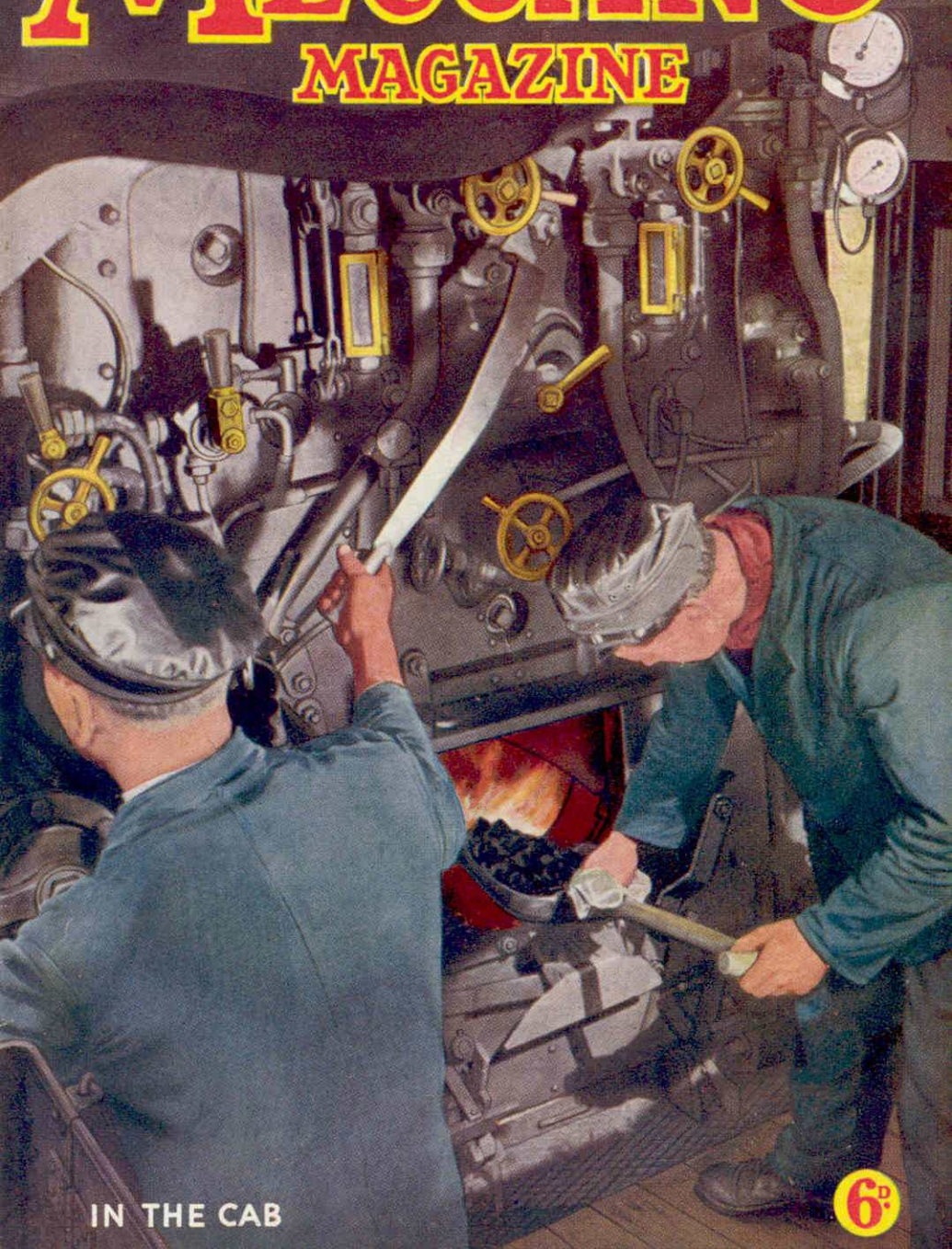


VOL. XXXII, No. 10.

OCTOBER 1947

MECCANO

MAGAZINE



IN THE CAB

6^p



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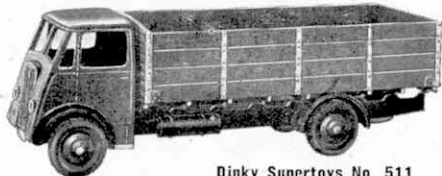
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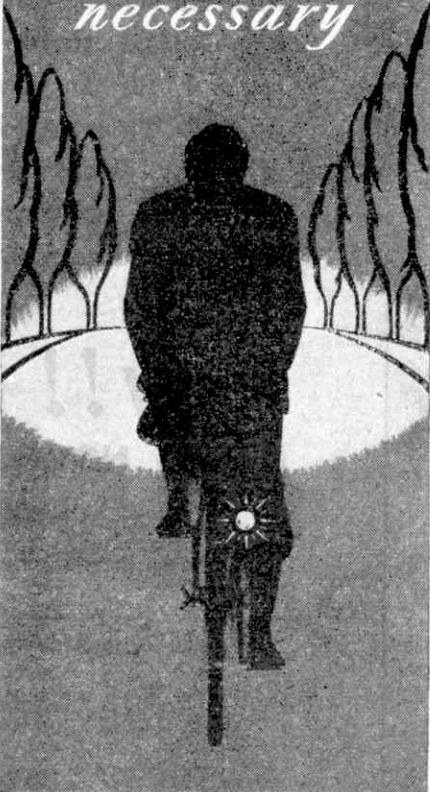
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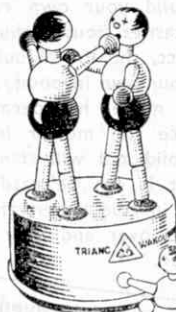
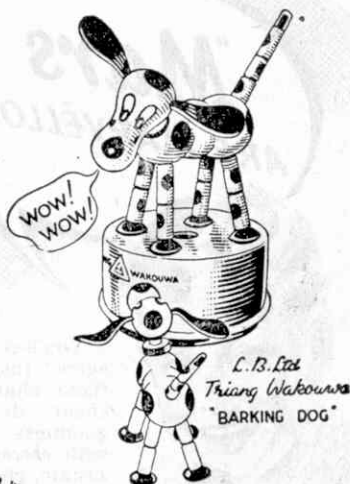


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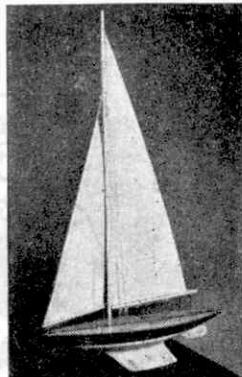
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Next Month: "OUR NAVAL AIRCRAFT." By John W. R. Taylor

MECCANO

MAGAZINE

Editorial Office
Binns Road
Liverpool 13
England

Vol. XXXII

No. 10

October 1947

With the Editor

"The Last of the Vikings"

Captain Gustaf Erikson, sailing ship-owner and ex-sailor, popularly known as "The Last of the Vikings" has died at the age of 74. He went to sea at the age of 10, by 15 was A.B. and two years later boatswain, and got his first billet as mate when he was 18. Before he was 20 he was master of the "*Adele*," a decrepit sailing vessel in the North Sea timber trade. After two years he gave up his command, shipped as a deep-sea mate and spent his spare time educating himself, but competition for command was harder and he was further handicapped by a broken leg that kept him ashore for a considerable time; so that in 1902 he returned as master of a timberman. By 1909 he was in command of the iron Russian barque "*Lochee*."

In 1913 he resigned his command to set up as a shipowner in the Aaland Islands. He had saved a good deal and his excellent reputation secured him good backing so that he was able to buy the composite barque "*Tjevemai*," 30 years old but in good condition. She was followed by the ex-German "*Rena Rickmers*," re-named "*Aland*." Both these ships were lost during the first world war, but he bought other ships and by keeping them out of the war zone made a very respectable fortune out of them. The victorious Allies found little use for the big German ships that had to be surrendered, and Erikson bought several of them. He succeeded in running his rapidly growing fleet of big windjammers at a reasonable profit although he never made the fortune with which he was credited. Their opportunities were gradually narrowed, but at the same time the number of young men who had to have sail experience in order to get certificates in

their respective countries, gave him the opportunity of getting first-class young crews willing to serve for very low pay.

So he kept his ships running until the outbreak of the last war, when several of them were lost by German action and others were captured. He managed to get two ships away this year, but they both sustained weather damage, and there is no doubt that his last days were embittered by the way in which the business he had built up so carefully had practically disappeared.

* * * *

The U.S. Navy Douglas "Skystreak" high-speed research aircraft described in last month's "*M.M.*" has quickly gained fame. On the 21st August last it set up a new world air speed record of 640.7 m.p.h., which exceeded by 17 m.p.h. the record of 623.8 m.p.h. established a few months ago by a U.S.A.A.F. Lockheed "Shooting Star." On the 26th August the "Skystreak" achieved the still higher air speed record of 650.6 m.p.h.

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New and Old in the Air

By C. G. Grey

THERE is a good old rhyming proverb which says: "Be not the first by whom the new is tried, nor yet the last to set the old aside." Which is always coupled in my mind with another: "To have *been* first merely proves antiquity; to have *become* first proves merit." Bear them in mind in your future career, in any line of business. They are particularly true in aircraft affairs.

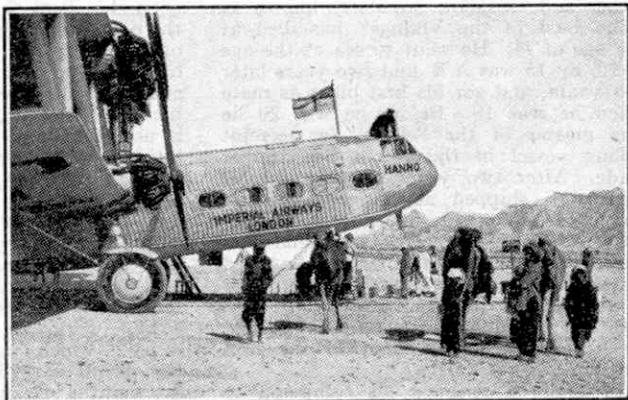
Just at the moment people are worrying their heads about speeds beyond the speed of sound—supersonics, they call them. Which means that some day aircraft may arrive before you hear them. That is not new really, because all projectiles do that. If you hear a bullet you know it won't hit you, because it has already gone past—and yet I've never known a soldier who, except in the heat of action, didn't duck at the sound of a bullet. Even the old-fashioned howitzer shells, which at the top of their trajectory could be seen turning over in the air, used to arrive and burst before one could hear them.

The V.1 flying bombs, which only did 400 m.p.h. or so, could be heard coming a long time before they arrived, because their speed was only about two-thirds of that of sound. But the V.2s which, a scientific friend of mine assured me, cruised up in the stratosphere at thousands of miles an hour and "slowed down to 6,000 m.p.h. or so" (as he said) before they hit, were inaudible. The queerest experience was to hear them coming *after they had burst*—they sounded like a very noisy express train. And yet they were visible if one just happened to be looking in their direction when they came along.

A small boy saw one of the first—that which almost blew up the Chrysler Works near Kew. He really did, because he described it, and his description tallied exactly with what we found out about it afterwards.

Sight is quicker than hearing, because light is faster than sound. One sees by light passing through the air. One hears by waves of sound pushing the air about, and air is very dense in fact. That is why, in the Schneider Trophy Race of 1931, when the speed of the competitors was a mere 300 m.p.h., we found that if we heard an aircraft passing in a certain direction, knowing that it was five or six miles away, we had to look several miles ahead of the sound to see the aircraft.

Now trying to fly faster than sound may be very interesting from a scientific point



One of the Handley Page H.P.42 4-engined air liners built for Imperial Airways. They gave splendid service.

of view, and piloting the aircraft that are trying to beat sound is very dangerous. As Peter Pan says, "It is a very great adventure"; but what is the good of it?

Flying at 500 m.p.h. would get you from England to the U.S.A. in about six hours. Flying at 700 m.p.h. you would take a little over four hours. And, as the philosophic Chinaman asked: "What will you do with those hours you have saved?"

For war there certainly is an advantage in having the fastest fighters. For example, if the enemy has a fighter which beats sound by doing 700, and perhaps ten some, miles per hour, and our best fighter is held up by the supersonic barrier of 650 m.p.h. (or whatever it may be), then obviously the enemy is going away from our people at 50 m.p.h.

The scientists tell us that they have calculated that at the speed of sound



An Avro "York" transport used for charter service by Skyways. Photograph by J. W. R. Taylor.

something happens. They do not seem to know what. But they have an idea, apparently, that any known kind of aircraft structure will break to pieces. Certainly that idea seems to be borne out by the mysterious buckling of the Gloster "Meteors" when they got up to 610 m.p.h. or so, and the makers had to strengthen them before risking the odd 5 m.p.h. or so to reach the record. Then there was the case of the De Havilland tailless jet machine, which did burst asunder at some very high speed, and killed poor Geoffrey de Havilland.

Strengthening *one* part generally means providing a strong point against which another part, hitherto strong enough, may break. Often one can stop breakages by making a part weaker so that it will bend. (Try strengthening a fishing rod and see what happens. The thing is an example of carefully graduated weakness.)

So you see the problems the makers of supersonic aircraft are up against. Yet

they must go on, for warlike reasons.

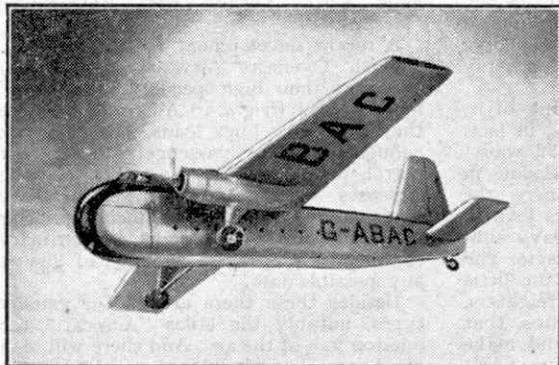
Nobody believes that guided projectiles, such as rockets with atomic war-heads and a range of 10,000 or even 1,000 miles will ever be so accurate as to be effective against a limited target. Radio-directing beams can be "bent" or "cancelled out" by defensive radio equipment. So we come back to high-speed bombers, carrying atomic bombs or disease bombs or some of the other nasty things about which scientists are talking.

Therefore the only defence is fighters which are faster than bombers. They will be jet propelled at first, and then, when scientists have progressed a bit with harnessing atomic energy, they will be propelled by it. And they in turn will be armed with atomic rockets which will have self-aiming devices by which they will be attracted on to the target bomber. And it, in turn, will reply with similar ingenious weapons.—Isn't science wonderful?

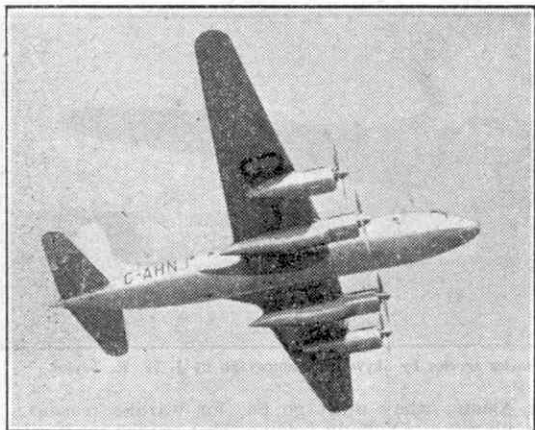
With that we may stop contemplating the new things which are to be tried. Think it over.

Now we can turn back and consider some of the old things which we are not yet ready to set aside.

In June last one of the cleverest designers in the United States, Jack Northrop, gave the annual Wilbur Wright Memorial Lecture to the Royal Aeronautical Society, the oldest aeronautical organisation in the world. He lectured on all-wing aircraft and showed splendid coloured movies of his all-wing machines flying.



The Bristol "Freighter" twin-engine transport. It has a payload of over four tons. Photograph by courtesy of Bristol Aircraft Co. Ltd.



Avro "Tudor" IV. This version of the basic "Tudor" I type is being built for British South American Airways Corporation. Photograph by courtesy of A. V. Roe and Co. Ltd.

I suppose that quite a lot of his large audience were almost persuaded that aircraft without tails or bodies are going to be the thing.

But afterwards, in conversation, Mr. Northrop made a remark which was more enlightening on the future of air transport than all his lecture. He said in effect: "There are a whole lot of burgs that can't afford reinforced concrete runways five thousand yards long and a hundred yards wide and five yards thick. And those burgs want air transport."

Then he explained that he is building a three-engined monoplane, which has a very low take-off speed, a still lower landing speed, and not very fast flying speed, and will lift a big load of freight or passengers out of a quite small field. And that, he said, will make more money out of aviation than all the jet-propelled or turbine-driven high-speed, stratospheric, pressurised air liners will make for many years to come.

Which, when you come to think of it, is just plain common sense. It is, in fact, just what the old Junkers Ju 52 was—and it was the world's best aeroplane in its day. The greatest ocean liners, the greyhounds of the sea, as writers love to call them, are kept going by heavy subsidies in the form of mail contracts. The ships that make the money are the little cargo boats, and the big slow freighters, and the tankers and the tramps that waddle around the Seven Seas and make big money on every mile they steam, while the crack liners lose it.

When Handley Page brought out his H.P.42 biplanes with four engines the air people in the U.S.A. laughed at them and talked about "built-in head winds." After they had been flying for some years, Juan Trippe, head of Pan-American Airways, the most astute air transport man in the States, flew over from Paris to London in one of them—I may say that they were the most comfortable vehicles ever built for land, sea or air. At Croydon Trippe was met by George Woods Humphery, then Managing Director of Imperial Airways, for whom the 42s had been built. As they met on the concrete W. H. said: "Well Juan, what about the built-in head winds?" and Trippe replied: "Built-in payloads, George, built-in payloads."

In spite of all our high-speed streamlined passenger-carriers, the slow freighters are out to make the money. The Bristol "Freighter," which when fitted with seats for passengers for short hops up to 500 miles becomes the "Wayfarer," lifts big loads off grass, or short runways. The big charter firms, such as Skyways (run by General Critchley and Sir Alan Cobham), London Air and Motor Services, L.A.M.S. (run by Dr. Graham Humby, who gave up being a famous surgeon to operate on air transport), Lancashire Aircraft Corporation Ltd. and others are using Handley Page "Haltons," a variant of the "Halifax" bomber, and are doing very well already. Those are all big four-engined jobs, with Bristol "Hercules" engines. Also they have Avro "Yorks," with Rolls-Royce "Merlins."

A recent development is that B.O.A.C. (British Overseas Airways Corporation) are using their high-speed "Lancastrians" for mail and freight to Australia, because they can carry huge loads, but have not enough room for passengers to pay for petrol, let alone all the other running expenses. And to-day V.I.Ps. (or Very Important Persons), as official priority passengers, are running short, and ordinary commercial passengers are a dead loss at any possible fare.

Besides these there are all the smaller types, notably the Miles "Aerocar," the one-ton van of the air. And there will soon be huge slow freighters, such as the "Hamlicar" glider, (Continued on page 408)



"Queen Mary" in Service Again

AFTER steaming 569,543 miles on transport service during the war, during which she carried 765,429 Servicemen across the oceans, the "Queen Mary" has now returned to the North Atlantic service. She made her first post-war voyage in this capacity on 31st July, 10 years after the keel of her sister ship "Queen Elizabeth" was laid down. The two "Queens" should have taken up the transatlantic service together in 1940, but the war intervened, and only now have the two great vessels taken up their joint task. There was a historic moment in the last week of July, when the "Queen Mary," anchored off Cowes on the completion of her trials, was passed by the younger vessel returning from New York to Southampton, a meeting that was celebrated by triumphant greetings from their sirens.

"Queen Mary" reached Southampton from Halifax at the end of her last troop voyage in September of last year, and a few days later 1,500 workmen from John Brown and Co. Ltd., Clydebank, her builders, swarmed aboard and began to dismantle troop fittings, removing the maze of standee berths, temporary wooden bulkheads and other special equipment as a preliminary to reconstructing and restoring the interior of the vessel. Scaffolding was erected and the decks resounded to the noise of hammers chipping and scaling paintwork. In the meantime many and varied tasks were undertaken above decks.

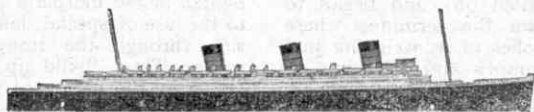
The 32 motor lifeboats were removed to the yard of John I. Thornycroft Ltd. at Nor-

tham for overhaul, the davits were dismantled and boat winches overhauled. One interesting task was the reconversion of the deck rails, on which thousands of troops had carved their names or initials. These were all scraped and planed ready for repolishing, except for one length that is to be preserved in the United States.

At one stage the vessel was moved into the King George V graving dock at Southampton, where the four 35-ton propellers were removed, the tailshafts were drawn and the underwater part of the hull was scaled and painted with anti-fouling composition, of which 3,000 gallons were required. At the same time a special composition, known as "Aranbee Fairing," used to smooth down the irregularities of overlapping plates, was inspected and renewed where necessary. The use of this composition has greatly lessened friction by reducing the resistance of the hull when the vessel is steaming at speed.

The giant machinery of the "Queen Mary" also was overhauled. She has 24 main water tube boilers, and these were thoroughly inspected and their thousands of tubes examined. The casings of the giant turbines were lifted and every detail was carefully scrutinised, while the great lengths of shafting inside the ship were inspected. The auxiliary machinery, consisting of pumps, electric generators, refrigerating compressors and a host of items of electrical equipment, was taken

apart, and all worn parts were replaced, everything being restored to its original condition.



Dinky Toys No. 52a Cunard White Star Liner "Queen Mary."

Footplate Trip on the "Turbomotive"

III—Return from Euston

By "North Western"

THE Editor has reminded me that in the December 1946 "M.M." I concluded my account of the up journey made on the footplate of the L.M.S. "Turbomotive" No. 6202 with the 5.25 p.m. express from Liverpool, Lime Street; but as far as readers are concerned I have not returned from London! I give therefore very briefly my impressions of the down journey with the 8.30 a.m. from Euston next day. There is not space to deal with every item in detail, so I only mention a few of the more notable features.

The arrangements at the Enginemen's Hostel where I was put up for the night at Camden are excellent. Absolute cleanliness and quiet are the golden rules, and their observance by all adds much to the enjoyment of the snug sleeping rooms—officially cubicles, I believe, but this word does not do them justice.

Reporting at the shed about 7.50

a.m. I was shown where the engine was standing, and so met Locomotive Inspector Jackson and the Liverpool crew working home, Driver C. Turner and Fireman C. Melville. Among other notable engines on view that morning was No. 6100 "Royal Scot." Inspector Jackson told me with justifiable pride that he had been one of the crew of that engine when, with its train, it had visited the U.S.A. and Canada in 1933.

Soon we "whistled off" and began to move gently down the terminus where our train, 16 coaches of it, weighing just under 500 tons empty and anything up to 540 tons full, was alongside platform 13. Promptly to time, with the safety valves just lifting, No. 6202 began to move this

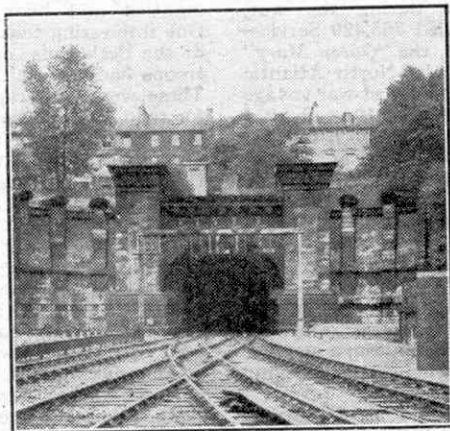
weighty formation, getting away in convincing style without any rear-end assistance.

Readers will recall that the main regulator on this engine is open all the time during the run. The steam supply is graduated by the number of steam valves or jets in use that feed steam to the main turbine. These valves are governed by means of the control box handle in the cab. In general on this run the rule was two valves momentarily at

starting, then three to get the train under way, followed by two again. At Euston, however, four jets were necessary with this big train, and our "Turbo" took the 1 in 70 bank in her stride. Once well over the top the four jets were reduced to three and as we got through Primrose Hill tunnel the normal two-jet setting was adopted.

At Bushey Troughs, thanks to modern equipment skilfully managed, a particularly "tidy" performance

raised our tender water supply by 1,000 gallons. With the characteristic hollow roar sounding beneath us owing to the nature of the ballast at such damp places, the fireman moved to the water scoop handle: A few turns of this, a hissing noise to the rear, and almost immediately he began to wind the handle back to raise the "dip." Here, as elsewhere when we picked up at faster speeds, there was just a slight flurry of water at the sides of the tender below footplate level. This is due to the use of special deflector vanes which ride through the trough ahead of the scoop. They "build up," as it were, the water in the centre of the trough before the scoop cuts off the "top layer," thus the amount of water spilled over the side



The mouth of Primrose Hill Tunnel showing its massive and ornate style. Photograph by courtesy of the L.M.S.

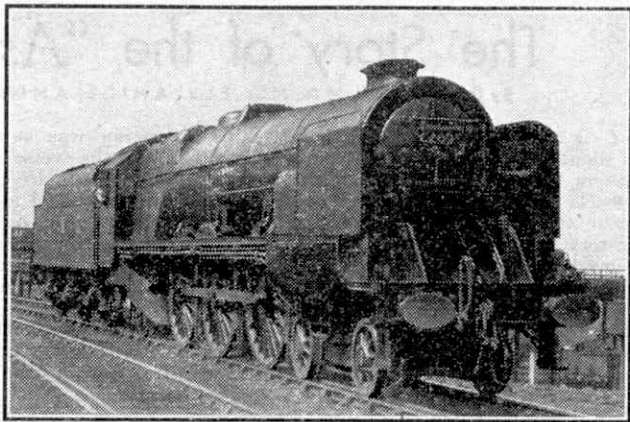
of the trough is reduced.

We stopped at Watford Junction and the "Turbo" cheerfully maintained speed up the long I in 335 to Tring, the speed rising as we passed between the lofty chalky walls of Tring cutting. The road along this length is notably straight and from the cab it opens out in fascinating fashion ahead. The splendid four-track way, with its endless twin files of telegraph poles marching alongside, simply unrolled itself towards us and was thrust behind as we forged northward.

The two outer single-line Leighton tunnels are a close fit round the train and I was warned in good time to cover my face with the usual footplate handcloth. With a "whoof" the strong draught caused by our passage into this tight little tube caused dust to eddy forward in clouds. A sensation of enveloping dry heat mounted gradually from the floor and then suddenly and thankfully we were out in the open again. A nasty little hole, Leighton tunnel!

Running through Kilsby tunnel in daytime is rather a curious experience, especially on the footplate. This is a much more generous bore and there are two intermediate shafts. Their large diameter allows a sort of half-light to filter down to the track level beneath them, so in passing from one section of the tunnel to the next it feels like running across the floor of an enormous well. Here in the yellow gloom under one shaft an up train passed us. A rumble, a hissing roar and the shape of an engine suddenly materialised; then a string of lighted windows and it was gone, leaving only swirling steam and a diminishing echo as it sped southward.

Rugby was left promptly; next stop Stafford. Here unfortunately we had to draw up twice owing to the length of the train. After Whitmore summit we began to move to some purpose down the slope of Madeley Bank and we spun down to Crewe. Then we bowled along the straight and easily-graded road across the Cheshire plain. At Hartford we



No. 6202 having left its empty train, comes slowly round by Edge Hill, No. 11 signal box. Photograph by Rev. Canon E. Treacy, Keighley.

whistled twice so that the "boxman" ahead at Weaver Junction would have the Liverpool road set for us. Sure enough, very soon afterwards it seemed, the Weaver Junction signal came into sight, a typical lofty signal with a sky background. This can be seen a little sooner from the fireman's side of the cab, so Fireman Melville leaned out here, as at other similar locations, in order to get an early sight of it. "Right, Charlie," he sang out, and leaving the road to the north we headed towards Merseyside.

We stopped at Runcorn and Mossley Hill and were soon drifting, downhill now, past Edge Hill and into the cavernous rock cutting leading to Lime Street. We were alongside No. 8 platform two minutes early by the public times then ruling, so that all concerned on the footplate had good reason to be pleased with the engine's showing. Quite clearly the unorthodox 6202 was master of the work and was admirably handled by the crew under the expert guidance of Inspector Jackson.

A carriage pilot engine came on at the other end, one of the familiar ex-L.N.W.R. "Coal Tanks" used for this job since time immemorial almost, and so No. 6202 trailed in the rear out again to Wavertree Junction. Here we hooked off from the train and headed up the inclined goods road, curving up over the main line; and so we came creeping round to Edge Hill No. 11, a little box high above the shed premises. Then we reversed and very gently picked our way down the incline to the coaling plant. The engine was then brought into the yard to be made ready to take up the 5.25 to Euston that evening.

The Story of the "Asturias"

By Denis Rebbeck, M.A., M.Sc., B.Litt., A.M.I.C.E., A.M.I.Mech.E., M.I.N.A.

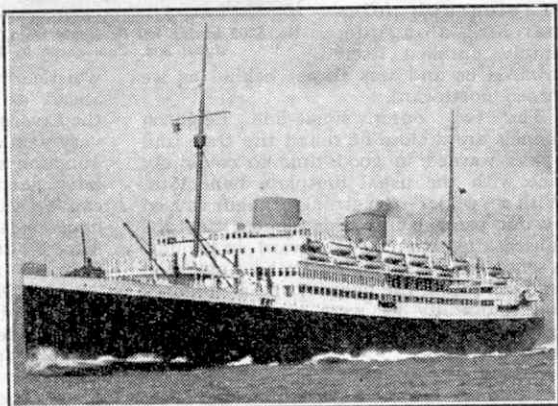
IT is not surprising that some ships should have more colourful careers than others, nor is it unusual that certain vessels should, for one reason or another, leave their mark on the pages of marine history. In penning these few introductory remarks the author has more than one ship in mind, but this short article is written around a famous Royal Mail 22,000-ton passenger liner which has had a very useful and a very chequered career.

The ship was designed and built, together with a sister vessel the "Alcantara," by Harland and Wolff Ltd., at Belfast. Many famous Royal Mail liners had been built in this same yard, in years gone by, and the two new passenger liners which were completed in the mid-1920s were worthy of the great company which they were to serve. The main machinery in each vessel consisted of two sets of eight cylinder double-acting four-cycle blast-injection diesel engines of Harland-Burmeister and Wain design, and though intricate-looking in their general appearance they were reliable in service and powerful in output. When running at the normal speed of 115 r.p.m. each engine developed 15,000 B.H.P.

The ships themselves exceeded, by several thousand tons, any previous vessel in the Royal Mail Fleet, and when launched they were the largest motor vessels afloat. The passenger accommodation and interior decorations were on the grandest scale and made an instant appeal to the travelling public on the South American route. At the British Empire Exhibition, held at Wembley in 1924 and 1925, the public had a grand opportunity of viewing the new standard of comfort which these two vessels were to provide, for on the company's stand at the Exhibition there was erected one of the luxuriously furnished suites de-luxe intended for the "Asturias" and later incorporated in that vessel when she was fitting out at Belfast.

Electricity played a very important part in the ship. Seven electric lifts and hoists conveyed passengers, crew and goods from deck to deck, and all lighting and

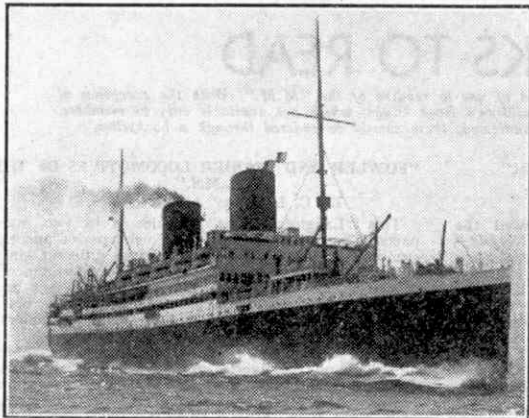
heating was supplied by electric power from the vessel's generators which also were diesel driven. Over 4,000 lamps lit the ship and nearly 500 large electric heaters were distributed throughout the accommodation, each heater being separately controlled. Eleven watertight bulkheads divided the vessel into twelve compartments; watertight doors, electrically controlled from the bridge, permitted passage through the bulkheads. In fog or in time of emergency these doors



The "Asturias" in her original role as a motor-ship.

are closed and it is an eerie feeling to be shut in one section of the ship, well below the water line. The doors can be opened for an instant by any one who wishes to pass through, but they automatically slide shut again, so it is not wise to linger on the way through!

The "Asturias" sailed on her maiden voyage from Southampton on 26th February 1926 and became a very popular ship with the many people who subsequently travelled on her. Eight years later, in 1934, the Royal Mail Line decided to improve its principal passenger service to South America by increasing the speed of the "Asturias" and her sister ship. Accordingly, in May 1934, the "Asturias" was withdrawn from service and sent to Belfast where her builders were entrusted with the task of removing her diesel engines and substituting in the same engine room very much more powerful geared steam turbines and Johnson water-tube boilers.



The "Asturias" after being re-engined as a geared turbine liner.

These boilers were designed to have a working pressure of 425 pounds per square inch—a high figure, especially for that period. Three of these boilers were sufficient to provide steam to drive the ship at a speed of over 18 knots. The lines of the re-engined vessel were improved by lengthening the bows, and the external appearance of the ship was enhanced by increasing the height of the two squat motorship funnels. The "Alcantara" was converted in a similar manner in the following year.

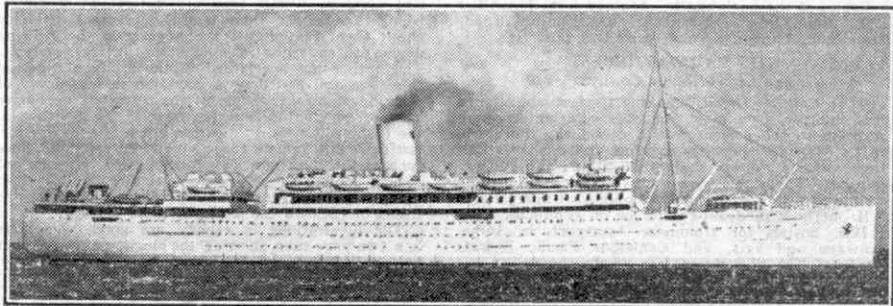
These two fine ships took on a new lease of life and continued their usual sailings until war broke out in 1939. They were then converted into armed merchant cruisers and in their new role they served their country well during the war years. By a curious coincidence the "Alcantara," like her predecessor of the same name in the 1914-18 war, was engaged in action with a German raider. This action took place in the South Atlantic in August

1940 and has already been reported in the Press. Subsequently this vessel was utilised for the transport of troops on which service she is still engaged.

The "Asturias," after operating for several years as an armed merchant cruiser on patrol duties and as a convoy escort, was eventually torpedoed and very badly damaged in the boiler room. In spite of the serious damage to the hull, the vessel succeeded in reaching harbour. After a quite considerable time she was brought to Belfast where her builders, Harland and Wolff Ltd., were entrusted with the difficult job of making her fit for further service. In view of the large

amount of work to be carried out and the consequent high cost of restoring the "Asturias" to her pre-war condition, it was decided by the owners to sell the ship to the Government. The latter were naturally eager to purchase this large passenger liner and use her for troop duties. The work of repairing the vessel and fitting her out specially for troop carrying was completed towards the end of last year, and our third illustration shows the "Asturias" leaving Belfast Lough to begin another era in her chequered career. Royal Mail Lines Ltd. continue to manage this grand old ship on behalf of the Ministry of Transport.

The "Asturias," rather like old Father Thames, goes on for ever. New engines, new bows, new funnels, serious torpedo damage and further replacements and repairs, even new owners, make no difference to this old timer whose spirit is as strong as ever. Bon voyage, "Asturias"!



The "Asturias" as she appears to-day for trooping.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With the exception of those issued by the Scientific and Children's Book Clubs, which are available only to members, and certain others that will be indicated, these should be ordered through a bookseller.

"THE FIRST RAILWAY IN NORFOLK"

By GEORGE DOW, A.M.Inst.T.
(L.N.E.R. 1/6)

In the August 1944 "M.M." we reviewed the original edition of "The First Railway in Norfolk," a booklet issued by the L.N.E.R. to mark the centenary of the opening of the Yarmouth and Norwich Railway. In this second enlarged edition further historical data has been included, with additional illustrations of considerable interest, and the whole has an improved style with a separate title page and a frontispiece map.

The book is on sale at the bookstalls at L.N.E.R. London terminals and principal stations in East Anglia, and copies may also be had from the company's Advertising Manager at 26, Pancras Road, N.W.1.

"WILD LIFE"

(L.A.C.S. 9d.)

Interest in the countryside and in the creatures that live in it are perennial and widespread, and "M.M." readers who share this will welcome the appearance of a magazine specially devoted to the topic. This first issue contains excellent articles on such subjects as the wild ponies of Exmoor, the grey seals, rabbits and red deer of Lundy Island, and the effect of the National Park scheme on the animal and bird life of the country. How inspectors of the R.S.P.C.A. joined in the rescue of animals buried under snow drifts or threatened by flood during the grim weather of last winter provides an interesting story, and there are attractive shorter articles and notes. Good photographs provide ample illustration, and if subsequent issues fulfil the promise of the first the new magazine will be greatly appreciated.

"S.E. AND C.R. LOCOMOTIVES"

By F. BURTT
(Ian Allan Ltd. 3/6)

The publishers of the well-produced book on locomotives of the former L.B.S.C.R. that was reviewed in the "M.M." for October 1946 have followed this up with a similar production by the same author dealing with the engines of the neighbouring South Eastern and Chatham Railway. Somehow the engines of the constituents of the S.E.C.R., the South Eastern and the London, Chatham and Dover respectively, never achieved the glamorous reputation of the Brighton engines of the Stroudley period. Possibly this was because they had no names and their appearance was less ornate, but they are of real interest to the railway enthusiast.

Copies of the book can be obtained from Ian Allan Ltd., Mail Order Department, 33, Knollys Road, Streatham, London S.W.16, price 3/9 post free.

"THE RAILWAY DIGEST"

(George Lapworth and Co. Ltd. 2/9)

"The Railway Digest," making its first appearance this summer, is a most readable and entertaining addition to the present wealth of railway literature. In its 64 pages there are extracts and condensations from various railway staff publications and railway journals. These deal with such subjects as tunnelling on the Stratford extension to London's Underground, S.R. methods of dealing with ice on conductor rails, L.M.S. hostels for trainmen, transport in India, railways and rats, and Canadian Pacific lineside gardens. The illustrations are nicely chosen.

"The Railway Digest" is published at 2/9 per post free by G. Lapworth and Co. Ltd., Vernon House, Sicilian Avenue, London W.C.1. Readers wishing to become subscribers should write to the publishers now. The next issue is expected to appear in November.

"FOWLER AND STANIER LOCOMOTIVES OF THE L.M.S."

By C. LANGLEY ALDRICH. (6/6)

This "Langloco Series" booklet is in two main parts. The first deals with the Fowler period and the standard engines then adopted for the different kinds of traffic, and the second records the developments of the Stanier regime, during which such new and striking L.M.S. standards were evolved as the hefty Class 7 4-6-2s, the familiar 4-6-0 "Black Staniers" and their sturdy 2-8-0 sisters.

There is a table of principal dimensions, notes are given on the liveries and style of lettering and numbering, and brief reference is made to the various L.M.S. Chief Mechanical Engineers who have held office since 1923. Finally there is a short description of the post-war light general-service 2-6-0s and 2-6-2 tanks. Sufficient illustrations to cover the text are included, many, but not all, from official photographs, and for the most part these are well reproduced. The principal names, building dates and so on of the classes dealt with form a useful part of the account.

Copies can be obtained from E. V. Aldrich, 104, Grove Crescent, Kingsbury, London N.W.3, price 6/10 post free.

"THESE YOU CAN HEAR"

By W. NORMAN STEVENS
(Amalgamated Short Wave Press. 2/-)

This interesting booklet is described as an introduction to world-wide short wave reception. Its chief contents are well-illustrated accounts of various short wave stations in Holland, French Equatorial Africa, Canada, Australia, British Guiana and elsewhere, with a table giving technical details and times of their transmissions. Another article deals with short wave tuning, and there is a chart showing at a glance when to search for a large range of overseas programmes. A selection of foreign stations that radiate special programmes in English also is given, with times and other necessary details.

The book can be ordered direct from Amalgamated Short Wave Press Ltd., 57, Maida Vale, Paddington, London W.9, price 2/3 including postage.

"THE LIGHT RAILWAYS OF BRITAIN"

By R. W. KIDNER
(Oakwood Press. 2/6)

Light and narrow gauge railways have long been of interest, particularly as so many of them provide such a contrast to accepted main line equipment and practice. While they are unfortunately diminishing in numbers, there is still a pleasant diversity about them that makes a change from the growing degree of standardisation evident on the larger systems. The author has specialised in the study of lines of this type and had done a good job in his survey of their development. Some of the quaintest no longer exist. The Lynton and Barnstaple, the Southwold, the Bishops' Castle, to mention but a few, have gone, but there still remain to us equally entertaining lines such as the Kent and East Sussex. The latter indeed is bold enough to emerge from its own territory into an S.R. station, and there the contrast between the trains of the two companies is most marked.

The illustrations in general are good, and there is a two-page map showing the location of the various light railways dealt with. A useful list is given of those still in existence, with details for the benefit of those who may wish to visit them.

Obtainable from the Oakwood Press, 30, White Horse Hill, Chislehurst, Kent, price 2/9 including postage.

The Bristol Rotor Test-Rig

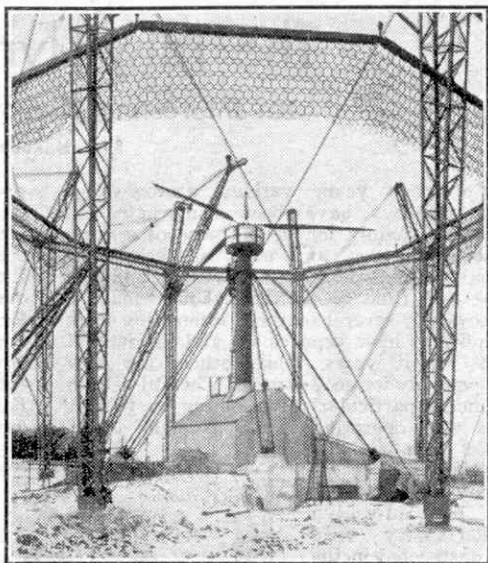
By John W. R. Taylor

THE success or failure of a helicopter depends on its rotor, which combines in one unit all the duties normally performed by a wing, ailerons, elevators and propeller. It is used to get the machine into the air and then to keep it there and propel it in the desired direction forward, sideways or even backward. It is the rotor that gives a helicopter its unique ability to hover. More than that, if the engine suddenly fails, the rotor must be able to change its pitch and then "free-wheel" so that the helicopter can glide safely to earth.

At the moment, because of British wartime concentration on military aircraft, American helicopters are the best in the world. But our designers are developing some very ambitious and promising new projects which will give the Americans plenty of healthy competition. With typical British attention to detail, much time and money are being spent on research to ensure the efficiency of each component of the new machines. The rotor test-rig built by the Bristol Company is a good example of this. Putting first things first, Bristols are going all out to perfect the rotor of their new Model 171 helicopter before putting the aircraft into service, and the test-rig permits tests of its aerodynamic properties to be carried out that would be impossible with the finished aircraft.

The Bristol rotor test-rig is the largest of its type in the world and, although simple in principle, gives incredibly accurate test data. It consists basically of a tubular steel tower with a spherical mounting at its lower end and a housing for the rotor axle at its top end. The drive-shaft for the rotor is inside this tower, power being supplied by a vertical-spindle, direct-drive, 500 v. electric motor.

The tower is not rigid but is supported by a system of six guy ropes. By slackening or tightening these guys, together with the fact that the tower is "ball-jointed" at its base, it is possible to allow some six inches of lateral movement in all



Bristol Rotor Test-Rig. Photograph by courtesy of The Bristol Aeroplane Co. Ltd.

directions at the top; the drive-shaft being provided with two universal joints to accommodate this movement and so ensure that no forces except the driving torque are supplied to the rotor on test. This "flexibility" of the tower permits the rotor to be tested under conditions that simulate all conditions of flight from straight-forward flying to hovering and even heavy landings.

As the rotor is some 50 ft. above the ground there is no ground interference to upset the delicate readings, which are measured by variable-resistance strain gauges and recorded on a cathode-ray oscillograph.

The tower is surrounded by a ring of 70 ft. high pylons from which is hung a complete circle of heavy steel safety netting. This is necessary as the rotors will at times be turned at far higher speeds than they will ever encounter in service, to ensure that the hubs will stand up to extreme loads. Should the hubs fracture, the flying rotor blades would be caught by the netting. The rotors are hoisted to the top of the tower by a 60 ft. jib crane and the tower is so constructed that intermeshing rotors, or even a fuselage complete with rotor, could be tested if desired. It is undoubtedly a most ingenious and useful addition to British aviation research equipment.

The Tal-y-Llyn Railway

An Interesting Narrow-Gauge Line

By R. H. Roberts

IN past years various narrow-gauge railways have been constructed in Wales, mainly for the purpose of serving slate quarries, and most of these lines have carried passengers as well as minerals at one time or another. Unfortunately, however, several of these interesting little railways have been closed and dismantled in recent years, while others are now open only for goods traffic. The Tal-y-Llyn line is particularly interesting in that it is still operating, and passenger trains are run in the summer time at any rate.

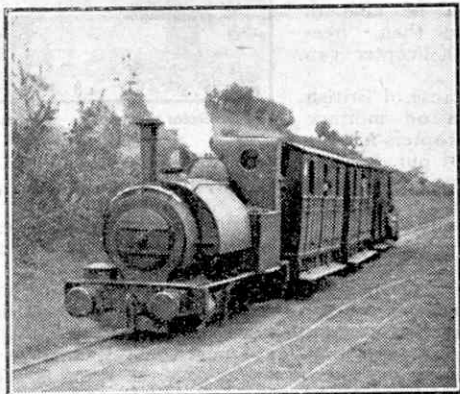
The Tal-y-Llyn Railway was constructed in the 1860s to a gauge of 2 ft. 3 in., to transport slates from the Bryn-Eglwys quarries down to the old Cambrian Railway, now the Great Western, at Towyn, Merionethshire. This duty it still performs, though the traffic is at present not very large.

The terminus at Towyn is at the "Wharf" station, at one end of the Great Western goods yard and sidings. At this station there is an exchange siding where slates may be conveniently transhipped to the standard gauge line. Most Tal-y-Llyn trains start from the wharf, though there is no passenger platform there. From the wharf station the line runs in a north-easterly direction, mainly in a shallow cutting, through the town of Towyn to the Pendref station which is the headquarters of the railway and where the locomotive shed is situated. Pendref station, like all the other stations except the wharf, has a small stone shelter and a short platform. As the line is single throughout, with no intermediate passing loops, one platform is provided at each station, on the left-hand side of the line

proceeding up from Towyn, and the carriages have doors on this side only.

On leaving Pendref station the railway crosses a side road by a level crossing, the only one on the line, and continues over comparatively level and open country for nearly two miles to the next station, Rhydyronen, which is near the village of Bryn-crug. Beyond this station the line enters the narrow valley of the little river Fathew, whose course it follows from now onward, clinging to the hillside on the

southern side of the stream. The best views are therefore to be had by sitting on the left-hand side of the coaches as the train leaves Towyn. One mile from Rhydyronen is the next station, Brynglas, serving a few farms and cottages. Near by is a woollen mill, which is generally open to visitors. Short sidings, now disused, are provided at Rhydyronen and

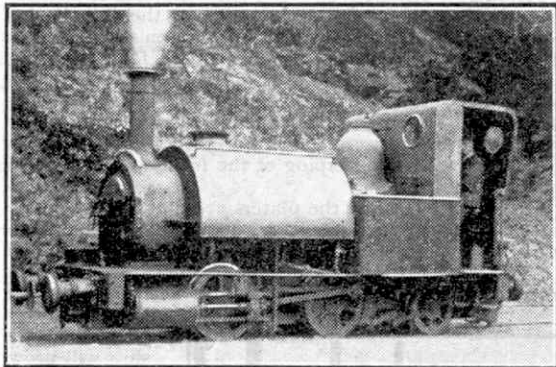


A train approaching Rhydyronen station on the Tal-y-Llyn Railway. The engine is saddle tank No. 2 "Tal-y-Llyn."

Brynglas stations.

The next station, Dolgoch, two miles beyond Brynglas, is situated in a picturesque wooded dingle, just above the well-known Dolgoch waterfall. Shortly before the station is reached the railway is carried over the Dolgoch Ravine by a high three-arched brick viaduct. It is usual for the locomotives to take water at this station, the small water tank being filled by a spring on the mountainside. Dolgoch station is a convenient starting point for a pleasant walk over the hills to the famous "Bird Rock." Beyond Dolgoch the line passes along the Fathew valley to Abergynolwyn station, the terminus for passenger trains, which is a good half-mile short of the village of Abergynolwyn and about three miles from the beautiful Tal-y-Llyn lake. Beyond the

station the line continues along its ledge of rock, high above the houses of the village, then runs for about a mile along the narrow Ceunant Gwylt or "Wild Ravine" to the quarries. The total length of the



Another view of "Tal-y-Llyn." This quaint little engine was built in 1865.

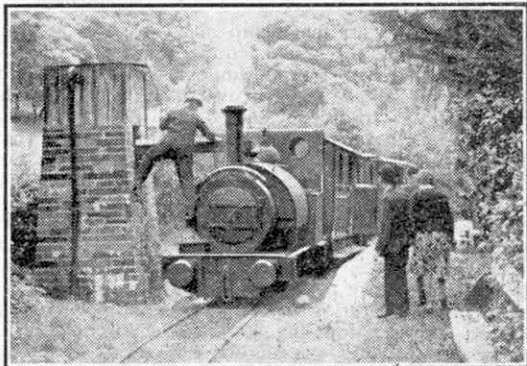
railway is about eight miles, passenger traffic being operated over seven miles of it.

Undoubtedly the most interesting feature of the railway, however, is the fact that the two locomotives built in 1865 for the opening of the line are still in use. These engines were built by Fletcher, Jennings and Co., of Lowca Works, Whitehaven. They are among the oldest locomotives at work in Great Britain, though they have had a good deal of rebuilding at various times. No. 1, originally named "Dolgoch" but later christened "Pretoria," is a 0-4-0 well tank engine, while No. 2 "Tal-y-Llyn" is a 0-4-2 saddle tank. Both these engines are of a comparatively small and light type, weighing about 12 tons each, and both operate now at the unusually low boiler pressure of 60 lb. per sq. in.

The usual train consists of two or three four-wheeled passenger coaches, and a brake van which serves also as a travelling booking office. There is no staff at any of the stations, and the engine driver issues tickets from the "booking office" before the train starts from each station. Slate trucks are attached at the rear of the train and in times of heavy traffic I have seen the fireman hop off the engine while the train is descending the bank between Abergynolwyn and Dolgoch

stations, wait till the last slate truck is going past him, then jump on board and reinforce the braking power of the engine by applying the hand brake on the slate "bogies," while sitting on top of the load of slates! Speeds of course, are not very great, the time allowed for the seven-mile journey being 45 minutes. The track is laid with rails of rather light section, supported in chairs of an unusual type. It is probably much the same track as was laid down for the opening of the line.

As may be imagined, a journey to Abergynolwyn is something of an adventure, though there is a very leisurely air about the little train as it puffs its way up the quiet valley. The coming of the motor bus has caused some reduction in the passenger traffic, but the railway still performs a very useful service, and all railway enthusiasts will hope that it will continue to do so for many years. The Tal-y-Llyn line is not included in the list of railway undertakings shortly to be nationalised, and seems likely to retain its individuality for some time to come. During the summer many holiday visitors to Towyn make use of the line, either to reach some of the picturesque places served by it, or to enjoy the novelty of the trip. No one who is interested in the unusual in railways and who has the opportunity should omit to pay a visit to this very attractive little line.



Taking water at Dolgoch. Note the water tower with its timber delivery trough.

Shipbuilding as a Career

By Lt-Col. Eustace Smith

(Assistant Managing Director, Smith's Dock Co. Ltd.)

WHEN King Alfred started building his small fleet in his efforts to halt the advances and raids of the Norsemen he founded one of the greatest, if not the greatest, of our national industries. Bitter experience and stern necessity soon made those early builders masters of their craft and the reputation we hold to-day has its roots in that distant past. It was the defeat of the Spanish Armada that first gave England the supremacy of the seas. Those early ships appear to us to have been very frail, but it was these same ships which first made "British Built" the hallmark of craftsmanship.

Our supremacy has been maintained to the present day; methods and materials used in shipbuilding may vary with the years, but English skill and craftsmanship remain superior and still "British Built is Best."

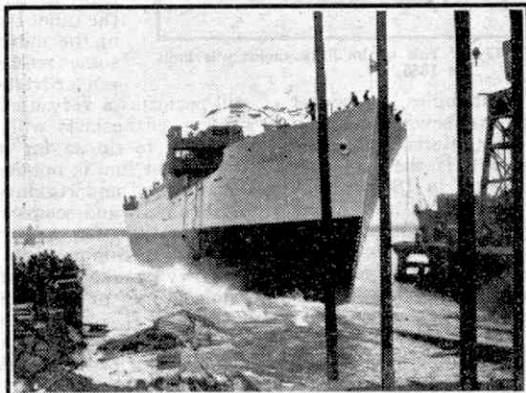
This reputation of which we are so proud is not an easy thing to maintain; the skill and craftsmanship needed to build a ship is not easily acquired; years of apprenticeship served under skilled supervision is necessary in every one of the numerous trades engaged.

A ship is born in the Drawing Office; designers, draughtsmen and mathematicians put the ship on paper. Hundreds of drawings are necessary to show where every bolt and rivet, every plate and stanchion must go. After the designers and draughtsmen have completed their task the plans are passed to the loftsmen-shipwrights operating in a spacious shop known as the Moulding Loft. Working from the drawings the shipwrights make full-size patterns in wood (called templates) of the varied and various shaped plates,

frames, etc. Once the templates or patterns are ready the erection of the ship begins. The templates are passed on to the platers who use them as a guide for measuring, shaping and cutting the steel plates used for building up the ship's shell. These templates must be followed with great accuracy, particularly those which apply to the shaping of the frames or ribs of the ship.

While the platers are preparing the steel plates and bars the riverside is a scene of bustling activity. Shipwrights are working with meticulous care on the laying down of the keel blocks, the

foundation from which the ship will grow. This operation calls for a high degree of skill, for it is vitally important that the keel should be laid at the correct angle to the water, so that the ship will travel down the slipways at the correct speed. On the keel block the keel is laid, and after the centre plate or backbone has been

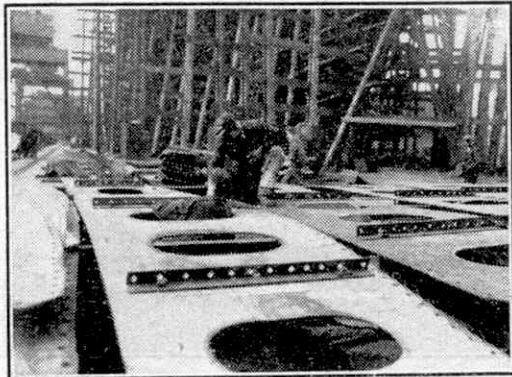


The proud moment when a ship is launched. The illustrations to this article are reproduced by courtesy of Smith's Dock Co. Ltd., Middlesbrough.

erected the bottom plates are swung into position.

At this constructional stage the work of the designers, draughtsmen, etc., becomes apparent. The frame or ribs of the ship are swung into position, the cross beams erected, and a gaunt skeleton of a ship has emerged from the stocks. Winches and derricks raise the shell plates into position, giant cranes lower fabricated sections into place, the staccato explosions of the pneumatic riveters fill the air as plates and beams are riveted, and the great hulk begins to assume the familiar shape of an ocean-going ship.

When these operations are completed the launching stage is reached and there is a justifiable feeling of pride throughout



Preparing floor plates for assembly.

the yard after the launch has been successfully carried out and the ship is floating smoothly at the quayside. But the launch is not by any means the end of the job. The engines must be erected, installed and tested, lighting cables installed and radio and radar fitted. Berths and cabin fittings must be added, ventilators, derricks, etc., have to be erected, the boilers and the funnel to be installed. These are only a portion of the multitudinous highly-skilled jobs which must be done before the ship is ready for her trials.

It is doubtful if there is any other branch of industry that offers the opportunities, the variety and scope of work that is offered in a shipyard. Seventeen highly skilled trades are employed in the building of a ship in addition to the draughtsmen and designers, each one requiring years of apprenticeship but each one offering a well-paid, interesting job to a boy who is willing to work.

Good work demands good workmen and no man can be a good workman if he is not doing the work he likes. At Smith's Dock we endeavour from the first moment a boy enters the yard, to remove any possibility of "the square peg being put in a round hole."

We do not engage apprentices before the age of 16, but boys who leave school before that age are employed as messenger boys, etc., in various departments. When a boy aged 14 or 15 starts work in the yard it is our practice, as far as possible,

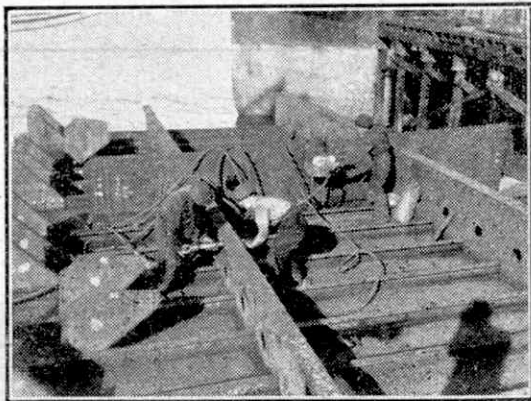
to give him an insight into at least three different departments before he reaches the age of 16. His progress is watched constantly by our Welfare Supervisor, whose job it is to help every boy in every possible way.

On reaching the age of 15½ or 16 all boys who wish to become apprenticed, together with boys from outside who wish to serve their time to a trade, spend a week in the Training School attending the Apprentice Selection Course. This Apprentice Selection Course is held three times per year, at Easter, Midsummer and Christmas, and the boys who are successful are offered an apprenticeship.

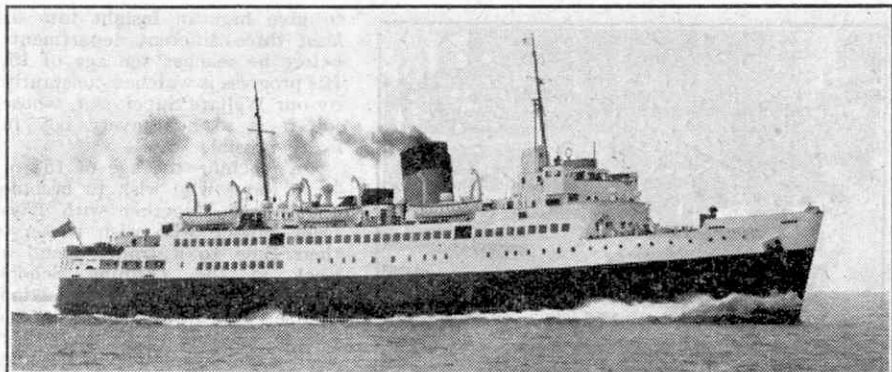
After selection all the Apprentices spend their first four months in our Training Shop. This is a fully equipped workshop, run by qualified instructors. Here the apprentices are given an insight into the work of a shipyard, they are taught the names and purposes of the hand and machine tools used, what they look like and how they work, they use the tools on actual jobs, and are given a good grounding in practical work which proves of immense value when they leave the Training Shop.

During the four-month introductory period our training staff are studying each apprentice carefully, and he is offered the trade for which he is best fitted.

A complete and detailed routine of training is laid down for each trade. Every aspect of the work is covered and each apprentice is (Continued on page 408)



A riveting squad at work.



S.S. "Falaise"

Shipping Notes

S.R. Cross-Channel Steamer "Falaise"

The new S.R. cross-Channel steamer "*Falaise*," the first post-war vessel of the company, made her first trip on the service between Southampton and St. Malo on 14th July. She was built by William Denny and Bros. Ltd., and has a length overall of 314 ft. and a breadth of 48 ft. Her gross tonnage is 3,710, and her speed 20½ knots, a knot more than that of previous vessels on the route. Parsons twin-screw single reduction gear turbines developing about 9,000 h.p. are fitted, and steam at 450 lb. per sq. in. and 750 deg. F. is supplied from two oil-fired Foster-Wheeler boilers. Two 200 kW turbine-driven generating sets supply current for lighting and power. The most recent aids to safe navigation have been fitted, including radar equipment, which will allow the vessel to continue running even in foggy conditions.

Luxurious passenger accommodation decorated in modern style is a feature of the "*Falaise*," which has air conditioning, and a radio-telephone, so that passengers can ring up their homes during a voyage.

S.S. "Arnhem"

The urgent need for new vessels for the L.N.E.R. Harwich-Hook of Holland service is being met in no small degree by the arrival in service of the S.S. "*Arnhem*." This vessel, which is illustrated at the

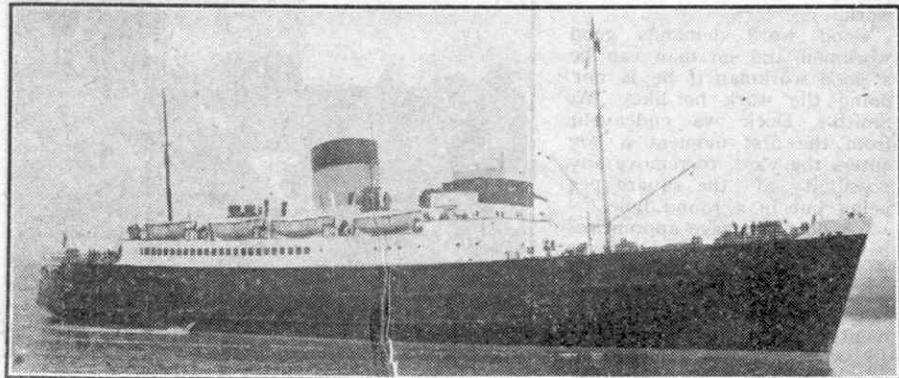
foot of this page, was built by John Brown and Co. Ltd., and launched in November 1946. In general appearance she is streamlined to modern practice, with a raked stem, a cruiser stern, two masts and a single funnel, and there are no ventilating cowls, since the air intake is at the base of the funnel.

The vessel has an overall length of 377 ft. and a breadth of 52 ft. Her gross tonnage is 4,891, and she has a maximum speed of 21½ knots. Her twin screws are driven by single-reduction gear turbines supplied with steam at 300 lb. per sq. in. and 600 deg. F. by two oil-fired Yarrow boilers. The electrical needs of the vessel are met by three 210 kW diesel generator sets. Radar and other modern navigational aids are fitted.

There is sleeping accommodation on the "*Arnhem*" for 421 passengers, and special provision is made for the carriage of motor cars.

Two motor ships are under construction by Harland and Wolff Ltd., Belfast, for the Moss Hutchison Line. They are designed for the fruit and general cargo trade in the Mediterranean, and grain and refrigerated cargo also can be carried.

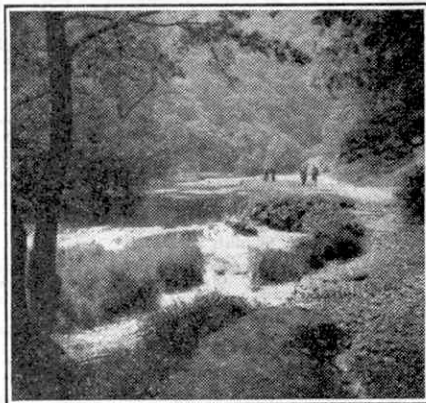
The two vessels are to be named "*Kantara*" and "*Karnak*." The former has already been launched. She is of the single-screw shelter-deck type, with a length of 387 ft. and a gross tonnage of 3,350.



Photography

Making Gaslight Prints

READERS who have never enjoyed the thrill of making their own gaslight prints should start now. The only things really necessary are a dish for developing and one for fixing; a good-sized bowl or pie-dish to hold water for rinsing the prints between developing and fixing, and for washing the fixed prints; a printing frame; chemicals for developing and fixing, and of course a packet of gaslight paper. This paper is scarce nowadays, but if possible get a packet of medium grade paper for average negatives



"In Sylvan Setting" (Dovedale, Derbyshire).
Photograph by W. R. H. Temple, Upminster.

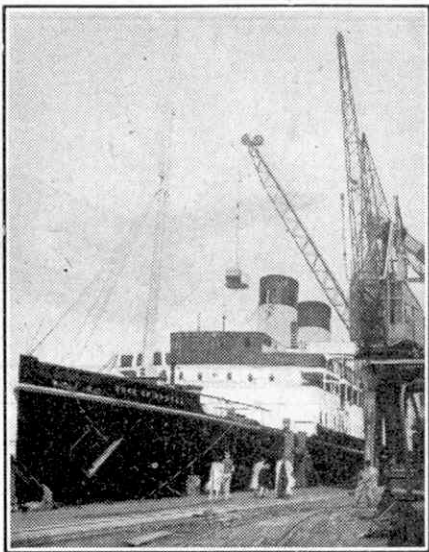
and one of contrasty paper for thin negatives.

The gaslight process is so simple that if the instructions supplied with the paper are carried out there should be no trouble; but the following tips may help.

First of all, sort the negatives to be printed into three groups, thin, medium and dense. The correct exposure for the negatives in each group will be about the same, therefore print all those in one group before passing on to those in the next.

Any ordinary 40 watt lamp, or incandescent gas light, will serve for exposing the paper, and some support should be provided on which the printing frame can be stood at a distance of 12 in. or 18 in. from the light. Make a preliminary test exposure with a medium negative. This is easily done by holding a piece of cardboard over the negative and moving it across a little at a time so that the first strip has an exposure of say three seconds, the next six seconds, the next nine seconds and so on. When this trial print is developed it is easy to see which exposure gives the best result.

It is obvious that a light that will print the paper will also fog it; so that all operations except the actual exposure should be

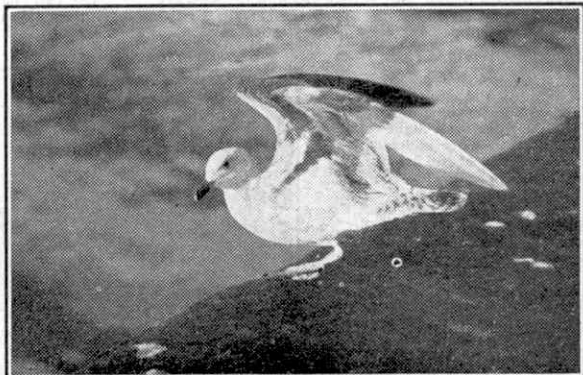


"Duke of Argyll," an Irish mail boat. Photograph by R. Wrigley, Clitheroe.

done in shadow, which can be provided quite simply by one's own body at a few feet from the light.

A ready-made developer such as Johnson's "Universal" is the simplest to use, and the same firm's acid fixing bath will ensure clean results. Development is rapid and should be finished in from 30 to 40 seconds. If the image flashes up very quickly and then blackens, the exposure has been too long; if it fails to complete in about one minute, under exposure is indicated. Prolonged development only results in stains.

When the print is fully developed, rinse it for a few seconds in the bowl of water; then place it in the fixing bath, submerge it completely and keep it moving about for 10 to 15 seconds. Fixing takes from 10 to 15 minutes, after which the prints are washed free of chemicals by giving them a series of five-minute soaks in clean water. draining the prints and changing the water after each soak.



"Happy Landing." A Gull alighting. Photograph by W. Barr, Birkenhead.



The Cunliffe-Owen "Concordia" twin-engined transport aircraft. "Aeronautics" photograph by Charles E. Brown.

Air News

By John W. R. Taylor

A New British Transport

The new Cunliffe-Owen "Concordia," illustrated above, may well prove to be one of the most popular feeder-line transports ever built. Design work on it was started soon after the end of the war. Investigation had proved that, although many operators consider a 10-12 seater aircraft the most economical and useful for charter or feeder-line work, nobody seemed to be building one. So the Cunliffe-Owen design team and workers set out to fill the gap with such enthusiasm and energy that the prototype flew on 19th May last. It has proved highly satisfactory, and the company are already planning for an eventual production of 12 a month.

The "Concordia" is a nice-looking aircraft of orthodox layout, with a wing span of 56 ft. 7½ in. It is powered by two 505 h.p. Alvis "Leonides" engines, which give it a range of 1,200 miles at 190 m.p.h. and a single-engined performance that more than fulfils international requirements. Normally, accommodation will be provided for 10 passengers in the air-conditioned cabin, together with a generous amount of luggage. The first production "Concordias" have been ordered by British European Airways, and should help to establish still further the British lead in this important class of air transport.

Round the World in Three Days

Flying solo Capt. William Odom, of the United States, has set up a new record of 73 hr. 6 min. for a flight round the world. This is less than half the time of 186 hr. 50 min. achieved in 1933 by the late Wiley Post.

Odom used the ex-U.S.A.A.F. converted Douglas "Invader," named "Reynolds Bombshell" owned by Mr. Milton Reynolds, the U.S. pen manufacturer. He took off from Chicago on 7th August last and flew by way of Gander (Newfoundland), Paris, Cairo, Karachi, Calcutta, Tokio, Anchorage (Alaska), and Fargo, in North Dakota; arriving back at Chicago on 10th August. His total time in the air was 63 hr. 15 min. and

his average flight speed 310.6 m.p.h.

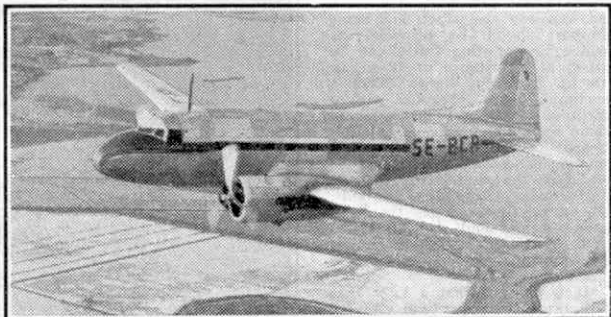
In April last Odom piloted the same machine round the world in 78 hr. 55 min., with Reynolds as navigator and with an engineer on board. This flight was an attempt by Reynolds to beat Howard Hughes' record of 91 hr. 14 min. set up in 1938 with a Lockheed 14 machine, and succeeded in spite of a longer route than that of Hughes being taken.

A Swedish Air Liner

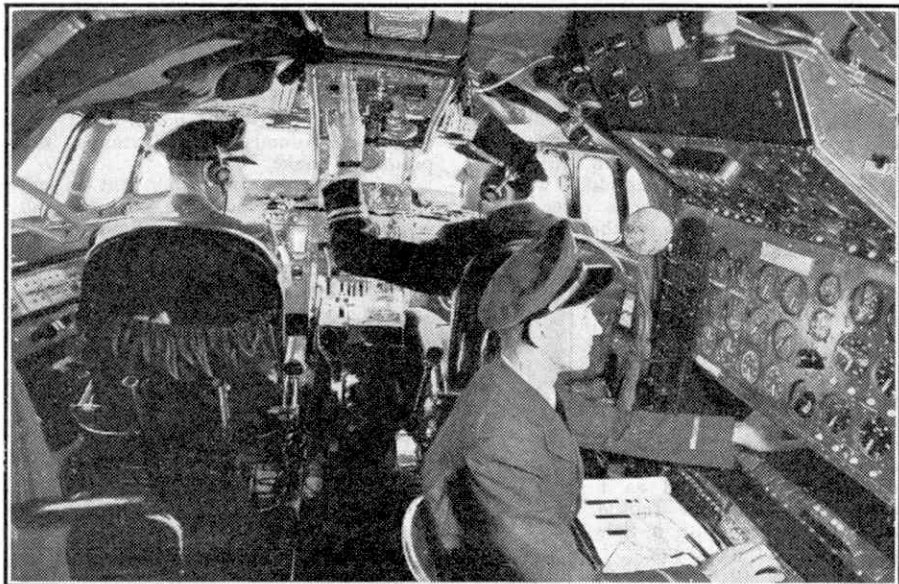
When I described the Swedish SAAB "Safir" light plane in the May 1947 "Air News" I referred to the new "Scandia" air liner also designed by the SAAB Company. This machine, shown at the foot of this page, was developed in close co-operation with the leading Scandinavian airline operators, to replace the veteran "Dakotas" at present in service. It is in production, and delivery should begin early next year.

The "Scandia" is a twin-engined, 24-seater with a wing span of 91 ft. 8 in. and a loaded weight of 31,000 lb., which puts it in the same category as the Vickers "Viking." In the standard version the passenger seats are arranged in two rows, with eight double seats on the starboard side of the cabin and eight single seats on the port side, all facing forward. For short-range service double seats can also be fitted on the port side, increasing the passenger accommodation to 32, with a crew of four. A baggage compartment, lavatory, and extensive cargo space are provided at the rear of the fuselage, and there is also a nicely fitted-out pantry in the 24-seat version.

The two engines are American 1,450 h.p. Pratt and Whitney "Twin Wasps." The machine has a useful range of 1,145 miles at a cruising speed of 176 m.p.h.



The "Scandia," a new Swedish air liner designed by Svenska Aeroplan A.B., by whose courtesy this photograph is reproduced.



In the control cabin of a Lockheed "Constellation." The flight engineer is on the right, behind the pilots. Photograph by courtesy of Lockheed Aircraft Corporation, U.S.A.

The Flight Engineer

In the early days of long-distance air services the pilots of the air liners had a great deal to attend to in addition to piloting the machines. Nowadays large aircraft carry a flight engineer to look after these other matters, so that the pilots are free to give their whole attention to the task of flying.

In the above photograph of the cockpit of a Lockheed "Constellation" the flight engineer is on the right, seated before the maze of dials and controls on his panel. He is responsible for the entire mechanical, hydraulic and electrical operation of the air liner. Except for take-off and landing, when the pilots take over engine operation, he handles all engine controls, observes fuel flow, continually checks the multitude of engine dials, and is on the alert to check any condition that may develop before it can become critical. The cabin pressure control system and the heating or refrigerating of cabin air are also his responsibility. It is also his job to supervise servicing, fuelling, loading and all ground handling of the machine at terminals and intermediate stops.

The Indomitable "Stringbags"

The Fairey "Swordfish" torpedo bomber was pronounced obsolete in 1939, but that did not stop it from establishing a fighting record second-to-none during the war. Even now uses are still being found for "Stringbags," and Faireys are reconditioning three of them at Hamble for pest-control work. In this capacity their slow-flying ability and manoeuvrability will be invaluable, until such time as special crop-dusting helicopters are available to take over the work.

Another "Swordfish" is being used in Johannesburg for towing advertising banners across the town. There seems to be a great deal of truth in the adage that "old soldiers never die."

B.O.A.C. Developments

With more new aircraft coming into service each week, the British Airline Corporations are extending many of their existing services and opening up several

new ones. For example, B.O.A.C. have recently increased their "Speedbird" services between the United Kingdom and Montreal from one to two each week. As a result, together with the services between the United Kingdom and New York, B.O.A.C. are now operating eight services weekly in each direction across the North Atlantic.

A fast new service to Lagos in West Africa is operated with "Halton" aircraft, which fly the 4,467 miles journey in an overall time of 29 hrs., stops being made at Casablanca, Dakar and Accra. Each aircraft carries 10 passengers and half a ton of freight, and the service operates six times weekly in each direction. Another new service on which "Haltons" are in use is that to Ceylon, via Castel Benito, Cairo, Basra and Karachi. It is the first time that a commercial trunk service has been operated to Ceylon from the West, and, at present, the "Haltons" fly the 6,400 miles once a week in each direction. A good feature of this service is the provision for a 24 hr. stay in Cairo on the outward journey and a stop of nearly 12 daytime hours there on the inward journey, for shopping and sightseeing.

First Civil Aircraft Equipped with Radar

Believed to be the first civil passenger "planes in the world equipped with radar, the three Short "Sandringham" flying boats ordered by Norwegian Air lines are now in service on the Northern Norway route. Each aircraft has one set of radar for map-reading through cloud and one set of "Rebecca," as well as a radar altimeter and all the usual flying instruments and automatic pilot. The "Sandringham" is the civil development of the famous "Sunderland" military flying boat, and carries 37 passengers and one ton of freight.

The Northern Norway route is not only one of the most arduous domestic air routes in Europe, but is also one of the longest, running from Stavanger, through the polar circle to Tromso, a distance of 1,165 miles. The large cabin windows of the "Sandringham" enable passengers to enjoy to the full the magnificent scenery of Norway's rugged coastline.

Snakes of Great Britain

By L. Hugh Newman, F.R.E.S.

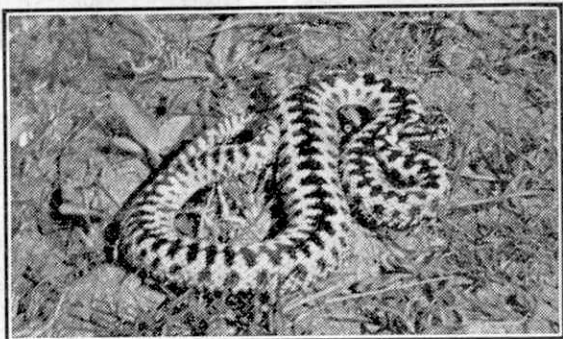
SNAKES, like all reptiles, will not respond to the call of spring unless there be warmth and sunshine. During a spell of spring-like weather early in the year, one can often come upon an adder lying in the sun on a warm, sheltered hillside, close to the spot where it has spent the winter in hibernation. Adders hide away very successfully during the winter months. Holes under large stones, cracks in walls, fissures in rocks and even hollow tree boles serve as winter retreats. Only this spring I disturbed a large adder at the base of an old oak tree, and as I approached it, the reptile slithered quickly into a hole at the base of the trunk.

Adders like to hibernate in company and on many occasions 10 or more have been found together when building or road-making operations have accidentally disclosed their winter quarters. In Sweden as many as 89 were once discovered under a large rock. A favourite place is among the roots of juniper bushes growing on dry hill-sides.

The adder is fairly generally distributed over the British Isles, with the exception of Eire, and I do not believe it occurs in the Channel Islands. There are places in England where conditions are particularly suitable for adders. They are known as "viper country" by local people. The dry heathery slopes on the North Devon and Cornish headlands, strewn with boulders

and pitted with rabbit holes, are typical breeding grounds for Britain's only poisonous snake.

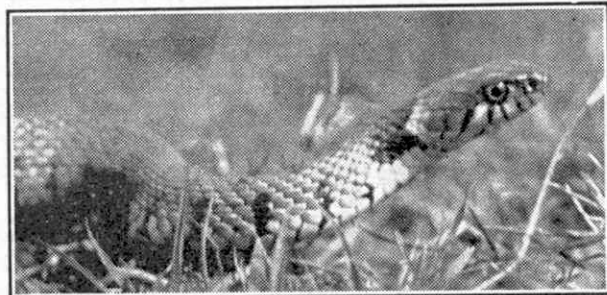
It is a very curious thing that, in spite of the adder's love of the sun, it usually waits until dusk before setting out to hunt



The British viper. The dark zig-zag band along its back is clearly visible. The illustrations to this article are from photographs by W. J. C. Murray.

for food. It will track down field mice, voles and even young moles, and occasionally it will enter water to catch frogs. Birds' nests on the ground are often raided and the eggs or young eaten. Young adders are particularly fond of catching lizards. After sunset they are attracted by lights and will often come crawling up to camp fires.

In spite of its poison fangs, and the general fear that it seems to inspire among even educated people, the adder should be regarded as a beneficial creature and not one to be killed at sight; otherwise there is always the danger of a plague of grain-eating rodents. It is a mistake to think that the adder is aggressive. Unless it is trodden upon, or deliberately teased and infuriated, it prefers unobtrusive flight to attack. One can always tell when an adder is about to strike, as it takes up a characteristic coiled attitude, with the head drawn back and the forked tongue darting in and out of its mouth. When attacking wild



The grass snake has eyes with round pupils; those of the adder are vertical slits.



A British grass snake with its eggs.

creatures the adder's aim is not very accurate. It will frequently misjudge the distance and fail to secure its victim.

Small children up to the age of six or seven may die as the result of a bite from an adder, especially when the snake has recently awakened from hibernation. With an adult the bite is seldom fatal, unless the person has a weak heart, and even then it is more likely to be shock than poison that will be the cause of death.

Most people can recognise an adder by the dark zig-zag band all down its back; it is not generally known that these snakes vary very much in their colouring. I have seen them silvery-grey, golden-brown, olive-green, red-brown, and even jet black. In these black adders the band along the back is invisible or shows up only in a certain light, but you can recognise the species by their triangular heads and the pupils of their eyes, which are narrow, vertical slits, like a cat's, surrounded by a red iris.

The grass snake is far larger, far more lively, and generally more attractive than the rather sluggish adder. The length is about 3 ft., but one that I saw gliding along a hawthorn hedge at Uckfield, Sussex, was well over 4 ft. in length. The normal colouring is grey or blackish-grey, with a paler underside and two conspicuous crescent-shaped yellow patches just behind the head. When the snake is moving these markings give the appearance of a yellow

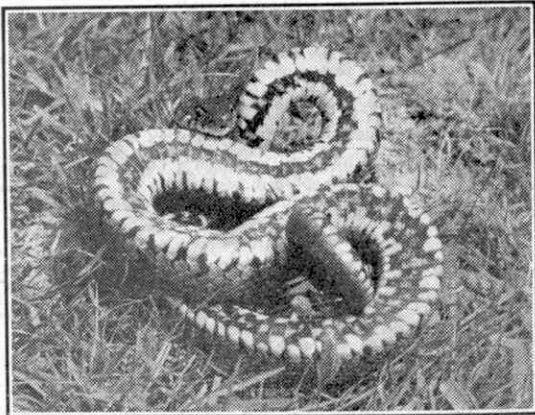
collar. In folk lore they are often referred to as a crown.

There are several named varieties which are characterised by spots or stripes, and black specimens are sometimes found in which even the yellow patches are missing. All these aberrations confuse those who have not made a special study of snakes, and the only way to tell whether a black snake is an adder or a grass snake is to look it in the eye! The grass snake's pupil is of a normal round shape, not vertical like the adder's. There is a difference also in their tails. The grass

snake's body tapers very gradually to a point, whereas in the adder you can see where the body ends and the tail begins.

When provoked, the grass snake will strike and bite, leaving a bleeding wound, but as it lacks poison fangs there is no danger of illness. Curiously enough, the grass snake is immune against the poison of an adder. Frogs are the favourite food of grass snakes, so they prefer water-meadows, the banks of slow-moving rivers and streams, marshland and lakesides to the sunny hills frequented by adders. They are great swimmers, and will cross lakes and rivers without hesitation.

In this country the most usual place for finding grass snake eggs is in manure heaps or piles of leaf (Continued on page 408)



A grass snake looks over itself! This creature is a remarkable contortionist.

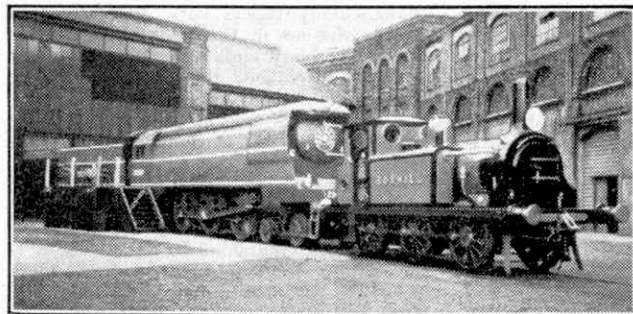
Railway Notes

By R. A. H. Weight

Diesel-Electric Traction on the L.N.E.R.

After careful investigation both in this country and in America, the L.N.E.R. have decided in principle on large scale experiments involving the construction of 25 diesel-electric locomotive units designed for working the heaviest East Coast main line passenger trains between London and Scotland. The diesel units, each of 1,600 h.p. at the generator couplings, will be used in pairs to form 3,200 h.p. locomotives capable of mustering a huge starting tractive effort of about 90,000 lb., more than double that exerted by the present largest "Pacifics," thereby providing smooth and rapid acceleration, probably with better performance uphill.

Like the "Pacifics" the diesel-electric locomotives will be capable of running at a speed of 100 m.p.h. and it is interesting to speculate whether, when trials eventually take place with the new motive power on suitable stretches of track, the present world speed



Ancient and Modern! "Terrier" tank "Boxhill" exhibited at Brighton with new 4-6-2 No. 21C 164.

record for steam traction of 126 m.p.h., which has been held by L.N.E.R. 4-6-2 "Mallard" since 1938, will be surpassed. On several occasions just before 1939 speeds exceeding 100 m.p.h. were attained by "A4" streamlined engines in ordinary service on the L.N.E.R., but conditions are not likely to permit such high speeds again for some time, while owing to shortage of materials it is probable that a considerable period may elapse before the new diesel-electric locomotives can be completed for service. The twin units will probably have 24 wheels, 16 of which will be "drivers." They will measure approximately 114 ft. over buffers and weigh about 240 tons.

Similar plans have already been reported by the L.M.S., of which we have published details. The S.R. also is proposing trials with diesel-electric traction between London and Exeter.

L.N.E.R. Locomotive News

Contracts have been placed for the construction of 35 class "L1" 2-6-4Ts, like the one present example No. 9000, with Messrs. Robt. Stephenson and Hawthorns Ltd. Others of the same new standard type are, we believe, on order at Darlington Works, L.N.E.R., while an additional 35 are to be built by the North British Locomotive Co. Ltd., Glasgow. The latter firm are also to construct 70 "K1" 2-6-0 mixed traffic locomotives based on the rebuilt "K4" 5 ft. 2 in. "West Highland" engine No. 1997, formerly No. 3445, "Mac Cailin Mor," which has been on trial for some time.

The six "K4" type locomotives, were smaller editions

of the large "K3" class with three cylinders and 180 or 200 lb. per sq. in. boiler pressure. The new standard "K1" type is a two-cylinder, 2-6-0 with 225 lb. per sq. in. pressure, as on the "L1" and "B1" latest designs.

More new "B1" 4-6-0s are in service from the company's works, also from contractors. Of these, Nos. 1200 and 1203 are stationed at King's Cross, Nos. 1202 and 1204 at Immingham, No. 1205 at Grantham, Nos. 1206-10 at Peterborough, Nos. 1214-6, 1218, 1220 in the North Eastern Area, and Nos. 1172, 1178, 1197 in Scotland; space will not permit of full lists being given. Continuing the 10xx series carrying "Antelope" names, built at Darlington, No. 1028 "Umseke" is shedded at Neasden, and No. 1029 "Chamois" at King's Cross.

New "A2/3" "Pacifics" No. 521 "Watling Street" and No. 522 "Straight Deal" are stationed at Gateshead, Newcastle; No. 523 "Sun Chariot" is at King's Cross. Rebuilt No. 113 "Great Northern" recently moved to Gateshead in exchange for No. 36 "Colombo," "A3" type, transferred to King's Cross. Some passenger shunting engines working at principal stations have been painted green. Considerable scrapping of engines of older types continues to be ordered.

Great Western Tidings

To speed up the work of track relaying in the Severn Tunnel, which is the longest in Britain, a special vehicle has been designed and will be built at Swindon. It is to be fitted with two diesel-electric hoists that will enable pre-assembled sections of track to be taken into the confined space of the tunnel, and placed in position with mechanical aid. Then the old track will be lifted out, and the whole operation will be completed in less time than hitherto.

Chepstow Bridge over the River Wye, on the old South Wales main line between Gloucester and Newport, was designed by Brunel in 1852 and is still in use. It has a 300-ft. tubular span over the river, and three 100-ft. land spans at the south end 50

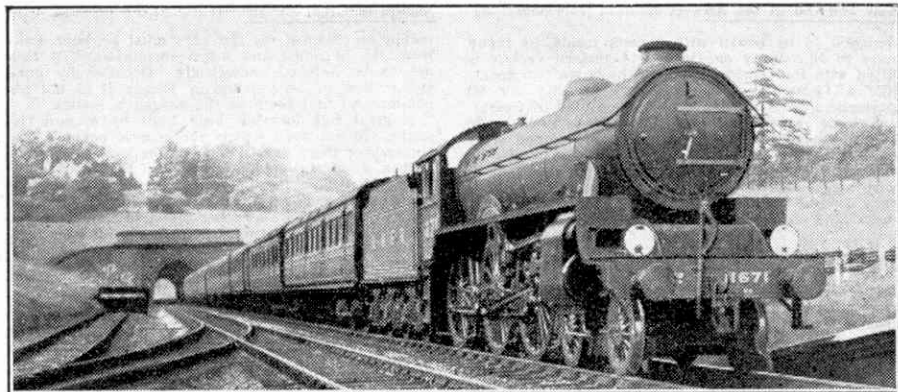
ft. in height. The old wrought iron land spans are now to be replaced by modern steel ones weighing some 600 tons, which will involve difficult structural alterations of considerable magnitude.

In connection with new strip mills near Port Talbot, S.Wales, a large industrial undertaking, $\frac{1}{4}$ miles of railway are to be diverted and doubled, two new marshalling yards are to be laid out, and viaducts, bridges and pipe lines installed. The main quay at the Company's Port Talbot Docks will be lengthened and new pumping machinery provided.

The fire-boxes of G.W.R. locomotives were constructed to burn Welsh coal, probably the finest steam coal in the world. Each ton used in 1938 produced 14,960 "heat units"; today mixed or inferior quality coal produces an average of only 13,840 units, a loss of $7\frac{1}{2}$ per cent. in power, with more ash and clinker to choke up the grates. This seriously affects time-keeping with heavy trains or when ascending steep gradients, and places an additional burden on the operating departments as well as on the drivers and firemen themselves. Other railways have similar difficulties at present.

L.M.S. Locomotive Developments

The steam locomotive building programme now in hand covers two "P" 4-6-2 "Duchess" class express engines; 70 more class "5" 4-6-0 mixed traffic; 48 further 2-6-4Ts, class "4"; 20 "4F" 2-6-0s of a new design for general freight traffic; and 10 more light class "2F" 2-6-0s similar to those recently introduced. This makes a total of 150 engines in hand at Crewe,



L.N.E.R. up Cambridge-King's Cross express passing Hadley Wood, headed by rebuilt B2 4-6-0 No. 1671 "Royal Sovereign," the engine used on the Sandringham Royal trains. Photograph by C. R. L. Coles.

Derby and Horwich. The new 2-6-0 design provides for two outside cylinders, and a double blast pipe and chimney, a new development on such a type. The latest ash clearing features now usual are incorporated. A notable innovation will be roller bearings for all axles of engine and tender on the 4-6-2s. For comparative purposes as regards performance and cost, 10 class "5" 4-6-0s will have roller bearings and Walschaerts valve gear as now employed; 10 will be fitted with roller bearings and Caprotti poppet valve gear such as was employed for a time on a number of the "Claughton" class engines; and 10 others will have plain bearings as now, which are liable to overheating and are not easy to lubricate, but Caprotti gear. The performances of these three groups of locomotives will be compared carefully, and the tests will extend also to present standard engines of the class having Walschaerts gear and plain bearings.

New engines in service during July were as follows: Class "5" 4-6-0 No. 4777, shedded 14B, Kentish Town; Nos. 4778-9, 24E Blackpool; No. 4790, 5A, Crewe North; No. 4791, 28A, Motherwell; Class "4P" 2-6-4T Nos. 2275-7, 30A, Cokerhill, Glasgow; No. 2278, 26A, Newton Heath.

Some 2-8-0 "SF" locomotives are oil fired; others of the type are being returned from the L.N.E. and G.W. companies. Further "City" series 4-6-2 express locomotives have had the streamlined casing removed. "Patriot" 4-6-0 No. 5529, unnamed, has been re-oriented to the new standard, "6P."

Remarkable Sleeping Car Experiment

So far British third class sleeping cars, seen mainly on the L.M.S. and L.N.E.R. night trains between London, the North of England and Scotland, have only provided lying-down accommodation with rugs and pillows in four berths per compartment. A notable innovation, therefore, will be the six L.N.E.R. cars now under construction of an entirely new design that will each provide eight single-berth compartments, also eight beds in four double-berth cabins, together with attendant's compartment, lavatory and toilet accommodation. Full bedding as well as individual washbasins

will be provided. The cars will be experimental to start with, not superseding the existing third sleepers entirely yet; the charge for their use will be somewhere between the present first and third class supplements.

Southern Notes

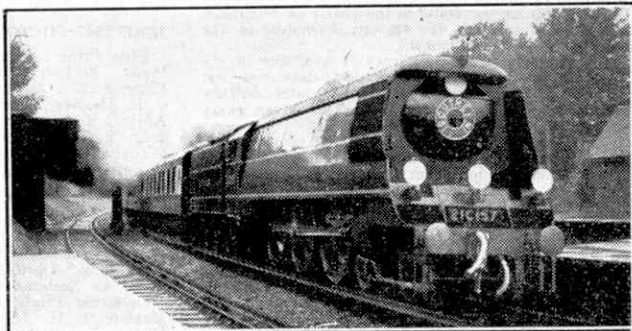
Additional new corridor coaches as well as new or remodelled restaurant and buffet cars are coming into service. The "Devon Belle" Pullman express, with observation car at rear, passes Salisbury station but calls west thereof at Wilton to change engines; there is no passenger stop between London, Waterloo, and Sidmouth Junction, Devon, 159 miles.

The U.S.A. 0-6-0T locomotives purchased for shunting duty in Southampton Docks are painted in S.R. black style, numbered 61-74. They are wider than the "B4" or "C14" former L.S.W.R. type engines used there and have been fitted for hauling and heating passenger coaches.

New "West Country" 4-6-2s Nos. 21C 162-5 are shedded at Ramsgate. No. 164 was exhibited, as the 1,000th engine built there, at Brighton Works recently with the veteran Stroudley "Terrier" tank "Boxhill." Our illustration gives a good idea of the interesting contrast presented.

The new "Battle of Britain" series of names on the light "Pacifics" will shortly be inaugurated.

Three-cylinder "UI" 2-6-0s are working London-Brighton trains on the Oxted steam routes; "B4X" 4-4-0s are seen on the Redhill-Reading line.



S.R. Derby Day Royal special passing Wandsworth Common, with 4-6-2 No. 21C 157. Photograph by C. R. L. Coles.

New and Old in the Air—(Continued from page 388)

designed to be towed with a tank inside, as many were to Normandy on D-day. A revised version is fitted with four engines, and will have, on two decks, like a London bus only bigger, capacity for 90 passengers on short hauls, or a huge load of freight.

So now you see that the big money is to be made in war-wasted Europe, and in the undeveloped areas of Asia, Africa and the Americas and Australia, by the old types of aircraft, in new and improved shapes, with bigger and better engines, for many years before they need be laid aside.

Shipbuilding as a Career—(Continued from page 399)

under the constant supervision of an expert craftsman. The foreman takes a close personal interest in the training and progress of the apprentices and the Welfare Supervisor maintains a close contact with each apprentice.

In addition to the practical training given in the yard a set course of study is laid down for each trade. This educational programme has been compiled in consultation with our technicians and the teaching staff of the local evening classes and technical college. The Directors of Smith's Dock Co. Ltd. are keenly interested in the welfare of their apprentices and use every means in their power to encourage them to study. All apprentices are expected to undertake the appropriate continuation classes, as laid down in the curriculum of their training. All expenses in connection with these classes are borne by the firm and the apprentices are allowed to leave work in sufficient time to enable them to get home and change before attending the Evening Institute.

Each year the Directors offer free scholarships tenable at the Constantine Technical College to all apprentices who have, by their previous evening school records, shown that they are capable of studying for the National Diploma examination. The number of scholarships awarded is not limited and every apprentice is eligible. Those who are successful in gaining a scholarship attend the Constantine Technical College for a full-time course of study lasting from September until April each year for three years. All the expenses of the course are borne by the firm. Text-books are provided, and in addition each apprentice receives his normal wages for the period of his attendance at the College. The value of the scholarship therefore is approximately £200. The period from April to September is spent at the yard learning the practical side of the trade.

In addition, if a boy is making sufficient progress in his studies the Directors will consider awarding a scholarship in Naval Architecture or Marine Engineering tenable at one of the Universities. All students, whether attending Evening School or Technical College, who are successful in the yearly examinations are awarded a bonus, the amount depending on the percentage of marks gained.

An excellent technical library is available in the yard, containing all the most up-to-date technical books and trade papers. New books are added as they are published and the apprentices are given every encouragement to use this library.

The recreational side is equally well provided for. A large park containing three football pitches, two cricket pitches, tennis courts, bowling greens, a golf course, etc., is available to all employees. The various sporting activities are organised and run by very enthusiastic committees, and are in a very flourishing condition. The apprentices are given every incentive to take part in all the sporting and social activities.

Every six months a report is sent to the parents of each apprentice informing them of the progress he has made. Every effort is made to maintain a close and intimate contact with each apprentice, so that his training with the company will instil in him that pride of craftsmanship that comes with the knowledge of "a good job well done."

Snakes of Great Britain—(Continued from page 405)

mould or compost, as the eggs must be kept away from air, in moist and warm surroundings, if they are to be hatched successfully. Occasionally grass snakes live in cellars, and in Russia it is not uncommon to find them in the peasant's houses.

A great folk lore has been built up around this snake. In Southern Russia the general belief is that somewhere there lives a king of the snakes, adorned with a wonderful golden crown. All the grass snakes with the yellow markings are his subjects, and to harm one would mean retribution in the form of illness, fire and various other disasters. This explains why they are allowed to stay in the house unharmed.

Gypsies seem particularly superstitious about snakes and believe that even the perfectly harmless slow-worm, which is not a snake at all but a legless lizard, can hurt by spitting. One old gypsy solemnly declared that a slow-worm had spit some venom on his forehead, and that every spring scales grew on the place. In these enlightened days we would probably put it down to lack of Vitamin C!

COMPETITION RESULTS

(HOME)

MAY 1947 ADVERTISEMENT CONTEST

First Prize: M. Mann, Norwich. Second Prize: G. W. Thynne, Crook. Third Prize: D. B. Appleyard, East Ardsley. Consolation Prizes: P. D. Hancock, Edinburgh 9; S. L. Dow, Cupar; M. R. Chambers, Harrogate.

MAY 1947 STATION NAMES CONTEST

First Prize: G. F. Crutchley, Northampton. Second Prize: C. E. Wrayford, Bovey Tracey. Third Prize: R. J. Perrin, Ilford.

JUNE 1947 ERRORS CONTEST

First Prize: C. E. Wrayford, Bovey Tracey. Second Prize: H. May, Renfrew. Third Prize: K. Hooper, Liverpool 15. Consolation Prizes: P. W. Blight, Plymouth; B. N. Blackman, Hull; M. H. Billington, Nuneaton.

JUNE 1947 DRAWING CONTEST

First Prize: Section A: P. D. Hancock, Edinburgh 9. Section B: P. Lawrence, Whitton. Second Prize: Section A: P. Hancock, Sheffield 6. Section B: P. Judge, Smarden. Third Prize: Section A: D. Sutherland, Glasgow, N.W. Section B: E. A. Gilmour, Burton-on-Trent. Consolation Prizes: Section A: M. Plunkett, Small Dole; E. J. Sinton, Aberdeen; B. C. Chapman, London E.11; A. J. Parris, Bletchley. Section B: J. G. Corbett, Guildford; D. Warner, Kington; R. Jones, Connahs Quay; R. Mason, Orpington; J. S. Chubb, Leeds 7.

JUNE 1947 PHOTOGRAPHIC CONTEST

First Prize: Section A: H. J. Edwards, Tunbridge Wells. Section B: J. Carver, Leuchars. Second Prize: Section A: N. V. Salt, Newcastle. Section B: C. H. Thomas, Aldershot. Consolation Prizes: Section A: H. E. Smith, London N.W.10; E. G. Holley, Heathfield; F. G. Reynolds, Sidcup; J. A. Lee, Bolton. Section B: T. A. Hughes, Machynlleth; P. D. Smith, Braitnree; M. Balls, Cambridge.

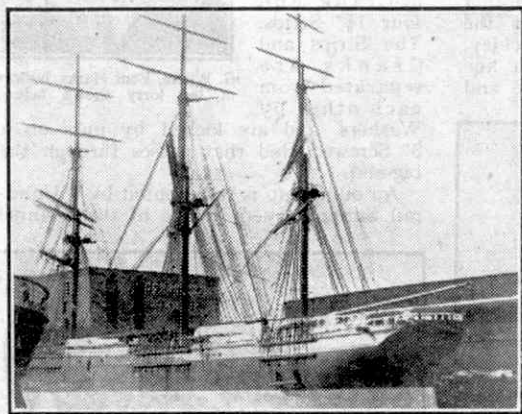
JULY 1947 PHOTOGRAPHIC CONTEST

First Prize: Section A: W. R. H. Temple, Upminster. Section B: P. Deggan, Surbiton. Second Prize: Section A: R. F. Barnes, Bedford. Section B: R. I. Ancliffe, Sheffield 2. Third Prize: Section A: W. C. Brown, Hove 4. Section B: D. Hazlehurst, Great Lever. Consolation Prizes: Section A: S. L. Connors, New Malden; J. H. Taylor, Aberdeen; Section B: H. Meyer, Chandler's Ford; B. Mallinson, Huddersfield; S. J. Twycross, Hyson Green; B. Carter, Shipley; M. J. Barnes, London S.E.15.

The "Great Admiral"

By Capt. H. H. Neligan

THE "Great Admiral" was one of those "Ocean beauties man has ceased to build," built in 1869 by Jackson of East Boston, U.S.A. She was the last of the American clipper ships built for the tea



The clipper ship "Great Admiral."

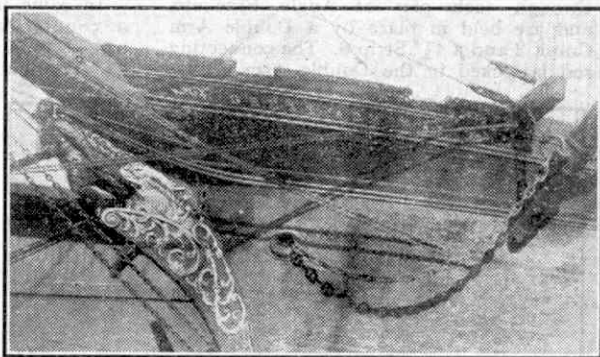
trade, and was a wooden full-rigged ship of 1,576 tons with every bolt in her hull of copper, and her bottom copper sheathed. She was fitted out regardless of cost, and her figurehead was a statue of Admiral Farragut, after whom she was named. She was sold to "The Black Horse" line of Boston, F. Weld and Company, and was one of the famous clipper ships of her day.

For 17 years she was under the command of Captain F. J. Rowell, who in all that time never had to call on the insurance for a cent for damage. In the year 1906, after a remarkable career, she foundered off the Californian coast. Her hull was washed ashore, and was burnt for the copper bolts.

The "Great Admiral's" magnificent figurehead was saved and is now fixed in a garden in the state of Maine, where the grand-daughter of the owner lives. It was a work of art and roused a great deal of enthusiasm

in each port at which the ship called, and was always kept in good condition. On the first fine day after the ship left port on a long passage, New York to China for instance, it was removed from the bow for safety. For this purpose a small crane was fixed on the ship's forecandle and the tackle was let down over the bow and shackled to a solid ring between the shoulders of the figure. The holding-down bolts were then removed, and the figure was hoisted up on to the forecandle head. It was then taken to a proper locker provided and there bolted and secured to keep it from being damaged.

While the ship was at sea the Chief Mate looked after the painting of the figure, giving it a new suit of uniform with special paint provided for the job, and real gold leaf for the brass bands. When near the next port the "Great Admiral" was taken out of his locker and secured in place on the ship's stem. It is worth recalling that the scroll work and the name of the ship were all gold leaf, not gold paint, and that the rigging shown in our picture was all wire, her original hemp rigging being replaced by wire in China in 1888. The payment for the whole job was the old hemp rigging, out of which the industrious chinamen would pick many bales of oakum which would have a ready sale.



The figurehead of Admiral Farragut.

Among the Model-Builders

By "Spanner"

A Built-up Crankshaft

From time to time I have suggested various methods of constructing a large crankshaft suitable for model steam and gas engines, and Fig. 1 shows yet another solution to the problem. This is the suggestion of C. H. Pendlebury, Hinckley, who used it recently in building a fine model of a stationary steam engine and

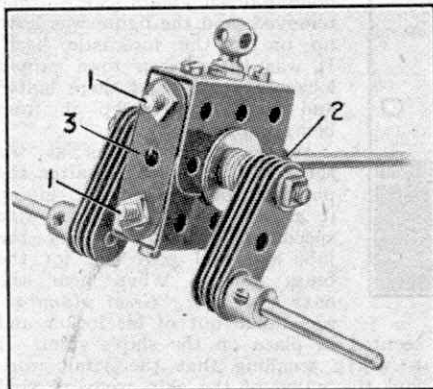
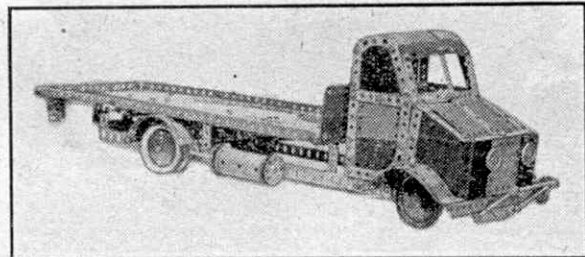


Fig. 1. A useful built-up crankshaft for a large model engine. It is the idea of C. H. Pendlebury, Hinckley.

boiler. It is exceptionally neat and effective and gives a throw of three inches.

The big-end is built up from two Channel Bearings. These are overlapped and fitted with an Angle Bracket at each end. Screwed Rods 1, each 2" long, are passed through each pair of Angle Bearings, and are held in place by a Double Arm Crank 2 and a 1½" Strip 3. The connecting rod is locked in the Double Arm



A prize-winning model motor lorry by G. Wyeth, Four Marks, whose portrait appears on this page.



G. Wyeth, Four Marks, builder of the lorry shown below.

Each web of the crank is constructed in the same way, and consists of a Crank and four 1½" Strips. The Strips and Cranks are separated from each other by Washers, and are locked by nuts on a 3" Screwed Rod that passes through the big-end.

An oiling cup is represented by a Hand-rail Support fixed to one of the Channel

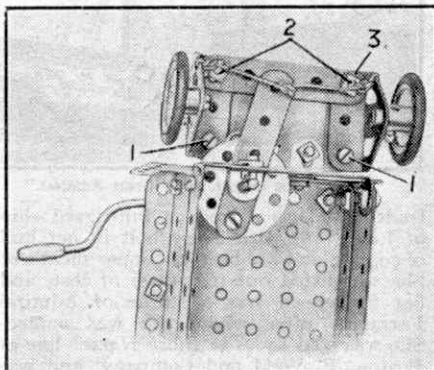


Fig. 2. A simple steering mechanism for a small and light vehicle.

Bearings.

In some models it is preferable to use a counter-balanced crankshaft and this can be built in a similar manner by using 2½" Triangular Plates in place of the 1½" Strips.

An Easily Constructed Steering Mechanism

The construction of a realistic steering mechanism for model vehicles is an easy matter for the fortunate possessor of a large outfit, but from enquiries I receive it is clear that many owners of smaller outfits would like some guidance in this connection. The mechanism illustrated in

Fig. 2 is designed specially for small outfit users.

Each of the front wheels is locked on a stub axle consisting of a $\frac{3}{8}$ " Bolt. This is passed through the end hole of a Trunnion that is free to pivot on the Bolt 1. These Bolts are locked to the chassis or frame of the model by two nuts. Washers are used for spacing purposes to allow the Bolts 2 to clear the chassis members. The track rod is represented by a $2\frac{1}{2}$ " Strip and this is lock-nutted to the Trunnions by the Bolts 2.

The steering is controlled by means of a $2\frac{1}{2}$ " Strip 3 bolted to a Bush Wheel. The Bush Wheel is locked on the Rod forming the steering column, which can be journalled in any suitable position on



The Meccano-like construction of this pit-head gear at the Robinson Deep Gold Mine in the Transvaal is very striking. The bus is a Leyland "Tiger" export model. Photograph by courtesy of Leyland Motors Ltd., Leyland, Lancs.

A Novelty for the Youngsters

The interesting novelty shown in Fig. 3 is quite simple to build and requires only a few parts and a *Magic Motor*. The Motor is used to rotate the Rod 1 that carries a white card 2 on each side of which pictures of suitable type are drawn. In the illustration a policeman's head and shoulders are drawn on one side of the card and on the reverse is a sketch of his helmet. When the Motor is set in motion the card rotates and the image seen by the eye persists for a fraction of a second, during which time the other side of the card comes into view. Thus the images superimpose and are seen apparently simultaneously, so that the helmet appears to be on the policeman's head.

If a motor is not available the card can be attached at each end to a piece of Cord; the Cord is twisted so that when the free ends are pulled the card is rotated.

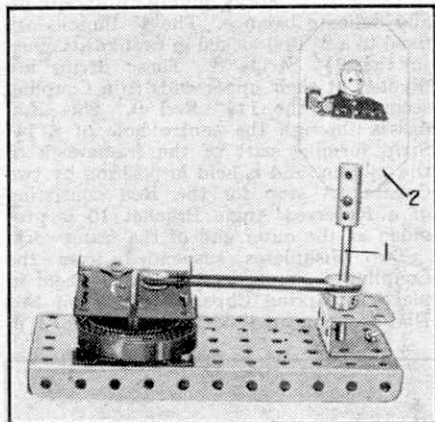
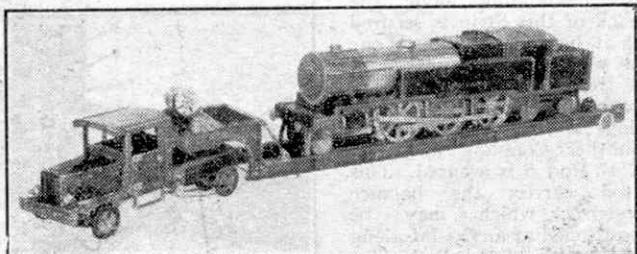


Fig. 3. An amusing device with which a bioscope effect is obtained.

the model. A length of Cord extending from the Strip 3 is fastened securely to each Trunnion, so that any movement of the Strip 3 is imparted to the Trunnions, thus turning the road wheels.

This mechanism is particularly suitable for models of small electric trucks or delivery vans, and greatly adds to the interest and realism.



Fine models of a giant articulated lorry and a locomotive. These formed the entry of P. Giese, Buenos Aires, in the "Autumn" Competition, and were awarded Third Prize.

New Meccano Model

Platform Weighing Machine

THE fine model platform weighing machine that forms the subject for our new model this month is remarkably accurate, and after careful adjustment

Accurate adjustments are made by means of a second Threaded Coupling 6, which is moved along the Screwed Rod until the steelyard is exactly balanced.

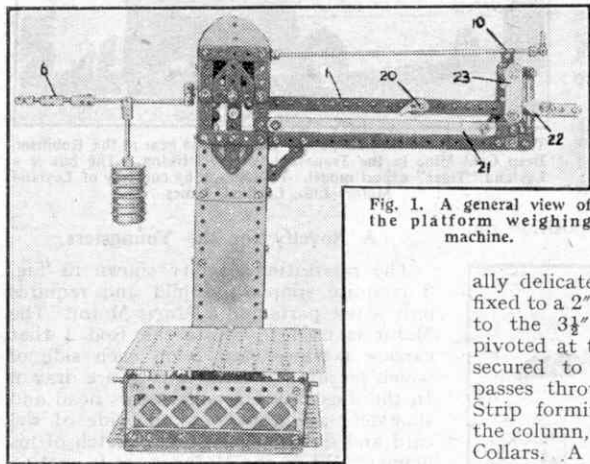


Fig. 1. A general view of the platform weighing machine.

Friction is reduced to a minimum by the incorporation of a knife edge bearing of similar type to that used in an actual machine. It consists of two Centre Forks 7 held in the Coupling 3. The points of these rest between the teeth of two $\frac{1}{2}$ " Pinions, so that the whole weight of the steelyard is supported by the steel points of the Centre

Forks, giving an exceptionally delicate balance. The $\frac{1}{2}$ " Pinions are fixed to a 2" Rod locked in Cranks attached to the 3 $\frac{1}{2}$ " Strips 8. These Strips are pivoted at their upper ends to a Coupling secured to the 11 $\frac{1}{2}$ " Rod 9. This Rod passes through the centre hole of a 1 $\frac{1}{2}$ " Strip forming part of the framework of the column, and is held in position by two Collars. A stop for the Rod consisting of a Reversed Angle Bracket 10 is provided at the outer end of the framework.

Two Fishplates suspended from the Coupling 4 support a 1 $\frac{1}{2}$ " Rod 11 held in place by Spring Clips. A Hook on this Rod is connected with the levers 12 in

will register weights up to several pounds.

The base of the model is built up from 5 $\frac{1}{2}$ " Angle Girders and Double Angle Strips bolted together as shown. The upright column is formed by four 12 $\frac{1}{2}$ " Angle Girders. These are joined together by 1 $\frac{1}{2}$ " and 2 $\frac{1}{2}$ " Strips, and the sides and front filled in by Flexible Plates.

The steelyard consists of a 12 $\frac{1}{2}$ " Strip 1, and an 11 $\frac{1}{2}$ " Rod extending along the back of this Strip is secured to it by two Couplings, one of which is shown at 2. A 3" Rod in the Coupling 2 passes through further Couplings 3 and 4 and enters another Coupling in which a 4" Rod 5 is secured. This Rod carries the balance weights, which may be positioned at any point along the length of the Rod. The Rod 5 carries at its outer end a Threaded Coupling holding a 2" Screwed Rod.

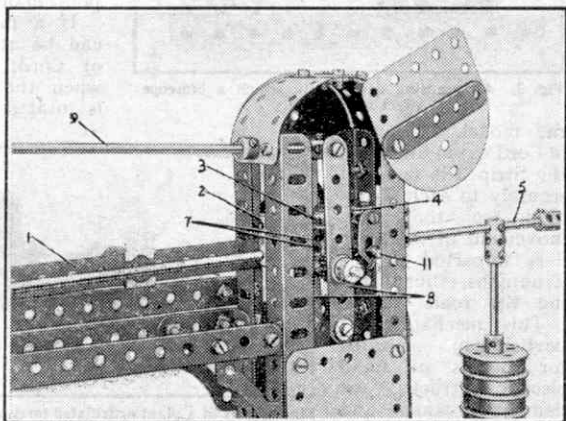


Fig. 2. Rear of model weighing machine showing the steelyard bearings.

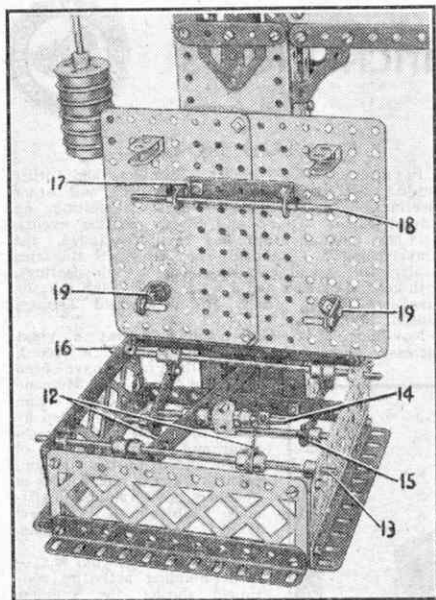


Fig. 3. The base with platform removed.

the base by a length of Sprocket Chain and a second Hook.

The levers 12 consist of $5\frac{1}{2}$ " Strips extended by $1\frac{1}{2}$ " Strips overlapped two holes. They are pivoted by two Fishplates held in position on the Rod 13 by Collars. A 3" Rod 14 is journalled in the Strips 12 and is linked to the Rod 15 by a Double Bracket fitted with a $\frac{3}{4}$ " Bolt. Two further levers consisting of 2" Strips are attached to the ends of the Rod 15 and pivoted to the Rod 16 by Fishplates. This arrange-

ment of levers ensures that a weight placed in any position on the platform produces an even pull on the Sprocket Chain.

The platform is made from two $5\frac{1}{2}$ " x $3\frac{1}{2}$ " Flat Plates overlapped one hole. A $2\frac{1}{2}$ " x 1" Double Angle Strip 17 carries a $4\frac{1}{2}$ " Rod 18 retained in place by Spring Clips. Two 1 " x $\frac{1}{2}$ " Angle Brackets 19 are spaced from the platform by four Washers and each carries a Threaded Pin. When the platform is in position the Rod 18 bears on the levers 12 and the Threaded Pins on the 2" Strips forming the second pair of levers. Two Single Bent Strips fit over the Rod 13 and provide a guide for the platform.

The Strip 1 is fitted with a sliding weight formed by a Slide Piece. A Pawl 20 is attached to this by a $\frac{3}{4}$ " Bolt; and indicates the weight of the load on the calibrated scale 21. This scale is cut from cardboard and is bolted to a $9\frac{1}{2}$ " Strip. An arrow-shaped piece of cardboard 22 is attached to the Strip 1 by a Reversed Angle Bracket so that it is exactly opposite a line on the indicator 23 when the steelyard is horizontal.

The steelyard is lifted into weighing position by replacing the Rod 9 under the Reversed Angle Bracket 10.

Parts required to build model Platform Weighing Machine: 1 of No. 1; 3 of No. 1a; 2 of No. 2; 2 of No. 3; 4 of No. 4; 4 of No. 5; 2 of No. 6; 8 of No. 6a; 4 of No. 8; 4 of No. 9; 1 of No. 9d; 9 of No. 10; 1 of No. 11; 2 of No. 12b; 2 of No. 13; 2 of No. 14; 1 of No. 15; 1 of No. 15a; 1 of No. 15b; 2 of No. 16; 1 of No. 17; 1 of No. 18a; 6 of No. 20; 2 of No. 26; 8 of No. 35; 78 of No. 37; 22 of No. 38; 2 of No. 44; 1 of No. 46; 2 of No. 48; 4 of No. 48d; 1 of No. 50; 2 of No. 52a; 1 of No. 57b; 1 of No. 57c; 20 of No. 59; 2 of No. 62; 7 of No. 63; 2 of No. 63c; 1 of No. 65; 1 of No. 81; 1 of No. 94; 3 of No. 115; 2 of No. 125; 4 of No. 126a; 2 of No. 136a; 1 of No. 139; 1 of No. 139a; 1 of No. 147c; 1 of No. 188; 3 of No. 189; 1 of No. 190; 1 of No. 191; 2 of No. 192; 2 of No. 214.

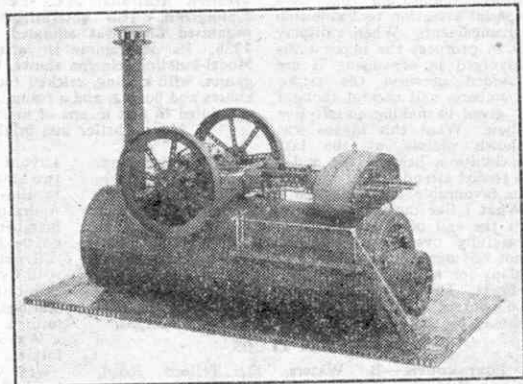
Prizes for Models Built from Outfit No. 4

The special "Outfit" Competition announced last month is still open for entries. In this contest prizes will be offered for the best models made entirely from the parts contained in Outfit No. 4.

Entries will be divided into two Sections, as follows: Section A, for models built by competitors living in the British Isles. Section B, for models built by competitors living Overseas. Envelopes containing photographs or drawings of models sent as entries should be addressed: "Meccano Outfit No. 4 Contest, Meccano Limited, Old Swan, Liverpool 13."

The closing dates are as follows: Home Section, 31st October; Overseas Section 28th February next.

The following prizes will be awarded in each Section. First, Cheque for £2/2/-; Second, P.O. for £1/1/-; Third, P.O. for 10/6. There will be also consolation awards in each Section.



A fine model of a Locomobile steam power plant built by C. Howard Pendlebury, Hinckley.



Club and Branch News



WITH THE SECRETARY

EXHIBITION SUCCESSES

I am glad to see that Clubs are again taking to Exhibitions. There is nothing like letting people know exactly what is being done and an Exhibition provides the best possible means to doing this. Both for recruiting purposes and for general publicity a group of models of good design and construction and operations on a well-planned layout are far more effective than the best printed card or leaflet, or even the most persuasive words from an enthusiastic official.

The publicity value of an Exhibition has been brought to mind by a very fine newspaper report of one arranged by the Maylands M.C., the well-known Western Australian organisation. The size and ingenuity of the models on show created a very deep impression, and must have gone far towards keeping up the reputation that the Club has established. Success at Exhibitions is no new thing for the Maylands M.C. Mr. V. Malmgreen, its Leader, has always encouraged displays of this kind and has seen to it that plans are efficient and their execution workmanlike. Thoroughness is the Club's keynote of the activities, and it is not surprising to find that membership is so highly valued that there is to-day a shadow Club, composed of boys waiting to join the Club itself when there are vacancies. At present the Club's accommodation is fully taxed by existing members!

THE RIGHT SPIRIT

The Norbury M.C. is another organisation that pays special attention to Exhibition arrangements. When a display is in prospect the many tasks involved in organising it are divided between the senior members, and careful thought is given to making an effective show. What this means was shown plainly at the last Exhibition, held at the end of June, for there was a record attendance of visitors, who commented freely in favourable terms on the enterprise of the Club. What I like most about this event, however, is that at the end of it the officials and members thought carefully over every detail and discovered flaws, not obvious to the visitors, that to them suggested plans for improvement in certain respects in future efforts. That is the right spirit. Clubs should never be content to rest on their laurels. Past successes should be the stepping stones to greater triumphs.

PROPOSED CLUBS

PORTSMOUTH.—B. Waters, 18, Telford Road, North End.

COEHAM.—V. Barwaker, 118, Highbury Grove.

CLUB NOTES

PLYMOUTH M.C.—Cricket, Rambles and other outdoor activities have been pursued, and other meetings have included a Puzzle Exhibition, an Advertisement "Quiz" and Stamp Section events. A Chess championship has been concluded, the winner being H. Goodman. The Club's new Magazine is attractive, giving excellent news of Club meetings, with general articles and a serial story. Club roll: 50. Secretary: D. M. Cundy, 10, Whitefield Terrace, Lipson, Plymouth.

NORBURY M.C.—The Exhibition was a great success. There were over 350 visitors, a record, and Club Funds have been increased by £17. Meccano models and a Hornby Train Display were supplemented by a Cinema Show and Refreshment and other Stalls, all of which added to the fun and profits. Parents and friends of members gave valuable assistance. Club roll: 43. Secretary: D. R. C. Pavey, 37, Croft Road, Norbury, London S.W.16.

HENLEAZE (BRISTOL) M.C.—Model-building activities continued during the summer months in order to make a good show at the Garden Exhibition held in August. Cricket also was played. Good progress was made with the permanent outdoor railway that the Club is constructing. This is providing a wide variety of interesting tasks. Visits have included a trip to the Docks at Avonmouth. Club roll: 16. Secretary: C. E. Frost, 32, Oakwood Road, Henleaze, Bristol.

BRANCH NEWS

HITCHIN.—The summer programme included visits to important railway running sheds and to the Vauxhall Motor Works. It has been decided to start a Library. The Branch room has been cleared in readiness for the construction of a new layout. Secretary: J. Mayhead, 49, Highbury Road, Hitchin, Herts.

HORLEY.—A good Garden Layout has provided enjoyable operations. It included two stations, tunnels and bridges, and trains were run to timetable, all members taking turns in control. A demonstration of the outdoor track of one of the members has been given. Secretary: D. J. Hunt, 11, Castle Drive, Horley, Surrey.

STROUD.—Members have enjoyed themselves greatly, with Cycle Runs, Visits to stations and a Dinky Toys Exhibition, at which 150 examples were on view. Two sections, the "Eagles" and the "Kestrels," have been formed. Secretary: D. Hargest, 6, Folly Lane, Stroud.

WEYMOUTH AND DISTRICT.—Two sections have been formed, named after the S.R. "Merchant Navy" and "West Country" locomotive classes. Plans are afoot for building up the Branch layout. Secretary: A. J. Brown, 68, Wylie Road, Weymouth, Dorset.



A. Pepper is Secretary of the Maylands (Perth, Western Australia) M.C., Leader, Mr. V. Malmgreen. This enterprising and well-organised Club was affiliated in February 1936. Its programme is varied, including Model-building, cinema shows, fretwork and games, with cycling, cricket, football, paper-chases and boxing, and a committee has been appointed to find means of making the Club bigger, better and brighter.

From Our Readers

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

A FINE BEECH AVENUE

The Grand Avenue at Savernake, Wilts., which has been described as Britain's finest forest aisle, was planted in or about 1722, and the trees that form this superb approach of over three miles must now be regarded as over-mature. They are beeches, and these trees are not long-lived, so that the avenue is perhaps unlikely to outlast the present century; there are many places in Savernake where old beech trees are going down as storms find their weakness. Whether any of the avenues planted in our time will be fit to compare, 200 years hence, with Savernake's Grand Avenue as it still is may well be doubted.

P. STEPHENS
(Kingston-upon-Thames).

BIRDS OF THE EYE VALLEY RESERVOIR

The Eye Valley Reservoir, half in Rutland and half in Leicestershire, is about two miles south of Uppingham. It was made by damming the Eye Brook just before it joins the River Welland, and was filled in 1940. It is about $1\frac{1}{2}$ miles long and $\frac{1}{4}$ mile wide, and it forms a useful stop on the bird migration routes from Spurn Head to the London area, and from Norfolk to the West Country. Although it is 50 miles from the open sea, birds rarely met with inland are often seen on it.

In winter the reservoir becomes black with duck; besides the Pochard and Tufted Duck, etc., which are very abundant in the cold spells, Pintail are seen, becoming more common every season; Scaup and Goldeneye are seen in ones and twos, though not staying long away from the sea. Two of the Sawbills, the Smew and Goosander, are regularly winter visitors. Just at the end of last year I saw a pair of Shelduck, but they are seen in spring and autumn as well, on passage.

One bird I have seen but not yet mentioned is the Great Northern Diver. I have "saved" this one because I regard it as a reward for many fruitless days spent studying the birds. I shall never forget the thrill of seeing it last winter.

There are interesting birds to see all the year round. In April the breeding birds on the reservoir are few because of lack of cover, but there are always Mallards, and last spring several broods of young Shoveller were reared safely. Shoveller may be seen generally when the water is high, because of the food they get from the algae in it. Redshanks and Lapwings are the only breeding waders; the former have spread considerably since 1900. Pochard and

Teal also can be seen in small numbers, but these two are more common in winter. The common Sandpiper, Greenshank and Dunlin pass through en route for their breeding grounds elsewhere.

During August and September migrants crowd the shores. Common and Green Sandpipers, pairs of Greenshanks, Ringed Plovers and Snipe, flocks of Dunlin and Lapwings, are all seen regularly. There are also unusual visitors such as Ruff, Curlew, Knot and Wood-Sandpiper, and rarities like the Godwits, Little Stint, Sanderling, Curlew Sandpiper, Spotted Redshank and Oyster Catcher. If that is not enough, the Black-winged Stilt and the Ventish Plover have been seen for the first time in the area. Of the ducks, Mallard, Pochard and Teal increase considerably in the autumn, and sometimes early Wigeon are seen.

A word to young bird lovers, whether they can visit such places as the Eye Valley reservoir or not. Study the birds as well as listing the species seen, and record all interesting actions, calls, and even proportion of males and females in flocks. But make your observations known, to complete the picture of Britain's bird life.

M. MACFARLANE
(Mill Hill School, London N.W.7).

UNLOADING TRACTORS IN AUSTRALIA

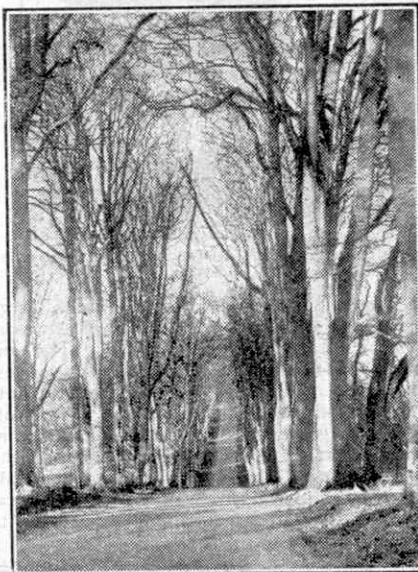
I was interested recently by the unloading of about 20 tractors that came up to Mallala by goods train, hauled by a 2-8-2 "Mikado" engine. With them was a huge travelling crane. The tractors, which had creeper tracks, were

to be used for the grading of a large airfield about two miles away, in preparation for the Mt. Eba rocket range.

Early one morning the travelling crane was shunted on to a siding, while the goods train was left on the main goods line. The train was kept moving along the line, and as each tractor on its truck came directly beneath the huge pulley of the crane the train was halted while the crane lifted it off and lowered it to the ground.

While all this was going on I was on the crane trying to understand the way in which it moved and turned. When all the tractors had been taken off, and put on to 18-wheeled lorries, the driver of the train asked me if I would like to look over his engine. To this I enthusiastically said "Yes," and it was very interesting to learn the meaning of each lever and handle. Finally the huge jib of the crane was lowered on to the trucks that supported it when not in use.

JAMES EAST (Mallala, South Australia).

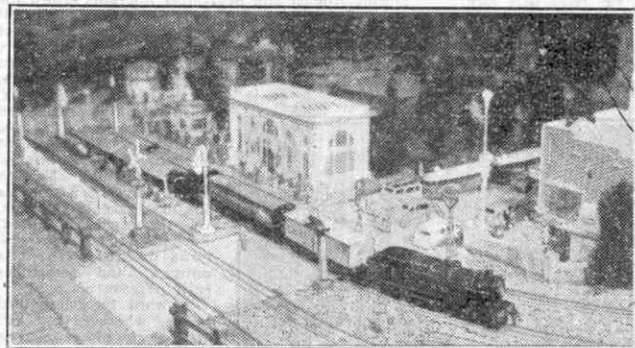


The Grand Avenue at Savernake, Wilts. These beeches are claimed to form Britain's finest forest aisle. Photograph by P. Stephens, Kingston-upon-Thames.

The "Model City" Railway

"MODEL CITY" is the name given to the striking miniature city and railway owned by the "M.M." reader Hamilton H. Jones, of Buffalo, U.S.A. Older readers may recall the description of the "City" as it was then, that appeared in the "M.M." in October 1934.

of a Hornby "Royal Scot," the oldest engine on the line, which was only displaced from passenger work because of the arrival of the "Princess Elizabeth" model in 1939. It still takes a 14 wagon train in good style. Other passenger traffic, such as the shorter distance express and sub-



A Hornby 4-4-2 Tank Locomotive and train at "Model City" on the layout of Hamilton H. Jones, Buffalo, U.S.A.

Special interest is attached to the miniature railway part of the system. On this a feature of note is the fact that both American and British type trains are operated, the British components being Hornby Trains. Some of the latter have been in use since 1933 and are still going strong.

The layout is electrically operated and boasts a four-track way so arranged that either left-hand running, as in Britain, or right-hand running as on most American roads, can be practised as required. The main railway centre in "Model City" is "Union Station." Right by the station there is a typical level crossing protected by the usual American "Railroad Crossing" sign with warning lights. These latter are very necessary as the roadway is thronged with miniature motor vehicles.

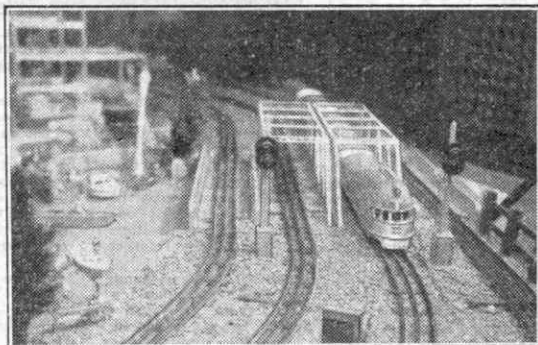
There are four Hornby locomotives and 28 items of Hornby rolling stock in service on the layout. Pride of place among the engines is taken by the big 4-6-2 "Princess Elizabeth," which usually runs a train of Hornby L.M.S. Corridor Coaches. Fast freight trains are in the hands

of another L.M.S. model, a 4-4-2 tank, and an S.R. 4-4-0 "Eton." American-type equipment includes a New York Central "Hudson" or 4-6-4 tender locomotive with a typical train and an unusual model in the shape of a streamlined diesel train.

"Model City" is not arranged haphazardly. Its business section is based on the "Union Station." There are commercial premises of

various kinds, large buildings with shops and such features as the 34-storey "Hotel Phoenix." The city is intersected by streets and avenues with suitable names and there is plenty of traffic on them, including a fleet of taxis.

Part of the city is on a higher level than the rest so that there is literally an "uptown" and a "downtown" section. The railway and a tramway are carried in tunnels beneath the high-level section.



An American diesel streamlined train crossing the Park Lagoon Bridge at "Model City."

Fun With Your Hornby Trains

THIS month we begin a short series of articles intended specially for those who have just received their first Hornby Train set. Readers who have had a Hornby layout for some time may also find something of interest in the series. In model railways, as in other things, it is never safe to think that we know it all.

Before we can do any train running we must first of all find a level space for the track, its extent varying according to the particular set we have acquired. A table is an ideal site, as the surface is level and is at a convenient height for carrying out operations. Very often, however, the only table available is not large enough, and then we must find room on the floor. Possibly we may have to move some article of furniture, of course with the permission of the domestic authorities. It may be necessary to run the line partly under a table or large chair, but this is not a disadvantage, as the obstacle can be regarded as forming a tunnel for our layout. If the train is hidden from view even momentarily during its run this will add considerably to the excitement of our operations.

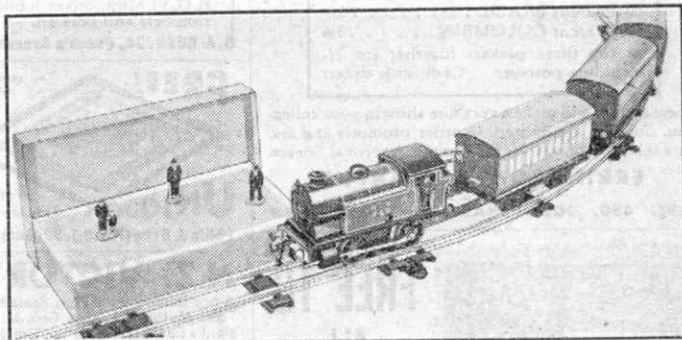
When the rails are connected correctly, as described in the instruction leaflet packed with the set, we are ready to assemble our train. Then comes the winding up of the motor, which we do by pushing the key on to the winding shaft as far as it will go and then turning it steadily in a clockwise direction. Continue turning the key until the spring is fully wound, counting the number of turns that are required. Then, for future operations, give one turn less than is required for full winding, so as to guard against any possible overwinding.

Next we set the train off on its journey round the track. If we have a station we shall, of course, start our train from

there; if not we must rig up some kind of a platform to form a starting point. To begin with, any simple arrangement will serve the purpose, such as a box lid or even a couple of books. The main thing is to have a definite starting and stopping point for our train.

In the illustration a cardboard box forms the station platform; it fits into the lid which is made to stand vertically to represent the station building. The two could be glued together and, to carry the scheme further, station building details could be drawn or painted on the lid.

We shall find that our fully-wound engine will haul its train round several circuits of the track, but most probably it will come to a standstill away from our



A Hornby passenger train approaching a station which has been constructed from a cardboard box and lid.

station. This is not satisfactory, because of course the train should stop exactly at the station. We can ensure this by making a series of experiments with different windings of the spring. We shall soon find the number of turns of the key required to bring the train to a stop at our station after a certain number of runs round the track.

In this way we take our first step towards realistic running of our train, namely, starting from a station, completing a number of circuits of the track, and then coming to a stop exactly at the point where it started.

Next month we shall describe how this way of working can be developed to provide really interesting results. We shall also make some suggestions for simple stations built of Meccano.

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Stamp Collecting

An Indian Survey

By F. Riley, B.Sc.

ON 12th August last the existing Empire of India came to an end, and in its place we now have the two Dominions of India and Pakistan. The change undoubtedly will result in interesting stamp developments. What they will be cannot be said at the time of writing. It was understood that the present

stamps were to remain current in the Dominion of India, and these were to be overprinted for use in the Dominion of Pakistan, but new issues were contemplated and their appearance will be looked for with interest.



So begins a new era in the already fascinating stamp history of India. This was summarised in an article in the "M.M." for November 1944, tracing briefly the development from the Sind Dakks of 1852 through the long series of portrait stamps to the attractive pictorials that have been issued since 1931. The first of these pictorial issues commemorated an event of the greatest importance, the inauguration of New Delhi, south of this ancient Indian capital, which had once again become the chief city of the Indian Empire and the seat of Government, a position that previously had been occupied by Calcutta. These fine stamps were in two colours. There were six of them. Four illustrated the Viceroy's House, the Council House and other new Government buildings, a fifth showed the War Memorial Arch and the sixth illustrated the Purana Quila, an ancient fort now in ruins that lies near the road leading from the new city to the old one.

This issue will not lose any of its interest in the changes that are now taking place, for New Delhi is the capital of the Dominion of India. The capital of Pakistan is Karachi, a large seaport at the northern end of the delta of the Indus. This is almost entirely a creation of British rule, with splendid harbour



works and buildings of modern architecture, and no doubt in time it will be honoured like the capital of the sister Dominion by stamps showing

its principal features and its public buildings. The negotiations that have led up to the formation of two new Dominions have brought the independent States of India into the limelight. It is perhaps only natural that there should be many divisions in such an immense country, with a long and complicated



history in which many races and religions have played prominent parts, but it will probably surprise many of our readers to learn that there were more than 570 separate states in the Indian Empire in addition to the vast territories that were under the direct rule of the British Government. The rulers of these states owed a common allegiance to the King Emperor and the larger ones had British residents, while the smaller ones were grouped together in Agencies, so that the Government exercised a friendly supervision. Most of the states are casting in their lot with one or other of the two Dominions.

These states vary considerably in size and importance. The largest of them is Hyderabad, in the Deccan, a land of more than 16,000,000 people. Next comes Mysore, with more than 7,000,000 inhabitants, followed by Kashmir and Gwalior, each of 4,000,000, while in the extreme south is the smaller country of Travancore, which is more densely populated and has 6,000,000 inhabitants. The wealth of some of these countries and of their rulers is almost fantastic. The Nizam of Hyderabad is usually reputed the wealthiest man in the world.

To us the great interest of these states is that many of them have actually issued their own stamps. In this they were perfectly in order, for although under the suzerainty of the British Crown, they were independent states, with their own laws and customs. In many of them the stamps of British India have always been used, in some instances with overprints, and in others the issue of separate stamps has been abandoned and those of British India adopted.

Of the states issuing their own stamps one of the most interesting at the moment is Bahawalpur, on the southern banks of the Sutlej, for it only made its appearance in our albums as a stamp issuing country as recently as January 1945, when a series of six pictorial officials was issued, the subjects ranging from the Palace and an irrigation dam to camels, pelicans and antelopes. It will be interesting to see if this state and others that have produced their own stamps continue to do so in the changed conditions, but in any case the new developments undoubtedly will increase the interest that collectors take in the stamps already issued by the various states. Many of these provide splendid opportunities for the close student who is interested in varieties and philatelic details, and others are attractive modern pictorials.

Several of the latter are illustrated on this page. One of them comes from Hyderabad, the hereditary ruler of which has expressed his intention of maintaining the independence of his country. The other examples come from Bhopal, Charkhari and Travancore.





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Stamp Gossip and Notes on New Issues

By F. E. Metcalfe

PERHAPS the most interesting set which has been issued by any British Empire country for a long time is the "Lighthouses" one, as it has already been dubbed, of New Zealand. We are illustrating one



of these and, yes, it depicts our own Eddystone. These stamps are for official use and are only valid in New Zealand itself, but they are none the less pukka postage stamps in every sense of the word, so no wonder dealers report good sales. They were designed by J. Berry of New Zealand, but recess printed by Bradbury, Wilkinson and Co. in England; so they are entirely an Empire product.

It wouldn't do for the U.S.A. to be out of the picture, so we are illustrating yet another commemorative; this time a purple 3c. stamp issued to commemorate the

centenary of the founding of the State of Utah. The design is attractive, but one gets rather tired of all these purple stamps and a page of them looks rather overwhelming. Incidentally

American collectors are complaining about the recent "Doctor" commemorative, and have already dubbed this stamp the "Maroon Blob."

A number of collectors are disappointed that they did not get a copy of the colonial section of Gibbons' catalogue which appeared earlier in the year. Apparently many had to go without and some are so eager to obtain a copy that they have paid nearly £5 in auction. Surely a catalogue cannot be worth such a sum to the ordinary collector, though it is said that there are still quite a few about willing to pay that sum, so what chance have our ordinary mortals in the scramble.

Recently we wanted to illustrate a copy of the Austrian "Vienna Prize" stamp, but lack of space prevented it; this month we are able to fit it in. We consider this stamp a beauty and not the least part of its charm is the fact that it can be purchased for a few coppers. Austria continues to turn out lots of stamps; but all are beautiful and a collector must be hard up indeed if he cannot afford to collect them, for all are exceedingly cheap. To those who want to collect really artistic productions and not expend much cash, Austria is the country for their attention.

Of course there are many other European countries turning out beautiful and cheap stamps, such as France and the Scandinavian countries, but Austria will take a lot of beating. Belgium is also issuing a lot of sets, but they have overdone the big stuff and dealers complain that Belgium is finished philatelically as far as British collectors are concerned, as they have had enough.

Dealers also report that the strongest supporters of our own

Empire stamps are the younger collectors. They seem to shun foreign stamps almost entirely and stick to colonial stamps, preferably the current pictorials. In the opinion of the writer of these notes they are not far out, for there is a saying that you don't lose money on colonials; as most of us spend more cash on our stamps nowadays than we would care to throw away on a hobby, this is a big item.



It was thought at one time that the only stamps which would be issued for the "Straits" would be a set for Singapore and another for the Malay Peninsula; it is fairly obvious now that all the old stamp-issuing states such as Kedah, Perak, etc., will be back on the job sometime next year. In the old days these stamps were anything but popular with collectors, but there has been a great change since the Japs were pushed out.

Speaking of the Japs, the Australian military authorities in Japan have exploded a small bombshell in the philatelic camp by overprinting Australian stamps for the use of their troops. The values concerned are the 1d., 1d., 3d., 6d., 1/-, 2/- and 5/-, and the last of these seems very hard to come by. It is not known yet whether Gibbons will catalogue these overprints or not; they will be the losers if they refrain and collectors won't mind much anyhow, for the collector of to-day is not the catalogue slave

that his father was.

Though these overprinted stamps are scarce at present, fancy prices should not be paid. Recently the 3d. value was being offered at £7/10/0. It is to be hoped that there were no collectors as stupid as the price. In time sets should be obtainable at about double face or so; of course this cannot be guaranteed and the authorities may withdraw the stamps; even so quite a few must have got out and will be offered later.



Our fourth illustration this month shows the 1d. stamp of Nyasaland, which is being changed. However such a monstrosity came to be adopted beats most people. Naturally the natives of the country concerned objected to being depicted in such a horrid manner and officialdom has at last agreed to make a change. It's high time too.

Collectors of perforation varieties got quite a shock when they heard that the 10/- value of Cayman and the 6d., 1/- and 2/- values of Grenada had reverted to the obsolete "compounds." Really it didn't matter much, if one also had the current stamps, for one lot became current again, but the others went obsolete, so in spite of the complaints nobody really lost much. There is one lesson to be learned from the switch over. Be sure you have the current "perforations" in your collection; then you need not worry about any change.

And now here is a nice little stamp to buy, if you can pick up a copy. Many collectors are short of the mint 3d. blue of Australia which was issued in 1937-8; it does not matter which printing, all are good mint. These stamps are well worth 5/- each, if mint, so try and fill your space as soon as you can.



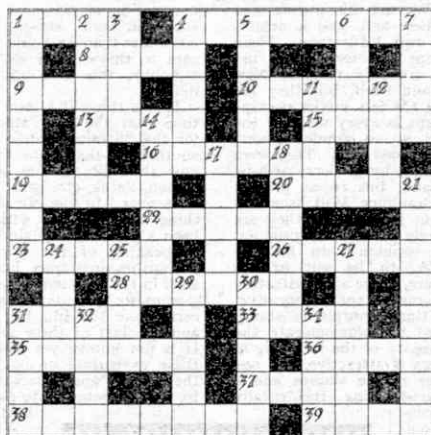
Competitions! Open To All Readers

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 Easy Crossword Puzzle

CLUES ACROSS

1. Garment
4. Worried
8. Comfort
9. Washing material
10. Stir up
13. Streak
15. First man
16. Drink of Gods
19. In the country
20. Scatter
22. Gives out
23. Garment
26. Beneath
28. Good opinion
31. Part of body
33. Expression
35. Plunge
36. River
37. Always
38. Public
39. Fastens



CLUES DOWN

1. Movements of body
2. Loom operator
3. Back of neck
4. Swiss city
5. Infect
6. Inroad
7. Consider
11. Vehicle
12. Domesticated
14. Creeks
17. Set of bells
18. Take for granted
21. Caution
24. Whetstone
25. Water plant
27. Modest
29. Italian city
30. Girl's name
31. Oriental governor
32. Direction
34. Parts of fish

This month's crossword puzzle, submitted by our reader T. K. Chaplin, will be found to follow the lines of the previous ones we have set on this page. Every effort has been made to provide a fair and interesting puzzle, without any traps in the form of alternative solutions. Every word used can be found in Chambers' or any other standard dictionary.

As usual, there are two sections in the competition, for Home and Overseas

readers respectively, and in each prizes of 21/-, 15/- and 10/6 will be awarded for the best solutions. If necessary the judges will take neatness and novelty into consideration. Entries should be addressed "October Crossword, Meccano Magazine, Binns Road, Liverpool 13." Closing dates: Home Section, 29th November; Overseas Section, 31st May 1948.

Do not cut out the diagram on this page. Make a copy of it for your entry.

Put These Right!

This month we present our railway-minded readers with a very simple but attractive competition. The accompanying sentences were picked up when listening to conversations between railway enthusiasts whose zeal outran their knowledge. They contain mistakes that no "M.M." reader should make, and these are to be discovered and listed. To show what is wanted, in the first sentence an engine is described as both simple and compound, which clearly must be wrong.

1. The new engine is a simple compound.
2. We had a banking engine at the front of the train on the downhill run.
3. Our train coasted up the 1 in 63 gradient at 40 m.p.h.
4. Last night we noted a four-coupled 0-8-4 tank.
5. The "Distant" signal showed clear but the "Home" was at danger.
6. A Block Instrument is a buffer stop.
7. The regulator is in the engine cab.
8. The blue lever in the signal cabin is for locking level crossing gates.

Competitors should give, in a few words, details of the mistakes and address their entries to "October Railway Errors Contest, Meccano Magazine, Binns

Road, Liverpool 13." These must be posted to reach this office by 29th November in the Home Section, and 31st May 1948 in the Overseas Section. As usual, there will be prizes of value of 21/-, 15/- and 10/6 for the best entries in each section, with a number of consolation prizes, and in the event of a tie the judges will take neatness and novelty into account.

October Photographic Contest

This month's photographic contest is the 10th of our 1947 series, and in it, as usual, prizes are offered for the best photographs of any kind submitted. There are two conditions—1, that the photograph must have been taken by the competitor, and 2, that on the back of the print must be stated exactly what the photograph represents. A fancy title may be added if desired.

Entries will be divided into two sections, A for readers aged 16 and over, and B for those under 16. They should be addressed "October Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13." There will be separate sections for Overseas readers, and in each section prizes of 21/-, 15/- and 10/6 will be awarded. Closing dates: Home Section, 31st October; Overseas Section, 30th April 1948.

Fireside Fun

"It says you left your last place because of illness. What was wrong?"
 "The boss got sick of the sight of me."

"Even if you have lost your penny you needn't cry about it, Billy."
 "Must do sumfin, an' I'm not old enough to swear."



"I'm bigger than you. I can look over that fence."
 "Well, I have to bend down to look over."

Kind Old Lady: "I always think you poor policemen run such a risk of learning bad things through being mixed up with criminals."

Policeman: "You needn't fear, mum. It's the criminals that run the risk of learning to be good mixing up with us."

"I say, the sleeves of this coat you made me are miles too long."

"Sorry, sir. I shall put that right, of course. How much shall I take off them?"
 "Oh, I think half an inch will do."



"I'll have 36 cornets."
 "How many?"
 "Oh! They're not all for me. I've got a pal outside."

THIS MONTH'S HOWLER

Octogenarians are very unhealthy men. We often read in the papers that they are dying.

BRAIN TEASERS

A ONE-WAY CROSSWORD?

A one-way crossword cannot be a crossword at all, but never mind—just try this. The clues across are: 1, Recently; 2, Used for shopping; 3, Taste or relish; 4, Leave; 5, Beat; 6, Planet. When the solution is complete, a word will appear in the fifth column. B.I.N.

1	A				
2	A				
3	A				
4	A				
5	A				
6	A				

IT LOOKS IMPOSSIBLE

Arrange 10 coins in five rows, each containing four coins. S.W.C.



"Why do you want another dog? What's the matter with this nice blue plush one?"
 "That's not the kind. I want one with fleas!"

TRY A SHOT AT THIS

A target used for shooting practice has a bull in the centre and four rings round it. A shot at the bull scores 10 points, and the four rings are valued 9, 8, 7 and 6 respectively. In how many ways can 40 be scored in five shots? S.W.C.

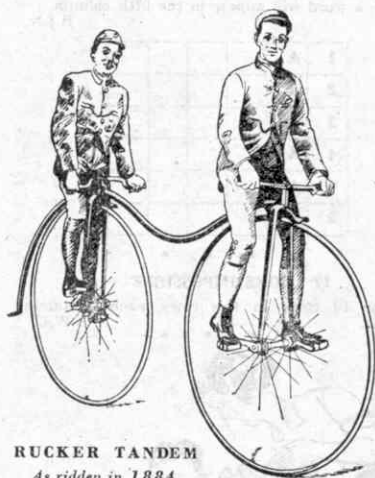
SOLUTIONS TO LAST MONTH'S PUZZLES

The five words in our first September brain teaser, starting at the bottom, are A, AS, SAT, TAGS, GATES.

In our match puzzle, numbering the matches 1 to 10; the moves required are as follows: 5 to 2; 7 to 10; 3 to 8; 1 to 4; and 9 to 6.

The code for our third puzzle is obtained by writing the letters of the alphabet in two columns, so that A and N are side by side, as are B and O, C and P, and so on. For each letter the one alongside it, either to the left or right, is substituted. This key then gives as the solution: DON'T PULL THE COMMUNICATION CORD IN THE SEVERN TUNNEL.

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As ridden in 1884

*but
modern
cyclists
ride on —*



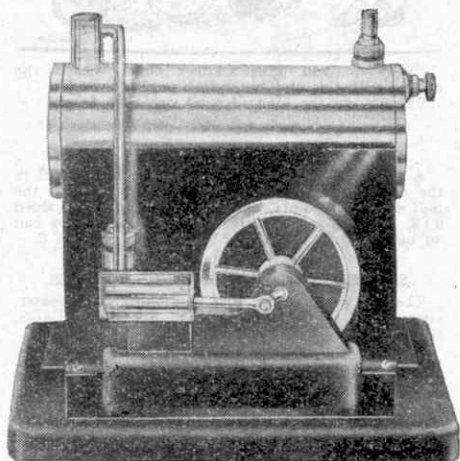
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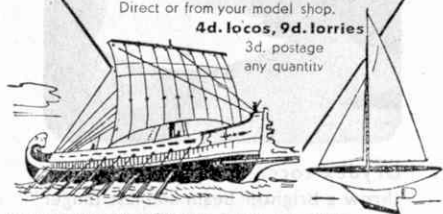
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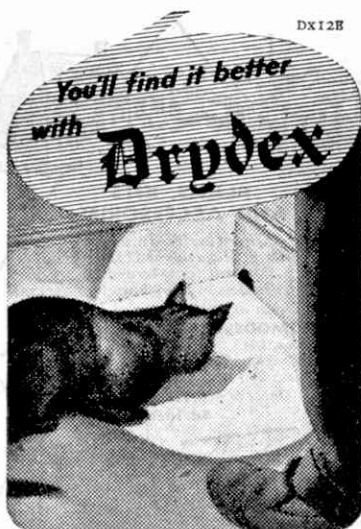
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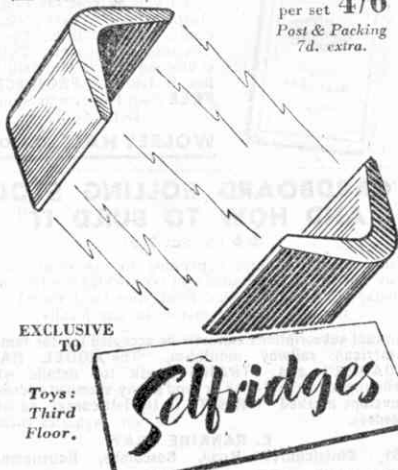
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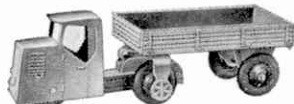


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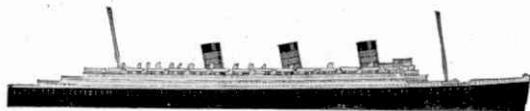
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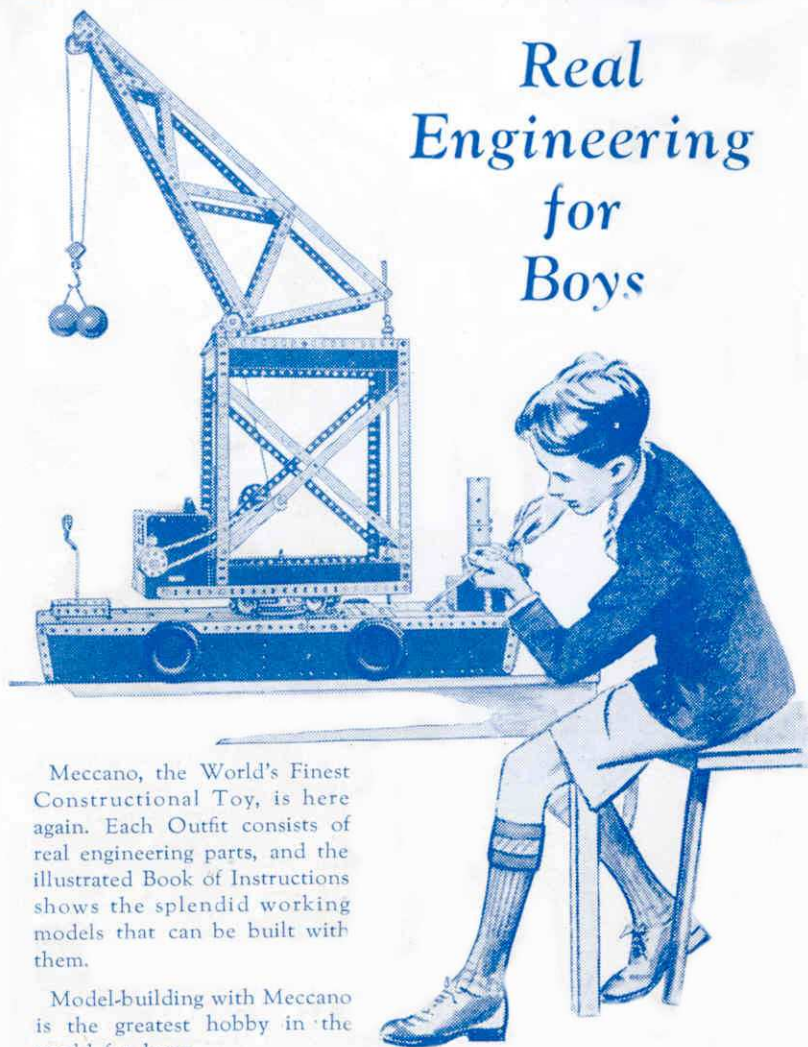
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