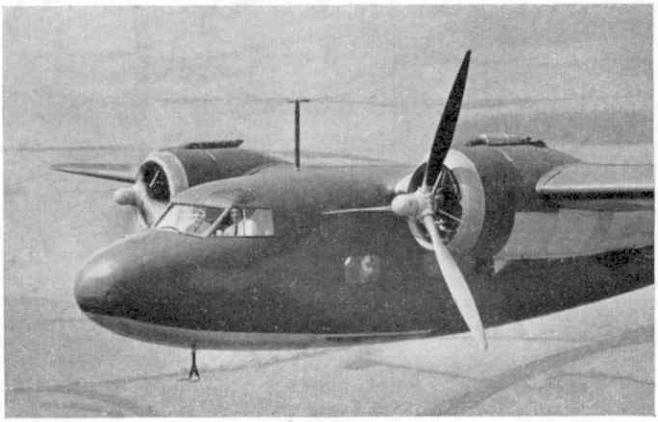
They soon realised that a propeller works aerodynamically in much the same way as a wing, and should therefore have the same sort of aerofoil shape as a wing. Bearing this in mind, they carved two 8½ ft. diam. two-bladed wooden propellers, tested them on their engine and found that the propellers achieved an efficiency of 66 per cent., which was remarkable for a first attempt.

An interesting feature of the Wright biplane was that its two propellers turned in opposite directions. If they had not, the forces they produced when turning at full speed (technically known as torque) would have tended to turn the aircraft up on one wing tip. For the same reason, many modern twin-engined aeroplanes have opposite-rotating propellers. Others, instead of a single very large propeller, have two smaller ones, mounted one behind the other and turning in opposite directions. Such units are called contra-rotating propellers.

During the first 10 or 15 years of powered flight, propellers changed very little. They were painstakingly carved by hand from carefully chosen boards of mahogany, glued together and balanced so that every blade of a propeller weighed exactly the same. This was, and is important, because if one blade is longer or heavier than another it will cause serious vibration, damaging the engine or even breaking up the aircraft in extreme cases.

Metal began to replace wood on a large scale in the 1920's, when the Fairey-Reed propeller put in an appearance in Britain. It was not only more efficient and durable, but easier to make in quantity, being machined from a single piece of duralumin and mechanically twisted to the correct "pitch".

Although I have not mentioned it before, this angle of "pitch" or twist of the blades is very important. For take-off, a fine pitch is best, which means that the

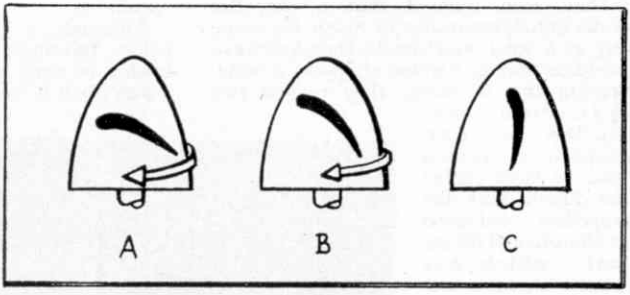


Triple-bladed propellers were much in favour at one time. Here is a D.H. Flamingo, of 1939, equipped with this type, seen clearly on the engine which is stopped. Photograph by courtesy of "The Aeroplane."

One of the Fairey Gannet's two contra-rotating, co-axial propellers feathered in flight with the aircraft cruising on a single engine to save fuel. On some aircraft, like the Westland Wyvern, one engine drives two contra-rotating propellers through gearing. The Gannet has two engines, each driving one propeller.

propeller blades are "flat", as shown in the drawing on this page. For high speed flight, a coarse pitch is needed, which means that the blades must be twisted more, to bite deeper into the air.

It was quite a problem for designers to decide on a compromise position, to give best possible performance under all conditions. The problem reached its peak in 1931 on the Supermarine S.6B seaplanes with which Britain won the Schneider Trophy. To absorb the power of their huge 2,300 h.p. Rolls-Royce "R" engines, Fairey's built special propellers with wide blades and very coarse pitch, which reached their best efficiency only when the seaplanes were flying at maximum speed. They made possible a top speed of over 400 m.p.h. for the first time in history, and one of them can still be seen today in the entrance hall of Fairey's headquarters factory at Hayes—a splendid reminder of one of Britain's great achievements in aviation.



This diagram shows (A) propeller blade in fine pitch for take-off. (B) blade in coarse pitch for cruising flight. (C) blade feathered—engine off.

But it was obvious even in the pioneer days that the real answer was a propeller with blades which could be set at fine pitch for take-off and turned to a coarser pitch during flight. Without such a propeller, an aeroplane was handicapped as much as a car would be with no gear-change.

Several people tried to produce variable pitch propellers; but the results were usually heavy, clumsy or unreliable, and the best that could be achieved was a propeller with screw-in blades, so that the pitch could be adjusted on the ground to suit different conditions.

In 1925 Dr. Hele Shaw and T. E. Beecham built, and tested at Farnborough, a hydraulic control that could turn the blades of a propeller during flight, so "balancing" the output of the engine through an engine-driven governor at all stages of the flight. For the first time pilots could automatically "change gear" in the air, whilst the engine continued to run at a constant speed. Five years later, the famous American propeller-manufacturer Tom Hamilton also designed a propeller on these lines; but neither the U.S. Army nor the Navy thought the idea worthwhile.

Fortunately, Boeing's were, at that moment, having difficulty in getting their new Model 247 air liner off the ground with a full load. Hamilton sent along one of his engineers, who proved that, by setting the blades of its propellers in fine pitch, the 247 could easily lift a full load, but was inefficient in cruising flight. Similarly,

when the blades were set in coarse pitch for efficient cruising, the 247 could get off the ground with only a small load. *But*—if the blades could be set at fine pitch for take-off and changed to coarse pitch in flight, the 247 could obviously carry a full load all the time. So why not try a variable pitch propeller?

Boeing's were convinced. The 247, with Hamilton-Standard variable pitch propellers, became an outstanding success and, before long, most big or fast aeroplanes were being fitted with them. De Havilland's bought the licence to build Hamilton propellers in England, and Bristol and Rolls-Royce formed a Company named Rotol to produce the hydraulically-operated propellers which they had been developing individually; the name Rotol being taken from the first two letters of Rolls and the last three of Bristol.

It was just in time, for if de Havilland's and Rotol had not been able to rush through enough variable pitch propellers to equip the R.A.F.'s Hurricanes and Spitfires in 1940, the performance of these fighters might not have been good enough to win the Battle of Britain.

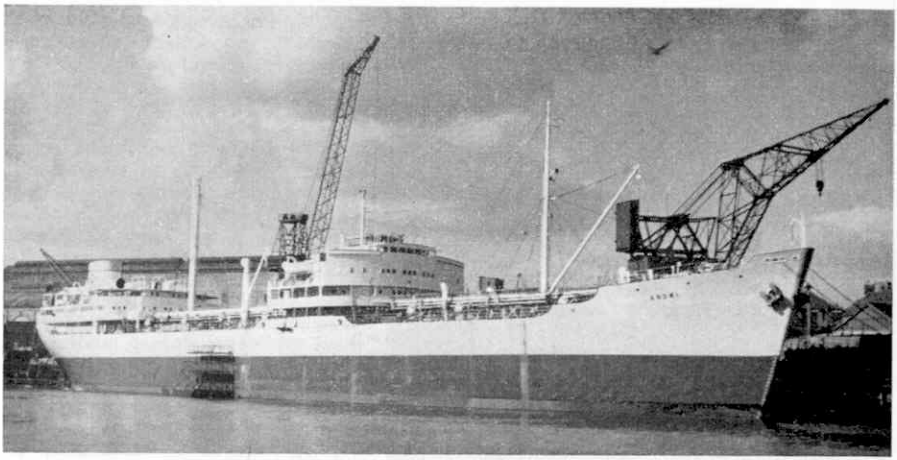
So we come to the present day, when jet engines have superseded piston engines and propellers in aircraft where high performance is more important than miles-per-gallon of fuel. But the gas-turbine has, paradoxically, given the propeller a new lease of life, because, by combining the two in a propeller-turbine, designers have been able to give aircraft like the Viscount, Britannia and Gannet comparatively high performance, fuel economy and a simple, reliable engine installation all at the same time.

What is more, the blades of the latest variable pitch propellers move through 120 degrees, and can be used as brakes during landing, by reversing their pitch so that they throw the slipstream forward instead of rearwards. And, if an engine fails in flight, or if the pilot wants to shut off one engine to save fuel, its propeller can be "feathered", so that it is end-on to the airflow and offers a minimum of drag.

De Havilland variable pitch propellers in production. In the foreground a 4-bladed propeller is being assembled. Photograph by courtesy of de Havilland Enterprise.

The blades themselves are today made of hollow steel or of solid duralumin, both with built-in electrical de-icing, either inside or set in the leading edge of the blades. So a reversible-pitch propeller is a complex, costly piece of equipment. But, by speeding take-off, reducing landing runs and offering best possible cruising performance, it is making air travel safer and less expensive for all of us.

Nor are propellers useful only for speeds up to the Britannia's 350 m.p.h. Already in the American National Advisory Committee for Aeronautics' great research centres, and on specially-modified jet 'planes, propellers suitable for supersonic flight are being developed. Their blades will probably be shorter and broader than those of present day propellers. They may be made of solid steel or titanium, and be extremely thin in section, perhaps even with curved or sweptback blades. But whatever their shape and size, we can be certain that the propeller still has a long and useful life ahead of it. Indeed, when atomic aero engines are perfected, they will probably be geared to drive propellers not so very different from those of the last 50 years.



The Motor Tanker "Andwi"

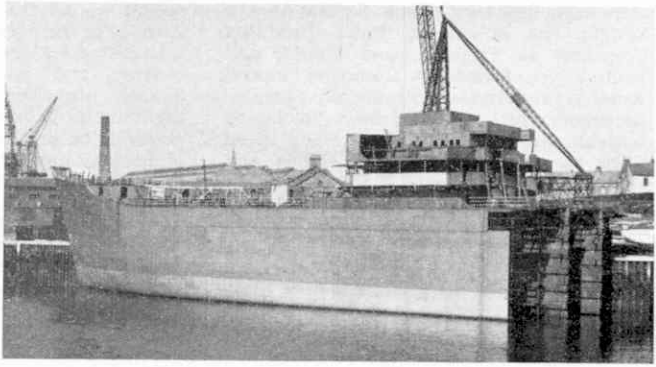
Second "Half-Crown" Ship Built at Sunderland

By Sidney Teasdale

SHIPPING history was made in 1951 when the *Rondefjell*, a 23,000 ton tanker, was built in two halves at the yard of John Crown and Sons of Sunderland, the two parts of the vessel being subsequently joined together in dry dock at South Shields. During the course of building, the tanker became known as the "Half-crown Ship," and in the officer's wardroom two half-crowns in a case recall the unusual method of building.

This method of construction is partly a consequence of experience gained on repairs to ships during the second World War, and partly a result of the post-war demand for new tankers of ever-increasing size. During the war, many ships that had suffered damage were speedily repaired by cutting away the damaged section and building a new replacement portion that was then joined to the undamaged part. After the war, the heavy demand for large new tankers fostered keen competition among ship-building firms and in order to meet the demand, many shipyards and slipways were enlarged. In the case of the firm of John Crown and Sons, however, there was insufficient room for such expansion, and this led to a decision to apply to the building of new ships the experience gained on repairing partly damaged ships during the war.

The second vessel to be built in this



At the head of the page is a picture of the 18,250 ton tanker "Andwi," which was built in two sections that were welded together after launching. The fore part of the vessel is seen in the illustration on the right.

manner, again a tanker, was completed at Sunderland in October 1954. The keel of the fore end of the tanker was laid in the early autumn of 1953, and thereafter building continued in the conventional manner. The half-ship was successfully launched, with her bulkheads sealed, in January 1954, and while fitting out of this section continued at a nearby quay, work began immediately on the construction of the aft end of the vessel. After launching this was towed up river for the installation of a 6,300 H.P. nine cylindered, French built Sulzer engine by the firm of George Clark (1938) Ltd.

The aft section of the "Andwi" being towed away after launching.

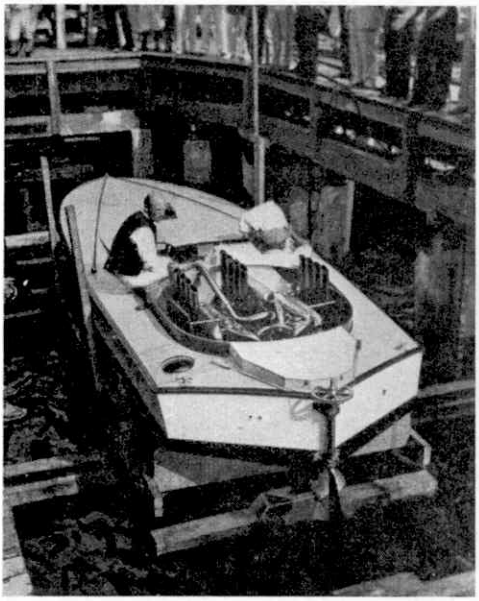
Soon afterwards, both sections of the tanker were taken into Messrs. Greenwell's dry dock at Sunderland, which readers may remember was described in the article on shipbuilding on the Wear that appeared in the January 1953 *M.M.* They were floated into the dock in the usual way, the aft section following the fore section. The dock gate was then shut and the fore section manœuvred into position, after which the pumping out of the water commenced.

The dock floor slopes down from the fore end to the dock gate, and because of this a level was reached when the aft section of the tanker was still partly afloat and manœuvrable, while the fore section was firmly settled on the keel blocks. At this stage pumping was stopped and the aft section was carefully manœuvred into line with the fore section. The remaining water in the dock was then pumped out, following which the welding together of the two sections began.

Approximately three weeks after the two sections of the vessel entered dry dock, the work of joining them together was completed. It was only then that the tanker was ready for the naming ceremony, an unusual one because it had to take place after launching. She was christened *Andwi* by the daughter of the owner, Mr. Rolf Wigand of Bergen, a name derived from parts of the owner's surname.

After a further period of fitting out, the completed 18,250 ton tanker ran very successful trials off the Northumberland coast and was handed over to her owner at the end of October last.

Launching half a ship. The aft section of the "Andwi" is here seen entering the Wear from the slipway on which she was built.



Major H. O. D. Segrave created speed records on land, on which he was the first man to reach 200 m.p.h., and on water. Here he is seen with his mechanic getting his famous speedboat "Miss England" into the water for a trial trip.
Illustrations, Picture Post Library.

Speed Records on Water

By Leslie E. Wells

SPEED! Some condemn it as the last atrocity of a mechanical age, and yet, since the day of the first chariot race, the lust for speed has been with us.

And now Donald Campbell, 33 year old son of the late Sir Malcolm Campbell, is hoping to travel 200 miles an hour on water, thus breaking the present 178.497 m.p.h. record set by an American, Stanley S. Sayers, on 7th July 1952, at Seattle.

You may ask: "Why race? Why attack records?" There can be no immediate answer to those questions, for it is impossible to give a coldly logical explanation of the sense of thrill that a speed ace gets when in his boat, aeroplane, or car.

At the time of writing, Donald Campbell is at Lake Ullswater, where he will put through its paces his new £25,000 turbo-jet *Bluebird*, before making the actual attempt on a new water-speed record. It is at present impossible to judge the speed of such a boat owing to its completely revolutionary design. The framework is built of welded chrome-molybdenum seamless steel tube, and although very light, is credited with having twice the strength of a supersonic jet fighter.

As little is known about stresses and strains imposed on high-speed boats, six special electronic instruments will be provided which will transmit these to electric recorders during trial runs. For Donald Campbell's object is twofold—to set up a new speed record and to establish scientific data in the field of high-speed motor boating.

Perhaps the foremost name among British speedboat record breakers was Donald's father, the late Sir Malcolm Campbell. In his boat *Bluebird I*, which was made of wood and only twenty-four feet long, he raised the record to 128.3 m.p.h. on Lake Maggiore in September 1937, thus breaking the record of 124.92 m.p.h. set up by the American, Gar Wood, in 1932, at Algonac with his boat *Miss America X*.

Speed boat designers break the underwater line of their boats with a "step", roughly amidships. At speed, this forces the forepart of the boat out of the water and cuts resistance to less than half. In the same way, the upward-inclined wing of an aeroplane at speed treats the air as if it were a solid and keeps the machine always tending to rise on a slow incline.

The faster a boat travels the more lightly she sits on the water. The "step" performs another useful purpose, in that it creates a cushion of air between it and the water and saves the hull from a great deal of buffeting.

In 1939 Sir Malcolm introduced *Bluebird II*, which was designed on what were then rather novel lines. Although being what is called a single-step hydroplane, like her predecessor, she was built on the three-point suspension principle. This meant that the forward step was in two parts, one on each side of the hull, with a concave space between them. Thus the boat carried a far smaller area of wetted surface than the more conventional type of hydroplane, which

An American speed boat expert — Commodore Gar Wood, who held the water speed record for many years, at the wheel of one of his boats.

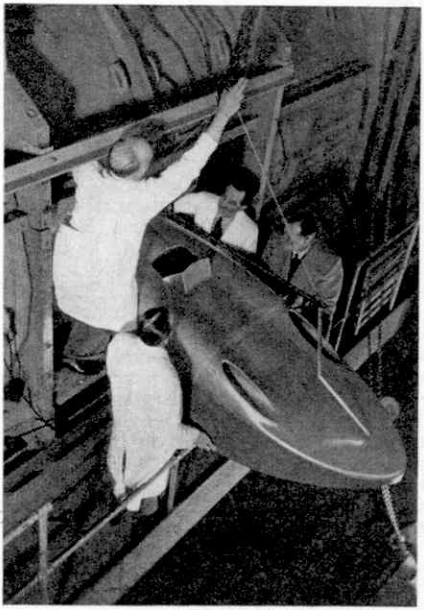
meant less resistance to forward movement. The record was attempted on Coniston Water in August 1939, and was raised to 141.74 m.p.h., at which figure it remained until 1952 when the present record of 178.497 m.p.h. was set by Stanley Sayers.

John Cobb was the fastest person ever to travel on water when, in his jet-engined speedboat *Crusader*, he attained the amazing speed of 206.89 m.p.h. over the first measured mile, before the boat disintegrated on Loch Ness, Scotland, killing him instantly, on 29th September, 1952. The Marine Motoring Association (the national authority for the control of motor-boat racing) stated: "This performance of one run over the mile does not constitute a world record, but is the fastest speed ever attained on water."

No article on speed-boat record breaking would be justifiable without mention of Kaye Don. In 1932 he attained 119.8 m.p.h., which stands for an even higher accomplishment than one would imagine at first sight. His magnificent boat, *Miss England III*, was raced on the waters of Loch Lomond. It was also a race against time, for the boat had been built, by the late Lord Wakefield's orders, so that it would be completed that summer. Although it was a "speed-built" craft, it possessed numerous novel features; one of the most outstanding was the provision of two propellers, which made experts raise their eyebrows. The boat was a single-step hydroplane, fitted with Rolls-Royce Schneider Trophy type engines that developed 220 h.p. at 3,200 revolutions per minute.

From the first day it reached the Loch, small misfortunes followed it. The first was when Kaye Don used the slipway owned by Sir Iain Colquhoun, who lived on a lakeside estate. The slipway had not been erected for heavy weights such as that of the 35-ft. *Miss England III*, so it broke down a number of times. Finally, the whole slipway was smashed in completely and had to be rebuilt. This necessitated the services of a diver borrowed from the Navy, who made day-to-day repairs.

These completed, fate struck again on the day when serious testing on water started, for it was discovered that two



Sir Malcolm Campbell watches a model of his jet-propelled modified "Bluebird II" being put into an air tunnel for tests.

scoops, which should have collected water to cool off the engines, broke at high speed. The reason for this bad luck was that the scoops were situated behind the widest beamline of the boat; therefore a vacuum was caused when speed rose above 80 m.p.h. So they were moved farther forward.

In 1952 John Cobb, holder of the world's land speed record, reached unofficially a speed of 206 m.p.h. on Loch Ness in his "Crusader," here seen returning to shore after her first trial on the Loch.

After this, more trouble sprang up, this time with the gear-box. This was repaired rapidly and Kaye Don totted up a record for the time being. Later, although he fitted new propellers that cost £500 each, his hopes were ruined when the petrol supply failed after reaching 119.1 m.p.h. Such are the difficulties and set-backs which attend speed-boat racing!

The attainment of high speeds on water has been achieved within comparatively recent years. The winner of the first race for the British International Trophy, held in 1903, averaged only 20 m.p.h. In 1904, to stimulate interest in motor boating, a cross-Channel race was held, and in the same year the R.A.C. promoted the first of a series of reliability trials. By 1921 *Miss America II* reached 80.6 m.p.h., and *Miss America VII* made a record of 92.8 m.p.h. in 1928. In June, 1930, Sir Henry Segrave, in *Miss England II*, met his death on Lake Windermere in reaching 98.96 m.p.h. The next year, in the same boat, Kaye Don "knocked up" the 100 mark on the Parana River, near Buenos Aires, and in July 1931 he topped 110 m.p.h. on Lake Garda.

Speed boating then developed into an international duel between Kaye Don and Gar Wood. The American reached 111.7 m.p.h. on U.S. waters. Kaye Don replied in July 1932, with *Miss England III*, and broke the record twice, on his first run attaining 119.8 m.p.h., making Britain, for two months, holder of the records on land, water and in the air. Then, in September, Gar Wood made his record of 124.92 m.p.h.

Such piston-engined record breaking speed boats simply drink petrol. *Miss England III* used five gallons a minute, at full speed, equal to 2½ gallons a mile, which is about 60 times as much as the consumption of the average motor car.

A good illustration of the rapid progress of motor boating can be gathered from the fact that when in 1885 Mr. J. J. Hulme, a London engineer, put an internal combustion engine into a river launch and chugged gently along several miles of the Thames, people on the river banks were amazed. In the following year spectators gathered on the shores of Lake Wurtemburg to watch Herr Daimler carry 11 people in a boat equipped with a 1-h.p. engine at its 3 m.p.h.!

The whole basis of present-day speed boating rests, strangely, on the work of a clergyman. He was the Rev. Charles Ramus who, about 80 years ago, discovered the principle of the hydroplane. Even the new *Bluebird's* jet-engine would be unable to give any really high speed if it were installed in an ordinary boat.

But we have by no means reached the last word in speed boat design. Nor have we yet come to the maximum attainable speed on water. Perhaps you cannot see the practical value of this speed. The Transatlantic liners are never likely to travel at 178 m.p.h., but in the years to come they might travel at 70 m.p.h., and the designers of every-day cars, planes and boats, learn a great deal from the engines that set up records.

In conclusion, we must salute the men who travel through space at high speeds. They are pioneers who risk their lives for the protection of others.

The High Road to Kashmir

By Bernard Llewellyn

THE hill roads of India are exciting roads and, though many people in this air age would rather look down on them than travel along them, I have always preferred to stay on the ground and follow the road to my journey's end. For instance, I would not have missed my trip over the Banihal Cart Road for anything.

Banihal Cart Road is the name frequently given to the high road that coils over the foothills of India, which rise, a high barrier, between the Vale of Kashmir and the hot sticky plains of Uttar Pradesh. Sometimes it is simply called the Jammu-Kashmir road. But whatever its name, it takes you from the railhead at Pathankot, where the overnight train from Delhi brings you after a ten hour trip, carries you triumphantly to a height of 9,000 ft., and leads you at the end of 267 miles to Srinagar, City of the Sun, in one of the loveliest high valleys of the world.

The bodies of the buses that follow the road are made in India. The Chevrolet or Dodge or G.M.C. engines and chassis are imported from America. The seats are on the hard side, and these single-decker vehicles cannot compare for comfort with the motor coaches of Europe. But then they are much cheaper. They are reliable, with better than average drivers.

Buses on the road to Kashmir stop for the night in the mountain village of Kud.

It is 67 miles from the railhead to Jammu, the winter capital of the Government of Jammu and Kashmir, 1,000 ft. above sea-level. The landscape on that August day was scrubby and in need of rain. Cattle sheltered from the sun under shady trees. There were dried-up river beds and wastes of rounded stones and bridges guarded by soldiers.

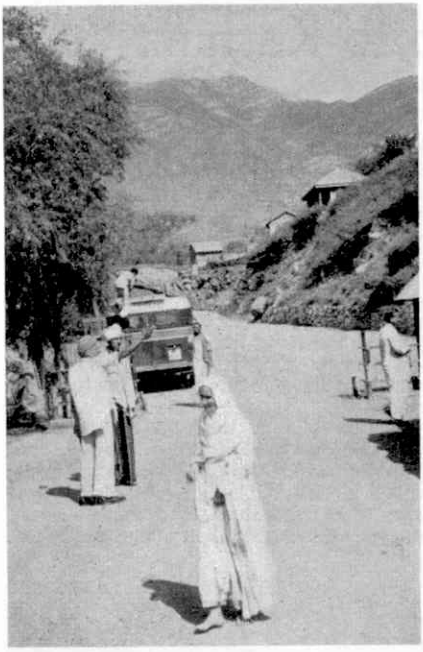
I lunched in Jammu, a city famous for its gilded temples capped with golden balls. Wherever you look along the skyline you see a temple. I went in the most famous of them, the Raghunath Temple, and saw the images of the gods. North of the city the hills had crept nearer.

During the 65 miles we covered that afternoon, the landscape became grander as the road corkscrewed even deeper into the forested hills, climbing to 5,000 ft. We passed a lorry which had turned over at a bend in the road a few minutes before.

By six o'clock the driver had pulled in behind a line of other vehicles that had stopped for the night in the mountain village of Kud. On one side of the road were the restaurants and such humble accommodation as the village possessed; on the other, cloud-capped purplish hills filled the horizon.

That night I lodged in a cheap little room with a clean mud floor and a rickety verandah overlooking the main street where the buses were parked. The sole furnishings were a string bed, a table, and a chair with a broken back. A hurricane lamp gave a feeble light. It was deceptively comfortable; for I was badly bitten by bed bugs and stayed awake a long, long time.

The driver had told his passengers that



At Banihal mountains straddle the road ahead as it climbs up to the tunnel marking the summit of the pass.

we should be making an early start. So by 6.30 a.m. I had breakfasted, loaded my rucksack and bedroll on to the rack on the bus roof, and was all set for the really interesting part of the journey along India's "Burma Road".

After a steep climb we found ourselves looking down on the Chenab, a yellowish stream moving at speed along the bottom of a great gorge. In wide loops the road began to descend towards the river, and the river became swifter, muddier and angrier as we approached. We crossed it by an iron suspension bridge at an altitude of 2,200 ft. Then came the slow journey up the other side to Banihal, a little town in a huge valley south of the high range that blocks the way to Srinagar. At Banihal—where we had another snack—great mountains straddled the road ahead.

The landscape had become immense. Vehicles on the twisting road were now toys, and the road itself a thin white thread with sharp hairpins and treacherous bends. Eagles drifted giddily in the air above us and white scavenger vultures looked at the bus with greedy eyes. With a window seat in the bus, you could look right down the precipice at wisps of cloud drifting in the valleys as we climbed. A couple of passengers looked once too often and were sick!

And then, as the road was on the point of reaching 9,000 ft., it levelled off to enter the 650 ft. tunnel that the road engineers cut through the Pir Panjal Range to make the Banihal Pass, leading into the wonderful Vale of Kashmir. This is the divide between two worlds. Ahead was a great golden valley, ringed by mountains, with streams running through fertile fields and a thin, distant road flanked by poplar trees leading through the valley towns to Srinagar.

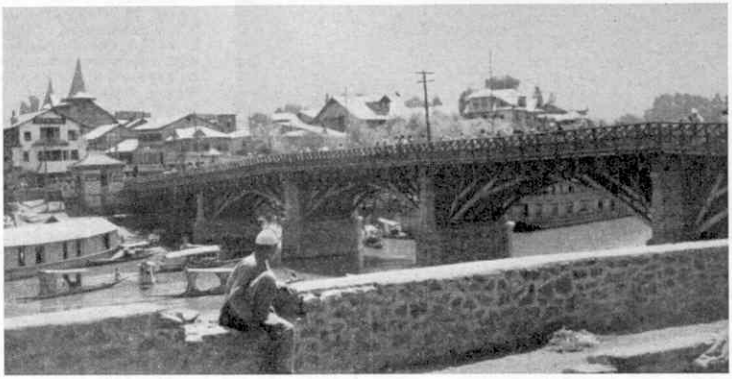
There was a mountain, too, jutting into the sky with an apron of snow glaciers about its waist. I was looking at the cone of Haramokh, from whose 16,903 ft. summit the first observations were made of mighty K2—second highest mountain in the world—nearly a century before.

So I came down the other side of the pass into the valley, past a sacred trout pool which is the lovely source of the River Jhelum, where a famous Moghul Emperor built a beautiful garden. It was

The Jhelum River is the main street of Srinagar.

these Moghul rulers who really discovered the beauty of Kashmir. From their capitals at Agra, Lahore and Delhi they came for respite to the golden Vale 5,000 ft. up in the mountains, set on the fertile floor of an ancient lake; and every time they came they enhanced the natural beauties with gardens and buildings of their own.

From the foot of the range below the pass, the road was level into Srinagar. Our bus now shared it with local buses and tongas, which are small two-wheeled pony carts for passenger hire. The buildings grew thicker, and when we stopped for a few moments on the edge of the city, wiry, bronzed Kashmiris came up to the bus windows to show us photographs of the houseboats they owned and to beg us to stay there.



The first bridge at Srinagar, with shikaras, the gondolas of Kashmir, on the river.

Srinagar is sometimes called the Venice of Kashmir, for it is built along the banks of the Jhelum River and spreads out through weed-covered waterways to two of the loveliest lakes in the world. On river and lakes people live on boats. There is a big floating population, while, since the end of the last century, British tourists have been in the habit of seeking refuge here in the hot weather and enjoying leisurely days on hundreds of floating homes.

I had always wanted to stay on a houseboat, and now I had the chance. I was recommended to a boat on lovely Dal Lake and the owner took me out to it the afternoon I arrived. From the lakeside embankment we crossed to the boat in a little punt, or shikara, paddled by a boy with an engaging grin.

As near as I could judge, the houseboat was about 100 ft. long and about twelve in the beam. It was built of Kashmir woods and shaped like an oversize punt with an elongated house set on top of it. I stepped aboard and passed through the French windows into the lounge. It was carpeted and all the comfortable furniture locally made. A door led from the lounge into the dining room, and from there a corridor along the side of the boat gave access to the three bedrooms and bathrooms. Attached to the rear of the houseboat was a little cookboat where the servants lived and prepared the meals.

I made this comfortable place my home while I explored the city and surroundings on foot, on a hired bicycle or by shikara. These shikaras are the gondolas of Kashmir, and people use them much as we use taxis in the West. But they are also pleasure boats, and the best of them are furnished with spring mattress cushions on which passengers may take it easy while the two expert paddlers who sit astern propel the craft rapidly through the water.

Srinagar's main road is the Jhelum River —a busy thoroughfare for small boats— which passes between old wooden houses whose carved verandahs overhang the water and the people who are always washing clothes or bathing along the river's edge. The buildings look as if they were built in the Middle Ages; their romantic appearance belies the narrow streets of the slum city behind them.

Off the river are backwaters where Kashmiri families live on rough, dirty, leaky houseboats of their own called *doongas*. People have been living in such boats for centuries. There is even a tradition among these Hanji people that they are in the direct line of descent from Old Man Noah himself; so it is little wonder that they make their homes on boats.

Exploring Srinagar, I was not surprised that this city had been a pleasure resort for generations of (*Continued on page 222*)

The Bristolian, the fastest train on British Railways, leaving Sonning Cutting behind No. 6009 "King Charles II." Photograph by M. W. Earley.

Railway Notes

By R. A. H. Weight

Scottish Tidings

Just before these notes were written news had been coming in of appalling conditions in the north of Scotland, where parts of the Highland line were blocked by deep snow drifts for the second time during the past winter. This caused locomotives and trains to be isolated temporarily, with much hardship for staff and passengers, though as always in such emergency conditions brave and determined efforts restored services as quickly as possible. The devastating effects of frost and blizzard conditions were also keenly felt further south.

Scotland's impressive new marshalling yard, which will be one of the most modern in Europe, is now well under construction near Thornton, Fifeshire. It is about two miles west of Thornton Junction on the East Coast main line, close to new and other collieries, serving a network of lines. The latest methods of shunting and distributing wagons into the reception sidings, where they are formed into outgoing trains, and of retarding their speeds down from the hump, will be electrically and hydraulically operated from one Central Control Tower. There will be 35 sorting sidings, new signal boxes and light signals, and, a locomotive yard equipped with a 70-ft. electrically powered turntable, together with offices and staff rooms. The planned capacity is 3,000 wagons per day in and out.

New class 4 2–6–4Ts have been allocated to 66A, Polmadie (Glasgow) shed, numbered 80111–5, 80054–8; these were built respectively at Doncaster and Derby. Engines of this or the L.M.R. type are now working from many Scottish sheds. Among locomotive withdrawals have been compound 4–4–0s Nos. 40906 and 41176 and 4–6–0 No. 61539, the last of the former Great Eastern unrebuilt type stationed in north-east Scotland. Those remaining in East Anglia are B12/3 rebuilds.

Morningside locomotive depot, a sub-shed to 66B, Motherwell, has been closed. New diesel-electric shunters numbered 13135–6 were lately stationed at 65F, Grangemouth.

Another London Tube is Planned

A much needed additional underground electric railway is proposed. It is to start from beneath Victoria main line forecourt and to run by way of Oxford Circus, Euston, King's Cross and St. Pancras, Finsbury Park and Tottenham to Walthamstow, where there would be three stations. The northernmost of these is to be on the surface with passenger connection on the level to the Eastern Region Chingford line. It would be unique in that at nearly every station it would connect with existing London Transport routes (District, Underground or Tube railways) or else be adjacent to stations on what are now steam branch lines of the Eastern or London Midland Regions. It would also serve, by escalator, stairs and subway, the main line termini at Victoria, Euston, King's Cross and St. Pancras, as well as the main line Finsbury Park and Tottenham suburban stations. Near the intended station at the top of High Street, Walthamstow, this "Route C" tube would pass almost beneath the old building that housed the Grammar School I attended as a boy, about the time when London's original tube railways were something entirely novel, and when much of the Epping Forest area was still truly rural.

Plans provide for 32 trains per hour, each formed of seven cars at peak periods, between Victoria and Seven Sisters, South Tottenham, and 16 trains per hour beyond. Even this intensive provision of accommodation could be stepped-up later if required. Trains would run in up and down tunnels 12 ft. in diameter, mainly at depths of between 45 and 60 ft.

London Midland Region

Light diesel railcars mainly in twin units, are now running on various lines in West Cumberland, serving Silloth, Carlisle, Maryport, Workington, Whitehaven, Penrith, Keswick and other stations. Among the new rolling stock for those services completed at Derby during the winter were motor third brakes numbered 79008–20, trailer composites having first class seating, and driving compartment coaches numbered 79600–12. The home depot for a number of the cars is Carlisle.

Just before the beginning of diesel operation, Ivatt class 2 2–6–0 No. 46459 was one of the engines working on the Keswick line to Penrith, a route boasting fine lakeland and mountain scenery that was so long the haunt of the old-time ex-L.N.W.R. 0–6–0s. A friend's journey up the Furness line was made behind Jubilee 4–6–0 No. 45599 *Bechuanaland* from Carnforth to Barrow, and thence to Workington with class 4 Mogul No. 43008.

Britannia Pacifics allocated to the Western Region have been observed at Barrow, Carlisle and elsewhere while running-in after overhaul at Crewe. Similarly, new 2–10–0s intended for the Eastern Region, as well as other B.R. standard locomotives on trial after emerging from Crewe Works, have been reported at many scattered points on the Western Division, L.M.R. articulated Beyer-Garratt 2–6–6–2s are seen sometimes working to Doncaster from Sheffield.

They appear to have left Wellingborough and their customary freight duties of the past along the southern stretches of the Midland main line.

At the end of January it was officially announced that No. 46225 *Duchess of Gloucester* was at the Rugby Testing Plant, also that two other large Pacifics, No. 46226 *Duchess of Norfolk* and No. 46254 *City of Stoke-on-Trent*, were on loan to Edge Hill shed, Liverpool.

Considerable improvements and modernisations are in hand at the General Station, Chester, an important junction and transfer point which handles Crewe-North Wales main line traffic, and W.R. and joint Birkenhead, Shrewsbury and other

View of the road ahead from the passenger compartment of a B.R. twin diesel set. The driver is on the left hand side. Photograph by W. S. Garth.

services. The work includes a new roof, electric lighting, replacing an elderly gas installation, and colour light signalling, together with the provision of cafeteria and other bright and spacious buildings for the use of passengers. The Mumps station at Oldham, Lancs., is soon to be rebuilt with a new street frontage, and plenty of natural as well as electric light.

Centenary of the Postal Train

The first special Royal Mail or postal train in the world began running just over 100 years ago, in February 1855, between London (Paddington) and Bristol. It conveyed a few of the very small and light vans in use at the time, limited passenger accommodation being added for a while later.

Now the 10.10 p.m. Postal express from Paddington to Penzance via Bristol, terminating at Plymouth on Saturday night, conveys sorting carriages and stowage vans for letters and packages, and like its eastbound counterpart is an institution of long standing. It handles, takes up and discharges huge quantities of mail, as do the West Coast Postal expresses between Euston and Scotland and the long-distance or cross-country trains on other routes conveying sorting carriages and special mail portions. Postal consignments on a large scale are also conveyed by ordinary service in guards' vans.

Western Locomotive Notes

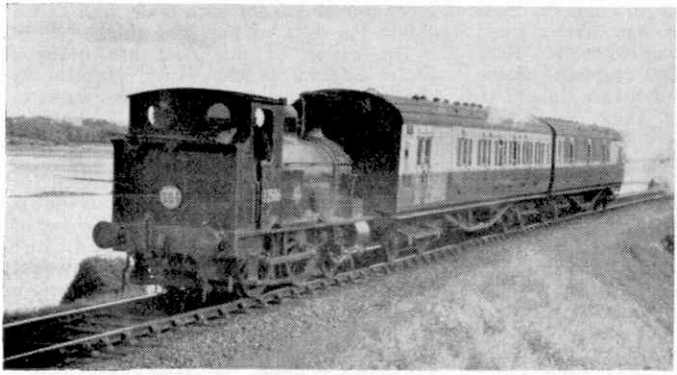
Recent allocations of new engines included No. 1651 to 87K, Swansea, Victoria, No. 1652 to 87D, Swansea East Dock, No. 1653, 86A, Newport and No. 1654, 87F, Llanelly. Nos. 1655–7 of the light 0–6–0T type have also been completed, as have Nos. 82032–4, continuing the class 3 2–6–2T construction at Swindon. The previous two of this type, Nos. 82030–1, went to S. Wales at 88C shed, Barry. No. 9497, to 83C, Exeter depot, is one of the heavy pannier tanks recently taken into stock from the Yorkshire Engine Company's works.

Class 4 4–6–0s numbered 75027 and 75029, were reallocated to 81F, Oxford. I mentioned seeing one of them at Paddington in last December's notes. Three 0–6–2Ts withdrawn, numbered 216, 356 and 371, hailed originally from the Taff Vale Railway.

An astonishing performance was recorded on the up *Bristolian* when in emergency No. 7904, *Fountains Hall*, a comparatively small Hall class mixed traffic 4–6–0 having driving wheels 6 ft. in diameter, albeit one of the latest modified type, took over the 7-coach flyer at Little Somerford, Wilts. It passed Swindon about 20 min. late, and ran the 77¼ miles thence with clear road to Paddington stop in less than one hour—59 min. 37 sec. to be precise—as the Kings have been known to do when gaining time. For over 70 miles, largely on level track, 80 m.p.h. was averaged, with maxima of 83–84. Arrival in London was only 13½ min. late!

* * * *

A new C.N.R. 43-mile branch line serving Kitimat, site of the world's largest aluminium development, was completed recently.



A Bodmin-Padstow train near Wadebridge. The engine is one of the veteran Beattie 2-4-0 well tanks, No. 30586. Photograph by S. C. Nash.

Choir boys of St. Michael's Church, Bristol, enjoying their 2d. starvers, an Easter Tuesday custom centuries old. The illustrations to this article are from photographs by the author.

Queer Easter Customs

By Reece Winstone, A.I.B.P., A.R.P.S., F.R.S.A.

THE most universal sign of the near approach of Easter, and one that could not pass unnoticed by town dwellers everywhere before the war, was the early morning calls by small boys selling hot cross buns. At Bristol, however, on Easter Tuesday, comes the more unusual appearance of "2d. starvers." These are buns given away to children in the parish of St. Michael's Church, and that is their nickname for them. The origin of the custom dates back to the days when poor people could get only black bread, and on this occasion they were sure of at least one meal of white bread a year. In the 20th century, buns take the place of bread, and after a short service the Vicar superintends their distribution to some 500 children. Some very old folk attend and take a delight in recalling the days of their own "2d. starvers."

Herefordshire folk celebrate Palm Sunday with "Pax Cakes." This distribution, made to the parishioners of Sellack, Hoarwithy and Kings Caple, dates back to the 16th century, and has an interesting history. The cakes are flat and round, and are stamped with the Lamb and Flag symbol. The funds are raised by a charge on Baysham Farm, left by a Lady Scudamore, which produces five shillings each for the three villages, and the remainder is made up by a local worthy. In olden times ale was also given away, but the source of the income for this has gone. It seems that the idea of the original donor was to give people who had quarrelled a chance of reconciliation before Easter. Hence the name "Pax Cakes," which means Peace Cakes. Such parishioners broke the cakes together in church. As the vicar presents them he says "Peace and good neighbourhood."

An older custom still, going back 800 years, is the "Tichborne Crawl." This actually takes place, not at Easter, but on Lady Day, 25th March, at Tichborne House, in that pretty part of Hampshire between Winchester and New Alresford. A ton and a half of soft white flour is given away and the squire himself superintends the ceremony. After a short Latin service by the family chaplain on the steps of the house, the tenants of the estate are called by name and given one gallon for each male, and half a gallon for each woman and child.

The origin of this dole has quite a Lady Godiva touch; Lady Mabella, a charitable person, totally in contrast to her hard husband, Sir Roger Tichborne, spent her life helping the lot of the poor, and on her death bed asked the squire to continue her good work. She pleaded for him to set aside some of his land so that it might provide a gift of bread on the day of the Annunciation. He agreed, but stipulated the amount of land would depend on her ability to encircle it before a lighted torch went out. The brave woman struggled to walk, and could only crawl, but by divine inspiration she managed to get round 23 acres. The land subsequently

became known as the "Crawls." With her last breath she cursed the house lest the family did not observe the custom, and so it has taken place till today. Even in the war a special grant, albeit rationed, enabled it to be kept up.

In the week following Easter comes Hock Tide at Hungerford, Berks. Originally a national holiday until the 18th century, it is thought to commemorate Ethelbert's slaughter of the Danes in 1002. Festivities have begun the night before with a supper for the menfolk, but *the* day is Tuesday, especially for the ladies.

On that morning at 8 a.m. the town crier Sydney Bushell sounds his historic horn in the market place. Two Tutti men then set forth with their poles, sticks, and garlands and coloured ribbon streamers. They call at every house in the town and have the right to demand a kiss from every female, or a fine of one penny, but they do not collect much cash! In the procession round the streets comes the Orange Scatterer, who gives the fruit away for the benefit of the excited children.

Another part of the ceremony is "shoeing the colt," driving nails into the shoes of the newcomers during the year. Then there is the election of the officers of the annual Jury Court, with such picturesque titles as Post Reeve, Bellman, Hay Ward, and Ale Taster. The whole ceremonial smacks of John of Gaunt—and he died in 1399.

The Tichborne Crawl, a distribution of flour that has taken place every Lady Day for 800 years.

An interesting event takes place at Grimston, near Melton Mowbray. Three hundred years ago a Grimston woman was lost in a severe thunderstorn, but hearing the church bell peal she found her way home. As a thank offering she bought the ground where she first heard the bell, and left it on condition that the bell was tolled each evening in the winter. This has been done. Curfew is at 8 p.m. and on Lady Day the villagers meet to bid by candle light for the tenure of the field. Twelve months tenancy goes to the man who is last to bid before the candle expires.

The North Country boasts several quaint survivals, of which the Pace Egg mumming play performed at Midgley, between Halifax and Hebden Bridge, is one of the most curious. It is performed in this moorland village on Good Friday and is another version of the ancient "Play of the Seasons." It had its origin in the Dark Ages, and is a dramatic representation of Spring triumphing over the death of Winter, originally enacted by farmhands who collected pace, or Pasche, eggs.

The play is now given by schoolboys and of course they collect money. It is not unlike the Christmas mumming plays. The actors are dressed in gay tunics trimmed with coloured paper, and cardboard helmets, and the quaintly named characters include The King of Egypt, Black Prince of Paradine, Bold Slasher, The Doctor, Toss Pot (the devil), the Fool, and of course St. George.

At Preston there is Egg Rolling on Easter Monday; its origin is rather obscure, but the early form of "dinging for eggs" is now a matter of civic importance. Every one seems to turn out to the parks for the children's delight, father or mother selecting a suitable slope, and rolling down an egg, chocolate or hard boiled, dyed in a gay colour and with the child's name painted on it. They are rolled about until they

break and then the children promptly eat them, but the winner is the one whose egg remains undamaged the longest.

In Leicestershire, Hallaton boasts "Hare Pie Scrambling" and "Bottle Kicking", also held on Easter Monday. The origin of the first named is attributed to a thank offering made by a woman after her escape from a bull, which was diverted from its charge by a hare. So each year the unknown benefactor's gift of land pays for "two hare pies", a quantity of ale and two dozen penny loaves. In the afternoon these two enormous pies, cooked in the village bakehouse, are ready at the Rectory to be cut up. The children rush round and secure what bits they may.

The remaining fragments are put into sacks and carried to the Fox Inn, where a procession is formed, headed by the band. Two men carry the sacks and three follow with the historic bottles. Two of the venerable casks contain beer, the third is a dummy kept in reserve. The procession arrives at Hare Pie Bank, a prehistoric encampment a quarter of a mile away, the sacks are opened and bits of pie hurled among the crowd in the best Hollywood "custard pie" tradition.

Then comes "Bottle Kicking" which resolves itself into a contest between the men of Hallaton and neighbouring Medbourne. The "goals" are two streams, a mile apart, and though the scrums may last half an hour, when the crowd is in motion nothing must stand in its way. Hedges, fences, gates, all simply disappear before their progress. The game is decided by the best of three and the bruised winners consume the ale round Hallaton Cross about 5 p.m.

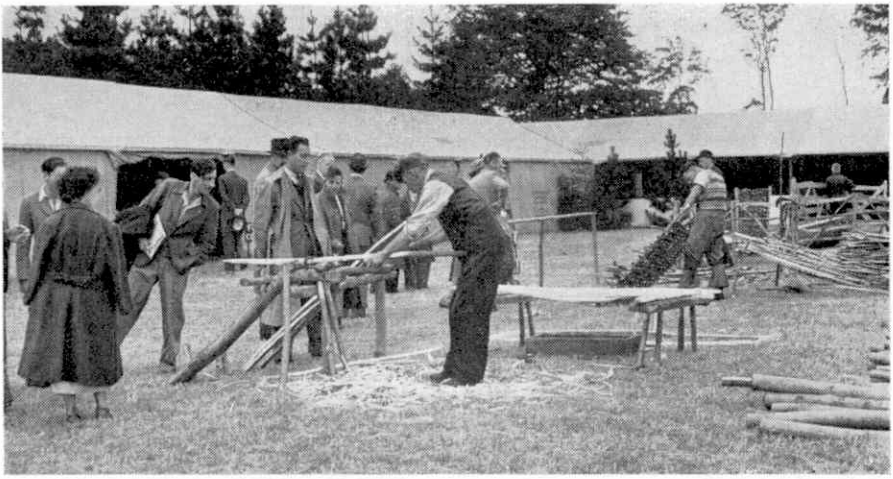
Loaves and other gifts are distributed to villagers of Ufton Court and Padworth, near Aldermaston, Berks., on the Friday following the third Sunday in Lent. The gifts are handed out through a window.

The ceremony of Maundy Pennies on the Thursday before Easter is familiar to most readers, but one little custom now discontinued might be mentioned. For centuries it was part of the ceremony for the King to wash the feet of the poor men to whom he made gifts, but James II was the last to do this in person. William III left this for his almoner and in 1754 it was dropped altogether.

Biddenden in Kent has a free distribution of biscuits on Easter Monday. Stamped with the effigy of the famous Biddenden twins, they are permanently remembered in the well known village sign. Eliza and Mary Chaulkhurst were Siamese twins, joined at the hips and shoulders, born here in 1100, it is believed. They had lived for 34 years when one died, the other following six hours later, despite appeals by her friends to be separated. In addition to the cakes, a dole of bread and cheese is handed out to Biddenden's poor in the morning.

Yet another is the Ufton Dole, on the Friday following the third Sunday in Lent. The villagers of Ufton Court and Padworth, near Aldermaston, Berks., remember a Lady Marvin, who in 1583 bequeathed this gift. From a window of the house 164 loaves are distributed and nine people formerly received flannel and calico, now represented by a blanket and pillow slips once in five years.

London has other ancient customs. One of these, usually observed late in March, is a gift of oranges and lemons from St. Clement Dane's church in the Strand. Although we all learn the famous rhyme as children it is not generally known that the jingle is based on a very old custom.



Trees Get Us To Work

THERE is a poem well known on the Continent in which the tree extols its virtues in meeting most of mankind's requirements, and pleads for immunity from harm.

The claims and sentiments in this poem are as true of trees in Britain as they are of Continental trees, and the Forestry Commission set out to develop the theme in its Agricultural Show exhibit last year. The display, which was arranged at the major shows in England and Wales, including such well known and important exhibitions as the Royal Show, the Bath and West and the Royal Welsh Show, demonstrated how coal is raised with the aid of wood in the form of pit props. Now coal gives us power for industry and transport; and so, on this basis, trees even get us to work.

The picture at the head of the page shows a scene in the forestry section of a large agricultural show. The Forestry Commission sometimes stages demonstrations of this kind as practical instruction and, usually under cover, provides exhibits for general information purposes.

It was in the latter connection that a Hornby-Dublo railway, lent to the Commission by Meccano Ltd., came into the picture. This consisted of two passenger coaches, hauled by a *Duchess of Montrose* locomotive, and it ran on a layout specially designed and built up to show it continuously leaving a tree-covered tunnel and then entering another tunnel in the factory area of a large city.

Day in, day out, in places as far apart, for example, as Exeter and Harrogate, Norwich and Machynlleth, this Hornby-Dublo locomotive tirelessly and efficiently performed its exacting task, watched throughout by a steady procession of visitors—it is estimated that about a quarter of a million people passed the Commission's exhibit during the complete show programme. Youngsters, of course, were well to the fore and, through the medium of the train, were introduced to an important aspect of forestry-cum-timber production that few could really have appreciated without its aid.

Believe it or not, the locomotive ran without change the whole of the time, and hauled its coaches a total of no fewer than 370 miles. This distance is about equal to a journey from London to Manchester—and back!

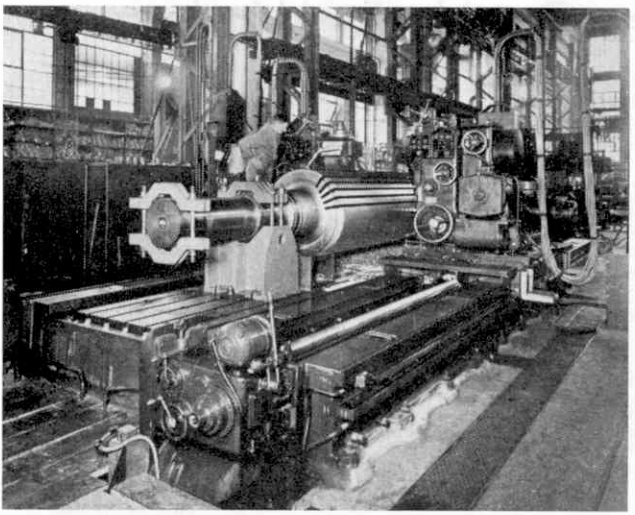
There may have been readers of the *Meccano Magazine* among the visitors to the agricultural shows at which this train was to be seen. If so they will have noted other sections of the Commission's display. Perhaps one of the most important was the reference to forest fires, which every year cause great devastation in British woodlands and, very often, are caused by thoughtless acts on the part of the public.

Rotors and Stators

What is Inside an Alternator

WE often hear of the erection of gigantic new power stations, and are given startling figures of the output of the generators, called alternators, installed in them. We also hear of parts of them being carried by rail or road, and realise from pictures of this that they are built on a really large scale. But we do not often learn much about the alternators themselves. Suppose we look inside a giant alternator, therefore, to see just how it is made up.

Before going into details it will be well to have an idea of what an alternator is and does. Some of you may know, and if you do you can easily skip the next paragraph or two if you wish.



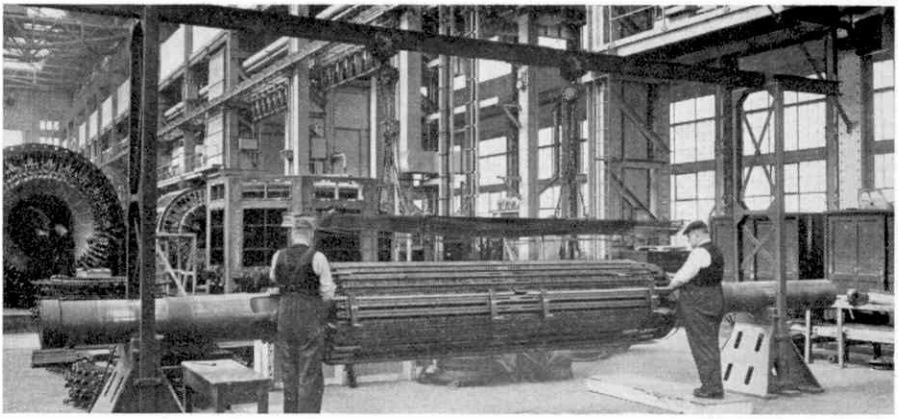
The rotor of a large alternator being slotted in the Witton Works of the General Electric Company Limited, to whom we are indebted for the illustrations to this article.

It is now more than 100 years ago since the famous scientist Michael Faraday found that an electric current was produced in a coil of wire rotated in a magnetic field. This discovery was the beginning of electrical engineering. In present day alternators the magnetic field is produced by passing currents through windings or coils, which are thereby transformed into the equivalent of the magnets with which most of us are familiar. They are in fact electro-magnets. Instead of turning a coil in the magnetic field of such an electro-magnet, which would not be an easy or economical thing to do, the coil carrying this electric current is itself rotated, and the induced output current flows through stationary coils in its field.

This gives us the two important parts of an alternator. The first is the rotor, the coils of which are supplied with current to produce an electro-magnetic field and are rotated at high speed, driven by a steam turbine, or perhaps by a water wheel, as in hydro-electric power stations. The stationary part, inside which the rotor turns, carries the coils in which the current required is generated, and is called the stator. The illustration on this page shows a rotor having slots cut along its length in which to place its windings; the lower illustration on the opposite page shows a stator, and it is quite easy to see where the rotor is placed in the completed alternator.

The rotor of a large alternator is a heavy casting that is carefully machined to the required shape and size. As it is intended to be rotated at a very high speed indeed, it must be perfectly balanced, so that it will run smoothly. And it must also be sound in every respect. This is tested by passing sound waves through it, by passing a heavy current from end to end of the forging, and by other means that would reveal any internal faults, or even tiny surface cracks and flaws too small to be seen with the naked eye.

In the small electrical appliances that are familiar to most of us, the windings consist of wire of different gauges; but something much more substantial is required for the rotor windings of a large alternator. This



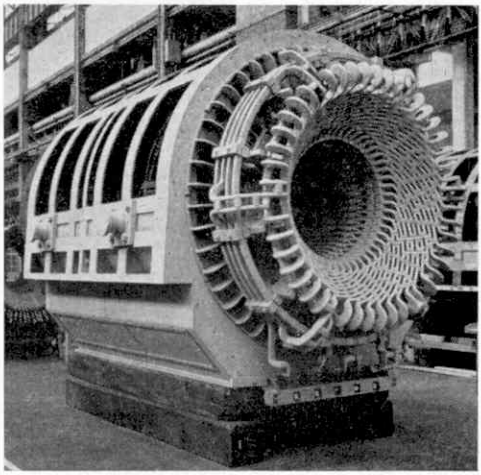
After slotting comes the winding of the rotor, seen here in progress.

takes the form of high conductivity copper strip. The rotor slots are lined generally with resin-bonded mica, which of course is an insulator. In these the coils are inserted turn by turn, with strips of insulating material between the turns in order to separate them electrically, and they are firmly compressed in their slots, where they are secured by T-shaped metal wedges.

Now let us look at the stator. Its frame is a rigid steel structure with internal ribs along its length. It is not a solid block, but is built up of a series of laminations cut accurately and slotted to provide for the windings. This laminated form of construction keeps losses by eddy currents to a minimum. One side of each lamination is coated with an insulating material, and during the building of the core additional insulation is provided at intervals between packets of laminations. Carefully designed ventilating ducts also are left in order to keep down the temperature, which rises when current flows through the windings. Water-cooled air is blown through the ducts by fans, and when the alternator is in use temperatures within it are measured automatically and recorded on dials at the control station.

The stator winding is carried out in the open slots of the laminations. Resin-bonded mica insulation again is used, and the final insulation of the slot portion of the coils consists of materials applied in a specially constructed wrapping machine and then consolidated into a seamless tube in a steam-heated press.

Possibly some readers will have been a little puzzled by the fact that current must flow through the rotor of the alternator in order to induce the output current in the alternator stator, and may have wondered where this current comes from. Well, it is generated in what is known as the exciter. This is a separate generator that is driven by the turbine that drives the main alternator. In a power station the steam turbine that provides the power, the alternator itself and the exciter are arranged in line on the main shaft, and the line also includes a generator serving various auxiliaries and another giving current for the rotor windings of the exciter.



The completely wound stator of an air-cooled alternator.

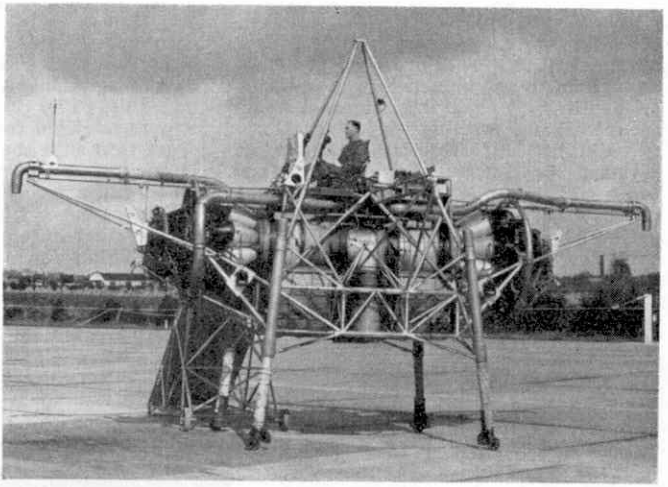
Air News

By John W. R. Taylor

The "Flying Bedstead"

Further details have been released of Rolls-Royce's fantastic "Flying Bedstead" experimental vertical take-off machine, which was announced briefly last September. It was built solely to test the practicability of using the downward thrust of one or more jet engines to lift an aeroplane vertically off the ground, and any aircraft designed to use the new technique will certainly not look like the "Bedstead". Indeed, they would probably be very like any of today's delta-wing aircraft, except that they would have extra jet engines pointing downward to thrust them off the ground at take-off.

The "Flying Bedstead" weighs 3½ tons and is powered by two Rolls-Royce Nene turbojets set end to end in the framework. Their exhaust jets are directed downwards through 90 deg. to provide the thrust. The pilot sits on a platform above the engines, and controls the direction of flight by blowing compressed air through small pipes projecting from each of the four sides of the framework. If, for example, air is blown through the forward pipe, it causes the nose to rise and the jet-thrust then makes the aircraft move backwards, in much the same way that a helicopter's direction of flight is controlled by tilting its rotor.



Capt. Ronald Shepherd, who made the first flight in the Rolls-Royce "Flying Bedstead," is seen here in the pilot's seat atop the two Nene turbojets. Photograph by courtesy of Rolls-Royce Ltd.

The "Bedstead" has a speed of about 16 m.p.h., has flown under perfect control at a height of 25 ft. and has made more than a dozen flights each of about 9 min. duration. Other, more advanced, types of vertical-lifting experimental aircraft are in hand.

U.S. 70,000-Ton Aircraft Carrier

The U.S.S. *Forrestal*, first of ten giant aircraft carriers to be built by the U.S. Navy, is fitting out in Hampton Roads, Virginia, and is due to enter service early next year. She will have a displacement of almost 70,000 tons in fighting trim, and will carry a complement of 3,500, including the personnel of her 125-plane air group.

Every modern device to improve operational efficiency will be built into the *Forrestal*. Her deck will be angled at 12 deg. and there will be four of the British-invented steam catapults, so arranged that they can all be used at the same time. The arrester gear will be of a new hydro-pneumatic type, able to bring to rest in 150 ft. a 30-ton aircraft like the Skywarrior atom-bomber after a 100 m.p.h. touch-down. The propulsive machinery will develop 200,000 h.p., giving a speed of about 30 knots.

More Air than Sea Passengers

In 1954, for the first time, more passengers crossed the oceans of the world by air than by sea. On the North Atlantic route alone, there were 15,000 flights by 12 airlines—an average of almost one transatlantic flight every half-hour, every day of the year. The 71 airlines belonging to the International Air Transport Association carried during the year a total of 44 million people, who travelled 28,000 million passenger-miles.

Austers among the Icebergs

Two Austers belonging to the R.A.A.F. played an outstanding part in the recent Australian National Antarctic Research Expedition, which set up a permanent base in MacRobertson Land, at a latitude of more than 66 degrees south. Both were veterans of Antarctic flying, having visited the area in 1949-50 with a party of British, Norwegian and Swedish explorers.

Their main tasks were survey photography and reconnaissance. Operating on both float and ski undercarriages, they guided the polar exploration ship *Kista Dan* safely through ice hazards which could have meant serious danger.

Altogether the Austers flew a total of 64 missions and suffered only one forced landing, when water froze in a fuel line, causing an engine failure. The only damage, in spite of a strong cross wind and rough ice in the landing area, was a broken ski, until one day a storm of hurricane force damaged the two aircraft so severely that their crews had to cannibalize parts from one wreck to make the remains of the other serviceable. This was done in only four days.

Aerobatics Competition

A new feature of this year's National Air Races, to be held at Coventry on 20th August, will be an aerobatics competition. Other attractions will include the King's Cup race, the finals of five trophy races organised by the Royal Aero Club, and a full air display.

Space Ship by 1957

An American scientist, Professor Fred Singer of the University of Maryland, said recently that a tiny satellite, able to circle the Earth continuously like an artificial Moon at a height of 190 miles, could be launched in 1957 if work on it began this year.

New sea rescue technique developed by the Royal Navy, as described on this page. The scoop net lowered from the helicopter is shown picking a man out of the sea.

He added that several satellites could be launched for less than the cost of one long-range bomber. They could be crammed with instruments that would send back a stream of information useful to meteorologists, astronomers, rocket designers and high-flying pilots.

Dr. Singer said that this type of rocket—called the Minimum Orbital Unmanned Satellite of Earth, or "Mouse" for short—would have no direct military use, but would pave the way for space-flight. It would be a cylinder with a diameter of 1 ft. and would be hurled into space by a giant three-stage booster rocket. Once in its orbit, it would encircle the Earth every 90 min. at a speed of 17,000 m.p.h., even after its fuel was exhausted.

New Helicopter Rescue Technique

One of the biggest difficulties in rescuing people from the sea by helicopter is that the person concerned is often too cold, weak or injured to slip the life-line around his shoulders. To overcome this drawback, the Royal Navy has developed a new rescue technique, in which the victim is literally fished out of the water in a net.

The equipment consists simply of a rope net attached to a D-shaped tubular frame, and hung on the end of a cable from the helicopter's winch. When not in use, it is secured alongside the cabin.

In action, the scoop is lowered into the water, so that the face of the D is submerged and the arc of the letter remains above water. The helicopter then advances at a speed of about 6 m.p.h. and height of 25 ft., until the victim has been trawled into the net.

The net is then hoisted up, so that the rescued person can either be assisted into the aircraft's cabin or, if badly injured, allowed to remain undisturbed in the net until the helicopter returns to its base. In tests, as many as 12 people have been picked up in 20 min. by a single helicopter.

Mobile Hangars

The United States Marine Corps is probably the most helicopter-minded military organisation in the world. For several years it has been preparing for the day when it could replace landing barges with helicopters for assaulting enemy-held beaches. Now, with the 26-seat, twin-engined Sikorsky HR2S-1 in full production, it will not be long before that plan becomes possible.

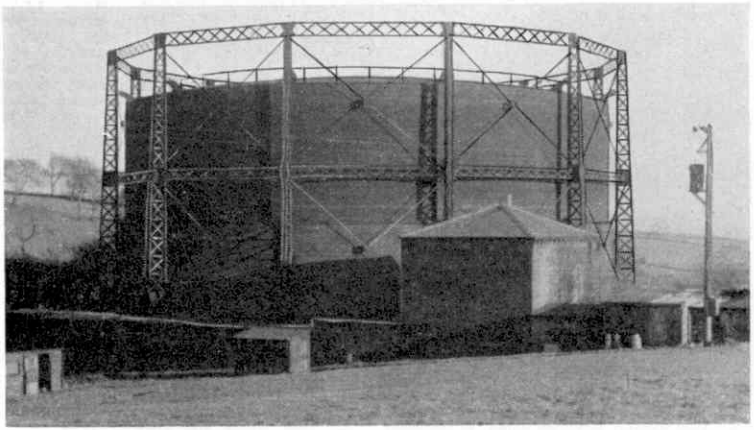
In addition to troops, the Marine Corps wants to fly vehicles, equipment and supplies into the battle area, and if present experiments are successful the helicopters will even carry their own hangars and shelters for their flying and ground crews.

To permit this, the Corps has developed a complete range of new dome-shaped shelters, built on geodesic principles. The one shown in the lower illustration on this page is made of magnesium and, although big enough to house three helicopters, can be lifted bodily by a single-engined Sikorsky HRS-1 (S-55). Its diameter is 50 ft. and, in service, it would be covered with plastic-reinforced paper-board. Other shelters vary in size from 36 ft. to 108 ft., the smaller ones having a structure of corrugated paper-board covered with heavy plastic.

Radar Warning Islands

Artificial islands moored as much as 125 miles from the Atlantic coast will soon improve the efficiency of America's radar defences. After construction ashore, they will be towed to sites along the continental shelf, where water is often less than 100 ft. deep. As well as providing radar warning platforms, they will double as weather stations and helicopter landing sites.

The U.S. Marine Corps' experimental dome-shaped hangar being transported by a Sikorsky HRS-1 helicopter. The hangar is 50 ft. in diameter.



Gasometers Don't Exist!

By J. L. Hepworth

IT may seem silly to some of us to be told there aren't such things as gasometers. But it is true. To everybody in the gas industry the things are known as gasholders. It's a more sensible word really, because a meter measures something, and gasholders are certainly not meters nowadays.

Because of their size most people are familiar with the outside appearance of gasholders, but let's start outside before we go into the black interior of one of them—freed from gas, of course—where the water hasn't a ripple on the surface and voices echo eerily inside the great steel casing.

At the head of the page is an illustration showing a 70-year old column-guided gasholder, with lattice girders instead of the tubular cast iron columns once used widely.

You've noticed the gasholders with a framing round them? One is seen in the picture at the head of this page. They are called column-guided because the tall columns of either cast-iron or steel act as guides when the gasholder rises as gas is pumped in. On the top of each telescopic section, or "lift", as gas engineers call it, you will see a number of rollers that engage with the columns to give a smooth action. The first gasholders to be made were all column guided.

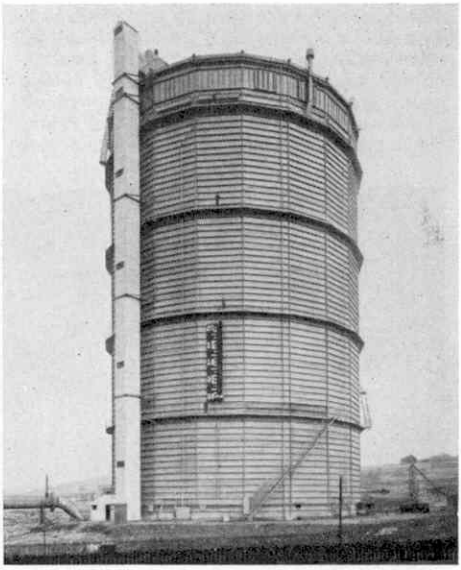
Then the spirally-guided type were invented and these didn't need columns. Most people will have seen spirally guided gasholders, but perhaps the lower picture on the opposite page will illustrate the principle underlying their design.

As the holder rises and falls the rollers on each side of the rails act as guides and allow spiral movement. But when the wind, that old enemy of the engineer, comes along, the holder can't be blown over because wind can't make it revolve; consequently the rollers grip tightly to the rails and the structure is as solid as a rock. It's rather like a nut and bolt. You can raise the nut on the thread by turning it, but now try to move it by just pulling. It locks on the thread.

These two, spiral- and column-guided, are the most widely used kinds of gasholder in the industry today. They differ from the third type completely because both use water to stop the gas leaking out, while the third sort doesn't. This last kind is consequently called the "waterless" gasholder. It is not very common, but it can easily be recognised because it looks very much like an enormous dustbin with platforms running round the sides at different levels, all connected by staircases.

Now that we've taken a quick look at the three types from the outside, let's go inside and find out what they're like there. We'll start with column-guided and spirally-guided ones; these are similar inside.

First, we make sure our gasholder has been cleared of gas, then we collect a little cage holding white mice. That seems odd,

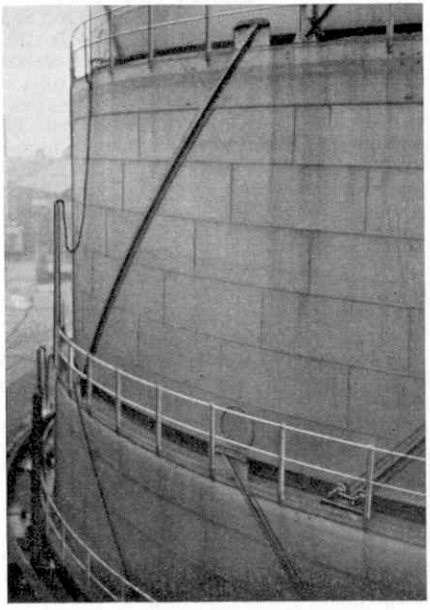


A waterless gasholder with a lift to speed travel up to the top. The black panel with white figures is an indicator showing how much gas is in the holder. Illustration by courtesy of Robert Dempster and Sons Ltd.

perhaps, but if our new friends show any signs of distress in the gasholder, we know it isn't safe and out we come until it is. Holding big electric torches, in we go through the manhole in the roof. One of our assistants has already fixed a rope ladder to a platform under the roof plates and at the foot of the ladder he's waiting on a raft he's built. It will have been an awkward job because the raft has to be got through the manhole in sections and built up inside.

Down the rope ladder then, and hold tight because rope ladders are tricky things. Steady now, here's our raft. Step on board and we're off for our sail round a gasholder. And don't fall into the water, because it's very deep and tastes awful.

Naturally, you want to know what all this water is for. At the bottom of each "lift" is what is called the cup. At the top is the "dip", or "grip". As each telescopic section raises the next one underneath, the cup engages with the dip, trapping water from the tank and forming a gas-tight seal.



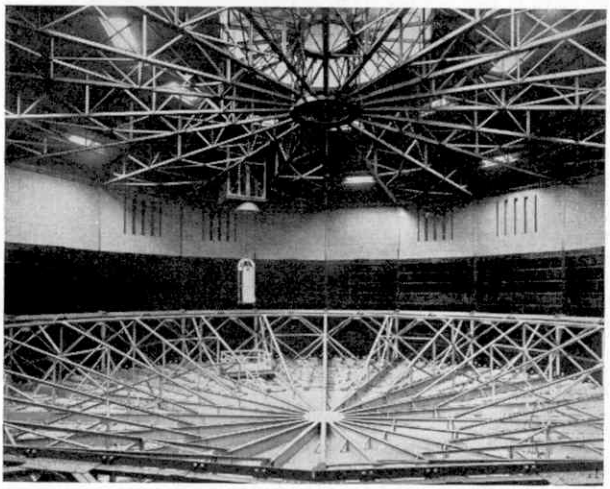
But let's paddle our raft away from the rope ladder and find out what else there is inside this gasholder. Keep the torches on and your heads down. Now you can see the reason. Under that domed roof we saw from outside is a bracing system rather like a spider's web. The purpose of this is to support the roof when the gasholder is completely collapsed in the tank, as it is now. When it is filled with gas, no bracing is required since the gas provides all the support necessary. If you shout you'll hear a voice that doesn't sound like yours echoing and booming round you in the blackness. And even the sound of our paddles is amplified. Those big pipes sticking above the water are the gas inlet and outlet.

Usually, on an internal inspection, we'd have to spend a long time examining the interior of the plates and the rivets for signs of decay. Then each lift would be raised in turn by pumping in air so that we could check them from our raft. But we have to visit a waterless gasholder yet, so it's time for us to go back up the rope ladder and out into daylight again.

We reach the top of the waterless gasholder either by electric lift or staircase.

This picture of a spirally-guided gasholder shows the rollers guiding one of the rails. Armoured hose takes steam to the pipe in the sealing water to prevent freezing in winter.

The height? Anything up to about 300 feet. This holder is completely different from the others in every way. On the roof, hanging on to the handrails on each side of the gangway, we can see the big, round ventilator in the centre. Windows round the top make the inside of this gasholder quite light. These odd-looking pipes sticking up from the sides are to allow gas to escape if what is called the piston gets too high.



The interior of a waterless gasholder, with a hoist giving quick access to the piston. Illustration by courtesy of Robert Dempster and Sons Ltd.

Let's take a closer look at this piston from the little platform under the roof sheeting, because it doesn't resemble an engine piston at all. It is rather like a flat roof for this gasholder that has fallen inside. On top, it is braced to stiffen it against any sagging. One of our illustrations shows the top of the piston clearly. Rollers guide it up and down the columns, or shell posts as they are called.

Under the piston is the gas, prevented from escaping by a system of weighted levers pressing a sealing strip against the side plates. Around the edge of the piston is a well that is constantly filled with hot tar to complete the seal. If we go back on to the roof, we can see some pipes coming up from below. These lead to tanks at the top of the structure, originating in the tar tanks and motor housings at ground level. The circulatory system for the tar is from the bottom tanks up to those at the top, which are designed to allow the tar to run down the interior of the holder to the well in the piston edge. From here, this sealing tar finds its way eventually past the pressure strip and down into a sump round the bottom plates. Pumps drain it from here and force it first through a heating arrangement at ground level, and then back to the top tanks to begin the process again.

To provide the necessary gas pressure, the piston is weighted to suit requirements. If it rises beyond a safe height, it uncovers the blow-off openings and excess of gas is harmlessly expelled into the atmosphere.

Internal inspection of the gasholder is carried out from the piston decking. Access is provided by an ingenious steel ladder in hinged sections, which neatly fold up as the piston rises, but in our illustration of the interior of a waterless gasholder a lift is seen instead of the ladder.

Meccano model-builders will be interested in the novel way in which these gasholders are built. They actually lift their own roofs from the ground, right up to the final position at the top of the shell posts. The first sections of the shell posts are erected along with the piston and several rows of side plates. Then the roof is built, temporarily connected to the piston. By blowing air under the piston, using a motor-driven fan, it is raised, taking the roof up with it. When near the top of the rows of side plates already in position, the piston is anchored to the shell posts and the process begins again, more side plates being added, followed by another "blow". To aid erection still further, a staging runs round the outside of the holder, slung from the roof, and this goes up as well. To obtain a smooth face inside the holder, the shell plates are flanged outwards avoiding internal bolts.

Briefly, that's the "inside" story of gasholders. To explain everything would fill this issue of the *M.M.* But now you'll know enough about them to entitle you to call them gasholders instead of gasometers. Sharp-eyed readers will be able to find some that are welded instead of riveted. And look out for the steam pipes that prevent sealing water from freezing in winter.

MECCANO MAGAZINE

Junior Section

THE *M.M.* not only keeps its readers young, as I remarked in February last, but also encourages them to keep their eyes open for things of interest. One result has been that throughout its history the Magazine has recorded many curiosities discovered by its readers, and two more of these are illustrated on this page.

The picture at the foot of the page at first glance does not look unusual, but close examination will show that the trolley bus appears to be going down the wrong road, for it has entered on a stretch that is marked with the "No Entry" sign.

The roundabout is at Christchurch, near Bournemouth, and the route of the trolley bus cannot be altered without an amendment to an Act of Parliament, which may take two years to obtain. So for the present these trolley buses do *not* keep left. There are warning signs and traffic lights to prevent accidents, of course, and one of the latter can just be seen in the distance, beyond the front of the bus in the picture.

This Edward VIII pillar box, photographed by M. Littledale, Bournemouth, is on the Pier at Southampton. Do you know one like it?

Now what is there unusual about the upper picture on this page? It is the monogram, which is that of Edward the VIII. The Post Office of course does not change all our pillar boxes, or post boxes, as the authorities call them, when a new monarch succeeds to the Throne; and Edward the VIII was King for such a short time that very few new pillar boxes were erected during his reign. This is one of them, to be found on Southampton Pier, and reader M. Littledale, who sent the picture, tells me there is one outside Southgate Underground station in London. Do you know where there is another? Look out for one, and keep an eye open too for a Victorian pillar box.

A roundabout on part of which trolley buses keep right instead of left! Why is explained on this page. It is at Christchurch, Hants., and this photograph was taken by M. A. Arnold, Bournemouth.

DINKY NEWS

A New Sports Car and a Warehouse Layout

BY **THE TOYMAN**

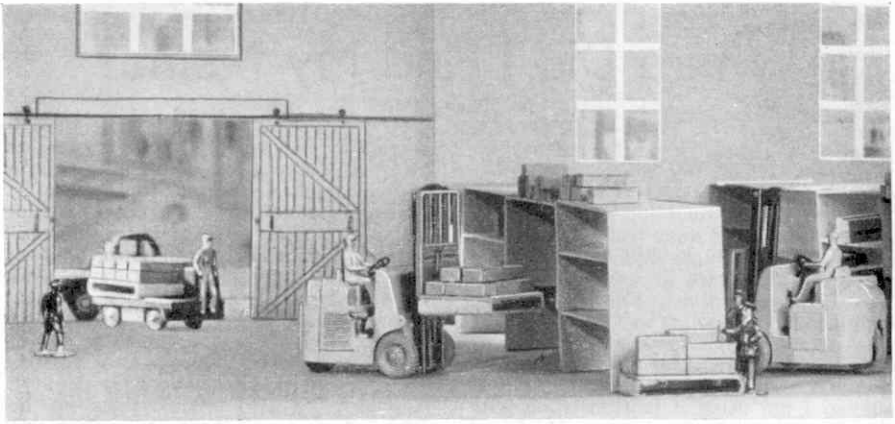
LAST month I told you that more new Dinky Toys Sports Cars were being prepared and would be added to the range as soon as possible. I was unable to give you more definite information then, but now I am glad to say it has been possible to introduce the first of these additional models—a miniature of the M.G. Midget Sports Car.

Since the war the appearance of most British cars has followed the trend of American and Continental manufacturers, and of course the new styling has several points to commend it. The M.G. firm has remained true to the traditional styling, however, and the new Midget is no less successful on this account. There are minor changes. For instance, the headlamps are blended into the front wings, but generally the appearance of the new car is similar to that of its predecessors. The new Dinky Toy is modelled faithfully on the real car, as you will see from my picture on the opposite page. Details such as the external spare wheel cover are reproduced accurately, and altogether I am sure you will agree that this new model is a worthy miniature of the actual car. A driver is fitted and is protected by a celluloid windscreen.

A busy warehouse scene showing goods being unloaded from a Dinky Toys Foden Flat Truck and taken into the store sheds by a B.E.V. Electric Truck.

On road layouts the Dinky Toys M.G. Midget Sports Car is an ideal companion for the Cunningham announced last month, both as a sports model and as a road racer. The lower illustration opposite shows two M.G.s and a Cunningham battling for the lead in a road race. A point that is sure to appeal to collectors is that the new model is available in two colour schemes, red and white, with a different identification number in each case.

Now for a new note in the Dinky Toys layout world. My correspondence recently has included letters from critical readers who point out that most of the schemes I have illustrated and described are designed mainly for road vehicles. These of course are very popular, but the Dinky Toys series covers a much wider field. So this month I am including two pictures of a layout I have worked out specially to



Dinky Toys Fork Lift Trucks at work inside a warehouse.

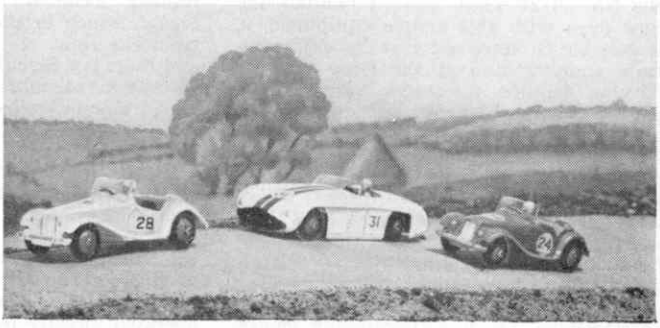
demonstrate the use of the mechanical handling machines in the range.

My scene represents a large warehouse, and the building is made very simply from sheets of cardboard. I cut out doors and windows in this material and then glued the pieces together to make three walls of the warehouse. Another piece of cardboard made the roof and the fourth side I left open, partly to provide an interior view of the scene, but also to allow lorries and other Dinky Toys to be moved about easily and for using them correctly. The cardboard is grey and gives a good representation of rough cast concrete walls, so that it is not necessary to colour the building. If required the walls and roof can be suitably painted, of course.

One of the machines most widely used to speed up the transfer and storage of goods is the fork lift truck, and my warehouse is well equipped in this respect, as two Dinky Toys Coventry Climax Fork Lift Trucks are available. The goods to be stored are represented by small wooden blocks, and to simplify the loading of these I have made several platforms, or pallets, to fit over the forks of the Fork Lift Trucks. You can see these pallets in the pictures, and you do not need me to tell you how to make them from small pieces of cardboard.

The storage of small articles is greatly simplified by placing them in racks similar to those shown in the interior view of my warehouse. These also are made from cardboard, with shelves placed at suitable heights to carry the goods to be stored and could be strengthened with strips of wood if thought desirable. Where the goods are to be held over a long period it is advisable to remove them from the pallets, so that these are available for further work. Very often, however, goods are stored for only a short time, and then the manual work required is reduced if the pallet is stored complete with its load.

Another Dinky Toy very suitable for use in a warehouse is the B.E.V. Electric Truck, which is shown in two of my pictures.

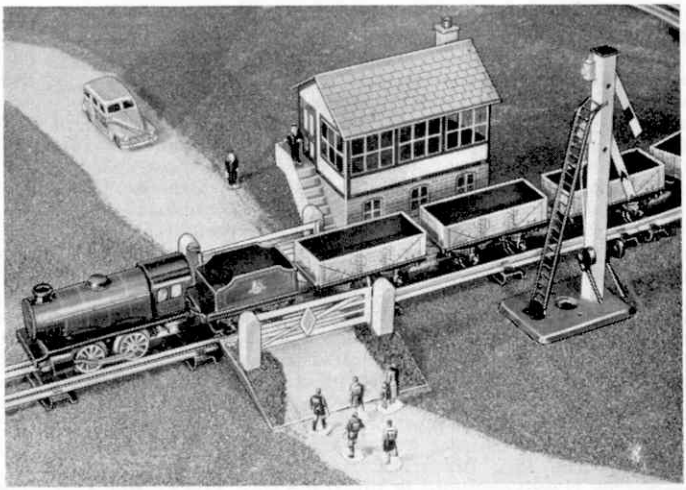


An exciting moment in a road race showing a Cunningham about to break through to take the lead from two M.G. cars.

Where Did I Find My Name?

By "Tommy Dodd"

SOME of you have written to ask me where I got my name from. The explanation of its choice is really simple. The use of nicknames for things used or found about one's daily work is common, among railwaymen as well as others, and to older railwaymen at least a "Tommy Dodd" is a ground signal, used in conjunction with points to govern shunting movements. Often these little signals or discs are known to trainmen as "dummies." But the older name is a more pleasant one, so I am using it in association with these pages. So there you are. My friend *"Spanner"* looks after the Meccano Model-Builders; and I hope that the name *"Tommy Dodd"* will become as familiar to you as his name is to Meccano model-builders.

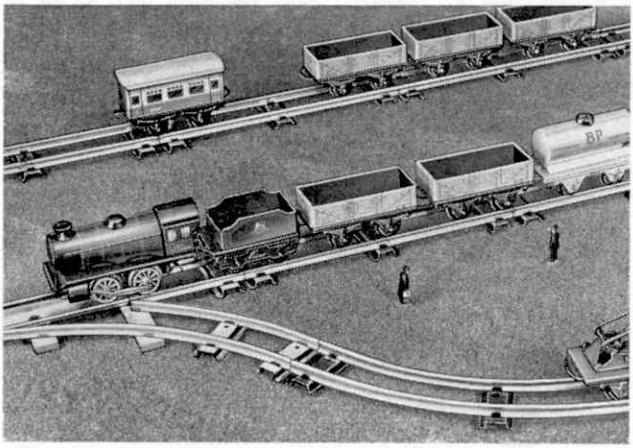


Over the Level Crossing comes the empty wagon train with a No. 20 locomotive at its head. You can easily build up a realistic scene like this with standard components.

Last month I started off with a preliminary talk about the smallest trains in the Hornby system, those now known as the No. 20/21 Train Sets. I pointed out how even with this simple equipment it is possible to have some really enjoyable train running, and at the same time to develop lineside interests. So my first picture this month shows part of a simple track where a road crossing arrangement has been built up. The crossing itself is provided by that well-known Hornby Accessory the No. 1 Level Crossing, which comes to you with a Straight Half Rail as well. The reason for the Half Rail is that if the Crossing itself, which incorporates its own running lines, is added to one side of a continuous track, it is necessary to add a corresponding length of rail to the opposite side in order to keep the layout symmetrical. This is where the Straight Half Rail comes in. Alternatively of course the Level Crossing and the Straight Half Rail together will balance a full Straight Rail on the opposite side of the track, if you wish to work things that way. You will soon see what I mean when you come to include the Crossing in your layout.

It is rather fun to build up a crossing scene as shown, something after the style in which *"The Toyman"* fixes up his Dinky Toys scenes that are such a well known feature of the *M.M.* On our railway scene we have a Double Arm Signal, which in the picture is giving the train the right of way over the Crossing, and there is a Signal Cabin close by, placed so that the signalman can keep his eye on road traffic as well as look after the trains. At the moment you can see traffic is not very thick, but the signalman—one of the miniature figures of Set 001 Station Staff—is out on his landing. As soon as the train has gone by and the Signals have been returned to the stop position he will be supposed to nip down the stairs and open the gates by hand, for this is one of those crossings where the gates are not operated directly from the signal cabin.

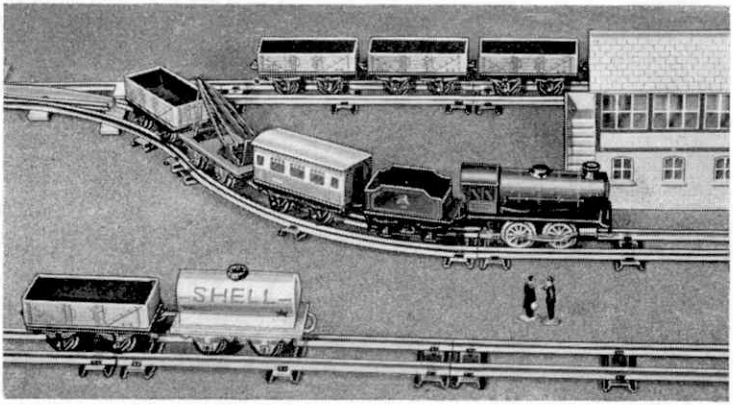
Although there are no actual ground signals for Points in the Hornby system, there are of course Points. If you have the 1 ft. radius rails of the No. 20/21 Sets on your layout any Points you add to your railway must also be of the 1 ft. radius kind.



The Right Hand Points and a reverse curve lead off the main line, along which a mixed goods train is making its way.

The addition of Points to a plain track straightaway gives you more fun with your trains, for Points need not only lead to sidings where rolling stock can stand. In addition they can provide for much more exciting working by offering alternative routes for through running and I expect that most of you have already explored possibilities in that direction. Thus, if you already have a train on the track that encircles the table legs, you can always divert traffic through the loop that perhaps wanders away around an armchair, or some other item that your railway may have to dodge—and it may have to do a lot of dodging if you extend it enough. This really is all to the good, as loops are more or less a necessity for the No. 20 locomotive, which does not reverse. Therefore we have to provide means for the engine not only to head into a track that runs off the main line, but also to head out again.

When using Points see that you press the operating lever or "tumbler" fully home, so that the moving switch rails take up their correct positions. At the facing end of the Points, where the switch rails taper off, they must fit closely up to the fixed rails. Otherwise when the train comes along the leading flanges may "split the points" as railwaymen say, and you will have a derailment on your hands! Whether this happens or not, it is quite a pleasing idea to run a breakdown train once in a while. Below you see a No. 20 Wagon and a No. 20 Crane Truck running with a No. 21 Coach to form a breakdown train. Don't forget that breakdown equipment, especially the crane, is often used for difficult loading jobs, and for bridge renewal and track work. Try operations of this kind.



A breakdown train assembled from No. 20 components runs into the loop past the Signal Cabin. In the background is a train of No. 20 Wagons.

Easy Model-Building

Wheelbarrow—Motor Car Steering Mechanism

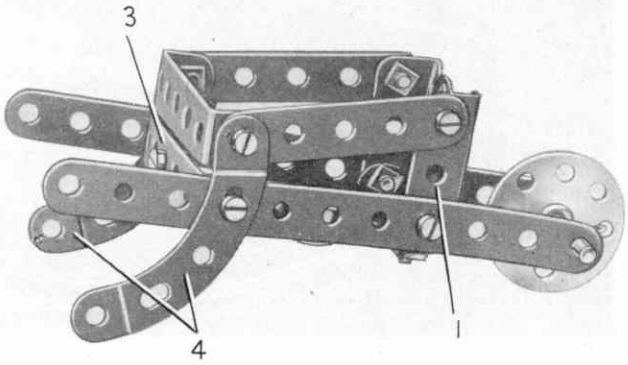
FIRST I would like to say how delighted I was that so many of you enjoyed building the two simple models that I described in this section last month, and have written to tell me so. I was very glad to receive you letters and hope that you will all find something of special interest in these pages every month.

Now I have another simple model for you, and also a very useful and easy-to-build mechanism that you can use for the steering of small model cars.

I am dealing first with the model, which is the wheelbarrow shown in the two pictures on this page. To build this you will need the following parts, all of which are contained in Outfit No. 0.

2 of No. 2; 2 of No. 5; 4 of No. 10; 3 of No. 12; 1 of No. 17; 1 of No. 24; 2 of No. 35; 14 of No. 37a; 14 of No. 37b; 2 of No. 38; 2 of No. 48a; 2 of No. 90a; 2 of No. 126; 2 of No. 126a.

Take the two 5½″ Strips and to each of them bolt a Trunnion 1 and an Angle Bracket. Next pass a bolt through the holes at the pointed ends of the Trunnions, and place on it two Fishplates 2. Fix these parts together with a nut.



No. 1. This attractive little wheelbarrow is made from the parts in Outfit No. 0.

Place a 2½″×½″ Double Angle Strip 3 between the two 5½″ Strips and bolt it in position, using the same bolts to fix the two 2½″ Stepped Curved Strips 4.

Bolt a 2½″×½″ Double Angle Strip between the top ends of the Curved Strips 4 and attach two 2½″ Strips by the same bolts.

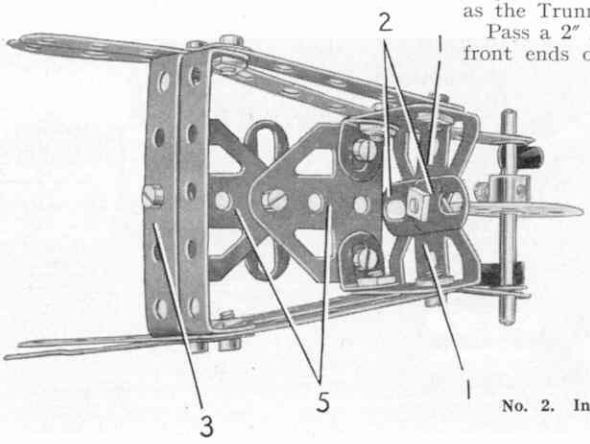
Fix the front ends of the 2½″ Strips to the Trunnions. Bolt together two Flat Trunnions 5 and two Fishplates.

Connect one of the Flat Trunnions to the Double Angle Strip 3 by an Angle Bracket.

Bolt the other Flat Trunnion to the Angle Brackets fixed on the same bolts as the Trunnions 1.

Pass a 2″ Rod through the holes at the front ends of the 5½″ Strips and place a Bush Wheel on the Rod.

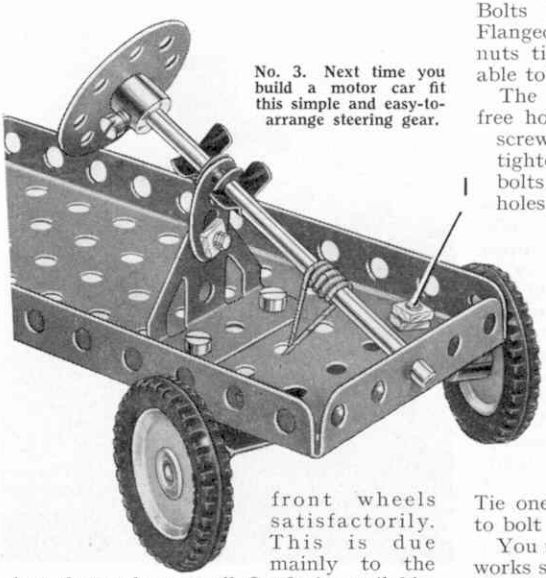
Fix the Rod in position by two Spring Clips—and your wheelbarrow is complete.



No. 2. In this picture the underside of the wheelbarrow is seen.

A Steering Method for your Next Model Car

I know that most of you like making model cars, but from what some of you have told me from time to time it seems that you find difficulty in steering the



No. 3. Next time you build a motor car fit this simple and easy-to-arrange steering gear.

front wheels satisfactorily. This is due mainly to the fact that only a small Outfit is available, but really workable steering gear can be made up from even a No. 1 Outfit, and I am showing one method in pictures No. 2 and 3.

The usual way of steering a small model is to pass the front axle through the lugs of a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip, which is then pivoted to the chassis, so that the complete axle can turn about the centre of its length. This arrangement certainly "works," but it is very unlike a real steering mechanism and I can quite understand that something more realistic is wanted. I think the arrangement shown in the pictures on this page, which is built up of parts included in No. 1 Outfit, meets the case.

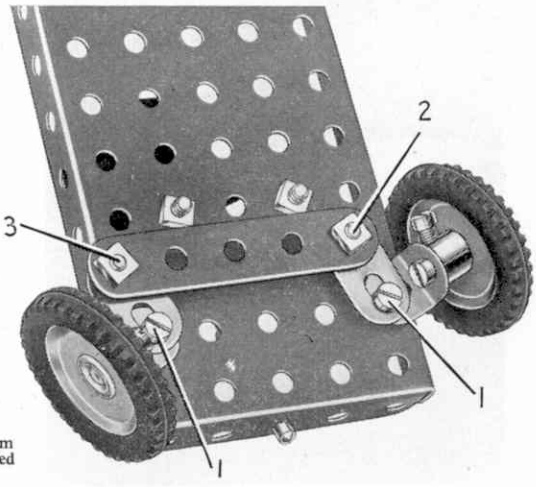
When you build your cars you probably use a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate for the chassis and for this reason I have fixed my steering mechanism to one of these Plates. Each of the front wheels is *fixed* by its set-screw on a $\frac{3}{8}''$ Bolt that is *free to turn* in an Angle Bracket. Through this Angle Bracket and a Fishplate a $\frac{3}{8}''$ Bolt 1 is passed, and these two parts are held tightly together by a nut. The Bolts 1 are then passed through the Flanged Plate and are fitted with two nuts tightened together so that they are able to swivel freely.

The bolts 2 and 3 are placed in the free holes of the Fishplates and a nut is screwed on each bolt, but is not tightened against the Fishplate. The bolts are then passed through the end holes of a $2\frac{1}{2}''$ Strip and another nut is screwed on each bolt and is tightened against the Strip.

The Rod you use for the steering column can be supported in the front flange of the Flanged Plate and also in a Fishplate bolted to a Trunnion as shown in the upper picture. Fix the Rod in place with Spring Clips. Now pass a length of Cord three or four times round the Rod, and take its ends through a hole in the Flanged Plate. Tie one end to the bolt 2, and the other to bolt 3. That completes the mechanism.

You may find that although the steering works satisfactorily, the wheels turn to the left when the steering wheel is turned to the right and *vice versa*. If this does happen then it is quite easy to put the matter right. Simply undo the ends of the Cord, cross them over and retie them to the bolts 2 and 3. The end previously tied to the bolt 2 will now be fastened to the bolt 3. The other end will similarly be crossed over.

Next month I shall have two or three more interesting items for you.



No. 4. The car steering mechanism seen from underneath, showing how the wheels are supported on their axles.

Of General Interest

Old Things and . . .

One of the pictures on this page shows something that most people would regard as old—it is a relic of road travel of about 150 years ago—and the other shows something that is really old, for it was constructed nearly 4,000 years ago.

The object in the first picture looks a bit like a village pump, and actually it is a pump, which is to be seen on the roadside near Hartley Witney, between Staines and Basingstoke. Coaches travelling along the roads, at the terrific speed of perhaps 12 to 15 miles an hour, threw up such a terrible cloud of dust that Turnpike Trusts, who maintained the roads and collected tolls, were compelled to erect wayside pumps, and to use the water from them for keeping the dust down.

The lower picture shows an unusual view of the Sphinx. It will probably be the first time you have seen the back of the head of that famous rock carving. Although it is several thousand years older than the turnpike pump, it is pretty certain that it will survive the latter.

Not a village pump, but one erected to provide water for keeping down dust on turnpike roads in coaching days. It is near Hartley Witney, Hampshire. Photograph by Reece Winstone.

It is being steadily worn away, by rain and other agents, but the metal of the pump will have ended as a rusty stain on the ground long before the Sphinx disappears.

. . . A New One

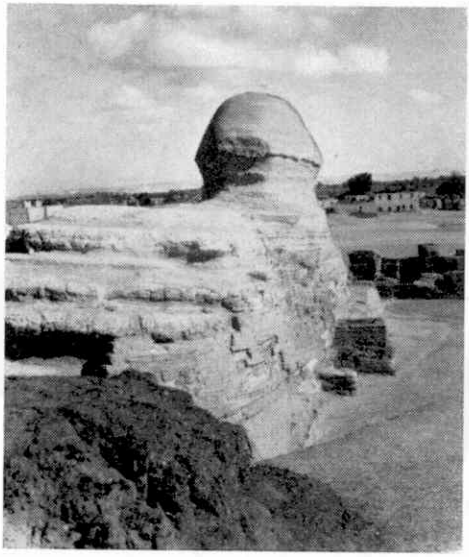
Have you seen the new sign in Piccadilly Circus, advertising a delicious and refreshing drink? If so, can you guess the length of fluorescent tubing in it? There is nearly a mile of it.

The sign is believed to be the largest in the country, covering about 2,000 square feet, with some letters 10 ft. in height.

Britain's Highest Transmission Line

Here is another question. Where is the highest high voltage transmission line in the British Isles?

The answer is that a new line that crosses the Corrieyairack Pass in Inverness-shire, and into which current was switched for the first time in November last, has this distinction. The tower at the summit is 2,600 ft. above sea level.



An unusual view of the Sphinx, showing the back of its head. Photograph by R. D. Stephen, Bournemouth.

Up and Down at Exeter

A Railway Curiosity

READERS may not believe it, but the two trains shown in the illustrations on this page, which were clearly travelling the same way when caught by the camera, are actually bound for completely opposite destinations. So far as the upper train is concerned—the *Devon Belle* of the Southern Region of British Railways—the journey is an up one; that is to say that the train is heading for London with its complement of returning holiday-makers. Curiously enough, the lower train, which is none other than the *Cornish Riviera Express*, is travelling down from Paddington to Plymouth and both trains were photographed within a short time of one another on the same day.

The Devon Belle, London-bound, enters Exeter (St. David's) behind Bulleid 4-6-2 No. 34021 Dartmoor, while below—

This curious situation comes about from the fact that the Great Western main line approaches St. David's Station at Exeter down the valley of the Exe, roughly in a south-westerly direction from Stoke Canon. Through St. David's it runs *southward* to Plymouth and the West, following the well-known coastal stretch through Dawlish and Teignmouth. The Southern route, once part of the London and South Western Railway, approaches Exeter from slightly north of east. It enters Queen Street Station, and S.R. trains for Plymouth then run to St. David's, and thence *northward* to Cowley Bridge Junction over Great Western metals before diverging westward.

Similarly, the up Western Region trains to London travel northward between St. David's and Cowley Bridge Junction, while S.R. trains bound for the same destination travel southward over the same stretch of line.

As if this were not enough, the two routes encounter one another again at Plymouth, the Western route appropriately heading west whereas the Southern route, following the Tavy and the Tamar, comes in an easterly direction to join the former G.W.R. metals at Devonport Junction. Thus the Plymouth section of the *Devon Belle* calls at Plymouth (North Road) just as the W.R. *Riviera* does, but it runs through the station in the opposite direction before curving away to Friary Station, its terminus.

—the down Cornish Riviera in charge of a King approaches in the same direction. Photographs by R. Russell.

A survey team on a tributary of the Yukon, where it feeds into Atlin Lake.

Operation Tulsequah

By Frank Illingworth

WORK is to begin shortly on what has been described as one of the most spectacular industrial undertakings anywhere. It is to cost nearly £100 million *in its initial stages*, and involves a major metallurgical industry in rugged country which only five years ago was yet to be fully explored. It will also result in the reversing of an Arctic river with a romantic history and more than 4,000,000 h.p. in its fast, silt-laden, ice-flecked waters—those of the mighty Yukon.

The Yukon rises in a remote corner of British Columbia and pours *northward* across 2,300 miles of Arctic desolation, to empty itself into the ice-jammed waters separating Alaska and Siberia. When the engineers have finished, its head-waters will flow *southward* into the Pacific through a system of lakes and tunnels. More than that! Several of its tributaries, themselves major rivers draining an area exceeding that stretching from Birmingham to Glasgow and from Manchester to Hull, will also be diverted through tunnels into the Pacific, by way of a deep-water inlet with a Red Indian name, Taku. Dams and power stations will be built at key points in areas where once the grizzly bear was paramount, and smelters and refineries will rise on the bleak shores of Taku Inlet at a place called Tulsequah by the local Indians.

In the early stages the emphasis will be on the production of steel, iron, manganese alloys, nickel, cobalt and aluminium. But as Project Tulsequah develops, ores will be imported from as far away as the Philippines, New Caledonia and other islands of South-East Asia and the Pacific, and from South-East Africa and Alaska.

This project has been mooted for some years. It lay like a Jules Verne shadow behind the publicity accompanying the construction of the Aluminium Company of Canada's great undertaking at Kitimat which, like Project Tulsequah, involved the reversing of a river. Long before the Duke of Edinburgh arrived at Kitimat, for the opening of the new aluminium industry there, engineers and financial interests were completing the last details of the much more spectacular Tulsequah undertaking.

This joint American-Canadian undertaking is financed by the powerful Frobisher, Ventures and Quebec Metallurgical group in Canada, and by Reynolds Metals, an American concern that is one of the world's largest producers of aluminium. It has the backing of the Canadian Government, and indeed Operation Tulsequah illustrates what can be accomplished by full co-operation between private enterprise and the State. For years now, while company and State have conferred on a high level, engineers and surveyors employed by the interested companies and government departments have been working through the mountains and valleys where Northern British Columbia merges into the wilderness of Alaska and Yukon Territory.

This is Klondike Gold Rush country. It knew Jack London, Robert Service, Sam McGee, Dangerous Dan McGrew, the Lady-named-Lou and other rip-roaring gold-crazed characters on the Trail of '98. Up to a year or so ago the main topic of conversation there was the gold in the silt of the Yukon River and its Eldorado

A member of one of the field team on the Tulsequah project ties on his snowshoes in preparation for another day's work in the bush.

tributaries. Even today you meet there old timers who think solely in terms of "gold in them gravels." But the emphasis now is on the latent hydro-electric power in these same waters.

The Yukon river system is one of the biggest in the world. It stretches to far north of the Arctic Circle. Some of its tributaries are longer than the Thames, the Clyde and the Avon put end to end. Yet it is so delicately balanced that it needs only one short tunnel through a mountain to reverse the flow of its headwaters. And work on this tunnel, between Atlin Lake and Sloko Lake, will begin next spring.

There can be little doubt that construction work would already be well in hand but for the pressing by American interests of an alternative site to Tulsequah as the new "Smelter City." As I understand it, the American view was that the power stations could be in Canadian territory. But the Americans wanted Smelter City to be across the Canadian border in *Alaska*, which belongs to the United States. This would have placed Canada in the position of junior partner. It would also have meant using Canadian water resources to manufacture metals that could then be offered by the United States in competition with Canadian industry. A ludicrous position!

Although the Yukon curves across Alaska it rises in Canada, in a shallow lake about the area of Surrey—Marsh Lake; and Canada insisted repeatedly that Smelter City should be on the *Canadian* side of her frontier with Alaska. But the U.S. had a strong card in that local topography meant that cables from the new power houses would have to cross a corner of Alaska, and thus it was the Americans managed to get a one-third interest in the latent power in the Yukon and her tributaries.

In the past men feared this river system. Time and again old-timers nodded towards this brown torrent and told me "Fall in the Yukon and you never come out—except when you're full of sediment. She never gives up a victim; undercurrents, and cold—they just grip you." One short stretch claimed the lives of 200 gold-seekers during the short summer of 1898—the stretch where the river roars with long corkscrew curls through the buttresses of Miles Canyon. *In two years' time there will be a power station near Miles Canyon.*

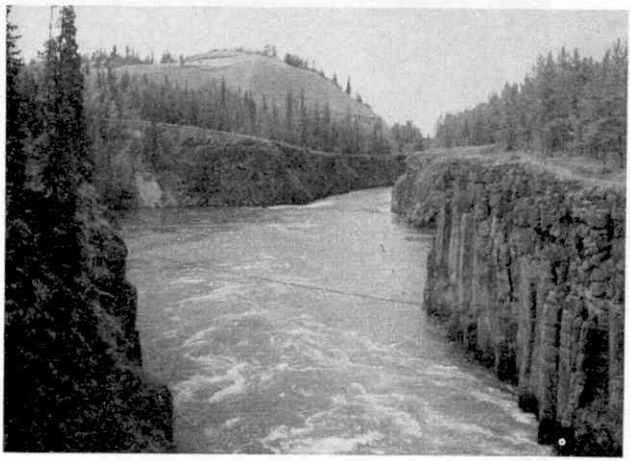
And as Operation Tulsequah develops so more than twenty miles of tunnels will be cut

The Yukon rises in a lake set amid peaks on the border between British Columbia and Yukon Territory.

through the mountains to draw increasing volumes of water from the Yukon and its tributaries to provide increasing amounts of power. The Alsek River for example, which flows into the Pacific, will be diverted into the Yukon—via the lake-system in the rugged country where Alaska, Yukon Territory and British Columbia meet.

The coastal climate here is comparatively mild, thanks to the warming influence of the Pacific equivalent of the Gulf Stream. But extremes of temperature in Northern Canada and Alaska are marked. Seventy "below" is nothing uncommon in winter, and neither is it uncommon for the shallower rivers to be frozen almost to their beds. With the return of spring they become brown torrents of immeasurable power, and, with the aid of dams, three major lakes are to be turned into reservoirs for the storage of the spring flood against the long, frozen winters.

The Canadians have indeed gone into Operation Tulsequah in detail. They have studied the glaciers that contribute to the waters of the Yukon system, plotting their rate of advance and retreat. They have considered the possibility of earthquakes in this land of rearing mountains; plotted climatic trends; and estimated heights, depths and slopes.



A power station is to be built near Miles Canyon, where 200 men perished in a single summer during the Klondike Gold Rush of 1898.

The Tulsequah project will take twelve years to complete. But Smelter City will be handling its first ore within three years; and in considering the tremendous engineering difficulties involved it might be well to remember that similar difficulties in the parallel power-smelter undertaking at Kitimat were solved four years almost to the day from the setting of the first dynamite sticks. The first sticks of TNT for Operation Tulsequah will be set this summer.

What is Sea Level?

The answer to this question depends on what you want the level for. The Ordnance Survey sea level is that of the lowest water of spring tides at Newlyn, in Cornwall. This level was carefully observed for a period of six years, from 1915 to 1921, and it is the average level during this long period that is the "sea level" of our maps.

Sea level at a particular place and time is taken as the basis of mapping because the levels of the seas vary from place to place. For instance, it has been found that "sea level" in estuaries is usually slightly higher than that along the adjacent open coasts. An even more startling fact is that the level of the Indian Ocean at the tip of the great Indian Peninsula is believed to be about 520 feet lower than that of Karachi, over 1,000 miles to the North.

If the Poles become warmer, and Polar ice begins to melt, sea level will rise. There are millions of tons of ice in the Antarctic alone. If all of this melted and flowed into the oceans it would raise their level by about 50 ft., and immense areas of land would be submerged. There is plenty of evidence that the Poles are becoming warmer, and an American exploring expedition is to visit the Antarctic to make measurements that it is hoped will tell us definitely whether the vast ice cap there is melting, and how fast it is going!

A Meccano Sewing Machine

Features of a Prize-winning Model

IN the Magazine for November, 1953, we included an illustration of a model sewing machine built by John Barnes, London W.13, which won a prize in the Meccano International Model-Building Competition. Unfortunately we were unable at that time to give much detail of the model, and as it is one that will no doubt interest other model-builders we are taking this opportunity to describe more fully some of its main constructional features.

Two illustrations of the model appear in Figs. 1 and 2 on this page. When the operating handle 1 is turned the movement is transmitted through gearing housed between two 4" Circular Plates, to the main shaft. This gearing comprises a 50-tooth Gear on the handle rod meshing with a ¾" Pinion on a 1½" Rod that forms the driven shaft. On the end of this Rod is a hinged finger 2, which can be set either to engage or disengage a balance wheel 3. A Hub Disc is used for the balance wheel and is attached by a Socket Coupling and a 2" Pulley, which is also used to transmit a drive to the cotton winding bobbin, to one half of a Dog Clutch. This complete unit is free to move on the Rod. The other half of the Dog Clutch is placed on the main shaft, which is an 11½" Rod, and by operating a lever placed at the back of the model, the two parts of the Dog Clutch can be engaged or disengaged as desired, through the medium of a Bolt carried by the lever that engages in the groove of the Socket Coupling.

The needle motion is obtained as follows. Fixed in a Bush Wheel on the end of the main shaft is a Threaded Pin, which carries three Washers, a Crank and a Collar. A bolt is passed through the boss of the Crank and then is screwed into a Coupling on the needle shaft. The take-up lever is connected to the shaft by a Double Bracket and a Collar.

The foot for holding the material to be sewn is made up from two Pawls without bosses, which are fitted to the foot shaft by means of a Coupling. The shaft is raised and lowered as follows. A Coupling is fitted on the shaft through one of its transverse holes. A bolt is then passed through the threaded transverse hole at right-angles to the shaft, and a nut is fitted on the bolt to hold it in place. A 1" Triangular Plate is fitted on one end of a 2½" Strip, which forms a lever. By raising the lever the Triangular Plate presses on the nut and thus raises the shaft. When the lever is lowered Compression Springs above the Coupling push the shaft down again.

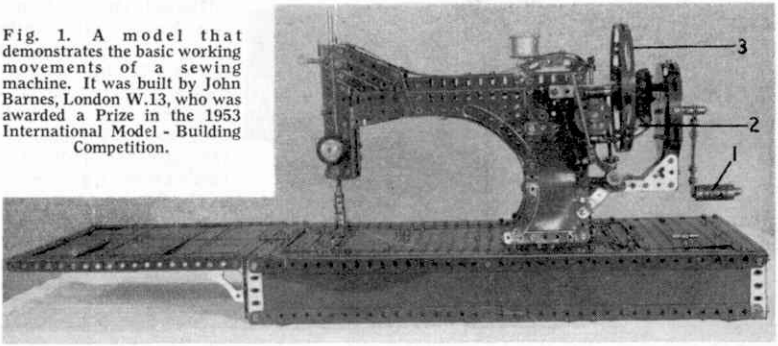


Fig. 1. A model that demonstrates the basic working movements of a sewing machine. It was built by John Barnes, London W.13, who was awarded a Prize in the 1953 International Model - Building Competition.

The Shuttle Operating Mechanism

A ⅞" Bevel Gear fitted on the main shaft meshes with another similar part fixed on a vertical shaft that extends down inside the column into the base. On its lower end this shaft carries a Triple Throw Eccentric 4, the arm of which is lengthened by a 4½" Strip and a 2" Slotted Strip 5. A ⅜" Bolt is fastened by two nuts in the centre of the slot in the Slotted Strip, and on its shank a Bell Crank with boss is

(*Continued on page 222*)

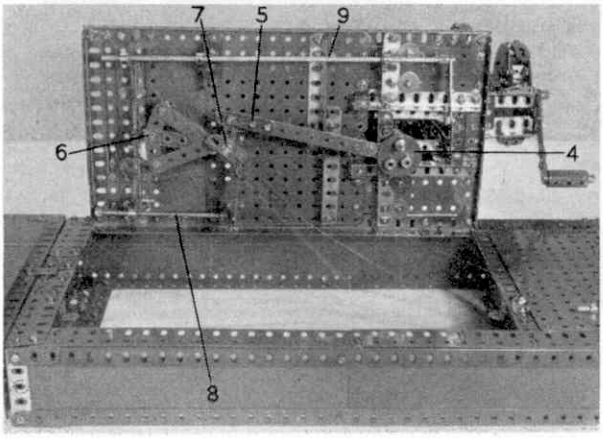


Fig. 2. The underside of the machine base, showing the shuttle operating mechanism.

Among the Model-Builders

By "Spanner"

A Built-up Universal Coupling

The useful feature of universal couplings is that the angle of the drive can be varied while the coupling is being driven, and a typical example of this arrangement

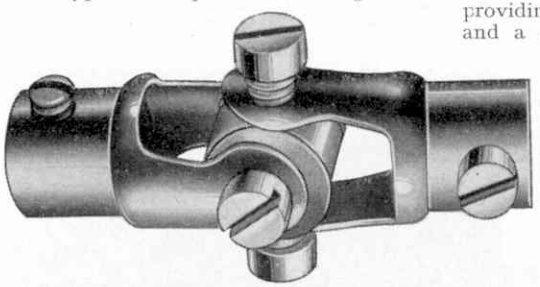


Fig. 1. This efficient universal coupling made up from two Fork Pieces forms a useful standby when the special Meccano Universal Coupling is not available.

is the drive to the sprung rear axle of a car or lorry. It will therefore be appreciated that the Meccano Universal Coupling is an extremely useful part. But in some models two or more Universal Couplings may be required and the model-builder may not have enough for his purpose. In these cases the built-up coupling shown in Fig. 1 will be found a useful substitute. It is based on a suggestion sent to me by M. R. Burnett, Alderney, C. Is. and P. Bennett, Oldbury, Birmingham, some time ago.

The built-up coupling is made from two small Fork Pieces and a Collar. A ½" Bolt is passed through one of the Fork Pieces into the bore of the Collar, which has a Washer on each side for spacing purposes. Two 7/32" Bolts are then passed through the lugs of the second Fork Piece into the tapped holes of the Collar, and are tightened until they grip the ½" Bolt tightly.

A Novel Speed Reduction Drive

Another interesting example of the adaptability of Meccano parts is shown in Fig. 2. This time it is in connection with an ingenious arrangement for providing a ratio of 2:1 between a driving and a driven shaft, without the use of ordinary gearing or pulleys. Although the mechanism is rather too large and cumbersome for general model-building purposes, it may be found useful in some models where plenty of space is available and the builder's stock of gears is limited. In any case its construction provides an interesting experiment in the demonstration of mechanical movements.

The driving and driven shafts are mounted as shown, and it is important to make sure that their centres are exactly ½" apart. It might be necessary to place packing pieces underneath the bearings to obtain the precise distance between the shafts. The driven shaft carries a Face Plate 1 to which four 1½" Corner Brackets are attached. These Corner Brackets are spaced from the Face Plate by two

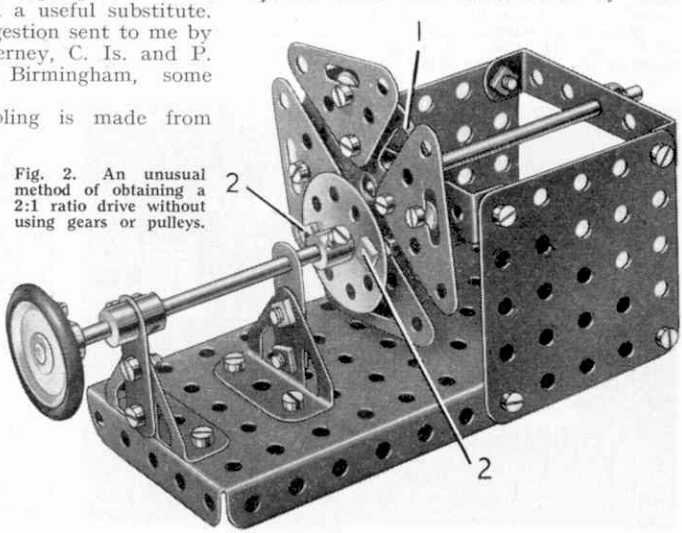
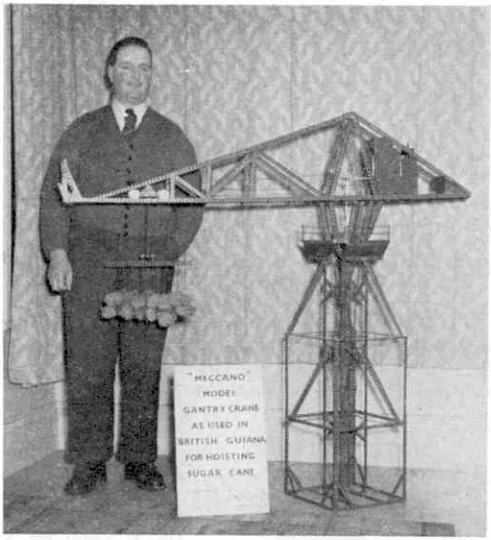


Fig. 2. An unusual method of obtaining a 2:1 ratio drive without using gears or pulleys.



Mr. F. C. Nicholson, Mablethorpe, and the model crane mentioned on this page.

Washers on each of the Bolts that hold them in place.

The driving shaft is fitted with a Bush Wheel that carries two Bolts 2, each of which is attached by two nuts. The heads of the Bolts engage between the edges of the Corner Brackets, the positions of which should be adjusted so that the Bolt heads slide freely between them. Once the adjustments have been made a remarkably smooth-running and silent drive is obtained.

A Simple Intermittent Motion Mechanism

I have included details of several intermittent motion mechanisms in these pages, but most of them have been fairly complicated arrangements using gears. This month I am describing a very simple but reliable mechanism of this kind. No gears are used in its construction, but as it depends on friction for its operation it is mainly suitable for small models in which the mechanism is not required to deal with heavy loads. It is shown in Fig. 3.

The driving shaft 1 is fitted with a Bush Wheel 2 to which a Semi-Circular Plate is bolted as shown. The driven shaft 3 carries a 1" Pulley 4 fitted with a Motor Tyre, and the Bush Wheel is adjusted on Rod 1 so that the Semi-Circular Plate engages the Tyre.

When the driving shaft is turned the Semi-Circular Plate is brought into contact with the Tyre for half a revolution of the Rod 1. The driven shaft 3 is rotated while the Semi-Circular Plate and the Tyre are in contact, but stops as soon as the turning movement of Rod 1 carries the Semi-Circular Plate out of contact with the Tyre.

"M.M." Picture Provides Subject for a Model

On page 207 of the April 1954 *M.M.* an illustration of a tower crane hoisting sugar cane on a plantation in British Guiana appeared. This was seen by a regular reader, Mr. F. C. Nicholson, Mablethorpe, who is also a very keen Meccano model-builder, and he used it as the basis for the very attractive model shown with its builder at the top of this page. The model has been on show in a Meccano dealer's shop in Mablethorpe, where it proved quite an attraction.

Notice the tower of this crane. Its square formation and diagonal bracing to a central column make it a pleasing variation from the more usual type of cranes.

The model is activated by two No. 1 Clockwork Motors. One operates the hoist, while the other, working through a gear-box, operates either the traverse of the hook trolley or the swivelling of the boom.

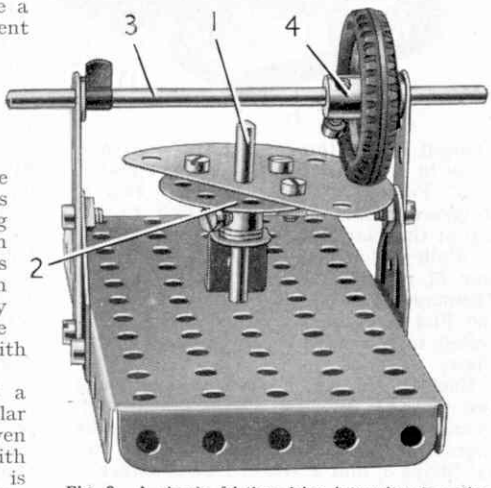


Fig. 3. A simple friction drive intermittent motion mechanism that requires only a few parts in its construction.

A New Meccano Excavator

For Outfit No. 5

AN interesting addition to the many mechanical excavators of various types that have been described in these pages from time to time is the Digger shown complete in Fig. 1 on this page. This model is designed for Outfit No. 5, and it should therefore be within the scope of the majority of Meccano users.

Construction of the model is best begun with the base or undercarriage, as it is generally known. This is made by bolting 5½" Strips 1 across the ends of a 5½" × 2½" Flanged Plate, the bolts being used also to fix in position U-section Curved Plates. A 3" Pulley 2 is supported by two ½" Reversed Angle Brackets bolted to the top of the Flanged Plate. The wheels are 1" Pulleys fixed in pairs on 3½" Rods. One of these Rods is supported in Flat Trunnions and the other in two 1½" Strips, the Flat Trunnions and the Strips being bolted to the side flanges of the Flanged Plate.

Each of the dummy tracks consists of two 5½" × 1½" Flexible Plates bolted end-to-end and curved as shown. The lower edges of the Plates are connected by two 5½" Strips 3, and a Wheel Disc is attached to each end by an Angle Bracket. The tracks are bolted to the ends of the Strips 1.

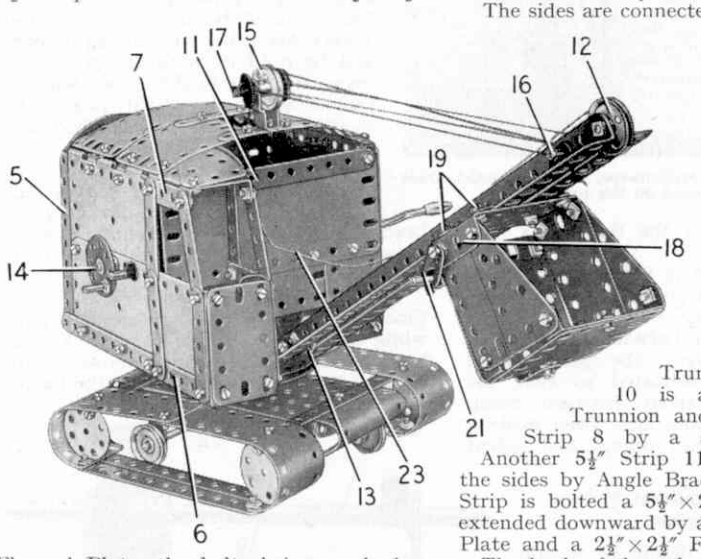


Fig. 1. Outfit No. 5 contains all the parts required to build this interesting Mechanical Digger.

The side of the cab seen in Fig. 3 consists of two 4½" × 2½" Flexible Plates and a Flanged Sector Plate 4. These parts are edged by a 5½" Strip and two 2½" Strips. The side shown in Fig. 1 is formed by the separated halves of a Hinged Flat Plate and a Flanged Sector Plate 5. This side also is edged by a 5½" and two 2½" Strips, and is extended forward by two 2½" Strips 6 and 7 and a 2½" × 2½" Flexible Plate. The front ends of the Strips 6 and 7 are connected by two further 2½" Strips.

The sides are connected by a 5½" Strip 8 attached to 1" × 1" Angle Brackets, and by a made-up strip 9 formed by two 2½" × ½" Double Angle Strips bolted to the flange of a Trunnion. A 3" Pulley 10 is attached to this Trunnion and is connected to Strip 8 by a second Trunnion.

Another 5½" Strip 11 is connected to the sides by Angle Brackets, and to this Strip is bolted a 5½" × 2½" Flexible Plate extended downward by a 2½" × 1½" Flexible Plate and a 2½" × 2½" Flexible Plate.

The back of the cab is filled in by two 5½" × 2½" Flexible Plates bolted to the rear flanges of the Flanged Sector Plates, and edged at the top and the bottom by 5½" Strips. The back is completed by bolting a 2½" Stepped Curved Strip to the top corner of each Flanged Sector Plate. The Curved Strips are then connected across by a 3½" Strip.

The front of the operating cabin is made by bolting a 2½" × 1½" Flexible Plate to Angle Brackets fixed to the side edged by the Strip 6. The other side consists of two 2½" × 2" Triangular Flexible Plates joined together to make a 2½" × 2" rectangular plate. This is attached to the front by Double Brackets and is connected by an Angle Bracket to the 5½" × 2½"

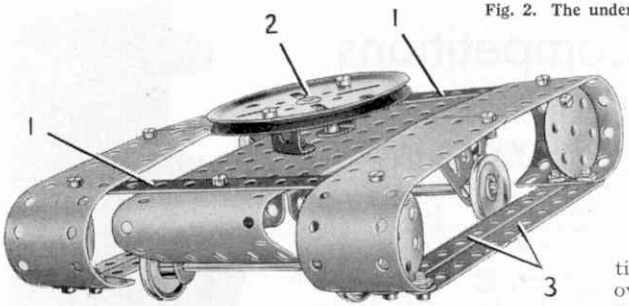


Fig. 2. The undercarriage of the Mechanical Digger.

Flexible Plate bolted to the Strip 11. The window frame on this side consists of two $2\frac{1}{2}$" Strips, one of which is connected to the Strip 7 by a $1\frac{1}{2}$" × $\frac{1}{2}$" Double Angle Strip.

A 2" Rod is fixed in the Pulley 2 and is passed through the Pulley 10. A Road Wheel is fixed on the Rod to hold the cab in place, but is spaced from the Pulley by four Washers.

The boom or jib along which the Digger bucket slides is formed by two $12\frac{1}{2}$" Angle Girders, each of which is extended at its lower end by a Fishplate. At the top a $\frac{1}{2}$" Bolt is passed through one Girder and is fixed in it by a nut. A 1" loose Pulley 12 is placed on the Bolt, and then it is fixed by two nuts in the second Girder. A similar arrangement is used at the lower end of the boom, but a $\frac{1}{2}$" loose Pulley 13 is placed on this Bolt. A $1\frac{1}{2}$" Rod is passed through the Fishplates at the lower end of the boom and through the lugs of a Double Bracket bolted to the Strip 8.

The roof consists of a $5\frac{1}{2}$" × $2\frac{1}{2}$" Flexible Plate and two $1\frac{11}{16}$" radius Curved Plates joined by two $2\frac{1}{2}$" Strips. It is attached to the sides of the cab by Obtuse Angle Brackets, and is extended over the control cabin by two $2\frac{1}{2}$" × $1\frac{1}{2}$" Triangular Flexible Plates. These are bolted to the $1\frac{1}{2}$" × $\frac{1}{2}$" Double Angle Strip.

The boom is raised or lowered by turning a Bush Wheel 14 on a 5" Rod. This Rod is joined to a $1\frac{1}{2}$" Rod by a Rod and Strip Connector, and is held in the sides of the cab by a Spring Clip. A length of Cord tied to the 5" Rod is passed over a 1" Pulley 15, round a $1\frac{1}{2}$" Rod 16 and round a $1\frac{1}{2}$" Rod 17. The Cord is taken again round Rod 16 and is tied finally to Rod 17. The Rod 17 is held by Spring Clips in a Stepped Bent Strip bolted to the roof.

The top of the bucket is a $2\frac{1}{2}$" × $1\frac{1}{2}$" Flanged Plate 18 and the sides are $2\frac{1}{2}$" × $1\frac{1}{2}$" Flexible Plates and $2\frac{1}{2}$" × $1\frac{1}{2}$" Triangular Flexible Plates. The sides are connected by two $2\frac{1}{2}$" × $\frac{1}{2}$" Double Angle Strips to which a $2\frac{1}{2}$" × $2\frac{1}{2}$" Flexible Plate is bolted to form the base. Four Fishplates, two on each side, are bolted to the Flanged Plate 18 by Bolts 19, but are spaced from this Plate by a Washer on each bolt. The flanges of the boom Angle Girders slide freely between the Fishplates and the Flanged Plate 18.

Movement of the bucket is controlled by a Crank Handle 20, which is mounted in one side of the cab and is joined to a $3\frac{1}{2}$" Rod by a Rod Connector. A length of Cord is tied to the rear edge of the Flanged Plate 18, is passed under the Pulley 13 and under (Continued on page 222)

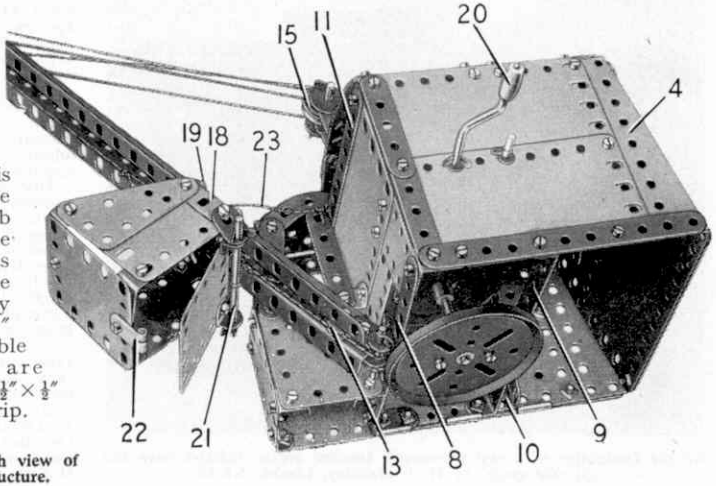


Fig. 3. An underneath view of the Digger superstructure.

Meccano Competitions

Prizes for Model-Builders

In case you did not see the March issue of the *M.M.*, in which we gave full details of a new model-building Competition that is now running, we are repeating the main details so that you can send in an entry while there is still time. If you own a Meccano Outfit, and can build a model based on your own ideas, this Contest gives you an opportunity to win a fine Cash Prize.

All you have to do is to think of a new model, no matter what kind, and then set to work and build it as neatly and realistically as you can with the parts available to you.

When you have built your model, make a sketch of it, or better still, have it photographed. Then write your age, name and full address on the back of the photograph or drawing and send this, together with a short description of the model, to *March Meccano Competition, Meccano Ltd., Binns Road, Liverpool 13.*

You must post your entry in time to reach Liverpool not later than 31st May next.

Entries will be divided into two Sections. A, for Competitors under 12 years of age, and B, for competitors over 12 years of age on 31st May 1955.

The following prizes will be awarded in each Section: First, Cheque for £4/4/–. Second, Cheque for £2/2/–. Third, Cheque for £1/1/–. Ten Prizes each of a P.O. for 10/6 and Ten Prizes each of a P.O. for 5/–.

Don't forget the closing date is 31st May.

PRIZE-WINNERS IN THE SEPTEMBER MODEL-BUILDING COMPETITION

The lists of prize-winners in the September Model-Building Competition (Sections A and B) are as follows:

Section A (for competitors under 14 years of age).

First Prize, Cheque for £4/4/–: D. Bretten, King's Lynn. Second Prize, Cheque for £2/2/–: D. Moffatt, Carrickmacross. Third Prize, Cheque for £1/1/–: R. Matthews, Sutton Coldfield.

Five Prizes each of 10/6: D. Gaff, Guildford; G. Wainwright, London, S.W.16; D. O. J. Tweed, Colchester; R. Swift, Huddersfield; A. I. Oxbrow, West Wickham.

Five Prizes each of 5/–: M. Adamson, York; D. Swift, Stalybridge; R. Woodward, Newhaven; G. King, Sydney, Australia; G. R. Escott, Ngaio, New Zealand.

Section B (for competitors over 14 years of age).

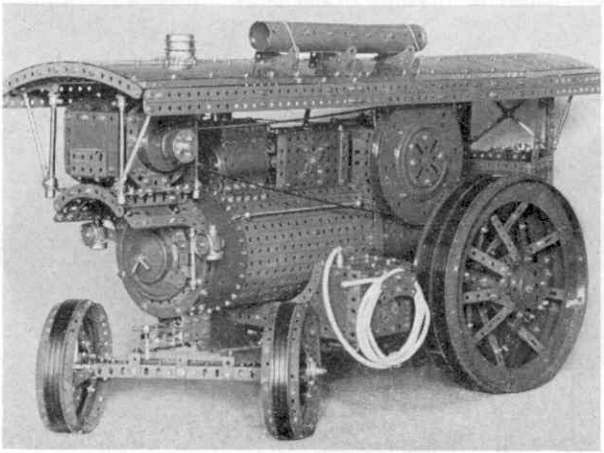
First Prize, Cheque for £4/4/–: H. J. Halliday, London S.E.15. Second Prize, Cheque for £2/2/–: H. Smith, Port Elizabeth, South Africa. Third Prize, Cheque for £1/1/–: R. J. Hilling, Ipswich.

Five Prizes each of 10/6: B. W. Rowe, Newton Abbot; A. E. Robinson, Vancouver, B.C.; G. Lake, Grantham; H. W. Henry, Rochester; J. Blackburn, Littleborough.

Five Prizes each of 5/–: K. Holden, Belfast; D. Angela, Liphook; C. S. Burney, Hazlemere; H. Davies, Worcester; R. Woodgate, Worcester.

This realistic gas cooker is remarkable for the amount of detail crammed into a small space. It is the work of R. J. Hilling, Ipswich.

Two models in this competition that caught my eye especially are illustrated on this page. They are a showman's traction engine by H. J. Halliday, London S.E.15, who won First Prize in Section B, and a miniature reproduction of a gas cooker, which is the work of R. J. Hilling, Ipswich, who was awarded Third Prize in this Section. I think both of these models, although differing greatly in subject, have something in common and that is the enormous amount of detail they incorporate in a comparatively small space. In addition both are most neatly constructed and proportioned.



All the fascination of a real showman's traction engine radiates from this splendid model by H. J. Halliday, London S.E.15.

First Prize in the Section for younger competitors went to David Bretten, King's Lynn, whose model was a mobile crane based on one of the well-known Coles lorry-mounted cranes. It is 4 ft. 6 in. in length, has a jib length of 3 ft. 1 in. and will lift a load of 18 lb. I may be able to illustrate this model later on.

Two other entries of a novel type won the Second Prizes in both Sections. One of these represents a Vauxhall 4-cylinder engine, built by Hylton Smith, Port Elizabeth, South Africa, and the other a rocket on its take-off ramp, which was sent in by D. Moffatt, Carrickmacross.

Club and Branch News

WITH THE SECRETARY

BE ENTERPRISING!

During the next six months outdoor activities will be the rule—if weather permits. They will consist largely of rambles, cycling runs, cricket matches, swimming, party excursions, and so on. It is an unwise Club committee, however, that does not bear in mind the fickle nature of our weather, and have some alternative programmes "up its sleeve" for adoption when wet weather causes outdoor projects to be cancelled. On these unfortunate occasions Clubs generally revert to the usual winter activities of model-building or games, but it is worth while trying to provide something more in line with the season's outdoor activities.

For instance, a Club in which cycling runs are very popular could arrange for a senior member to give a practical talk on the care, maintenance, and overhaul of a bicycle. There could be an illustrated lecture on how bicycles are made, and on another occasion senior members who have been on cycling holidays could describe their adventures. Something similar could be done to link up with Club cricket—illustrated talks, say, on how cricket bats are made, on the history of this great game, and famous cricketers of the past. Talks on Photography, too, are very timely.

GATESHEAD MECCANO CLUB EXHIBITION

St. George's (Gateshead) M.C. will hold their fourth Annual Exhibition on Saturday 2nd April, in St. George's Church Hall, Durham Road, Gateshead. The Exhibition will open at 10.30 a.m., and in addition to the usual fine display of Meccano models, Hornby-Dublo layout, model aircraft and miniature petrol engines, there will be a special feature. Prices of admission: Adults, 1/–; Children, 6d.

PROPOSED H.R.C. BRANCH

WELLINGTON — Mr. R. J. Cottrell, 21 Clifford Terrace, Wellington, Somerset.

CLUB NOTES

CONSETT Y.M.C.A. M.C.—The Club have been granted a larger room in the Y.M.C.A. premises, and have been busy relaying their model railway. Work has also continued on the big model colliery, the members being arranged in three groups. The first group are building the screens and other surface buildings, the second the haulage engine plant, and the third group constructing the conveyor. On Model-building Competition Nights members have been required to first draw their model and then to build it, a dual task that has produced some excellent results. Club roll: 35. *Secretary:* B. Ward, 10 Cyril Street, Number One, Consett, Co. Durham.

HORNSEA M.C. — Model-building was carried out at a recent meeting, and others have been devoted to games and film shows. Club roll: 11. *Secretary:* J. Gosnold, Sunnybrae, Belgrave Drive, Hornsea, E. Yorks.

CHRISTCHURCH (N.Z.) M.C.—The fine display of working Meccano models staged by the Club at the Christchurch Intermediate School Fair included a Meccanograph, windmill, double steam engine and a remote-controlled jib crane. An outstanding feature was a 6 ft. long model of a Supermarine Swift aircraft. *President:* Mr. C. E. Saunders, 6 Walsall Street, Riccarton, Christchurch S.W.1, New Zealand.

BRANCH NEWS

AVIARY MODEL RAILWAY (LEEDS)—Excellent new quarters have been occupied and work begun on the construction of an ambitious layout mounted on baseboard supported at a convenient height. When completed the layout will be 17 ft. long and will occupy the whole of one side of the room. A talk by a railway guard was enjoyed at a recent meeting. *Secretary:* L. Blakey, 21 Arley Street, Armley, Leeds 12.

HINDHEAD AND DISTRICT—Several members recently visited Mr. H. Grenside, of Beacon Hill, to inspect his excellent "0" gauge layout. Plans are in hand for visits to places of railway interest. *Secretary:* B. J. Hinde, "Hindhead Brae," Hindhead, Surrey.

NEWPORT (I.O.W.) CHURCH OF ENGLAND BOYS' SCHOOL—During a visit by the Mayor, the Chairman of the Education Committee and the County Education Officer, great interest was shown in the Branch layout, and the Mayor operated a train. *Secretary:* E. Cousins, C. of E. Boys' School, West Street, Newport, Isle of Wight.

KENTISH TOWN (LONDON)—Important improvements have been made to the Branch layout. A visit was paid to the School-boy's Own Exhibition, London, in January, where members were thrilled by the fine displays. *Secretary:* J. A. Kirby, 9 Busby Place, Kentish Town, London N.W.5.

There is no doubt about the keen interest with which visitors to the recent Exhibition arranged by the Norbury M.C. are examining the fine Meccano model of a London tram car, which was built for the event by K. Hyndman, a member of the Club. Meccano model-building and Hornby-Dublo train operations are the main activities of this long-established Club. Photograph by courtesy of "The Croydon Advertiser."

HORNBY RAILWAY COMPANY

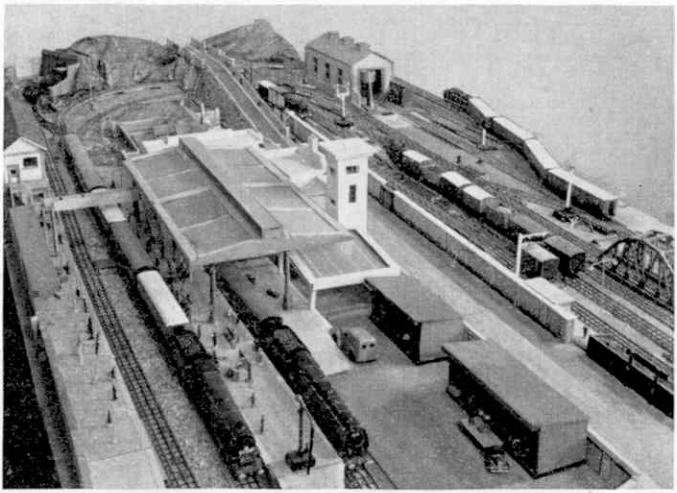
By the Secretary

New Notions for Hornby-Dublo Layouts

AMONG the many interesting letters that reach me daily are those from Hornby-Dublo owners giving details of their layouts and I always like to try and make use in these pages of some of the ideas that my correspondents are using. It is much easier for me to do this when such details are accompanied by one or two good sharp photographs showing at least parts of the railways in question. For various reasons it is not always possible to include the whole of a layout in one picture, although this can sometimes be done with success, as the upper illustration on the opposite page shows. As a rule, however, the limitations of space or the situation of the railway itself means that the more interesting parts of a system have to be shown in separate pictures.

There is a good example on this page, which shows part of the layout of Mr. N. F. Harris of Sevenoaks, Kent. From the illustration it will be seen that the system has been extended beyond the more or less conventional arrangement of a plain oval main line. It is partly double track, but at the end of the railway furthest from the camera the up and down tracks separate. The outer track passes through a tunnel, of which the earthworks can plainly be seen in the photograph; the inner one pursues its course in the open, passing under the raised roadway that marks the point where the outer track emerges from the tunnel. From here the two tracks run roughly parallel again, but are some distance apart because the locomotive depot is placed between them.

At the near end of the layout the two tracks come together to form a single line, which continues up to the Points near the platform end seen at the front of the picture. Sidings with several sets of Points providing loop lines parallel with the main tracks can be seen inside the wall that separates the yard thus formed from the main road running along the centre of the layout board. Of course this road simply disappears into the distance, as it were, at the end of the board, but this is not really a disadvantage as it has to end somewhere and the "over the hill" effect at the far end is really successful.



Part of the layout of Mr. N. F. Harris, of Sevenoaks. The main road divides the system into two before disappearing "over the hill" at the end of the board.

Stations and other buildings have been made by the owner of the layout and an unusual feature clearly visible in the picture is the covered courtyard at the back of the inner platform, where road vehicles can come into the Station. Road access of this kind is characteristic of many stations and its inclusion in miniature is a splendid idea.

Another small matter, but one that makes a tremendous difference to the station, is that the platforms are liberally

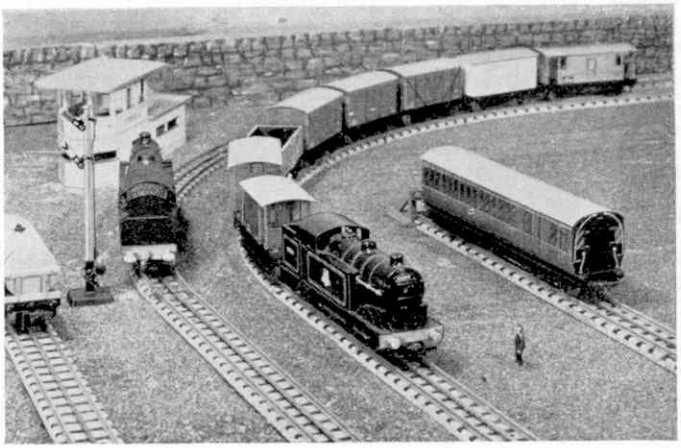
A general view of the Hornby-Dublo layout developed by Mr. P. Crampton and his son, of Nottingham. The system handles plenty of traffic and has a neat and tidy appearance.

peopled with the miniature figures intended for Hornby-Dublo railways. These give the station a really busy look and the effect is much better than it would be if there were just a few little people here and there along the lengthy platforms.

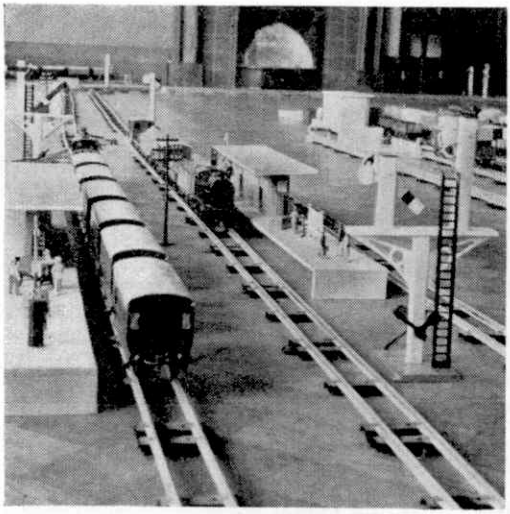
The trains of course speak for themselves, the principal traffic being capably handled by two Hornby-Dublo "Duchess" Locomotives. On the front of one of these is a reproduction of one of the distinctive headboards carried by the engine of *The Royal Scot*. This was cut from a picture of the train, mounted on card, and then attached to the engine by means of Balsa cement. This little item alone adds considerably to the importance and effectiveness of the miniature express.

Some of the happiest layouts that I hear about are those in which father and son—and mother of course too sometimes—are jointly concerned. This is the state of affairs behind the development of the attractive system shown in the upper picture on this page. This has been developed by Mr. P. Crampton of Nottingham for his boy, whom you see busily keeping traffic moving. Although scenic features as such have not been incorporated, various lineside buildings have been introduced and the system has a tidy look about it that I am sure will appeal to many of you. I am glad to see that the railway has been fenced in; as you know, I have often remarked about the necessity for this in these pages. There is a useful concentration of sidings in the centre of the layout and the amount of rolling stock visible suggests that the system is a really busy one.

Filling the corners is sometimes a problem with layouts arranged on a board rather than on shelving that follows the walls of a room. In the layout above, one corner neatly accommodates the control apparatus, while in two others there are buildings. No doubt other developments will follow, and the lower picture on this page points the way to one interesting possibility. The built-up wall runs along the edge of the board and the Signal Cabin is placed in the angle between this and the siding, which runs up practically to the limits of the board. The siding fills an otherwise empty space, and is useful for storage of rolling stock not in service.



Rounding the bend is a Hornby-Dublo 0-6-2 Tank, while a 2-6-4 Tank is travelling light in the opposite direction.



Hornby Railway at Longmoor Camp

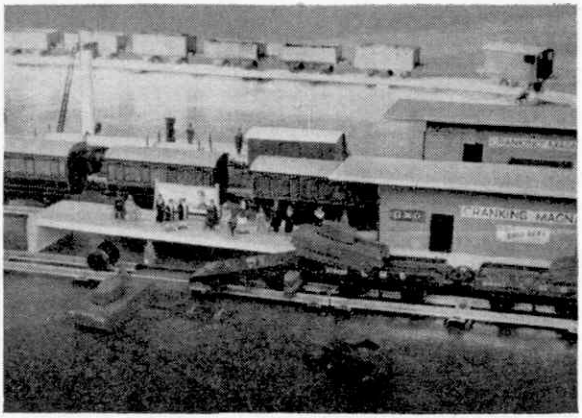
LONGMOOR, in Hampshire, has long been famous as the home of military railways, of standard gauge. But it is also the home of an admirable Hornby Clockwork Railway. This has been laid down in a room in one of the Officers' Messes, by permission of the President of the Mess Committee and the Mess Secretary. It is known as the Chuntering, Cranking and Tottering Railway, and is owned by Capt. J. A. Robins, R.E. (H.R.C. membership number 256206).

The C.C. & T. Railway links up the towns of *Chuntering Parva*, *Cranking Magna* and *Tottering* with a double track system that formed the original layout. At a later date a branch line was built running from *Tottering*, over the *Cranking Creek* on a "through" type bridge, to *Nattering Quietly*. The line then disappears into a tunnel, coming out in the vicinity of *Squad Halt*. After passing through this station, the branch re-joins the main line at *Chuntering Parva*.

The branch line is single track with passing loops at the stations. There are sidings, too, at each of these stations, a petrol depot at *Squad Halt*, and extensive cattle pens at *Nattering Quietly* to accommodate the livestock traffic to and from the market, for which the town is famed!

On the main line, the most important station is *Cranking Magna*, where there is an engine shed and an extensive goods yard. There are four roads through the station, the platforms being situated between loop lines and the double tracks. Goods traffic is handled into and out of the yard through reception sidings and a set of crossovers at each end of the station. *Tottering* is a normal junction station having, in addition to a small yard, a refuge loop that is signalled for use in both directions. *Chuntering Parva*, another junction, is the railway's smallest main line station, with only one island platform. Within its station limits, however, there are a milk depot and sidings provided for the use of the Civil Engineer's Department. This latter department has storage room here, and the sidings are served by a pillar crane for use in handling heavy bridging parts and permanent way materials.

Locomotive power is provided from

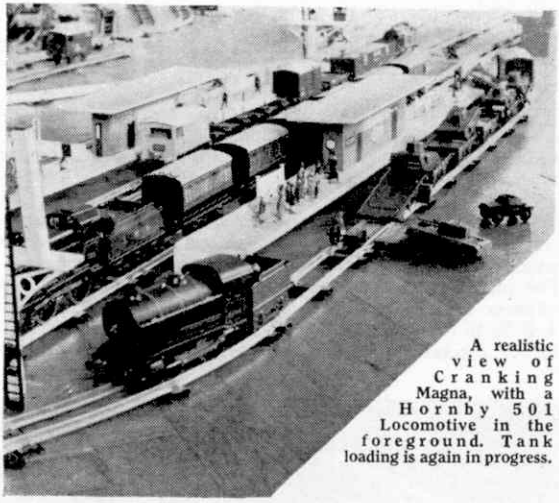


At the head of the page is a scene at Cranking Magna, on the layout of Captain Robins, R.E. On the right a Dinky Toys Centurion Tank is being entrained by means of a specially adapted ramp wagon.

the central shed at *Cranking Magna* where, in addition to normal coaling and watering facilities, there is a turntable. This is the only one on the system. Water is also available at *Nattering Quietly* and *Chuntering Parva*. The breakdown train is stabled at *Cranking Magna* locomotive shed. It consists of two cranes complete with a runner or match wagon for each, a standard Open Wagon for stores, a Passenger Coach for the crew and a Passenger Brake Van as the tool and brake van. The whole train is hauled, quite easily, by a Hornby 0-4-0 Tank Locomotive.

The two breakdown cranes have removable couplings, for if these were left in place during a lift they might foul an object that was being hoisted close in to the crane. The cranes can lift one end of an engine, or can pick up a standard Hornby Straight Rail from a flat truck alongside the crane and place it ahead. This latter capacity provides a means of end-on prefabricated platelaying. The crane trucks have thick sheet lead bolted underneath to give them stability during such operations.

Nine engines serve the system. These consist of a pre-war 4-4-0 L.M.S. tender locomotive that is normally used for the express main line passenger train; three No. 501 0-4-0 L.M.S. and L.N.E.R. tender locomotives; and five 0-4-0 L.M.S. and L.N.E.R. side tanks. Visitors often enquire about the length of run and the "pay load" of a clockwork engine. Experience on the C.C. & T.R. has shown that they are capable of at least 130 track lengths—given a reasonable amount of straight—with six wagons and a van.



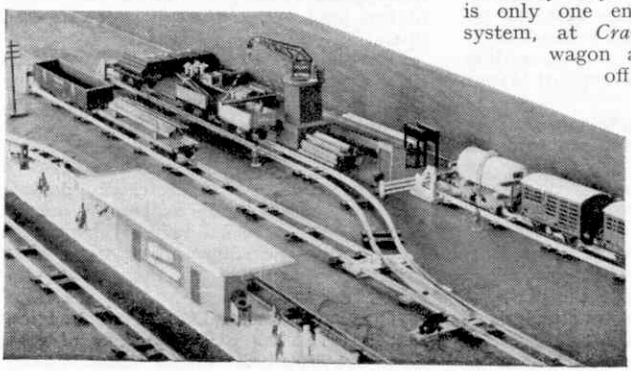
A realistic view of Cranking Magna, with a Hornby 501 Locomotive in the foreground. Tank loading is again in progress.

On occasions there have been as many as twelve people working the system at the same time, forwarding a series of goods trains from station to station between the running of booked express and local passenger trains.

Rolling stock consists of coaches and wagons of all types in the Hornby System and a certain number of others dating back before the last war. As might be expected of a model railway at Longmoor, a special feature is made of the transport of military equipment, and a vehicle of particular interest is what is known as the ramp wagon. This has been home developed and is used with a train load of Dinky Toys Centurion Tanks. There is only one end-loading ramp on the system, at *Cranking Magna*, but this wagon allows Tanks to be got off or onto the train of Flat Trucks at places where there is no fixed ramp available.

The operation of the ramp wagon is simple.

(*Continued on page 222*)



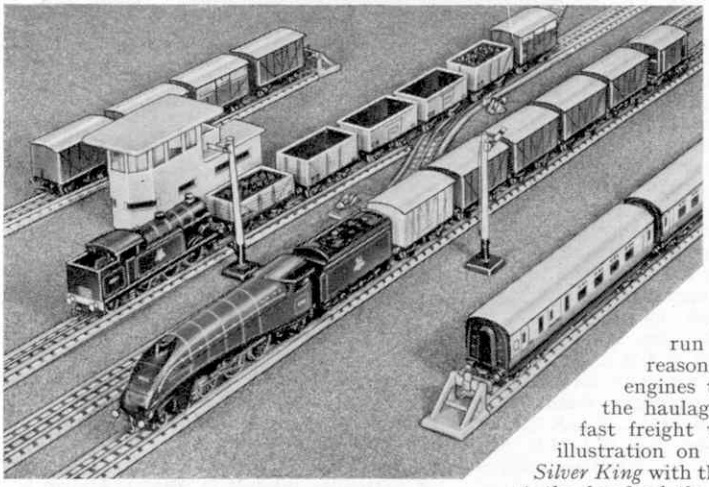
Aerial view of the Civil Engineer's Sidings and Depot at Chuntering Parva. The special siding for milk traffic is on the extreme right of the picture.

Watch Real Engines at Work

MOST of us will gain better ideas as to how we should make use of the different engines that we have on our Hornby-Dublo railways if we watch carefully what goes on in actual practice. This may sound an unnecessary suggestion, but if we do not keep an eye on real practice we may miss something good. For instance, it is perfectly correct to run express trains with one or other of the 4–6–2s in the Hornby-Dublo system, and either *Duchess of Montrose* or *Silver King* makes a grand sight at the head of an express formed of appropriate Hornby-Dublo corridor stock. But there are many other trains beside expresses that run on real railways and we should endeavour to reproduce some of these too, according to the equipment and the type of layout that we have.

Then there is a special fascination about long non-stop runs. But the Hornby-Dublo driver will find more opportunity of exercising his skill if one or two long-distance stopping trains are included in the running programme, and I need not remind you that there are such trains on real railways. Nice judgment will be needed to bring such a train alongside the platform at an intermediate station, particularly if some additional operation is to be carried out there, such as the attachment or detachment of one or two vehicles. Starting up again also calls for a nice touch on the control handle.

Another point to keep in mind is that at an intermediate stop we may assume our engine requires to take water and then the tender has to be brought neatly alongside the Water Crane at the platform end. There is a lot of satisfaction in doing jobs like this in a more professional manner than one sometimes sees. Those of you who have not really tried it should do so.

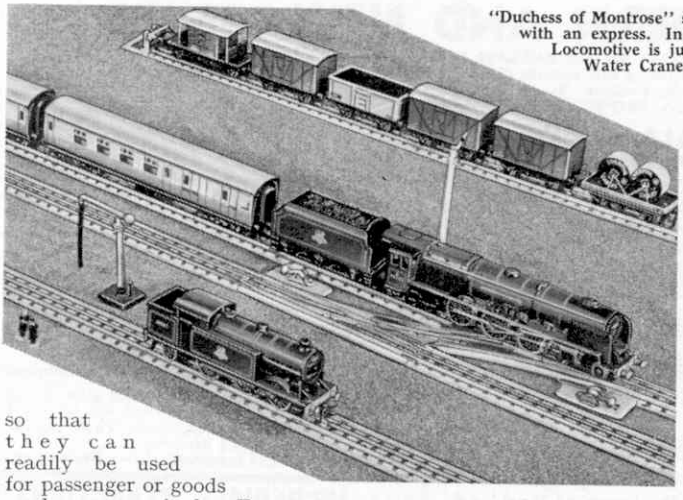


"Silver King" takes its turn on an express goods train composed entirely of Hornby - Dublo Vans.

Another type of run on which we can reasonably use our big engines to advantage is in the haulage of long distance fast freight trains, and in the illustration on this page you see *Silver King* with the job well in hand, at the head of the train of Hornby-Dublo Vans. Perishables and other merchandise must be hustled along, and the regular running of one or two trains of this kind makes the whole business of operation much more realistic.

We must not forget too that trains like this sometimes make intermediate stops for examination or for locomotive purposes, but they do not necessarily take on or put off any vehicles. This can provide the opportunity for working such a train into a loop, where it can be electrically isolated for the time being while another movement is being made. The fitting in of the different workings on these lines is one of the most fascinating parts of running a Hornby-Dublo railway.

The two Hornby-Dublo tank engines can be used for a fine variety of jobs. Both are essentially mixed traffic engines,



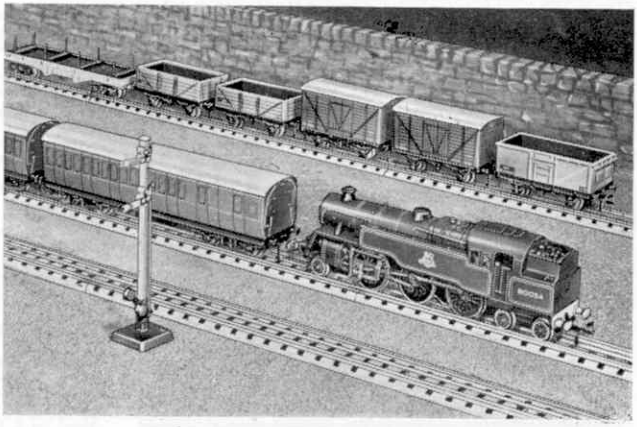
"Duchess of Montrose" speeds along the main line with an express. In the foreground the Tank Locomotive is just moving away from the Water Crane after filling up.

so that they can readily be used for passenger or goods work as required. For instance, the new 2–6–4 Tank is a fine heavy suburban engine and one of our pictures shows how thoroughly it is at home on a train of suburban coaches.

Do not forget that tank engines run equally well either chimney or bunker first, so that when arranging their duties it is not necessary to include any special arrangements for turning them round. Many Hornby-Dublo layouts incorporate the "S" shaped reverse curve loop joining opposite sides of the main oval, and this provides a ready means for turning the tender engines so that they are right way round when required for the next journey.

With the tanks the means for running the engines round their trains rather than for turning them round are required. For this the use of crossover Points to form loop lines including an Uncoupling Rail has already had some attention in the *M.M.* If you are not able to arrange a loop for running round purposes, then the alternative is to provide an Uncoupling Rail and an isolating section just beyond it at the arrival end of the platform. The engine brings its train in, and after coming to a standstill it backs just sufficiently to become uncoupled from the train. Then it moves again into the section that can be switched out for the time being. Another engine can then come on at the other end and take the train away.

On the goods side of things both Hornby-Dublo Tank locomotives can be found plenty of employment, and apart from the ordinary shunting and marshalling connected with goods and passenger train working, there are such little jobs as transferring vehicles from one place to another on the layout in connection with moves to be made subsequently. When this type of work is seen in a station on a real railway one sometimes wonders what it is all about. There is a purpose behind it, of course, and it is in following up such odd jobs as well as in the regular running of the trains that our Hornby-Dublo railwaying becomes such good and realistic fun.



The Hornby - Dublo 2 - 6 - 4 Tank in a characteristic attitude hurrying citywards bunker first.

For other Stamp Advertisements see also pages 220 and xviii

Stamp Collectors' Corner

By F. E. Metcalfe

THE DIVIDED COUNTRY

A LOOK at the map will show why I have chosen the above title for Pakistan, for this new republic, which is so much in the news, is in two parts. A tragic position for a new country.

Pakistan has not had a long philatelic run, for it has only been going since 1947. When it became a separate entity—if one can describe as an entity something that is in two parts—it overprinted the existing Indian stamps with the new name PAKISTAN. Right from their very beginning these stamps have provided great fun for the philatelists, and in spite of all their investigations, we now only know relatively little about the varieties made in 1947 by the overprinting of the word PAKISTAN on these Indian stamps, and probably we shall never have the whole story.

It was decided to overprint the stamps officially, but it took some time to get these official overprints distributed to all the post-offices. So the various provincial postmasters undertook the job of overprinting their own stocks, and what varieties they produced to be sure. Doubles, inverteds and inks of all colours are to be found. In most cases just ordinary rubber stamps were used for the overprinting. One dealer in London at the time showed me a number of pieces from parcels, where the overprints were partly on the parcels as well as on the stamps! There are so many different varieties, that it is impossible to get a complete list, so all the catalogues can do is just to note that these things exist, and leave it at that.

After all this local overprinting, those officially prepared were distributed. These were later replaced by the definitive set, which apart from a number of commemorative stamps, to which I will refer later on, has done service until now. That is not quite correct, for there was one change of great interest in the definitive designs. On the 1a., 1½a., 2a., 3a., 6a., 8a., 10a. and 12a. stamps the moon is shown turned to the left. There we have the waning moon—how ignorant your scribe was, for he did not know that at the time—and that would not do for Pakistan, where such things have importance. So the moon was changed from left to right and now we get the waxing moon and all is well.

The other values of the set showed various views of Pakistan, but the perforations caused real excitement. Though the 15r. stamp is of high face value, a used copy perforated 11½ can be obtained for a few shillings, because air mail charges are high, and a lot of heavy mail comes to Britain from Pakistan. But if you want a used copy perforated 14 × 13¾, well, you just won't find one. And if you want one mint, then you'll have to pay into the teens of pounds; yet less than two pounds will buy a stamp with the commoner perforation. So it can be seen that perforation varieties are of monetary importance at any rate.

There is another rather interesting point about the perforation varieties of this set. Since the death of King George VI a number of stamps have appeared in a new perforation altogether, perf 13¼. So collectors of Queen Elizabeth stamps will be including these in their collections, as well as those who only go in for stamps of the previous reign.

The new perforation varieties of course will appear in the next edition of the Commonwealth Catalogue of QE stamps, so make sure that you get your copies of these stamps while they are available at reasonable prices. I had better give the values, so that you will know what to look for. *Ordinary Postage:* 3p., 6p., 9p., 1a., 1½a., 2a., 1r., 2r., 5r., and 25r. *Overprinted Service:* As with ordinary postage, except the 25r.

I referred earlier to commemorative stamps. There have been a number of these. The first set appeared in 1948 and was called the Independence issue. Be careful that you do not mix up stamps of this set with the definitive issue; they are very similar in design, but on careful examination it will be noted that the Independence stamps bear the date 18th August 1947 in very small print. The next issue, in 1949, was in commemoration of the first anniversary of the death of Mr. Jinnah, that strong man who was the chief instrument in bringing Pakistan into being as a separate country.

There is an interesting point about this set. The portrait of Mr. Jinnah does not appear on any of the three stamps, nor of course are *any* portraits shown on any Pakistan stamps. The religion of the country forbids it.

We next get another interesting commemorative set, to mark the fourth anniversary of independence. The designs were exquisite, and I remember asking our Editor to illustrate one at the time, which he did. In August 1952 appeared a pair of commemoratives to commemorate the First Indian Postage stamp, known as Scinde Dawk. The design was original, if not particularly striking, for while in the top left corner we saw a reproduction of the Scinde Dawk stamp, with the waxing moon and star symbol in the other corner, below were planes and camels depicting new and old methods of mail transport.

Once more the anniversary of independence was celebrated in 1954, by a commemorative set of stamps. This time was the 7th and the set was on a quite elaborate scale. Seven values were concerned, and all showed views and scenes in Pakistan. The 1r., which is illustrated, shows a cotton plant.

For other Stamp Advertisements see also pages 218 and xviii

Stamp Gossip

PRIMITIVE DRAWINGS

COLLECTORS will remember that South West Africa issued a set of stamps last November, with the lower values depicting rock drawings that dated back for centuries. In the same month Sweden released a set of five values that also illustrated primitive rock drawings, which are said to date back about three thousand years, and a stamp from this latter set is illustrated.

When one examines a modern painting, it is possible now to see where some of our contemporary artists obtain their inspiration! Speaking personally, a nice little Turner, or even a Romney, would be preferred for my study, but that I suppose only shows how little I know about art.

To return to the Swedish stamp, I am sometimes asked why all stamps from that country seem to have straight edges. The answer is that most stamps are apparently sold in rolls, though it is possible, I think, to buy booklets with stamps in blocks.

INDUSTRY

We who live in industralised countries sometimes envy those who live in what we think are romantic places. For instance, consider Syria. Here surely is a nation of people who only worry about camels to ride on, and date palms to sit under. But take a look at the Syrian stamp I am illustrating. It might be depicting Coventry, or Birmingham!

Alas, the whole world is straining to turn itself into a workshop, which would not be so bad if those workshops were not so hideous. Anyhow there will soon be no more golden roads to Samarkand. Pity, really.

LETTER BOXES

Most collectors have been told at some time or other that so and so has a stamp hundreds of years old, etc. And of course we philatelists smile at such ignorance, but there are some things about our hobby that we don't all know. For instance, this year brings the centenary of the first pillar box. I wonder how many stamp collectors knew before reading this that those erections in the streets, which appear to have been there since the year dot, have had actually only a century of existence, at least in Great Britain—France had pillar boxes way back in the seventeenth century.

It was Anthony Trollope who claimed responsibility for their introduction into London. Official records credit Rowland Hill with having ordered in 1854 the first half dozen "pillar letter boxes," which were installed just 100 years ago. Whoever it was, we wouldn't get on very well without them today.

Here is another interesting point. The first mention of pillar letter-boxes appeared, not in any Post Office document, but in the first British stamp catalogue, published in 1862. This was the Mount Brown catalogue and in its preface it mentions that the first letter box to be erected was at the corner of Farringdon Street and Fleet Street. Quite a fitting site really.

WHATEVER IS IT?

I am sure that not one collector in a thousand will be able to make heads or tails of the Haiti stamp illustrated this month. Actually this shows a fort. You need a magnifying glass, as all good collectors do, to make it out.

The man who drew the original of this picture was Cristobel Colon, our Christopher Columbus. As long ago as 24th December 1492 his vessel the *Santa Maria* was wrecked off the coat of Haiti. The crew went ashore, and with timber from their ship built the fort seen on the stamp. The fort was named Navidad, which is Spanish for Christmas.

The Haitian Post Office has issued two 50c. stamps in red and slate, and the "Hurricane Relief Fund" will profit from the sales. I think that readers will agree what an interesting stamp it is, but what a pity that the whole design was not given up to the drawing of the fort.

LEEWARD ISLANDS

From time to time I get letters from collectors asking why countries like Antigua, Virgin Islands, etc., have two sets of stamps, and why the second set, that designated Leeward Islands. Well there is what is known as the Presidency of Leeward Islands, and the colonies that compose it are Antigua, Montserrat, St. Kitts-Nevis and Virgin Islands. Now I cannot explain why it should be thought necessary for them to have their own sets of stamps as well as those of the Presidency, but they have.

It would now seem that as the federation of colonies is to be broken up, this second set will be done away with, and many collectors will be sorry, for Leeward Islands stamps have always been very popular. To be candid, however, there has never been any real reason for their existence from a postal point of view. Maybe they have had a revenue use, about which we collectors know nothing.

LAMP OF LEARNING

There is no doubt about it that some of the finest designs are to be found on the stamps that Israel is turning out today, and the stamp illustrated here is one of these. It was issued in January to commemorate the 50th anniversary.

Just study for a few minutes this Israel stamp. Note the utter simplicity of the design, and yet think whether any design be more apt and pleasing.

Some time ago, I started a modest collection of Israeli issues, and it is fast becoming my favourite.

THIS MONTH'S COVER

The front cover illustration this month, based on a photograph kindly supplied by the Bristol Aeroplane Company Limited, shows the de Havilland propellers of the Bristol Britannia air liner. These 16 ft. diam., hollow-bladed propellers have been designed to cater for the special requirements of the turbine engine. A special article on Aircraft Propellers, by John W. R. Taylor, appears on pages 168–71 of this issue.

The High Road to Kashmir—

(*Continued from page 179*)

Moghuls, and that it remained the delight of tourists from all over the world. For the city on the meandering Jhelum is overlooked by the snows of the Himalayas to the north. They adorn the sky high above the lakes and terraced gardens and temple spires and bush shikaras. And I marvelled again at the superb setting of this emerald City of the Sun—between the high passes which mark ancient trading routes across the mountains and the new pass which the engineers had cut above Banihal on the road I had come.

The high road to Kashmir could have no finer ending.

A Meccano Sewing Machine—

(*Continued from page 205*)

pivoted through an end hole. A short Rod fastened in the boss of the Bell Crank is journalled in the base and in a Double Bent Strip. To the other arm of the Bell Crank the shuttle carriage 6 is bolted.

The Feed Mechanism

The feed teeth are represented by a 57-tooth Gear bolted to a 4½" Strip. This Strip is given a circular motion by two lever mechanisms, the effect of which is to raise the teeth of the Gear above the level of the base on the forward movement only. When the Gear is raised its teeth grip the cloth and carry it forward under pressure of the foot.

The up-and-down movement to the 4½" Strip is imparted by a Double Arm Crank 7 mounted on the same Rod as the Bell Crank. A 2½" Strip is pivotally connected to the Double Arm Crank by a ½" Reversed Angle Bracket, and the other end of the Strip is lock-nutted to a 1½" Strip bolted to a Crank on a Rod 8. This Rod is mounted in 1" × 1" Angle Brackets bolted underneath the base, and it carries a Double Arm Crank fitted with a Threaded Pin. A 2" Slotted Strip bolted to one end of the 4½" Strip that carries the Gear, is pivoted on the Threaded Pin and is held in place by a Collar.

The horizontal, or backward and forward movement of the feed Gear, is operated by a Single Throw Eccentric on the main shaft. A 7½" Strip bolted to the Eccentric is lock-nutted at its lower end to one arm of a Bell Crank, the other arm of which carries a 2½" Strip. The 2½" Strip in turn is bolted to a Crank on a Rod 9, which is journalled in 1" Corner Brackets fixed to short Angle Girders underneath the base. The Rod 9 carries a Double Arm Crank, and the 4½" feed Strip is lock-nutted to one of its arms.

A New Meccano Excavator—

(*Continued from page 209*)

the Rod on which the boom pivots. The Cord is wrapped four or five times round the Crank Handle, is taken again under the Rod supporting the boom and is passed over the Pulley 13. The Cord is then taken round the Pulley 12 and is tied to a Driving Band, which is looped through a hole in the front of Flanged Plate 18. The Driving Band is stretched slightly to tension the Cord.

The unloading trap at the back of the bucket is a 2½" × 2½" Flexible Plate fitted at its top corners with two Angle Brackets. A 3½" Rod 21 is passed through these Angle Brackets and through Fishplates lock-nutted to the sides of the bucket. In the digging position the lower edge of the Flexible Plate engages a catch formed by the lug of a Right Angle Rod and Strip Connector 22 bolted to the base of the bucket. To unload the bucket the Plate is raised clear of the catch by pulling a Cord 23. This is tied to the cab at one end and to the centre of Rod 21 at the other end.

The Parts required to build this Mechanical Digger are as follows: 12 of No. 2; 1 of No. 3; 12 of No. 5; 2 of No. 6a; 2 of No. 8; 8 of No. 10; 4 of No. 11; 12 of No. 12; 2 of No. 12a; 7 of No. 12c; 1 of No. 15; 4 of No. 16; 1 of No. 17; 4 of No. 18a; 1 of No. 19g; 2 of No. 19b; 5 of No. 22; 1 of No. 22a; 1 of No. 23; 1 of No. 24; 2 of No. 24a; 2 of No. 24c; 11 of No. 35; 118 of No. 37a; 106 of No. 37b; 19 of No. 38; 2 of No. 38d; 1 of No. 40; 1 of No. 44; 1 of No. 48; 4 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 54; 3 of No. 90a; 2 of No. 111a; 5 of No. 111c; 1 of No. 115; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 186; 1 of No. 187; 4 of No. 188; 4 of No. 189; 4 of No. 190; 2 of No. 191; 4 of No. 192; 1 of No. 198; 2 of No. 199; 2 of No. 200; 1 of No. 212; 1 of No. 212a; 1 of No. 213; 4 of No. 221; 2 of No. 222.

Hornby Railway at Longmoor Camp—

(*Continued from page 215*)

When it is desired to lower one end of it to form the ramp, the timbers that travel on the wagon are removed, the couplings are taken out and by pressing down on the forward end of the wagon the back wheels are released and can be run clear. The wheel-less end of the wagon is then lowered. The timbers, which travel on the wagon, are then packed between the rails and at one side of them to complete the ramp. The Flat Trucks are backed down to the ramp wagon and loading or unloading then takes place.

All the station buildings are home-made. There are over a hundred figures on the system, which makes it look very much lived-in. The platforms are well peopled and there are plenty of slot machines and similar accessories. Some of these are pre-war, and have been collected during many hours spent in second-hand shops.

Trains on this layout are controlled by means of the normal type of Hornby lower quadrant Signals for the running signals, and in addition there is a number of ground signals. Six home-made route indicators reduce the number of signals that would normally be required. Electric two-aspect light signalling has been tried out with success, though its installation has been suspended for the time being.

This Month's Special Articles

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.

DONKEY WHEELS

The old donkey wheels are among the most interesting reminders of the methods employed on farms and large estates for drawing water from the well in earlier days. The wheels were large, about 20 ft. in diameter, with an internal platform running round the inside of the circumference. On this platform the animal walked, and, in so doing, caused the wheel to revolve. To a projection from the axle a chain was attached with a bucket, which was lowered into the water and raised when full.

At Saddlescombe farm in Sussex there is an old donkey wheel which was in regular use until comparatively recently, and by its means the farm was supplied with water for all its needs. It is now well protected from the weather and in good condition. During later years the wheel was turned by a pony, a little Welsh cob, which for thirty years worked the "tread-mill" every week day. The wheel is now idle, hydraulic and electric power having supplanted animal motive power in farm economy.

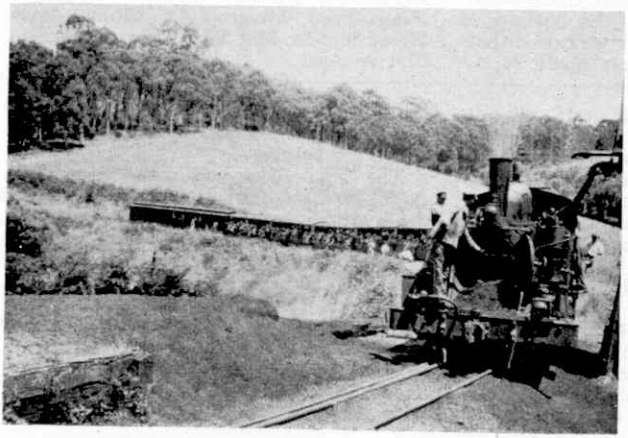
A. PHILLIP (Hassocks).

The donkey wheel at Saddlescombe farm, which pumped water until comparatively recently. Photograph by A. Phillip, Hassocks.

"PUFFING BILLY'S" FAREWELL

The "Puffing Billy" Railway, from Ferntree Gully to Gembrook, Victoria, Australia, was described in the February 1954 *M.M.*, and in August last the Editor mentioned the closing of this narrow-gauge line, following a landslide that blocked the track beyond Belgrave. But through the efforts of the *Sun News Pictorial*, a Melbourne daily newspaper, "Puffing Billy" was made available on Saturday, 11th December 1954 to young *Sun* readers, and made four trips, with 600 children on each, Billy's biggest loads. An elderly couple who travelled on Billy's first journey were present on one of these trips as guests of the *Sun*.

Those who were in the Dandenongs caught some of the magic of this memorable occasion, a magic that was heralded by a distant toot, a laboured chuffing, and then the appearance of the tiny engine hauling its ten open-sided carriages loaded with excited youngsters. Billy's wheels spun on the rails again and again as he tried to start a heavy climb, each effort ending with a slip and a disgruntled snort. "Come on Billy, you can do it", shouted his young passengers. And Billy dug his toes in, strained, and was up the hill.



Puffing Billy's train fills up. Photograph by B. Choate, Melbourne.

Then came Billy's last journey. At level crossings people stretched streamers across the track, which Billy breasted triumphantly. Then he eased into Ferntree Gully for the last time. His excited young passengers clambered out and Billy moved back to his shed, slowly, and a little sadly. Dozens of his young friends watched as he was bedded down. "Goodbye Billy", they called.

And then, because of the success of this occasion, the Railway Commissioner agreed to give another chance to children unable to get a ride, and "Puffing Billy" was allowed to make more trips during the Christmas holidays.

BRUCE CHOATE (Melbourne).

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.

An Aviation Figureword

Figureword competitions always produce good crops of entries, and the one set here this month will appeal specially to readers who are aviation enthusiasts. It is concerned with the names of current types of British, Canadian, American and French aircraft. There are nine such names in all, each of eight letters, and in the diagram on this page are nine horizontal rows, one for each of these words, which readers are asked to find with the aid of the clues given here.

x								79
	x							85
		x						100
			x					97
				x				109
					x			94
						x		75
						x		95
							x	99
82	120	108	77	119	105	91	131	

HORIZONTAL TOTALS

VERTICAL TOTALS

In the last column of the diagram are numbers marked "Horizontal Totals." These are made up by giving numbers to the letters of the alphabet, A being 1, B 2, C 3, and so on down to Z, the value of which is 26. The numbers representing the letters of each name must add up to the horizontal totals shown, and in addition the letters must be such that the vertical totals are those shown at the bottom.

As a help to make a start we reveal that the first letter of the first name is A, the value of which is 1. Thus the first word required is one beginning with A, the horizontal total of the numbers represented by the letters being 79, and A contributes 1 to the first vertical total of 82.

The letters represented by X in the diagram will reveal, reading from top left to bottom right, a word common to all the aircraft mentioned in this puzzle.

There will be two sections in this Contest, for Home and Overseas readers respectively, and in each prizes of 21/–, 15/– and 10/6 will be awarded for the three best entries in order of merit. The diagram must not be cut from the page; entries must be made on separate sheets, and in the event of a tie judges will take originality of presentation into account. State name, address and age.

Entries must be addressed *April Figureword Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 31st May; Overseas Section, 31st August.

Spring Photographic Contest

This is the time of the year when amateur photographers who put away their cameras during the Winter, bring them out of hiding and prepare for action. To these enthusiasts, and to readers who use their cameras at all seasons, we extend an invitation to enter our 1955 Spring Photographic Competition.

In this we invite competitors to send us photographs that illustrate conditions or events of this season. Each competitor may submit only one photograph, which must have been taken by him, and on the back of his print must be stated exactly what the photograph represents; also his age must be given.

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: *Spring Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 31st May; Overseas Section, 31st August.

Competition Results and Solutions

HOME

NOVEMBER 1954 FIGUREWORD CONTEST

1st Prize: C. J. Charles, Darlington. 2nd Prize: E. G. Hodgkins, Stonehouse. 3rd Prize: D. W. French, Greenford. Consolation Prizes: J. K. Allen, Runcorn; A. Murphy, Wallasey; R. Plumridge, High Wycombe; W. A. Jacques, Cliffe; M. J. Hardstone, Beckenham; T. M. Silvey, Rudgeway.

NOVEMBER 1954 MOTOR VEHICLE DRAWING CONTEST

1st Prize: R. Purvis, Stanmore. 2nd Prize: J. Parker, Cow Ark. 3rd Prize: M. Dunnett, Chester-le-Street. Consolation Prizes: A. W. Burdett, Manchester 20; E. Mason, Rugby; R. Poulet, Wallington; D. C. Crabtree, Morley.

DECEMBER 1954 HIDDEN NAMES CONTEST

1st Prize: P. Mather, Bakewell. 2nd Prize: J. A. Pring, Ringwood. 3rd Prize: R. Stevenson, Belfast. Consolation Prizes: R. J. Skan, Birmingham 31; B. J. Bartlett, Northleach; H. Perry, Smethwick 40.

DECEMBER 1954 PAINTING CONTEST

1st Prize, Section A: R. Martin, Reeves Rest; Section B: A. F. Heath, Liverpool 23. 2nd Prize, Section A: B. Chapman, London E.11; Section B: J. N. Walton, Stocksfield-on-Tyne. 3rd Prize, Section A: D. West, Creswell; Section B: I. C. Heath, Calne. Consolation Prizes: P. M. Stoneham, Barrow-in-Furness; B. Brundles, Stafford; T. Tatler, Bridlington; P. W. Bainbridge, Chatham; D. Sensecall, Chesterfield; A. Thompson, Wells.

OVERSEAS

JUNE 1954 FILM CONTEST

1st Prize: P. Adams, Melbourne, Australia. 2nd Prize: R. Tatler, Hamburg, Germany. 3rd Prize: W. Brown, Christchurch, New Zealand. Consolation Prizes: R. T. Craven, Auckland, New Zealand; B. Bryan, Toronto, Canada; J. K. Balmer, Cape Town, S. Africa.

JUNE 1954 MOTOR SLOGAN CONTEST

1st Prize: I. T. Callen, Wellington, New Zealand. 2nd Prize: M. Murtagh, Dublin, Eire. 3rd Prize: J. Williams, Adelaide, Australia. Consolation Prizes: S. Hickman, Ottawa, Canada; G. Jones, Perth, Australia; E. Isaac, Nairobi, Kenya, B.E.A.

JULY AND AUGUST SUMMER HOLIDAY PHOTO CONTEST

1st Prize, Section A: H. Arnold, Dublin, Eire. Section B: D. de Korte, Eindhoven, Holland. 2nd Prize, Section A: M. L. A. Chaves, Porto, Portugal. Section B: D. Smith, Hawke's Bay, New Zealand. 3rd Prize, Section A: B. G. Smith, Toronto, Canada. Section B: P. Whetsone, Calcutta, India. Consolation Prizes: H. Roskafte, Ler, Norway; V. Barnes, Perth, Australia; P. Taylor, Quebec, Canada; A. Wallace, Palmerston North, New Zealand; R. Boundy, Christchurch, New Zealand; S. W. Kidd, Otago, New Zealand; G. Bisshopp, Toronto, Canada.

JULY 1954 FREIGHT TRAIN CONTEST

1st Prize: M. Moffatt, Winnipeg, Canada. 2nd Prize: P. Jones, Adelaide, Australia. 3rd Prize: B. Lynch, Johannesburg, S. Africa. Consolation Prizes: N. Kerley, Dublin, Eire; P. James, Wellington, New Zealand A. Sachs, New York, U.S.A.

AUGUST 1954 CAR FACES CONTEST

1st Prize: I. Minto, Concord, Australia. 2nd Prize: M. Miller, Wellington, New Zealand. 3rd Prize: K. Enders, Stanhope, Australia. Consolation Prizes: K. Gracie, Glenealy, Eire; D. Morton-Brown, Wellington, New Zealand; S. N. Amerasinghe, Colombo, Ceylon; P. Travis, Munster, Germany; W. D. Mould, Pymble, Australia; L. G. Alley, Durban, S. Africa.

SEPTEMBER 1954 CROSSWORD CONTEST

1st Prize: M. Rose, Wanganui, New Zealand. 2nd Prize: A. Ventura, St. Julian's, Malta, G.C. 3rd Prize: B. McCarroll, Lower Hutt, New Zealand. Consolation Prizes: P. Ball, Letterkenny, Eire; B. Bateson, Adelaide, Australia; T. Tomlinson, Winnipeg, Canada.

SEPTEMBER 1954 AIRCRAFT CONTEST

1st Prize: R. G. Wainsford, Johannesburg, S. Africa. 2nd Prize: P. P. O'Riley, Bray, Eire. 3rd Prize: S. P. Marshall, Barbados, B.W.I. Consolation Prizes: S. Lee, New Delhi, India; T. Pike, New York, U.S.A.; N. P. Boardman, Christchurch, New Zealand.

SOLUTIONS

OCTOBER 1954 LOCOMOTIVE CONTEST

1. Smokebox door handrail. 2. Double chimney. 3. Top feed. 4. Nameplate, and crest. 5. Steam dome cover. 6. Washout plug. 7. Tender front plate. 8. Tender side sheet. 9. Axle box. 10. Power classification data. 11. Sand box. 12. Sand pipe. 13. Connecting rod. 14. Mechanical lubricator. 15. Cylinder drain cocks. 16. Foot steps. 17. Buffer. 18. Smoke deflector.

NOVEMBER 1954 FIGUREWORD CONTEST

Bristol, Bedford, Karrier, Hillman, Fordson, Daimler, Lagonda, Triumph, Leyland, Bentley.

Merioneth above the Ganllwyd Valley. A prize winning print submitted by E. Jones, Caernarvon, in the November 1954 Beauty Spots Photographic Contest.

Fireside Fun

The children were in the midst of a free-for-all when father unexpectedly entered the room.

"Tommy, who started this?" he asked the nearest youngster.

"Well," replied Tommy, "It all started when Albert hit me back."

* * * *

Tourist: "Good river for fish?"

Fisherman: "It must be. I can't persuade any of them to come out."

* * * *

The Sergeant was explaining some important points to a squad of recruits on the range.

"This type of bullet will penetrate two feet of solid wood," he said. "So remember to keep your heads down."

* * * *

"What flavours of ice cream do you have?"

The waitress answered in a hoarse whisper, "Vanilla, strawberry, and chocolate."

Trying to be sympathetic he said, "Have you got laryngitis?"

"No," she replied, with an effort. "Just vanilla, strawberry and chocolate."

* * * *

News item: Mr. Smith visited —— School yesterday and lectured on "Destructive Pests." A large number were present.

* * * *

A motorist had just been pulled up for speeding. The police officer, pad in hand, approached the car.

"All right," he snapped. "What's your name?"

"Aloysius Gloucestershire Merkowitzskyvitch," the driver replied.

"Well," the policeman said, putting back his pad, "don't let me catch you speeding again."

* * * *

"We're in luck, Selby—a Zebra crossing!"

A clerk, checking over an applicant's papers, was amazed to note the figures 127 and 123 in the spaces reserved for "Age of father, if living" and "Age of mother, if living."

"Surely, your parents aren't that old?" the surprised clerk questioned.

"No," was the answer, "but they would be, if living."

* * * *

"Waiter, this coffee is mud."

"Sorry, sir, it was ground only a few minutes ago."

* * * *

THIS MONTH'S BRAIN TEASERS

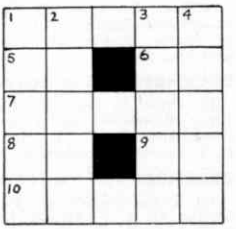
FIVE MINUTE CROSSWORD

Clues Across

1. To read this you must be . . . . .
5. Decay without ending.
6. Two thirds of VIA.
7. Old castles had these.
8. Two compass points.
9. Seen on radio sets.
10. Hands out.

Clues Down

1. Equipped.
2. Free.
3. Of utmost importance.
4. Stops without beginning.



* * * *

HIDDEN PHRASE

This is a well-known phrase of four words. Six letters, three each of two kinds, have been left out and the remaining letters have been set down in their correct order, but closed up so that the spaces where the letters have been omitted cannot be seen. Can you discover what the phrase is?

IOWOIGH

* * * *

BIRDS' NAMES

What birds' names are indicated by the following:

1. What everyone does at meals.
2. A pronoun and a preposition.
3. A celebrated architect.
4. A kind of country and a female bird.
5. To take without permission and to be inside.
6. Sounds like part of a plant but isn't.

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

A Coin Puzzle

The six moves required to solve this puzzle are as follows: move 12 to 3; 7 to 4; 10 to 6; 8 to 1; 9 to 5 and 11 to 2.

* * * *

What am I?

A map of the world.

* * * *

Jumbled Trains

(1) Golden Arrow, (2) Elizabethan, (3) Royal Scot, (4) Flying Scotsman, (5) Merchant Venturer, (6) Bournemouth Belle, (7) Broadsman, (8) Cornish Riviera.

STAMP ADVERTISEMENTS

(see also pages 218 and 220)

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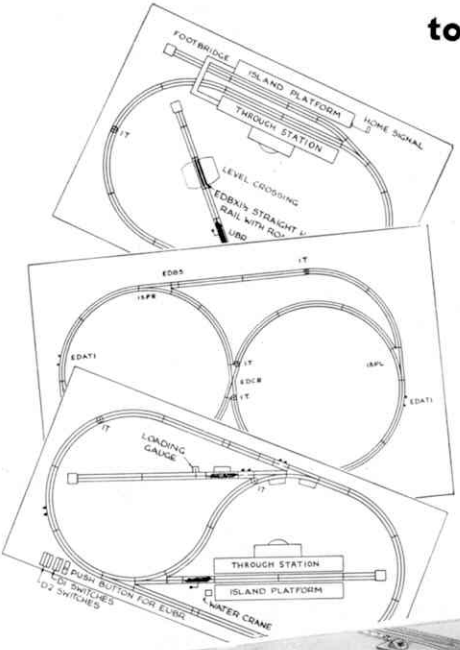

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