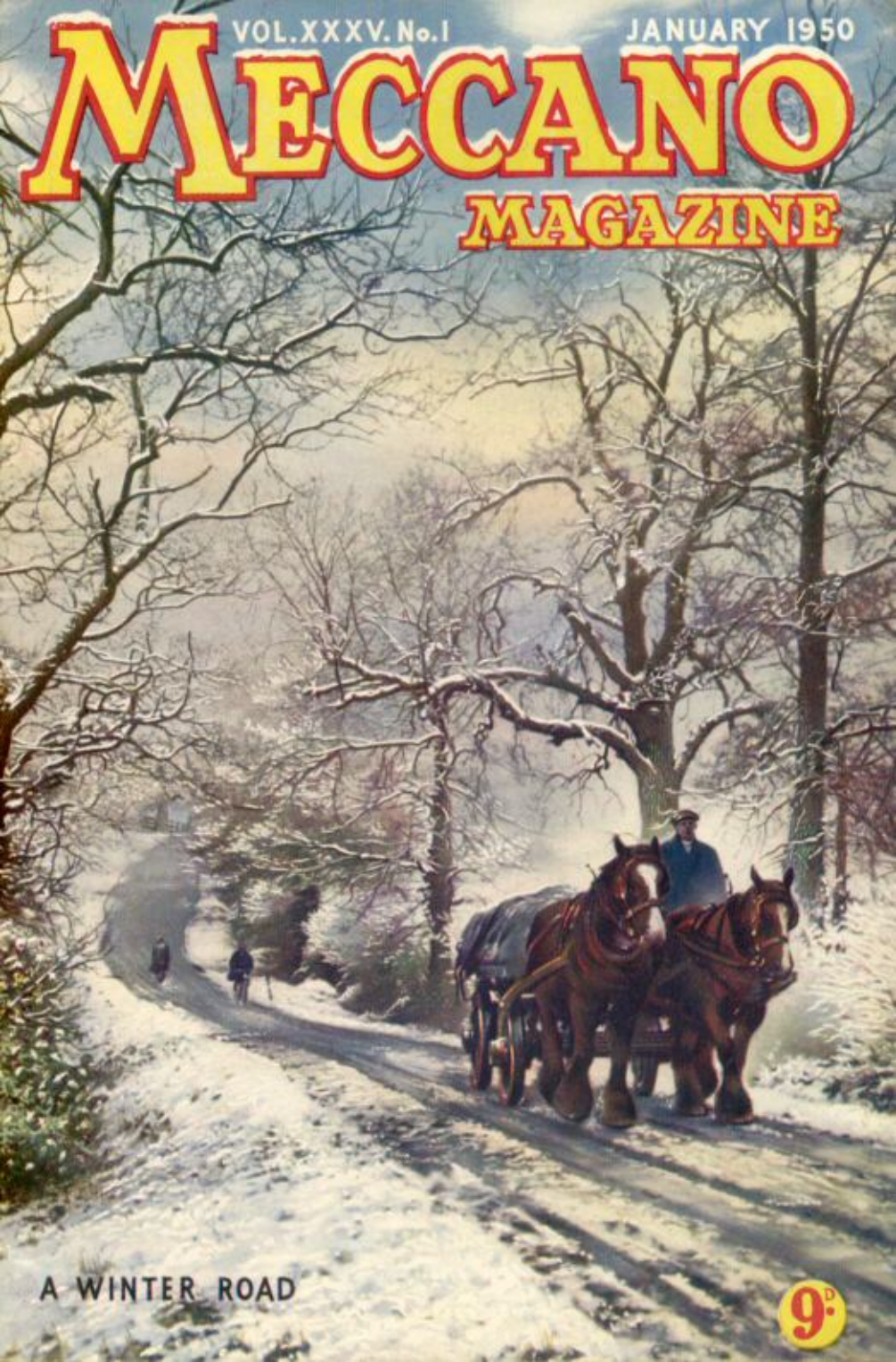
VOL. XXXV. No. 1 JANUARY 1950

MECCANO MAGAZINE



A WINTER ROAD

9D

DINKY TOYS

Motocart
No. 27g
Low loading three-wheeled truck. Tipping high-fronted body.

NEW

Ready during the month

Daimler Ambulance
No. 30h
A beautiful model finished in cream with red wheels and the Red Cross on each side.

Coventry Climax Fork Lift Truck, No. 14c
The loading carriage is raised by turning a handle.

Wheelbarrow
No. 105b

Forward Control Lorry
No. 25r

4-wheel Hand Truck
No. 105c

B.E.V. Electric Truck
No. 14a

Ford "Fordor" Sedan
No. 139a

Loud Speaker Van
No. 34c

The Standard "Vanguard" Saloon, No. 40e

Austin Devon Saloon
Dinky Toys No. 40d

Bedford Refuse Wagon
No. 25v
Sliding covers, tipping mechanism, opening rear door.

Massey-Harris Tractor
No. 27a

Harvest Trailer
No. 27b

Massey-Harris Manure Spreader, No. 27c

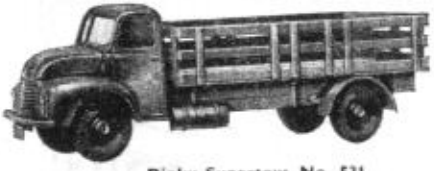
For prices see current list

MADE IN ENGLAND BY MECCANO LIMITED

SUPERTOYS

Dinky Supertoys No. 571
Coles Mobile Crane
Hoisting, jib-raising and slewing movements.

Dinky Supertoys No. 562 Dumper Truck
Adjustable front wheels, tipping bucket, reversible driving seat.



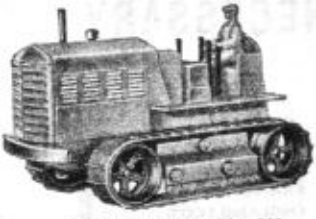
Dinky Supertoys No. 531
Leyland 'Comet' Lorry

Dinky Supertoys No. 514
Guy Van
Large capacity van body, with opening double doors at rear.

Dinky Supertoys No. 751
Lawn Mower

Dinky Supertoys No. 504
Foden 14-ton Tanker

Dinky Supertoys No. 511
Guy 4-ton Lorry



Dinky Supertoys No. 563
Heavy Tractor

For prices see current list

MADE IN ENGLAND BY MECCANO LIMITED

MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

Vol. XXXV
No. 1
January 1950

With the Editor

Forthcoming Articles

Once more we come to the beginning of a New Year, and this is a good opportunity to peep into the future of our own small world—the world of the "*Meccano Magazine.*"

I have been looking over the list of special articles that are in preparation, many of them by writers already familiar to us. Next month there will be an article on the Bertram Mills Circus, with splendid illustrations and a fine cover picture. The same issue will include an account of the French trains that run on pneumatic tyres, and of a remarkable U.S.A.F. test hangar in which every climate in the world can be imitated. Articles in later issues will deal with harnessing the wind for power, an extraordinary mechanical man and his dog, a great tramway and light railway system in Belgium, the Clifton Suspension Bridge, the Kingston Power House, and the production of sugar from beet. For the many readers who demand an occasional nature article there will be one dealing with the otter at home and in captivity, and another on newts and lizards. These are just a few of the good things for 1950.

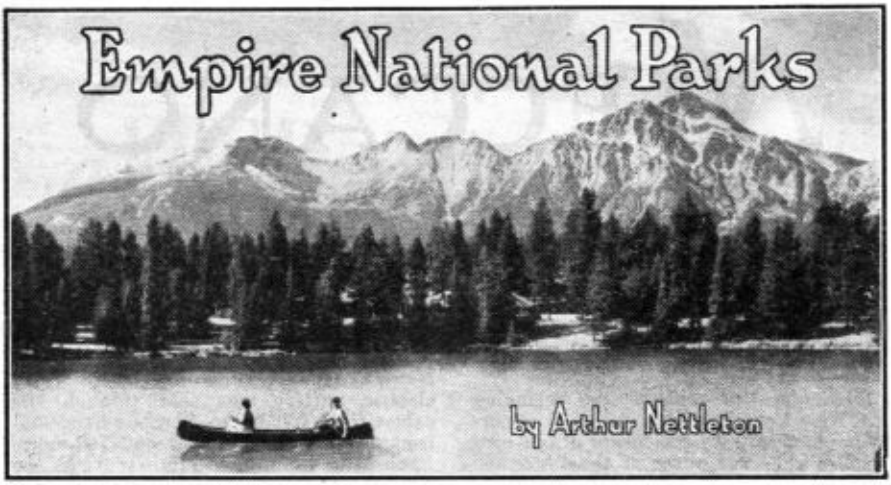
Here is a good resolution for every reader: "I will write to the Editor at least two or three times during the year."

A Famous Silver Thimble

One of the historic romances of the 19th Century, the laying of the first telegraph cables across the Atlantic, is recalled by the recent gift to the Science Museum of a silver thimble. After repeated and disastrous failures in 1857 and 1858, the laying of two cables from Valentia in Ireland to Newfoundland was successfully achieved in 1866. As an experiment, the two ends of the cable were connected together in Newfoundland and a current from an electric battery was sent through the cables from Ireland to Newfoundland and back again, a distance of some 3,700 miles. Even after the double journey across the Atlantic, the current was strong enough to produce large deflections on the reflecting galvanometer which had recently been devised by Professor William Thomson, later Lord Kelvin.

The "battery" used for this experiment consisted only of a tiny silver thimble containing a few drops of acid and a wire of zinc. This had been borrowed from Miss Emily FitzGerald, daughter of the Knight of Kerry upon whose land was erected the building known as Telegraph House in which the cables terminated.

This Month's Special Articles



WE have heard much in recent months about plans to establish National Parks in Britain. So far we have safeguarded very few districts from undesirable development and spoliation, nor have we introduced schemes to enable the walker, cyclist, camper, motorist and nature lover to enjoy the countryside. But this lack is now to be remedied by scheduling certain regions as National Parks and preserving other districts as nature reserves.

Such projects are by no means new. National Parks and nature reserves, far bigger than any which could possibly be established in this country, have existed in other parts of the world for many years. Retreats of this kind in Canada alone now total more than a score, and they have a combined area of more than 12,000 square miles. South Africa established her first National Park in 1898, and four others have since come into existence in the Union. Australia's chief addition to the list is at Port Hacking, New South Wales, while tracts of New Zealand's scenic wonderlands are similarly protected.

A scene in Jasper National Park, one of Canada's mountain wonderlands. Photograph by courtesy of the Canadian National Film Board.

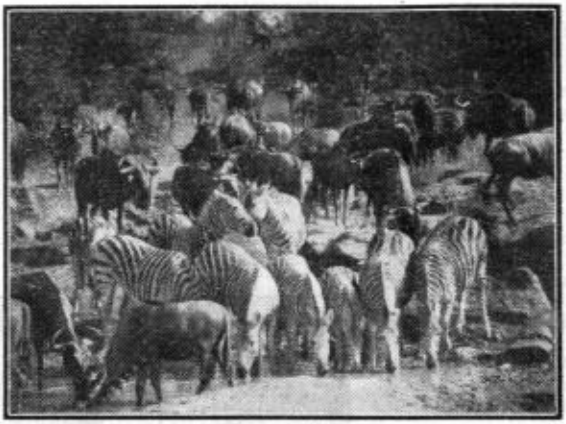
The most famous reserve in South Africa is the Kruger National Park, which covers 8,000 square miles of the Transvaal. It is indeed the world's most remarkable sanctuary for wild life, as well as a popular and unique attraction for tourists. It covers a larger area than Wales and presents a great variety of scenery. Here too are lions, buffaloes, giraffes, leopards, zebras, elephants and antelopes, all finding a natural home in this part of South Africa.

More than 1,000 miles of excellent motor roads have been made through the region, enabling visitors to penetrate the area and view the animals and birds in their natural surroundings comfortably and safely. Rest camps also have been provided at various points, where tourists may spend a night or two. Motorists and their cars have become such a familiar sight in the Park that most of the wild creatures in it have lost their fear of man, and now accept passing vehicles unconcernedly. It is nothing unusual to see lions lazing by the roadside, or actually lying in the roadway and causing motorists to slow down or pull up while the beasts get out of the way.

The Kruger National Park is an equally wonderful sanctuary for all kinds of bird life. Its winged inhabitants include birds of prey such as the hawk, eagle and vulture, as well as many specimens with bright plumage and many species of owl.

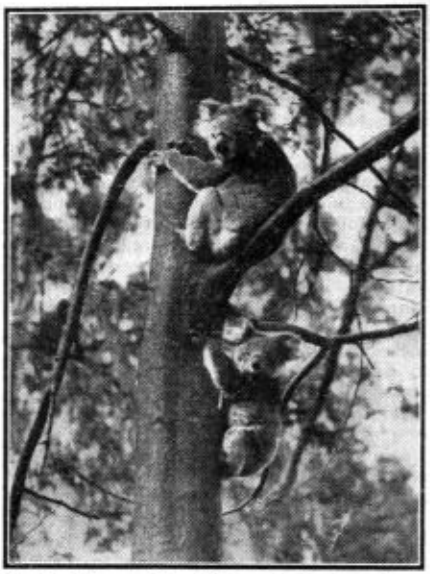
Entirely different is the Drakensberg National Park, a region of grand and beautiful scenery safeguarded by the people of Natal. It consists of mountain peaks, commanding great stretches of Basutoland, the Orange Free State and Natal, and it affords fine opportunities for climbing. Mammoth waterfalls, deep chasms, and valleys clothed with luxuriant vegetation add to the attractions of the area.

The wild game in the Park include the stately eland and the graceful orbi, which live a protected life there. The eland, a species of antelope, is now specially preserved in other parts of South Africa too, for there were fears that it was becoming almost extinct. Some 40 years ago special measures were introduced to preserve the few remaining examples of the animal on farms, and the Giant's Castle Game Reserve came into being. Other sanctuaries for wild life are near Bredasdorp and Upington. Bredasdorp lies about 100 miles east of Cape Town, and the small National Park there was specially formed to safeguard a herd of bontebuck. Like the eland, this animal had become nearly extinct before it was given the security of a reserve, but it is now more numerous.



Zebra and wildebeeste in Kruger National Park. Photograph by courtesy of P. de L. Bayers.

The Kalahari Gemsbuck National Park, on the eastern border of South West Africa, is more than 1,000 times as big as the Bredasdorp National Park. It covers nearly 3,650 miles, and is a reserve for thousands of gemsbuck and springbuck, together with eland, lions, ostriches, and other African wild animals and birds. Yet another National Park in the Union is near Port Elizabeth, and here the Addo elephant is specially protected. The animal is somewhat smaller than the ordinary African elephant, and its tusks do not grow to the same length, but in all other respects it is identical with the commoner members of the tribe.



The koala bear of Australia, easily tamed and now specially protected.

A further reserve, for the preservation of mountain zebras, was established in the Cape of Good Hope in 1935. For a number of years it had been evident that the number of such animals in the Union was dwindling rapidly and alarmingly. So an area near Cradock, where some of these fascinating creatures were to be found, was bought by the South African Government and turned into a reserve.

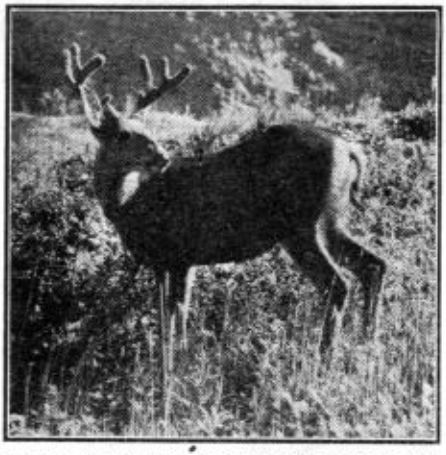
In the game reserves a number of boreholes and dams have been made, thus providing a regular supply of drinking water in that arid area. Otherwise the animals would have to subsist on the juice of the tsama melon for long periods.

Canada's biggest National Parks are in Alberta, and the oldest of them, the Banff National Park, was established as far back as 1885, though it has been greatly extended since that time. It is a mountain playground now covering no less than 2,500 square miles, and it is also an important sanctuary for big game. It contains two famous resorts, Banff and Lake Louise, and consists of massive, snow-capped ranges, great forests, placid lakes, and rushing rivers.

Banff is walled in by a great circle of peaks, and from this resort you can explore an enchanting region famous for its fishing and winter sports facilities, its spectacular views, its majestic trees and its varied wild life.

As a result of rigid sanctuary regulations, many species of animals which were becoming extinct are now protected and are multiplying. Among them are the black bear, moose, white-tailed deer, elk and caribou.

Not content with such a fine playground and nature reserve, in 1907 Canada scheduled an adjoining territory of 4,200 square miles as a further retreat! This region, now called the Jasper National Park, is an immense mountain wilderness of majestic peaks, broad valleys, and beautiful coloured lakes. It is rich in history too. Over these mountains came the annual "fur brigade" bringing furs to the Columbia River, there to meet the "western brigade" from the Pacific. In the same territory took place the dramatic struggle between the rival Hudson's Bay Company and the North West Company, for control of the rich fur trade. Jasper National Park, in fact, gets its name from Jasper House, a fur trading post run at that time by a clerk called Jasper Hawes.



Mule deer buck in velvet in Banff National Park, Canada.

The Park contains thousands of big game animals, including brown, black and grizzly bears. Since they were given protection, some of the animals have become very tame, and deer and elk sometimes visit the town of Jasper. Many miles of first-class motorways have been constructed, without marring the beauty of the landscape. There are also pony trails into the more remote parts, facilities for swimming and canoeing, and opportunities for such winter sports as ski-ing and tobogganing.

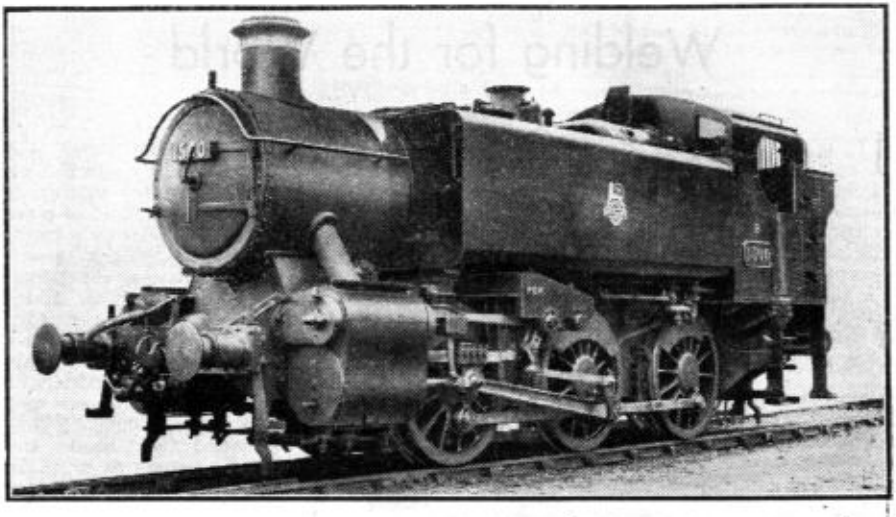
Canada's National Parks are so many and varied that they have become her greatest tourist asset. Oddly, perhaps, this nowadays extensive scheme was really begun by the building of the Canadian Pacific Railway from coast to coast. Prospectors surveying the route discovered springs of hot water bubbling from the side of a mountain in the Rockies, and they suggested that a resort be established near this point on the railway route. Faced with the choice of leasing the sites of the springs or purchasing them, the Dominion Government decided to buy them. Shortly afterwards, when a party of Canadian politicians journeyed across the Rockies by the new railroad, they were so impressed by the grandeur of the scenery that they promoted a Bill to preserve the region as a National Park, as well as to establish a resort.

That was the beginning of the present series of retreats and reserves in the Dominion, and indeed it led the way for National Parks in other parts of the Empire as well. Canada's other National Parks to-day are varied in character. A bison or buffalo reserve was established in Alberta in 1806, and over 700 of these powerful animals were transported there from Montana, U.S.A. Another reserve in Alberta is intended chiefly for antelopes.

Now that we in Britain are adopting more fully the idea of preserving our beauty spots as playgrounds and establishing certain areas as nature reserves, the National Parks in distant parts of the Empire assume an even greater interest. Our own Parks must necessarily be bijou ones by comparison, yet they will have an affinity with the grandiose examples overseas.

On the other hand, rural activities such as agriculture and livestock rearing must continue in our national playgrounds. We cannot afford to set aside large areas solely for recreation.

Another point on which our Parks will differ from those overseas is that, although good motor roads will be built up to the boundaries, it is not intended to build wide highways through the regions.



New Western Region Shunting Tanks

AS announced recently in "*Railway Notes*" Swindon Works, the locomotive headquarters of British Railways Western Region, is building a series of shunting tank locomotives of new design. The photograph reproduced above by courtesy of British Railways shows No. 1500, the first of these sturdy and compact engines which are intended for continuous yard shunting duty.

On this type of work, any features of design that allow the engine to be kept in service without the need to return frequently to the shed are invaluable. Ease of preparation and examination are important, and if the work can be done without the necessity of standing the engine over a pit, so much the better. With these requirements in view, the traditional G.W.R. arrangement of inside cylinders for 0-6-0 tanks has given place to cylinders and motion outside the frames. Not that the use of outside cylinders is unusual, for practically all the larger standard Western Region types have them; but the application of outside motion is a novelty for Swindon.

The only other Western engines now in service with this feature are the half-dozen Avonside 0-4-0 tanks specially built for service at Swansea Docks. These, however, were not a genuine Swindon design.

The outside position of the whole of the motion on the new engines makes for ready accessibility for examination, servicing and repair. A further help towards easy maintenance is the absence of any external footplating above the cylinders and motion, or indeed anywhere along the sides of the engine. Western engines invariably carry their shed indication on the side angle of the footplating; so on No. 1500, as this is absent, the legend "*PDN*" appears on the motion bracket.

Standard Swindon practice is followed elsewhere about the engines, and in general details they resemble the 94xx series of 0-6-0 tanks introduced a year or two ago. They carry the same standard non-superheater boiler as that fitted to the 94xx. They are slightly heavier than the 94xx class, but they exert the same nominal tractive effort.

The coupled wheelbase is moderate and a curve of three chains radius can be negotiated at slow speed. Lever reversing gear, as fitted to so many Western locomotives, is handier to use on shunting engines, where frequent reversing is required, than the wheel and screw gear.

It is pleasing to note that the typical Great Western chimney with a copper cap is fitted and that the traditional Swindon pattern of number plate appears on the cab side. Great Western green, however, has given place to British Railways black, with the "lion and wheel" emblem on the sides of the tanks.

Welding for the World

By C. W. Brett, M.Inst.W.
(Managing Director of Barimar Ltd.)

IT is certain that scientific welding engineers cannot be numbered among those who have cause to complain of the monotony of the daily round. Rarely, in repair work, do two jobs require precisely the same treatment. When there is an exception, then most likely it will concern the putting right of a batch of machinery parts, all new and in process of production. What has happened is that holes have been drilled in error and need welding solid again. Or it may be that a considerable number of components have been turned or ground undersize, in which event by far the most economical and trustworthy remedy is to build them up afresh with new metal.

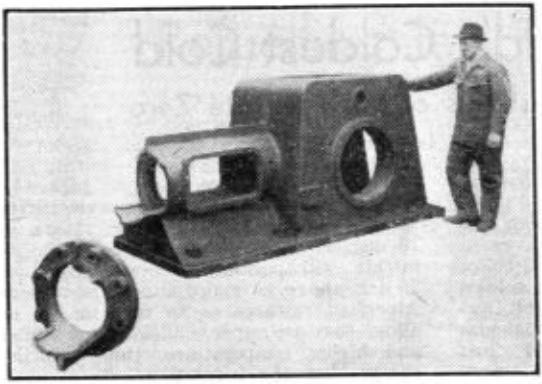
Arm of radial drilling machine—a not uncommon breakage. A repair to a part like this demands accuracy and strength. The illustrations to this article are by courtesy of Barimar Ltd.

To many who are casually interested in engineering matters this may seem prosaic, even a trifle uninteresting. But wait a moment, and take a look inside the works of an up-to-date scientific welding firm with its bewildering variety of equipment, some of it highly spectacular when it is in operation. Then pass on to the machine shops capable of undertaking what is virtually jeweller's work on the one hand and dealing with castings weighing 10 tons or more on the other.

Take a look too at the metallurgical chemists at work, ensuring the selection of the right grades of weld metal, and watch the X-ray machines by which steel, inches thick, is no more able to conceal a hidden fault that could a sheet of plate glass. All these things and much more, including the ever vital "know how," have earned this country a reputation in welding that is second to none. Moreover it is an export outlet of rapidly increasing value, for it is not just the less important items that are handled in this way but the crankshafts of railway locomotives and ships. Diesel engine cylinders and their heads, the latter weighing as much as 30 cwt. or more, are also familiar visitors for attention.

These things and many more like them are vitally important, and it is imperative that all risk of further failure, barring only gross misuse, be eliminated. Life and limb may well depend upon the soundness of the welding, and consequently specialist firms never take a chance. They test and re-test, check and re-check, and then they issue a money-back guarantee. That is the invariable routine, and upon such a foundation a great reputation has been built.

To look at the daily batch of new work an engineer's annual and a geography book seem to be necessary. On the occasion of a recent visit the fragments of a three ton casting had just arrived by train-ferry to London and thence to the welding works. This turned out to be the massive crankcase and piston rod guide of a compressor. The capacity of this machine is best judged from the fact that it requires 800 h.p. to drive it. It had come from Belgium, a country that has set many difficult welding problems for British specialists in times past. These have been handled brilliantly and, as always happens in such cases, a tentative trickle turns into a steady flow of business, for trade of this kind can only be built upon utterly dependable results.



This large compressor casting came from Belgium by train-ferry. It would have taken many months to re-cast and machine a new piece of machinery like this.

The cause of the smash in this instance was the piston and its rod parting company. Cast iron being the metal concerned, an oxy-acetylene process was used; this is in contrast to steel to which electric welding is more commonly applied.

Contrary to the general impression, it is not the requisite strength that is difficult to obtain. If necessary this can be increased to an extent far beyond that possessed by the damaged part before it suffered accident. No; strength alone would be useless without perfect alignment. A tolerance of no more than one-thousandth part of an inch is standard practice and sometimes even this small amount must be reduced. The actual work of the operator looks deceptively simple, but skill resulting from long training and a natural aptitude play a vital part.

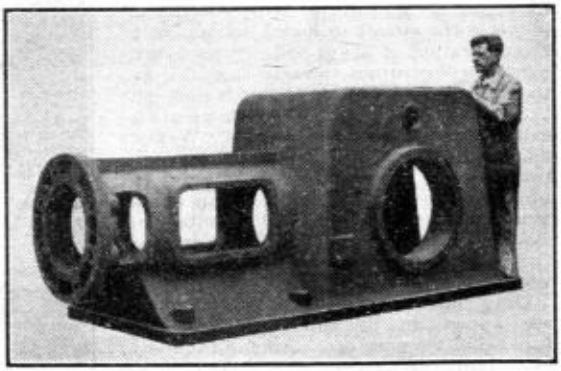
After final inspection there is the machining to be done. This not only ensures re-assembly without need for fitting, but also removes all trace of repair. Only a few days would elapse before the casting was on the North Sea again in every way equal to new, but at a small fraction of the price of replacement and without the long delay that is almost inevitable with the majority of renewals these days, particularly when large castings are involved.

Among those things waiting their turn sometime during the day are certain to be a number of parts belonging to machine tools, often key machines. This means that the unexpected breakdown may be holding up a series of other factory units that are dependent upon it. This time the radial arm of a large drilling machine seemed to be about the most important item in the category just mentioned. The arm was broken in two and there were several other loose fragments. Strength, accuracy plus skill indeed are necessary to deal with a casualty of this variety. However, it was not regarded as being in any way unusual.

The next item concerned a cylinder block belonging to some car or commercial vehicle. This was in such a fragmentary state that an onlooker could hope only that the operator, whose task it would be to put this casting together again, was a jig-saw enthusiast. Yet it was certain it would go together, and moreover it would need a microscope to tell just where the fractures had been.

In contrast to this there were parcels containing precision parts some so small that several could be concealed in the palm of the hand. The components of cinematograph projectors seemed to figure fairly highly on the list, with wear more often than breakage being the cause of the trouble.

Welding specialists are just as ready to meet weakness arising from abrasion or corrosion as they are to deal with a straightforward fracture. Moreover they are not content to build up *(Continued on page 41)*



The owner's faith in British welding was fully justified, as will be seen by this illustration of the repaired job.

The World's Coldest Cold

Probing the Mysteries of the Absolute Zero

By M. Lorant

SCIENTISTS of the American Westinghouse Company, in their new "push-button" laboratory, are probing deep into the mystery of how matter behaves at temperatures down to 458 deg. F. below zero, a fraction above the world's coldest cold. Dr. Aaron Wexler, head of low-temperature studies at the Westinghouse Research Laboratories, disclosed just recently that a new "cryogenics" laboratory is producing these low temperatures as swiftly and automatically as a home refrigerator. Using special techniques, the scientist can come within one-tenth of a degree of absolute zero, where no heat whatsoever is present. This is 459.7 degrees below zero on the Fahrenheit scale.

"At such temperatures," Dr. Wexler explained, "the nature of matter undergoes radical changes and it behaves in a most mysterious manner. For example, liquid helium flows uphill and the flow of electricity in a wire encounters no resistance at all. Although these facts have been known for years, scientists are striving to find out why this should happen. Our quest is aimed at uncovering fundamental explanations of this mysterious behaviour at super-cold temperatures."

One major mystery now under attack is the obstacle-free course that extremely low temperatures provide for electricity.

"Normally, electricity flowing through a wire will meet resistance and lose some of its power in the form of heat, but if you immerse the circuit in liquid helium, with a temperature of about 452 degrees below zero, it will continue to carry current even though the source of electricity is shut off.

"This strange behaviour, which scientists call 'super-conductivity'," Dr. Wexler added, "may be of great significance to future power transmission. If it could be properly harnessed, it might mean much more efficient and cheaper distribution of electricity. A thorough understanding of the nature of super-conductivity may be the key to unlock this door."

Only certain metals, 13 of them so far, are known to be super-conducting at super-cold temperatures. Among the most important of these are columbium, tantalum, vanadium and their alloys, because they become super-conducting at temperatures that are relatively high.

"Pure columbium will conduct electricity without resistance at a temperature of 16 deg. F. above absolute zero, while its nitride will perform the same feat at 29 deg. above. A major aim of the present American research is to find metals or alloys that are super-conducting at higher and higher temperatures, thus reducing the problem of refrigeration."

Dr. Wexler's "push-button" laboratory takes helium gas in at one end and in a series of steps produces liquid helium at the other, with a temperature of 452 deg. F. below zero or about 8 deg. above rock-bottom cold. Additional methods bring this down almost to absolute zero.

All through the process electronic and mechanical controls take over, standing guard over the high pressures involved. The helium gas is stored in tanks that line the ceiling of the laboratory; the liquid becomes a gas again after use and is returned to the tanks.

Solid chunks of air dropped into liquid helium cause the latter to boil, as the air, although frozen solid, is more than 100 deg. F. hotter than the helium.

Refuelling Jets in Flight

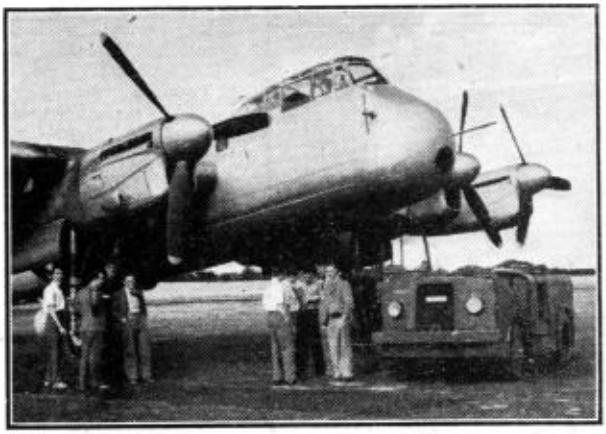
By John W. R. Taylor

NOW that the first wave of enthusiasm for jets had had time to die down a little, air force leaders throughout the world are having a lot of second thoughts on the subject, some of them most disconcerting. In fact it is becoming more and more obvious that jets, at their present stage of development, are not the answer to every prayer of the military air strategists.

Chief problem is the rate at which jet engines burn fuel. For example, modern air combat is fought at very great heights, and a fighter has to be able to climb to those heights quickly if it is to intercept a fast enemy bomber before the latter has dropped its bombs and turned tail for home. The snag is that most jet fighters use so much fuel in reaching, say, 40,000 ft., that in combat their pilots might well have time for only one quick pass at an enemy bomber before they had to start looking for a place to land.

Similarly, the ideal modern bomber force would seem to consist of squadrons of high-speed, unarmed jet atom-bombers, escorted by long-range, heavily-armed jet fighters; but "long-range" and "jet" do not go together. By the time the bombers have packed aboard enough fuel to carry them to a distant target, there is little room for bombs. The comparatively small jet fighters now in service could not carry even the necessary fuel to escort the bombers. In fact, it is doubtful if any jet smaller than the single-seat Lockheed F-90, which weighs more than a fully-loaded "Dakota" air liner, with fuel making up half of that weight, could operate over a range of 1,500 miles, which is the minimum for effective bomber escort work.

Short range and endurance of jet aircraft is one of the most serious problems facing designers and air force strategists to-day. It appeared to be insoluble until a few months ago, when one of Britain's greatest airmen, Sir Alan Cobham, came to the rescue. His answer is to have "fuel stations" cruising around at, say, 25,000 ft., so that when a jet fighter has used up most of its kerosene it can come along for a refill and then resume its attacks or escort duty with minimum waste of time and fuel, and no landing or take-off worries. Being a practical man, he borrowed a standard R.A.F. "Meteor" jet fighter to prove that his idea would work.



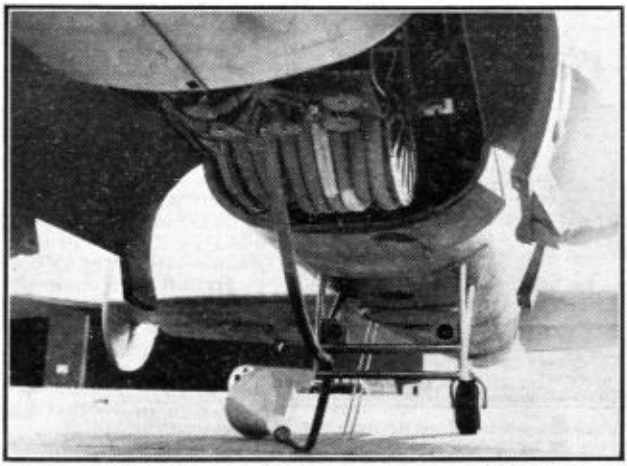
Avro "Lancaster" tanker used in refuelling the "Meteor" jet fighter in flight. It has a specially modified nose to give the operating crew the best possible view for refuelling. The illustrations to this article are by courtesy of Flight Refuelling Ltd.

Sir Alan's company, Flight Refuelling Ltd., began tests with the "Meteor" in April 1949, using a modified "Lancaster" as tanker. By the beginning of August all was ready for the first full-scale public demonstration of the new technique under operational conditions. In the presence of an official time-keeper from the Royal Aero Club, the "Meteor" took off early in the morning of 7th August and remained in the air for 12 hrs. 3 min. before landing. During that time it was refuelled ten times by the "Lancaster," receiving a total of 2,352 gall. of kerosene while airborne, and covering some 3,600 miles up and down the South Coast. Poor visibility in rain and cloud did not hamper the operation at any stage, for both aircraft were fitted with radar and remained in contact with each other continuously.

The method that Sir Alan has evolved for flight refuelling jets is different in many

respects from his well-tried technique for refuelling air liners, which was illustrated in the February 1948 "*M.M.*" The equipment fitted to the "Lancaster" tanker is basically the same, but the fuel hose has a hollow cone at its lower end, to keep it steady while it is being trailed. At the top end, the hose is carried on a spring-loaded drum inside the aircraft and connected through a revolving joint to the fuel supply tanks.

This equipment could of course be fitted easily to bombers such as a "Lincoln" or "Superfortress," so that a few tankers could be mixed with the bombers in any group to refuel escort fighters and bombers on long-range missions.



Jet fighter refuelling-hose unit, with drogue attached to the fuel pipe line for refuelling jet aircraft in flight.

The only modification necessary to the fighter is the fitting to its nose of a probe, which is in effect a rigid tube leading back into the aircraft's normal fuel system, and special valves which shut off the fuel supply from the tanker as each of the fighter's tanks is filled. The extra weight of this equipment totals only 25 lb.

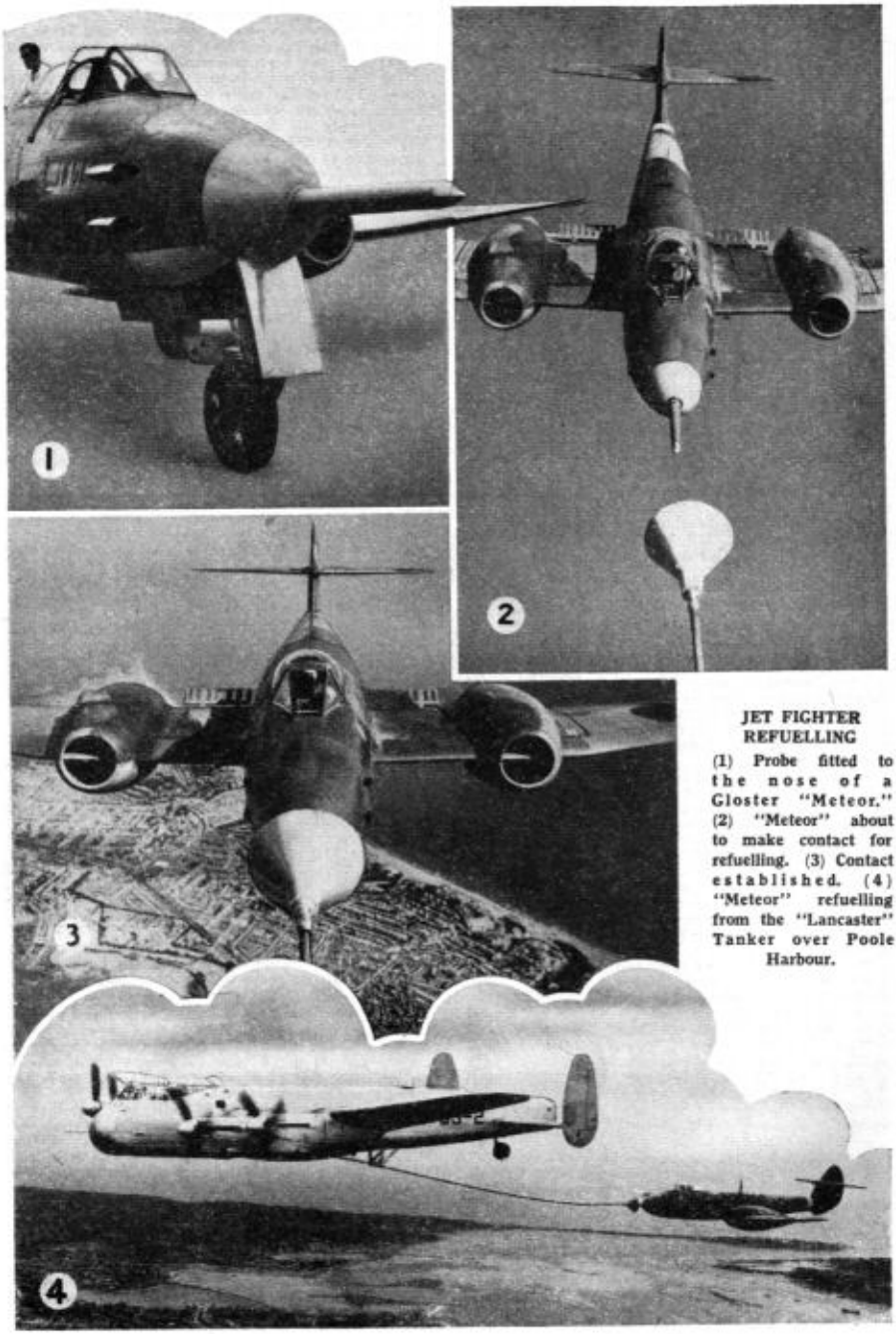
In operation, what happens is that, as soon as the fighter pilot sees that his fuel is running low, he calls up the tanker by radio and approaches it comparatively slowly from behind, manoeuvring into a position where the probe on the fighter's nose can engage the cone on the end of the refuelling hose. The fighter then advances a feet few, the probe enters the hose and is locked in place automatically by a special toggle arrangement, so designed that the joint made is completely leak-proof and yet permits easy withdrawal when the fighter pilot wishes to break away.

As soon as the probe is locked in place, slack in the hose is taken up by the spring-loaded drum in the tanker; and as the drum revolves it automatically starts the flow of kerosene down the hose into the fighter's tanks. Once his tanks are full, all the fighter pilot has to do is to throttle back until a pull of 300 lb. is exerted on the hose, when the joint breaks and fuel flow is stopped simultaneously. Thus, as one Canadian reporter remarked: "the fighter pilot does not have to press a button, open a valve or take his attention for a second from his flying. He merely, like a bee, sticks his nose into the clover and thinks how wonderful it is to be a bee."

Tests so far completed have proved that operational flight refuelling of jets in all weathers and at night is not only practical but safe and easy for any pilot of average ability. Reports say that the R.A.F. is not, at present, interested officially in the scheme. On the other hand, the U.S.A.F. certainly is, and it is significant that Sir Alan Cobham has opened a branch of his company in America.

The Americans have already used equipment developed by Flight Refuelling Ltd. to make the first non-stop round-the-world flight with a B-50 "Superfortress" bomber. In fact, they are so certain of its operational usefulness that every U.S.A.F. B-50 "Superfortress" Bomber Group now contains a proportion of B-29 tankers, whose sole job would be to fly with the B-50s on long-range strikes and re-fuel them *en route*, as required.

British equipment is therefore already strengthening the offensive power of the U.S.A.F., whose "Superfortress" and B-36 bombers are already the best in the world. If the R.A.F. continue to ignore the possibilities of aerial refuelling for jets, we may well find in a year or two that this British-developed equipment will help to make American interceptor and escort fighters operationally more efficient than our own.



JET FIGHTER REFUELLING

(1) Probe fitted to the nose of a Gloster "Meteor." (2) "Meteor" about to make contact for refuelling. (3) Contact established. (4) "Meteor" refuelling from the "Lancaster" Tanker over Poole Harbour.

Railway Notes

By R. A. H. Weight

Locomotive Shed Numeration

As mentioned some months ago, the L.M.S. practice of denoting locomotive sheds by a letter and number code, including the fixing of metal plates on the smoke-boxes of engines, is to be extended to all sections of British Railways. Already various type locomotives carry shed plates. According to the latest information the code for the Eastern and North Eastern Regions is as follows: Stratford, 30A; Cambridge, 31A; Norwich, 32A; Plaistow, 33A; King's Cross, 34A; Peterborough, 35A; Doncaster, 36A; Ardsley (West Riding), 37A; Colwick (Nottingham), 38A; Gorton, 39A; and Lincoln, 40A. This completes the Eastern Region. In each case, as customary, there are a number of sub-sheds within a district, lettered B, C, D, etc. For example: Southend (Victoria) is 30D; March 31B; Ipswich 32B; Hatfield, 34C; Neasden, 34E; Grantham, 35B; Frodingham, 36C; Bradford, 37C; Leicester, 38C; Sheffield, 39B; and Boston 40F.

The main N.E. area numbers are: 50A, York; 51A, Darlington; 52A, Gateshead; 53A, Hull (Dairycoates); and 54A, Sunderland. Sub-shed lettering follows within the districts such as: 50B, Leeds (Neville Hill); 50E, Scarborough; 51D, Middlesbrough; 52B, Heaton; 53B, Hull (Botanic Gardens); and 54B, Tyne Dock.

All Scottish sheds come into the 60-68 group. Southern and Western Region codes will be announced shortly.

Western Tidings

The "*Torbay*" and "*Cornish Riviera*" expresses have lately been formed of carmine and cream coaches, though for a time the dining cars on the former were chocolate and cream.

As on other Regions, the British Railways totem is more in evidence on locomotive tenders and side tanks and on rolling stock. It is understood that in view of the success in performance by No. 6022, other "Kings" will be similarly fitted for high-degree superheat, that is to say the super-heating surface will be increased. The latest "Castle," No. 7027, is allocated to Laira.

Two "Bulldog" 4-4-0s stationed at Westbury, No. 3363 "*Alfred Baldwin*" and No. 3438, have been withdrawn; so have two "Stars," No. 4012, "*Knight of the Thistle*" and No. 4019, "*Knight Templar*," as well as "Saint" 4-6-0 No. 2987, "*Bride of Lammermoor*," which was once a 4-4-2 in early Churchward days, with high cab and big reversing lever. Three "Bulldogs," Nos. 3432, 3401 and 3455, were lately working from Hereford to Gloucester or elsewhere, the last two being named "*Vancouver*" and "*Starling*" respectively.

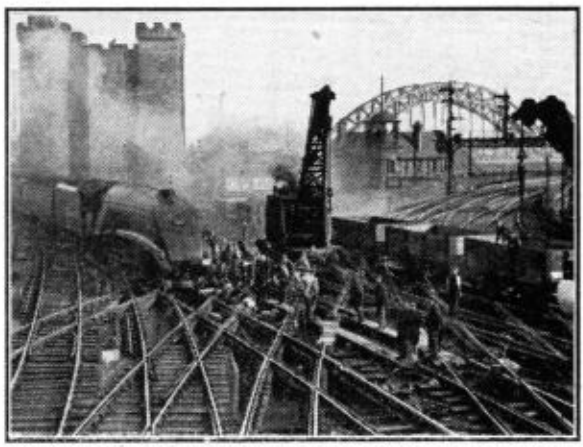
New 2-6-2Ts placed in service in October were Nos. 4170-3; light 0-6-0Ts for S. Wales were completed with Nos. 1600-4, while another large 0-6-0 inside-cylinder tank, No. 8452, was delivered by the Yorkshire Engine Co. Ltd.

News from the East Coast Route

Accelerations took effect last autumn on account of higher speeds now allowable north of Berwick across temporary bridges and rebuilt embankments brought into use after severe damage by floods in the summer of 1948. In consequence the "*Flying Scotsman*" as well as other Anglo-Scottish services now arrive earlier. The Pullman car expresses between King's Cross and Scotland, also London and Newcastle, London and Yorkshire, have been quickened.

The quickest start-to-stop timings in Britain are operated along the fairly level, electrically-signalled, Darlington-York 44-mile stretch, five trains being allowed only 45 min. The "*North Briton*" evening express from Glasgow to Leeds has a mile-a-minute booking of 44 min. This is the first post-war 60 m.p.h. start-to-stop run here, and it revives the record for the one-time fastest train in Britain, which was operated over this course in N.E. and early L.N.E.R. days with a 43 min. allowance, averaging 61.8 m.p.h. Various faster schedules of course were worked in the 1930's up to the outbreak of war.

The first long-distance run logged by the writer behind one of the latest Peppercorn "Pacifics" of class "A1" suffered badly from delays, severe slowings for repair work or signals occurring before uphill lengths. There was a hold-up outside Peterborough on account of a fast train to London just leaving ahead, which caused signal checks for some distance. The train was the 10.6 a.m. "non-stop" from Doncaster to King's Cross, with a 460-ton load full. The engine through with the York portion was 60117; the 8-coach Hull restaurant car section was brought into Doncaster by the first "Shire" 4-4-0, No. 62700 "*Yorkshire*." The total time taken to King's Cross was 195 min. compared with the 184 allowed for 156 miles, including a number of service slacks, though the net time allowing for all delays was not more than 176 min. The maximum speeds were 71 m.p.h. near Carlton-on-Trent, and 73 at New Southgate when time was being made up before a cautious run down into the terminus.

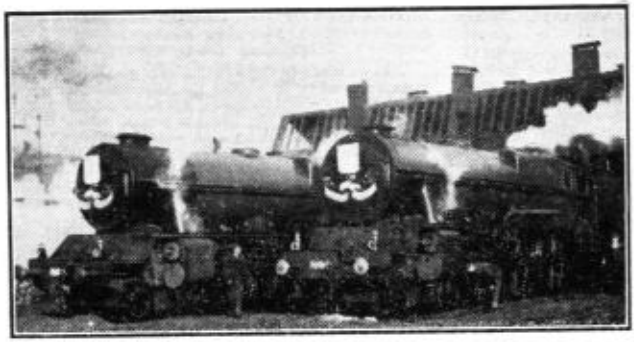


An up express from Edinburgh picks its way along the only track left open during the renewal of the crossings near the High Level Bridge at Newcastle. British Railways Official Photograph.

The complicated layout of rails and crossings at the north-east end of Newcastle Central station was recently completely renewed in the course of four extremely busy weekends. In view of the density of traffic, the hardest wearing type of "Era" manganese cast steel has been used for the track layout here since 1912, previous renewals having taken place in 1924 and 1938. The whole of the new steelwork was assembled first by Hadfield's Ltd., Sheffield, the makers, afterwards being checked and loaded into wagons in the right order at Low Fell Permanent Way Depot; 93 castings were included, with a weight of over 70 tons; 25 track circuits had to be disconnected and replaced.

An Eire Railway Centenary

To celebrate the centenary of the opening of the main line to Cork from Dublin in 1849, Córas Iompair Eireann, successors to the old Great Southern and Western Railway, ran several centenary special trips between the two cities early in November. In the down direction, on Sunday 6th November two special trains, which were completely booked up, were run, each hauled by one of the three-cylinder "800" class 4-6-0s with special decorations on their smoke-box fronts.



An unusual sight at Cork. Two of the former Great Southern three-cylinder 4-6-0s Nos. 800 and 801 after hauling special centenary expresses from Dublin. Note the special smoke-box decorations. Photograph by C. L. Fry, Dublin.

The upper picture on this page shows No. 800 "*Maeve*" and No. 801 "*Macu*" at Cork after the down run, on which schedule was 3 hrs. 15 mins. for the 165¼-mile journey. The all-in fare included meals on the train and a tour of Cork by motor bus. Sound and recording apparatus was fitted up so that passengers in each coach could listen to a commentary on the run, interspersed with music and news items. Competitions and other novelties formed part of the programme.

(C. L. Fry)

L.M.R. Locomotive Notes

We have received advice of new engines placed in service during October or early November as follows: Class "2", 2-6-2T, built Crewe: No. 41239, stationed 2E, Warwick; Nos. 41240-3, 22C, Bath; No. 41244, 15A, Wellingborough; Nos. 41245-6, 19B, Millhouses (Sheffield); No. 41247, 17A, Derby; and No. 41248, 14A, Cricklewood. Class "4" 2-6-4Ts built Derby: No. 42121, 5D, Stoke; the remainder to Scottish area: No. 42122-4, 67A, Corkerhill; and No. 42125, 66B, Motherwell. Class "4" 2-6-0s, ex-Horwich: Nos. 43043-4, 21A, Saltley; No. 43045, 15C, Leicester; and Nos. 43046-7, 22A, Bristol. Diesel-electric 0-6-0 shunters, built Derby: Nos. 12057-8, 18A, Toton, and Nos. 12059, 21A, Saltley.

Several "6P" 4-6-0s now carry smaller type smoke deflectors in front. More "Royal Scots" converted with new boilers include Nos. 46102, "*Black Watch*"; 46106, "*Gordon Highlander*," which are painted dark green.

With the withdrawal of No. 22846, only two of the ancient Kirtley double-framed Midland 0-6-0s remain. No. 22853, was built in 1873 but the other, now No. 58110, dates back to 1870.

Southern Miscellany

The double-decked electric suburban train of eight coaches in two sets of four began running on 2nd November, but had to be taken out of service for a while owing to cracks developing in the welded wheels of a new type. By ingenious design and selection of materials, the weight per vehicle is no greater than in an ordinary latest type set. Useful experience will be gained in the course of operating this experimental train in regular passenger service.

The Tavern Cars are to be modified in external appearance. The restaurant cars which run next to them will have large windows fitted to meet popular desire.

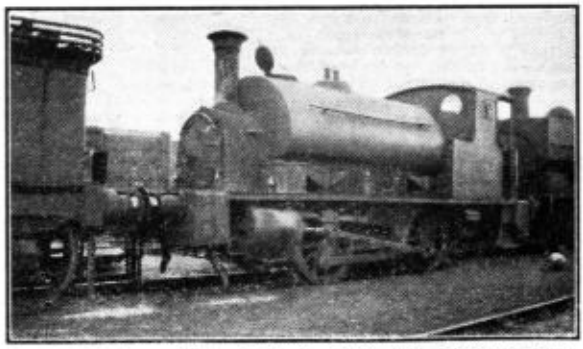
The latest three "Merchant Navies," Nos. 35028-30, have been allocated to Dover instead of Bournemouth, so the biggest Southern 4-6-2 type engines may be seen on Eastern Section boat trains. New "West Countries" Nos. 34093-4, named respectively "*Saunton*" and "*Mortehoe*," are stationed at Bournemouth; No. 34096 "*Trevone*" was finished at Brighton in November. About the same time it was learned that Nos. 34095 and 34097, the first two of the six under construction at Eastleigh, had also been completed.

"Merchant Navy" No. 35018 "*British India Line*" recently ran from Basingstoke to Surbiton, 35¾ miles in barely 36 min. start-to-stop with about 360 tons, gaining over 10 min.

Coin-Operated Luggage Lockers

Experimental "*Sixpence in the slot*" luggage lockers are now in use at Euston, L.M.R. The user places the coin in the slot and so frees an individual key to a private locker. Thus a passenger in a hurry can place his luggage in a locker immediately, without having to bother with the ordinary Left Luggage Office. He can withdraw his luggage again within the next 24 hours, but if unable to do so it will be obtainable at the Left Luggage Office.

The lockers are built in units of eight compartments, arranged in two vertical columns of four, with a central lock and release mechanism panel.



An ex-Caledonian saddle tank, London Midland No. 16032 at Crewe. The engine is standing between two L.N.W.R. veterans. Photograph by B. H. Carter, Shipley.

BOOKS TO READ

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

"THE BOYS' BOOK OF SCIENCE AND INVENTION"

(Evans, 10/6 net)

Living as we do in a scientific age, it is only to be expected that modern books for boys will include many that give some account of the marvels that scientists have given us, and of the way in which these are changing our lives. Here is an excellent example of such a book. The subjects have been carefully chosen to give a wide view of modern scientific achievements, and these have been explained simply for the benefit of boys, whose interest in them will be deepened. Every section is well illustrated with drawings that help to make the subjects dealt with clear, and there are also 50 excellent photographs.

The book begins in somewhat startling fashion with the possibilities of travelling to the Moon by rocket, a project that seems to come nearer to us every day. Other sections deal with jet engines and the gas turbine, and with the wonders of radar, radio and television. Giant telescopes, the electron microscope, coal-cutting machines and deep sea diving suits are given attention, together with the production of films, the making of money—in the Mint of course—calculating machines and so on, and atomic energy is dealt with in a section that is concerned more with the production of energy for industrial purposes than with the destruction that atomic explosion can achieve.

In addition there is an informative section on the use of science in crime detection, with stories of metals and machinery, water power development, fire fighting and the motor cars of to-morrow, and a final section giving glimpses of possible wonders of the future.

There are also science crosswords and quizzes, with tables of elements and other interesting details, and the book undoubtedly is one that will be read with eager interest by the modern boy.

"THE TRAIL OF FROZEN GOLD"

By WILLIAM GLYNNE JONES (Harrap, 7/6 net)

The lure of gold will never lose its magic, and men will brave all hazards to stake a claim wherever there is promise of the metal. One of the most famous of all gold rushes was that to the Klondyke in the closing days of last century. The struggles of gold seekers in the frozen wastes of this region provide the setting for an excellent story by Mr. Glynne Jones that is full of narrow escapes from death and disaster. The hero, Ralph Hendon, on his way to the Klondyke, rescues an old man from murder, and the two then become partners in the Klondyke gold rush. Their path to fortune is full of danger owing to the enmity of a notorious gambler, and readers will thoroughly enjoy the story of their trials and their ultimate triumph.

"THE RAILWAY MODELLER"

(Ian Allan Ltd., 1/6)

This is No. 1 of a bi-monthly model railway publication edited by G. H. Lake. If the variety of interest and the quality of the illustrations and general treatment of this first issue is maintained, then the new journal should have a successful life.

The present issue includes a description of the Irish International Railway and Tramway System, owned by C. L. Fry of Dublin, which is one of the most interesting miniature layouts in existence. There are also a "Live Steam" department and sections dealing with coach-building and the construction of accessories; and in a varied range of general articles and notes there are amusing descriptions of some garden railway adventures and the first of a series of pictures of scenes on pre-grouping railways. In a special section devoted to trade topics recent developments in the model railway world are described.

"STEAMERS OF THE THAMES AND MEDWAY"

By FRANK BURTT

(Richard Tilling, 12/6)

We owe much to those enthusiasts who have devoted time and energy to tracing the histories of our cross-channel and coastal steamers, which are a never-ending source of interest. Mr. Burtt is one of these. He has already produced one book on paddle steamers, and in this companion work he now traces the history of the passenger steamboats of the Thames and Medway since the appearance of the "*Margery*," the small vessel that is generally accepted as the first passenger steamer to work regularly on the Thames.

"*Margery*" began her career in January 1815, and she was followed by a remarkable array of ever larger and more powerful and comfortable vessels, most of which of course were paddle steamers. In recent years very fine boats with screw propellers have been placed in service, but the old paddle steamers had a fascination of their own, and it is not surprising to find that the author has completed his story with a detailed account of the paddle tugs of a famous Thames firm.

For each vessel Mr. Burtt gives interesting details, with notes on engines as well as particulars of service. Details also are given of the various companies that have organised the services, and the story covers ferries as well as vessels plying up and down the estuaries.

There are 46 reproductions of photographs of a well chosen selection of the vessels dealt with.

"RIDERS OF THE BLACK CAMEL"

By ARTHUR CATHERALL

(Venturebooks, 5/- net)

Here is a story that is full of life and vigour. We enter on the excitement immediately, as we make the acquaintance of Digger and his Irish companion when a mishap compels them to land their aircraft in the Arabian Desert. First they find a big negro buried to his neck in the sand and then they discover that they have entered on a struggle with the Riders of the Black Camel, who serve a mysterious Arab organisation and are led by an ex-German officer. There is also a secret diamond mine, from which jewels of enormous value are obtained. Danger threatens the British outposts in Southern Arabia from the Riders, but the schemes of the German and his Arab associates are finally frustrated.

A swiftly moving yarn, with a good frontispiece.

"A BOOK OF MODEL RAILWAYS"

By P. R. WICKHAM

(Percival Marshall and Co. Ltd., 15/-)

In this comprehensive review of railway modelling, the aim of the author has been to cover the main branches of this fascinating craft as fully as possible. Practically every aspect of small-scale miniature railway work is dealt with. The chief emphasis is on modelling of rolling stock, buildings and scenery, but track laying is efficiently dealt with in spite of the author's confessed lack of enthusiasm for this part of model railway work. There are many reproductions of photographs in addition to a plentiful supply of line illustrations, many of which are from the author's originals.

In the earlier part of the book, model railway affairs as they are to-day are given something of a background by a short history of railway modelling. Neither in this, however, nor elsewhere in the book have we been able to find any reference to Hornby and Hornby-Dublo trains. This is surprising, as these famous trains not only provide for the beginner, but are used on many systems that have had their beginnings in the purchase of a simple train set.

"SOME CLASSIC LOCOMOTIVES"

HAMILTON ELLIS
(Allen and Unwin Ltd, 21/-)

Readers of this author's previous works will not be disappointed in "*Some Classic Locomotives.*" This is not intended to be a complete locomotive history. It deals only with selected general types or "families," and gives particular treatment to various outstanding engines or classes of engines. Thus the Crampton type, which became better known on the Continent than it did in this country, opens the story, and Allan's Crewe type, with its subsequent ramifications and developments, is dealt with in the following section.

The author has a happy knack of weaving into an entertaining story many of the thoughts and impressions that strike the locomotive student when browsing over the history of engines of former days. We follow him with keen enjoyment, whether he writes of famous locomotive engineers such as the Beatties, Stirling, Stroudley and Drummond, or of typically British 4-4-0s, "Atlantics," 4-6-0s and compounds. His final chapter brings us to the well-known Beyer-Garratt, a type of articulated locomotive developed in this country and now in service on railways all over the world.

Photographic reproductions are numerous and excellent, and there are attractive colour-plates from the author's own originals. There are also some tables of dimensions, and a good index.

"FRUITS AND BERRIES"

By WINIFRED E. BRAY
(Brockhampton Press, 3/6)

Exploring the hedgerows on a bright day in Autumn will bring to light a surprising range of fruits and berries, as remarkable in their own way as are the more familiar flowers that precede them. The cornfields, the woods, heaths and commons, bogs and the seashore also yield attractive fruits, and here the author tells their stories simply but admirably, with the aid of excellent drawings in colour by Will H. Stevens. This little book will be found an accurate and attractive guide for all who wish to explore this wonderland within easy reach.

"GIMLET LENDS A HAND"

By CAPT. W. E. JOHNS
(Brockhampton Press, 6/- net)

Captain Johns can always be relied upon to produce a thrilling story with outstanding characters. He has certainly done this in "*Gimlet Lends a Hand,*" in which old friends of ours from a previous book by the same author reappear. Three of them undertake the dangerous task of rescuing the kidnapped son of an American millionaire from unscrupulous bandits. The quest leads them to a small town in the mountainous South East of France, where the boy is actually hidden in a ruined castle. Their efforts to find and rescue him are promising, but are on the verge of breakdown when Gimlet, otherwise Captain King of the Commandos, unexpectedly lends a hand, and eventually plays the leading part in sorting everything out.

The book is illustrated by four full page plates and many drawings in the text.

"THE MODEL SHIPBUILDER"

By CMDR. J. K. D. HUTCHISON and CMDR. G. G. PORTCH
(Bell, 12/6 net)

Commander Hutchison was formerly keeper of ship models in the Science Museum, South Kensington, and Commander Portch, who completed the book on the death of Commander Hutchison, gained his knowledge of ships and the sea in the hard school of experience. It is not surprising therefore to find that the book is one of real value, to beginners and experienced model-makers alike, because of its wealth of detail and its plans, photographs and drawings.

Actual instructions for making three simple and comparatively cheap working models are given, but there is a remarkable amount of practical information on designing and building model ships in general, with explanations of ship terms and nautical expressions.

50 YEARS OF MODEL MAKING"

(Bassett-Lowke Ltd., 2/6)

Readers will join us in congratulating Bassett-Lowke Ltd., of Northampton, on the completion of 50 years of scale modelling. The firm's Jubilee is commemorated by the issue of a splendidly illustrated booklet of absorbing interest, in which its growth from humble beginnings is traced. From the start the mainspring of its activities has been Mr. W. J. Bassett-Lowke, its founder and Managing Director, who with other pioneers transformed a hobby into a full-time business, the products of which are known all over the world.

As the story is unfolded it is seen that there is practically no field of scale modelling that has not been covered by the enterprising experts of Northampton. They made the first serious attempt to produce models of locomotives and railway equipment that actually resembled the real thing, and developments have gone on ever since. In addition, panoramic and industrial models, and reproductions of ocean liners and other types of ship have all been turned out from their works. Readers will remember the article describing the model of R.M.S. "*Queen Elizabeth,*" the world's largest liner, that appeared in the April 1949 "*M.M.*" A special feature has been made also of miniature passenger-hauling locomotives and rolling stock.

During World War II the Bassett-Lowke factory was concentrated entirely on model-making, and many thousands of models were supplied to the Services for rapid training of personnel. Among the more famous wartime developments first modelled in Northampton were the Bailey Bridge, the Mulberry Harbour, every type of landing and assault craft, etc. Since the war the firm have made large numbers of models covering almost the entire field of industry and commerce, to assist the national production drive.

Copies of this fascinating booklet can be obtained from Bassett-Lowke Ltd., Northampton, price 2/6 post free.

"THE ROYAL ROAD TO CARD MAGIC"

By J. HUGARD and F. BRAUÉ
(Faber and Faber, 12/6 net)

Most of us have dabbled in tricks with cards, and those who wish to make sufficient progress in the art to surprise their friends and to puzzle audiences will find this book invaluable. The authors are experts, who not only know how to perform tricks but are able to pass on their knowledge to readers. They explain fully the mechanics of a wide range of tricks, and give really good advice on the showmanship with which these should be presented.

The book begins with careful descriptions of the shuffles, flourishes, passes and other sleights that are the foundation of card manipulation. The reader is led on step by step from the easier manipulations to the more difficult, and in each case a selection of tricks based on the particular principle involved is given, so that the would-be conjurer soon has at his command material for a display. Good use is made throughout of explanatory drawings.

"THE JOHNSON 'WELLCOME' PHOTOGRAPHIC YEAR BOOK"

The 1950 edition of this well-known Photographic Year Book is the first for which Johnsons of Hendon Ltd. have been solely responsible. It contains the usual diary pages, with provision for recording and indexing exposures, and a greatly extended section on technical matters, covering every detail from the actual exposure to the production of the finished contact printing or enlarging.

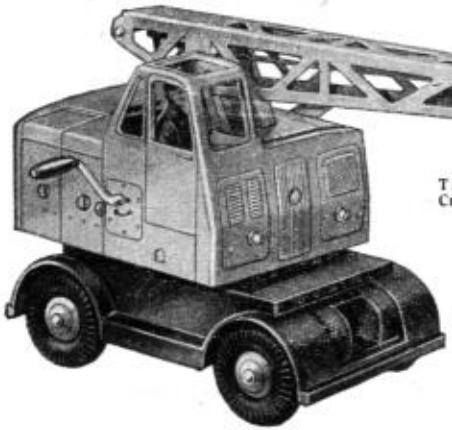
Special interest attaches to the exposure calculator included in the book, which is based on the one that has long been a successful feature of the Burroughs Wellcome Year Book. This has been modified to make use of the modern British Standard Exposure Indices for plates and films. The light tables have been redesigned and extended to conform with this standard and to allow for their use in any latitude.

The Year Book can be obtained from dealers, price 4/- plus 1/- Purchase Tax.

Dinky Toys and Supertoys

Coles Mobile Crane, Motocart and Guy Van

THIS month we have a particularly fascinating series of Dinky Toys and Dinky Supertoys for review. The first of them is the outstanding miniature of the Coles Mobile Crane, Dinky Supertoys No. 571, a remarkable model that will be received with delight by every enthusiast.



The Coles Mobile Crane, Dinky Supertoys No. 571.

The real Coles Mobile Crane can be driven backward or forward along the ground, its superstructure can be turned round in a full circle, its jib can be raised or lowered to give varying radii of action, and of course it has provision for lifting loads and putting them down again. Power is supplied by a petrol or diesel engine, which drives a generator producing direct current for the motors that operate the various movements. The driver is seated at the front of the revolving superstructure, where he has a good view of the load and of the ground in front of him, so that he can readily control all motions and operations. The cab is similar to that of the average car or lorry, and the controls are easy and certain in action.

The miniature reproduces the characteristic movements of the crane in a remarkable manner. It runs easily along the ground on its four wheels, provided with rubber tyres; and the superstructure can be turned by hand throughout a full circle, so that the owner can use the crane for raising loads at the sides as well as in front and behind. Movement of the jib up or down is controlled by turning a handle on the near side when the rotating superstructure is in its normal position, and the load is raised or lowered by turning a similar handle on the opposite side. The purpose of each handle is indicated by the words *"Raise Jib"* or *"Raise Hook"* alongside.

To complete the picture there is a miniature "driver" seated in the cab, while at the front of the superstructure is a representation of the radiator grille. The proportions of the original are maintained throughout, and various external details of both chassis and superstructure are well indicated.

The owner of this splendid crane who makes good use of it may find the time come when the cords that

Another view of the Coles Mobile Crane with the jib raised.

The Motocart, Dinky Toys No. 27g.

raise the jib and the load have to be renewed. All that is then necessary is to raise the front of the superstructure from the chassis by a smart pull, when it will turn upward on a hinge at the rear. This gives access to the shafts so that repairs or changes can readily be carried out.

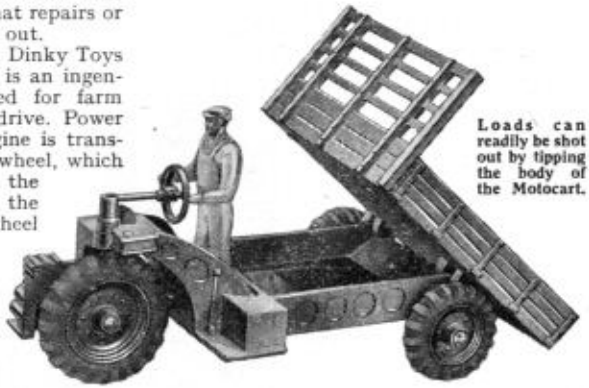
Next we have the Motocart, Dinky Toys No. 27g. The original of this is an ingenious motor vehicle introduced for farm work. It has an interesting drive. Power from its 8 h.p. air cooled engine is transmitted to a large single front wheel, which also is used for steering, and the steel chassis is connected to the steering head above the front wheel by what is known as a swan neck.

A glance at our illustrations of the Dinky Toys Motocart will show the construction, as the miniature reproduces the original very closely. Its appearance, indeed, with its driver standing at the steering wheel exactly as the driver of the real vehicle does, is remarkably realistic.

The body fitted to the Dinky Toy has low side boards and a high front or rave. Certain models of the original have tipping bodies, operated by hand. The Dinky Toys model also has a tipping body, and owners will find it easy to shoot its loads by simply raising the front.

Our third new product this month is the Guy Van, Dinky Supertoys No. 514, shown at the foot of this page. The basis of this is the now well-known Dinky Supertoys Guy chassis, on which a van body of large dimensions, with rear opening doors, has been fitted. Each van will bear the name of some well-known British firm, and the result is a really beautiful miniature road vehicle.

The Coles Mobile Crane is just the thing for loading goods wagons in the sidings of Hornby Railway layouts, its capacity for placing loads to the side as well as in front and at the rear making it specially useful for this purpose. Cranes of this type indeed find application in real railway work, and their use in miniature on Hornby Railways therefore is quite realistic. The Guy Flat Truck, Dinky Supertoys No. 512, which has the same chassis as the Guy Van illustrated on this page, also is splendid for use on Hornby Train layouts. The miniature container fits exactly on its platform.



Loads can readily be shot out by tipping the body of the Motocart.

The Guy Van, Dinky Supertoys No. 514.

Science and Crop Protection

By N. P. Harvey

TO-DAY the name of Britain stands higher in the world of science than ever before. Wartime developments such as penicillin, remarkable for its unique bactericidal properties, polythene, undoubtedly the best plastic insulator yet evolved, and the new anti-malarial drug, combining both prevention and cure, known as "Paludrine," provide three examples of products of equal importance in times of peace.

In the field of agriculture and horticulture progress has been no less striking. Food production to-day is of paramount importance in countries like Britain that depend partly on imports, and the British chemical industry has developed a number of outstanding products to protect our crops from pests, diseases and weeds. It is, in fact, not always realised that although sound seed, balanced manuring and good cultivation will do much to ensure plentiful crops, such efforts may be to a large extent wasted unless the plants are protected, where necessary, from the ravages of insect pests and similar ills.

A "weed" is easy of definition, and may be briefly described as any plant growing where it is not wanted; but confusion sometimes arises between the terms "pest" and "disease." Pests are members of the animal kingdom; instances are ants, aphids (greenfly, blackfly, etc.), leather-jackets and wireworms. Diseases belong to the vegetable and microbe worlds and are caused by minute organisms in the form of fungi and bacteria; examples are mildews and some cankers.

Why do we hear more of pests and diseases to-day than formerly? One reason is that as the result of prolonged scientific study and experiment, both scientists and practical workers have a far greater knowledge of disorders in plants than our forefathers. Another is the planting, with intensive cultivation of larger areas of one species or variety of a plant, which assists the rapid spread of any trouble. Fruit trees are a notable example. Again, the greater amount of transport available in recent years, cutting down the time between districts, counties, countries and even continents, has resulted in the transference of many pests and diseases from one place to another.

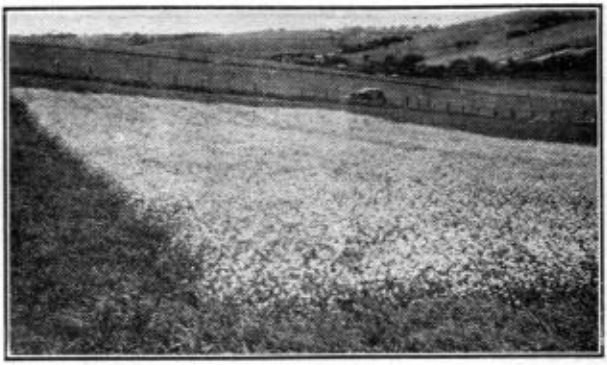
Attempts to control plant pests and diseases were probably first made soon after man began to cultivate the soil. The practice of treating seed wheat to prevent the well-known bunt disease is traditional in many countries. The ancient Egyptians used fermented cow urine, and the Romans sour wine. Further, certain basic cultures, such as vine growing, received a regular routine treatment with sulphur and copper,

Dusting fruit trees with the Pestmaster Midget to destroy pests. Photograph by courtesy of E. Allman and Co. Ltd., Chichester.

to combat the diseases which recur annually. More spasmodic use was made of arsenic and nicotine, the standard insecticides, but their popularity has always suffered because they are highly poisonous to human beings. Similarly, the employment of sulphuric acid to destroy weeds in cereals and onions suffers from one serious drawback—the strong corrosive action of the acid on skin, clothing and equipment, necessitating the most stringent precautions in handling.

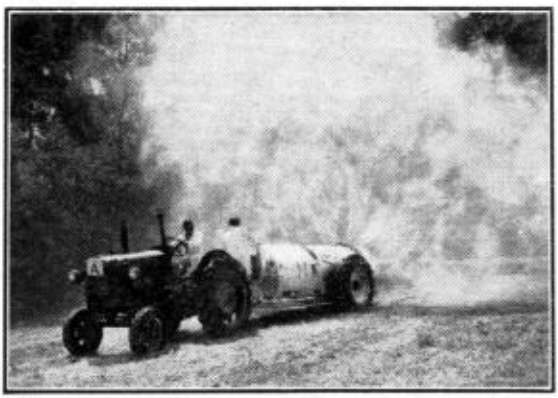
The future of crop protection thus depends on the discovery by the chemist of new compounds, with new properties. Let us therefore trace the evolution of a

new product for plant pest or disease control from its beginnings in the laboratory to the final application in the field. In order that readers may be provided with up-to-date examples of this type of chemical achievement, I am describing the work of Imperial Chemical Industries Ltd., the leading firm in the chemical industry, and its associated company, Plant Protection Ltd.



Charlock growing in part of a wheat field, the rest of which was treated with "Agroxone" and is free of the weed. Photograph by courtesy of Plant Protection Ltd.

British research plays a prominent part in the control of agricultural and horticultural pests and diseases throughout the world, and it may justly be claimed that one of the greatest and most fruitful sources of chemical inspiration is the group of manufacturing divisions of Imperial Chemical Industries. It is here that the evolution of the products of Plant Protection Ltd. begins, and the fundamental research undertaken by these divisions of I.C.I. is continually suggesting chemicals with possible application in the field of pest and disease control. Such chemicals are passed on to the I.C.I. Agricultural Research Stations at Hawthorndale and Jealott's Hill, both near Maidenhead, for preliminary evaluation tests and small scale field trials. Where such testings confirm the promise of any given chemical, it is transferred to the Fernhurst Research Station of Plant Protection Ltd. near Haslemere, Surrey, for full biological evaluation. The laboratories of the firm's factory at Yalding, Kent, then formulate the chemical so that it emerges as a finished product for a particular purpose.

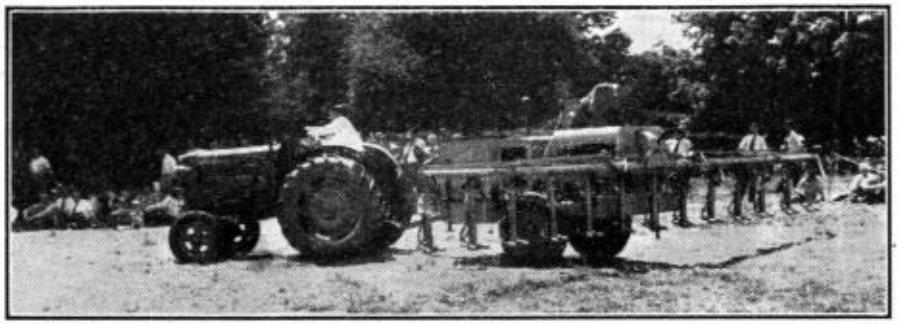


The Autoblast at work. This powerful machine develops a 100 mile an hour blast into which spraying material is introduced. Photograph by courtesy of "Sport and Country."

The testing of new products is not limited to Fernhurst itself. So that results are obtained under diverse conditions of soil and climate, field trials are arranged in co-operation with Government officials, research stations and commercial growers, both at home and overseas. For example, the potentialities of "Verdone," the new *selective* weedkiller for lawns, were first confirmed by trials undertaken throughout the country in co-operation with the Board of Greenkeeping Research.

"Gammexane," gamma BHC, is now recognised everywhere as an insecticide of unique value in both agriculture and horticulture. The story of its discovery and subsequent success in many different parts of the world against a very wide range of insect pests, affords a typical example of the alliance between I.C.I. and Plant Protection Ltd.

When derris was freely available before the second World War, large quantities were used in preparations to combat flea beetle on cabbages and related crops. These are little fellows about one eighth of an inch in length, usually black with one yellow stripe down each wing case. They are most active in warm, sunny weather and



The "Agro" Atomiser Sprayer spraying 13 rows of crops at once with pest destroyers. The machine can also be used as a flat sprayer for applying hormones and selective weedkillers. Photograph by courtesy of Plant Protection Ltd.

jump when disturbed. The beetles perforate the leaves of young seedlings with "shot holes" so that the plants are often destroyed.

Derris extract is taken from the root of a plant native to Malaya. In the autumn of 1941 preliminary work was begun to find an alternative to derris for flea beetle control. With the fall of Malaya in February 1942 supplies virtually ceased and the task became one of great urgency. Reports on the thousands of chemicals already tested as insecticides by I.C.I. were studied. They were reduced to a short list of about forty, but only three proved worth further trial. Of these, benzene hexachloride was the most promising, resulting in the introduction of the "Gammexane" range of gamma BHC insecticides. "Gammexane" proved, in fact, to be an even more efficient agent of destruction for the dreaded flea beetle than derris.

Space does not allow full details regarding the many insect pests controlled by "Gammexane," but a few outstanding examples must be mentioned. Locust control is probably the most remarkable.

I.C.I. established the first colony of locusts in this country in 1936 at their Hawthorndale Laboratories, and and it was here that the extreme toxicity of this new insecticide to locusts was discovered. To quote Dr. R. Slade, "a small quantity of dust containing the crude material was sieved on a bench on one side of the room in which were housed cages containing locusts. All these locusts subsequently died. Furthermore, after thoroughly scrubbing the cages, vacuum cleaning the walls, and washing the floors, fresh locusts placed in the cages also died. It was not until the room had been redecorated and the cages again scrubbed that breeding of the locusts could be resumed.'

It was subsequently found that only three grammes of gamma BHC scattered over one acre would destroy 40,000,000 locusts. Highly successful results were reported from countries as far apart as Arabia, the Argentine, Australia, India, Italy, Persia and the U.S.A.

The wireworm is an implacable enemy of good farming. On fields where it attacks cereals losses of £3 per acre are commonplace, losses of £8 per acre are frequent enough, and losses of the entire crop by no means uncommon. Thanks to "Gammexane" this age-old problem has at last been solved, and the farmer can now apply a special insecticide dust containing this material by combine drill along his rows of cereal or sugar beet. The latest development is a new product called "Mergamma" A. This is an entirely new type of seed dressing, providing the first combined control of wireworm and seed-borne cereal diseases. Before "Mergamma" A was placed on the market 226 field trials were held in Great Britain and Ireland.

Wireworms do not limit their depredations to cereals and sugar beet. They attack a wide range of vegetable and flower crops, especially on ground recently broken up from grass. New allotments are thus often affected. Potatoes are probably number one favourite, but cabbages, root crops, lettuces, peas, tomatoes, strawberries, carnations, delphiniums and Michaelmas daisies may all suffer on occasion. The amateur gardener will therefore be glad to learn that there is a special "Gammexane" dust for use in the garden. This controls cabbage root fly, carrot fly and onion fly as well as wireworm.

From a horticultural point of view, perhaps the most fascinating application of this remarkable insecticide is in the form of smokes for greenhouse fumigation. The smoke generator technique is one of the cheapest and quickest known methods of applying insecticides, ensuring a far more uniform distribution than is possible with spray application. The smoke penetrates into every part of the greenhouse, thus giving a much higher degree of control than by spraying, when only the plants are treated. The generators are self-contained, needing no apparatus for application, the wick being instantly ignited by a match, taper, petrol lighter or cigarette. Aphids, capsids, thrips, and chrysanthemum midge are a few of the pests controlled.

"Gammexane" also has a wide range of uses in the veterinary, domestic and industrial fields, as well as in public health.

Weeds in cereal crops constitute one of the biggest problems in arable agriculture. By competing for light, air, soil, moisture and plant food, they often reduce yields by as much as 20 to 30 per cent. or even more. "Agroxone" is an entirely new type of weed killer, which provides a really adequate answer to this problem.

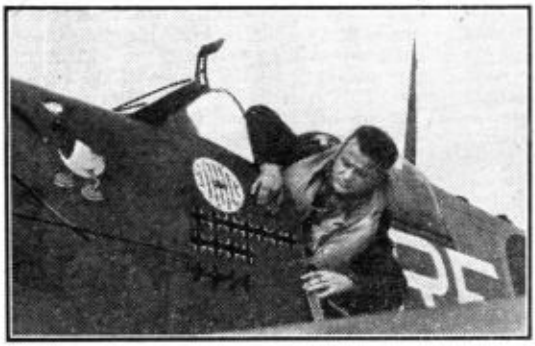
The scientific story behind the development of "Agroxone" is one of great interest. It has been known since about 1930 that plant growth was controlled in Nature by minute amounts of chemicals called plant hormones or growth substances. More recently synthetic organic chemicals have been found with similar properties, one of which is α-naphthylacetic acid. This is the basis of products used to hasten the rooting of cuttings, to prevent pre-harvest drop of apples and to produce seedless fruits.

The success of these growth substances for the rooting of cuttings was known to vary from species to species. Why should not their action upon seedlings and fully-grown plants vary just as much? Might it not be possible to find substances which would stunt and kill weeds, yet leave crop plants unharmed? A number of chemicals were tested for this purpose, with the result that one known to chemists as 4-chloro-2-methylphenoxyacetic acid was eventually chosen for commercial development under the name "Agroxone."

"Agroxone" proved an unqualified success in the control of weeds in cereals. As may be seen from one of our illustrations, spectacular results were achieved against charlock, one of the most widespread and pernicious of the weeds with which the British farmer has to contend. The *(Continued on page 41)*

"Destiny Can Wait"

WE often think of the Royal Air Force's victory in the Battle of Britain as an all-British affair. Actually, many of the "Hurricane" and "Spitfire" pilots who fought and died in those Summer skies over Southern England carried on their uniforms for their country. When the fighter pilots destroyed enemy aircraft over London, they felt that they were defending Warsaw too, because Britain symbolised for them the last stronghold of freedom in Europe. The bomber crews made no attempt to disguise their grim satisfaction when their target was Berlin, and they never spared themselves in the effort to make every bomb count.



Polish airmen shot down 957 German aircraft in World War 2. Each victory added another cross on the side of a "Hurricane" or "Spitfire." Photographs by R.A.F. Polish Film Unit.

They had few opportunities to help directly their colleagues of the Polish underground Home Army, except during the gallant but hopeless Warsaw rising in 1944. Then they took off in their "Halifaxes" to drop supplies in the blazing city knowing that the chances of returning to their base were slight.

Part of the debt that we owe to the Home Army itself is revealed for the first time in "*Destiny Can Wait*," which describes how Polish underground workers discovered and mapped the German rocket experimental station at Peenemunde in 1943. This enabled the Royal Air Force to devastate Peenemunde and so delay the V.2 onslaught on London until after D-Day. The story of how the same Polish experts later managed to obtain a complete V.2 and "dissect" it under the noses of the Germans, so that they were able to radio to London details of the weapon before the first one was fired, is far more thrilling than any "spy" fiction.

the shoulder flashes of "Belgium," "France," "America," or, more often, "Poland."

The Polish Air Force had been the first to go into action against the Luftwaffe nearly a year earlier, when, in 17 days, it destroyed 126 enemy aircraft at a cost of 90 per cent. of its own out-dated warplanes and 70 per cent. of its aircrews. Those who survived went through incredible hardships and dangers to reach France and England, to carry on the fight.

When France too was overrun they flew in defence of England, with such fervour and skill that No. 303 Polish Squadron became the R.A.F.'s top-scoring fighter unit in the Battle of Britain.

Similarly, when Bomber Command wiped out Hitler's invasion fleet and then went on to strike at the heart of German industry and, finally, to blast a way through Europe for the Allied armies of liberation, many of its "Battles," "Wellingtons," "Halifaxes," and "Lancasters" were manned by Polish crews. Other Poles served with distinction in Coastal Command, Transport Command and in the Special Duties Squadron which dropped arms, food and Allied intelligence teams into occupied Europe.

"*Destiny Can Wait*"* tells their story, the story of hundreds of Polish airmen who took off from aerodromes in Britain never to return, and of the few who survived to find that the sacrifice had been largely in vain, because much of their homeland was given at the Yalta Conference to the country which shared Hitler's conquest of Poland in 1939.

Nobody could read this book without being convinced and deeply moved by the sincere love of the Polish aircrews

There are few other references to the work of the Home Army, but almost every page contains some example of the heroism and endurance of Polish airmen. The story of Flying Officer Targowski is typical. He flew in both the Cologne and Bremen 1,000-bomber raids before being posted to Coastal Command, where he won a D.F.C. for bringing his crew safely home after his "Wellington" had been shot to ribbons by six Junkers 88 twin-engined fighters.

Exactly a month after that action, he set off on another sortie in high spirits because he had received a letter from his wife, the first news of her since he left Poland. The news of his D.F.C. came through two hours after he took off, so his colleagues arranged a party to celebrate the two pieces of good news on his return. But Flying Officer Targowski never did return.

J.W.R.T.

The Mascot of No. 303 Polish Fighter Squadron, top-scoring R.A.F. unit during the Battle of Britain.

*"*Destiny Can Wait.*" *William Heinemann Ltd. 402 pp. 25s. net. Obtainable from: The Polish Air Force Association, 14, Collingham Gardens, London S.W.5.*

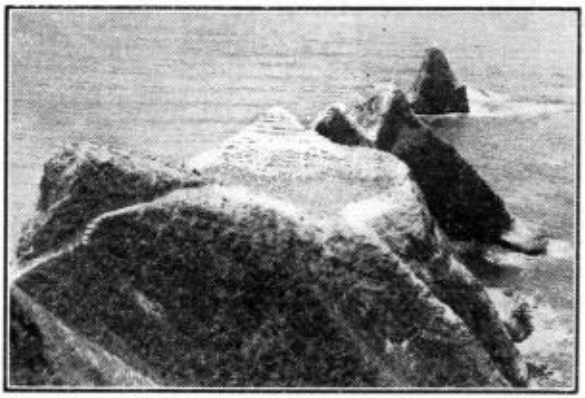
Cape Kidnappers

New Zealand's Famous Gannet Rookery

By V. May Cottrell

THE southern point of Hawke Bay, on the east coast of the North Island of New Zealand, is now named Cape Kidnappers, but long before the white man came it was known to the Maoris as Matau-a-Maui. In these modern days Cape Kidnappers is famous for its gannet nesting place, which is remarkable as being the only one where these handsome sea birds nest on the mainland; all other gannetries are on islands, and usually are almost inaccessible.

From Napier most visitors to Cape Kidnappers walk the distance, which has to be done at low tide. About two hours each way are required for the trip, allowing for numerous stoppages to gaze at the wonderful cliff formations, or to peer into the many fascinating ravines which meet the eye at frequent intervals en route.



The Gannet nesting ground, Cape Kidnappers, New Zealand, the only one in the world that can be reached from the mainland.

Nature lovers experience a wonderful feeling of exhilaration and well-being during this walk, which prevents their noticing the distance which must be covered before the gannet nursery is reached. The firm sand beneath their feet, the salt tang of the sea in their nostrils, and the beauty and grandeur of the stratified bluffs which accompany the traveller practically the whole distance, all tend to lift their thoughts above the level of the ordinary everyday affairs of life.

The colouring in the faces of the cliffs is very beautiful and varies greatly with each layer of material, brown, flesh-colour, blues, greys and black all blending into a harmonious colour scheme to charm the eye and enthrall the senses of the passer-by. This is indeed a geologist's paradise. The history of their formation is clearly written on the faces of the cliffs themselves for those who have eyes to see and knowledge to understand.

By now our party will have reached the Black Reef, which looks like a giant's finger thrust out into the ocean. This rock is deceptive as a landmark because, when one first catches a glimpse of it, it looks rather less than a mile away, but experience teaches that at least four miles must be traversed before it is actually reached.

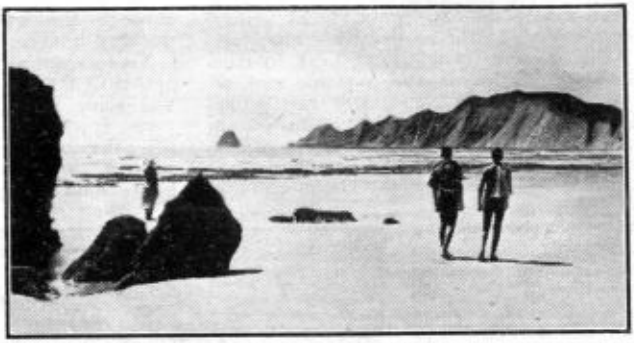
On rounding the last bend on the way out, an impressive scene presents itself. The tall, sheer cliffs of the Cape, the graceful sweep of the Bay, and the broad stretch of glistening, golden sand, lapped by tiny wavelets, make a delightful picture. Whatever the weather, this "close-up" of the Cape is in itself well worth the energy expended in getting there.

There is a story in Maori mythology concerning Cape Kidnappers. Maui, the great hero-god of the Maoris, converted the jawbone of an ancestor into a hook, and went a'fishing. He drew up the North Island of New Zealand, which is therefore called Te Ika a Maui, or the Fish of Maui. The hook made fast at the point on the East Coast called Hawke Bay, and Cape Kidnappers is still known to the Maoris as Matau-a-Maui, the Hook of Maui, the enduring remains of the mythical hook.

On 15th October 1796, Captain Cook, in the *"Endeavour,"* stood off the southern point of the bay that he had just named Hawke Bay in honour of Admiral Hawke. Armed Maoris came out to the ship in

canoes, and during the process of trading one of the natives appropriated a piece of red baize and made off with it. Later on the canoes returned and trade was again begun. This time one of the Maoris seized Taieto, a little native boy from one of the Pacific Islands, dragged him into his canoe and paddled off as fast as possible. Muskets were fired at the fleeing natives and one was wounded. Little Taieto was held down at the bottom of the canoe, but when the bullets began to fall, his captors released their hold and Taieto promptly jumped overboard and swam back to the "*Endeavour*." Though much exhausted, the little chap reached the ship in safety. So that is why the Hook of Maui received its English name of Cape Kidnappers.

Having passed the Black Reef, the party proceeds along the beach, away from the cliffs now for another mile. By this time everyone is ready for refreshments, especially those of a liquid variety. So we settle ourselves on a grassy slope and soon make short work of the good things we have brought with us. The appetites of some of us may have been sharpened by a delightfully refreshing swim in the sparkling blue waters of the Pacific Ocean, which stretches away to the far horizon.



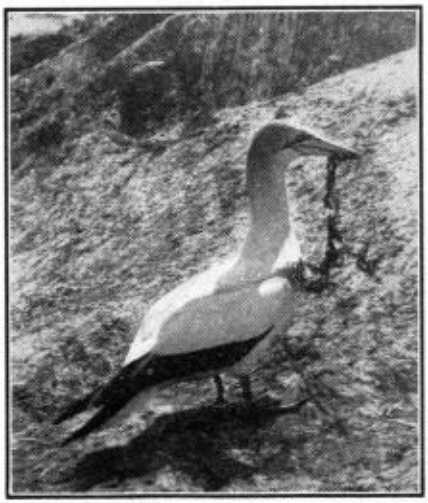
Cape Kidnappers and its gannet's nesting place, once the haunt of the solitary naturalist, now visited by hundreds of holiday makers each season.

From this point we can see Scinde Island, standing out in silhouette against the distant blue mountains. Scinde Island is the hilly part of the City of Napier, which struck the headlines in the newspapers of the world in 1931 when a disastrous earthquake rocked the whole district and left the business section of Napier in ruins.

And now for the real adventure of the day. There is some stiff climbing ahead of us if we desire to see the gannets at close quarters. The path cuts across country for a short distance, turns abruptly seaward once more and continues up the edge of a steep cliff for about a hundred yards or so. The sun is hot, our feet slip on the dry grass, and we begin to wonder if it is really worth the effort required to reach the top. But presently our gaze is caught and held by thousands of graceful sea birds wheeling, dipping and circling in the blue, high above the nesting ground which is still hidden from view.

The sight, which gives promise of good things to come, spurs us on to fresh efforts and presently the whole party is standing on a headland, where a distant view of the nesting ground is obtained. There is probably no more inspiring sight in the whole of New Zealand than that which lies spread out before us. The beauty and grandeur of the scene holds us spellbound.

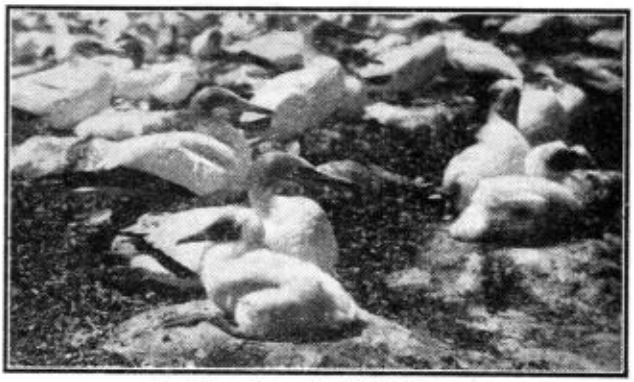
A deep valley separates us from the end of the Cape where the gannets have



Gannet with seaweed for its nest—an unusual picture.

their home. We see the sharp pinnacles of the Cape, their rocky sides dropping sheer some 200 ft. to the Pacific Ocean. The water, which gleams and sparkles in the sunlight as far as the eye can see, is of an enchanting shade of blue, and pure white where the little waves break gently on the reefs at the foot of the cliffs.

Our gaze is caught and held by the rocky pinnacles at the extreme end of the Cape. Some are almost needle-like in their sharp severity of outline, and even on such points as these a few of the more adventurous spirits among the gannets have their homes. The great bulk of the birds, however, have selected a shallow basin or depression between two towering peaks, and here one sees thousands of them sitting on their rough nests, consisting only of strands of seaweed, which they have constructed on the bare surface of their rocky nesting ground.



A colony of gannets with their chicks.

After resting, and gazing our fill at the alluring picture spread out before us, we go nearer, picking our way carefully over the steep and somewhat dangerous track that leads right to the nesting ground, so that we can see the birds at close quarters and study them at our leisure. Having negotiated the slippery path in safety, we arrive on the nesting ground, seat ourselves within a yard of the nearest birds, who disdainfully ignore our presence and go about their own affairs as usual, and proceed to study the gannet at home. The birds make excellent subjects for photographs, as they "stay put" so obligingly and good studies of them can be obtained easily.

A hundred years ago there were many whaling stations on the coast of New Zealand. Whales were very plentiful in those days and several stations were established on Hawke Bay in the 1840's. Two huge iron pots, used for trying out the oil, are still to be seen embedded in the sand three miles south of Cape Kidnappers.

But now the tide is creeping in, and if we desire to get home fairly dry we must start at once. Bidding a reluctant farewell to the birds, who ignore our existence, the party scramble down from the nesting ground. After collecting our belongings from the beach, we set off for home. Arriving at the Black Reef, we find that the tide has beaten us there. Off come stockings and shoes, and we wade through the water, risking a thorough ducking from an extra large wave.

Visitors are always warned to note the action of the tides, but many are careless and some have adventures that are far from enjoyable. Last year one party had the bright idea to return to the waiting cars by an overland route, but soon found themselves in difficulties because of the precipitous nature of the country. In this instance a "short cut" certainly proved the longest way home, for they found themselves confronted with a 40-ft. drop and no way round it. It was only by lowering a small boy down the cliff with fencing wire that a fireman's ladder from Napier was brought to their aid, after a long and weary wait.

Nearly every year some groups and individuals have to spend the night in a darksome ravine when caught by the tide. It can be no fun for them at the time, as they are both cold and hungry, but they never fail to make the most of their unenviable experiences afterwards, adding such thrilling details as a vivid imagination can devise.

One of my most delightful trips to the Cape was in company with some 50 boys and girls from Napier's secondary schools. On this occasion we cycled six miles along the beach from Clifton, which is the nearest point by road. On the return journey the gusts of wind were so fierce that we could only ride between them.

Photography

Camera Work in January

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

THE hours of daylight in January are comparatively few, but this is no real handicap to the keen all-the-year-round photographer. A great deal of interesting work can be done in the home with a few yards of flex, a 250 watt bulb, a spool of H.P.3 film and a camera with a fairly large stop.

It is always good to have a photographic record of work done in connection with other hobbies, such as the models built with Meccano, the Hornby-Dublo layout, or that special bit of carpentry of which we are proud. Any such subject comes under the heading of close-up or table-top photography, and readers will find that the planning and arranging of miniature scenes for table-top work is extremely fascinating. Most of the materials required are ready to hand and there is endless scope for ingenuity.

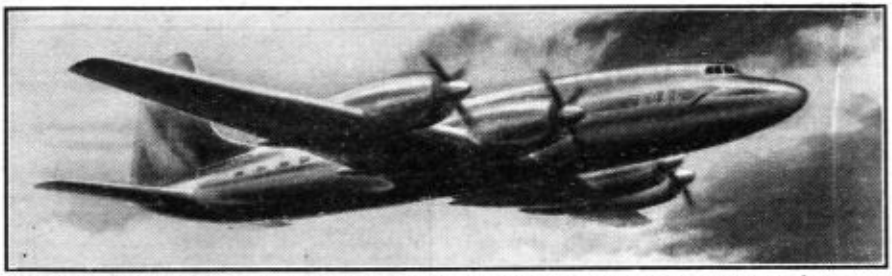
A family portrait.

The argument.

Then there is the important subject of indoor portraiture. There is something about a home portrait that cannot be got in a studio. The family are much more at their ease; they can smile more naturally and are ready to play their part so that a real "homely" touch is given to the picture. Good material is available also at children's parties.

Use the wall or floor plug for the extra flex and have a switch at the bulb end so that the light can be turned on and off quickly. It is useful to have a reflector of some kind attached to the bulb holder. This can be readily made from the conical top of a round oil can. With a fast film with a lens at F.8 and with the ordinary room lighting and our bulb so as to make about 500 watts, the exposure required is about 1/10th. It is difficult to give an accurate figure, however, as room conditions vary a good deal, and the decorations may necessitate rather longer. The only real guide is a test exposure.

A Ludo battle.



An artist's impression of the Bristol "175" air liner. Photograph by courtesy of The Bristol Aeroplane Co. Ltd.

Air News

By John W. R. Taylor

The Bristol Type 175

An order for 25 four-engined aircraft represents a lot of money in these times. The news that British Overseas Airways Corporation have placed a contract for 25 Bristol "175" air liners is therefore a great tribute to the Company responsible for the giant "Brabazon," as the prototype exists only in the form of a few fuselage frames, a number of "prefabricated" skin panels and a lot of drawings.

By combining a comparatively orthodox design with advanced production methods, Bristols hope to have the first "175" in the air within about two years; closely followed by the other 24 aircraft. Such an ambitious programme is possible only when a company is able to lay down a full-scale production line from the start, so credit must also be given to B.O.A.C. for their bold decision to order the type straight off the drawing board.

The "175," which is illustrated above, will be a 50-62 passenger aircraft, with a range of over 2,300 miles at a cruising speed of 340 m.p.h. It will be equipped to the usual high B.O.A.C. standard of comfort, including a galley for heating pre-frozen meals, a buffet for cold snacks and drinks, and separate dressing rooms for men and women.

The first "175" will be powered by four Bristol "Centaurus" 663 piston-engines, but it is probable that most, if not all, of the 25 aircraft will go into service eventually with four Bristol "Proteus" propjets. As they will be in about the same class as the "Stratocruiser," but with rather higher performance, they should make a first-class team with the "Comets" to restore British leadership on world air routes.

The Percival "Prince," a twin-engined 8-12 passenger transport. Photograph by courtesy of Percival Aircraft Ltd.

Helicopter Night Mail

Following its experimental night mail service carrying dummy mail between Peterborough and Great Yarmouth last Spring, as described in the May 1949 "*M.M.*", the B.E.A. Helicopter Unit is now running a regular G.P.O. night service from Peterborough to Norwich, carrying up to 500 lb. of real letters on each flight.

The Unit's Westland-Sikorsky helicopters, which are specially equipped with a variety of radio aids, achieved a 100 per cent. schedule in the first week of the new service, in spite of bad weather.

High-Speed Wind Tunnel

A new wind tunnel capable of producing speeds up to 7,600 m.p.h.—ten times the speed of sound at sea level—has been built for the U.S. Army at the California Institute of Technology, Pasadena. It will be used in the development of guided missiles and rockets.

No photographs of the tunnel may be published yet, but apparently the air enters the 5 in. square working section through a narrow slot in the throat of a steel alloy nozzle. As it does so it naturally expands, causing the temperature to drop to about 430 deg. below zero Fah.

The fastest tunnel previously in service in America gave speeds of up to about 5,300 m.p.h.

"Princes" for the Navy

The Royal Navy have ordered a number of Percival "Prince" aircraft for training and communications duties. This is the first large contract for the "Prince," and follows a year of intensive flight trials, including two overseas proving flights of over 40,000 miles, during which the aircraft was successfully subjected to severe tests under tropical conditions.

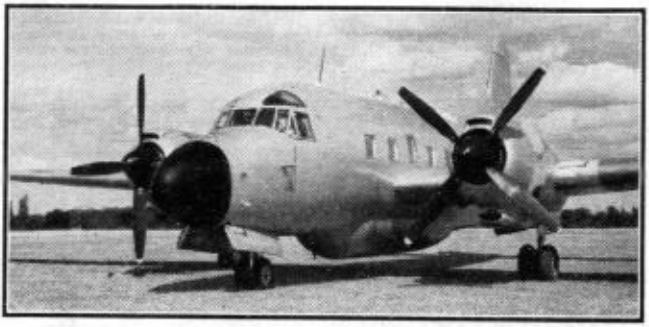
The "Prince" was originally designed as an 8-12 seat air liner, powered by two 520 h.p. Alvis "Leonides" engines, but its cabin is so roomy that it can be adapted readily for many other purposes. For example, one version displayed at the 1949 S.B.A.C. Show was fitted out as an air survey aircraft, with a redesigned "glass" nose for a photographer, and with camera mountings in the cabin. Other versions include an air ambulance, executive travel aircraft, aerial freighter, and now, a military trainer able to accommodate a wide variety of radio and navigation training equipment.

R.A.F. Antarctic Expedition

The Royal Air Force will fly in the Antarctic for the first time when a unit of two officers, three airmen and two "Auster" 6 aircraft reaches the South Polar Seas this month aboard the sealing vessel "Norsel," as part of a joint Norwegian-British-Swedish scientific expedition.

The main duty of the R.A.F. unit will be to try to find a passage for the "Norsel" through the pack-ice of Queen Maud Land, an unexplored tract of the Antarctic bounded in the West by the Falkland **Islands Dependencies and** in the East by the Australian Antarctic Territory. No ship built for navigation in ice has yet succeeded in penetrating this pack-ice, which was a major factor in defeating Shackleton's expedition in 1914. The "Austers" will also be used to find advanced bases on the mainland, and are fitted with skis to enable them to operate easily from snow or ice.

Participation in the expedition will give the R.A.F. a unique opportunity to enlarge its knowledge and experience of polar flying, especially the effects of climate and magnetism, and to try out items of Service equipment such as clothing, radio and special tools.

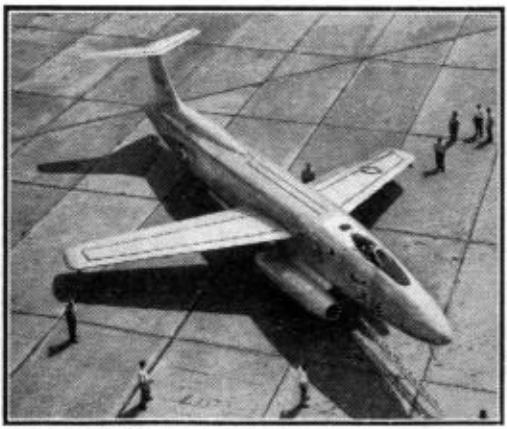


Vickers "Varsity" military trainer, developed from the "Valetta" transport. Photograph by Vickers-Armstrongs Ltd.

New Swept-Wing Bomber

The new two-seat Martin XB-51 jet-bomber, shown in the lower illustration on this page, is the first post-war aircraft designed specifically for destruction of tactical targets in co-operation with Army ground forces. It made its first flight of 34 min. at the end of October last year, piloted by Pat Tibbs, Martin's Director of Flight.

Almost every feature of the XB-51 is revolutionary. To begin with it is the first U.S.A.F. aircraft powered by three jet engines. Two of them are mounted on pylons on the lower sides of the fuselage near the cockpit, and a third is hidden in the rear part of the fuselage with its air intake in the large dorsal fairing. Its thin high-speed section wings are swept back at an angle of 35 deg. and have a span of about 55 ft. Its tailplane is also swept back at 35 deg. and is mounted right at the top of the fin. Lateral control is provided by small "spoilers" on the top surface of the wings instead of by conventional ailerons. The undercarriage is of the tandem type developed by Martins for their earlier six-jet XB-48 bomber, and has two twin-wheeled main units which retract into the fuselage, and small retractable balancer wheels at each wing-tip.



The Martin XB-51 two-seat jet bomber described on this page. Photograph by courtesy of The Glenn L. Martin Co., U.S.A.

More "Argonauts" in Service

Forty-passenger Canadair Four ("Argonaut" class) air liners, which have been in service for several months between the U.K., Hong Kong and Tokyo, have now replaced "Yorks," "Skymasters" and "Lancastrians" on several more B.O.A.C. routes.

They have taken over from "Skymasters" the twice-weekly service to Bahrein, and the weekly ones to Baghdad and Abadan, resulting in a typical saving in time of four hours on the latter route. These services were previously operated by Skyways Ltd., under charter to B.O.A.C. Cairo has been brought within a day's journey from Britain now that this route is flown by "Argonauts" instead of "Yorks." They have also replaced "Yorks" on the once-weekly services to Calcutta and Lydda.

The two "Lancastrian" services now operated by "Argonauts" are those between London-Colombo and Colombo-Singapore, with a saving of up to 31 hrs. in some cases.

"Mosquitoes" for Sweden

The Fairey Aviation Company recently completed the overhaul, modification and flight testing of 45 ex-R.A.F. "Mosquito" Mk. 19 night fighters, destined for the Swedish Royal Air Force. The work was undertaken in Fairey's Northern flight test and repair centre at Ringway Airport, near Manchester, and follows similar contracts for conversion and overhaul of 132 "Mosquitoes" for Turkey and five for the Dominican Republic.

Another Airline Buys "Connies"

Chicago and Southern, one of America's leading airlines, have ordered five of the latest model "Constellations" from the Lockheed Aircraft Corporation, at a cost of between five and six million dollars. Chicago and Southern thus become the fifteenth major world airline to use "Constellations," 213 of which have been delivered or are still on order. During more than 700,000 hrs. of service these "Connies" have flown a total of well over 5,000 million passenger miles, including 20,000 North Atlantic crossings.

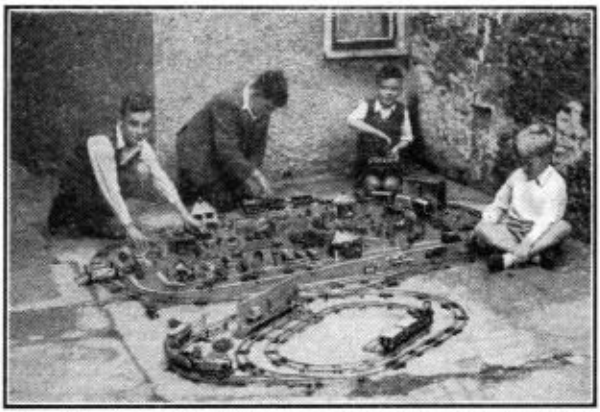
Fun with Dinky Toys

A Village Scene and a Neat Road Layout

THE three owners of the splendid layout shown in the upper illustration on this page enjoy really happy times with it. They are George, John and David Linstead, who live in Ilfracombe. Their layout represents a village through which a main road passes, and they have had the happy idea of combining their Dinky Toys village with a Hornby Train layout, an interesting feature of which is a level crossing at the entrance to the village itself. There is a splendid farm, where a Massey-Harris Tractor, a Harvest Trailer and a Market Gardener's Van are constantly seen at work, and in addition a Wheelbarrow and a Lawn Mower are put to good use in and around the farm scene. What may seem to be a surprising number of military vehicles appear on the roads along with motor cars, lorries and buses. Their introduction is neatly explained by the supposition that an army recruiting campaign is in progress, and no doubt the villagers enjoy the spectacle that Light Tanks, Jeeps, Reconnaissance Cars and a Field Gun Unit provide for them.

In the village itself there are a church, on the main road, and a fire station, both of which are Dinky Builder structures. A bus station is next to the stores, and there is also a Village Institute, nicely placed at a corner, while a hospital on the far side is readily distinguished by the figure of the Matron standing in the porch. These buildings were made with the parts of Bayko Building Sets.

The roads of the layout are well marked out, and excellent use is made of Road Signs, Telephone Call Boxes and other Dinky Toys features to give a lifelike appearance to the general scene. The roads are very busy indeed. This is readily explained by the fact that besides the usual agricultural traffic of such a village there is heavy traffic on the main road through it, while army recruiting demonstrations add to the congestion. The three owners of the layout are kept very busy arranging and superintending all this movement, and that on the associated Hornby Railway. This railway traffic centres chiefly on the station and goods yard, which lie just off the village itself.



A fine Dinky Toys village with its owners, George, John and David Linstead, Ilfracombe.

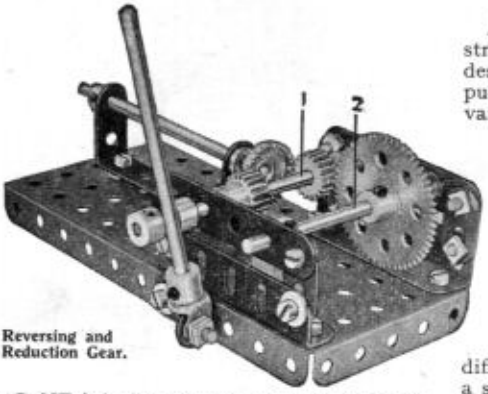
The Linstead layout is over 6 ft. long and more than 4 ft. in width. As our illustration shows, it was operated in the open during the summer season. Now that outdoor operations would involve some discomfort it has been transferred indoors.

The second of the two Dinky Toys layouts illustrated on this page is owned by Geoffrey Brazier, Kings Heath, Birmingham, and his brother. It is an interesting example of what can be done in a small space. The base is a piece of plywood 3 ft. square, on which the boys' mother painted roads with crossings and junctions. Running their Dinky Toys on these gives the two boys great fun, and has helped them to acquire road sense.

A game on the board begins by the erection of various Road Signs at suitable places, and the marking of pedestrian crossings with chalk. Then vehicles are placed at various points and the fun of moving them round begins. They are not run in haphazard fashion, for it is a strict rule that they must move as real road vehicles do, obeying the directions on all road signs. There is a filling station on the layout, and the "drivers" pull up there for petrol when necessary. Occasionally there are minor collisions, when the Breakdown Lorry and its crew become very busy, but so far no accidents to pedestrians have been reported, so the drivers must be really careful.

Running a variety of Dinky Toys on this neat board, with its roads, crossings and a roundabout, gives great fun to Geoffrey Brazier, Kings Heath, Birmingham, and his brother.

The New Meccano Gears Outfit



Reversing and Reduction Gear.

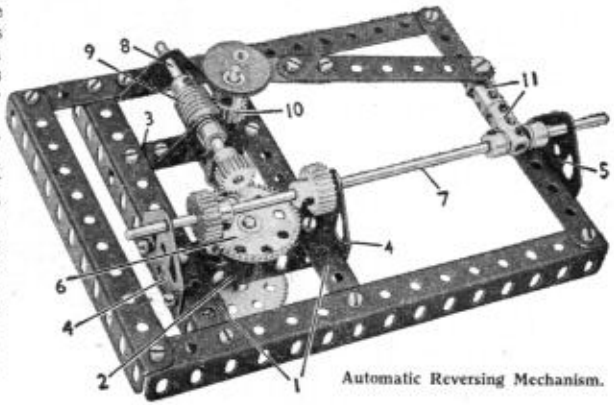
ONE of the most important Meccano developments since the war is the introduction of the new Gears Outfit A, which is announced in the advertisement on the back cover of this issue.

Gears Outfit A is not a complete outfit in itself, but is an Accessory Outfit of very great value to the owner of a standard Meccano Outfit. It is specially suited to Outfits No. 3 to No. 6. At present models built with Outfits up to and including No. 6 can be driven only through belts and Pulleys; the addition of a Gears Outfit enables the model-builder to drive them by means of fascinating gear mechanisms, just like those used by real engineers.

When a Clockwork or Electric Motor is used to drive a model, even a small and simple one, the best results are obtained when suitable speed-reduction gearing is arranged in the drive. All the gears required to assemble such reduction gearing are provided in this Outfit.

A splendidly illustrated Book of Instructions is packed with the Outfit. This describes in an interesting manner the purpose and use of gearing, and explains various types of gears, such as spur, contrate and worm, and the special uses of each. Next come more detailed explanations of the applications of Meccano gearing, accompanied by examples of the different ways in which it can be used to provide speed-reducing mechanisms, drive-reversing mechanisms including automatic types, a two-speed gearbox, an intermittent motion device, miscellaneous constructions such as differential and steering mechanisms, and a simple epicycloidal arrangement.

All these mechanisms are illustrated with actual examples constructed from the gears contained in the Outfit. In each of these mechanisms the gears are fitted into a simple Meccano framework to make their assembly perfectly clear and to show how they would be arranged in actual models. The frameworks themselves would not be used in models unless they happen to be convenient for the purpose.



Automatic Reversing Mechanism.

The Meccano Gears Outfit "A"

LIST OF CONTENTS

2	of	Part No. 25	Pinion, ½" diam., ½" face, 25 teeth.	2	of	Part No. 29	Contrate Wheel, ½" diam., 25 teeth.
2	„	„ 26	Pinion, ½" diam., ½" face, 19 teeth.	1	„	„ 32	Worm Gear, ½" diam.
1	„	„ 27	Gear Wheel, 1½" diam., 50 teeth.	1	„	„ 94	Sprocket Chain, 40" length.
1	„	„ 27a	Gear Wheel, 1½" diam., 57 teeth.	1	„	„ 95	Sprocket Wheel, 2" diam., 36 teeth.
1	„	„ 28	Contrate Wheel, 1½" diam., 50 teeth.	2	„	„ 96a	Sprocket Wheel, ½" diam., 14 teeth.

Book of Instructions.

Among the Model-Builders

By "Spanner"

A Giant Astronomical Clock

One of the best examples of Meccano model-building that has come to my notice in recent years is a giant astronomical clock built by Mr. John Nowlan, Dagenham. Mr. Nowlan is a Meccano enthusiast of many years experience, and he is seen with his clock in the illustration on this page.

The clock is made almost entirely from Meccano parts, and contains over 50 dials. These dials are constantly moving, and show the time, day, date, month, year and season. They also indicate sunrise and sunset, phases of the Moon, and the state of the tide in any of the coastal towns of Britain. It is also possible to obtain other astronomical data from the machine, including the stars that are visible overhead at any particular time of the year, and the time in any part of the world. In addition to all this the mechanism includes a complete Westminster chiming clock.

The model was begun in 1945 and is not yet completed. Already, however, it weighs several hundredweight, and over 6,000 nuts and bolts are used in its construction. The mechanism includes 11 motors, some of which are slave motors and are brought into operation only once in a year. Some idea of the fascinating nature of the many mechanisms in this clock may be gained from the fact that one of the gears revolves at 250 revolutions per minute while another moves so slowly that 25,782 years will have elapsed by the time it has made one revolution.

Mr. Nowlan is now working on the final stages of the mechanism.

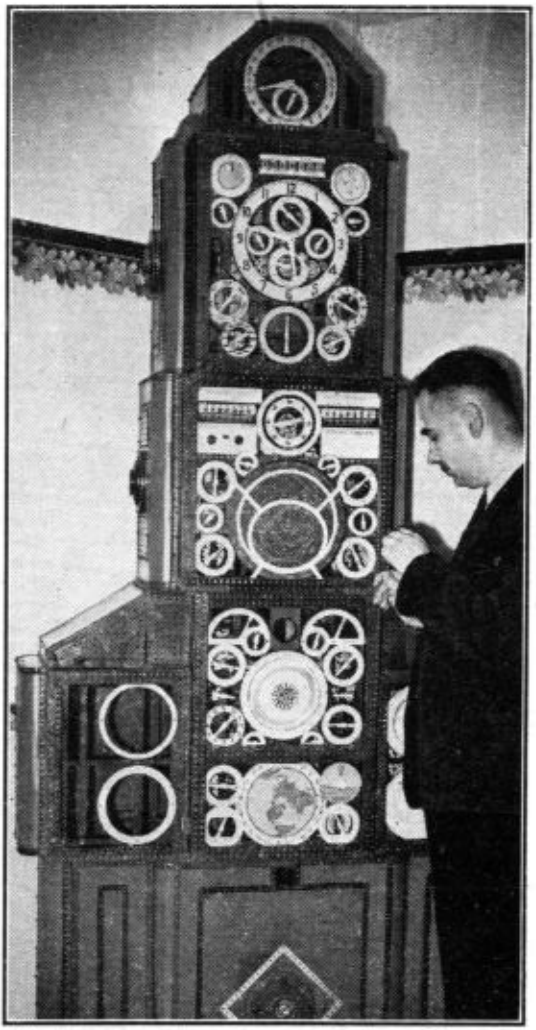


Fig. 1. Mr. John Nowlan, Dagenham, and his wonderful astronomical clock, which is described on this page.

How to Use Meccano Parts

Bevel Gears (Parts Nos. 30, 30a, and 30c)

In order to reduce friction to a minimum and to obtain a smooth even drive, bevel gearing is always designed so that the surfaces of the teeth of two bevels that mesh with each other lie in planes which, if extended, would all meet in a common point, and this point would coincide with the imaginary point of intersection of the axes of the shafts carrying the bevels. The Meccano Bevels are made with the teeth at such an angle that two $\frac{3}{4}$" Bevels (Part No. 30) can be meshed together, or

a ½" Bevel (Part No. 30a) can be engaged with a 1½" Bevel (Part No. 30c). Two 1½" Bevels should not be meshed together, nor should a ⅞" Bevel be engaged with a 1½" Bevel, for the teeth would not be properly in line.

Fig. 2 gives a good idea of some of the more important applications of the Meccano Bevel Gears. It represents a differential gear suitable for use in a motor chassis. The ½" and 1½" Bevel Gears are used to transmit the drive from the propeller shaft to the rear wheels, and the series of four ⅞" Bevels are arranged so that power can be applied to both road wheels under varying working conditions.

In Fig. 3, three ⅞" Bevels are employed to form a simple and compact reversing gear. The driving power is applied to the shaft 2 and is directed via the ½" diam. ½" width Pinion 3 to the Gear Wheel 4, which is secured to the Rod 6 carrying two Bevel Gears 5. The reverse is effected by a hand lever connected to a rocking arm that causes the Rod 6 to move longitudinally in its bearings by striking one of the Collars secured against the faces of the Bevels 5. The direction of rotation of the driven Rod 10 is changed by bringing one or other of the Bevels 5 into engagement with the third Bevel fastened to the Rod 10.

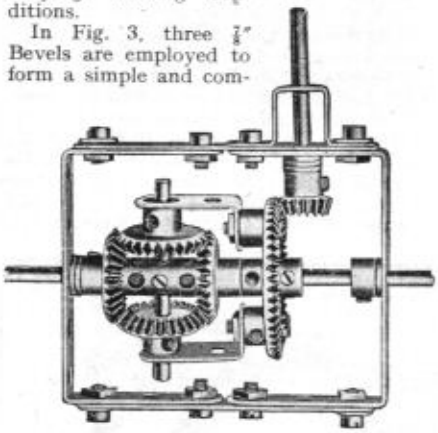


Fig. 2. Meccano Bevel Gears used in a differential mechanism suitable for a car chassis.

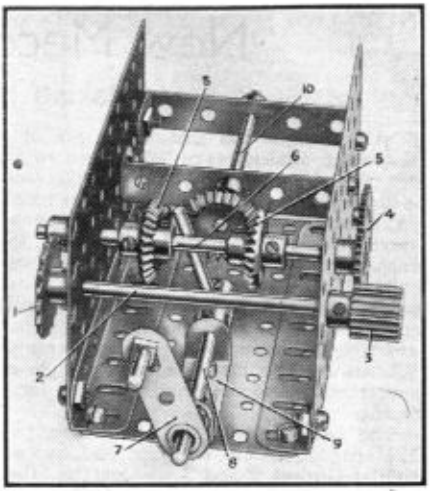


Fig. 3. Another example of the use of Bevel Gears. Here three of these parts are used to form a drive reversing mechanism.

A Prize-winning Model from Holland

I am always glad to have news of model-builders overseas, and many of them write to me quite regularly. I received a letter from C. F. Th. von Ziegenweidt, Delft, Holland, one of many Dutch friends who write to me from time to time, enclosing a photograph and a few details of a fine Ford Truck he has built. The photograph is reproduced as Fig. 4 on this page, and I think readers will agree with me that the model is a most praiseworthy effort.

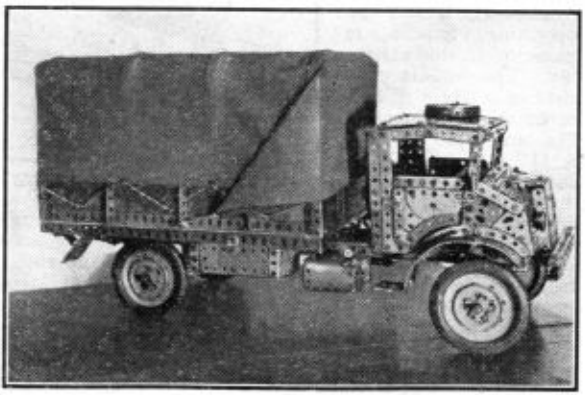


Fig. 4. A model of a typical army lorry built by C. F. Th. van Ziegenweidt, Delft, Holland.

New Meccano Models

Fence-Making Machine—Log Saw

OUR new models this month are of a most unusual type. The first to be described is a fence-making machine and is illustrated in Fig. 1. This model is based on a machine designed to produce the special wood and wire fencing used for enclosing fields, and it works most realistically. The model can be used with short pieces of round or square section wood, such as meat skewers; but if these are not available, Meccano Rods make a useful substitute. The model is quite simple in construction and does not require a large Outfit.

The base is made by connecting two 12½" Angle Girders 1 at one end by two similar Girders 2 and 3, and at the other end by a 12½" Angle Girder 4. Two 9½" Angle Girders 5 are bolted to 5½"×½" Double Angle Strips fixed to Girders 2 and 4.

The housing for the operating mechanism is assembled next. It is formed by 4½"×2½" Flat Plates bolted to the Angle Girders 2 and 3 as shown in the illustration, and the Flat Plates are joined across at each of their upper corners by 2½"×½" Double Angle Strips 6 and 7. A Double Bent Strip is bolted to Double Angle Strip 7, and the operating handle is mounted in this assembly. The handle consists of a Bush Wheel fitted with a Threaded Pin, and it is fixed on a 1½" Rod. The Rod carries also a ½" Pinion 8.

Two 5" Rods 9 and 10 are mounted in the 4½"×2½" Flat Plates, and each is held in position by a 1" Sprocket and a Collar. The 1" Sprockets are linked by Chain, so that the Rods rotate simultaneously. Rod 9 is fitted with a 1½" Contrate that meshes with the ½" Pinion 8. Rod 10 carries a Worm that engages a ½" Pinion 11 fixed on a 4" Rod mounted in 2½"×½" Double Angle Strips bolted between the Flat Plates. The outer end of the 4" Rod carries a 1" Sprocket connected by Chain to a similar Sprocket on the winding drum shaft.

The winding drum is a Boiler complete with Ends. A Bush Wheel is bolted to each Boiler End, and these are used to fix the drum on its shaft. The shaft is a 6½" Rod and is mounted in 2½" Triangular Plates bolted to the Girders 5.

The wire used in the fence is carried on bobbins fixed to the driving Rods 9 and 10. Each bobbin assembly consists of two 1½" Rods fixed in a Coupling locked on one of the driving Rods. The Couplings are not fixed exactly in line, but are staggered slightly so that they can rotate freely. It is important to make sure that the Couplings are fixed on their shafts in the same relative positions to each other. The wire is wound round three Collars that are free to turn between ¾" Washers on each of the 1½" Rods, and the free parts are held in place by Collars. A Bush Wheel is fixed at the extreme end of each of the Rods 9 and 10.

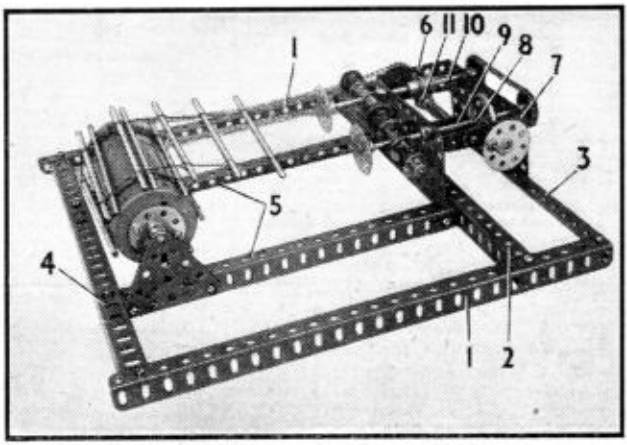


Fig. 1. A fence-making machine that is interesting to construct and operate.

Four separate lengths of wire are used in the machine, each being wound round one of the bobbins and then passed through the Bush Wheel on the same Rod. The wire used should be pliable, but stiff enough to retain the twists and hold the fencing firmly in position. Copper wire of about 22 S.W.G. is ideal for the purpose. The ends

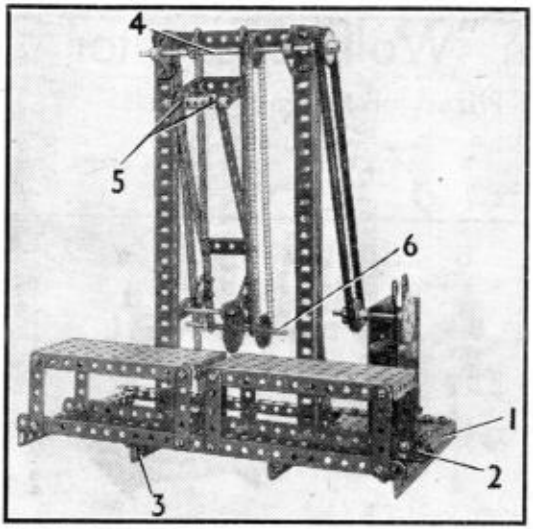


Fig. 2. A simple model of an unusual type of wood sawing machine.

of the wires are twisted together in pairs, and each pair is fastened firmly to the winding drum.

The machine is operated by placing a Rod or a length of wood between the pairs of wires and then turning the handle so that the Rod is gripped firmly between the twisted wires. A second Rod is then inserted at the spacing required, and the process is carried on until the desired length of fencing is made. The number of turns given to the handle after the Rods are in position determines the distance between the posts of the fence, and the same number of turns must be made at each step in order to get an even result.

Parts required to make the Fence-Making Machine: 5 of No. 8; 2 of No. 8a; 1 of No. 14; 2 of No. 15; 1 of No. 15b; 5 of No. 18a; 5 of No. 24; 2 of No. 26; 1 of No. 28; 1 of No. 32; 36 of No. 37; 5 of No. 38; 8 of No. 38d; 1 of No. 45; 4 of No. 48a; 1 of No. 48d; 2 of No. 53a; 20 of No. 59; 2 of No. 63; 2 of No. 76; 1 of No. 94; 4 of No. 96; 1 of No. 115; 1 of No. 162.

Vast numbers of trees are cut down every year and converted into logs, planks and boards, and the many different types of machines used in these processes make very interesting subjects for Meccano models. One of these machines forms the subject of our second model and is illustrated in Fig. 2. The model is a reproduction of a small sawing machine that is sometimes used for cutting boards. The cutter is of the circular type, and revolves at high speed. In this type of machine the saw is mounted in a pivoted frame suspended freely so that it can be drawn forward as the saw cuts through the wood.

It is best to begin construction of this model by assembling the base and saw bench. The base is rectangular in shape, and is constructed from two 12½" and two 7½" Angle Girders. One of the 12½" Girders overlaps the 7½" Girder 1 by one hole and a second 12½" Girder 2 is also bolted in position in the same way. The saw bench consists of two 5½"×2½" Flanged Plates, and these are attached to eight vertical 2½" Strips bolted to the 12½" Angle Girders of the base. A slight gap is left between the 5½"×2½" Flanged Plates to allow the circular saw to be moved across the work. The power unit is fixed to a platform bolted into a corner of the base. The platform is made from two 3½"×2½" Flanged Plates, and is connected to the 12½" Angle Girders by a 5½" Angle Girder. A second 5½" Girder is bolted in position as indicated at 3.

The saw frame is built from two supports each consisting of two 12½" Angle Girders bolted together to form U-shaped girders.

The power unit is a No. 1 Clockwork Motor, attached to Angle Brackets bolted to the platform formed by the 3½"×2½" Flanged Plates. The drive from the Motor is geared down through a ½" Pinion on the Motor driving shaft to a 57-tooth Gear fixed on a Rod mounted in the Motor sideplates. This Rod carries also two 1" Pulleys, and the drive is transferred from these to similar Pulleys on a 6½" Rod 4 by Driving Bands. Two Driving Bands are used in order to eliminate slipping. Rod 4 is mounted in Trunnions bolted to the saw frame, and the saw arm pivots on it.

The saw arm is built by connecting two 7½" Strips by two 1½"×½" Double Angle Strips and bolting to these a frame of 2½" and 5½" Strips. Two 1" Rods 5 joined by a Coupling pass through the 2½" and 5½" Strips and are held by Collars. A Sprocket on Rod 4 drives a Sprocket on Rod 6, which carries a 1½" Sprocket Wheel forming the saw.

Parts required to build the model Log Saw: 2 of No. 1; 2 of No. 1a; 2 of No. 2; 12 of No. 5; 7 of No. 8; 2 of No. 8b; 2 of No. 9; 4 of No. 12; 1 of No. 14; 1 of No. 16; 1 of No. 16a; 1 of No. 17; 2 of No. 18b; 4 of No. 22; 1 of No. 26; 1 of No. 27a; 2 of No. 35; 65 of No. 37; 2 of No. 48; 1 of No. 48d; 2 of No. 52; 2 of No. 53; 6 of No. 59; 1 of No. 63; 1 of No. 94; 1 of No. 95a; 2 of No. 96; 2 of No. 126; 2 of No. 126a; 2 of No. 186e. 1 No. 1 Clockwork Motor.

The Priestman "Wolf" Excavator

British Firm Offers Prizes for Meccano Models

PRIESTMAN BROTHERS LTD., Hull, manufacturers of cranes and excavators of all types, are offering in conjunction with Meccano Ltd. a fine range of prizes for the best Meccano models of their well-known "Wolf" Excavator illustrated in Fig. 1 on this page. The "Wolf" Excavator is an ideal general purpose machine, and can be supplied with various attachments which enable it to operate as a shovel, skimmer, dragline, crane, trencher or certain other forms of excavating appliance. In Fig. 1 the "Wolf" is shown fitted out as a mechanical shovel, and it is this form of the machine that is the subject of the competition.

Model-builders who wish to take part in this interesting competition are invited to try their skill in reproducing the outward appearance and chief mechanical features and movements of the "Wolf" as closely as possible. It is not of course expected that they will be able to reproduce all the finer features and constructional details of the actual machine, and all that is required is that their models should have an outward appearance as similar as possible to that of the Excavator seen in Fig. 1 and should be capable of carrying out its essential digging and travelling movements. The manner in which these movements are obtained in models is left to model-builders to devise for themselves.

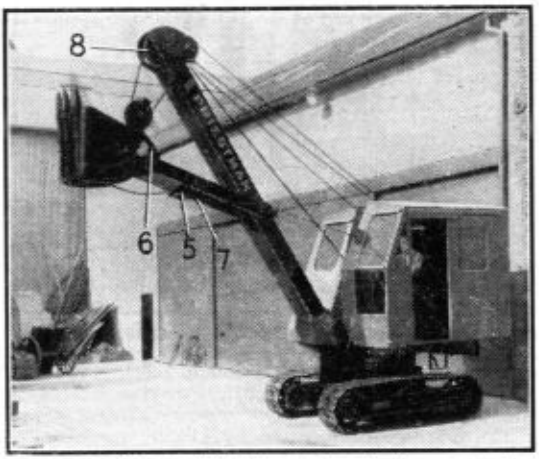


Fig. 1. The Priestman "Wolf" Excavator equipped as a mechanical shovel. Valuable prizes are offered for Meccano models of this fine appliance.

The following details of the actual machine are given for the guidance of intending competitors. The "Wolf" is driven by means of a Dorman Diesel engine mounted at the rear of the superstructure, but model-builders may substitute for this either a Clockwork or an Electric Motor. The power unit drives all the movements of the excavator, which are as follows: travelling, rotation of the superstructure, raising and lowering of the jib, and operation of the shovel arm. Model-builders are free to devise their own mechanisms for providing these movements and they are not required to follow the actual methods used in the real machine.

Briefly the "Wolf" Excavator consists of three main sections, consisting of an undercarriage,

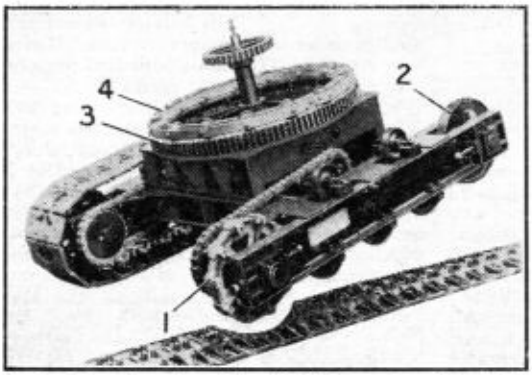


Fig. 2. The undercarriage of the "Wolf" Excavator, which carries the crawler tracks. The final drive to the crawlers is by heavy roller chain.

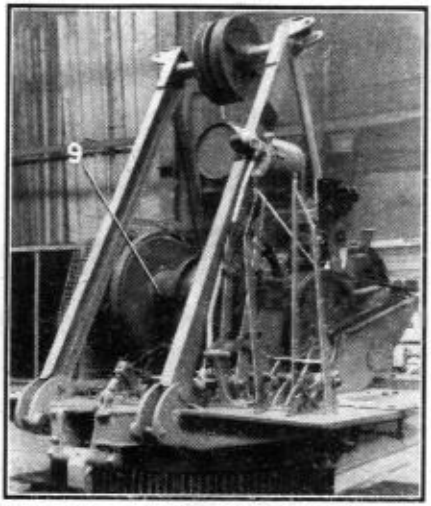


Fig. 3. The superstructure of the "Wolf" Excavator shown complete.

which carries crawler tracks, a rotating superstructure housing the mechanism, power unit and controls, and the digging attachment, which for the purpose of this competition is a jib and shovel arm with its bucket.

The undercarriage, which is shown in Fig. 2, consists of a built-up steel frame carrying two crawler belts. The crawlers are carried round a driving sprocket 1 and an idler roller 2, and supported by small bottom rollers and two top rollers. On the top of this frame is another built-up frame that supports a fixed toothed gear ring 3. On top of the gear is mounted the rotating superstructure and cab, which revolves on a ring of rollers 4. The superstructure is rotated by means of a pinion that meshes with the toothed gear ring on the undercarriage. Model-builders are free to devise their own methods of rotating the superstructure according to the Meccano parts available to them.

In the actual machine, clutches are provided to enable both crawler tracks to be driven simultaneously, or to allow either one of them to be locked and the other driven to permit steering. Model-builders may use any method they like of achieving this result in models.

The jib is pivoted at its base at the front of the superstructure as shown in Fig. 1. In the centre of the jib is pivoted the shovel arm 5, the other end of which is attached to the bucket. A strut 6 from the bucket to the arm alters the angle of the bucket and keeps it in the chosen position. The bucket has a rear door, hinged at the top, and provided with a "catch" that is operated by a rope 7 from the control point in the superstructure.

The outer end of the jib is fitted with sheaves or pulleys round which ropes are carried from two winding barrels 9 (Fig. 4) in the superstructure, which are driven through gearing from the power unit. Clutches are provided to permit either barrel to be driven as desired. The outer sheaves at the jib head are used for carrying the rope that raises and lowers the jib. This rope is attached to one of the winding barrels in the superstructure. The bucket arm is raised and lowered by a rope attached to the second winding barrel, and this passes over another pulley at the jib head, round a pulley block on the bucket and then is anchored at the jib head.

We wish to remind model-builders that they are free to use their own methods of obtaining the various movements of the excavator, but it is essential to reproduce as closely as possible the actual outward appearance of the machine and its main proportions.

The competition will be divided into two sections, one for (*Continued on page 41*)

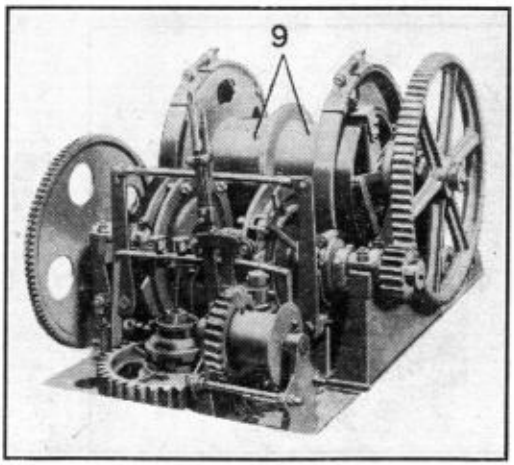


Fig. 4. The mechanism of the "Wolf" showing the winding barrels and part of the drive to the undercarriage.

Model-Building Competition Results

By "Spanner"

June "General" Model-Building Competition

One of the most successful of the "*M.M.*" Competitions organised during the past year was the "General" contest that was first announced in the June issue. This contest attracted a large number of entries, and some of the models were particularly interesting. The complete list of prize-winners in the Home Section of the contest is as follows:

First Prize, Cheque for £3/3/-: M. A. Reed, Epping. Second Prize, Cheque for £2/2/-: K. R. Pargeter, Stourbridge. Third Prize, Cheque for £1/1/-: G. I. Mackenzie, Elgin.

Five Prizes each of 10/6: D. V. J. Taylor, London N.21; W. J. Rowland, London S.E.21; H. Taylor, Huddersfield; J. McMay-Russell, Coventry; C. C. Bishop, Cardiff.

Five Prizes each of 5/-: R. J. Hilling, Ipswich; J. Dunworth, Droitwich; W. Lees, Selkirk; A. Cookson, Blackburn; G. Mason, Parkstone.

The most outstanding model was a vertical milling machine, built by Michael A. Reed, Epping, who was awarded First Prize. The model is shown in Fig. 1 on this page and the following details will be of interest and help to other model-builders who may wish to attempt models of this kind.

All the movements of the worktable have both hand and self-acting feeds. The latter are operated by a motor at the base of the column, the drive from which is taken through a three-speed gear-box controlled by handle 13, and transmitted to the knee through a shaft fitted with a Universal Coupling at each end, to allow for the vertical movement of the knee. The motor also drives another similar shaft at a higher speed, which provides a rapid "setting up" feed speed. This feed can be engaged by pressing the handle 4.

The handles which control the feed movements each have three positions, *i.e.*, "off," "forward" and "back." The table and the knee are controlled by handles 5 and 2 respectively. Handle 15 controls the traverse of the carriage.

The cutter spindle has a fine vertical feed controlled by handwheel 9. The shaft of the handwheel carries a ½" dia. Helical Gear that meshes with a 1½" dia. Helical Gear mounted on a vertical Screwed Rod, which carries a Threaded Coupling controlling the vertical movement of the spindle.

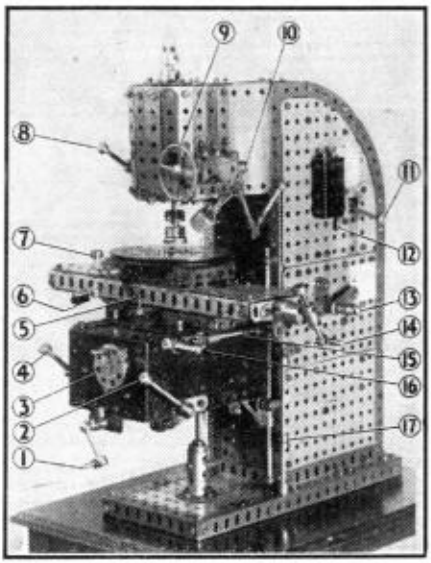


Fig. 1. Interesting mechanisms combined with a realistic and neat appearance made this vertical milling machine an outstanding entry in the June 1949 General Model-Building Contest. It was built by Michael A. Reed, Epping, who was awarded First Prize.

The cutter is driven by a further motor mounted in the upper part of the column, through a five-speed gear-box. The various speeds are selected by handle 11, vertical movement of which slides the shaft of the vertical gear-box, whilst lateral movement controls the horizontal gear-box.

The drive is taken through Bevel Gears and a clutch, which is controlled by handle 8, to the cutter spindle.

The motors are controlled by a miniature iron-clad switch 12. A dummy adjustable work light 10 is provided.

The circular worktable provided has 360 degrees of movement. Nuts are clamped between the plates of the table to provide tapped holes by means of which work can be clamped to it. The table may be removed when not required. All moving parts of the machine are enclosed, a door in the rear giving access to motors and gears.

Second Prize went to K. R. Pargeter, Wollaston, Stourbridge, builder of the mobile excavator illustrated by the drawing reproduced as Fig. 2. The details of this model are clearly shown and its main qualities are neatness and good proportions.

G. I. Mackenzie, Elgin, sent a model motor-driven lawn mower operated by a Clockwork Motor. The cutting cylinder is fitted with razor blades, and will actually cut grass!

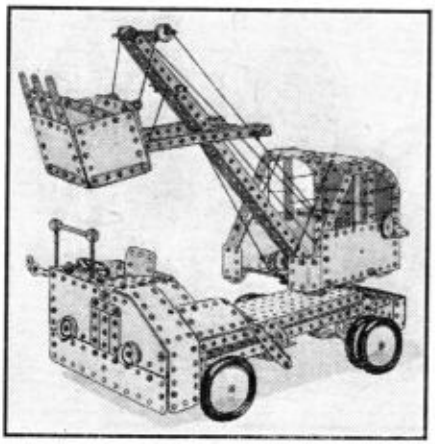


Fig. 2. A reproduction of a drawing by K. R. Pargeter, Wollaston, Stourbridge, of his model excavator which won Second Prize.

Club and Branch News

WITH THE SECRETARY

MAKE 1950 A RECORD YEAR

The Christmas and New Year season is now approaching its end, and in most Clubs and Branches the Exhibitions, Open Nights and Socials of this period have been held, with real profit to everybody concerned. Now we must look ahead again.

I hope that every one connected with both Meccano Clubs and Branches will have a very happy and prosperous time during 1950, and also that they will do everything possible to ensure a happy New Year for the Club and Branch movement. Each member can do so by helping to increase the strength of the organisation with which he is directly connected. There are various ways of ensuring this. One, perhaps the most important, is to join heartily in every scheme adopted to make Club and Branch life more attractive, and to try to think out new ideas for the programme. Another, suggested last month, is to introduce at least one new member, if Club and Branch accommodation allows. I hope that everywhere due attention has been given to this need for enlarging the Club or Branch roll, which works in two ways. On the one hand it introduces more Meccano and Hornby Train enthusiasts to a happy community; and on the other it helps by introducing members who in time will be Club or Branch stalwarts, with experience in everything that makes for a successful organisation.

In the coming months indeed enthusiasm in every Club and Branch should be at its highest level and every effort should be made to direct it to good ends. Better model-building, more efficient working of Hornby and Hornby-Dublo Train layouts, increased skill in all other pursuits included in the programme, greater friendship among members and happier Club or Branch fun and games—these should be the aims of every Club or Branch official, and indeed of every individual member. If all these points are borne in mind then 1950 should be a record year since Clubs and Branches became more active again at the end of the war.

CLUB NOTES

WHITTINGTON (CHESTERFIELD) M.C.—Members concentrated on model-building in preparation for the Exhibition. This was very successful. Besides a display of models there was an excellent Hornby Train layout, on which operations were conducted to timetable with great success. Club roll: 12. *Secretary:* P. W. Sharp, 17, Hill Top Road, Old Whittington, Chesterfield.

BORDEN GRAMMAR SCHOOL M.C. Filmstrips and Lantern Slides have been shown and Talks have been given on Meccano models, the construction of radio receivers and the development of motor car design. A Discussion on "*Space Ships*" produced many novel ideas. Club roll: 19. *Secretary:* S. Wood, 20, Harold Street, Queenborough, Kent.

HORNSEA M.C.—A Talk on how the motor car engine works was illustrated by films. Model-building has continued, and demonstrations of film developing have been given. Short talks given by members, and illustrated by lantern slides are a feature of the programme. Club roll: 12. *Secretary:* R. HARRIS, Toy-laf, Victoria Gardens, Hornsea.

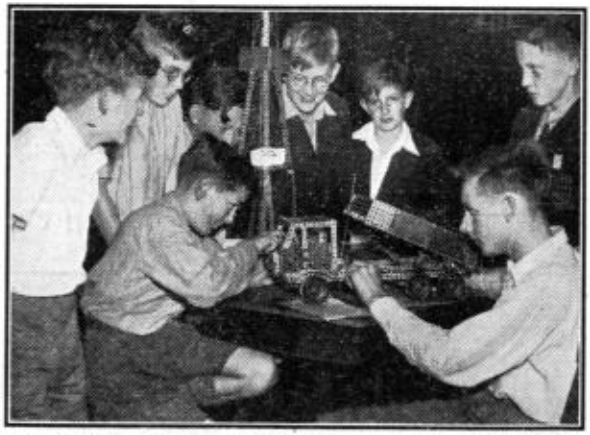
AUSTRALIA

MAYLANDS M.C.—The normal sequence of Model-building, with fretwork and general games, has been followed. Special models displayed at the Associated Youth Council Exhibition aroused intense interest; they included a wheat elevator, a loom, a clock, an aircraft carrier, with model aircraft on the deck, and a giant crane. Cycle Runs and Film Shows also have been enjoyed. Club roll: 42. *Secretary:* V. Chester, 16, Kennedy Street, Maylands.

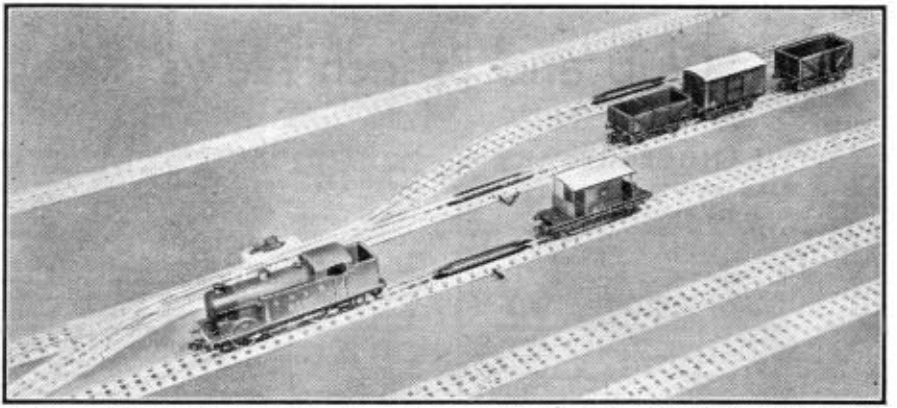
BRANCH NEWS

TETTENHALL COLLEGE—A splendid display was organised for School Speech Day. There were two Hornby Train Layouts, one rural in character and the other urban, and members built up special scenery for these. A very interesting and enjoyable visit was paid to an engine shed, where members learned many details of railway working. *Secretary:* J. C. Sprang, Tettenhall College, Nr. Wolverhampton, Staffs.

LOUGHTON, ESSEX.—Reports from the Secretary, the Chief Engineer, the Rolling Stock Superintendent and the Librarian, presented at the Annual Meeting, showed that good work was being done, but the technical experts suggested thorough overhauls of track and rolling stock. These are now being carried out, with special attention to signals. A system of sectional work at track meetings has been introduced. *Secretary:* F. G. H. King, 12, Shelley Grove, Loughton, Essex.



A model-building discussion in the Club room of the Norbury M.C., President, Mr. W. J. Wyse, B.Sc., Leader, Mr. C. B. Chapman, Secretary, J. W. Taylor. This enterprising Club was affiliated in December 1935. Many splendid Exhibitions have been organised. The display at the most recent of these included three Hornby and Hornby-Dublo Layouts, a stamp stall, photographs of trains and a collection of pre-nationalisation railway labels in addition to many splendid models. Photograph by courtesy of the "Croydon Times."

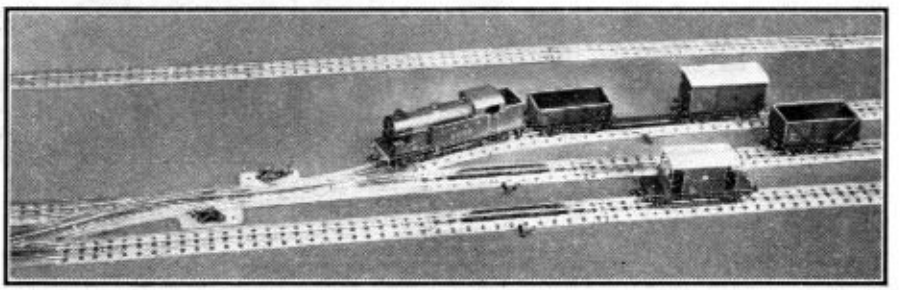


The Hornby-Dublo Tank leaves its Brake Van and moves off to marshal the vehicles in the sidings into the required order.

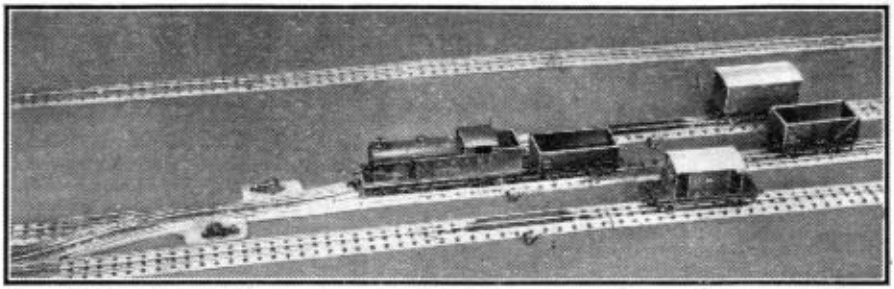
A Hornby-Dublo Shunting Scheme

THE introduction of the Hornby-Dublo Uncoupling Rail described last month, opens up exciting possibilities in the way of shunting and marshalling operations. The accompanying pictures show a series of typical operations that are made possible by its use in a layout. On several occasions, in articles dealing with Hornby-Dublo Tanks at work, we have described a typical working scheme where the engine sets off with a brake van to assemble a complete train. It makes a series of trips round the layout picking up different vehicles in turn on successive calls at the one siding. In such instances the siding is supposed to represent a different local yard on each circuit. This is the type of local pick-up goods or trip-working, parts of which are shown in our pictures.

The typical siding arrangements and the position of the Uncoupling Rails will be evident from the illustrations. To begin with the ramps of the Uncoupling Rails are left unset, that is in the "down" position; they are set in the operating position only when uncoupling is to be done. In the photographs there is shown what is usually known as a reception road. This can be a loop line alongside the main running lines, but provision of this is not absolutely necessary. On a small system there will not be space for a reception loop. We will assume that the engine and the Brake Van arrive at the yard where there are several vehicles to be picked up. The Brake Van having been uncoupled from the engine, as shown in the first illustration, is left on the loop while the marshalling operations are carried out.



The Goods Van and Open Wagon are set back into the far siding and the Goods Van is left there.



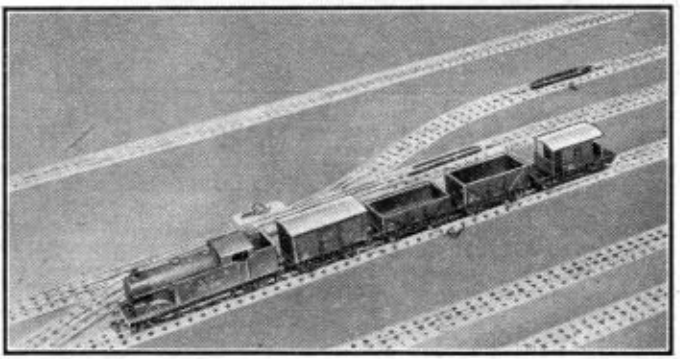
The engine brings back the Wagon to its original position and shunts it off for the time being.

We will suppose that we are required to make up a train in the order shown in the last picture. When the engine reaches the yard there are two vehicles together on one siding, a Wagon and a Van, and further along the same road there is a High-sided Wagon. We want to couple up to these first two, but not to the other one. This is where our practice in engine control previously advised in these pages comes in so useful. The engine is eased along until its coupling engages with that of the first Wagon. With the Wagon and the Van attached the engine moves forward again clear of the points leading to the second siding. The points are set, the uncoupling ramp in that siding is put in the operating position, and the engine backs its two vehicles "inside." As soon as the couplings between the Wagon and the Van are separated by the uncoupling ramp, the engine stops quickly and is then reversed, drawing the Wagon forward again while the Van is left behind. This situation is shown in the second picture.

The next move is easy; the uncoupling ramp in the first siding is now set and the engine backs the Wagon into this siding and leaves it there. If this move is carried out smartly, the Wagon may run on far enough to couple up to the High-sided Wagon and the two will then be ready to move away. In the meantime, however, the engine returns and picks up the Van from the second siding which is required to travel at the head of the train. Having collected this, it is an easy matter now to pick up, in addition, the two Wagons waiting on the next road.

This completes the vehicles that are to be picked up here and we have them in the order required. They are now brought over the crossover on to the reception loop, or main line as the case may be; and after they have been backed up gently to couple on to the Brake Van, the train is complete and ready for the next stage of the run.

On a small continuous system, the train may have to return to the same sidings to carry out the next set of operations. If other sidings are included in the layout they can be made the scene of further pick-up operations. In any case, the moves to be made can be varied almost indefinitely. There is a great deal of fun in making up a train in a certain order in the smallest number of moves, and the Uncoupling Rail will add greatly to the pleasure of doing this. Other schemes will be dealt with in future issues.



The Goods Van, Open and High-sided Wagons have been made up into a train and the engine takes them with the Brake Van on the next stage of the trip.

Developing a Hornby Railway

LAST month we gave various hints for the Hornby Train owner just beginning his miniature railway activities. Now we hope to help him in the development of his train set into a more extensive system.

Once the running and management of a train set has been mastered, the keen Hornby owner naturally desires to extend his small oval track and add to his railway so that in time it may become a large system with a variety of accessories and rolling stock. After the addition of further Straight Rails to the oval track contained in the train set, the usual way to develop the layout is to add Points so that either branch lines or sidings can be made or an alternative main line route constructed.

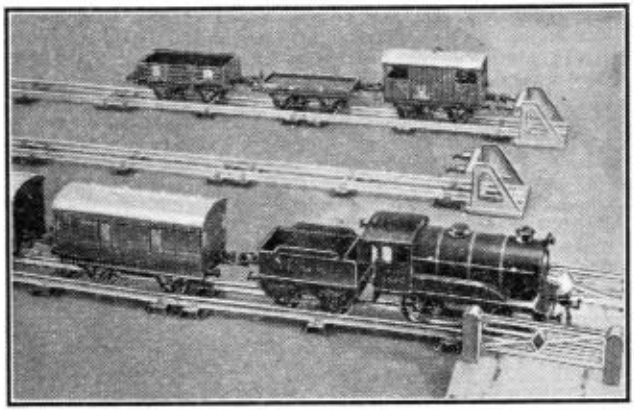
When adding Curved Rails, Points or Crossings to an existing track it is specially important to see that the new parts are suitable for the purpose. Thus, if the Curves already in use are of the 2 ft. radius kind—12 of them form a circle—then the additional Curves, Points or Crossings must correspond.

All Hornby Train Sets except the M0 and M1 Sets have 2 ft. radius Curves. The M0 Sets have 9 in. radius Curves—six to the circle—and there are special Straight Rails to suit this type of track. M0 Rails are easily identified by their sleepers, which are plain and narrow without the turned up edges characteristic of the standard Hornby Rails; and their joints are secured by special Connecting Clips. There are no Points or Crossings for M0 track.

M1 Train Sets have standard Hornby Rails with Curves of 1 ft. radius and six of these form a circle. Points and Crossings suitable for 1 ft. radius layouts are included in the Hornby System.

Special attention is drawn to this matter because there have been instances of Hornby Train owners trying to use together rails of different radius and type. This never works out satisfactorily and can only cause difficulties and disappointments.

Certain accessories are used in conjunction with the actual rails, such as Buffer Stops and Level Crossings, and good use of these in developing a layout can be made in the way illustrated on this page. The picture shows a stopping passenger train hauled by a No. 501 Locomotive approaching a Level Crossing.



A Hornby Passenger Train approaching a Level Crossing. Each of the sidings shown is correctly terminated by a Buffer Stop.

After the track has been extended, stations are needed to deal with the traffic. The Hornby No. 3 Station is a very effective model for passenger traffic, and the Island Platform can be used independently or in conjunction with the Station.

Next we come to signals. The use of these can be merely ornamental, or they can be correctly placed so that a realistic and railway-like signalling system is produced. A miniature railway that is correctly signalled is far more interesting than one which has the signals just placed haphazardly. At present only single and double-arm signals are available, but these can be used either alone or in conjunction with one another to cover most of the situations that are likely to arise on a miniature railway.

Other Hornby equipment includes Turntables for turning the engines after their runs. One of these can be placed near the station or at the end of a branch line; it should also be easily accessible from the engine yard so that engines can reach it without complicated movements.

Welding for the World—(*Continued from page 7*)

faulty parts and make them as they were before. They seek to do better than that by applying materials that are more resistant to further similar failure. It is because of the positive success obtained in such efforts that many people who rely on the resources of welding to help them in their difficulties prefer a welded part to a brand new replacement of the original type.

This work is not confined to iron and steel, but is applicable to all manner of other metals, even those having such a large content of magnesium that they are highly inflammable in certain conditions.

The versatility of modern scientific welding is one of its marvels. For it is applied to the most humble of cooking utensils with the same certainty of success that attaches to the most complex and costly machinery.

Science and Crop Protection—(*Continued from p. 20*)

value of "Agroxone" has also been established in the control of rushes, ragwort and buttercup in pasture land, as well as in linseed, rice and sugar cane.

From "Agroxone" came "Verdone," again an entirely fresh type of weedkiller, this time for lawns. "Verdone" acts in the same way, destroying many of the most troublesome weeds, such as plantains and creeping buttercup, without any damage to grass. It has been successfully used not only by thousands of amateur gardeners, but also on parks and sports grounds throughout the country. "Verdone" was employed at Wembley Stadium on all the turf used for the Olympic Games.

It has been known for some years that greater efficiency is obtained if fertilisers are applied "little and often," and particularly if they are in solution. "Solufeed" is a highly concentrated fertiliser in powder form, which is readily soluble. Tomato yields of 90 tons per acre have been recorded at the Fernhurst Research Station using "Solufeed." Though it may be applied by means of a tank and watering can, the most satisfactory method is through the "Solufeeder." This apparatus works from an ordinary water main, and *automatically* dilutes a concentrated fertiliser solution before application to crops.

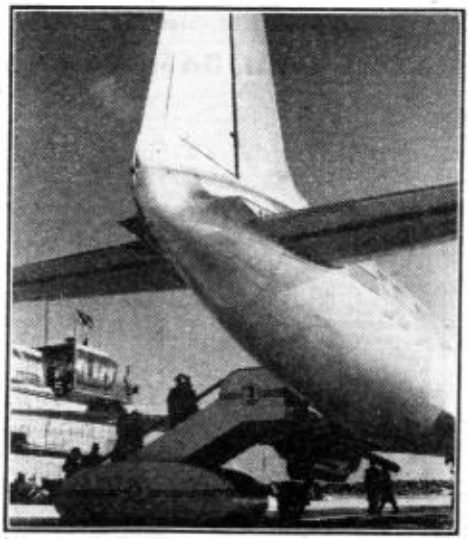
Improved pest and disease control methods demand fresh methods of application to realise their full efficiency. During a recent visit to Fernhurst by delegates from the International Congress of Crop Protection, 29 different spraying and dusting machines, all from British firms, were demonstrated in action. The three machines described below are of special interest.

The "Pestmaster Midget" Powder Duster is the smallest of the three, and is the lowest-powered engine-driven duster manufactured. It was designed in response to requests for a precision duster which would give maximum results with a minimum of effort on the part of the operator; the prime mover is a ¾ h.p. petrol motor. There are two models, one mounted on a harness and carried at the front of the operator, the other again mounted on a harness, with the motor and fan carried at the front and the dust hopper on the back.

The "Autoblast" is a big step forward in the design of spraying machinery. It is powered by a Ford V8 motor, and consists of a fan capable of developing a 100-mile-an-hour blast, into which the spraying material is introduced. It will spray 30-35 acres of top fruit in a day.

With the conventional type of spraying machine it is necessary to employ 100 gallons of water, weighing 1,000 lb., to apply a few pounds of chemical to each acre. With the "Agro" Atomiser Sprayer only one-tenth of the water normally used is required. The principle is very simple and consists merely of dividing the water into a large number of small particles and spreading them evenly over the crop.

The foregoing, exclusive in its details, but by no means in essence, is only a passage in the much wider story of Britain's post-war effort. It is also surely a passage in the attempt of crop protection scientists all over the world to serve agriculture, upon which, as the events of the last decade have so forcibly reminded us, the maintenance of our civilisation and our progress ultimately depend.



Passengers boarding a S.A.A.B. "Scandia" air liner at Bromma Airport, Sweden. Ten "Scandias" have been ordered for Swedish Airlines. Photograph by courtesy of Svenska Aeroplan A.B.Sweden.

The Priestman "Wolf" Excavator—

(*Continued from page 35*)

readers living in the British Isles and the other for readers living Overseas. The Home Section will remain open until the 29th April next and entries for the Overseas Section will be accepted up to 31st July.

There is no limit on the size of Outfit or number of parts that may be used in building models.

The following prizes will be awarded in each section and will be awarded jointly by Priestman Bros. Ltd. and Meccano Ltd. First Prize, Cheque for £6/6/–; Second Prize, Cheque for £4/4/–; Third Prize, Cheque for £2/2/–. There will be also 10 prizes each consisting of a Postal Order for 10/– and 10 prizes each consisting of a Postal Order for 5/–. In addition Meccano Ltd. will award a number of handsome Certificates of Merit for those competitors whose entries just fail to reach the standard required to win one of the principal prizes.

To enter the contest it is only necessary to send a good photograph, or failing this, a good sketch of the model together with a description of its principal features. The competitor's age, name and address should be written clearly on the back of each photograph submitted and the envelope containing the entry should be addressed: "*Priestman Excavator Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13.*"

A SPOTTERS' NOTEBOOK

Enthusiasts who wish to keep a record of engines they see will find the Spotters' Notebook illustrated on page xiv of the December "*M.M.*" very useful. In it there is room for records of 2,560 locomotives. Notes on buses or motor cars also can be entered.

For other Stamp Advertisements see also page 44.

Stamp Collecting

Early Days in the Hobby

By F. Riley, B.Sc.

THERE are always new stamp collectors. Many boys discover for themselves the fascination of collecting and arranging these pieces of gummed paper, with their wonderful range of design and colours. Others see the collections of friends and immediately decide to join in the fun, while many are given stamps, often with albums, as Christmas presents. With these beginnings collecting may be a little haphazard at first, and this article is intended to help those starting the hobby to begin on good lines.

First and foremost, an album must be obtained. Stamps kept in a cardboard box or in envelopes can give no real pleasure to anybody, and would soon become grubby and damaged. Stamps in good condition well arranged in countries on the pages of an album make an attractive display, and the stamps themselves can be examined freely and easily without suffering any harm.

There are more good albums available to-day than there have been for many years. The kind most suitable for a beginner is probably that in which the pages have country headings, and either have printed spaces for the stamps or a quadrille, that is the page is divided into small squares by means of lightly printed lines. These squares are a great help in placing the stamps in regular and attractive patterns. The paper itself should have a good writing surface. Shiny papers look nice to begin with, but their surfaces easily become marked when removing stamps from them.

One drawback to the stamp album of this kind is that certain pages may become crowded, leaving no room for further stamps of the particular country concerned. This difficulty is avoided by the use of the loose leaf albums popular with more advanced collectors. In these separate sheets are bound in a case, so that one or more can be inserted at any place to accommodate extra stamps. Care however must be taken not to put in more sheets than the binding case itself will hold comfortably.

Stamps themselves have a certain thickness, and a pile of sheets on which stamps have been mounted will be bulkier than one of blank sheets. For this reason many albums have strips of paper between the leaves under the binding, which have the effect of separating the sheets sufficiently to allow for the presence of stamps. Albums of this kind do not swell uncomfortably when filled with stamps. Finally the album itself must always be kept in its case, or otherwise protected, and the surfaces of the stamps in it should be preserved by placing sheets of thin transparent paper over them.

It is bad practice to handle good stamps, whether mint or used, and it is well to form good habits from the start. For this reason the beginner is advised to get a pair of stamp tweezers and use them. He may feel a little awkward at first, but he will soon become expert in handling his stamps with them.

A packet of good hinges is a real necessity. Stamps should always be removable, and even while on the album page it should be possible to look at the back in order to see the watermark. With the stamp hinge this can be done. It is a short strip of special paper gummed on one side. To use a hinge it is folded, with the gummed side outermost, making one arm about twice as long as the other. The short arm is moistened at one spot and stuck on the stamp, with the fold just beneath the perforations at the top. A spot on the long arm of the hinge is then moistened, the stamp is turned over, placed in the correct position on the page and gently pressed down so that the hinge will stick. The pressing should not be done with the bare fingers; a slip of clean paper should be laid on the stamp first. The least possible amount of damping is required. Wetting the hinge, or even damping it all over on the gummed side, is unnecessary and liable to make a mess of things.

Another point to bear in mind is that the hinges should be of good quality. Never be tempted to buy poor hinges because they are cheaper. Although these may cost less at first they will involve greater expense in the long run, for cheap hinges may not "peel" quickly. When a good stamp hinge is thoroughly dried it will continue to adhere to the album page, but a gentle pull will detach it. With a bad hinge an effort to peel off a stamp will result in damage to the surface of the page.

If by any chance a stamp is fixed in the wrong place, or is not straight, wait until next day to peel it off.

For other Stamp Advertisements see also page 42.

Stamp Gossip

and Notes on New Issues

By F. E. Metcalfe

THE most popular stamps which appear every year in the British Commonwealth are the pair from New Zealand. The famous "Health" stamps of course are those referred to and, as we have been saying for years now, this year's issue breaks all records in numbers sold. In Wellington over £9,000 worth were sold the first day of issue, and Auckland touched almost £4,500. As a third of all this goes to children's charities, who can say that stamp collectors are not of some use to the community?

As usual the two stamps have a total face value of 4½d., but as New Zealand currency has gone up 20 per cent. in relation to sterling since last year, collectors at home will have to pay an extra penny a set. There is a chance this year of a prize, if you manage to get a copy of the second stamp on the first row of the 2d. + 1d. value, for this has a very nice variety, which will probably find its way into the catalogue. The "error" consists of a missing dot under the D of 1D. This variety should be worth a number of shillings in a few months, so be sure and check up your copy.

Such is the interest in the "U.P.U." commemorative issues that it is difficult not to refer to them. The writer of these notes stood talking to the proprietor of a London stamp shop for about an hour recently. During that time about 30 customers came in and bought stamps, and not a single stamp was asked for which was not a "U.P.U." issue. As previously mentioned, a complete set of these stamps will be a desirable property; alas not everybody will be able to afford to buy all the sets, even if they buy them as soon as they come out, for there has been a lot of juggling with prices and sets like Yügoslavia, etc., cost 10 times face at the very beginning.

New Zealand did not bring out a set, as its appearance would have coincided with that of the "Health" stamps and the authorities were not willing to do anything that might interfere with the sale of the charity issue.

Australia's single stamp was a beauty, made more popular by having a horse instead of the ubiquitous globe as the principal motif. There is only room to illustrate one "U.P.U." stamp this month, and Australia would have been selected, but this stamp will get all the publicity it wants, so an unpretentious item from Indonesia has been selected instead. This country has produced two stamps, and they are really nice and restful, restful indeed compared with the giant affair from Brazil. This stamp was issued a few months ago in homage to President Roosevelt. The collecting of stamps bearing the portrait of the late President is becoming quite a cult in the U.S.A., and a number of post offices have not been slow in cashing in on the craze. Countries like San Marino have been well to the fore, and recently a set was placed on the market from Ecuador, but it seems that the set was not official. Abyssinia has also issued a set—and of course Liberia and Monaco—about which there are some doubts, but anything goes with some collectors in the west, but the moral over here is, stick to your own Empire's stamps. They are safer and just as attractive.

This is perhaps a good time to take stock of collecting in 1949. One notable aspect was the almost fantastic popularity of K.G. VI stamps, and it is probably true to say that now there are as many collectors of these issues in the Empire as there are of all other stamps put together. There is a good deal of justification for this popularity, for most collectors spend more on their collections nowadays than they can afford to throw away on a mere hobby. In other words, they have to consider the resale value of their collection, and it is a fact that the resale value of a K.G. VI collection is, generally speaking, much higher in relation to what one spends on mint stamps at any rate, than that of any other group collection. The devaluation of the pound has also helped, for it has encouraged the sale of these stamps in the U.S.A.

There may be many junior collectors who would like to take up K.G. VI stamps, but whose pocket money does not allow a large outlay. To these I would say, get a cheap loose leaf album—and be sure to keep it spotlessly clean, for dealers won't buy mint stamps in soiled albums—and then buy a current set as and when you can afford it, up to say 3d. Dealers stock these short sets, which cost about a shilling or so each, a sum that most can afford, and they also sell the higher values separately.

The last illustration this month is of a stamp issued by Eire, or the Republic of Ireland, to give it its proper title. A lot of silly remarks have been written about Irish stamps, just because the designs are not the usual chocolate box top type of art. Probably they are not pretty, but they are real art nevertheless, which is more than can be said about many of our own issues, and the Irish Government plays fair with collectors, a very important point. The commemorative stamps of Ireland are distinctive in appearance and within the reach of all, with no pound stamps obviously prepared to catch out stamp collectors. The stamp illustrated is in honour of that great poet James Mangan who was born in 1803 and died at the early age of 46. A great loss to Ireland.

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.

Which Cover Did You Like Best in 1949?

Above are reproductions in miniature of the 12 covers of the issues of the "*M.M.*" during last year. These of course are in black and white, and so do not give any real idea of the brilliancy and colour of the originals, but they will serve as a guide to readers who enter our 1949 cover voting contest.

All that is required in this contest is that each entrant must state on a postcard: A, which of the 1949 covers he likes best; and B, in what order he thinks they will be placed by the combined votes of competitors. In each section of the contest the covers must be referred to by the names of the months in which they appeared, and it is not necessary for a competitor to place his own choice at the head of his list under the second heading.

The names and addresses of entrants must be written on their postcards and these should be addressed to "*1949 Cover Voting Contest, Meccano Magazine, Binns Road, Liverpool 13.*" There will be the usual sections for Home and Overseas readers, with prizes in each of 21/–, 15/– and 10/6 for the best entries in order of merit, and in addition there will be Consolation Prizes for those who just fail to secure one of the principal awards. The closing dates are: 28th February in the Home Section and 31st May in the Overseas Section.

Animal Drawings

A very large proportion of readers have animal pets, and practically all are always keen to visit Zoos and to enjoy the movements and antics of some of their inhabitants. Because of this we are taking animals as the subject of a drawing contest that is certain to be immensely popular.

There is no restriction whatever in regard to the kind of animal chosen for an entry for this competition. Readers who have pets may try to give some idea of these, and others may send in drawings of animals they have seen in Zoos or elsewhere. Any kind of drawing may be submitted, whether in black and white or in colour, but competitors must bear in mind that it is the drawing itself, and not the use of colour, that judges will take into account.

There will be two sections in this competition, one for Home readers and the other for those living Overseas. In each of these sections there will be two classes, one for competitors of 12 years of age or more and the other for those under 12, so that younger readers of the "*M.M.*" need not hesitate to send in entries. In each of the four divisions of the competition there will be prizes of 21/–, 15/– and 10/6 for the best entries in order of merit, and in addition there will be Consolation prizes for efforts showing merit, but not quite reaching prize-winning standard.

Competitors must remember to put their ages as well as their names and addresses on their entries, which should be addressed "*January Drawing Contest, Meccano Magazine, Binns Road, Liverpool 13.*" The closing dates in this contest are 28th February in the Home Section, and 31st May in the Overseas Section.

January Photographic Contest

The first of our 1950 series of photographic contests is a general one, in which we invite readers to send in prints of any subject. There are only two conditions—1, that the photograph must have been taken by the competitor, and 2, that on the back of each print must be stated exactly what the photograph represents.

The competition will be in two sections, A for readers aged 16 and over, and B, for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas Sections.

In each section prizes of 21/–, 15/– and 10/6 will be awarded. Entries should be addressed "*January Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.*" Closing dates: Home Section, 31st January; Overseas Section, 29th April.

From Our Readers

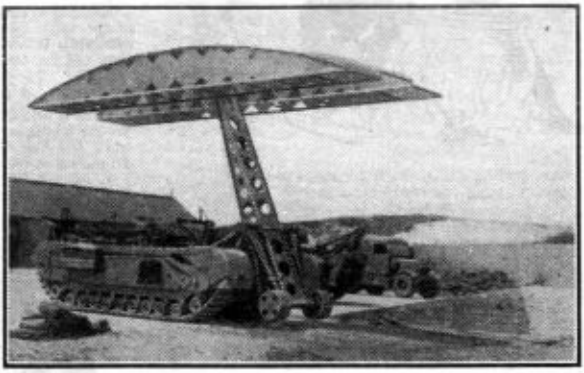
This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs 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 PORTABLE BRIDGE

The machine shown in the upper illustration on this page is a bridge-layer, which goes ahead of fighting tanks and lays its bridge over any anti-tank ditch that is likely to obstruct the following vehicles. The bridge-layer stops in front of the ditch and a motor inside is started up, raising an arm which is attached to the point of balance of the bridge section. The latter is pivoted and so remains parallel to the ground from the moment when it is raised from its rests until it is lowered across the ditch. As soon as the bridge has been laid in place, the bridge-laying tank withdraws, taking with it the arm. The bridge is then left free for following tanks to pass over. It will bear the weight of any known tank.

When everything has passed over, the layer moves forward with its arm on the ground and slides it back into position on the bridge. The motor is again started up and the bridge is lifted up so that it rests compactly on top of the tank once more.

A. C. A. BENDA (Winchester)



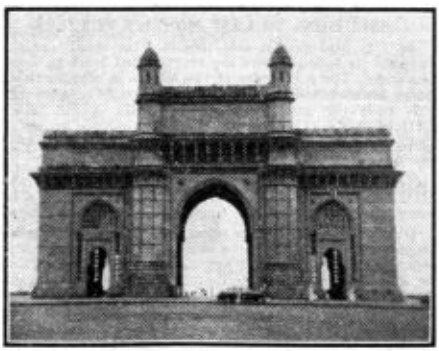
A bridge-laying tank at work. Photograph by A. C. A. Benda, Winchester.

THE GATEWAY OF INDIA

The Gateway of India, seen in the accompanying illustration, is in the south-eastern part of Bombay, the greatest city of India. This beautiful piece of architecture is the first thing that catches the eyes of all foreigners visiting India, and appears to welcome all newcomers entering Bombay harbour.

The monument was built to commemorate the landing in India of their Majesties King George V and Queen Mary on 2nd December 1911, and was the work of George Wittet, Consulting Architect to the Government of Bombay. It was specially utilised for the ceremonial entrance and departure of British Viceroys, and of Governors of Bombay. Granite that is peculiar to India was used in its construction. This allows very intricate carving, which is performed by craftsmen with the aid of crude tools.

IVAN C. DYER (Bombay)



The Gateway of India, an impressive feature of Bombay Harbour. Photograph by Ivan C. Dyer, Bombay.

LIFE IN THE MALLEE

I was interested in the article "*Red Rain*" contributed by J. H. Crawford to the June "*M.M.*" This rain is by no means so common in Melbourne as the article suggests. In fact it falls very rarely indeed, and there is no great amount of red mud left by it. It is also not correct to attribute the colour to dust from the Mallee, in the north west part of Victoria. The dust that reddens the rain comes from farther north.

I was born in the heart of the Mallee and lived there many years, and I can assure readers that its soil is light brown in colour and does not form a sticky dust. When supplied with water it grows wonderful crops of wheat and oats, and feed in plenty for healthy fat sheep. The farms are well equipped, and some homesteads have electric lighting, refrigerators and telephones. There is no irrigation in the section where I lived, but once a year water flows along a series of open waterways from a large storage basin 200 miles away to fill up the farmers' dams. This water is used for live stock, while crops rely on rain water. Most farmers have a windmill by the dam to pump water for use in the homestead and gardens. In addition large tanks holding 1,000 gallons fill up from the spoutings of buildings when it rains, providing a standby in times of drought.

In the extreme north of the Mallee, on the border between Victoria and New South Wales, irrigation has developed the country into a wealthy fruit growing district where magnificent grapes, oranges and peaches thrive.

Some beautiful birds make their home in the Mallee and it is not uncommon to find a clothes line green with parrots. Kangaroos and emus also are seen, especially in drought years, when they come from the deserts to seek water. Many aboriginal axes and tools have been discovered in the district and skeletons too have been ploughed up, and there is evidence of old salt lakes in some parts.

MRS. D. M. WHITEHEAD (Mirfield)

Fireside Fun

"Sorry, sir, but we can't send the goods you ordered until you have paid for the last consignment."
"Oh, I can't wait till then. Cancel the order."

• • • •

"Ah, getting dinner ready for me, I see."
"No. Getting you ready for dinner."

• • • •

"I think Johnny is going to be an auctioneer when he grows up, daddy."
"Whatever makes you think that?"
"He's just put the radio under the hammer."

• • • •

"What's that? You've never seen a horse with a wooden leg?"
"Of course not. They'd shoot them first."
"Well, go and look at the roundabouts on the fair ground."

• • • •

"Now I'll show you how to multiply by 10. I write 28.6 on the board, and rub out the decimal point. Where is the point now, Willie Graham?"
"On the duster, miss."

• • • •

"I say, Brown, do you know your hens are coming over into my garden?"
"I thought they must be."
"What do you mean?"
"Well, they never come back."

• • • •

"A tramp who walks in his sleep is the luckiest man alive."
"Why?"
"He has all day to rest in."

• • • •

"Why do they put black engines on freight trains, porter?"
"To pull the wagons, Sir!"

BRAIN TEASERS

ONE INTO TEN

Can you draw four straight lines across a circle in such a way that they will divide the area of the circle into five pairs of similar and equal parts?

• • • •

NOT AN ADDING MACHINE

A typist set out an addition sum on her machine, but in doing so she made a lot of mistakes and what she achieved was the "sum" shown below:

3 (@ /
£ ' &
———
4 6 3 0

The six missing digits are all different from each other, and one of them is 2. What are the others?

B.V.

• • • •

FORWARD AND BACKWARD

A friend of mine told me that his wife's age consisted of the same two digits as his own but reversed. The difference between their ages is 1/11th of the sum. How old are they?

• • • •

I GO TO THE WORKERS

Here is an easy word pyramid to finish with. There are six words in the pyramid, each after the first made from the one before it by adding a letter and re-arranging as necessary. The clues are as follows:

1. Myself. 2. Exists. 3. Take it easy. 4. Position. 5. Usually climbed over. 6. Workers. 7. More workers.

• • • •

"Can you help me, sir?"
"No. I couldn't play a note on that thing."

• • • •

SOLUTIONS TO LAST MONTH'S PUZZLES

In our first puzzle last month "Keyword" helps because its seven letters are represented by 1 to 7 in the code. The remainder of the letters in alphabetical order are denoted by the numbers 8 to 26. Applying this code the message reads I WISH A MERRY CHRISTMAS TO ALL OF YOU.

To solve the second puzzle add 9 to 9 and divide by .9; the result is 20.

The proverb hidden in our third puzzle is A ROLLING STONE GATHERS NO MOSS. Each word, itself hidden, will be found in one of the six clues.

Buying by the square foot in our fourth puzzle would cost 4/8, while buying by the square yard would cost 5/-. The second method therefore would be the dearer, although the cost of the linoleum is lower.

In our last puzzle the Paralytics obtained 18 points, the Rangers 14 points and Half-Day Thursday 15 points.

• • • •

THIS MONTH'S HOWLER

The home of the swallow is in the stomach.

How to get your "M.M." bound

Readers of the "M.M." can have their copies of the 1949 issue bound in the official cover by Messrs. T. L. Duncan, 20, Cumberland Street, Liverpool 1. This cover is in cloth and morocco, and the words "MECCANO MAGAZINE" are embossed in gold on the back, together with the year. The cost of this is 11/6, including return carriage.

Magazines to be bound in this way should be sent, carriage paid, to Messrs. T. L. Duncan at the address given, together with a postal order to cover the cost. Readers doing this should say whether they wish the coloured covers and the advertisement pages to be included or not.

Volumes of the "M.M." from 1942 to 1948 also can be bound in the official cover at the same rate. The charge for those prior to 1942 is 16/6.

READERS' SALES AND WANTS

SALES

20 "M.M.s"; 30 "Children's Newspapers"; Seven Books; Two Puzzles; 40/- post free. Good condition; S.A.E. for list.—D. Edwards, 1, Station Road, Barnston, Wirral.

Model Railway Gauge 0, includes Locomotive, Pullman Car, Dining Car, Three Trucks, large quantity Track, Transformer; all perfect condition. Nearest offer £20.—Frankham, 31, Alderney Gardens, Northolt, Middlesex.

"M.M.s" April 1946–August 1949, as new. Ten complete Sets Senior Service Photo. Cigarette Cards in Albums; perfect. Offers.—Bowker, 11, Norlands Lane, Widnes.

Hornby Electric "*Flying Scotsman*" 4-4-2; Oval Track; Viaduct and One Point; Three Bogie Carriages; One 4-wheel Carriage, and 21 assorted Trucks.—Wood, "Barncroft," Charles Street, Alfreton, Derbyshire.

14 Dinky Toys and a Garage, 18 in. x 14½ in., with two sliding doors. Also Meccano Set No. 5; Crystal Set and a Dinky Builder Outfit No. 2. What offers?—B. French, 123, High Street, Bangor, N. Ireland.

"M.M.s" complete volumes 1934 to 1939 inclusive, 6/- each; 1931/'32, '40 (six copies missing), 12/6; Bound copies, '33, '41, '42, '43, '44, '45, 10/- each; Unbound, 1946/'47, '48, 6/- each. All in perfect condition. Postage Extra. — Payne, "Hillcrest," Westerleigh, Nr. Bristol.

Complete Prestacon Outfit, used very little, as new, cost £4/4/-; accept £3/3/-; or exchange for Hornby-Dublo Set.—F. Pike, 120, Queen's Drive, Queen's Park, Glasgow S2.

Bargains: 8/6 Books sold 3/- to 4/-; good condition. List includes books by T. C. Bridges, Freeman Wills Croft, Major Charles Gilson, Jeffrey Hamilton, Caleb Hawker, W. E. Johns, James Kenyon, Michael Pool, Arthur Randsome. Write for list. Other authors in stock.—D. C. Wasdell, 46, Englestede Close, Handsworth Wood, Birmingham 20.

MECCANO MAGAZINE

Registered at the G.P.O., London, for transmission by Canadian Magazine Post.

EDITORIAL AND ADVERTISING OFFICES:
LIVERPOOL 13, ENGLAND.
Telegrams: "Meccano, Liverpool."

Readers' Sales and Wants. Private advertisements (i.e., not trade) are charged 1d. per word, minimum 1/-. Cash with order. Readers' advertisements are published as soon as possible; inclusion in the first issue after receiving them cannot be guaranteed.

Large Meccano Set, including a No. 2 Clockwork Motor (new), Gears, Sprockets, plus a large number of Extras and Special Parts; cost over £8; accept £4. Also Eight Dinky Toys and Three Supertoys, £1.—R. Carmichael, "Coylet," Horam, Sussex.

S.E.L. 4/6-v. Reversing Motor, 15/-; Permanent Magnet, lifts 7 lb., 7/6; Few Meccano Parts.—Swinscoe, Maldon Wood Farm, Weeley Heath, Clacton-on-Sea.

Hornby Gauge 0 Train Set for sale, includes: 40 Rails; Engines; Rolling Stock; Station; Level Crossing; £5 or nearest offer. Details from Simmons, 5, Kingsmead Avenue, Worcester Park, Surrey.

"Our Railway History," Rixon Bucknall, 7/6.—Swindell, 21, Ranmoor Gardens, Harrow, Middlesex.

Meccano No. 5, 30/-, and No. 5A, 6/-, both complete; "Bumac" variable-speed Steam Engine, 25/-, new condition; Revmaster Electric Motor, 6/-; Meccano *Magic* Motor, 2/-.—S. Priestley, "Beechwood," Barbon, Carnforth.

Dinky Toys (35) including one Supertoy, in perfect condition, at 40/- or nearest.—Stephen Falkner, 128, Milton Road, Cambridge.

"M.M.s" January 1944–January 1948 (one missing); Aeroplane Meccano; Meccano Steam Engine; Dinky Toy Ships, 18 complete. Best offers secures.—John Farr, Luckington Rectory, Nr. Chippenham, Wiltshire.

18 Dinky Toys, £1/0/8; Dinky Petrol Pumps, 2/-. All good condition.—Michael Green, 134, Silverdale Road, Hull.

20-v. 2-4-2 Lionel Loco. and Tender, Gauge 0, £3/10/- or offer. WANTED: 0 Electric Straight Rails.—Harwood, 1, Warden Terrace, Eastchurch, Sheerness, Kent.

As new—"What Engine is That?" (Webster); Mechanical Details of British Railway Engines, e.g., Tractive Effort; cost 10/6; highest offer secures; also Philip's "British Railway Map," cost 3/-.—Johnston, 11, Blackthorn Avenue, Manchester 19.

15 Dinky Toys, perfect condition, £1.—M. Laurie, Greenfield House, Pitkerro Road, Dundee.

Hornby-Dublo Rails, Rolling Stock and Accessories, Electric; S.A.E. for list.—Lewarne, 186, Pasley Street, Stoke, Devonport, Devon.

"M.M.s", Railway Periodicals and Books; also Stamp Collection with Accessories; S.A.E. for particulars.—Measures, 86, Glenesk Road, Eltham, London S.E.9.

WANTS

Meccano E20b Electric Motor and suitable Transformer or Meccano Steam Engine in good condition. Write—B. Crookston, Greatworth, Banbury.

Three Hornby Points, Right-hand, Left-hand and one other, 2 ft. radius; also a pair of Buffer Stops. All Electric and Gauge 0. State price.—Wilkinson, "Glenside," Harley Wood, Todmorden, Lancs.

Quantity of Hornby Electric 2 ft. Radius Rails, Points.—B. Worley, "Carlton Pantry," Henley Crescent, Braunstone, Leicester.

Urgently: Super Model Construction Leaflets; Meccano Standard Mechanisms Manual; any editions Meccano Book of New Models; also Meccano Manuals for Large Outfits years 1925 and 1928. State prices and particulars.—W. N. Cramer, 801, N. Grant Avenue, Clinton, De Witt County, Illinois, U.S.A.

DINKY BUILDER

The Building Toy for Younger Folks

Simplicity is the keynote of this fascinating building system. With Dinky Builder hinged plates and rods, the youngest children can build all kinds of models with the greatest ease—Furniture, Buildings, Windmills, Wheel Toys and scores of others.

The parts are beautifully enamelled in blue and yellow. They can be used over and over again. Nuts and bolts are not used in this system.

Two Complete Dinky Builder Outfits are available—No. 1 and No. 2

For prices see current list

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