VOL. XLVIII. No. 2 FEBRUARY 1963

MECCANO MAGAZINE

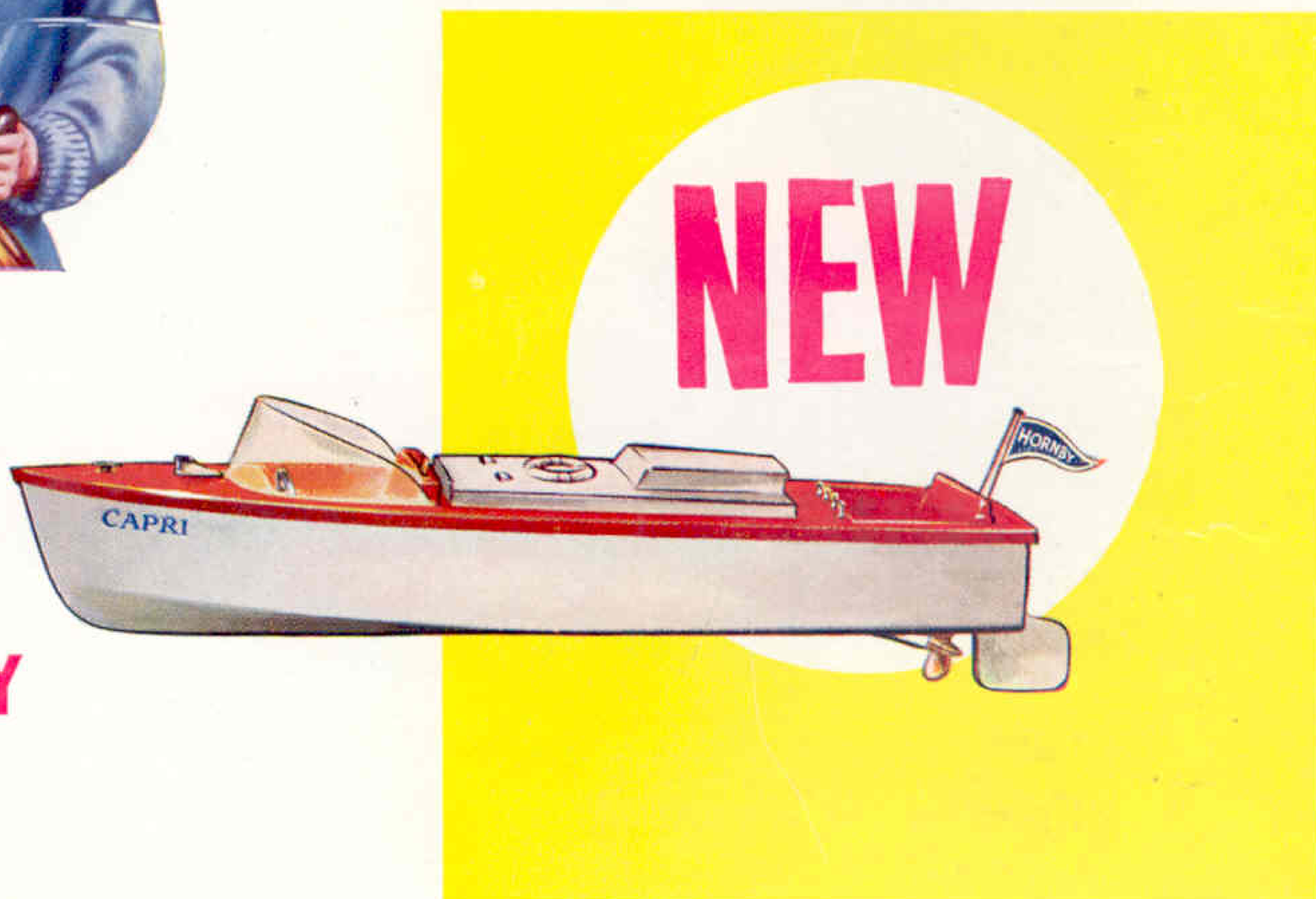
1/3

HORNBY SPEED BOATS

Model No. 10
ELECTRIC MOTOR LAUNCH CAPRI

The motor launch Capri represents a typical high-powered pleasure craft with twin cockpits and windscreen. It is fitted with an efficient electric motor, driven by two $1\frac{1}{2}$ volt batteries (Ever Ready U11 or equivalent), and achieves a speed of 100 ft. per minute. This sleek model, moulded in high-impact Polystyrene, has plated steering wheel and fittings. A plastic pennant is supplied bearing the name "Hornby".

Length $11\frac{5}{8}$ in. Beam $3\frac{1}{8}$ in. U.K. Price **17/6**



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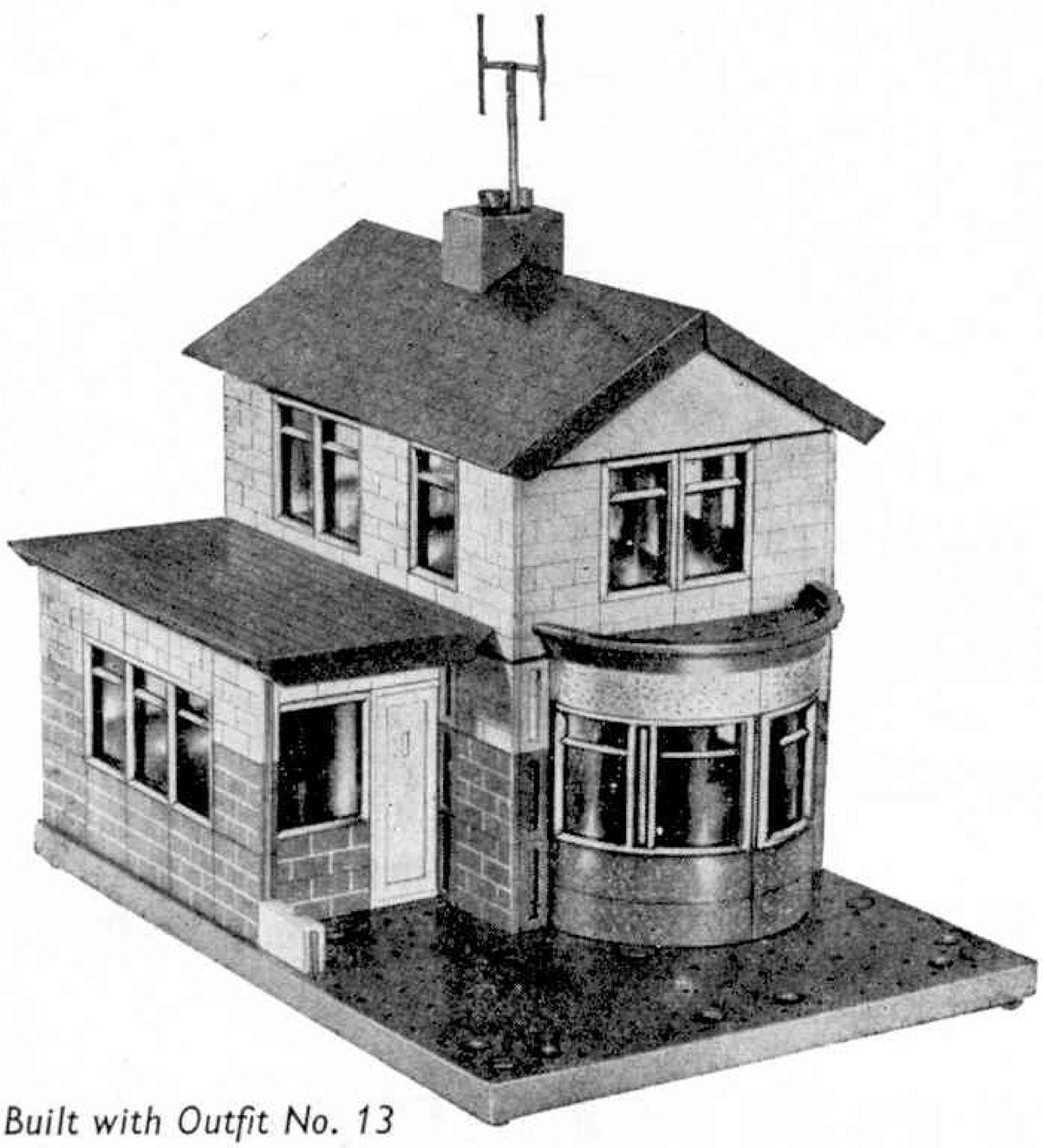
Outfit No. 13



Built with Outfit No. 13

It adds greatly to the fun and interest of the hobby to be able to purchase spare parts separately, a few at a time, or in small packs of assorted parts, to build these attractive larger models. Most Bayko dealers stock spare parts. Model builders unable to get spares should write to Meccano Limited.

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No. 12 Outfit		**19**	**9**
No. 13 Outfit	**1**	**8**	**3**
No. 14 Outfit	**2**	**4**	**6**
No. 15 Outfit	**3**	**15**	**0**

Bayko Accessory Outfits			
No. 11c Accessory Outfit ..		**8**	**9**
No. 12c Accessory Outfit ..		**12**	**3**
No. 13c Accessory Outfit ..		**19**	**9**
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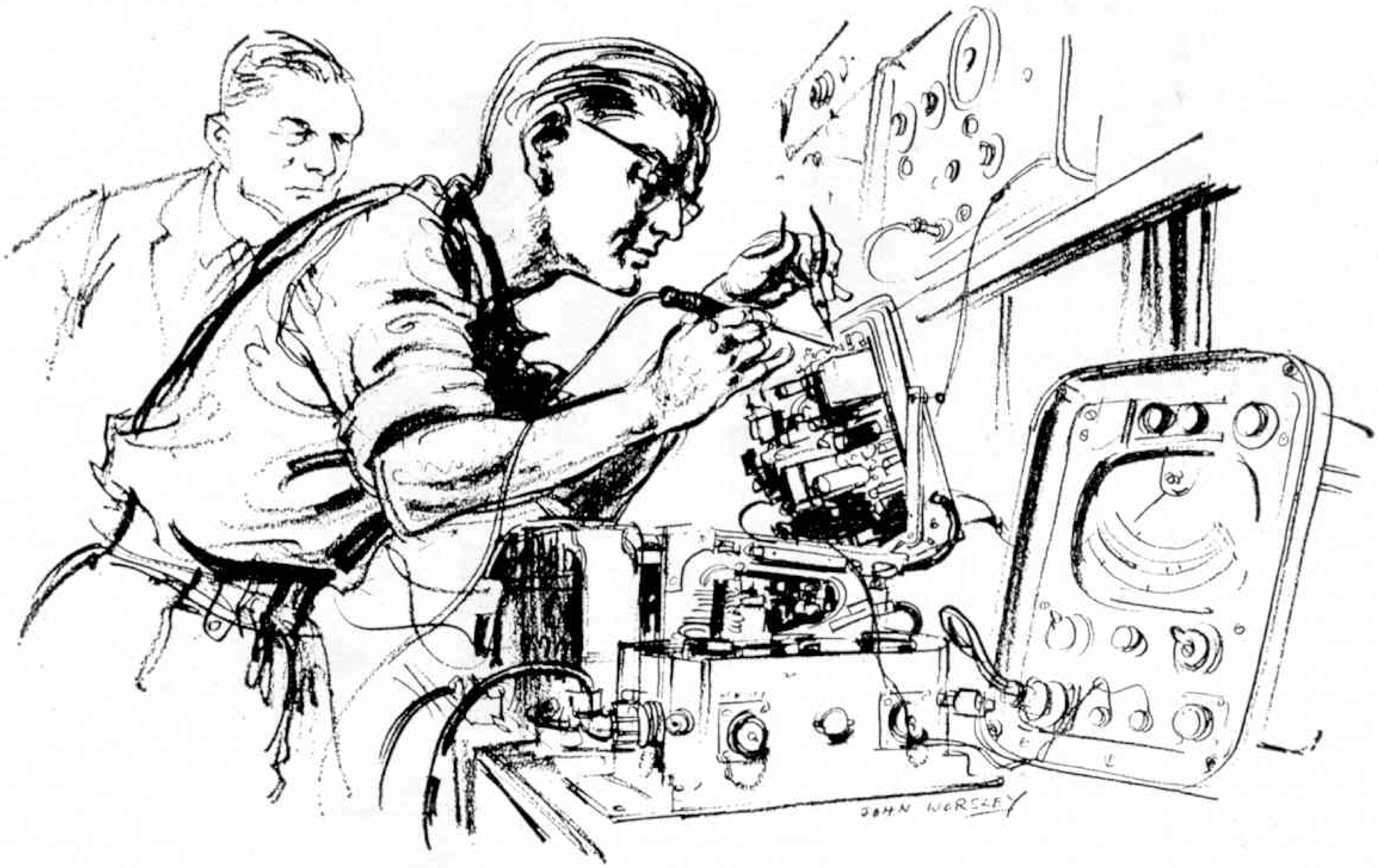

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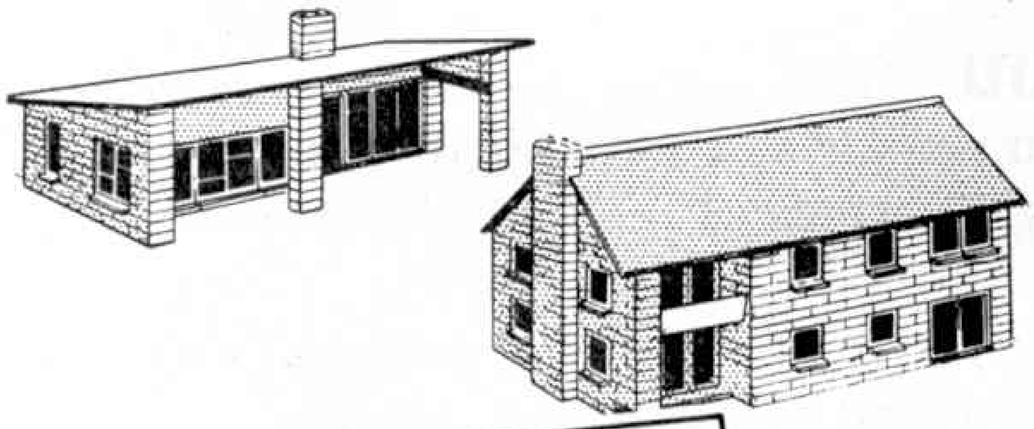

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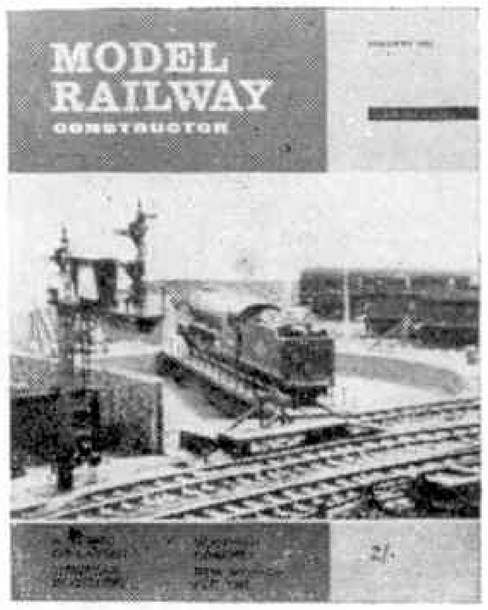

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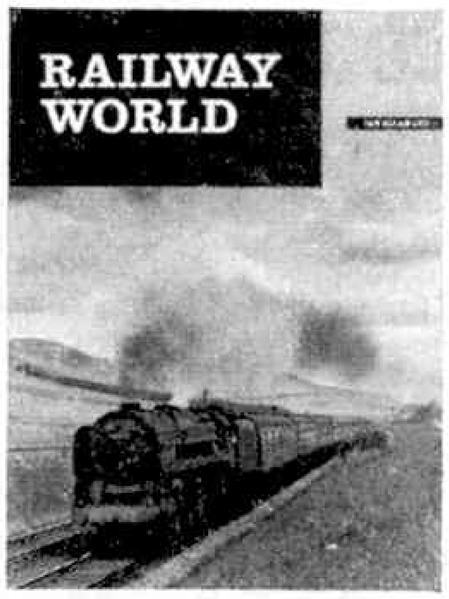

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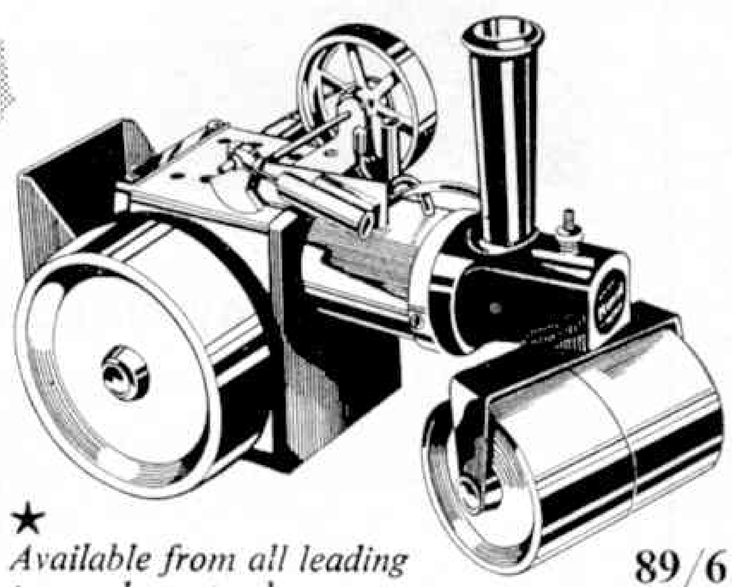

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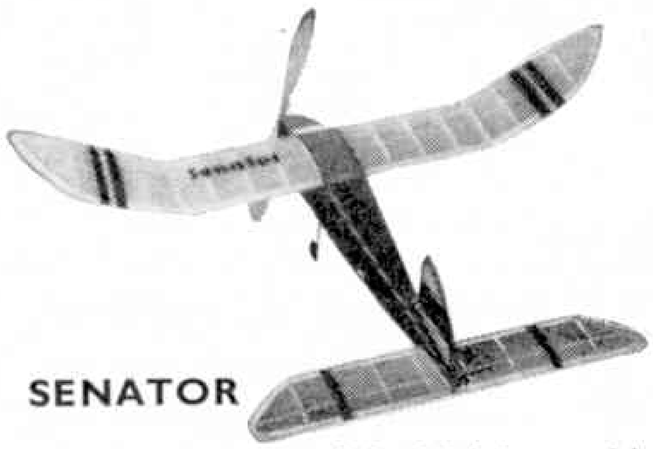

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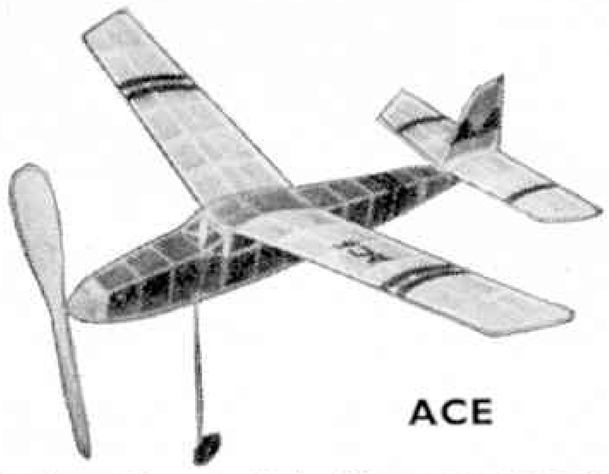

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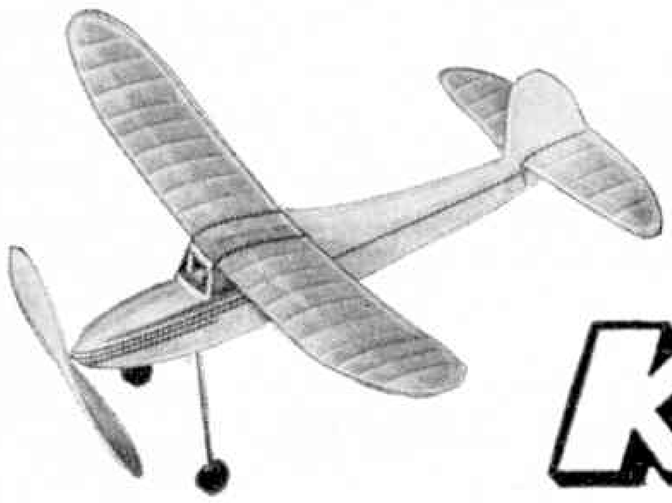
Sleek cabin model. Construction is very simple, and the number of cut-out sheet parts have been kept to a minimum. Wingspan 30 in. **7/4**



COMPETITOR

The pleasing lines of this model have made it one of the most popular in the K-K range. Performance is outstanding. Wingspan 32 in. **10/6**

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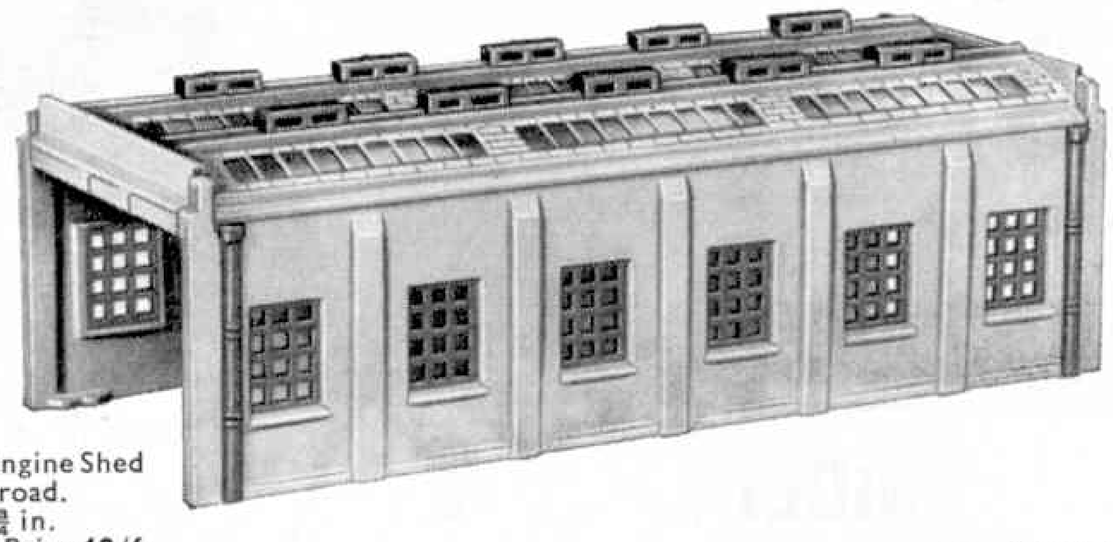

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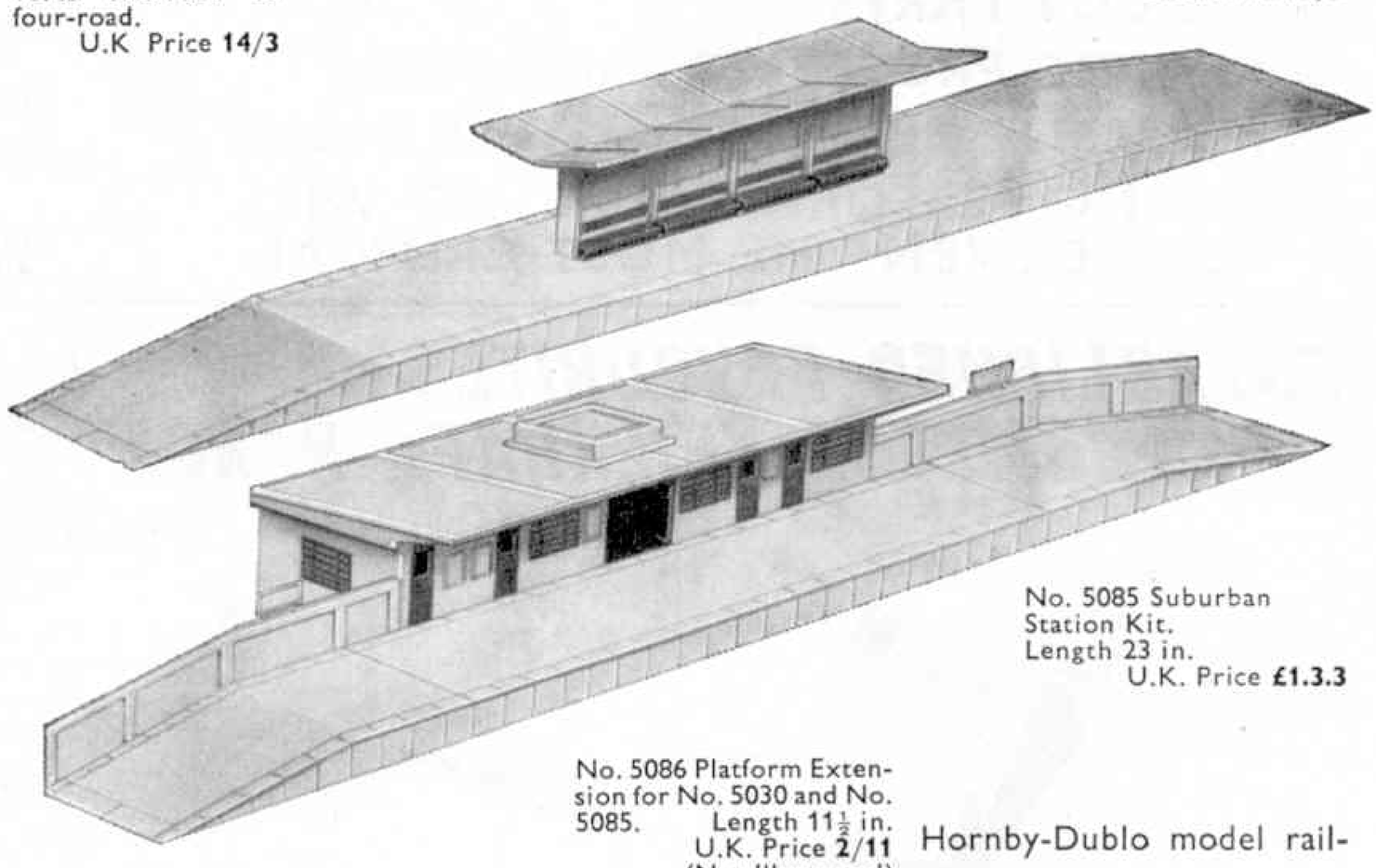

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(Not Illustrated)

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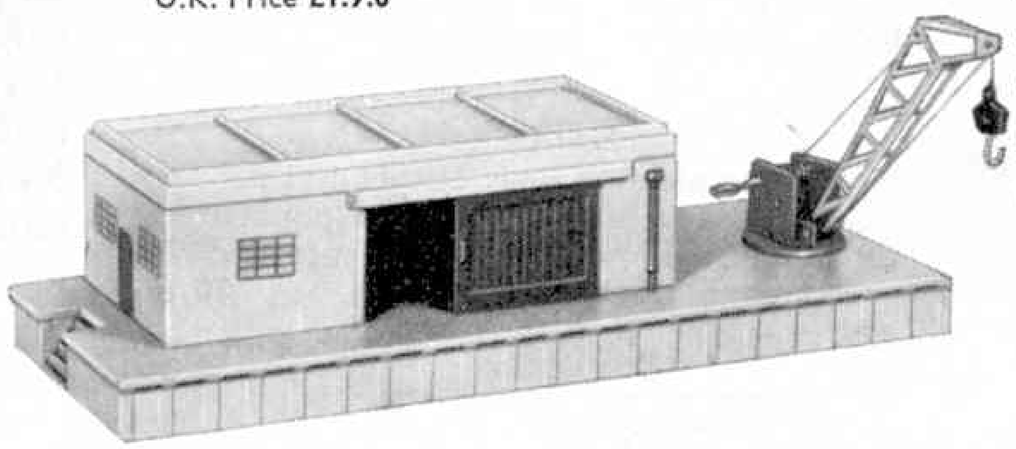
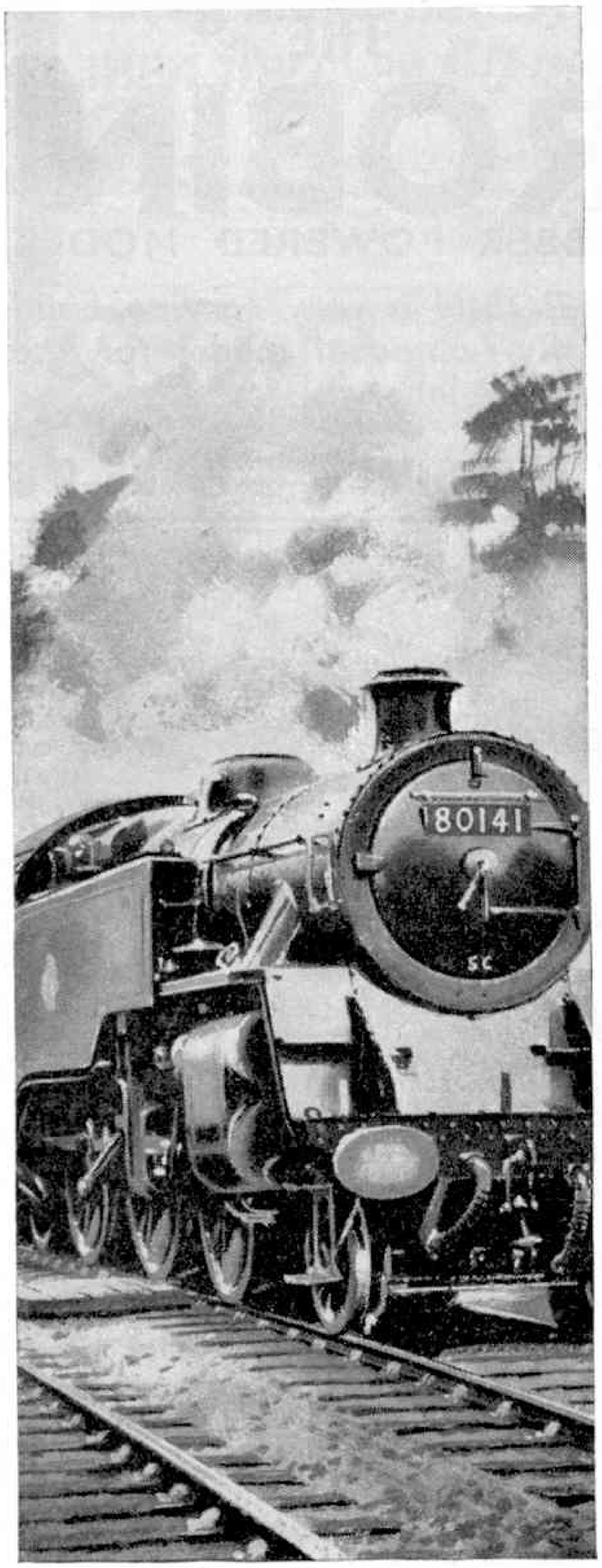


Hornby-Dublo model railways are getting a new look with these build-it-yourself kits of moulded polystyrene parts. They can be assembled in a few minutes, and dismantled even more speedily. The Engine Shed, and the platforms of the passenger Stations, can be extended by the addition of separate sections.



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Editor:
GEOFFREY BYROM

Asst. Editor:
ERNEST MILLER

WHEN I and others of my generation were young, we used to thrill to the exploits—then purely figments of an author's imagination—of mechanical men who could bestride the earth and perform tasks of a super-human nature. To the boy of the present age such inventions are no longer fiction; they do exist and form part of the world's scientific and industrial make-up. You will find in this month's *M.M.* an article about "O-Man", "Yes-Man" and other mechanical creatures that serve some of the needs of modern industry; as a preliminary to this, I am introducing you to a machine known as Mobot, pictured above. Developed by the Shell Oil Company in the U.S.A., Mobot can work on oil wells 1,000 feet down on the ocean bed. It can swim, see, hear, and has a "nose" that can turn screws, work valves, and grip pipes and hoses. It can also wield a wire brush and other tools.

Mobot's first job was to complete a well off the coast of Santa Barbara, California. As you probably know, because most of the promising areas on land have already been explored, drilling in the open sea has become the oil companies' biggest hope of finding new oil and gas fields. Since, however, exploration at great depths rules out the use of conventional well-head equipment, placed on a platform projecting above the water, the necessary components have to be assembled on the floor of the ocean itself, and the well put into production by remote methods. Mobot can carry out these tasks at greater depths, and for longer periods, than any human deep-sea diver could cope with. Electro-hydraulically operated from a master control centre aboard the drilling vessel, Mobot swims down to its work, using two adjustable propellers. A gyroscope gives it a sense of equilibrium. The device can see up to 30 feet by means of self-contained lighting and a TV camera, which transmits its field of view to a screen in the control centre. Sonar acoustic equipment, possessing a bat-like squeak, is used to locate well-head or other metal objects at greater distances. A sensitive microphone enables the robot to listen to the various operations it performs.

THE EDITOR

Next Month: Master of the Queen's Horse-Power

THIS MONTH'S CONTENTS INCLUDE—

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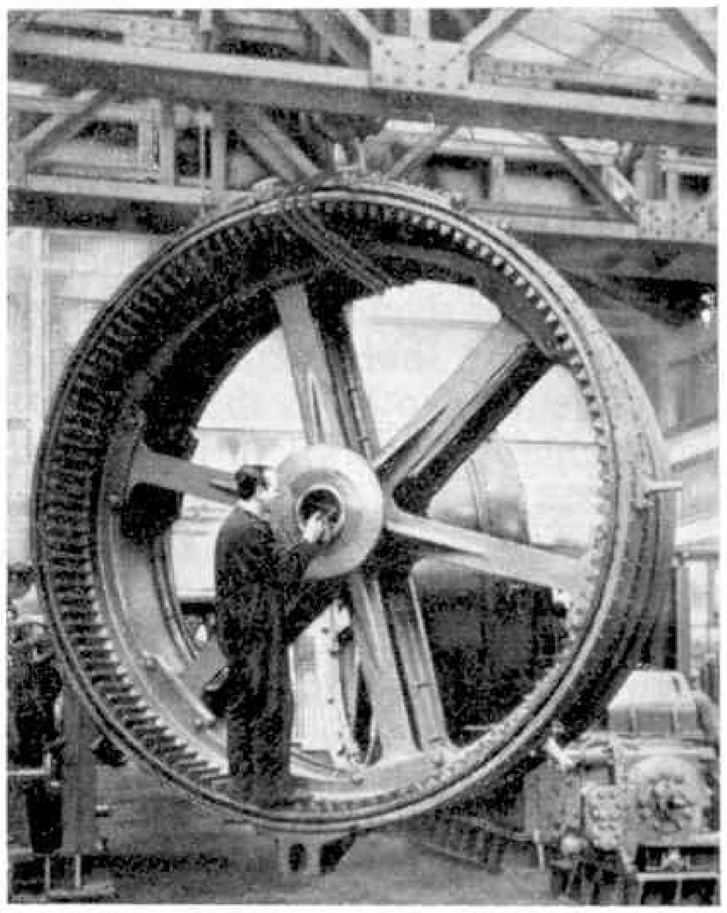
OUR FRONT COVER

We are indebted to Johnson & Phillips, Limited, of London, the well-known electrical engineers and cable makers, for this month's cover. It shows one of the firm's fitters working on the forward cable-laying machinery designed and constructed by their Marine Department for the 8,000-ton vessel Mercury, *built at Cammell Laird's shipyard, Birkenhead, for Cable & Wireless, Ltd. The machinery, electro-hydraulically driven and servo-controlled from remote console units, consists of separate port and starboard machines for picking up and paying out deep sea cable, together with hauling-off and holding-back gear, guides, cable drums, lead sheaves, 3-sheave bow gear, and other equipment. Cable drums and bow sheaves are all 10 feet in diameter.*

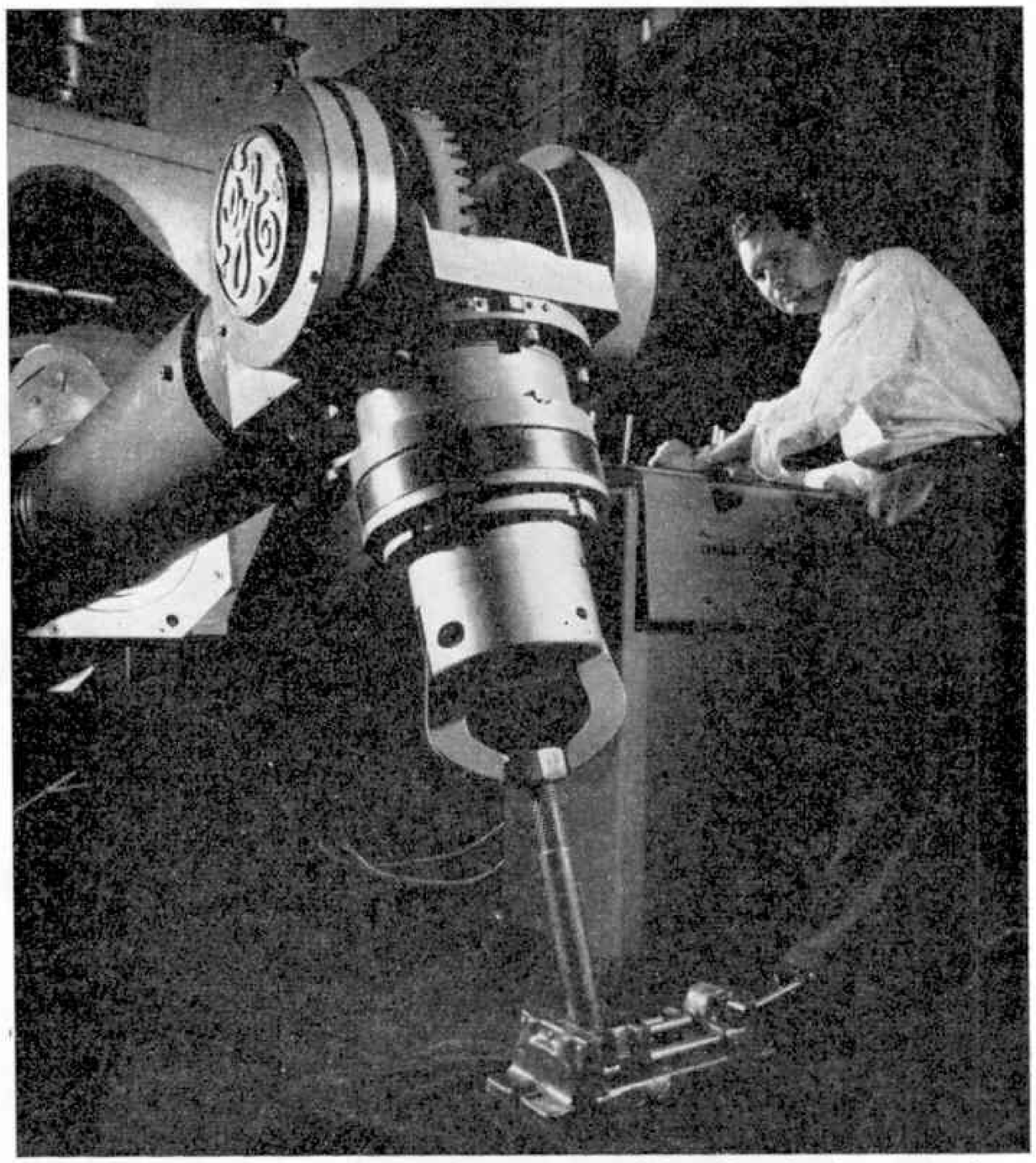


MECHANICAL MANIPULATORS OF TODAY

MORE and more powerful and ingenious machines are needed today because of the ever-growing needs of science. Many of these inventions have resulted from following the straightforward engineering principles employed in Meccano, or other building sets of an educational nature. The "Electron Optical Bench", for instance, was invented by an American engineer after watching his son, who was playing with a building set presented to him at Christmas, convert a suspension bridge into an oil derrick merely by moving a few toy girders.

Described by

Charles A. Rigby



Mechanical Arm. "O-MAN", threading a nut on a bolt, with a development engineer at the controls. The photographs illustrating this article appear by courtesy of U.S. General Electric.

Perhaps the world's most powerful mechanical arm was developed several years ago in America. Named "O-Man" (for Overhead Manipulator), this 15-ton remote-controlled giant makes possible the assembly or dismantling of large machinery by the twist of a knob or the flick of a lever. This mechanical "Tarzan" was built as the answer to the need for a device with several times the lifting power of existing mechanical arms, yet with equal versatility.

By comparison, if a man were as strong as "O-Man" he would be able to carry 5,000 lb. on his back, lift 3,000 lb. from the floor, hold 1,000 lb. with his arm extended horizontally, or lift and manipulate a piano with his forearm and wrist.

"O-Man's" chief job is to pick up heavy parts, position them and fasten them into place. It can drill and tap holes, use power wrenches, hammers, or riveters, and if need be, can handle a sheet metal saw.

While its grip lacks the flexibility of human fingers, it otherwise possesses the same degree of motion as the human hand and arm, plus the ability to telescope its "forearm" and revolve its wrist.

In a special test, it twisted an iron bar into a corkscrew then tied it into a neat knot. Yet, although not intended for delicate tasks, "O-Man", with its twin steel fingers, can whip up, slice and serve a cake or pick up and pour a glass of water, so refined can its touch be made.

Resembling a gun turret, the big device operates from a crane bridge, its vertical manœuvrability ranging from floor level to the height of the crane bridge. Power control is supplied by means of 140 separate wires in multi-festooned cable. The heart of the control mechanism is a system of eight amplidynes—devices that provide automatic control giving smooth operation and limiting all motions to prevent damage to equipment.

"Yes-Man", another mechanical manipulator is a two-armed electro-hydraulic machine which, if need be, can perform sensitive mechanical tasks at the bidding of its "master" thousands of miles distant. The most dexterous master-slave manipulator yet devised, it is designed primarily to do the job of a mechanic in radioactive areas too dangerous for human beings to work in.

"Yes-Man" actually consists of two machines which have almost identical pairs of arms and hands resembling a dentist's drill rigs. One is a "slave" and the other the "master", and they are virtually twins except that the former has claw-like fingers on each hand and no operator's seat. Its arms, elbows, wrists, hands and fingers are electronically geared to duplicate simultaneously the exact motions of the master.

To perform a given mechanical task, the operator seats himself in the master seat, straps his own arms and fingers into the mechanical arms and fingers, and watches the slave duplicate each motion he makes. Its chief advantage is dexterity, for it has two fingers and a thumb on each hand, plus wrists and elbows to give it wide flexibility.

Instead of pushing buttons and controls, the operator actually goes through the desired arm and finger motions for the task at hand. Operating the master machine, he can "feel" the force encountered by the slave as it tackles the job. This sensitive touch enables him to control this part of the machine with a high degree of proficiency in handling a wrench or a screwdriver, pouring water, placing

"YES-MAN", the two-armed electro-hydraulic machine doing a make-up and hair-do job on a model.

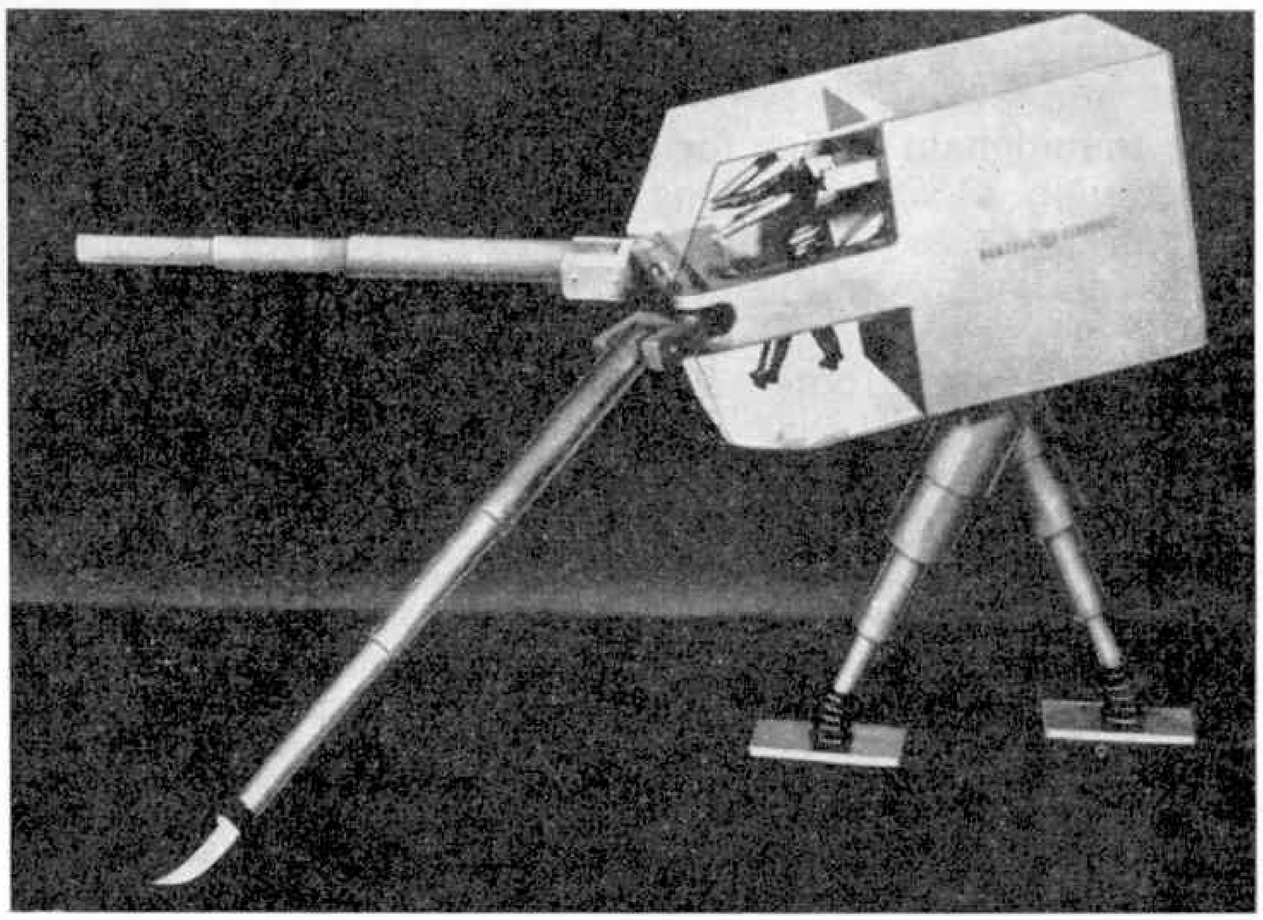
objects, or virtually any other mechanical chore. It permits him to perform intricate operations in hazardous radioactive areas remotely and at a safe distance.

Were the master directing the slave thousands of miles distant, "Yes-Man" would require many telephone channels, and, to see what he was doing, one TV channel. In spite of the distance between them, the operator of the master would still "feel" what the slave was encountering. Normally, operating distances are nowhere near as great and the problem of interconnecting master and slave is simpler.

Although not the strongest manipulator ever built, it is the strongest "spatial correspondence" system devised, i.e. the strongest manipulator giving the operator the advantage of controlling many complex motions in a "normal" manner without having to think about which push-buttons must be operated to achieve the desired motion. It can lift up to 100 lb. in certain positions, and 25 lb. in any position.

The system consists of two master arms, one left and one right, each with two fingers and a thumb; left and right arms on the slave with corresponding finger arrangement; two separate hydraulic pumps; a rack of electronic amplifiers and two groups of electro-hydraulic valves, which convert the electrical signal into hydraulic power. This, in turn, operates the slave and gives the master its ability to "feel". The slave can be mounted on a variety of devices to extend its work area —overhead cranes, rollers, a dolly, a remote control truck or whatever is practical to obtain access to its work.

Another wonder machine of this type is also being developed. This is the Pedipulator, a manned robot "walking machine", able to stride on legs twelve feet long across terrain at a speed of 35 miles an hour. When perfected it will provide a means of transporting men and supplies, or carrying out such tasks as fire-fighting or rescue work in places that are difficult or impossible to reach by wheeled or tracked vehicles.



The Pedipulator or walking machine may look something like this. Its 12-foot-long legs and oversize arms would follow the natural movements of the human operator inside, greatly multiplying his strength and power of locomotion.

It is believed that the Pedipulator's "body" will be large enough to contain a man, whose arm and leg movements, with the aid of electronic circuitry, servo units, and power drives, will induce like movements in the over-sized limbs of the robot, with their far greater strength and power of locomotion. This machine would thus belong to the new class of devices known as "CAMs" (Cybernetic Anthropomorphous Machines), in which the human operator is, in effect, part of the machine itself.

"Handyman", a unit with arm-like extremities which follow operator arm and finger motions in performing a variety of tasks, has already been developed and used for some time in the U.S. Air Force nuclear propulsion programme.

One advantage of such devices is the fact that they eliminate much of the extensive operation training necessary with conventionally-controlled machines. Substitution of a control system by which the machine follows the operator's natural movements for one involving ordinary knobs and levers can reduce training to a minimum, and allow the operator to concentrate on the task rather than on the machine. With such a machine, agility and power over rough terrain, and not speed, are the main objectives.

The Pedipulator would be able to pick itself up if it "fell down", and could be used, in tandem, with others of its kind to transport loads in much the same way as two men carry a litter or pallet between them. One design problem, however, is that of making the control equipment comfortable for the operator over long periods.

Criteria for the vehicle's initial performance call for it to be able to walk slowly on a level plane or up a slight incline, to side-step and turn about, and to step up and down stair-like intervals.

With further development, the Pedipulator would have greatly enhanced capabilities. After their experience with "Handyman", the designers will study various problems. For example, translation of the operator's walking motions into Pedipulator leg action will require both electronic and electrical equipment similar to that used for "arms" and "fingers" in the robot "Handyman".

Book Review

Turbine-engine Airliners of the World by F. G. Swanborough (Temple Press, price 25/–) illustrates and describes every turbine-engined type of transport which has gone into regular airliner service since a de Havilland Comet of B.O.A.C. operated the world's first jet passenger flight in 1952. It also includes the newer types still under development and not yet in service. The history of each design is given, with details of the different versions. The illustrations show each type in the insignia of each airline which has operated it, and there are detailed three-view tone drawings of the more important types and line drawings of the others.

EXIT *MAYFLOWER*

Engine lovers everywhere regret the disappearance of some of the B1 Class 4–6–0s, among them the locomotive named after the little ship which carried the Pilgrim Fathers. In this article, the author tells the story of a class of engine well-known on former L.N.E.R. routes.

Driver D. Jones, of Grimsby, was in charge when this photograph of "Mayflower" was taken.

EVERYBODY loves a B1—at least on the Eastern Region and in Scotland, and there is regret among engine-lovers that some members of the big family of more than 400 of these locomotives have been taken out of service for scrapping. Among these, surprisingly, is No. 61379 *Mayflower*, only eleven years old and one of the most popular and best performers. An Immingham engine for all but a few weeks of her short career, No. 61379 had a long spell of high-speed work on the King's Cross to Grimsby expresses before Britannia Pacifics (discards from the dieselised Great Eastern section) took over. These workings saw her daily at Boston, where footplate crews were changed, and the local Town Council has applied

By R. S. McNAUGHT

successfully for one of her large brass cabside plaques, which will be displayed in the Town Hall. Each of the plaques, fitted soon after the engine's acceptance trials in 1951, bears the inscription "This locomotive was named *Mayflower*, 13th July, 1951, as a symbol of the ties binding the towns of Boston, and of the lasting friendship between the U.S.A. and the British Commonwealth".

The American link with the old-world Lincolnshire port of Boston stems from the sailing from there, in 1633, of the earliest settlers in their ship *Mayflower*. Persecuted for their religious beliefs, these stalwarts founded the newer Boston under the leadership of John Cotton, Vicar of the church known as the "Boston Stump", on account of its lofty tower.

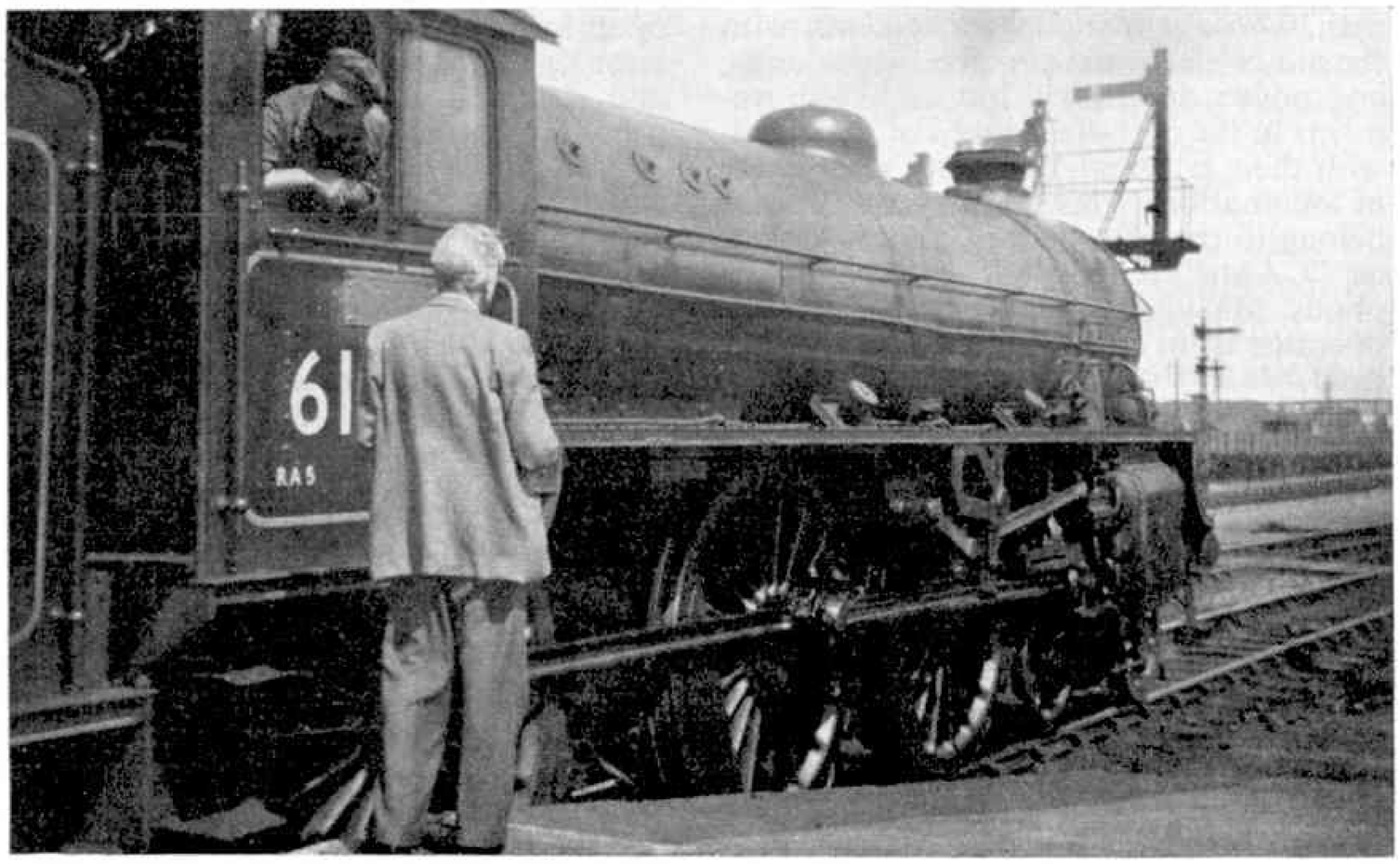
The locomotive *Mayflower*, although a London and North Eastern design was, in fact, added to the stock of British Railways three years after the L.N.E.R. had ceased to exist, and bore the lined black livery adopted, after various experiments, for those mixed traffic or general purpose engines which fell into a category between the express class (Swindon green) and the plain black freight and shunting classes.

In addition to its brass plaques, *Mayflower* was distinctive by reason of the crimson background to her nameplates, other named B1's having to be content with backgrounds of plain black.

* * * *

One of Mayflower's regular drivers, Mr. D. Jones of Grimsby, figures in our illustration of the cab-side. His view was that No. 61379 was "fast and willing, but a bit rough to ride on", but he was cynical about the brass adornments, and humorously commented that the Works might as well have completed the job by putting in a stained glass window or two. "And a collecting box for the crew!" added the fireman, who overheard our conversation. Operating staff always regard any official leanings toward sentiment with a certain cynicism!

Another view of "Mayflower" taken at Spalding on the first trip after the locomotive had been named. The illustrations on this page are reproduced by courtesy of F. S. McNaught.



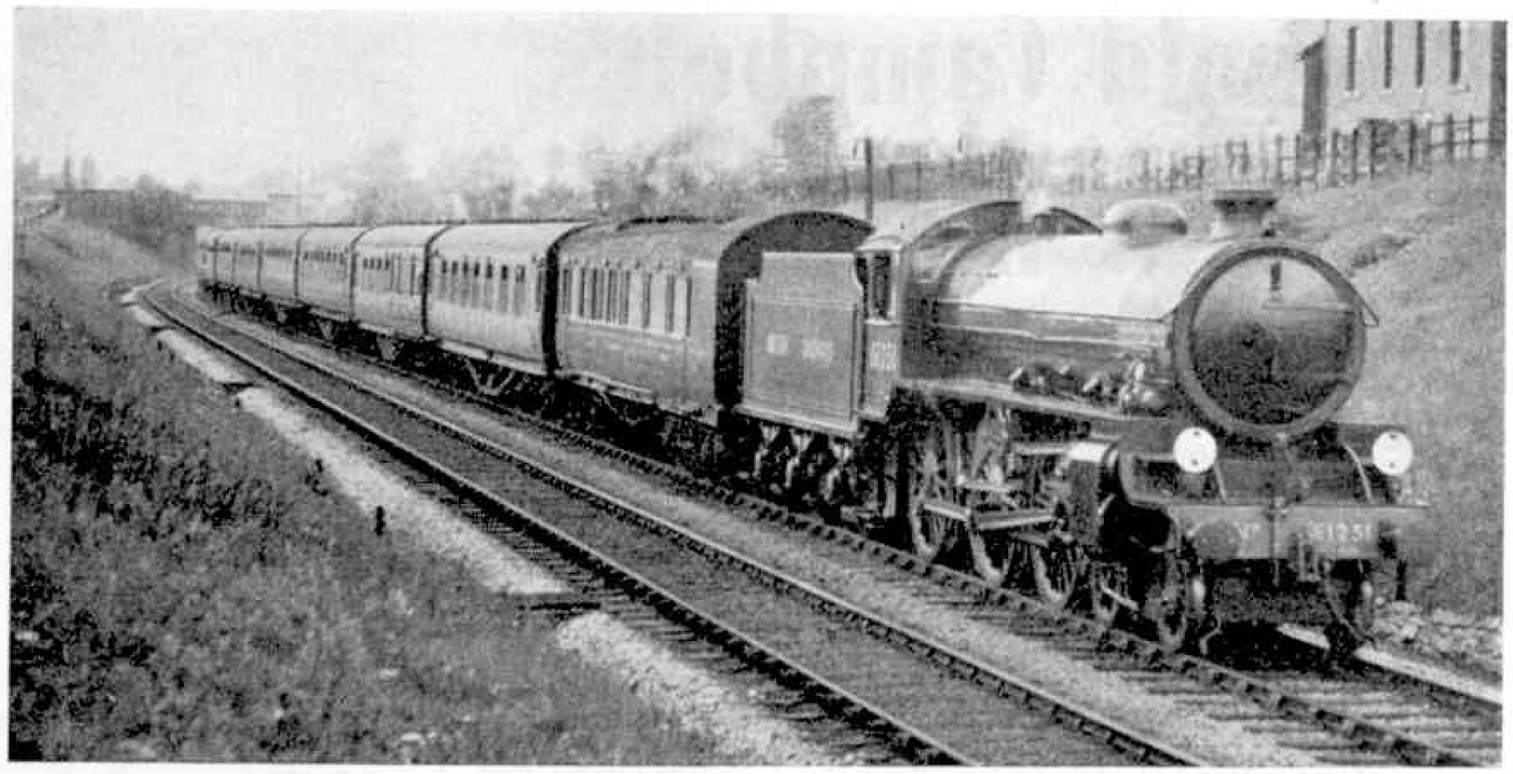
The B1 class was multiplied from a design introduced during the last world war—in 1942 to be exact. The pioneer engine, built at Darlington, was named *Springbok* in honour of Field Marshal (then General) Smuts, the great South African leader, to commemorate his visit at that time to Britain, and it was decided to call the new class, then numbered from 8301, the Antelopes. Thirty-nine of the first forty were labelled accordingly, and then apparently the supply of names ran short. Some of the titles were excellent, but *Bongo*, *Kudu*, *Puku* and *Gnu* seemed more suited for small shunters, and the custom which sprang up among the crews and operating staff of dubbing the latest main line engines indiscriminately as "Bongo's" so offended the authorities that No. 8305 had its nameplates taken off and placed in store, perhaps as a hint. These name plates were later restored, however.

Eventually, the whole class became familiar and popular as the B1's, and were mainly unnamed except a series of eighteen, mostly stationed in Scotland and the North Eastern Region, which were given the titles of former officials and executives of the L.N.E.R. Odd man out was *Mayflower*.

* * * *

The first B1's were painted in L.N.E.R. mixed traffic livery—black, with thin red lining—and were used on quite secondary jobs until their speed and haulage capabilities were realised and it was found they could even deputise, within limits, for the Pacifics. Soon after the war, the L.N.E.R. made a praiseworthy attempt to brighten things up by restoring its former apple green livery to various locomotive classes, and a constant stream of gay new B1's issued from the works of several engine-building firms. Before this, No. 8304 *Gazelle*, ear-marked as the "Royal Train Engine", had been painted green, and this may well have set the fashion.

Technically, Edward Thompson, who designed the B1 class, was aiming to provide a strong and reliable general purpose engine of wide availability and uncomplicated layout. He was undoubtedly impressed by the success of the Stanier Black Fives on the L.M.S. and the leading dimensions of *Springbok*, and its host of duplicates, were very similar. The boiler was identical with that of the efficient *Sandringham* 4–6–0s designed by the North British Locomotive Company—which also built many B1s—to the requirements of the famous Sir Nigel Gresley, but its steam pressure was raised from 200 to 225 lb. per square inch. The main divergences from what had become standard Doncaster and Darlington practice for large engines was the use of two cylinders instead of three, and the provision of an exceptionally long regulator handle of Great Central style instead of the fore-and-aft type. This was to ensure sensitive handling of an engine designed to make the best use of short cut-off working. Certainly, the staccato exhaust of a B1 when starting or working hard much more resembles that of a Stanier type, or a Great Western Hall or County, than it does the traditional East Coast sound.



Among the B1 Class locomotives named after railway executives is No. 61251 "Oliver Bury", seen here working between London, St. Pancras, and Manchester, Central, during the locomotive exchanges of 1948 referred to in this article. This engine was named after Oliver Bury, once General Manager of the Great Northern Railway.

One other innovation for an L.N.E.R. tender locomotive was a powerful and quick-acting steam brake, although a vacuum ejector was, of course, also provided for train working. "Learning the brake" was said to be the most tricky feature for drivers taking over a B1.

In the Inter-Regional Locomotive Trials of 1948, Nos. 61251, *Oliver Bury*, and 61292 (unnamed) ran under test conditions on various "foreign" routes, and won an excellent reputation for all-round efficiency. The named engine in particular did well, and had the temerity to make the fastest time recorded, with a load of 260 tons, up the dreaded Hemerdon Bank when working between Plymouth and Newton Abbot, on the Western Region. The same engine also performed most creditably when loaded to 475 tons, between Exeter and Taunton.

Although the B1 class has developed a reputation for rough riding, and some weakness in steaming at times, it is depressing to realise that such a fine design was destined to have so short a career owing to its appearance rather late in the era of steam.

A notable B1 feature was the elaborate electric lighting fitted to a large number of the class by the builders. They had a robust turbo-generator mounted on the running board and wired up to a full set of permanent lamps, provision being made for the use of ordinary lamps or white discs for headcode purposes during daylight. This expensive feature appeared to work very well but, surprisingly, was not extended to the B.R. "Standard" Classes.

The very efficient B1 boiler was fitted to several of the 3-cylinder "Sandringham" 4–6–0s (now extinct) with beneficial results.

The class has earned a reputation for ubiquity, and many rail centres remote from the E.R. have made good use of them.

RAILWAY BOOK REVIEW

Locospotters' Annual 1963 by Cecil J. Allen (Ian Allan Ltd., 7/6), presents an attractive variety of contents covering steam and diesel locomotive subjects and referring in some detail to the unusual electro-diesel of the Southern Region. In addition, the English Electric gas turbine 4–6–0 locomotive, at present in the experimental stage, is illustrated and described. The diesel-hauled *Trans Europe Express* has a chapter to itself, and in another section the thrills of 100 m.p.h. travel by train are graphically described. Steam locomotive chimneys, track and timetable topics receive consideration, and the chapter dealing with the world's most powerful locomotives, steam, diesel, gas turbine and electric provides the answer to the question, which locomotive *is* the most powerful in the world.

There are plenty of good illustrations, well reproduced, together with a number of colour photographs. There is an attractive coloured cover, showing a 4–6–2 steam and a 25 kV electric locomotive at Crewe.

"ARTICS" FOR INDIA RAILWAY CONSTRUCTION

The Southern Railway, India, has ordered four Leyland Comet articulated outfits from Ashok Leyland Ltd., of Madras, to carry materials for new lines which they are to construct under a vast programme of expansion. One of the major operations on which these articulated vehicles will be used is the laying of a broad gauge line to link Salem and Bangalore.

The tractors are 100 h.p. 9 ft. 10 in. wheelbase models, and the semi-trailers 11-ton payload Gama units with 32 ft. long by 7 ft. 3 in. wide steel covered platforms. Each trailer is designed to carry 42 ft.-long rails and long girder parts, and will be fitted with three ½ in. chains for laying down one layer of 6 in. deep rails.

Donald Campbell's New Bid For Land Speed Record

Frontal view of the E-type Jaguar.

SHORTLY before he was due to leave for Australia and begin final preparations for attacking the world's land speed record, I went to see Donald Campbell at his lovely home near Reigate in Surrey. As we walked into the drawing room, my attention was immediately caught by a photograph of his father, the late Sir Malcolm Campbell, nine times holder of the world's land speed record which in itself is a record that is still unsurpassed. Sir Malcolm raised the record from 146 m.p.h. in 1924 to 301 m.p.h. in 1935 and then retired, only to begin all over again on the water.

Donald Campbell is seen here in the cockpit of his Bluebird car. This photograph, taken in 1960, appears by courtesy of British Petroleum Limited.

ROAD AND TRACK

By JERRY AMES

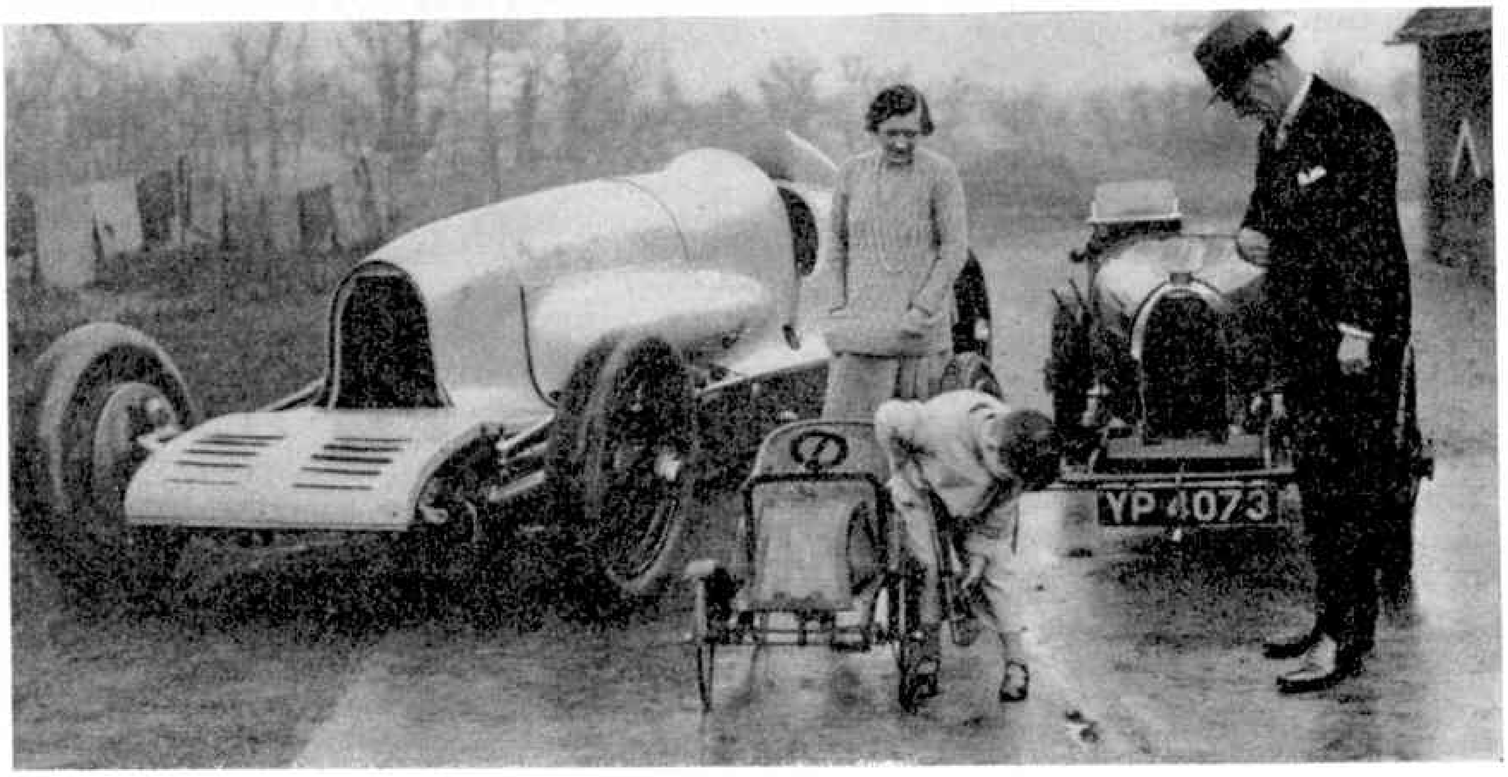
Donald has the greatest admiration for his father's exploits both on land and water; indeed, from early boyhood he lived in an atmosphere of perpetual record breaking, for his father always seemed to have just established a new set of figures, or was preparing to defend his title again.

The only time Donald accompanied his father on one of these trips, he told me, was in 1935 to Bonneville Salt Flats, Utah, when Sir Malcolm Campbell achieved his greatest ambition by becoming the first man to exceed 300 m.p.h. on land. You can imagine what a thrill it was for Donald, still a schoolboy. Twenty-five years later he returned to the same course with *his* Bluebird to make his first attempt on the world's land speed record, and one that nearly ended in disaster.

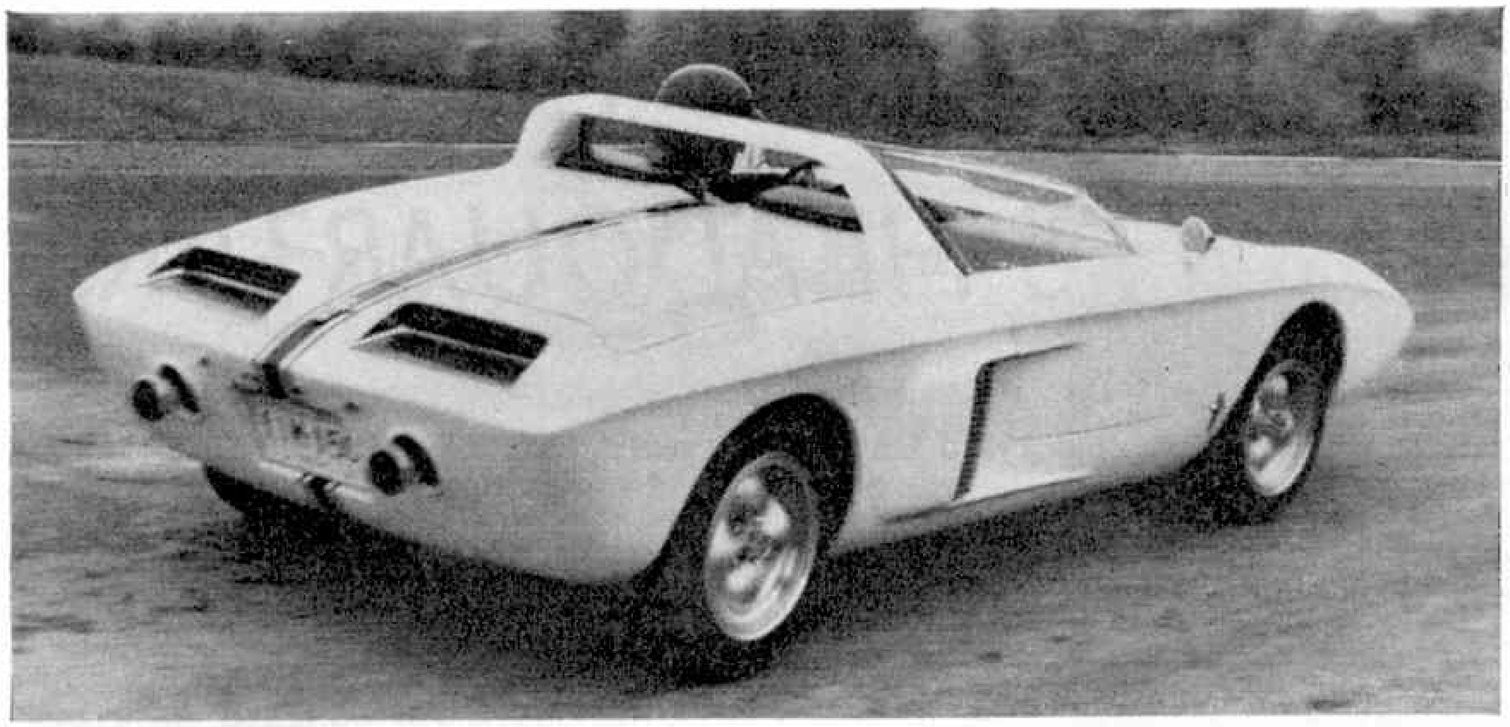
It happened when Donald Campbell really let the huge gas turbine-powered Bluebird off the leash for the first time. Running the 4,250 h.p. Bristol Proteus engine up to 80 per cent. of its power, off came the brakes at 9,000 r.p.m. Four tons of snarling machinery sped up the course, swifter than an arrow, reaching 327 m.p.h. as it passed the first milepost, the thick black guide line painted on the salt beds in the correct position in between its wheels.

A second later Bluebird drifted slightly off course, first to the right and then to the left as Campbell applied steering correction. At 1.7 miles Bluebird moved further left, with an unperturbed Campbell still accelerating, then came real trouble as the wheels struck a soft patch, the tremendous speed accentuating a gyroscopic effect.

The giant car slewed sideways, rolled once, twice, three times, skating on its side to rip off all four wheel covers. Another roll, with first the tail hitting the ground and then the nose, this time tearing wheels away from their mountings. With the two right hand wheels went complete suspension units. Mercifully, Bluebird stopped her mad career the right way up with engine running, her body now torn and crumpled. Still sitting in the cockpit was a dazed and shocked Donald Campbell, his crash helmet split by the terrible pounding it had taken.



Two generations of record-breakers—the young Donald Campbell with his parents. In the background is the Napier-Bluebird of the late Sir Malcolm Campbell, nine times holder of the world's land speed record, and the other car is one of Sir Malcolm's many G.P. Bugattis. Photographs from the Jerry Ames' collection.



Top picture shows the Ford Mustang, a two-seater sports car with all round independent suspension and powered by the V–4 Engine developed from the German Ford Taunus M12 but enlarged to 1,500 c.c. This photograph appears by courtesy of "Motoring News". Below: Michael Parkes is pictured here with his Sunbeam Rapier at Silverstone. Wearing a crash helmet is Peter Harper.

As well as courage, Donald Campbell has inherited from his father, Sir Malcolm, the luck of the Campbells and is ready to try for the record again.

While he was at Bonneville Flats in 1960, there was considerable activity by other drivers and teams attempting records and needing to use the surveyed course during the same period, which meant the Campbell team had to fit in its arrangements with others, speeding up the vital trials programme and reducing the time Donald could spend at the wheel of Bluebird. He was only able to drive the car five times before the run which ended in a high-speed crash. That is one reason why this time he has chosen Lake Eyre, in Australia, for no one else will be using the course while he is there, giving him more time to work up gradually to speeds of around 400 m.p.h.

The vast, desolate, flat expanse of Lake Eyre is 75 miles from the nearest railhead and every drop of drinking water will have to be transported to the base camp; that means enough for nearly 100 people who will be resident there during the record period. Everyone moving around must do so on compass bearings or they could quickly get lost. Each time Campbell takes Bluebird out on the 20-mile course he will be followed by aircraft and specially-equipped Land Rovers. The course itself must first be cleared of numerous salt islands standing seven or eight inches high, each with a hard core of two or three inches that must be ground down by special rotary cutters, to avoid tearing the surface, which could otherwise make handling the car impossible.

Bluebird herself has been re-built since the Bonneville crash, but no major changes have been made to the splendid design conceived by Norris Brothers who have again specified the stresses each part must be able to take.

A new stabilising tail fin measuring 17.5 sq. ft. will be taken out with the car, but only if trials prove it desirable will the fin be used.

The cost of attacking the world's land speed record, including the cost of the car, has risen from £1,500 to something like £1,500,000 during the past 35 years, while power units have changed from discarded wartime aeroplane engines to a modern gas turbine unit. But the skill and courage of the driver is still as much a vital factor as it was in the days when Sir Malcolm Campbell first probed the unknown.

FERRARI PLANS

At his recent Press conference, Enzo Ferrari, the leading Italian racing car constructor, announced his plans for 1963. Ferrari has always been keen on British drivers and so it came as no surprise to learn that his 1963 team will be led by yet another top British driver, John Surtees, formerly world motor-cycle champion. His team-mate will be Willy Mairesse, of Belgium.

But Enzo Ferrari now seems to have an equally high regard for British engineers and has signed up 31 year-old Michael Parkes on a long-term contract, as design and development engineer. Racing driver Michael Parkes, son of the chairman of Alvis Cars, has been one of the leading development engineers at Rootes for several years and has taken a prominent part in the design and development of the new, small Rootes family car, with all-independent suspension, to be announced in the spring. Michael Parkes left the Rootes Organisation on January 1, 1963, to take up his new appointment with Ferrari, which includes the testing of prototype Formula One machines, a type of job in which he is extremely interested.

Parkes will be one of the top men in the team of 94 responsible for designing, building and developing all Ferrari's future racing cars. He will have a big say in deciding whether the 1963 Grand Prix machines are to be powered by V–6, V–8 or V–12 engines; occasionally he may race in the team.

At his Press conference, Enzo Ferrari once again bracketed the name of Stirling Moss with the immortal Nuvolari, legendary motor racing hero of pre-war days, and added that his cars in future would be raced only by experienced test drivers as in the old days, not by men who were merely professionals.

Phil Hill, who brought the World Championship to Ferrari at the close of 1961, is reported to be considering offers to race Fords in the future, if the firm enters Grand Prix racing, as is expected.

Perhaps a pointer to the new interest Fords U.S.A. are showing in European-type racing is their experimental sports car the Mustang, illustrated in these notes. It is the work of Roy Lunn, who was in the Competitions Department of Jowett and Aston Martin before joining Fords, Birmingham, where he was responsible for the development of the o.h.v. Anglia 105 E engine.

The 1½ litre Mustang two-seater sports car is powered by the V–4 developed from the new German Ford Taunus M.12, but is enlarged to 1,500 c.c. It is mounted towards the centre of the car immediately behind the seats. In competition form with two twin-choke Weber carburettors

(Continued on page 94)

HARBOUR THAT WAS ONCE NELSON'S HEADQUARTERS

PRINCE CHARLES' birthday (November 14), is traditionally "Dockyard Day" in the little West Indian island of Antigua. It was specially significant the year before last for it saw the official re-opening of Nelson's Dockyard in English Harbour, now restored as a living monument to the great admiral who once had his headquarters there. Antigua is intensely British and very proud of its connection with Lord Nelson. One of the Leeward Islands group, it measures about sixteen miles across (area 108 square miles) and has a population of some 50,000, mostly black and smiling.

Antigua was discovered by Columbus on his second voyage in 1493. He named it after a church in Seville, but it has remained firmly British from its first settlement in 1632, apart from a brief period of French occupation which was ended by the Treaty of Breda in 1667.

Many colonists went there in the reign of Charles II, and the island became important through its rich sugar cane plantations and its position as one of the chief naval bases in the Caribbean. In the eighteenth and early nineteenth centuries many British warships were overhauled in English Harbour, where a neat little dockyard was built on a peninsula of reclaimed land jutting out into the lovely landlocked inlet, a natural refuge from storms and a secure hide-out.

By
A. G. K. LEONARD

Nelson first came to Antigua in 1784 as the 25-years-old captain of H.M.S. *Boreas*. He remained there until 1787 as C.-in-C., Leeward Islands Squadron, having seniority over the commander of the *Pegasus*, Prince William Henry, Duke of Clarence, later to become the "Sailor King", William IV. Clarence House, built for the Duke on heights overlooking the dockyard, is now a government summer residence.

Other famous British admirals who used the dockyard included Rodney, Hood and Jervis, but the celebrated name of Nelson naturally became attached to it. The Royal Navy gave up its base at English Harbour in 1889 and the dockyard buildings, of timber or yellow and red Georgian brick, gradually began to decay.

Nelson's Dockyard, "the most perfect naval relic of its time in the world", could not be allowed to fall into ruins, however, and plans were prepared to preserve this symbol of Britain's sea-power. With the aim of restoring it and turning it into a first-class yachting centre, the then Governor of the Leeward Islands, Sir Kenneth Blackburne (now Governor of Jamaica) whose headquarters was on Antigua, took the lead in 1951 in forming the Society of Friends of English Harbour. By 1956 the Society had raised £50,000, mostly in the United Kingdom, through a special appeal committee sponsored by Lady Churchill and under the patronage of Princess Margaret, who herself visited Nelson's Dockyard in 1955.

Contributions to the Restoration Fund were helped by mooring fees and admission charges, for with its dry and sunny climate the island is quickly growing in popularity as a holiday resort, and as a meeting place for yachtsmen. Yachting activities have greatly developed in recent years, giving a new vitality to the old harbour, where the former officers' quarters are now occupied by resident yachtsmen and owners of boats let for holiday cruises.

During the past five years, £50,000 has been well spent on restoring Nelson's Dockyard. The Admiral's House has been rebuilt to accommodate a fascinating naval museum and the offices of the Dockyard Supervisor. The bed in which Nelson is supposed to have slept while stationed at Antigua in 1784–87—a fine four-poster ornamented with carved pineapples, the arms of Antigua—is now in this country being expertly repaired.

Other Dockyard buildings have been converted so that now there are offices for yachting businesses, an aquarium, an hotel and storage and repair space for yachtsmen, washing and laundering facilities, etc. The old Copper and Lumber Store has been reconstructed as a dance hall; more moorings for yachts have been provided and the Dockyard now really "lives" again.

English Harbour and Nelson's Dockyard, Antigua. Picture shows the orginal capstans and, in the background, the inner harbour which was used by smaller ships of the Fleet. British official photograph, Crown copyright reserved.

Proud of the transformation, Antigua went gay when the official re-opening ceremony took place on November 14, 1961. Yacht races and cruises brought many vessels to the scene and there were warships from Britain, Canada and the U.S.A.

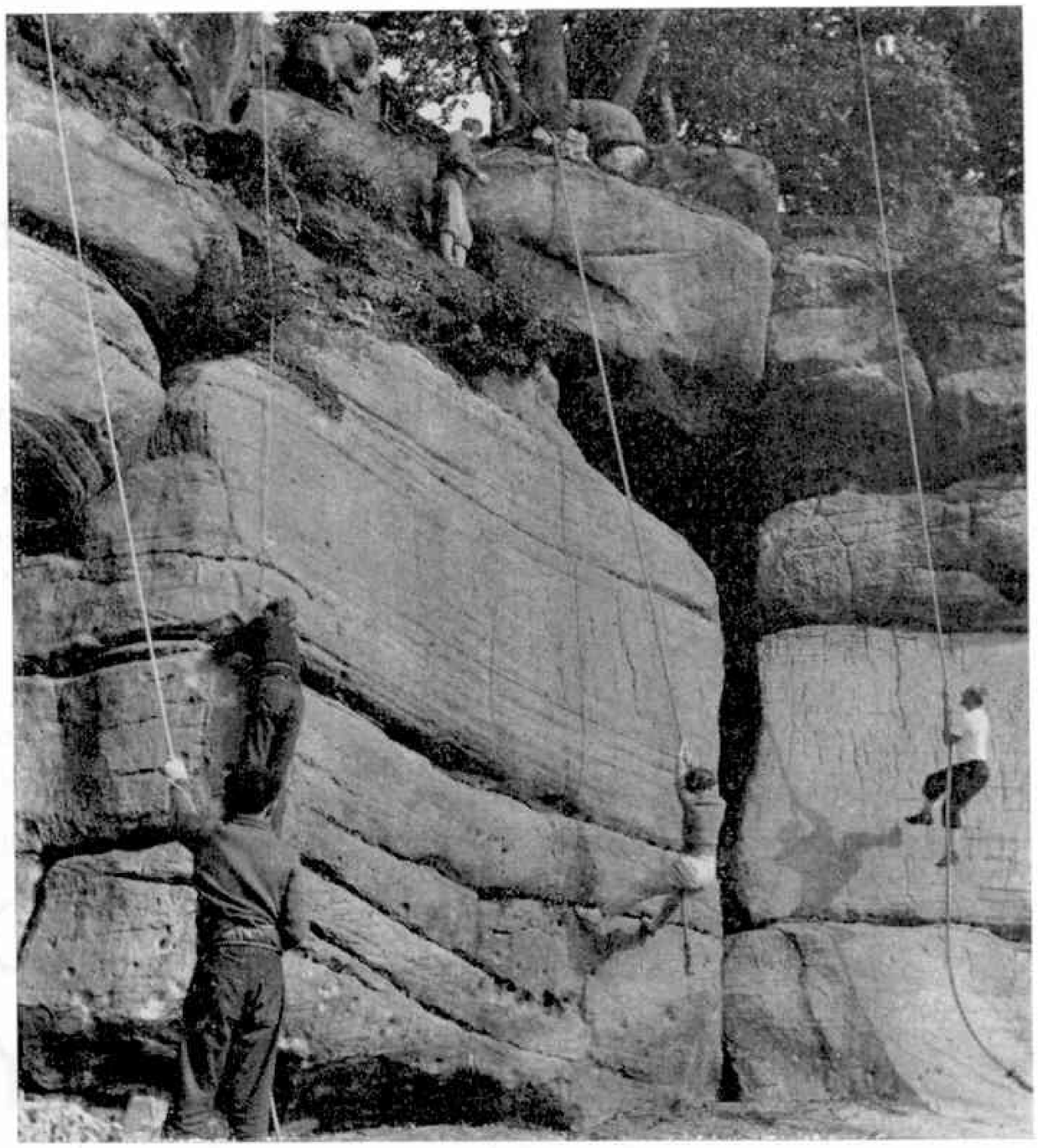
To mark the occasion two attractive stamps were issued, one of which you see at the top of the page. They show a view of the Dockyard flanked by portraits of the Queen and Lord Nelson.

School For Rock Climbers

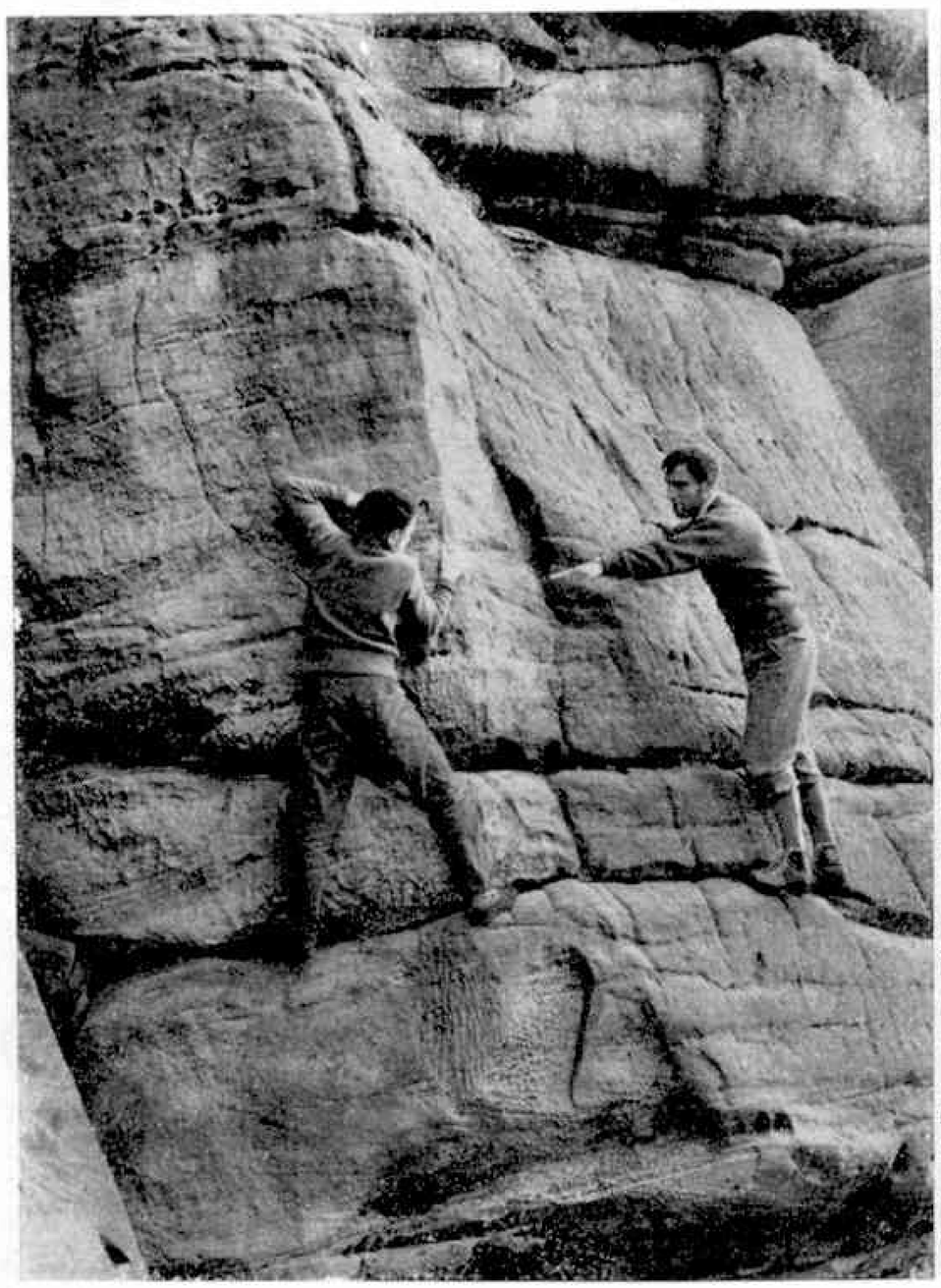
THE "mountaineering gymnasium" illustrated in these pictures owes its origin mainly to the enthusiasm and initiative of one man. He is Mr. John Walters, an engineer formerly in the R.A.F. on air crew duties, who found that the physical and mental exercise provided by rock climbing was helping him in his everyday life. And so he decided to do something to help others interested in

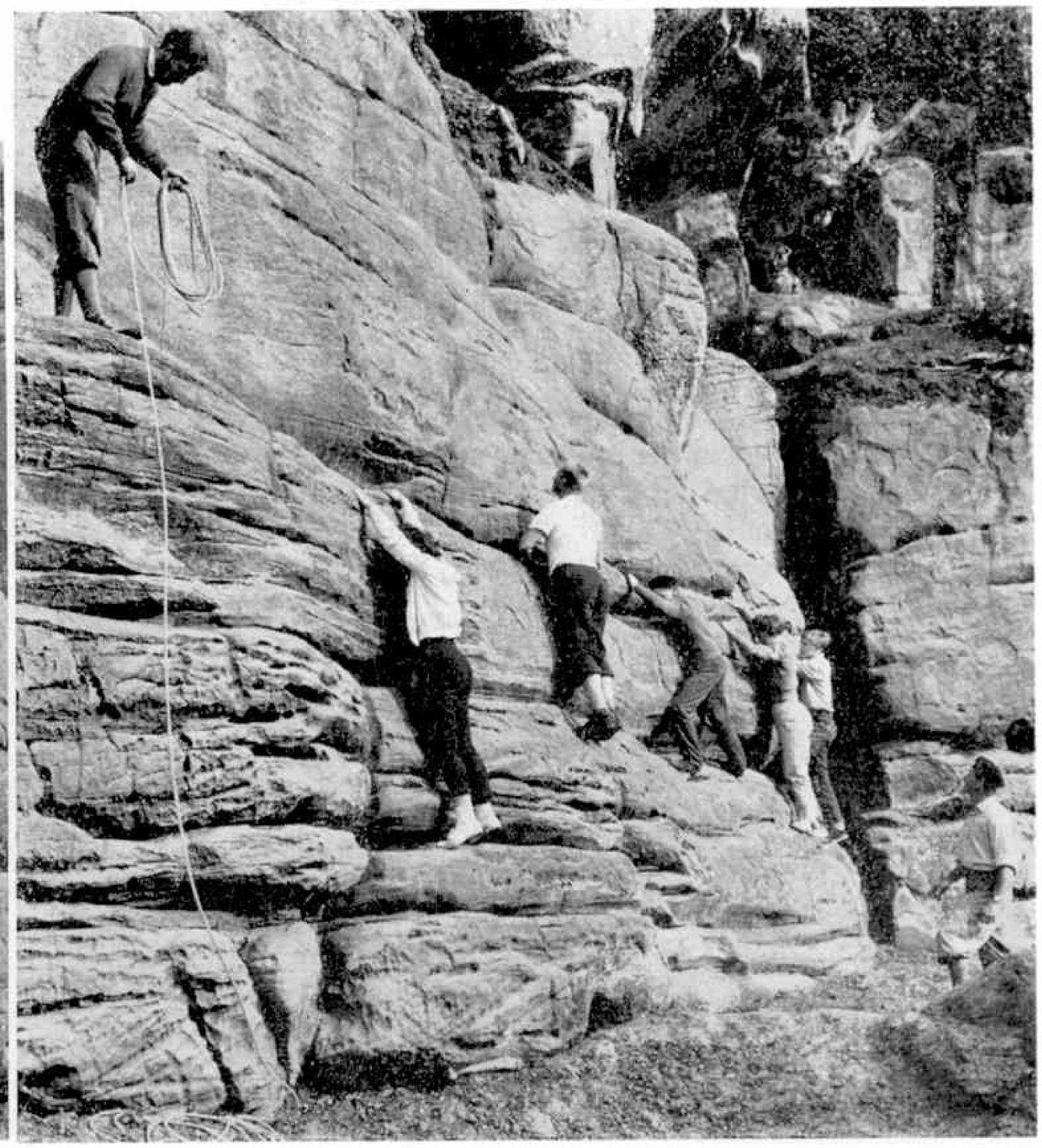
A PICTORIAL FEATURE
BY JOHN TOPHAM

taking up these courses. He purchased a derelict six-acre corridor of land near Tunbridge Wells containing a sandstone outcrop known as Bowles Rocks and, with a band of fellow enthusiasts, set to work to clear the land, create a rock-top walk, and build a warden's house, club house and swimming pool. The result is a fine centre, fully equipped as a rock climbing nursery and outdoor gymnasium where the energetic can enjoy healthy exercise and expert tuition in climbing.



Our pictures show: (Top right) a general practice session at the mountaineering gymnasium; (bottom right) an exercise in low-level traverses—for strengthening finger and arm muscles in particular, and (below) a young pupil being taught how to achieve the balance and movement required for a small traverse.





Through the inventions of the modern world, scientists have analysed the contents of coins in use more than 2,000 years ago. How they reached their conclusions is described in this fascinating article.

MARVELS OF ATOMIC ARCHÆOLOGY

By L. A. Redman

MOST people think archaeology is dull and dry-as-dust—they could not be more wrong. It brings rewards in hard cash as well as brain-box interest to University professors. The Bedouin of the Dead Sea made thousands of dollars from the Biblical Scrolls they discovered. Even now, many people think more similar scrolls are in Bedouin hands, to be fed slowly to the market so that the price will be kept high.

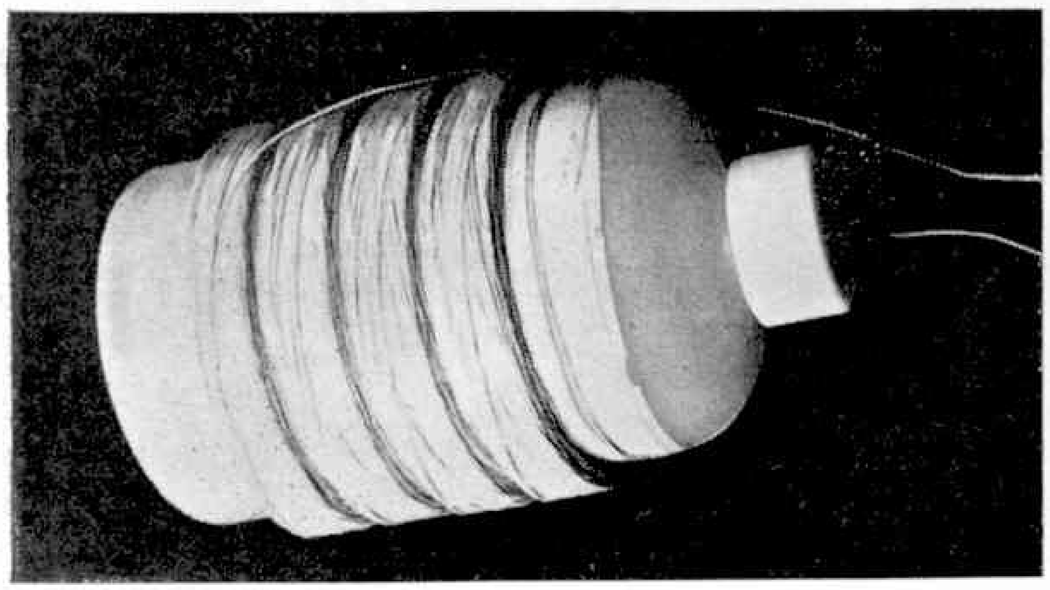
Even the less spectacular finds of scholars are interesting, however. For example, the ancient Sumerians had many proverbs. This one might well have been written only yesterday, instead of some 5,000 years ago:

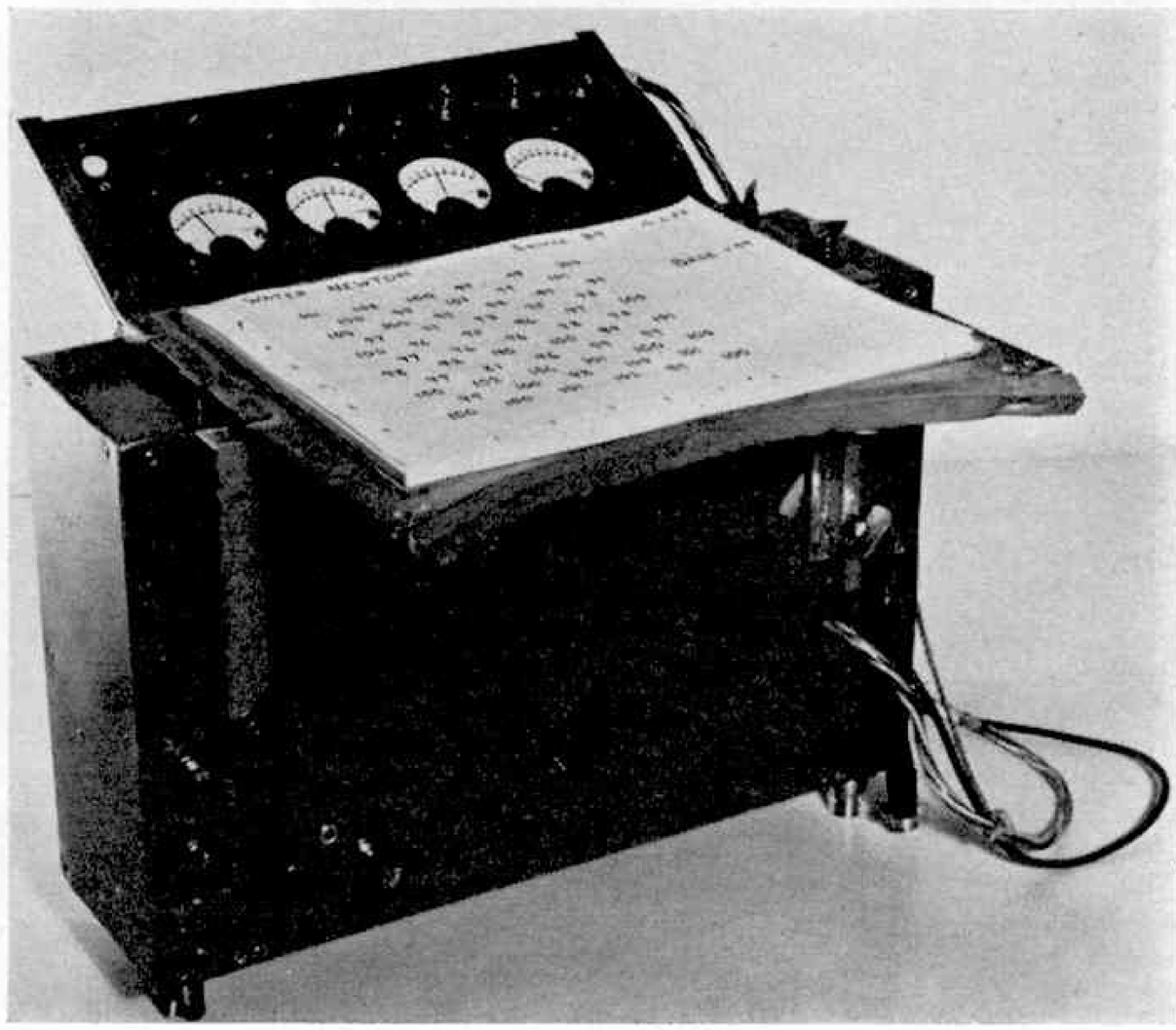
"*You can have a lord, you can have a king,*
But the man to fear is the tax collector!"

Coming back to the present, two new methods now enable archæologists to find buried objects more quickly and identify them more accurately than ever before. The first method uses approximately 200 transistors in the complex electronic circuits needed to detect tiny magnetic fields; the second uses one of the newest and biggest inventions of science—a nuclear reactor.

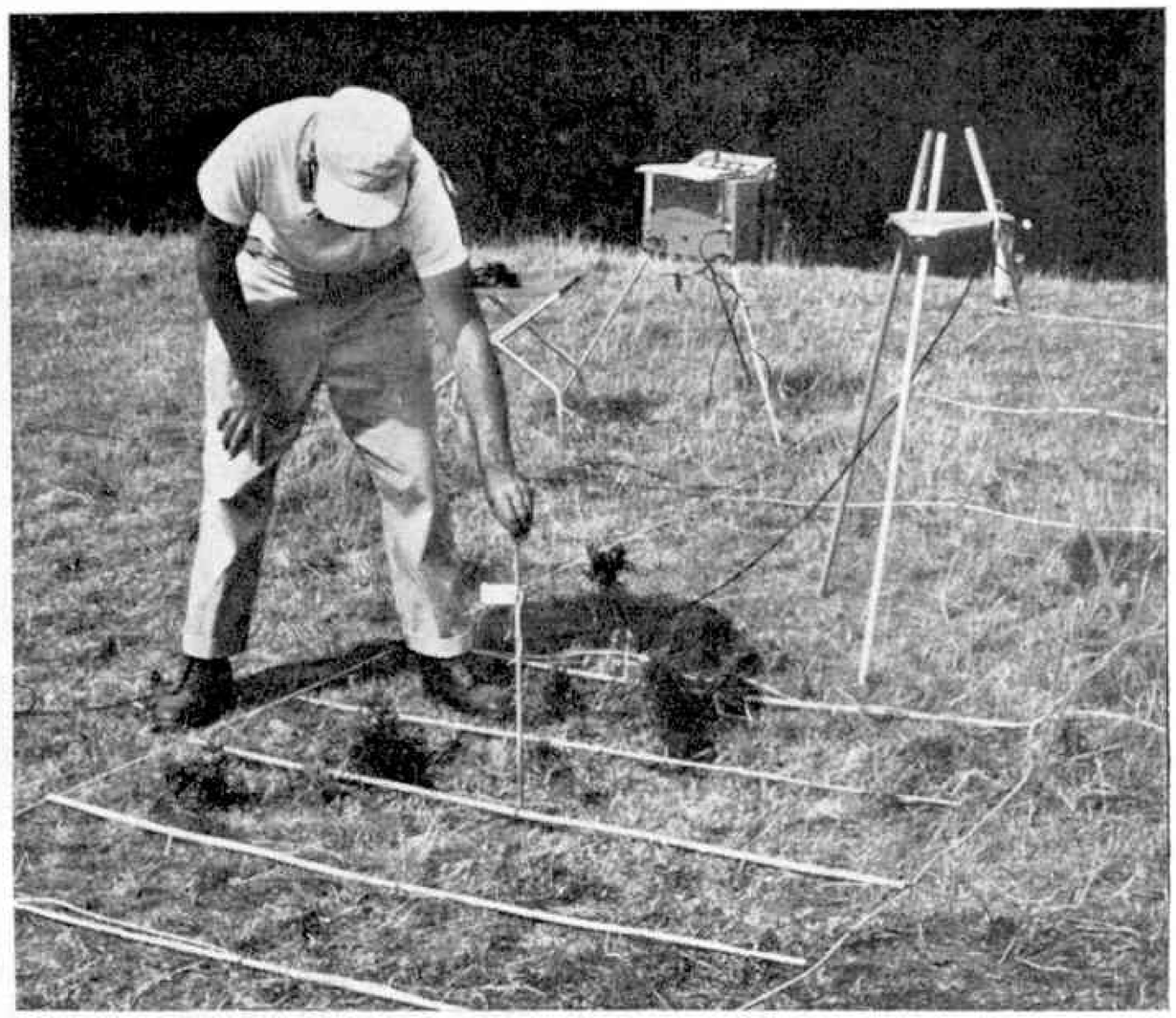
In the past, the only reliable means of finding buried objects has been by careful digging. To make sure that nothing is missed or damaged this method of excavating takes a long time—weeks, or often months, of painstaking work. Using the new system one can very quickly detect objects buried under the ground, the principle of its operation being its ability to detect very weak magnetic fields.

Most objects, you may know, possess magnetism, but it is often too weak to detect. Take pottery as an example. When it is fired in a kiln, the atoms line themselves up along the direction of the earth's magnetic field; when the pot cools, this magnetic effect is fixed in it and so when objects of this nature are buried they cause minute local changes in the earth's magnetic field. Such changes are very small indeed but scientists at the Research Laboratory for Archæology at Oxford have developed an instrument capable of detecting them. It is called a proton magnetometer, and by its use, an acre of ground can





Right: The brain of the proton magnetometer. Below: The detector of the magnetometer—a plastic bottle full of water surrounded by a coil of many turns of wire.



Left: The completely portable proton magnetometer. It weighs 23 lb, including the accumulators used as the power supply. Above: Marking out the grid as a basis for recording readings.

be surveyed in four hours—a very much shorter job than digging.

The proton magnetometer works like this: the earth's magnetic field on its own produces a change in the magnetic field in the atoms of the detecting device. This effect is most pronounced in the protons of the hydrogen atoms in ordinary water. In fact, the detecting device is simply a plastic bottle full of water. Wound round the bottle is a coil of many turns of fine copper wire. When the detector is over an object magnetised in same direction as the earth's field, the resultant field is greater than it would have been if there were no object. This alters the magnetism of the protons and this induces a tiny voltage in the coil wound round the bottle. The induced voltage is continually changing, and the frequency of the change measures the strength of the magnetic field. The induced voltage is, however, only about one millionth of a volt, so that before its frequency can be measured it has to be amplified.

Only a short while ago, the circuits to make this amplification would have been too complicated. Now, by using 200 transistors in place of valves, the apparatus can be made small enough to be easily portable, and this is an essential requirement where rapid use in the field is of importance.

This method has also been used to measure the direction in which objects are magnetised, which in itself is often very useful in identifying them. For example, a terra-cotta figurine was discovered with the broken-off head lying next to it. The question then arose as to whether or not the head had actually belonged to that particular body. It was found that the magnetic directions in the two parts were entirely different, confirming that the head was not the original one.

Another way of identifying ancient objects involves the use of one of the nuclear reactors at the United Kingdom's Atomic Energy Research Establishment at Harwell.

Scientists, again from Oxford University, have analysed in this reactor Greek silver coins of the Fourth and Fifth centuries B.C., and also some Athenian coins of the Second Century B.C., sent from the American Numismatic Society. The coins were put into the reactor at Harwell where they were bombarded by neutrons. Neutrons, remember, are atomic particles which have no electric charge and so can penetrate the charged atoms from which the coins are made. This bombardment makes the coins radioactive so that they emit gamma rays—very short-wavelength X-rays. Each slight impurity in the silver coins emits gamma rays of a certain energy, so by measuring these energies the impurities present—and the amount of those impurities—can be found.

In the silver coins examined it was found that those which came from Athens contained 0.03 per cent. gold and 0.05 per cent. copper, while those from Corinth had 0.4 per cent. gold and one per cent. copper, which meant that at the time the coins were made the Athenians and Corinthians got their silver from different mines. Yet coins from the two cities 50 years later had impurities that were exactly identical, showing that the silver all came from the same mine.

Thus the modern nuclear reactor has helped to give precise detail about something which was part of life more than 2,000 years ago.

END OF THE RIDE

Tramway Twilight by J. Joyce (Ian Allan, 21/–) is a well-illustrated work which tells the story of the decline of tramways in Britain since the end of the war in 1945. In that year there were still more than 6,000 tramcars in service, but from then onwards tramway systems have been closed one by one until, by late 1962, only the Blackpool Tramways survived.

The electric tram played a vital role in the development of the cities and larger towns of Britain but changed conditions and obsolete regulations prevented developments such as those which have taken place in the largest centres of Europe, where the tram is still the chief means of passenger transport. The modern vehicles in use today bear little resemblance to the characteristic British double-deckers which are portrayed so admirably in this book.

Tramway Twilight will be read with interest by the enthusiast, and the splendid selection of illustrations will revive memories for him and at the same time provide him with a record of a once-familiar form of transport. Even the trolleybus, which once bid fair to replace the tram, may itself disappear first, while buses, the present conquerors, are beginning to feel the effects of private transport. It is interesting to speculate on what the future holds in Britain, for the man without a car. *Tramway Twilight* tells the story of the last seventeen years in a very readable manner.

TRIDENT SMASHES HUNTER RECORD

Pictured at Fiumicino Airport, Rome, after setting a new unofficial speed record from London, is this D.H. Trident. Photograph by courtesy of B.E.A.

DURING its first long overseas flight, on November 20 last, the D.H. Trident gave a glimpse of the high-speed travel that B.E.A. passengers will enjoy when it enters service towards the end of this year.

Flown by de Havilland's Chief Test Pilot, John Cunningham, the three-jet airliner covered the 930 miles from London to Rome in 97 minutes. This represents an average speed of 575 m.p.h. and beat by 9 m.p.h. the official London–Rome speed record set up by Bill Bedford and Frank Murphy in a two-seat version of the Hunter fighter.

The Trident which made this trip, G–ARPB, is one of three now undergoing flight tests at Hatfield. It was on its way to Khartoum, via Cairo, to start the first of a series of trials under hot weather conditions. On board were a flight crew of four and nineteen technicians and flight observers. The return flight was made, via Aden, about ten days later.

ROYAL HERONS REPAINTED

Many aircraft now have their nose, wingtips or tail painted with orange Day-glo fluorescent paint to make them more easily seen in flight, particularly in bad weather, and so reduce the risk of collision. Most remarkable of all were the Heron light airliners of the Queen's Flight, which were given a complete all-over coat of Day-glo.

Unfortunately, it has been found that the heavy paint upsets the balance of the control surfaces; so the Herons now have a new, but equally distinctive paint scheme. The fuselages and wings are still bright orange, but the tail surfaces and wing flaps are finished in ordinary navy blue paint with white piping.

AIR NEWS

by

JOHN W. R. TAYLOR

TAKE-OFF TECHNIQUE

Airfields are so vulnerable to attack by rocket missiles that the fighters and bombers of the future will be useless if they need long concrete runways from which to operate.

We have already seen one solution to the problem in the shape of the Hawker P.1127 strike fighter, which combines supersonic performance with the ability to take off and land vertically, like a helicopter. It achieves this by the use of swivelling exhaust nozzles, which divert the exhaust from its jet-engine downward for take-off and landing.

The French Dassault Balzac research aircraft, which began its flight trials last autumn, uses a different technique. Like the Short SC.1 which preceded it, the Balzac has separate engines for take-off and cruising flight.

As can be seen in the photograph on this page, the Balzac was produced by fairly simple conversion of a standard Mirage III fighter airframe. In place of the usual SNECMA Atar turbojet, it has a much smaller Bristol Siddeley Orpheus. This has made room in the fuselage for eight Rolls–Royce RB.108 lift engines, of which two pairs are mounted vertically on each side of the central air duct to the Orpheus.

The RB.108's are used to lift the Balzac vertically off the ground. When it has reached a safe height, the Orpheus is opened up to thrust it forward. As speed increases, the wings develop lift in the normal way, until they are able to support the aircraft by themselves. The RB.108's are then switched off, and doors above and below them are closed to streamline the fuselage.

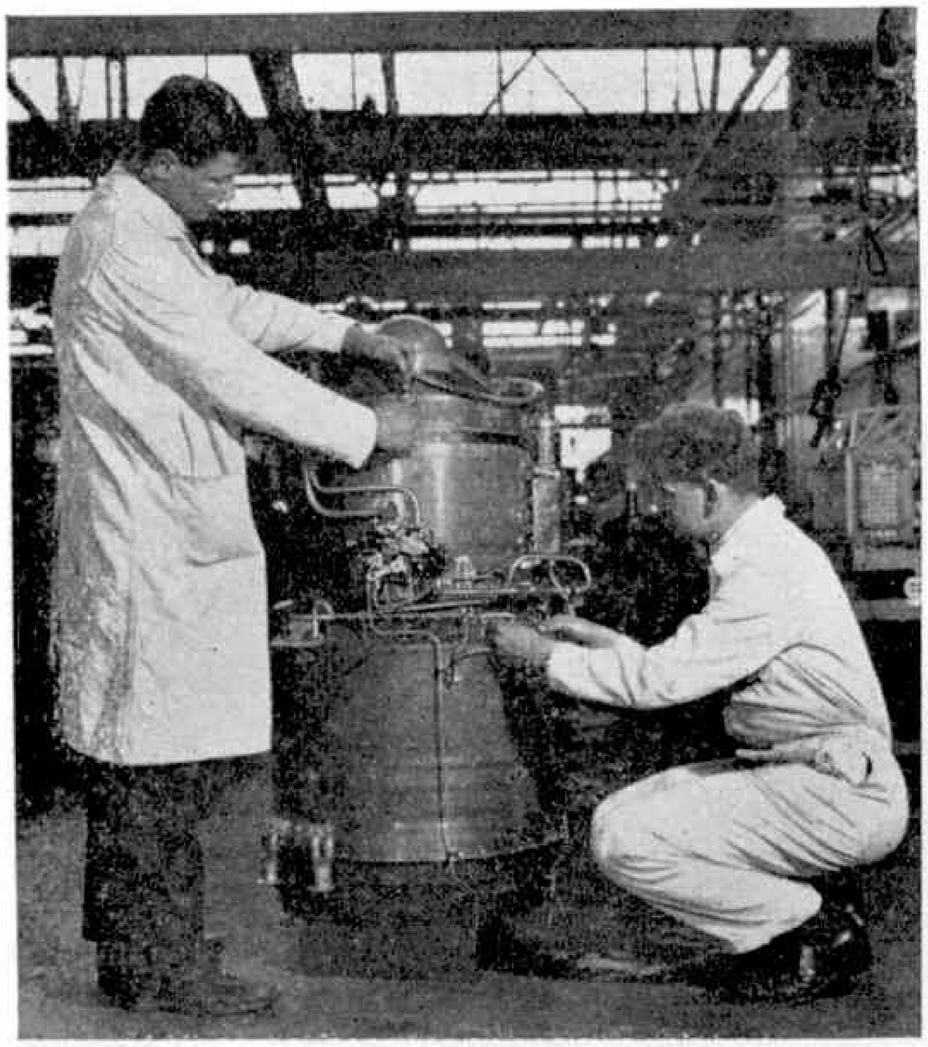
Within three weeks of its first tethered lift-off, the Balzac had climbed to a height of 50 feet and had been flown horizontally forward, backward and sideways, including forward jet-borne flights up to 550 yards long. It will be followed this year by the much more powerful Mirage III–V fighter on similar lines.

PLASTIC JET-ENGINES

Key to the success of the Balzac and Short SC.1 is their use of Rolls–Royce lift engines of revolutionary design.

Slightly more than one pound of upward thrust is needed for every pound weight of aircraft that has to be raised off

Seen hovering is the French Dassault Balzac research aircraft. Note the open doors above and below the lift engines.



(Above) This CF–104, with practice-bomb carrier under the fuselage, was photographed at Cold Lake, Alberta.

(Left) The ultra-lightweight Rolls-Royce RB.162 lift-jet is being developed to provide jet-lift for VTOL and STOL aircraft. This new jet-lift unit has been under test since November, 1961. Rolls-Royce photograph.

the ground. It is, therefore, very important to keep the weight of the lift engines as low as possible, especially as they also have to be carried around as deadweight during cruising flight, when they are switched off.

The RB.162 lift engines that will be used in the Mirage III–V each weigh only 275 lb., yet give 4,400 lb. of thrust. In other words, they give about 16 lb. of thrust for every pound weight—a power/weight ratio that has never before been obtained with a jet engine.

Rolls–Royce have achieved this weight-saving, and comparatively low cost, by the use of new lightweight materials. One such material is glass-fibre reinforced plastic, which is used for the compressor blades and compressor casing. It may seem hard to believe that plastics can be used successfully in this way, in view of the terrific heat built up inside a turbojet, but Rolls–Royce believe it may not be many years before complete engines are made of plastics.

Nor is this all, for it will be possible to plug engines like the RB.162 into position in the aircraft, rather like fitting an electric light bulb. As they are pushed into their mounting socket, all fuel, oil, electrical and other connections will be made automatically, and it will be possible to leave the engines in position for long periods with only brief visual inspections.

MID-AIR REPAIR

When a salvo of rockets was fired from a Westland Whirlwind helicopter during a recent exercise, the rocket pack broke away and smashed the aircraft's port undercarriage. The pilot flew back to the Aeroplane and Armament Experimental Establishment at Boscombe Down, where an attempt was made to land, using baulks of timber to support the wheel-less side of the machine. This caused such dangerous vibration that the pilot had to climb away again.

It was decided to try replacing the damaged leg as the Whirlwind hovered. With one crew member leaning through a cabin window, and another reaching out through the radio and baggage compartments, a new fuselage attachment bracket was fitted. A complete undercarriage strut assembly was then fitted by four ground crew, after which the helicopter landed safely. The whole operation took just over half an hour.

TOO FOGGY TO DRIVE — SO THEY FLEW!

During the fogs that blanketed many parts of Britain towards the end of last year representatives of Smiths' Aviation Division, makers of the Trident's SEP 5 auto-pilot and landing system, set off by car from Cheltenham to visit the de Havilland works at Hatfield. They found the visibility so poor that they abandoned the road journey, jumped into an aircraft and flew to Hatfield instead.

The approach and touch-down at Hatfield were made by using the aircraft's new blind landing equipment in conjunction with the airfield's standard Instrument Landing System (ILS) beacon. The fog was so thick that a car sent out on to the airfield, to guide the aircraft in after landing, had difficulty in finding it on the runway.

The aircraft which made the flight, a Vickers Varsity, is being used to flight test the automatic landing system that will be fitted eventually to the Trident and Vickers VC10 airliners. When the system comes into everyday use, it will enable aircraft to take off and land safely, on schedule, even when airports are covered with fog or low cloud.

SERVICES TO CONTINUE

In recent years Sabena, the Belgian airline, has subsidised its costly pioneer international helicopter services with profits from its fixed-wing operations. Like most other airlines, it encountered severe financial problems last year, and decided that it could no longer afford to continue helicopter operations.

Fortunately, the Belgian Government regards Sabena's experience in this field as too valuable to be thrown away and has offered help to cover the cost of keeping the helicopter network open. As a result, it has been possible to run services daily (except Sunday) through the winter from Brussels to Rotterdam and Cologne, via Liege and Maastricht, twice-daily services from Brussels to Eindhoven, and three-times-a-week services from Brussels to Duisburg, via Cologne.

R.C.A.F.'S NEW 'PLANES

Canadair have done such an excellent job of producing CF–104 Starfighters for the Royal Canadian Air Force that No. 6 Strike-Reconnaissance Operational Training Unit, at Cold Lake, Alberta, has been equipped with these 1,400-m.p.h. aircraft for several months.

Most of the Starfighters at Cold Lake are standard CF–104 single-seaters, but the unit has also at least two dual-control two-seat CF–104D trainers. The torpedo-shaped device seen under the fuselage of the CF–104 in the photograph on this page is a practice-bomb carrier.

As one fighter enters service in Canada, another disappears for on September 6 last year the Royal Canadian Navy "paid off" its VF–870 squadron of Banshee jet-fighters at the R.C.N. Air Station, Shearwater.

VISIT TO A BALTIC BIRD SANCTUARY

Described by
L. Hugh Newman

The way out to the island bird and animal sanctuary through Barosund in the Finnish Archipelago. All the illustrations are by the author.

IF you look at a map of Finland, you will notice that the southern coastline is protected by a barrier of islands from the open sea. This fantastic archipelago is comprised of millions of granite rocks, some only showing just above the surface of the water, others piled to form small, tree-clad isles, and constituting, at their largest, tracts of land several miles across containing self-supporting farms and their communities. For a month last summer I lived on one of these smaller isles, by name "Morholm". It is situated about midway along Barosund which is the main sound, or "marked waterway", through these multitudinous islands to the open sea.

Although I lived for the most part entirely alone on this island I was not at any time lonely. There was a lively traffic down Barosund, both by night and day, the night traffic being guided by innumerable little lighthouses flashing white, green or red lights according to their position on the rocky points on either side of the sound. Modern steamers, built specially for transporting cut timber from the forest for the paper mills in Sweden plied regularly along this waterway.

Every few days, a contingent of the Finnish Navy passed through, with blue and white flags fluttering bravely in the breeze, but with mounted guns shrouded peacefully in canvas. Motor launches and yachts were almost as frequent as cars in a country lane, and the air was hardly ever free of the familiar *put-put, put-put* of some outboard motor driven craft trecking between one island and another, for this part of the archipelago was well populated, not in any sense by tourists, but by resident families of farmers or fishermen, many of whom I discovered had lived here for generations. In fact, I was shown a map dated 1639 marking many of the properties and farms that are still in existence today. The spelling of some of them was slightly changed, but was still quite recognisable.

To the naturalist, this archipelago opened up enormous possibilities, for any of the bigger islands might have a particular fauna of its own, as I was to find out. The butterflies I caught and the birds I saw when I was living there last August were rewarding enough, but I want to tell you, in some detail, of just one day I spent in company with my brother-in-law, Mark Savonius, who kindly took me in his motor launch *Origon* to a unique bird and animal sanctuary at the southern end of the Barosund Archipelago.

I was extremely fortunate in getting permission to visit it, as this sanctuary is an entirely private one, maintained for its owner's pleasure, and it is in no way an island zoo. The public are not admitted, and there are notices posted on many of the trees near the waterline making it quite clear that landing on these islands is strictly forbidden. Indeed, it would be dangerous to attempt going ashore at certain season for reasons which I shall soon make clear. Only through the good offices of my colleague on the BBC programme *Nature Parliament*, James Fisher, the ornithologist, who kindly introduced me to Dr. Lars von Haartman, Professor of Zoology at Helsinki University, was I able to get a letter of introduction to the owner of the island sanctuary and, in fact, visit it at all.

This unique sanctuary is owned by Mr. R. Kreuger, an industrial engineer who has his business in Helsinki, but who manages to spend at least two months during the summer on the main island of Hättö, where he has a residence. He is also there on every available weekend when the islands are accessible, for, of course, during the winter months Finland is frozen up and Barosund becomes icebound. Mr. Kreuger purchased the property in 1938, when it was merely a collection of seven large islands, each with an area of some 20,000 acres, and another 25 to 30 smaller islands, a few of which are no more than large rocks for birds to rest on.

I do not know what first gave Mr. Kreuger the idea of creating this sanctuary, but he did tell me that in 1936, two years before he took over these islands, he counted 25 pairs of nesting eider duck during a visit in April of that year. He found them on the islands and land surrounding a shallow lake which he has now converted as a pool for ornamental water fowl. On the last count he made, in 1961, the total had risen to 200 pairs, giving some idea of how a properly-run bird sanctuary can help increase the number of migrant species that can be induced to breed in peaceful surroundings unmolested by man.

I was there, as I said, in August, and the duck had all flown months before, but Mr. Kreuger helped me to climb over a high wire fence enclosing this main breeding place for birds, and showed me two empty nests that had been occupied that spring. I noticed how some attempt had obviously been made to help the birds bring off their clutches successfully by building up dead fir branches to form a

Mr. Kreuger is seen here up aloft in his observation tower at his island sanctuary.

shelter overhead, giving protection from the prevailing wind coming off the Baltic. He described to me what the lake looked like in late spring when hundreds of eider duck and their young swam and paddled in the shallow water, and then he told me a very strange thing . . . Fifty years ago, this lake had been deep water and there are fishermen alive today who can remember large boats at anchor in this sheltered natural harbour; now it is a mere two to three feet deep, exactly right for a bird sanctuary. At the time of my visit, his ornamental fowl had been drastically reduced by foxes coming across the ice in winter, and by the exceptionally severe winter just past. I saw Greylag and Canada geese, two species of Swan, including the Singing Swan, and various duck with the curious *muscovi* very much in evidence. A large hut had been built at the far side of the lake to provide shelter in the hardest weather, and I was told that a local fisherman in the employment of Mr. Kreuger comes and feeds these birds throughout the winter.

After I had photographed some of the birds, we made our way across the island towards Mr. Kreuger's residence, a long, low bungalow covered with Virginia creeper right up to the chimney pots, and a wide verandah in front. As we approached the house he began talking about his Red and Fallow Deer that mostly roamed wild in Hättö, and as he spoke he suddenly stiffened, paused and gripped my arm, turning with a finger to his lips. And there, before the house, were a pair of Red Deer, the male magnificent in full velvet. They came towards him as he crested a knoll of rock, but immediately they saw Mark and I following behind they tossed their heads and started to retreat, and only the voice of their master crooning "Come here, come here my beauties, come here" (or words that must have had much the same meaning) brought them to a standstill. At that moment I realised that Mr. Kreuger had that rare gift among naturalists of being able to gain the complete confidence of the beasts among which he lived.

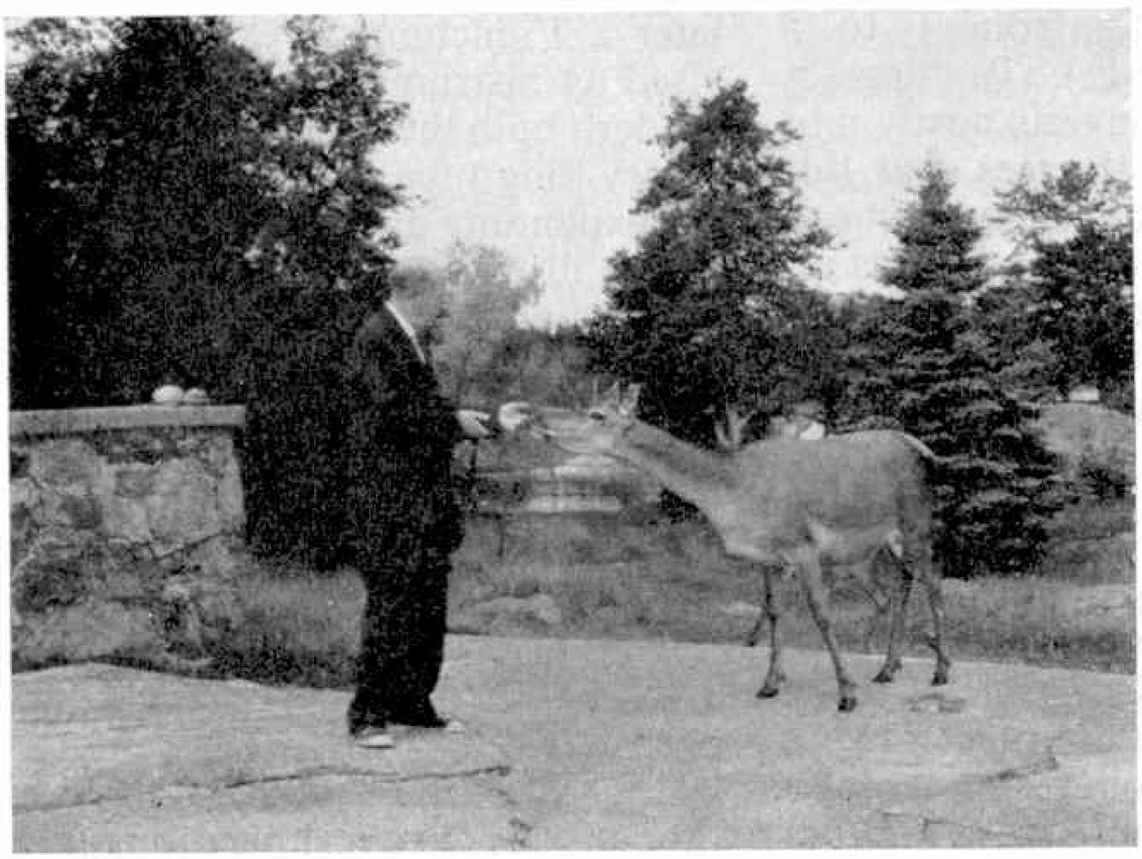
It was extraordinary to see his animation, too, at the sight of his beloved deer after all these years of their companionship; he could still visibly show his delight in their presence. He went indoors and returned with a bucket of oats. The two animals now came forward, rather timidly, with their heads continually turning towards me where I stood with camera poised. But again, his insistent soft voice, encouraging these wild creatures to come close to him, gave them that extra bit of confidence they needed. And then, when he had thrown down a few handfuls of grain and the deer had stretched out their graceful necks to the ground to lick up the food, I was temporarily forgotten by man and beast.

After the deer had eaten all the grain they wanted, we went indoors to a typical Finnish meal of coffee, *bulla* (a kind of sweet white bread baked with sultanas) and various home-made biscuits. Mr. Kreuger told me he had imported both Red and Fallow Deer from Sweden soon after the war, and he now had a herd of some 30 Fallow Deer on the home island, while there were wild herds on two of the other large islands. The stags of Fallow Deer can be dangerous beasts at rutting time, and so Mr. Kreuger had built a large stockade some distance from the house. From his residence, I caught a glimpse of them between the trees, but unlike the Red Deer which he had obviously tamed to a certain degree, the Fallow Deer were extremely wild and shy —at any rate, when visitors came to see them. I now realised why the notices were posted on the trees at vantage points on these islands as obviously not all the deer could be rounded up and Mr. Kreuger did not want any fatalities, even among trespassers.

Mr. Kreuger has sometimes had reports of deer being seen on some of the other larger islands in the Barosund area and is convinced that now and then an odd pair migrate by swimming across the water, but I did not get the impression that this worried him at all. When I asked him if he were conducting any scientific research

(*Continued on page 94*)

Left: Mr. Kreuger feeding a Red Deer by hand outside his residence on Hättö Isle. They show no fear of him but were very nervous of the author when he approached to photograph them. Right: A view of the lake which Mr. Kreuger has converted into a bird sanctuary. Various geese are seen in the foreground and in the background are their winter quarters.



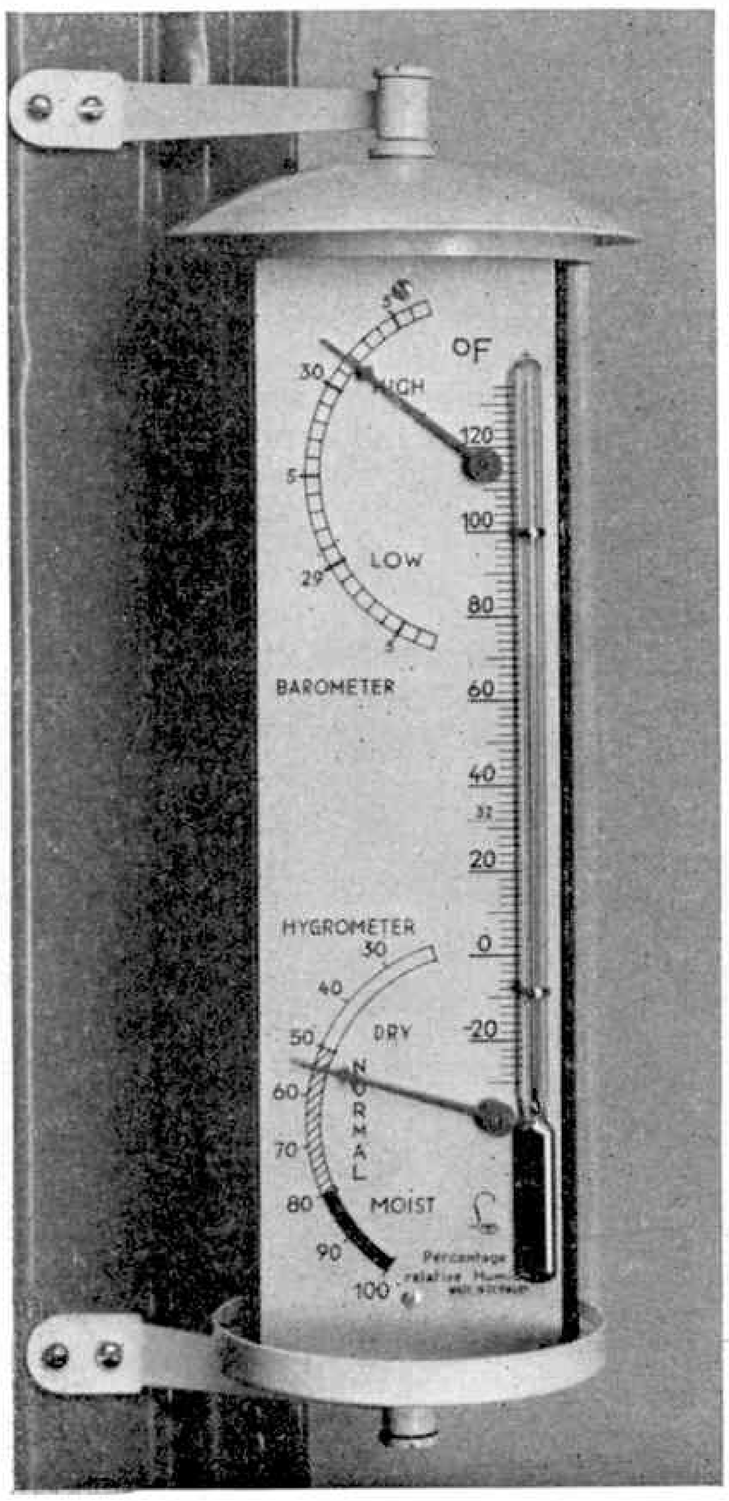
A WEATHER EXPERT WRITES ABOUT . . .

The Change To Centigrade

AT the present time, the B.B.C. weather bulletins are giving temperatures in both the Fahrenheit and Centigrade scales, but at some future date (which has not yet been made known) the use of Fahrenheit will be dropped altogether.

Sir Graham Sutton, the Director-General of the British Meteorological Office, has explained that the change is being made largely in the interests of international conformity. All other nations are using the Centigrade scale at present, and as each country's weather is affected by that of other lands, it is helpful, if not essential, for meteorological codes to be standardised. When this is done, weather reports can be sent to (or received from) all parts of the world with the utmost speed.

To members of the British public the change may not be too welcome. Old traditions die hard, and the Fahrenheit scale has been used exclusively in this country for weather forecasting and recording for over one hundred years; in fact, since organised weather reporting first began. And, of course, most people feel that they know where they are with Fahrenheit. "Eighty in the shade" will seem a little queer when it is expressed, in Centigrade, as 26.66 degrees.

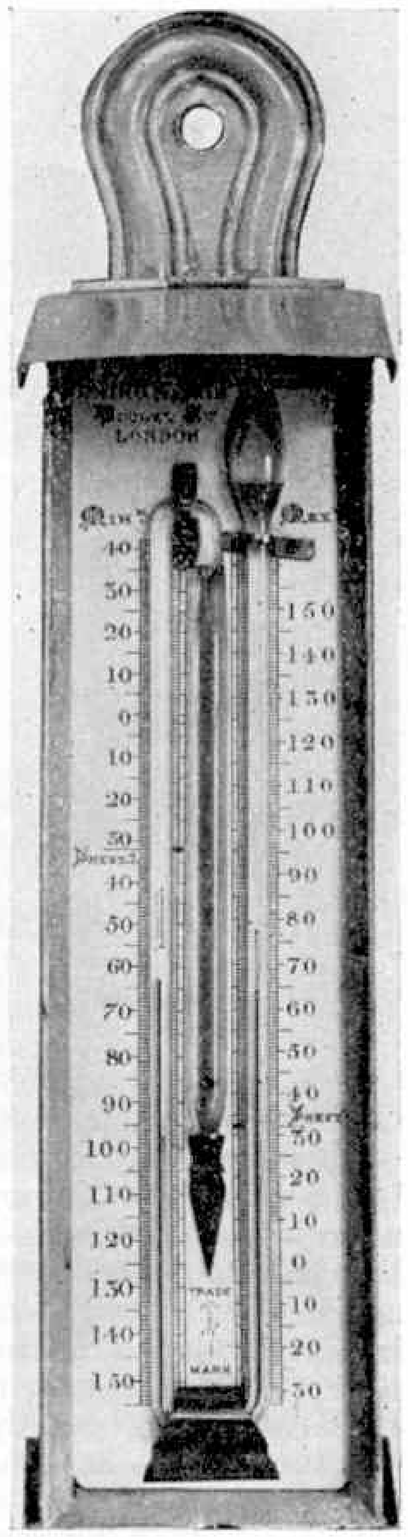


By DAVID BOWEN, F.R.Met.S.

No doubt we shall soon become accustomed to thinking in terms of Centigrade. A mild day will then be one with temperatures of round about 13 degrees C. (55 F.) and a cold day anything from 1 to 5 degrees C. (34/41 F.). Ten degrees C., by the way, converts neatly into Fahrenheit at 50 degrees, but this is the only exact conversion that can be made. All other conversions involve the use of decimal figures, but these will obviously have to be corrected to the nearest whole number.

One thing that does seem to make immediate sense is that, in Centigrade, the freezing point of water is 0 degrees. In Fahrenheit it is, of course, 32 degrees. Hence, when converting, this figure must always be taken into account.

To convert a figure from Fahrenheit to Centigrade, first subtract 32 and then multiply by 5/9. To convert Centigrade to Fahrenheit, first multiply by 9/5 and then add 32.



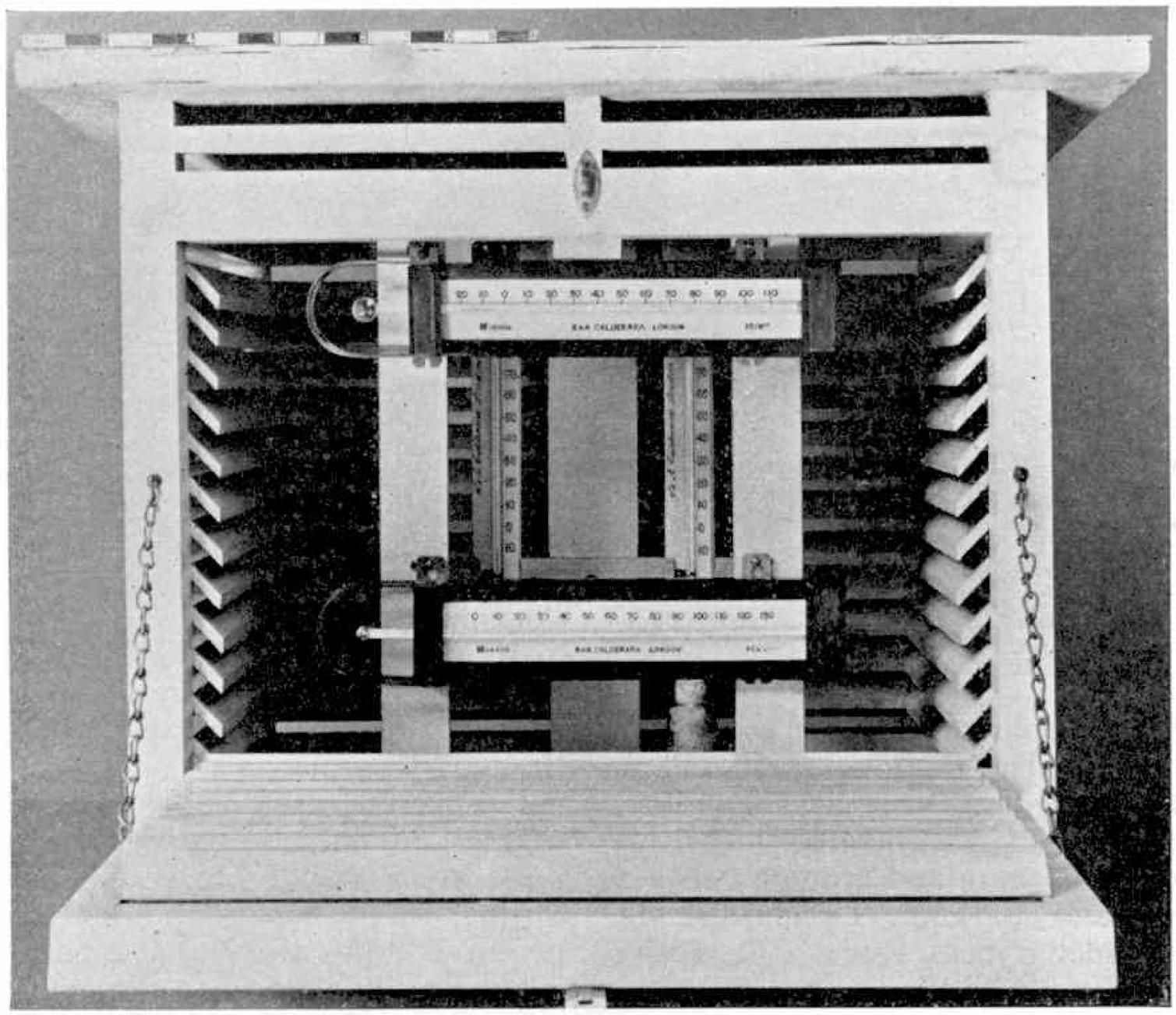
Right: An early-type maximum and minimum thermometer for measuring the daily range and extremes of temperature between day and night.

Bottom picture: This instrument measures air temperature, atmospheric pressure and also the moisture content of the air. Where, as here, the temperature graduations are to one side of the thermometer, it will be comparatively easy to affix the new Centigrade scale in place of the existing one.

Scales of temperature have their origin in the scientific progress of the sixteenth century. The first recorded instrument was made by Galileo in 1593. Some forty years later a Frenchman, Jean Rey, devised an instrument resembling our modern bulb thermometer, but with a very long tube that used water as the expanding and contracting substance instead of mercury.

Alcohol thermometers followed, and these are still used today where only a limited temperature range needs to be recorded. The first mercury thermometer was invented by another French scientist, Boullau, in 1659.

The curious thing is that although a workable instrument had at last been devised, it was not until the latter half of the eighteenth century that anyone gave serious thought to



The interior of a modern standard pattern thermometer screen. The instruments at the rear are wet and dry bulb thermometers which determine atmospheric humidity. In front (mounted horizontally) are maximum and minimum thermometers graduated in Fahrenheit.

the question of introducing some kind of standard by which temperatures could be accurately measured.

Gabriel Daniel Fahrenheit, an instrument maker and a native of Danzig, devised his now famous scale about 1714. He considered that the greatest degree of cold could be made by mixing together ice and sal ammoniac, and to avoid the need for negative readings he decided to call this zero. He then discovered that if he made the interval between freezing and boiling 180 degrees, zero would come exactly 32 degrees below the freezing point of water: so he fixed it thus, leaving freezing point at 32, normal human temperature at about 98 and boiling point at 212.

This scale was universally accepted at the time. A contemporary scale, the Reaumur, invented by the Frenchman of this name, was unpopular, mainly because the difference of 80 degrees between freezing and boiling points made each degree unit too large.

In 1740, Anders Celsius, of Upsala, in Sweden, put forward what now seems the obvious notion of making the range between the two points exactly one hundred degrees. This new idea found ready acceptance in many countries and the scale soon became known as Centigrade.

The Meteorological Office in this country is now trying to encourage the use of the name Celsius in reference to this scale. But the general public may well resist the apparent change in name from Centigrade to Celsius just as much as the change of the national temperature scale from Fahrenheit to Centigrade.

New R.C.T.S. Publications

For almost 60 years the Compound 4–4–0s traversed first the metals of their parent company, the Midland Railway. Later, under the succeeding L.M.S. regime, they covered the routes of numerous others. Of the fleet of 245 Compounds, Midland and L.M.S., there is now a lone survivor, M.R. No. 1000, restored and preserved in 1914 condition. **The Midland Compounds,** by David F. Tee (The Railway Correspondence and Travel Society) provides in the meticulous manner usual with R.C.T.S. publications an extensive survey of the class, their general history, their numbers, dates, and their changing features and duties from 1902 when the initial engine appeared, to 1961 when the last one was withdrawn.

The book is well illustrated by pictures of Compounds, static and in action, in the various stages of their lives. It will have a strong appeal for the locomotive enthusiast, and it is a must for the Midland specialist. The book can be obtained from the Hon. Assistant Publications Officer of The R.C.T.S., Mr. N. J. Claydon, 19 Dene Court Road, Olton, Solihull, Warwickshire, price 7/– including postage.

* * * *

Locomotives of the G.W.R., Part Nine is a further addition to The R.C.T.S. series of publications dealing with G.W.R. locomotives. This Part, with 56 pages of text and 29 pages of illustrations, covers the standard two-cylinder classes, with the exception of the 4–6–0s, already included in Part Eight. There are 16 main classes, comprising the first County class, which were 4–4–0s, 2–6–0 and 2–8–0 tender engines and the 2–6–2 and 2–8–0 tanks.

These all formed part of the G.W.R. standard locomotive programme initiated by G. J. Churchward, who was "Chief" at Swindon from 1902 to 1922, but whose influence was apparent before, and persists long after, his period in that office. His career and features characteristic of his practice are considered and, class by class, numbers, dates and dimensions are given of his two-cylinder engines and their developments introduced by his successors, while there are comprehensive and informative notes on details of design, fittings, liveries and so on. The illustrations record the variations in detail observed from time to time.

This essential book for G.W.R. and Western Region enthusiasts can be obtained from The R.C.T.S. Hon. Assistant Publications Officer, Mr. N. J. Claydon, of the address given earlier in this column, price 14/– including postage.

Lighting-Up Times For 1963

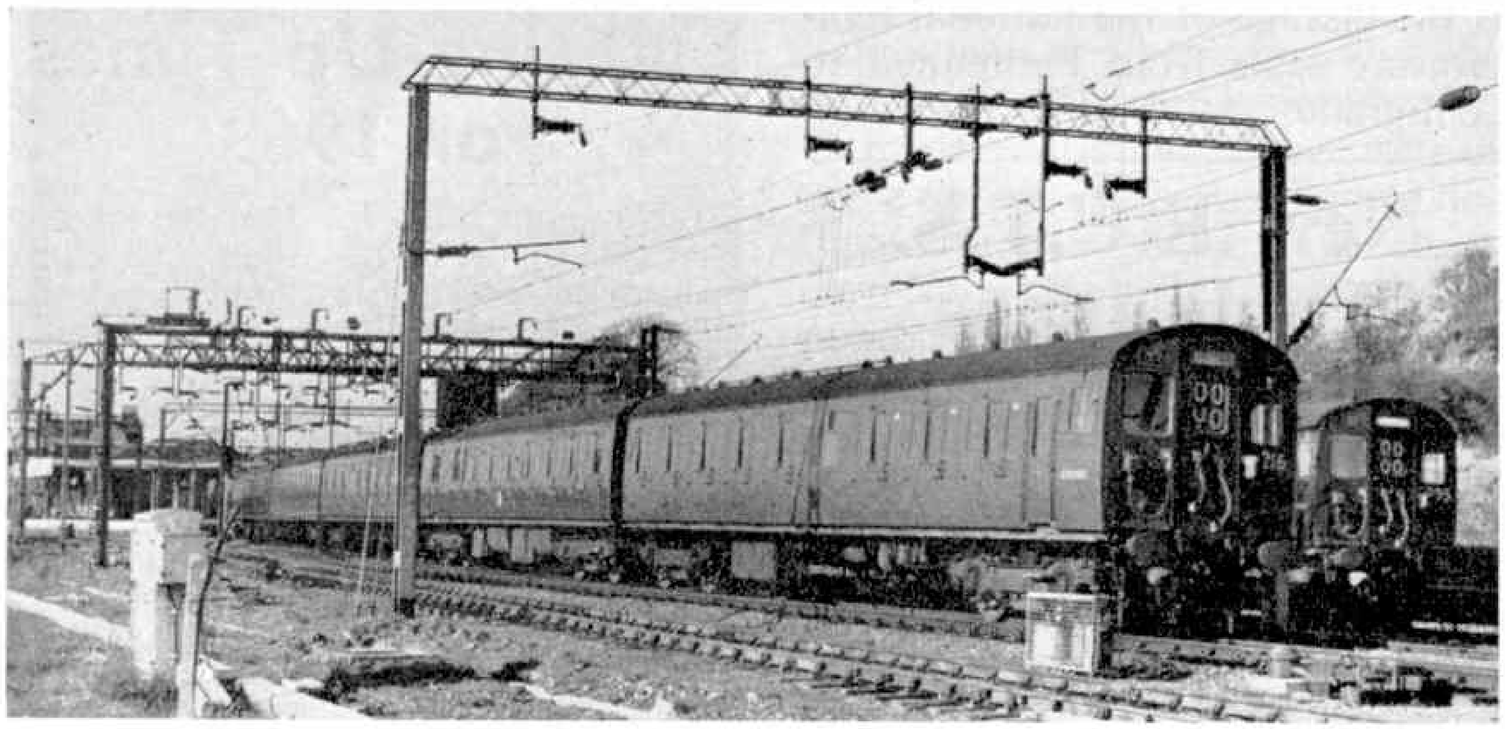
Lighting-up times for 1963 have been published by the Royal Automobile Club in a useful, pocket-size pamphlet, which also includes a town-to-town mileage chart. The lighting-up table shows the legal requirements for motorists throughout the country, but the R.A.C. urges drivers to use their lights immediately road conditions make them necessary. The times given in the pamphlet are for London and other principal cities. The pamphlet is obtainable from the Club's headquarters at 83 Pall Mall, London S.W.1., or from any R.A.C. Office.

RAILWAY NOTES

Contributed by R. A. H. Weight

TILBURY AND SOUTHEND ELECTRIFICATION

A YEAR ago (February 1962 *M.M.*) I reported the vast structural, signalling and traction changes being effected along the London, Tilbury and Southend lines of the Eastern Region. I described the rather unique suburban-type residential passenger services operated intensively over distances up to nearly 40 miles each morning and evening between the City terminus, Fenchurch Street, and Barking, Upminster, the Southend-on-Sea group of stations and Shoeburyness, Essex. The motive power at the time of my previous visit, in 1961, was almost entirely class 4 2–6–4T steam locomotives, though Brush diesels were working some passenger trains as well as a number of the long-distance freight services through to other Regions, or E.R. lines, as they do now.



Since last summer more frequent overhead-wire electric passenger trains have provided quicker average overall and intermediate timings, not only during peak hours but on a regular-interval basis throughout the day, providing from two to six trains every hour, according to location, in each direction.

This includes services via Tilbury—a loop route serving many important industries and Thames-side activities. Numerous journeys between London and Southend take only 45–47 minutes including several stops; mile-a-minute averages are maintained, uphill and down, and are sometimes exceeded between halts only about twenty miles apart, with maxima of fully 75 m.p.h. quickly attained, as I noted, for instance, between Barking and Upminster stops, only 7¾ miles from each other.

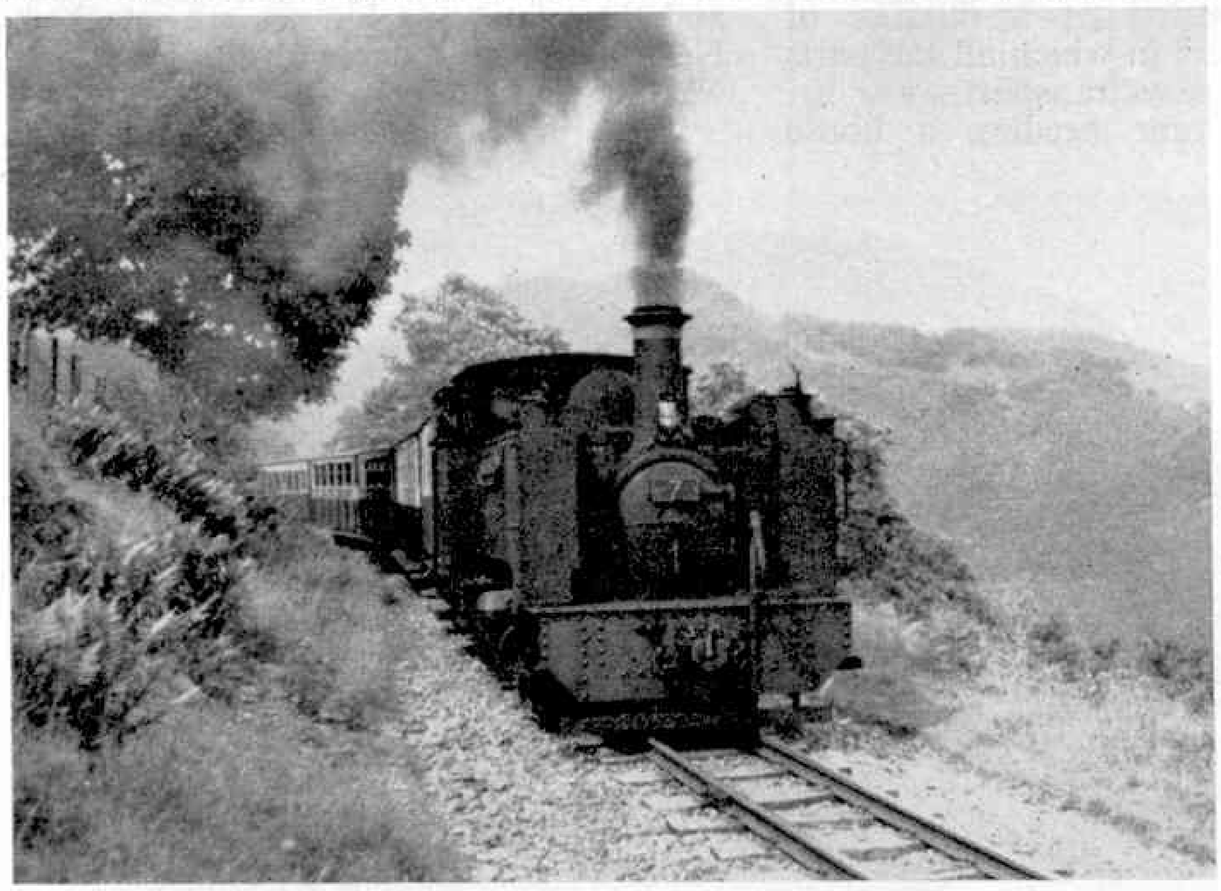
Multiple-unit four-coach sets, having comfortable first and second class accommodation for about 270 seated passengers, are coupled together to make up 8 or 12-coach trains as traffic requires. The four electric motors driving the bogie wheels of one car in each set develop up to 960 h.p.

An automatic electric train-reporting system is to be installed down the Southend direct line, which will inform the Traffic Control Office at Fenchurch Street by means of track circuits, relays and electric typewriter, the passing times of each train at twelve selected intermediate points.

W.R. DEVELOPMENTS

"The South Wales Pullman will start at 16.55 hours; The Bristol Pullman (up) at

At left (top) English Electric Type 4 diesel No. D289 is seen alongside a Jubilee 4–6–0 No. 45628 "Somaliland", at Kentish Town. The photograph is by J. A. Fleming, who also took the picture for the heading illustration of a scene on the now-closed Westerham branch. Plans for its revival were referred to in the "M.M." last November. Bottom left: A multiple-unit electric train on a trial run on the Southend line at Pitsea. Photograph by M. Edwards.



Above: The "Cambrian Coast Express" waits to leave Dovey Junction behind No. 7803 "Barcote Manor". The Pwllheli portion has just been backed on to the Aberystwith section in this picture by Colin P. Walker. Left: W.R. No. 7 "Owain Glyndwr" is here approaching Devil's Bridge on the narrow gauge Vale of Rheidol line. Photograph by R. F. Roberts.

15.15"—so the departure indicators on Paddington and Temple Meads Stations respectively tell us. These announcements are part of a scheme now being extended to other stations' timetable sheets and train movement notices, as well as certain train brochures, to employ the Continental 24-hour clock system, which is already familiar in some British spheres.

Bright colour schemes departing from the customary chocolate-and-cream are being featured as stations are repainted. These include terra cotta and grey at Paddington, recalling in modern version a painting style in existence there many years ago. Others lately transformed in appearance and including various shades of grey finish are Taplow, Chippenham, Evesham, Frome and Teignmouth, and more are in process of redecoration.

Extensive modernisation of the signalling systems along the busy Paddington–Reading 36-mile section comprising four or more tracks has been proceeding by stages for some years. Not far out from Paddington, the new Old Oak Common signal box controls a complicated and much occupied network of lines, including the junction for High Wycombe–Birmingham and the north; also that leading to Kensington, the West London connecting links and the S.R., and the engine and carriage lines in and out of Old Oak Common locomotive and rolling stock depots. It replaces three former large mechanical cabins. The signalmen can set up more than 200 different routes, train paths or crossings, with their appropriate colour-light signals, in association with automatic train describers, thumb switches and electrical operation.

Resignalling and additional and rearranged tracks on a big scale form part of the railway facilities organised in Newport Docks, on the main line and alongside the vast new Spencer Steel Works of Messrs. Richard Thomas and Baldwins at Llanwern, Monmouthshire, opened by the Queen last October. I hope to describe these more fully later.

FAST DIESEL RUNNING

My friend, Mr. G. Tibbett, has kindly sent along detailed logs of a number of express runs under winter conditions between London and Bristol. The trains concerned were *The Bristolian*, with its normal load now heavier than in the 1¾-hour non-stop days, hauled by a Warship class diesel-hydraulic 2,200 h.p. locomotive, and the de-luxe *Bristol Pullman*, weighing about 370 tons, including self-contained diesel-electric 2,000 h.p. traction. Each provides the fastest service of its kind between the two cities, covering the 118½ miles, including one or two stops, in two hours or less, although fog and extra slowings caused a few late arrivals. On the other hand, lost time is often made up.

The westbound *Bristolian* from Paddington at 8.45 a.m. with "10-on"—about 360 tons gross, headed by No. D853, *Thruster*, had just two signal checks, ran steadily and fast without exceeding about 76 m.p.h., reached Bath Spa, almost 107 miles, in 100 minutes as booked, and Bristol, also punctually, at 10.44. With a coach less, No. D818, *Glory*, was more severely delayed by signals, as well as two other slowings for repair work, but attained 80–82 m.p.h. in places and reached Bath two minutes early. Bristol was reached a minute before time.

In the opposite direction from Temple Meads at 4.15 p.m. No. D820 *Grenville*, with "10-on", gained a minute to the Bath stop, but was not so lively thereafter, arriving two minutes late. This was more than covered by extra speed reductions, although there is a recovery margin. On a busy Friday, tackling the stiffest load I have heard of on this express—11, including some very heavy well-filled coaches and weighing decidedly over 400 tons gross—No. D822, *Hercules* (well named!), passed Swindon and Didcot ahead of time, covering 65 miles from Bath restart to passing Pangbourne, in the wooded Thames Valley, in 55½ minutes, averaging 70 m.p.h. with maxima of 80 m.p.h. In spite of severe repair and signal slowings on each side of Reading, a punctual arrival seemed in sight, but congestion outside Paddington at a peak evening period caused an unfortunate five-minute final signal delay.

The 115-minute Bristol–London morning Pullman was in Paddington to time amid heavy pre-Christmas traffic, keeping the 65½ m.p.h. schedule from restart to Bath, in spite of five slacks and one short stop for signals. There were rapid accelerations, with maxima from 84 to 86 m.p.h. on almost level track.

LOCOMOTIVE VARIETY

From another old friend, Mr. Norman Harvey, I have received interesting notes including lineside observations and travel stories of last summer. Shrewsbury Station, as I have pointed out before, is a most interesting junction and staging point. From there important main or cross-country English and Welsh routes radiate, causing busy periods in the station for long-distance trains, especially during the holiday season. Locomotive classes represented on Paddington–Chester–Birkenhead expresses, which pass through

(*Continued on page 94*)

Seeking Adventure In A "Quilted" House

A NEW and exciting concept in "travelling homes" is opening up new vistas in the exploration of inhospitable regions hitherto left virtually unexplored through extremes of climate. Now in production in Canada, these travelling homes are so light and compact they can be stored aboard an aircraft and flown anywhere in the world where an aircraft can touch down. And the home can be assembled, complete with a cosy fire, within half an hour of arrival at one's destination.

Learning this, one's mind is instantly buzzing with questions! How big are these "homes"? Can they be erected and used anywhere? What about the cost?

It was, in fact, an ever-increasing and urgent need of some kind of living accommodation for people such as explorers, surveyors, miners, research scientists, foresters and agricultural research workers, on whom we are depending for the broadening of frontiers in the world's few remaining unexploited regions, that forged the idea for a form of housing fully insulated against the weather yet easy to transport and simple to assemble.

By A. J. BRANSTON

So the "quilted" house became a reality.

After much trial and experiment, several models were completed for use by two expeditionary parties working for the Canadian Department of Mines and Technical Surveys. Both expeditions—one working on the Polar Shelf project and the other in the Canadian Hydrographic Service—were doing vital research work in inhospitable terrain with below-zero temperatures.

Under these severe conditions, the Parcoll Housing Unit, as it is called, fulfilled all expectations. Members of each party found themselves tremendously impressed by the ease of handling, the resulting comforts to the people involved, the economies reflected in transporting the unit by air, and its versatility in moving camp sites from one location to another.

The officer in charge of the Canadian Hydrographic Service research work expressed his appreciation in these words: "After arrival at the beach, we had our camp site completely assembled, including housing units and radio towers, and our transmitters were broadcasting—within 30 hours. In previous years it has taken this time alone just to set up the living accommodation. At no time in the past have we ever set up so quickly and efficiently".

In shape, the quilted house is semi-circular. It consists of a number of wooden containers in which all the parts are packed for easy transport. For instance, an explorer needing a house measuring 16 ft. × 16 ft. would have nine containers, eight of which are each 8 ft. long, 2 ft. wide and 15 inches deep. Each of these containers opens up to form a portion of flooring 16 ft. × 2 ft. The ninth is slightly larger, as it has to accommodate the two end wall sections with the door. This ninth section fulfils a further vital function as a wind-breaking vestibule erected at the house entrance.

The eight remaining containers, once emptied of their contents, become the floor panels. Since these consist of tempered hardboard panels in a new honeycomb section, they are enormously strong while providing an efficient insulating medium.

Assembling the house is so simple that a housewife could do it. No tools whatever are required—not even a screwdriver! Once the superstructure is up, using the aluminium tubing and castings provided, the strong and sturdy full-size doors, the unbreakable plastic windows and the ventilating louvres are attached. Next stage is to buckle on the insulating weather-proofed covering (the "quilt")

(*Continued on page 95*)

The interior of the "quilted" house (top). Note how the containers fit neatly together to form the wooden floor. You can also see the quilted roofing, the lightweight folding chairs and a heater. The bottom picture shows the neat and compact appearance the house provides from the outside.

DRILLING FOR OIL, AT SEA

A NEW FLOATING PLATFORM

NEW equipment introduced by the Shell Oil Company in the United States now allows the search for oil to be extended into the open seas. Blue Water, a floating drilling vessel developed as a joint project by the Shell Oil and the Blue Water Drilling Corporation of New Orleans, rides virtually motionless in spite of wind and waves while the drill is lowered and driven thousands of feet below the sea bed.

New techniques developed by Shell Oil enable wells to be completed on the sea bed by remote control from the vessel, without the use of divers. All the equipment needed for drilling and completion is lowered to the well-head on the ocean floor, remotely coupled up and put into operation under the eye of a deep-water TV camera. The vessel can operate in up to 600 feet of water, and with modification depths of 1,000 feet should be possible.

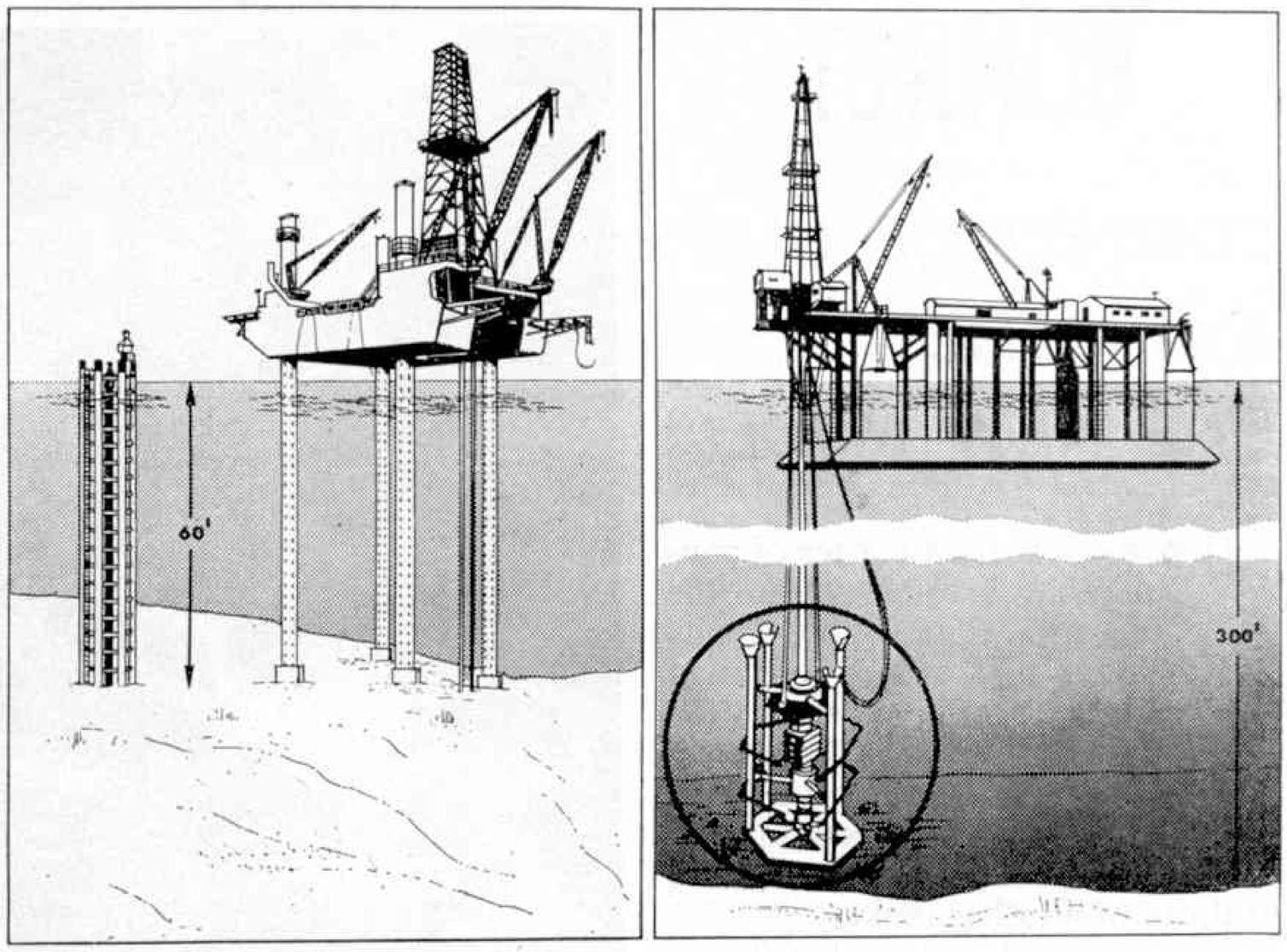
* * * *

Drilling in such offshore areas as the Gulf of Mexico, the Pacific Ocean off California, the Persian Gulf and parts of the West European continental shelf has become the oil companies' biggest hope of finding new oil and gas fields. Up to now, however, high costs and technical problems have restricted most of this exploration to close-in areas where the water is no more than 200 feet deep.

* * * *

The first sea-bottom well completed with the new techniques was brought in early in 1961 in the Gulf of Mexico. Blue Water operated successfully, weathering winter storms with waves up to 28 feet high and winds of more than 25 miles an hour. In the worst weather, roll and pitch was less than five degrees.

Three exploratory wells were then drilled 40 miles off the Louisiana coast.



How oil and natural gas fields can now be developed in open seas by means of an all-weather floating drilling vessel and a system for completing wells on the ocean floor by remote control from the surface, is illustrated in the diagram on the right. The remote control equipment, developed by the Shell Oil Company in the United States, is shown in the circle. Conventional offshore drilling rigs (left diagram) that rest on the sea bottom are limited to shallow waters. The wells they drill need elaborate structures to support oil-flow equipment. Illustrations by courtesy of the Shell Oil Company.

One reached 11,586 feet in 21 days and another 13,202 feet in 32 days. The fourth hole was completed in nearly 300 feet of water, the greatest offshore depth ever achieved. Blue Water subsequently started its fifth deep-water well.

Except for the additional time needed to hook up the mooring system, and the more elaborate starting procedure required, drilling rates have approached those for shallow-water or land rigs.

The Blue Water vessel has an acre-size deck mounted on 100-foot high "stabilising bottles" at each corner, all connected by a latticework of giant tubes. It is known as a semi-submersible rig since it floats with 40 feet of its structure under water, where wave action is least. A partly automatic system, with ballast tanks in the "bottles" and elsewhere, maintains the trim and draught regardless of changing hook and deck loads.

The vessel is towed to the drilling location and moored by a ring of eight 10-ton anchors. It has a heliport, an over-the-side drilling rig and quarters for a crew of 40.

* * * *

The underwater completion system, which allows the well-head to be on the ocean bed instead of on a massive pile-driven structure projecting above the surface, was developed by the exploration and production research division of Shell Development Company at Houston, Texas. The project took seven years to complete and cost more than 7,000,000 dollars exclusive of the cost of the vessel and the drilling equipment.

The study involved not only research and experiment with many types of underwater equipment and operating methods, but also an intensive investigation of wave action both at and below the surface.

* * * *

In the underwater completion technique the locking and unlocking of valves, connections and seals is carried out entirely from the drilling vessel, by means of high-pressure hoses and other remote units, and no diver is needed.

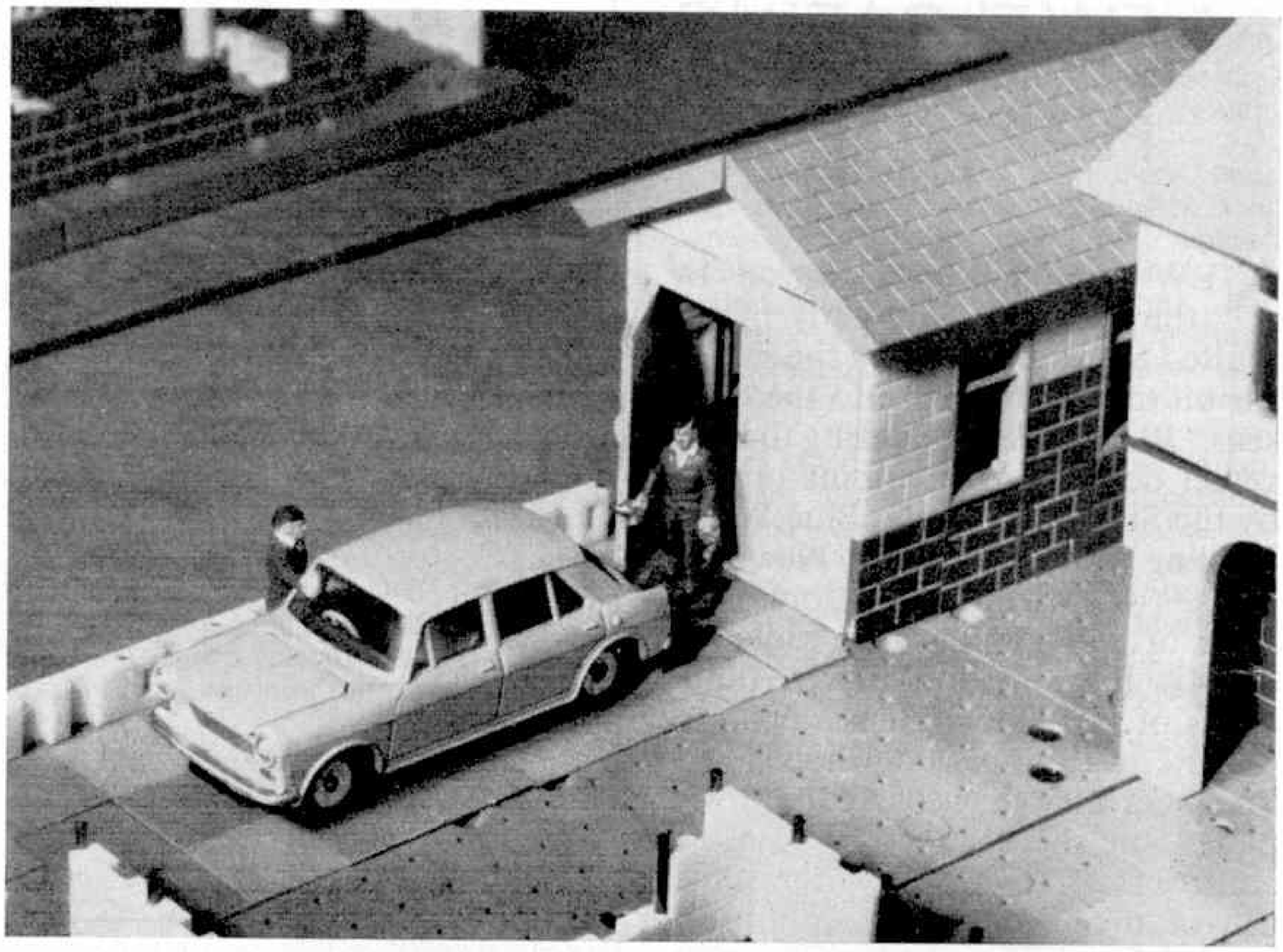
A five-columned structure is used to guide all the equipment to its place on the sea bed. This is lowered to the bottom and locked to casing embedded in the ocean floor. Each of the columns has a line running up to the vessel. Three lines are used to guide equipment to the sea floor; the two others are used to operate an underwater TV camera and other gear. As drilling progresses equipment is changed, some of it weighing as much as 35 tons.

With these new techniques, oil men can work wherever the ocean promises hope of discovery, and Shell Oil are making various components and methods available to the industry through equipment manufacturers and service contractors.

MINIATURE MORRIS 1100 HAS A LIFT-UP BONNET

COMPRESSOR UNIT IS ANOTHER FINE NEW MODEL

NEW models are a matter of considerable frequency in the world of cars. They follow trends and fashions, not only in outward design but in internal matters such as seating, etc. Most of them have some particular individualistic touch about them which recommends them to the purchaser in preference to those of another make.



Cleaning the car is usually a weekend job. The owners are rightly proud of their new Morris 1100 and believe in keeping it spick and span. Garage and houses are built in Bayko.

DINKY TOYS NEWS

By The Toyman

Much less frequently comes one specially appealing model which bursts on to the scene with enormous impact. Such a car was the Morris 1100 saloon which hit the headlines for days when it was brought out not very long ago. Everybody read about it; endless thousands went to look at it in the showrooms, a lot of people bought it, and altogether it had a christening which was quite exceptional.

Now this fascinating car figures as the latest Dinky Toys model and, as in the case of No. 113 M.G. B Sports Car, we have worked on its production as a miniature in the closest liaison with the Morris Organisation. Their full co-operation has enabled us to create a perfect replica—the first Dinky Toy to be built to a new, larger scale of 1:42.

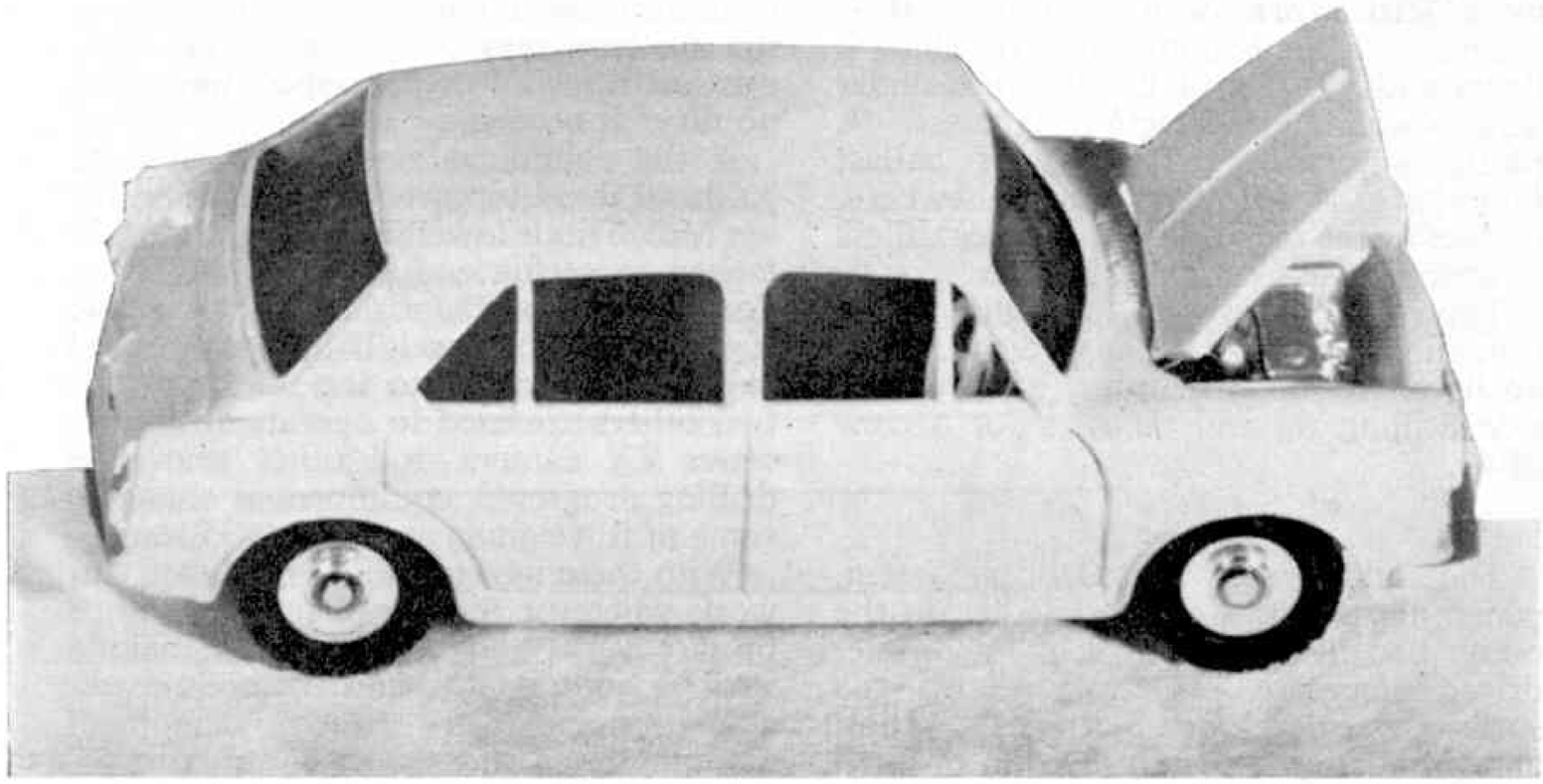
One of the outstanding features of the Morris 1100 is the transverse B.M.C. engine, and this has been incorporated in the Dinky Toys miniature. The Dinky Toys owner can gain access to the engine by lifting up the bonnet of this natty little car and, without question, this is a toy which is going to figure in collections all over the globe.

Numbered 140 in the Dinky Toys list the Morris 1100 possesses all the attributes one associates with the latest Dinky Toys —Prestomatic steering, four-wheel suspension, windows, seats and steering wheel. The appeal of this top priority toy for all enthusiasts is enhanced by its pale blue finish in high-lustre gloss. The engine is finished in aluminium and presents an impressive little unit so far as detail is concerned.

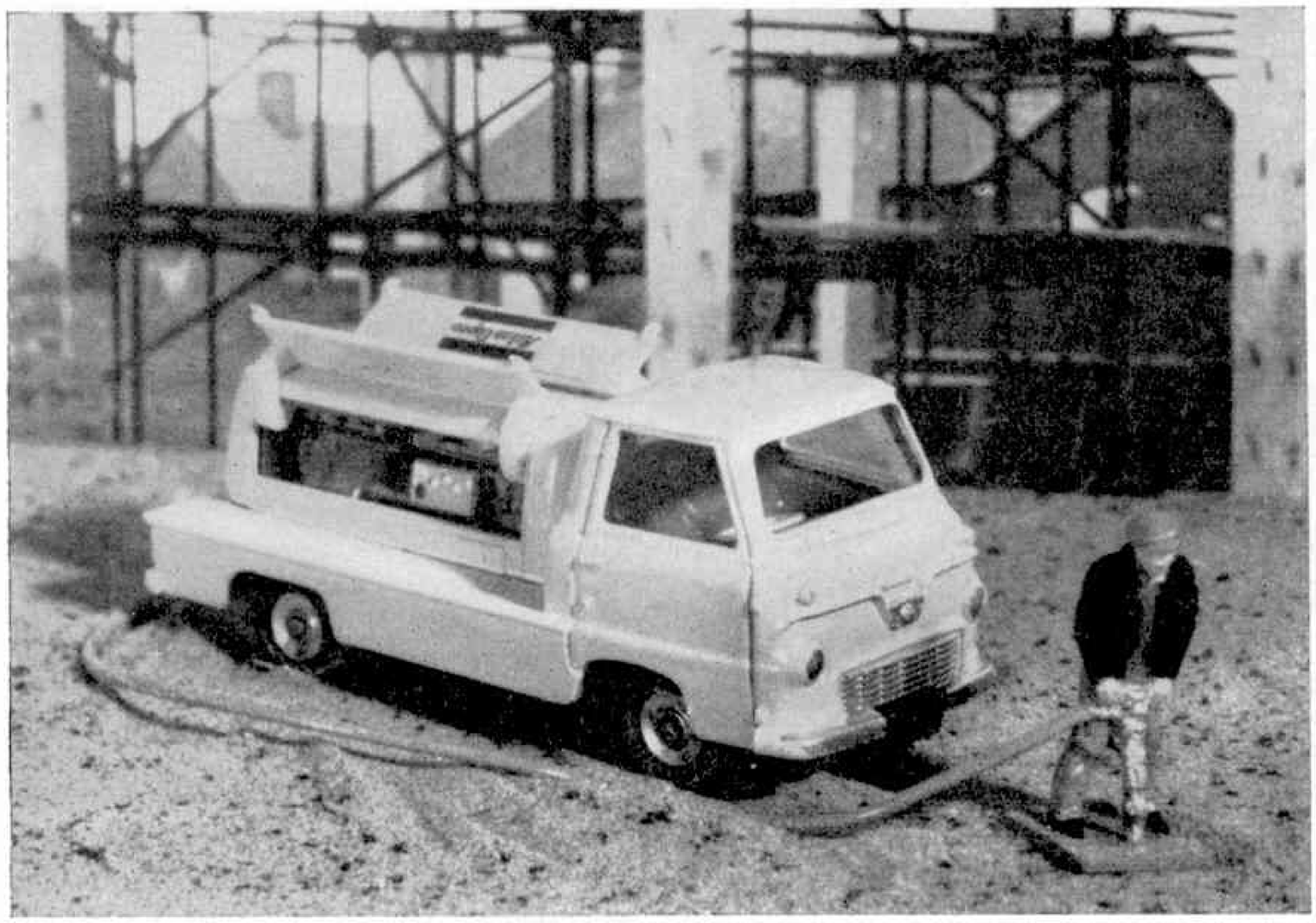
I outline below technical details of the actual car for those who may have only read about it in general terms without having had the opportunity to absorb specific details.

Perhaps its most important aspect, apart from the crosswise-mounted engine which drives the front wheels, is the completely new suspension system making use of ordinary water. This new system, trade name "Hydrolastic", not only gives an unbelievably smooth ride over very rough surfaces but also prevents pitch and roll.

The engine is of the 4-cylinder, o.h.v. variety with a capacity of 1,098 c.c. which develops a power output of 50 b.h.p. Maximum speed is 78 m.p.h. and the car



This cut-out shows how effective the Morris 1100 looks with bonnet lifted.



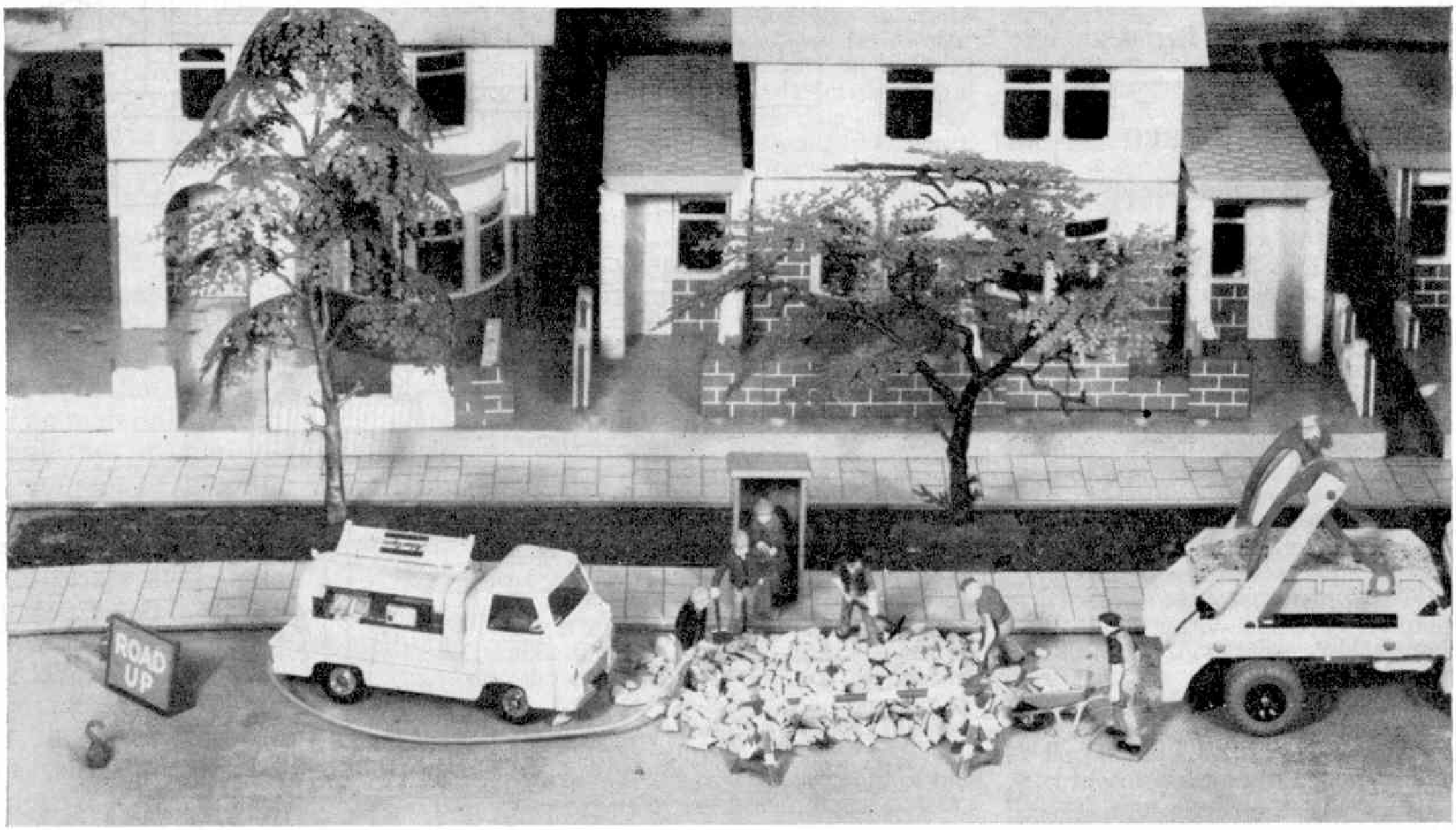
Close-up of the Atlas Copco Compressor Unit (left) shows how effectively it links up with the Man with the Pneumatic Drill (or road breaker) who comes from Dinky Toys Road Maintenance Personnel Set (No. 010). Below: Danger—Men at Work: other members of the Road Maintenance gang figure in this scene with the Compressor Unit and the Marrel Multi-Bucket Unit.

will cruise comfortably at 70 m.p.h. Overall dimensions are: length, 12 ft. 3 in.; width, 5 ft.; height, 4 ft. 5 in.; wheelbase, 7 ft. 9½ in.; front track, 4 ft. 3½ in.; rear track, 4 ft. 2⅞ in.

The actual Morris 1100 is available with either two or four doors and, although small in stature, can carry, with comfort five people and a certain amount of luggage. It is interesting to note that the ground clearance of this revolutionary car is 6 inches, whereas that of many bigger cars is less. A neat, compact little car the Morris 1100 may be, but it is certainly no midget.

You will have seen from the heading that we have a further tip-top new model this month—a compressor unit based on a vehicle of this type used by Atlas Copco (Great Britain) Limited of Hemel Hempstead, Herts, a firm world-famous for their compressed air equipment. The Dinky Toys miniature, which is No. 436 in our lists, represents a compressor unit mounted on a Ford Thames 15 cwt. chassis. The unit is completely encased for protection and has a door on either side, running the whole length and opening upwards to give access to the "works". The interior machinery is faithfully reproduced in quite minute detail, even down to the control panel. I must add that although this is a commercial vehicle the Dinky Toys model, like so many of the latest cars in the Dinky fleet, has four-wheel suspension and Prestomatic steering. The cab has windows, a steering wheel and separate seats for the driver and his mate. The whole model is finished in bright yellow gloss with the words *Atlas Copco* transferred in blue on both doors of the compressor unit.

This first-class vehicle has been designed not only as a self-contained unit but to be used specifically in connection with the Set of Road Maintenance Personnel (Dinky Toys No. 010), and so two points have been provided at the rear of the compressor lorry to which hose from the pneumatic drill included in the Road Maintenance Set can be attached. And, of course, there are so many other models which can be brought into play with the Atlas Copco vehicle from the existing range, notably No. 251 Aveling-Barford Diesel Roller, No. 437 Muir-Hill 2-WL Loader, No. 961 Blaw Knox Bulldozer, No. 960 Albion Lorry-Mounted Concrete Mixer, No. 965 Euclid Rear Dump Truck and 966 Marrel Multi-Bucket Unit.



Handy hint for the young photographer

HOW TO MAKE YOUR OWN PRINT DRYER

ALL beginners in photography have experienced the trouble of wet contact prints having to be dried by leaving them on newspapers or between blotting paper overnight.

BY

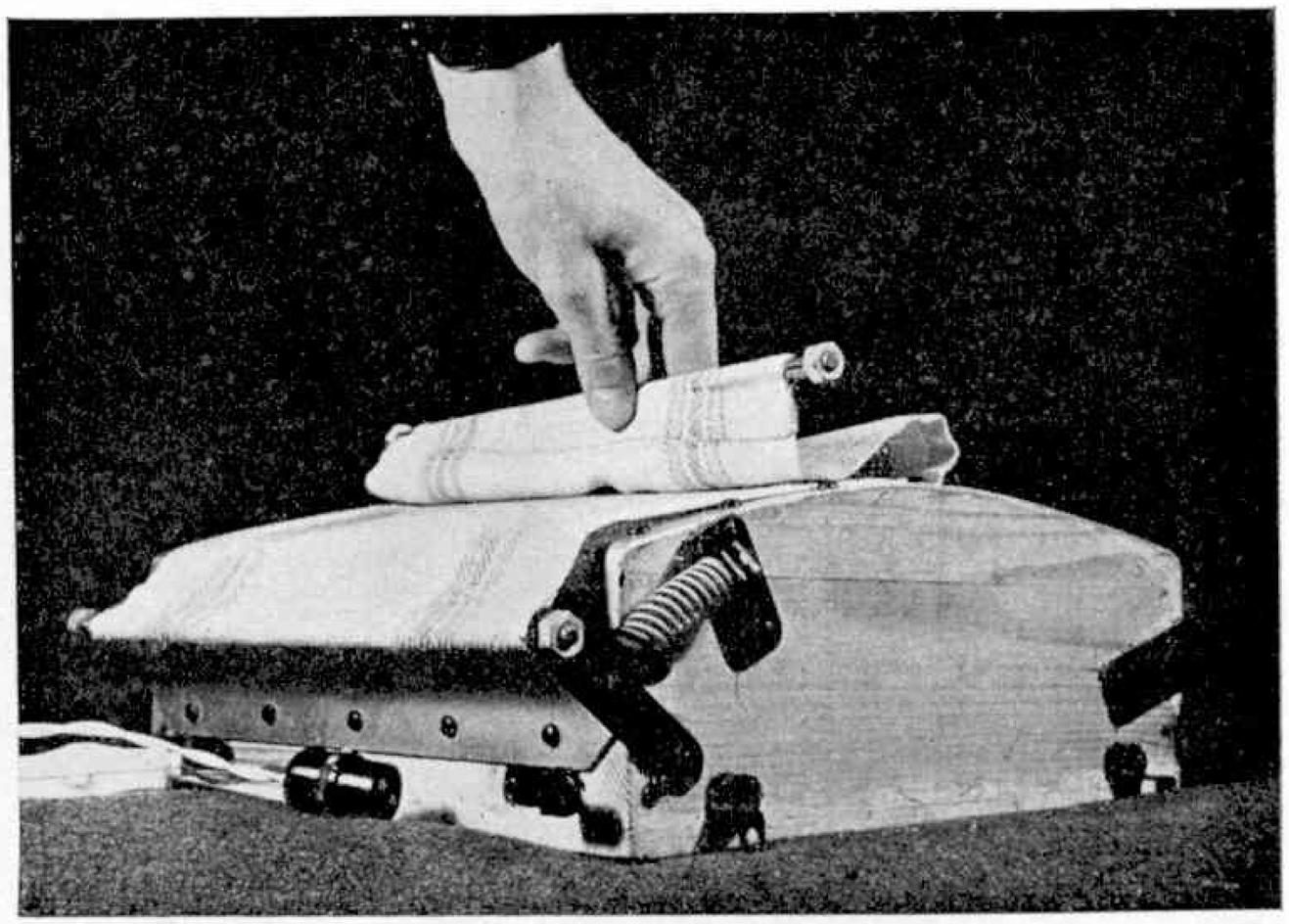
EDWARD G. HODGKINS

The result is a heap of curly pieces of paper, almost impossible to flatten out quickly.

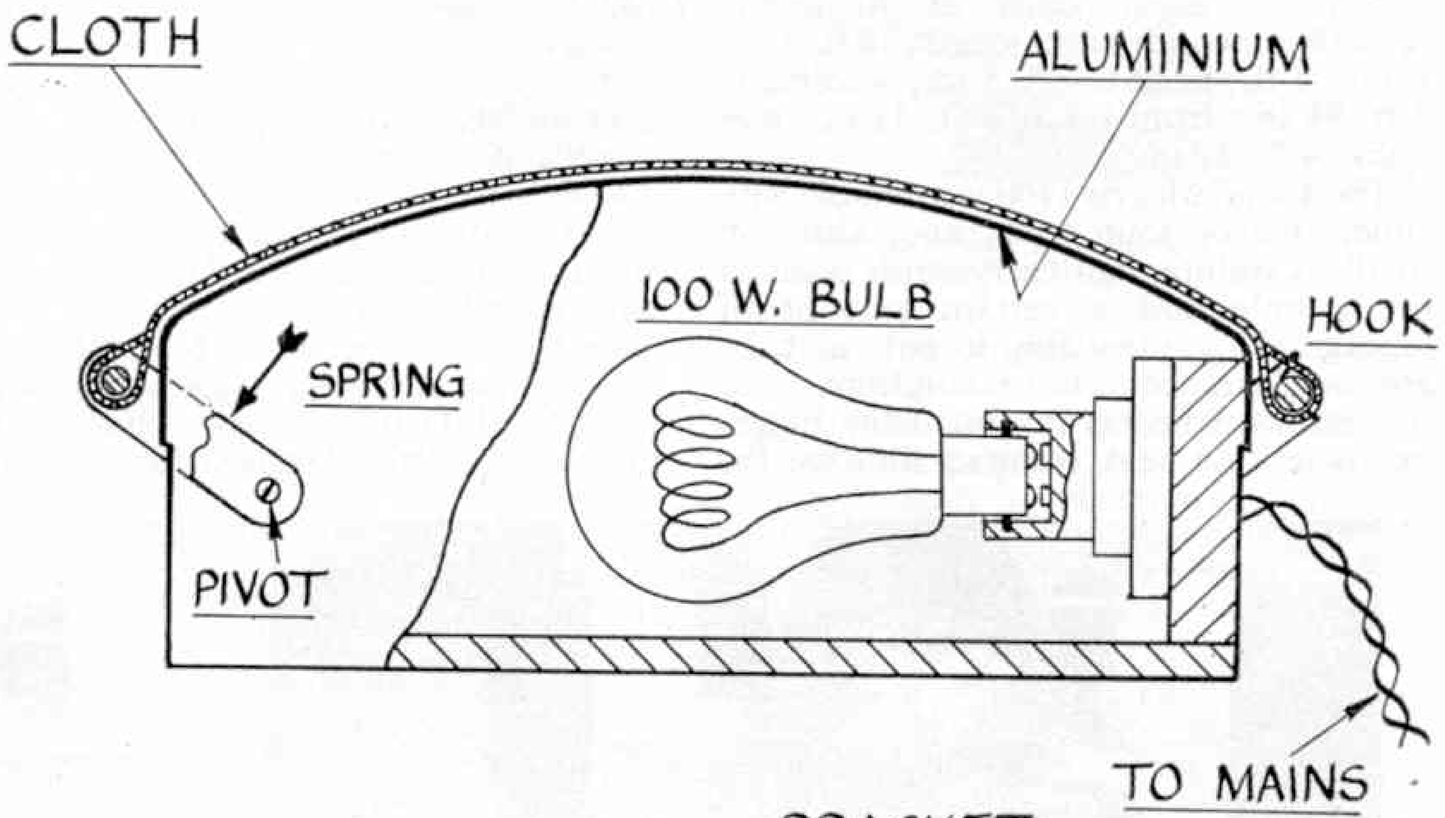
I had this trouble five years ago

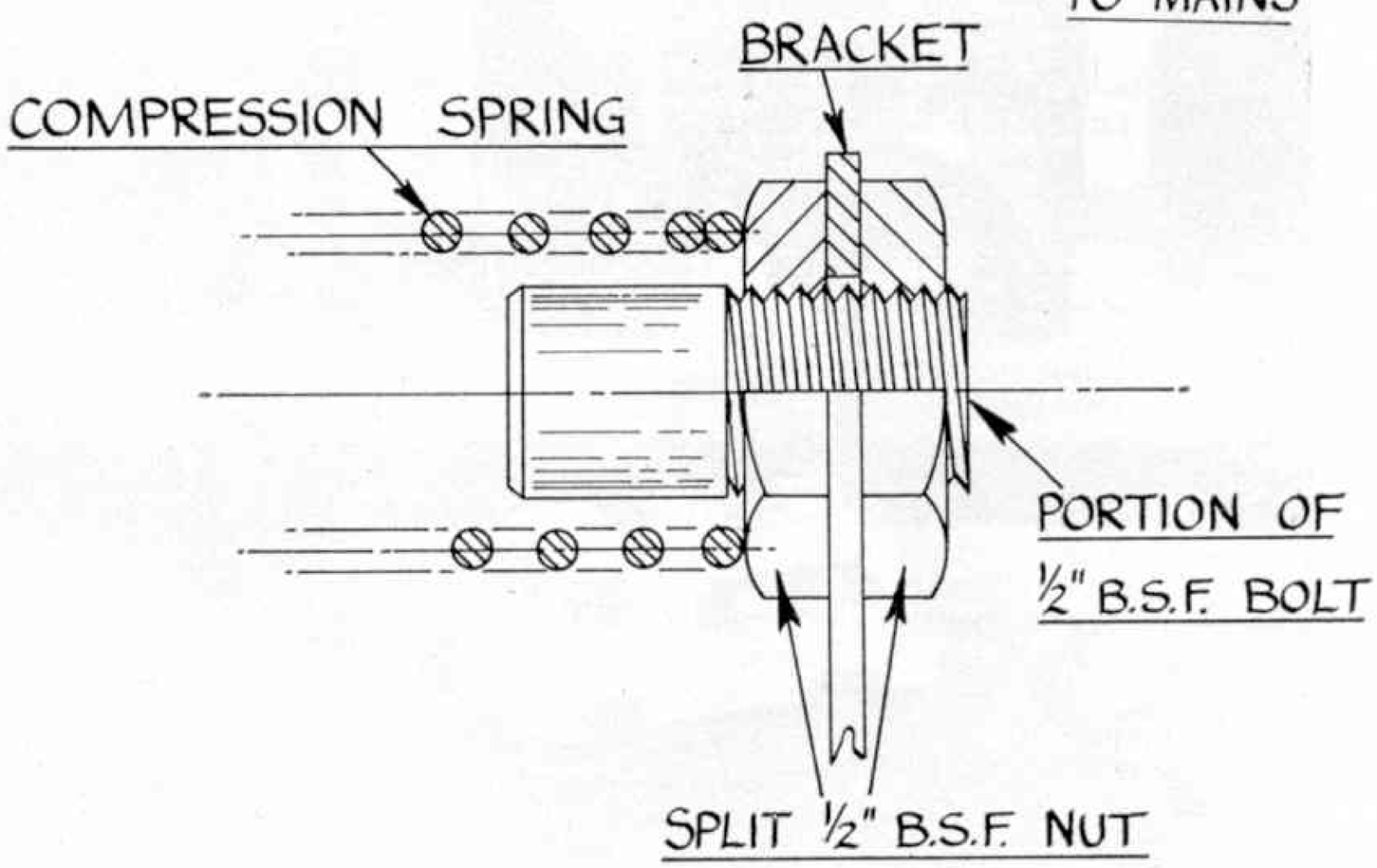
ITEMS REQUIRED

	s.	d.
¾″ Blockboard for sides and ends: 2 pieces 10″ × 3½″ 2 pieces 10½″ × 4½″ ..	6	0
¼″ plywood base 12″ × 10″ ..	1	6
16 gauge aluminium sheet 16″ × 10″	1	6
16 gauge mild steel plate—offcuts	1	0
4 dozen black japanned wood screws ¾″ long	2	6
2 compression springs (from a garage)	1	0
1 tea-cloth	1	6
2 ¼″ silver steel rods, 12″ long	3	0
4 ½″ BSF bolts		
4 ½″ BSF nuts		
4 ¼″ BSF nuts (on ends of rods)	1	6
Lampholder, adaptor, flex and 100-watt bulb ..	3	0
Black Paint		6
Total	23	0

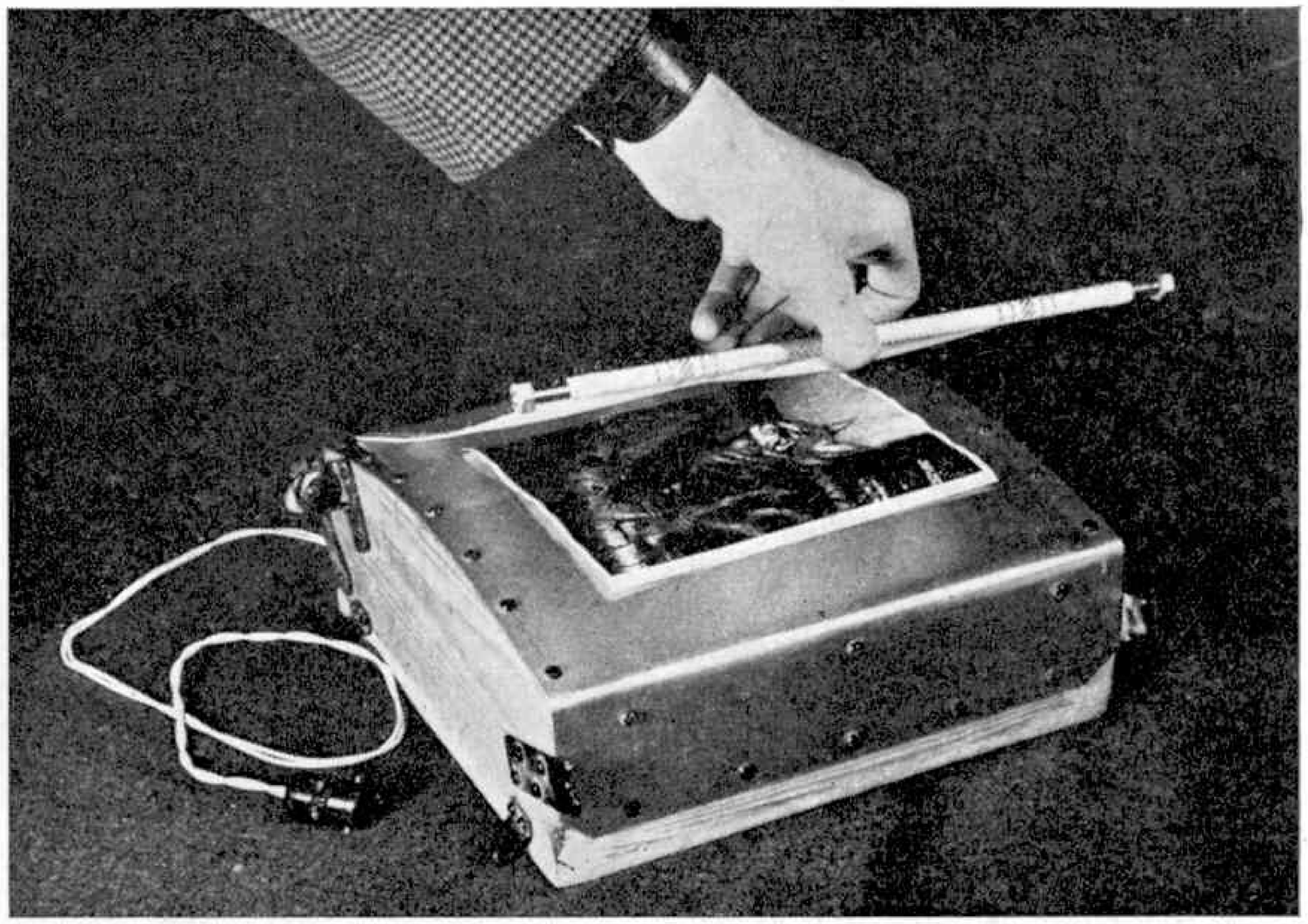


Above: Lifting the cloth cover off the print. The photograph shows one of the steel rods to which the cloth is attached. Centre: A sectional view of the 100-watt print dryer which is 12 inches long by 10 inches wide. The height is 4½ inches. Bottom: Sectional drawing showing details of the spring locator.





Another view of the print dryer, taken at an angle, which shows the piece of cloth—and the steel rods to which it is attached—which is stretched tightly over the dryer when this is in use. Photographs and diagrams are by the author.



and I decided to make myself a print dryer to do the job for me. This device consists of a heated wooden box with a curved top of aluminium sheet covered by a piece of cloth. The heating "element" is a 100-watt electric light bulb which gives continually good results. By its use I have dried many thousands of prints.

The cloth cover was made from a piece of tea-cloth with a $\frac{1}{4}$ inch silver steel rod sewn into each end. It was necessary to cut half-an-inch of thread on each end of these rods first so that nuts could be used to attach the rods to the brackets. In order to keep the photographs flat while drying, the cloth must be kept in tension over the top of the photographs (which should be placed face upwards). This is done by two strong compression springs acting on the brackets supporting one of the rods. The rod at the free end of the cloth hooks over two fixed brackets on the side of the box.

All the brackets were bent from 16 gauge mild steel plate while the springs are held in place by short pieces of $\frac{1}{2}$ inch bolts. Four of these bolts were sawn in two pieces close to the top of the threaded portion. The head was thrown away and the other piece was fixed to the bracket by two thin nuts made by sawing one ordinary nut in half.

The whole unit was fixed together with black japanned screws and the inside of the aluminium top was painted black to prevent loss of heat by radiation inside the box.

The materials shown in the panel are all that are required for a dryer big enough to take one 10×8 inch prints or a dozen $2\frac{1}{4}$ inch-square contact prints at a time. Approximate prices at the time of writing are also listed and you will see that the whole only comes to something over £1.

Many of the items shown need not be bought, however, as Dad's workshop will probably yield a variety of bolts, springs, paint and perhaps even the wood and metal themselves. Mum, too, may well be persuaded to give up a tea-cloth.

It is easy to see, then, that even if all the materials have to be bought, this dryer is still only one-third of the cost of a "shop" model.

Railway Book Review

The Great Western Railway was possibly the most individual of the former separate railway companies and was the only one to retain its original title until nationalisation—from the date of its Act of Incorporation in 1833 until 1948, when it became the Western Region of British Railways. It was unique in maintaining until 1892 the broad gauge of 7 ft. originally adopted by Brunel, its first Engineer, although standard gauge routes had been added or taken over and there was, until the final end of the broad gauge, much mixed-gauge track, some of it of remarkable complexity at stations and junctions.

In **The Great Western Railway In The 19th Century** (Ian Allan, price 30/–) the author, Mr. O. S. Nock, B.Sc., tells a fascinating story. The fifteen chapters of the work form, in effect, a series of essays on different aspects of G.W.R. developments and operation, and the account is brought down to the year of the Diamond Jubilee of Queen Victoria. By then, 1897, the system had become consolidated as a standard gauge concern, and had begun to show the first signs of the developments that were to make such a remarkable story of progress during the first quarter or so of this century.

There is a very readable account of the pioneer days of the broad gauge system, and we are given an interesting insight into the operating methods of earlier times. The spread of broad gauge influence, the so-called "battle of the gauges", and the foundation and development of Swindon Works as an establishment for locomotive, carriage and wagon building and maintenance make, in their separate chapters, a fascinating story.

Needless to say, locomotives and their work, rolling stock and other equipment get their share of attention, as do the development of standard gauge routes and services, the building of the Severn Tunnel, and the organisation and methods adopted for the final gauge conversion of 1892. The book is illustrated by a fine selection of photographs, many of which are from the British Railways archives.

Britain's First Cutter Loader

What is believed to be the first cutter loader used in a British ironstone mine has come into service at the Easton ironstone mine, near Grantham, of the Ore Mining Branch of The United Steel Companies Limited.

Known as the M. & C. Norse cutter, the machine has a cutting head of four shearing discs, which cut into the ironstone. The ore is loaded by gathering arms to a central scraper chain conveyor which delivers it into 15-ton shuttle cars. Use of the cutter loader will eliminate drilling and shot firing in the Easton mine.

The M. & C. Norse machine was made by Mavor and Coulson, Limited, Glasgow in association with the Lee–Norse Company of America, and this application is the first of its kind in the world.

Ball Games Through The Ages

By F. W. Robins, F.S.A., F.R.G.S.

The cricket memorial at Broad Halfpenny Down, Hants.

FOOTBALL, cricket, tennis, golf—these games occupy the leisure time of vast numbers of people in this day and age. Some people play, others watch—and comment. Professionals play games for a living; sports writers attend the events for the same important reason. And all the world over there are endless tens of thousands of amateurs who take part in a wide variety of ball games for the pure enjoyment and beneficial recreation they can provide.

We may tend to look on such pursuits as something linked only with the present, but ball games reach back, in fact, to the very depths of history. In early times round stones, fruit and the like probably led to the invention of games of which present-day sports are simply a natural development.

Such games as tennis, the Basque game of pelota and many other games of the bat, racquet and fives groups started as simple handball, and those taking part only acquired implements for actually striking the ball in the course of the generations.

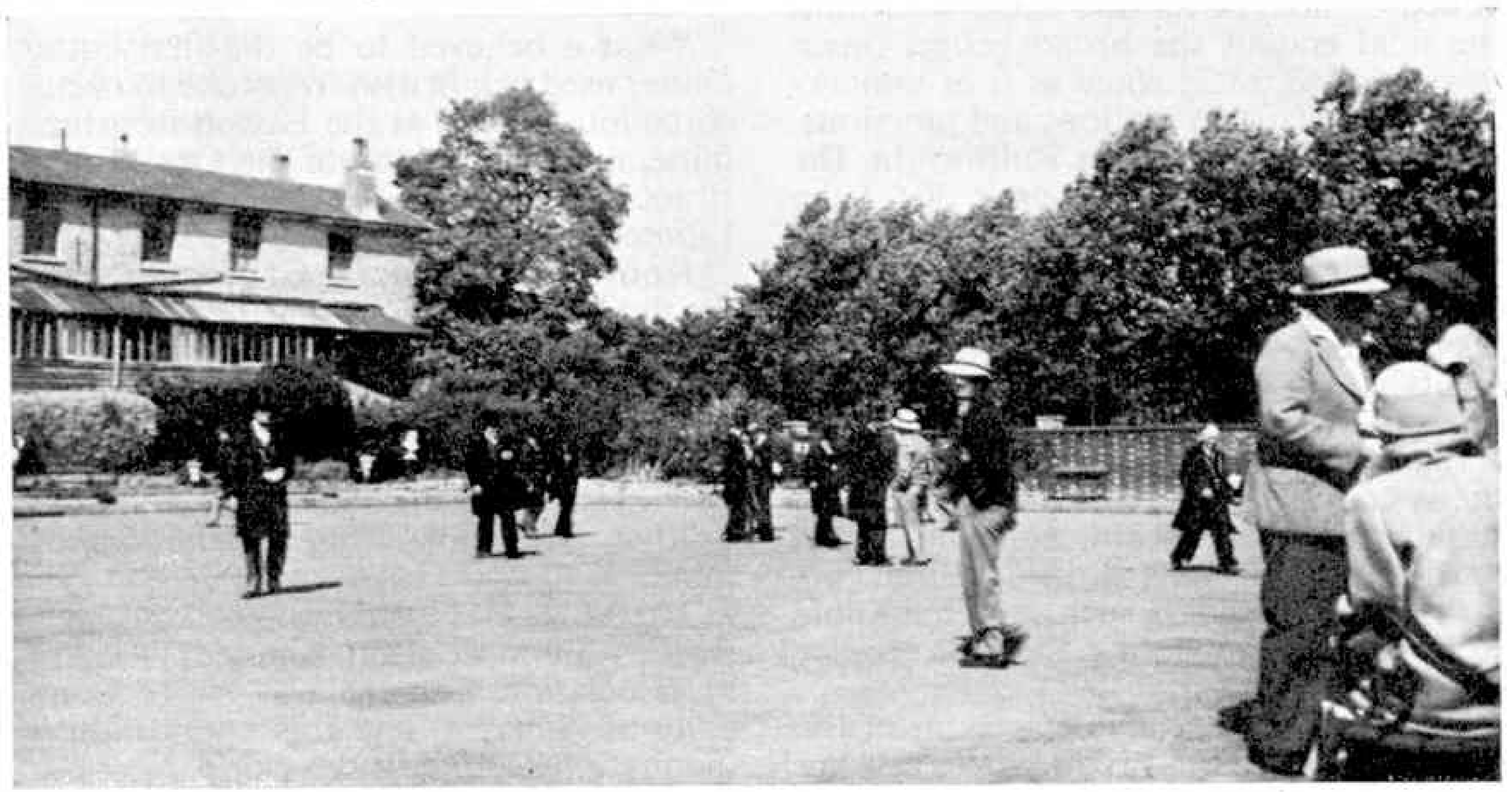
Legend, however, suggests that heavier balls were sometimes bowled and the stories of boulders being thrown by giants probably allude to the use of great stones for some sort of ball play, whether in sport or with more hostile intent.

Among the finds of ancient Egypt have been many examples of balls made of leather, wood, or even pottery—the last panelled in alternating light and dark blue, strangely like a child's rubber ball of today—and 4,000 years-old paintings depict girls playing ball, sometimes pick-a-back. Except for a pre-dynastic model of what appears to be unmistakably a form of ninepins, dating from some 6,000 years ago, the earliest ball games were undoubtedly rhythmic, as Homer's description of ballplay among the early Greeks suggests.

At a later date, in the Christian era, church walls were used for handball games and this was the case with pelota, almost indefinitely old and still played today with the bare hand, with a gauntlet, or with a sort of padder tennis bat. The proper game, played in a kind of fives court, and exceedingly fast, involves the wearing of the *chistera*, a basketwork half-cylinder strapped to the arm and requiring considerable skill if the player is to take the ball in the centre of the half-circle and return it with accuracy.

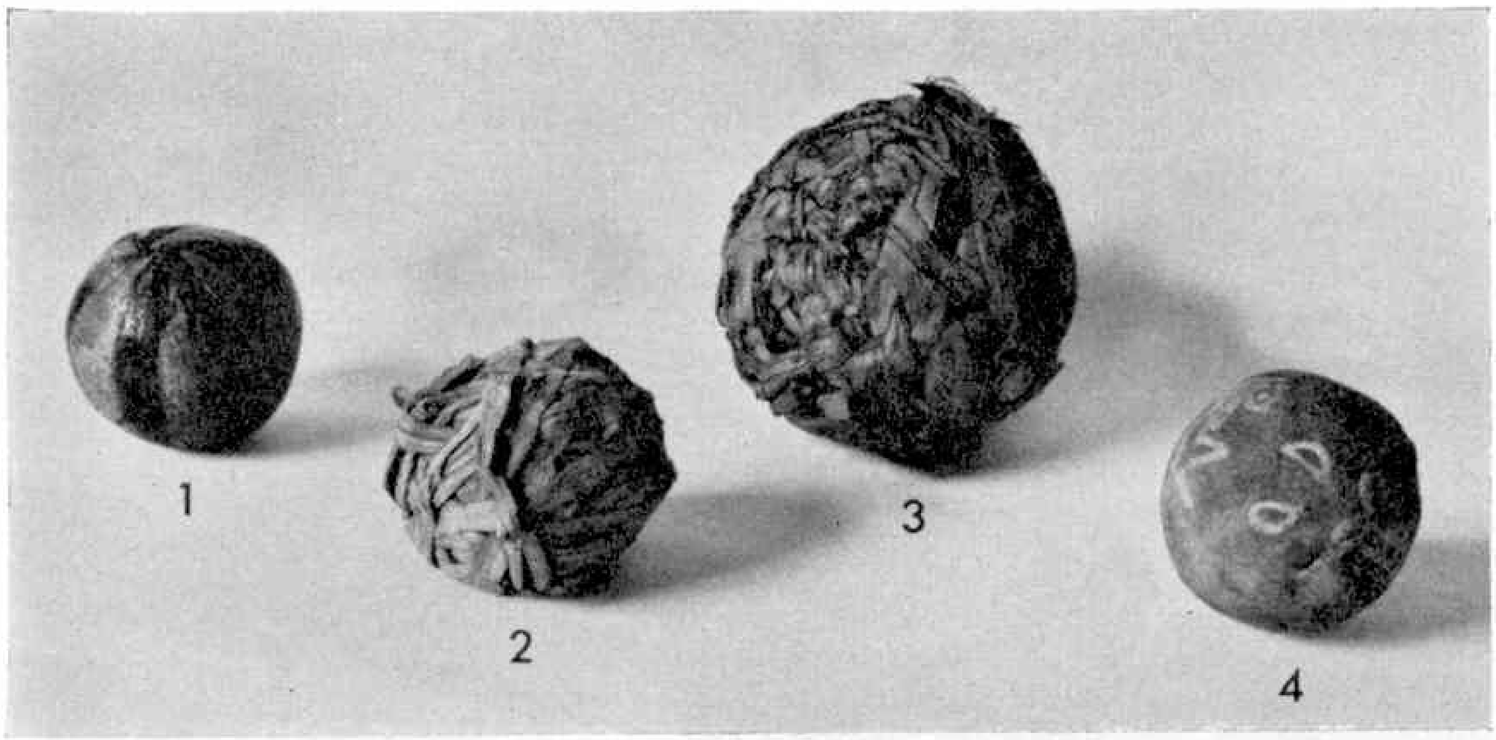
Pelota reflects the development of tennis—not what we call tennis today, which, as lawn tennis, only started in the nineteenth century, but the old "royal" tennis, which still exists in a few places. It is played in a court like a medieval cloister with a sloping penthouse roof, originating, it is believed, from the fact that it was first played, especially in France, in castle yards, just as "fives" derives its buttressed court from the fact that the original venue was a chapel wall. First of all, the old game of tennis made use of a cord instead of the present net, and was played with the hand. Then a gauntlet was worn, and in due course the gauntlet was "stringed". Detached from the hand, and held, it thus became the racquet.

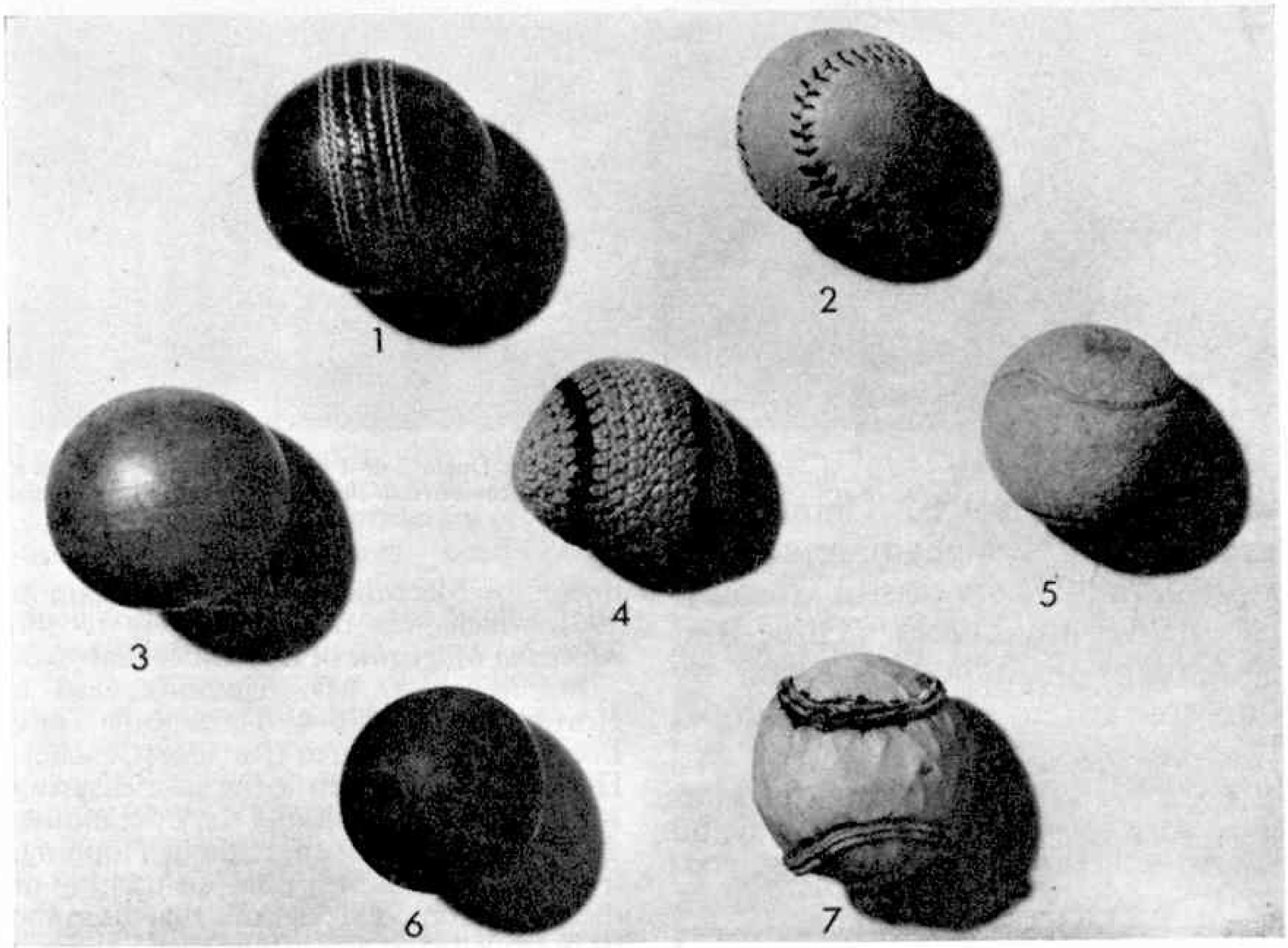
Southampton Bowling Club—the "Knighthood Tournament" in progress.



Rugby in ancient Athens

Rossall School, on the Fylde Coast, claims to have invented hockey but it is difficult to see just what grounds there are for that assertion, since a form of hockey is distinctly depicted on a pediment of about 500 B.C. in Athens. This also shows a form of three-a-side Rugby football, played with a small ball. Hockey players, wielding sticks with curved ends, also appear on Roman lamps. It is fairly obvious, indeed, that hockey was a game invented by ancient shepherds, using their crooks to propel the ball. It is sometimes suggested that the shepherd's game, called "La Crosse" in France, was taken across the Atlantic to become, with use of a netted stick, the national game of Canada. But against this theory there is the certain fact that the American Indians had a game of ball, with nets attached to sticks, long before the first European colonist set foot on American soil. The ancient Irish game of hurling, too, with its broad-bladed hockey stick, its horseskin ball and primitive rules, goes back at least to the time of St. Columba, who had to flee Ireland for sheltering one who had killed another at the game, which was described to the





Contrast through the ages. From ancient times (top picture) are (1) An alternating blue and black glaze ball (Dyn. XVII–XIX); (2) Twisted papyrus ball from Asfum, Roman Egypt; (3) A plaited rush ball from Thebes (Dyn. XII); (4) Resin and clay ball, inscribed with the name of the goddess Abydos (Dyn. XIX). Photograph by courtesy of the Ashmolean Museum. Below: As used in modern times (left to right) Cricket ball, baseball, rubber play-ball, woollen ball, lawn tennis ball, lacrosse solid rubber ball and Irish hurling ball.

author as "more a battle than a game!"

In medieval illustrations, it is sometimes difficult to be sure whether a game depicted is hockey or golf, unless the objective is shown as, in both cases, a curved stick or club is used. So, too, a good deal of confusion has arisen as to what, in medieval times, constituted bowls proper or skittles. Many of the official fulminations against playing "bowls", especially directed at young apprentices in the Middle Ages and after, were probably aimed rather at the skittle alleys and their associations with gambling, than at the bowling greens frequented by staid citizens, although wagering was usual on these, also.

Southampton claims to have the oldest bowling green in the world, dating from the thirteenth century. Here, each August, a "Knighthood Tournament" is played, with the existing "knights" as judges, in top hats and frock coats, the winner being known as "Sir" on the green for ever after. Bowls, like ice hockey, started as a true ball game.

Romans played football

Football met with official disapproval in the Middle Ages, and subsequently. Time and time again the ruling authorities issued warnings and threatened prohibition, but to little effect. There was, perhaps, good reason for the disapproval, since there was no such thing as a football pitch and the game was played in the public thoroughfares, with violence and a total disregard for persons and property.

Apart from the evidence of the Athens sculpture already mentioned, football was certainly not a British invention, but was played by the Romans. Stories that it originated with the kicking about of an enemy's skull can be discounted—although it is possible that such a "football" may have appeared as an improvisation. So also can the old story of Rugby starting through a scholar at Rugby suddenly picking up the ball and running with it. Medieval football, as a matter of fact, was much more like Rugby than Association. In the old Shrove Tuesday games—still surviving at St. Ives and St. Columb in Cornwall, at Ashbourne in Derbyshire and at Alnwick, Northumberland, played at Derby until it was put down with the aid of a troop of dragoons, and once played in the streets of other towns, including Dorking—the goals were usually the opposite ends of the township and the teams were "Uppies" and "Downies" (or town versus country). The ball could be thrown, kicked or carried towards the appointed goals, violence being employed to stop its progress and subterfuge to ensure it. The game still played by the Marblers' Company on Shrove Tuesday at Corfe Castle is not a team game, but a kick-about largely to preserve an ancient right of way. Football nearly died out in the early nineteenth century; its preservation was mainly due to the big schools, who evolved their own peculiar codes, later to be standardised either as Rugby or Association football, although Winchester still plays its own game.

Billiards was originally played on a green; pall mall and croquet were post-medieval, and are now virtually dead.

Cricket in top hats

Cricket is said to have originated with stoolball or club-ball. It is first mentioned under its modern name in the reign of Elizabeth. Although Hampshire claims to have been its cradle, it was played, at least as early, in Kent. The Hambledon club, however, was the first regular club to play it and in the days of the club's glory, in the eighteenth century, the little village had the distinction of playing teams representing All-England, usually for a stake.

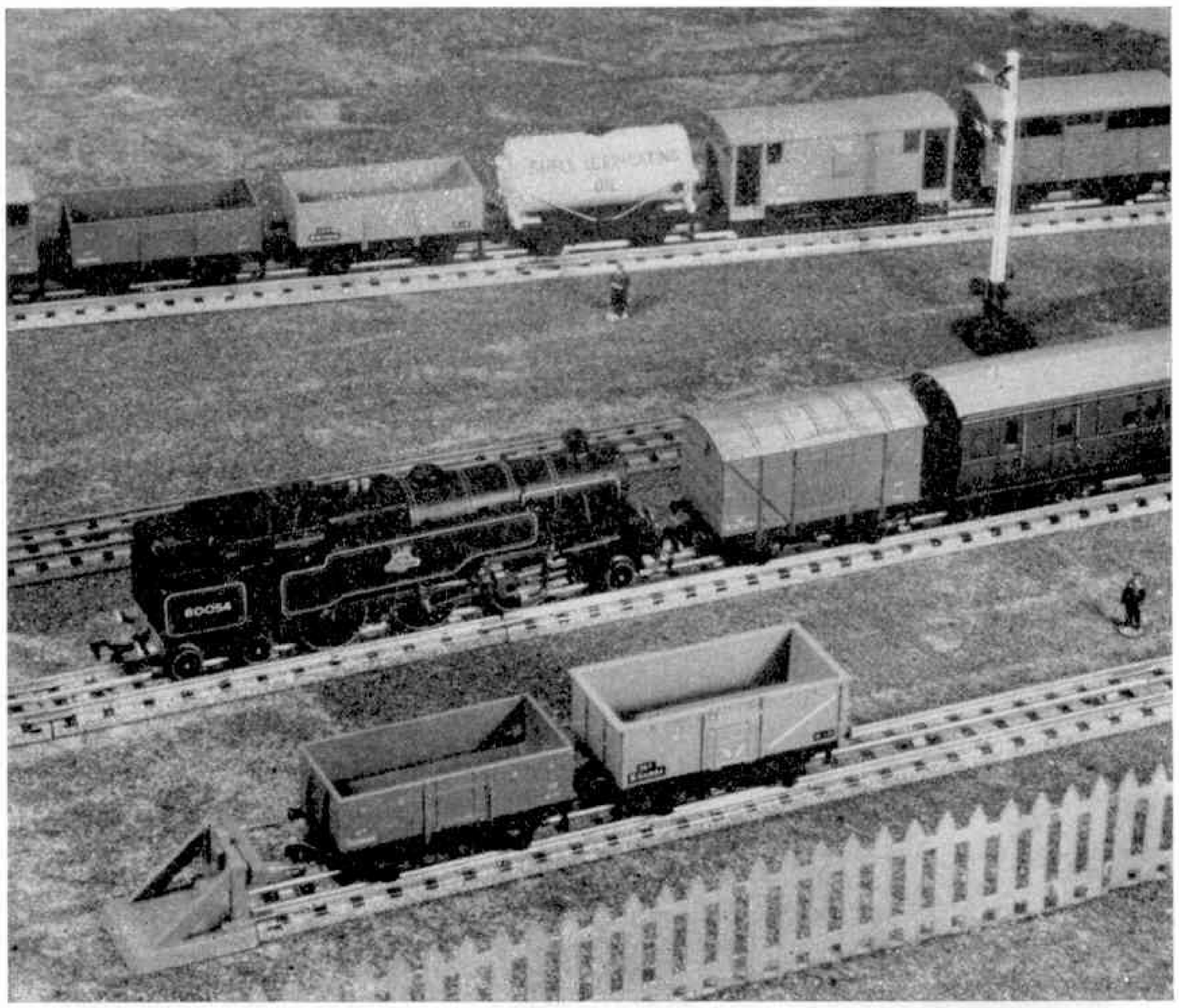
The Hampshire stalwarts disported themselves in top hats, and wickets were first of all two stumps, the bats being curved. It was not until an enterprising individual turned up with a bat wide enough to blot out the wicket that the size was standardised. At one time it was necessary to put the ball in a hole between the stumps before a man could be stumped or run out. Cricket, at any rate, is thoroughly English; apart from Commonwealth countries who have been taught the game by the Homeland, other overseas countries neither understand nor appreciate it. An American once described it as "a funeral without flowers!"

Ball games of one sort or another, national or international, are practically universal. A search of the records at the Patent Office yields an astonishing variety of inventions, both of games and implements, especially concerning billiard balls and golf balls. The latter include balls with spirals inside, (*Cont. on page 95*)

Hornby Railway Company

By the Secretary

TANK PASSED THIS TEST WITH FLYING COLOURS



A Hornby-Dublo 2–6–4 Tank in action. This is a similar locomotive to the one used on the endurance test referred to on this page.

THE 2–6–4 Tank Locomotive shown in our picture here has been a familiar engine in the Hornby-Dublo system for quite a long time. All of you know that it represents the B.R. Standard 2–6–4 Tank design developed for heavy suburban and what is usually known as residential traffic. This type of engine is equally suitable for passenger or freight working and, in miniature, it is a great favourite on many layouts.

I am sure you will be interested in the account that follows of the performance put up by a Hornby-Dublo Three-Rail 2–6–4. A Hornby-Dublo enthusiast for many years, Mr. Brian E. Timmins of Erdington, Birmingham, reports on a remarkably successful display, using Hornby-Dublo Three-Rail equipment, held late last year by the Stourbridge and District Model Railway Society.

The test was an endurance demonstration and was based, in a modest way, on the Co–Co Diesel endurance test conducted by Meccano Limited in London in 1961 which was described fully in the *Meccano Magazine* of December that year.

For his test, Mr. Timmins used a Hornby-Dublo 2–6–4 Three-Rail Tank Locomotive and three Corridor Coaches. He operated them on a circuit measuring 189½ inches in length and the Locomotive and Coaches were run, without stopping, from 12 noon until 8 p.m. on the day of the exhibition. Throughout that time the train travelled at a constant speed and the stand-by *Bristol Castle*, which was kept at hand in case of any fault developing, was not called upon.

The demonstration aroused enormous interest, Mr. Timmins states. "It went off without a hitch", he adds "the 2–6–4 Tank performed admirably and finished the eight-hour run completely cold, as when she started. She ran with the load of three coaches for the whole time, with one notch to spare on the controller".

Over the tunnel mouth from which the train emerged on each of the 2,400 circuits which it made during the test was a placard headed, "Endurance Demonstration". Underneath were the words "This locomotive commenced running with the opening of the exhibition and will (we hope) continue running at constant speed for the duration."

Well, Mr. Timmins' hopes, and those of the other enthusiasts at the exhibition, were adequately fulfilled!

TIME	No. OF CIRCUITS	DISTANCE	ACTUAL MILES	FROM HERE TO:–
12·00 NOON	ZERO	IN FEET.		
1·00pm / HOUR	300	4740	0·9	STOURBRIDGE JUNCTN
2·00 ~ 2HRS	600	9480	1·8	WORDSLEY.
3·00 ~ 3HRS	900	14220	2·7	WEST HAGLEY.
4·00 ~ 4HRS	1200	18970	3·6	HOLY CROSS.
5·00 ~ 5HRS	1500	23700	4·5	HIMLEY HALL.
6·00 ~ 6HRS	1800	28410	5·4	DUDLEY STATION.
7·00 ~ 7HRS	2100	33190	6·3	OLDBURY.
8·00 ~ 8HRS	2400	37900	7·2	GREAT BRIDGE.

Left: The schedule drawn up for the test run.

As previously mentioned, the length of the circuit was 189½ inches, and the time taken to complete one circuit was twelve seconds. The running speed of the engine and coaches was 0.9 m.p.h. actual, equalling a scale speed of 69 miles an hour. The scheduled journey was the equivalent of a trip by train from Stourbridge Junction to Great Bridge, a distance of 7.2 actual miles.

The schedule, as set out on the placard, is reproduced on page 76 giving the time taken, number of circuits, and the distance covered in actual feet and miles.

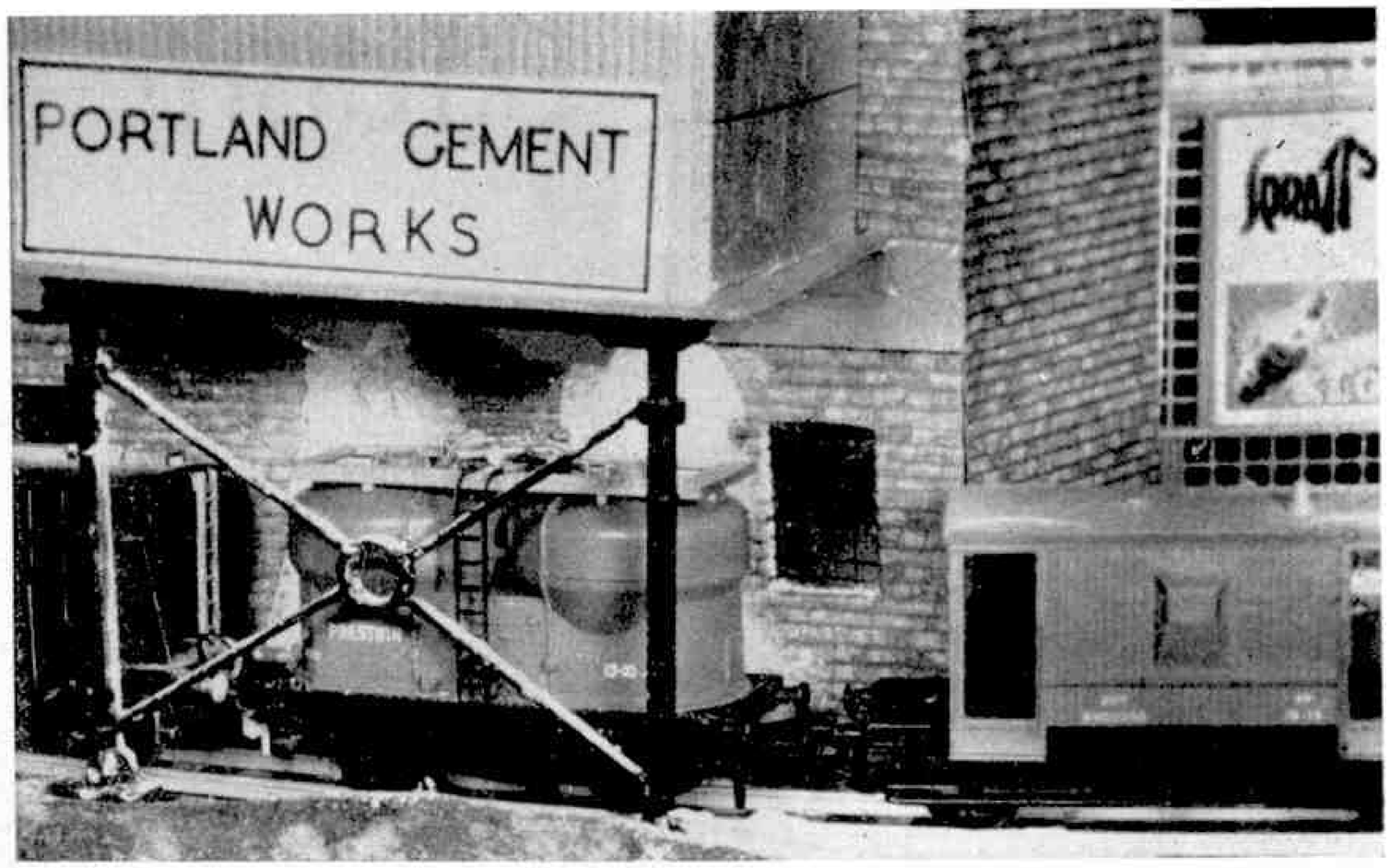
Perhaps the most intriguing portion of the placard was a small envelope arrangement at the foot in which a pad of paper had been put to record any "out of course" stops. Mr. Timmins, in sending details of the demonstration, stated, "A pad was attached in this position, but only the top sheet was used."

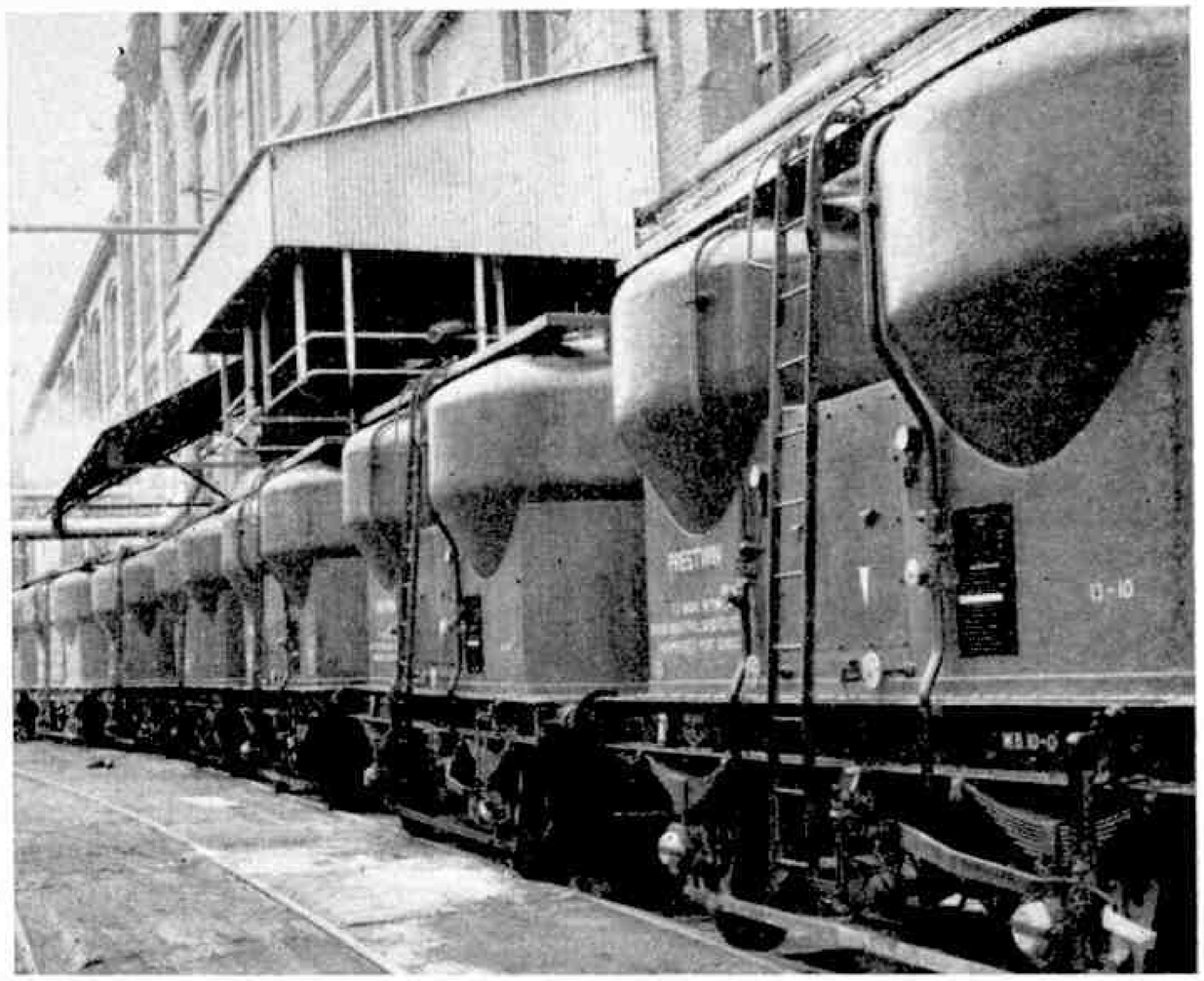
And on that top sheet, I should add, was the one word "Nil"—a most effective tribute to the 2–6–4's sterling performance!

A 2–6–4 TANK QUERY

This happy account of 2–6–4 Tank performance reminds me that a number of Hornby-Dublo owners have written to me concerning the magnetic shunt device applied to the motor of this Locomotive. The purpose of including this refinement in the design was to provide for slow running, according to the setting of an adjusting screw, the screw head being accessible through a hole specially provided for the purpose in the back of the engine bunker.

In recent productions of this Locomotive this device has been omitted, since it is no longer considered necessary in view of improvements in the design of power control units for Hornby-Dublo purposes. So, it is possible that, if you have a 2–6–4 Tank which was purchased recently, it will not include the magnetic shunt device, although this feature may be referred to in the instruction booklet packed with the engine. I hope this explanation will clear up a point that has been puzzling some Hornby-Dublo owners.





Above: Realism in miniature is the keynote here. On the layout of S. F. Page, a Hornby-Dublo "Prestwin" Silo Wagon is standing beneath the twin hoppers of a loading plant. Right: A similar situation in real life. This British Railways photograph shows a train of "Prestwin" Silo wagons at Avonmouth.

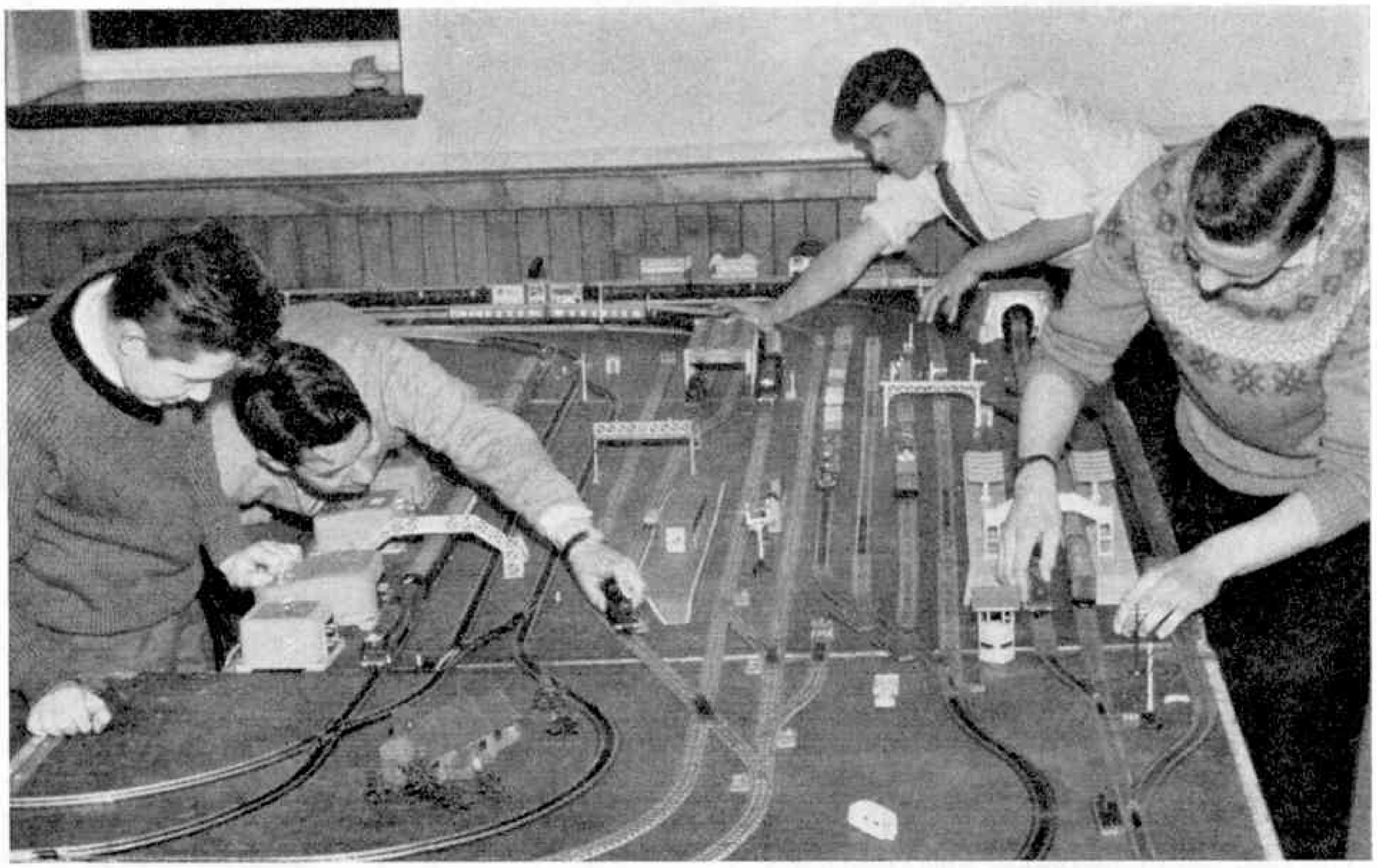
L.M.R. TENDERS

Many older readers will recall the Hornby-Dublo 4–6–2 Locomotive *Duchess of Atholl*, long since superseded in the range by the corresponding 4–6–2 *Duchess of Montrose*, which in turn has been replaced within the last year or two by *City of Liverpool*, listed as No. 3226 in the Hornby-Dublo catalogue. The original *Duchess of Atholl* was a popular engine in its L.M.S. red livery and some of these veterans are still in use. A point that sometimes arises in correspondence concerns the tender of this type of engine. Somehow, in course of time, tenders for miniature locomotives get damaged, or go missing altogether, particularly if an engine has passed through the hands of several different enthusiasts. Tenders for *Duchess of Atholl* locomotives have not been available for many years now, and I am sometimes asked whether there is any suitable substitute in the present range. Fortunately there is, in the shape of the tender designed for the City 4–6–2s. As it happens, this is finished in maroon, a livery applied to certain L.M.R. 4–6–2's in recent years. From the running point of view, the tender is quite suitable for coupling to a *Duchess of Atholl*, and although its colour is not an exact match for the L.M.S. red of this type of engine, it can be considered reasonably close to it. There is the point that a *Duchess of Atholl* carries the former L.M.S. number, 6231, on the cabside, whereas the City tender is distinguished by the B.R. emblem. Strictly speaking, these distinctions belong to different periods, but this has not prevented a number of Hornby-Dublo owners mating the engine and tender concerned, in order to keep an engine in traffic which may still be effective.

"PRESTWIN" WAGONS AT WORK

The two pictures reproduced on this page make an interesting follow-up to the notes that I gave a little while ago concerning the No. 4658 *Prestwin* Silo Wagon. In November last I drew your attention to the operation of such vehicles in block train formations between points where special loading and unloading facilities are provided. It is quite evident that this scheme is applied in miniature on the layout of S. F. Page of Sleapshyde, near St. Albans, reference to which is made by *Layout Man* on another page in this issue. In the upper illustration here we see a Hornby-Dublo *Prestwin* Wagon standing beneath the loading hoppers at a miniature cement plant. Next to it is the No. 4626 *Presflo* Bulk Cement Wagon, both obviously part of a formation of suitable wagons run specially for cement traffic.

BOYS' BRIGADE EXTENSIVE HORNBY-DUBLO SHOW LAYOUT



Some of the members of the 45th (Glasgow) Boys' Brigade busy preparing their railway layout for an exhibition. Hornby-Dublo equipment was prominent in the collection of material used on the layout. Photograph by courtesy of the "Evening Times", Glasgow.

NEWS reaches me this month of a splendid railway layout recently shown to the public by members of the 45th (Glasgow)

BY

LAYOUT MAN

Boys' Brigade as part of an exhibition held by their organisation. As is evident from the picture on the right a great deal of the equipment used was Hornby-Dublo, and both Two-Rail and Three-Rail circuits were introduced, independently of one another, yet forming part of the one general plan. Space limitations frequently prevent the average Hornby-Dublo owner from developing extensive schemes of this kind, but they are undoubtedly highly effective for display purposes.

When the exhibition was over, *M.M.* reader and Hornby-Dublo enthusiast Morton K. Higgins, a member of "The 45th", who was partly responsible for the layout arrangements, sent along the photograph. I was very glad to see this, not only because it shows some of the Brigade members on the job, but because it also illustrates various features that can be applied with advantage to many layout schemes.

For instance, the actual layout, while as extensive as the baseboard area allowed, was not in any way complicated. There is plenty of track, it is true, both Two-Rail and Three-Rail, but the course of each circuit was kept as simple as possible. In this way members were able to operate their train service in a smooth and efficient manner, with none of the time wasted by the delays that can be so frustrating to visitors viewing a layout as well as to the operators themselves. Clearly this sort of thing can be of benefit on the average home railway, too. As I think you will agree, most of the systems that have been dealt with in these pages have been arranged with their track layouts on relatively simple lines.

"M.M." reader S. F. Page has provided this "snowstorm" scene taken on his Hornby-Dublo Two-Rail layout. In the foreground empty stock for two different trains is being dealt with, while over the wall from the station the 4-6-2 "Golden Fleece" is climbing an incline with a Pullman train.

"M.M." reader John Williams, of Nuneaton, with his Hornby-Dublo layout. The system is generally simple in plan, but effective in operation.

A good example of a layout of the smaller but well-planned kind is shown in our third picture, where *M.M.* reader John Williams, of Nuneaton, is busy with his Three-Rail layout. Although the railway is not a big one, there are two main tracks, for up and down traffic respectively, and the sidings and loop connections add considerably to the possibilities of realistic operation. This is a fine example of a layout of a compact nature, the running of which must give its owner many hours of pleasure.

Keeping a balance

I have no doubt, too, that John always has in mind the possibility of extensions, not only of the track, but of the lineside effects, a fair sprinkling of which can be seen in the picture. It is a good idea not to overdo either of these two aspects of development, as this can easily destroy the air of balance that is apparent in most well-planned systems. The railway should not over-run the whole of the miniature countryside. Nor, on the other hand, should there be such a collection of lineside buildings and so on that it is difficult to find the railway!

Where the line is hidden, as it were, amid a great wealth of lineside features, some of the attraction of operating and watching the trains is lost. A lot of the interest in train running, from the onlooker's point of view, can stem from the impression that one is really at the lineside, and not taking a somewhat detached and distant view of the proceedings. This impression of being at the lineside can be readily obtained when the operator and any onlookers are outside the layout board. On such a board, the main track is usually not very far from the baseboard edges and it is readily possible to get a good close-up impression of the train movements.

The same realistic aspect can be achieved with other types of layout boards, if the control site is well placed and the space available for the operator, or those looking on, is well arranged. Space restrictions may make it difficult to attain ideal conditions, but by careful planning and arrangement it is possible to achieve a great deal. This, I feel, has certainly been accomplished on the layout of *M.M.* reader S. F. Page, of Sleapshyde, St. Albans, part of whose Two-Rail layout is shown in the "snowstorm" scene in our second picture. Things are not cramped, but the best possible use has been made of the baseboard area available. Although numerous photographs from Mr. Page's camera have been included in these Notes in recent months, I have not so far made reference to the layout they have depicted. Correspondence discloses that this is distinguished by the initials *L.N.E.R.*, which stand for *London, Newborough and Easthyde Railway*. The picture was taken at *Newborough Junction*, from the top of a tunnel that overlooks the station, and clearly things are busy.

Climbing the bank

In the picture, an express formed of Hornby-Dublo Pullmans headed by the 4–6–2 *Golden Fleece* is climbing the bank to an elevated section of the track. Normally, following the general pattern of operations on the Great Northern Line of the Eastern Region, such important passenger trains are diesel hauled, two Hornby-Dublo Co–Co "Deltics" being diagrammed for such duties. One of these workings involves the operation of a train of Hornby-Dublo Sleeping Cars. Other diesels, including the Hornby-Dublo Bo–Bo, work passenger, freight, and mixed traffic, and in the lower picture on the opposite page a Bo–Bo Diesel is drawing empty stock into one of the Junction platforms.

Some steam type locomotives are in use, including the *Golden Fleece* we have noted previously, but only on occasions do these engines appear on passenger trains. Specials for the benefit of railway enthusiasts, or relief trains at holiday times, are usually steam jobs.

Apart from the motive power situation there is much Hornby-Dublo freight stock of modern character and there is, on page 77, a very effective picture of Hornby-Dublo "Presflo" and Twin Silo Wagons at a cement installation. Block trains on fast timings for cement, fuel oil, container and refrigerator traffic are a feature of the operating programme.

Fun With The No. 50 Series

(*Continued from page 81*)

transport for many years, and the fun of reproducing this in miniature with the use of these Wagons, and the aid of suitable Dinky Toys, is something that is always enjoyable. Lifting the Container can be carried out in modern style by the use of a No. 971 Coles Mobile Crane, an appliance which is found nowadays in many freight yards.

Similar lifting operations may be called for if you load the No. 50 Lumber Wagon with miniature baulks of timber. "Left-overs" from some "do-it-yourself" job can be quite handy for such loads, while it is sometimes possible to come across suitable sticks from a bush or tree that will represent timber in transit in the rough state.

There are two kinds of No. 50 Tipping Wagons, Side Tipping and Rotary Tipping respectively, which have their uses if your line is handling materials for a big contracting job involving building and road making. Similarly, the No. 50 Hopper Wagon has various uses. It can carry your railway ballast for the track, or it can be used for coal traffic destined for power stations or engine sheds.

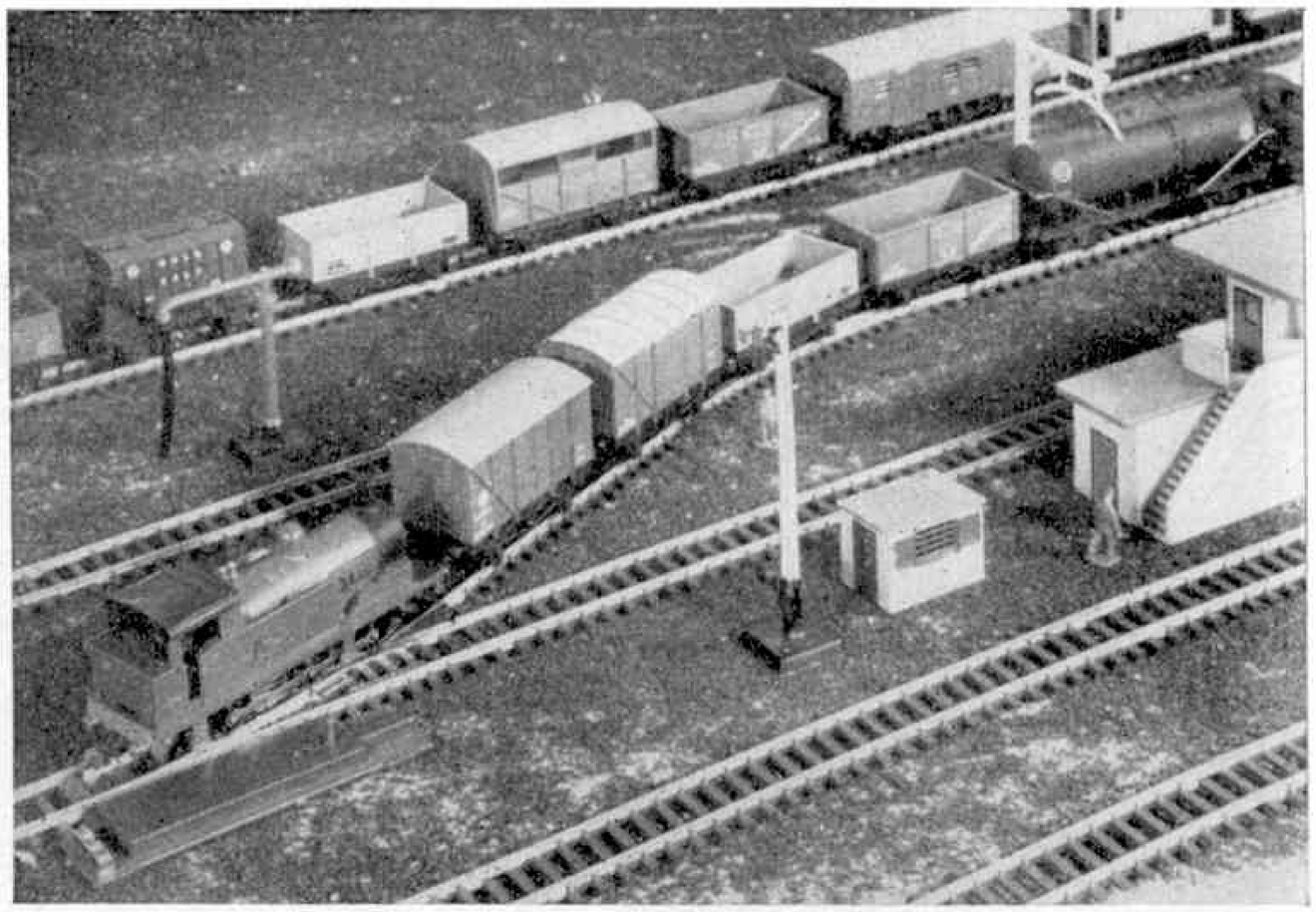
* * * *

Then we have two Tank Wagons, one for oil transport and the other for carrying gas. These are respectively the No. 50 Tank Wagon, bearing the wording *Shell Lubricating Oil*, and the No. 50 Gas Cylinder Wagon. The Oil Tank Wagon appears in the background in the upper photograph on page 81. You can see that it follows the usual form of modern construction for its type. The Gas Cylinder Wagon is more unusual, having a set of three rather slender cylinders running the length of the wagon frame. Real vehicles of this type are used to carry gas under pressure.

The No. 50 Crane Truck provides a useful crane for light lifts in yards or on jobs along the line and, finally, we have the Goods Brake Van, a typical vehicle with short verandah at each end, and with the usual guard's look-outs, sometimes known as duckets, represented in the tin-print design on the sides. It has lamp brackets for tail lamps, and for side lamps as well, at each end. Altogether it is a smart and attractive Brake Van for the end of your train.

Operating Passenger And Goods Traffic On Double Track

LINESMAN'S MONTHLY NOTES ON HORNBY-DUBLO 2-RAIL



Shunting operations in progress on a Hornby-Dublo Two-Rail layout. The 0-6-0T pushes its train into one of the sidings.

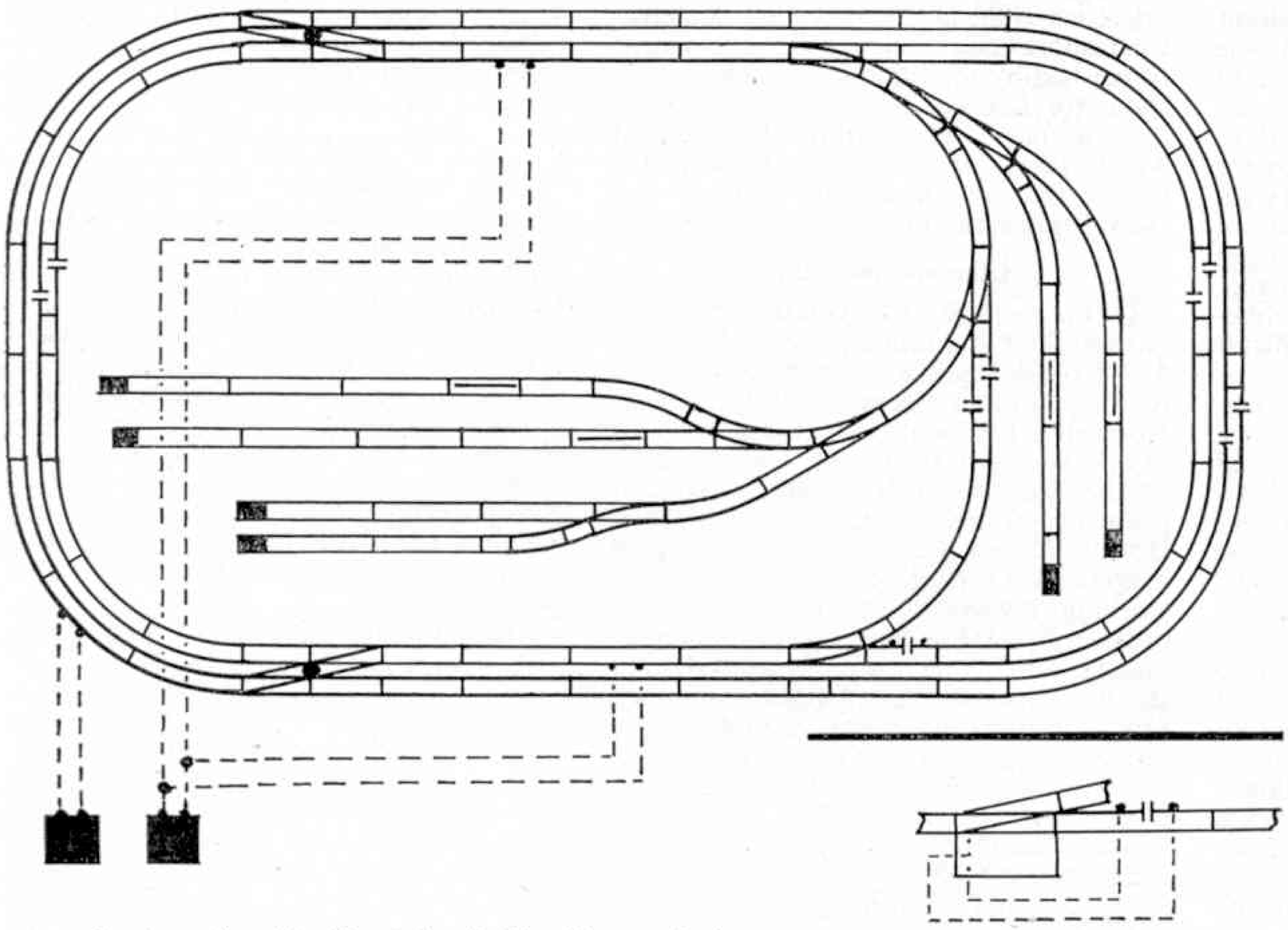
CONTINUING with our series of double track layout schemes, we present this month a large oval formation with an inner loop line from which various sidings diverge. Not only is this layout sufficiently large to allow for main line express train running, but it also provides plenty of scope for goods train operation and the shunting movements that are inseparable from it, and, of course, this all adds to the interest of working.

Engine shed tracks to accommodate a two-road building are also included, so that the locomotives can be stabled after finishing their work. The layout, including the Control Units, will fit on a baseboard measuring eight feet six inches by five feet three inches.

To operate the layout two power control units are required—one for each main track. The wiring is simple and is shown clearly on the diagram. The one isolating section on the inner main line is arranged by the use of a Single Isolating Rail at one end and a Double Isolating Rail at the other, the former being wired to the Points in the way shown in the small diagram. The section will be rendered dead by switching the Points for the inner loop line. An engine or train can stand between the Single and Double Isolating Rails, while another encroaches on to the same main track for the purpose of shunting the sidings.

As a suggested method of operation, run a passenger train on the outer track and a freight train on the inner. The latter can begin its journey at one of the sidings, the engine coming from the shed to pick up the train, and it can then traverse the main line as often as the operator desires. The train can finish its journey at either the same siding or one of the others. Alternatively, the train may be split up, the vehicles being shunted and left in the various sidings, such movements being made by backing the vehicles in and detaching them by means of the Uncoupling Rails. These Rails can be Hand or Electrically-Operated as desired.

(*Continued on page 95*)



The comprehensive and exciting layout described by Linesman, is shown above in diagram form. Note the separate small sketch at right.

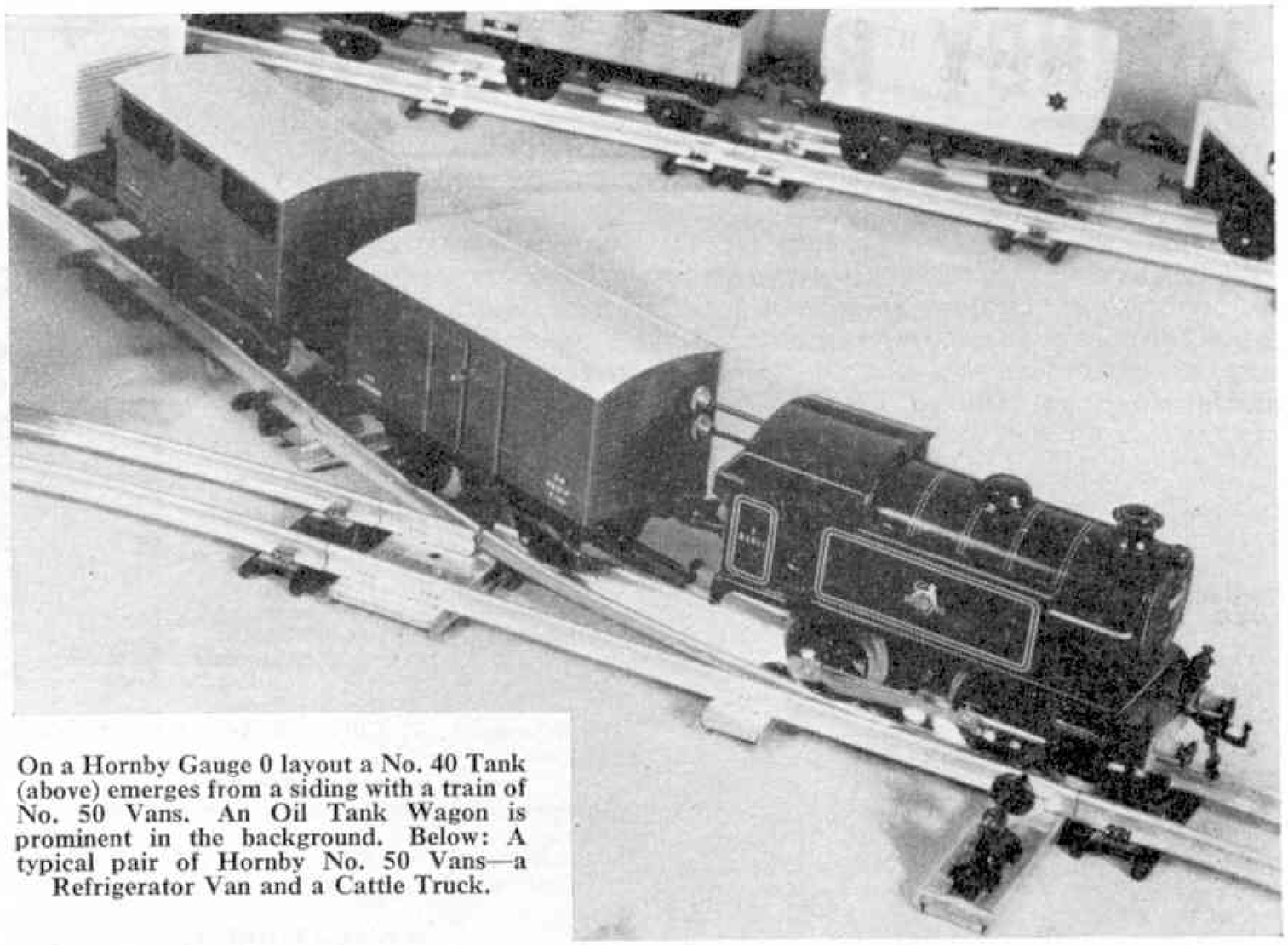
WIRING OF SINGLE ISOLATING RAIL

ITEMS REQUIRED

21 Curved Rails	2710
11 Curved Rails, Large Radius	2719
1 Curved Terminal Rail, with Suppressor, Large Radius	2721
1 Curved Half Rail	2711
8 Curved Quarter Rails	2712
33 Straight Rails	2701
2 Straight Terminal Rails, with Suppressor	2707
10 Straight One-Third Rails	2703
11 Straight Two-Thirds Rails	2702
1 Straight Two-Thirds Single Isolating Rail	2738
4 Straight Two-Thirds Double Isolating Rails	2739
4 Uncoupling Rails	2745
8 Right Hand Switch Points	2728
4 Left Hand Switch Points	2729
6 Buffer Stops	2450
2 Power Control Units	

FUN WITH THE No. 50 SERIES

AS I said last month, there is plenty of variety in the No. 50 Wagons and Vans. It is possible to count as many as seventeen separate items in the No. 50 class, if you count the Low-sided Wagon on its own and allow for the fact that it is also available with three different loads. So it is not difficult to make up a representative goods train, or "freight" as they are often called nowadays, from this selection.



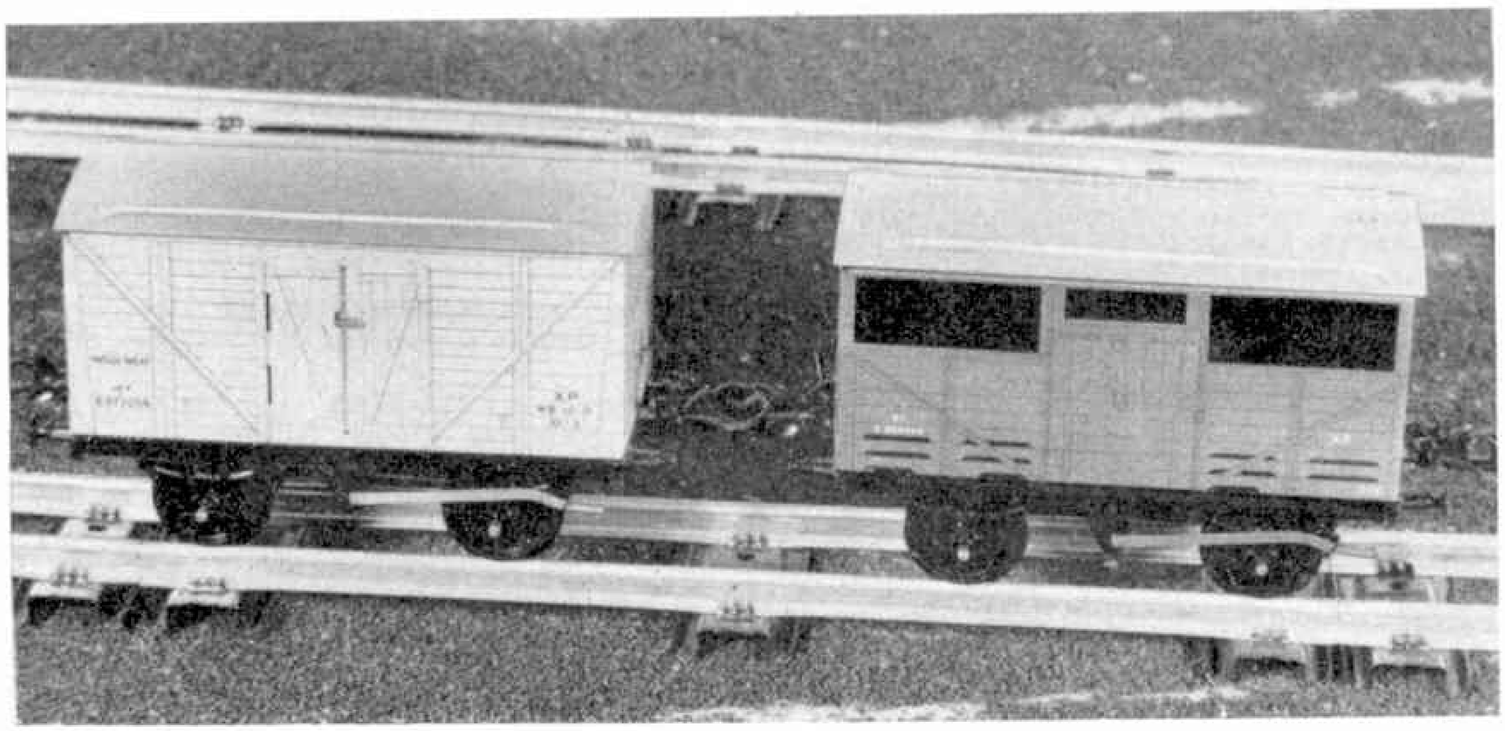
On a Hornby Gauge 0 layout a No. 40 Tank (above) emerges from a siding with a train of No. 50 Vans. An Oil Tank Wagon is prominent in the background. Below: A typical pair of Hornby No. 50 Vans—a Refrigerator Van and a Cattle Truck.

By "Tommy Dodd"

Apart from their realistic character, a good feature—particularly for wagons that are to run on a railway on the floor—is their strength. The stout underframes carrying the wheels, and on which the bodywork is supported, have buffer beams that are cast as one unit with the buffers themselves. Any rough shunts—and such things can happen, even on the best clockwork railways—are not likely to result in damage to buffers or other parts. The underframes are well-detailed, and where appropriate they incorporate as a separate fitting the long hand-brake lever characteristic of so many four-wheeled wagons and vans in this country. Freedom of running is ensured by the use of moulded wheels, mounted on steel axles. The lightest lubrication—a tiny drop of oil applied to the axle at the back of each wheel—is sufficient to give smooth quiet running for quite a long time. The relative silence in operation of a train of such well-lubricated wagons is almost uncanny.

Several of the typical vehicles shown in our illustrations are of special interest. For instance, the No. 50 Goods Van next to the engine in the top picture, representing B.R. standard practice for this type of van, has opening doors, a feature that adds a great deal to the fun of using it. You can open the doors to pop miniature loads inside, or the Van can stand with the doors open alongside a goods platform, just as you see them in real life. Again, a Van can stand in your siding or yard, while a Dinky Toys vehicle is backed up to the open doors. I expect many of you already do this sort of thing, because you can find a lot of enjoyment in the arrangement of different scenes, quite apart from the running of the trains.

Similar doors are fitted to the No. 50 Refrigerator Van, which is one of the two vehicles shown in the lower picture. Here you can clearly distinguish the doors, and the handle of the bolt that locks them.



Next to the Refrigerator Van is a vehicle for carrying livestock, and although this is classed as a van, because it has a roof, its actual title in the Hornby System is Cattle Truck. For further variation in names, one sometimes hears the real ones spoken of as cattle *wagons*, so I suppose that whichever name you fancy can be considered correct!

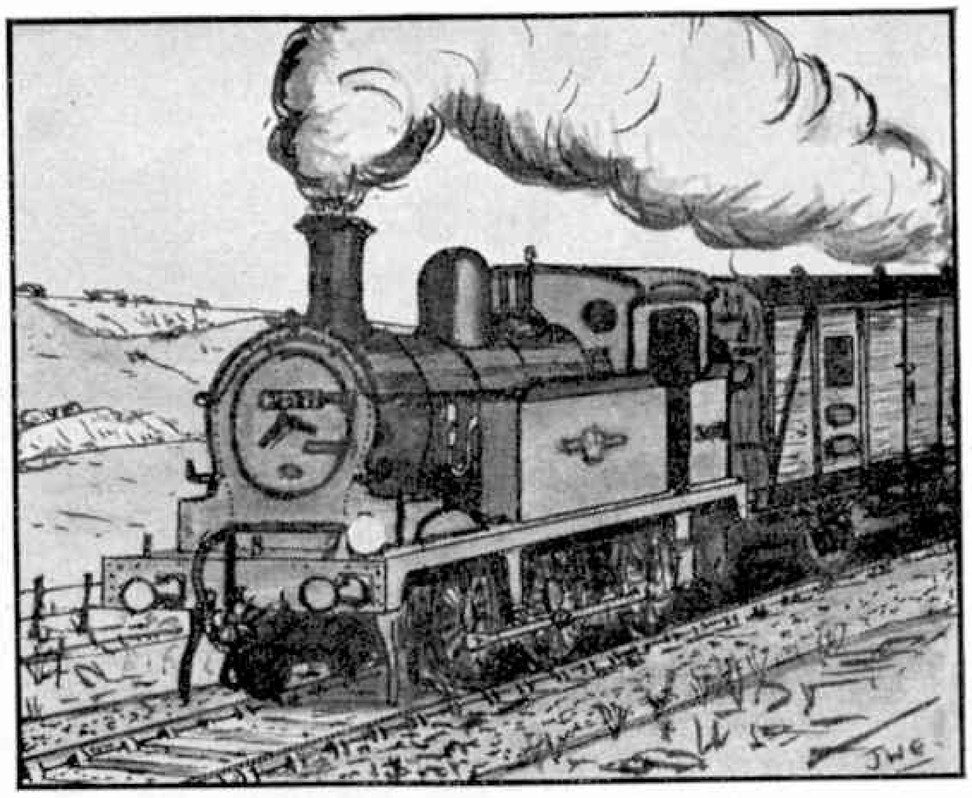
Notice how well the tinprint design of the bodywork shows up in the lower picture. This method of finish is applied to all the No. 50 Vans, including the Goods Brake, as well as to the bodywork of the No. 50 Wagon—an open vehicle—and the No. 50 "Saxa Salt" Wagon. It allows the characteristic features of the real vehicles to be represented in a convincing manner, and one advantage of stock detailed in this way is that it keeps its good finish for quite a long time, with reasonable use. The two vehicles I have just mentioned, the Open Wagon and the "Saxa Salt" one, can be considered together in a sense, as each can be supposed to be conveying equally essential minerals, coal on the one hand, and salt on the other.

The "Saxa Salt" Wagon is particularly attractive, and finds a place on many Gauge 0 layouts nowadays. It represents a privately-owned vehicle and is finished in characteristic yellow body colour with bold red lettering. The peaked roof is a feature of many wagons used for salt traffic and, from their shape, they have long been known to railwaymen as "cottages".

The Low-sided Wagon is a useful item, suited to the conveyance of various kinds of loads. You can buy it separately, or it is also listed with a Cable Drum, with a Furniture Container, and again with an Insulated Meat Container. Container traffic has been a feature of road–rail

(*Continued on page 79*)

HORNBY REPAIR SERVICE



THE service operated by Meccano Limited to expedite repairs to Hornby-Dublo Locomotives and Tenders, Hornby Gauge 0 Clockwork Trains and Clockwork and Electric Meccano Motors is being constantly widened in its application. Dealers authorised to offer this service, who are listed below, display a distinctive Accredited Service Specialist sign. Customers may, of course, send repairs to the Service Department of Meccano Limited, at Hanson Road, Aintree, Liverpool 9, if it is more convenient for them.

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BEDFORDSHIRE

Bedford—H. J. Banks, 23 St. Peter's Street.
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Reading—E.A.M.E.S. (Reading) Ltd., The Model Shop, 24 Tudor Road.
Reading Model Supplies, 1 Hosier Street, St. Mary's Butts.

CHESHIRE

Birkenhead—Birkenhead Model Supplies Ltd., 32 Grange Road West.
Moreton—Mortimer Ltd., 254–260 Hoylake Road.
Neston—J. Bailey, The Model Shop, Parkgate Road.
New Brighton—G. Longworth, 78–80 Rowson Street.

CORNWALL

Helston—Eddy & Son (Helston) Ltd., 21 Meneage Street.

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ESSEX

Chelmsford—Chelmsford Model Co., Baddow Road.
Colchester—West End Cycle Stores, 65 Crouch Street.
Ilford—Pages of Barkingside Ltd., 19 Broadway Market, Fencepiece Road, Barkingside.
Southend-on-Sea—Alco Supplies, 133 Hamstel Road, Southchurch.

GLAMORGAN

Cardiff—James Lendon, 194 Fidlas Road, Llanishen, The Model Shop, 9 Mill Lane.
Neath—Pearns Ltd., 16 Alfred Street.

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Bristol—The White Tree Electrical and Toy Bazaar, 28 North View, Westbury Park.
Cheltenham—I. Newman (Cheltenham) Ltd., 127–9 Bath Road.
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Gloucester—C. & N. Ash Ltd., 106 Westgate Street.

HAMPSHIRE

Bournemouth—Deppers, 918 Wimborne Road.
The Sports Shop, 14 Seymoor Road, Westbourne.
Portsmouth—Robin Thwaites Ltd., The Hobby Shop, 28 Arundel Street.
Southampton—H. I. Dowding & Son Ltd., 265–267 Shirley Road.
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HERTFORDSHIRE

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Canterbury—Barretts of Canterbury Ltd., 2 St. George's Street.
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Leicester—North's Toy and Model Stores, 5 Melton Road.
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Cleethorpes—H. Loftis, 196 Grimsby Road.
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London—Allan Brett Cannon Ltd., 32 Railway Approach, London Bridge Station, S.E.1.
H. A. Blunt & Sons Ltd., 133 The Broadway, Mill Hill, N.W.7.
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W. & H. (Models) Ltd., 23 Paddington Street, Baker Street, W.1.

MIDDLESEX

Edgware—Cresta, 1 Cinema Parade, Manor Park Crescent.

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Peterborough—Oliver Carley, 35 Broadway.
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Nottingham—Beecroft & Sons Ltd., 16 Pelham Street.
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Bath—Pram and Toy Shop Ltd., 22–23 Southgate Street.
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Coulsdon—R. Wills (Scientific Hobbies) Ltd., 92 Brighton Road.
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The Perrys, 769 Alum Rock Road, Ward End
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Bradford—Bradford Model Railway Centre Ltd., 202 Keighley Road, Frizinghall.
W. Carter, 15 Bridge Street.
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The Redgate Co. (Sheffield) Ltd., Moorhead.

CHANNEL ISLES

Jersey—George D. Laurens, 3/5/7 Queen Street.

EIRE

Dublin—Southern Model Railway Co., Lower Leeson Street.

NORTHERN IRELAND

Belfast—The Model Shop, 36 Wellington Place.
Thornton & Co. Ltd., 40/42 Donegal Place.

WESTERN AUSTRALIA

Perth—Jack Stanbridge's "Hobbyshop", 54a Canning Highway, Victoria Park.

Get The Most From Your Tape Recorder

Our picture, by courtesy of Grundig (Great Britain) Ltd., shows two of the many useful accessories to a mains-operated machine—a battery-operated portable and a parabolic reflector for recording bird calls and insect sounds.

WHEN you get your first tape recorder, you should adopt the slogan—if you did not already do so with your first camera—"This is not a toy". Remember that, even more so than with a camera, you have real power in your hands.

To be worthy of owning such a machine, you must have a sense of responsibility. For instance, by its use, you might give the impression that you are singing in the bath, or in your bedroom or study, or fooling around your ham radio, or indulging in any other noisy interest you might have, such as banging on the piano. And while your tape recorder is obligingly making these sound "alibis" for you, you are busy raiding the 'fridge!

Apart from the effect of such activities on one's conscience, you might also bear in mind the effect on your pocket. The temptation to record all manner of sounds could prove an expensive indulgence.

* * * *

At first glance, the tape recorder is primarily a machine for the musically minded. Certainly the scope it offers to the music lover is tremendous. The standard large spool of 5½ inches has a running time, at the standard speed of 3¾ i.p.s., of nearly double an average symphony, and is quite capable of taking the average act from opera. So there is nothing in the music line coming over the radio that the standard-type tape recorder cannot handle.

Also, if you belong to a record library, you can take tape recordings of the best discs. What is more, you can obliterate them when you tire of them and wish to have something new in your collection of recorded musical tapes.

But anyone who is not musical can still get an enormous amount of pleasure out of tape recording. I particularly recommend to anyone who has a tape the hobby of "Tapesponding". This is the sending of 3-inch spools of recorded tape to those friends who have tape machines. The empty tapespondent spools, with their appropriate boxes, cost 3/6 each, while with their full capacity of tape, 250 feet, they cost 9/–.

Second Article in The New Series By Gordon E. Gompers

Great fun can be had at a party with the taping of guests while they are unaware of the presence of your machine. To hide the tape recorder and accessories is quite an art. Placing a machine where it is not only hidden, but is within reach of a mains supply (without recourse to the tell-tale long extension cables) is something that often severely taxes one's ingenuity. I have successfully hidden my tape recorder behind a sofa. The microphone I have always hidden in a bunch of artificial flowers, without discovery to date. There was the occasion when one lady guest insisted on smelling the flowers. Fortunately, she was a little myopic!

For these impromptu recordings I favour long leaders so that you have time to switch on, welcome your guests, and usher them into the taped room before any recording begins. As a matter of courtesy I always obliterate the tape after playback by plugging the cable into the wireless. Guests might be quite happy to listen to, and laugh at, their comments but would hardly relish the thought that anyone else might be able to hear them at a later date.

* * * *

As you advance in the hobby of tape recording you will not be satisfied only with the one mains machine, microphone and cable. The gadgets you can add to your machine are so numerous that only a few can be mentioned here, together with their uses. They include a battery-operated transistorised tape recorder for gathering outside effects; a parabolic reflector for recording bird calls and insect sounds; an earphone for private listening, with stethoscope attachment; a telephone adapter for taping both sides of a telephone conversation, and special long microphone leads, for the occasion when you might require the microphone to be a considerable distance from the machine.

When taking up tape recording seriously, you would be helped by reading, regularly, some authorative publication dealing with the subject. The *Amateur Tape Recording and Hi-Fi* is very sympathetic to the novice and it has many features that I find almost indispensable, such as the tapespondents' directory.

A MECCANO BEAMING FRAME

For Use With Loom Described Last Month

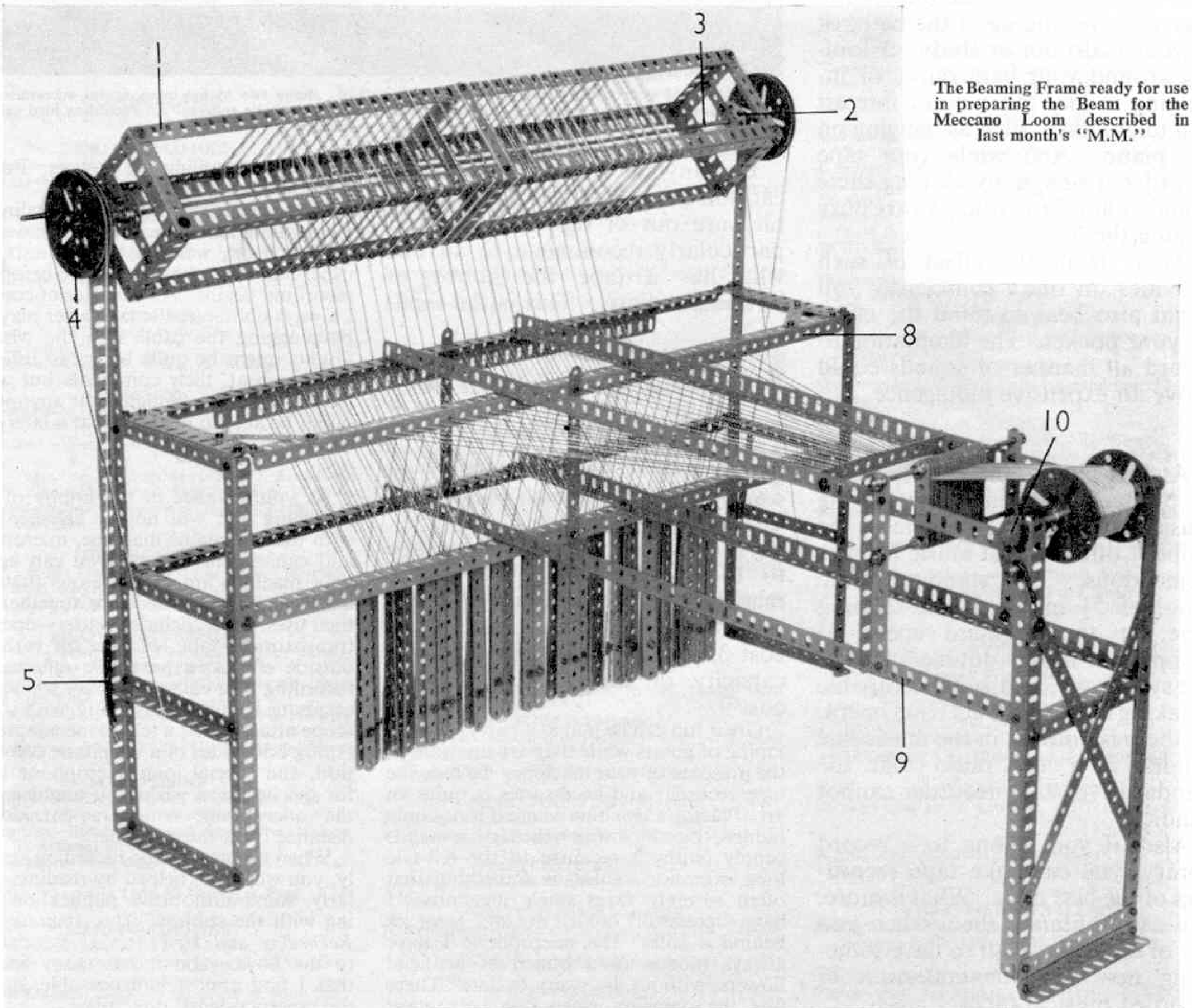
LAST month I described the construction of a Meccano Weaving Loom, and I expect quite a number of readers will already be at work on this excellent model. In that article I mentioned that a Beaming Frame was required for the purpose of winding the warp threads on to the built-up roller forming the Beam and I am, therefore, giving here details of a suitable Beaming Frame for this purpose.

It is designed specially for use in conjunction with the above-mentioned Loom. After a little study of the accompanying illustrations, no difficulty should be experienced in building the framework, so we may devote our attention to the more obscure points in the construction of the model and its manipulation.

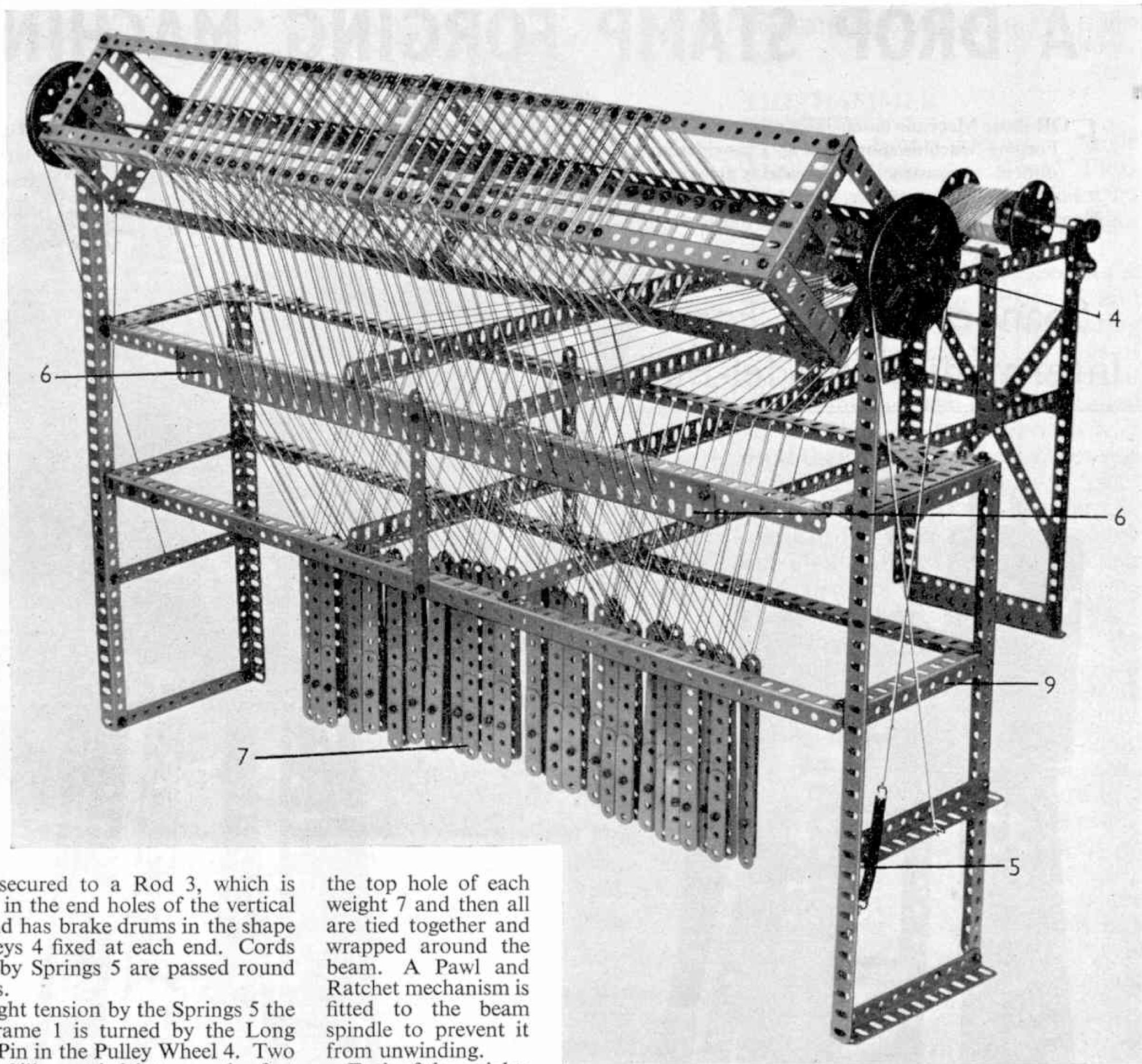
The rotating frame 1 on which the various threads of silk are wound, consists of four 24½" Angle Girders with 31 bolts being inserted in the holes of each Girder

BY SPANNER

in order that each pair of threads may be kept separated from the next pair. A Bush Wheel 2, attached to each end of the



The Beaming Frame ready for use in preparing the Beam for the Meccano Loom described in last month's "M.M."



The Beaming Frame seen from the rear.

frame, is secured to a Rod 3, which is journalled in the end holes of the vertical Girders and has brake drums in the shape of 3″ Pulleys 4 fixed at each end. Cords tensioned by Springs 5 are passed round the Pulleys.

With slight tension by the Springs 5 the rotating frame 1 is turned by the Long Threaded Pin in the Pulley Wheel 4. Two threads of Silk are tied between the first and second Bolts to the 24½″ Angle Girders and the frame 1 is turned until the required length is wound on. The threads are now cut and the loose ends are tucked-in between the threads already wound on the frame 1. This operation is repeated 30 times. Each section must have the same number of turns and start and finish on the same 24½″ Angle Girder.

With this part completed, all the thread ends are pulled out and the frame turned backwards, until there is enough length to thread them through the Flat Girder 6, one thread in the top hole and the second thread in the bottom hole.

It is best to support the weights 7 on Rods passing through the third hole from the top, the Rods being supported by the Angle Girders 9 until the threads have been attached to the Rod 10 in the centre of the beam. The supporting Rods are removed before winding the warp on the beam.

Each of the warp threads is led through the top hole of each weight 7 and then all are tied together and wrapped around the beam. A Pawl and Ratchet mechanism is fitted to the beam spindle to prevent it from unwinding.

Each of the weights 7 is composed of a 5½″ Strip to which a 2½″ Strip is attached. If the builder does not possess sufficient 2½″ Strips, it will be necessary to construct some of the weights with other Strips to an equivalent weight.

One or two precautions must be observed before attempting to remove the beam from the beaming frame for insertion in the Loom. If all the silk has not been wound off the frame 1, the threads must be cut. Prior to this, a Rod should be clamped over the threads on the beam to prevent the threads from becoming loose and deranged; and a pair of Strips should also be clamped above and below the warp, just in front of the reed. This is to prevent the warp threads from pulling out of the reed when the warp is severed. The beam may then be removed from the machine. It should be borne in mind that much of the success of the model depends upon the warp threads being wound evenly upon the beam, and in carrying out this work care must be taken to see that the tension weights do not drop so far that they touch the floor, as the sudden release of tension causes uneven patches to occur on the beam.

The brakes for the rotating frame should be strong enough to prevent the frame turning with the weight of Strips 7, yet should allow the frame to turn without difficulty when the warp threads are wound on to the beam.

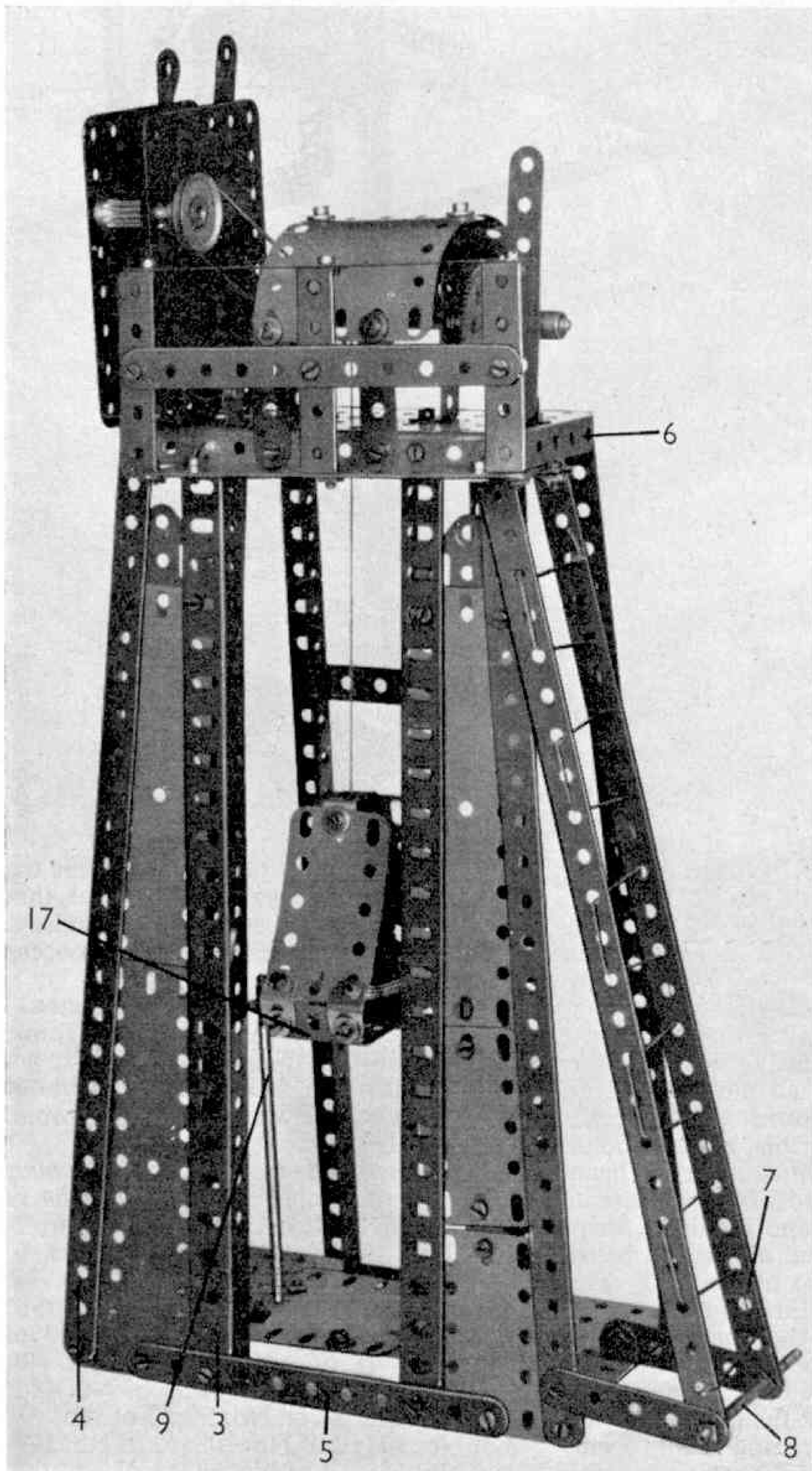
Parts required to build the Beaming Frame: 2 of No. 1a; 62 of No. 5; 54 of No. 3; 2 of No. 4; 91 of No. 5; 12 of No. 7; 2 of No. 7a; 4 of No. 8; 11 of No. 9; 8 of No. 9b; 2 of No. 9d; 2 of No. 13; 3 of No. 14; 1 of No. 15; 2 of No. 19b; 2 of No. 24; 221 of No. 37a; 220 of No. 37b; 41 of No. 38; 1 of No. 40; 2 of No. 43; 4 of No. 48a; 1 of No. 48d; 2 of No. 58; 11 of No. 59; 2 of No. 63; 3 of No. 103; 2 of No. 103a; 2 of No. 109; 1 of No. 115a; 1 of No. 147; 1 of No. 148.

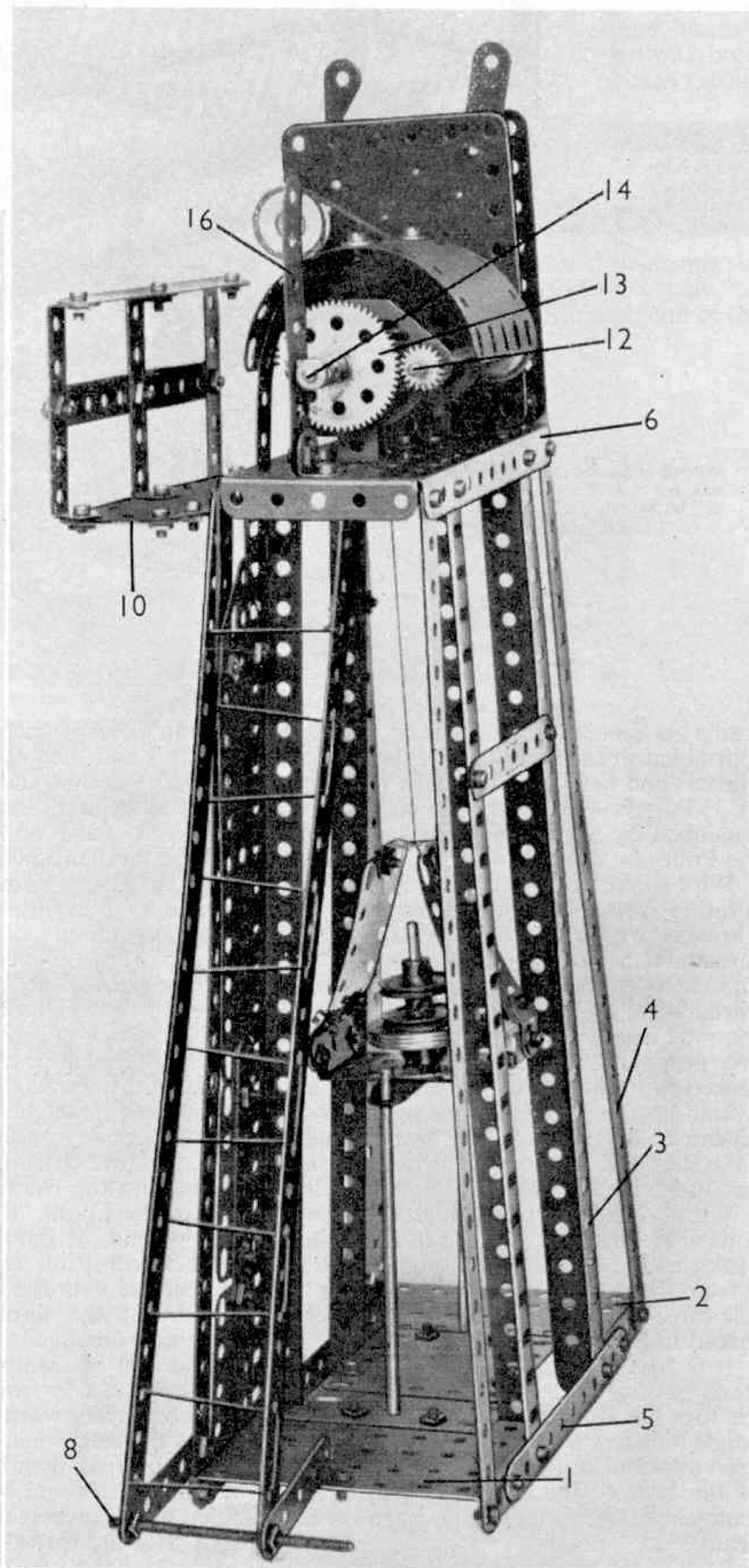
A DROP STAMP FORGING MACHINE

FOR those Meccano enthusiasts who own an Outfit No. 6 or 7, the Drop Stamp Forging Machine shown in Fig. 1 provides an interesting subject which is not difficult to construct. The model is driven by a No. 1 Clockwork Motor, but it can be operated manually, if a Motor is not available, by substituting a Crank Handle for the Rod marked 12 in the illustrations.

Spanner Writes For The Intermediate Model-Builder

Here now are instructions on assembling the framework: Two $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plates 1 and 2,





Figs. 1 and 2. Two views of the Drop Stamp Forging Machine, which is operated by a No. 1 Clockwork Motor.

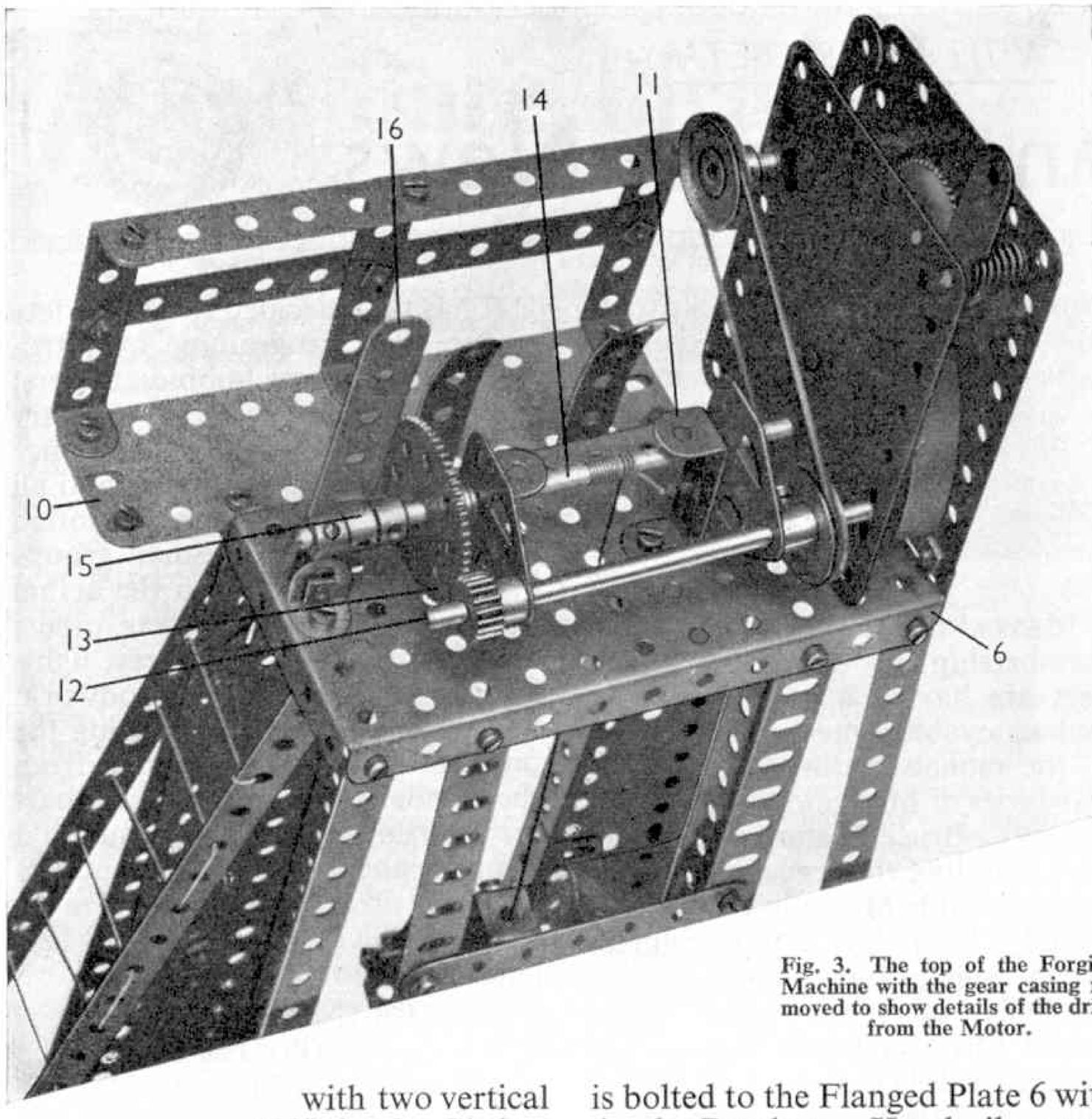


Fig. 3. The top of the Forging Machine with the gear casing removed to show details of the drive from the Motor.

with two vertical $12\frac{1}{2}''$ Angle Girders and two $12\frac{1}{2}''$ Strips 3 and 4, are joined together by $5\frac{1}{2}''$ Strips 5. The upper ends of the Girders and Strips are attached to a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 6, and the space between them (at the front of the model) is filled in with two $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates and a Flat Trunnion on the left, and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ and one $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate, a $3\frac{1}{2}''$ Strip and a Flat Trunnion on the right-hand side of the model.

Two $12\frac{1}{2}''$ Strips 7 are attached to the base at their lower ends by two $2\frac{1}{2}''$ Strips and are connected to the Flanged Plate 6 by Angle Brackets. Four nuts on a Screwed Rod 8 hold the Strips apart. Cord is used to represent the rungs of the ladder. Between the Flanged Plates 1 and 2 two $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates, overlapped three holes are bolted, together with two Right-Angle Rod and Strip Connectors secured by Angle Brackets, to their undersides to support the vertical slide Rods 9. Next, a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 10 is bolted to the Flanged Plate 6 with Angle Brackets. Handrails made up from three $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips and two $5\frac{1}{2}''$ Strips are bolted to the Flexible Plate 10.

THE DRIVE MECHANISM

A No. 1 Clockwork Motor is fastened to the platform 6 by two Fishplates and an Angle Bracket. Two $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 11 are extended with Flat Trunnions and bolted in position. A 4″ Rod 12 mounted in the Trunnions takes the drive from the Motor by a 1″ Pulley and Driving Band, with a $\frac{1}{2}''$ Pinion transmitting the power to the Gear Wheel 13 on Rod 14. Now place a loose Collar 15 between two fixed Collars, and with a nut and bolt, connect the $3\frac{1}{2}''$ Strip 16 (lock-nutted to the Angle Bracket fixed to the platform) to the loose Collar. A Cord Anchoring Spring is placed in the centre of the Rod to form an attachment for the hammer lifting cord. Two Curved Plates are now bolted by two $2\frac{1}{2}''$ Strips to the platform 6 to cover the mechanism.

THE HAMMER

Using four Obtuse Angle Brackets, attach two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates to a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate 17 and connect their top edges with a Double Bracket.

Now bolt a $3\frac{1}{2}''$ Strip across the centre of the Flanged Plate 17 and pass its ends over the Rods 9. Spring Clips are placed on the top ends of the Rods. To increase the weight of the hammer a Bush Wheel is bolted to the Plate 17, together with a 2″ Rod that has four Wheel Discs and two 1″ Pulleys fixed to it. A piece of Cord is fastened to a Washer and the Cord is then threaded through the Double Bracket on the hammer and tied to the Cord Anchoring Spring on the Rod 14.

The hammer is lifted by the Motor drive and by moving the lever 16 to disengage the 57-teeth Gear Wheel from the Pinion, the hammer drops by its own weight.

Particular care should be taken to ensure that the Rods 9 are in a truly vertical position as it is essential for the hammer to run freely on them. If the Rods are even slightly out of line, the operation of the hammer may be impaired. It is a good idea to spread a little light oil over the Rods so as to keep friction to a minimum.

PARTS REQUIRED

The parts required to build the Drop Stamp Forging Machine are as follows: 6 of No. 1; 6 of No. 2; 4 of No. 3; 4 of No. 5; 2 of No. 6a; 4 of No. 8; 3 of No. 10; 1 of No. 11; 8 of No. 12; 4 of No. 12c; 2 of No. 15; 1 of No. 15a; 1 of No. 17; 4 of No. 23; 1 of No. 24; 2 of No. 24a; 2 of No. 24c; 1 of No. 26; 1 of No. 27a; 2 of No. 35; 91 of No. 37a; 85 of No. 37b; 15 of No. 38; 2 of No. 48; 3 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 53; 3 of No. 59; 1 of No. 80c; 4 of No. 126a; 1 of No. 176; 1 of No. 186a; 4 of No. 188; 4 of No. 189; 2 of No. 190; 2 of No. 200; 2 of No. 212a; 1 No. 1 Clockwork Motor.

WITH THE SECRETARY

Club and Branch News

CLUB NOTES

ST. ANNES Y.M.C.A. M.C.—The main feature of the Club's display at the Y.M.C.A. 1962 Christmas Fair was a seven-foot high Meccano model of the Eiffel Tower, complete with working lifts. The boys assembled the model without any assistance from their Leader, Mr. Strangeways. Model railway activities in the associated H.R.C. Branch have become increasingly popular during recent months, with a corresponding influx of new members. *Secretary:* Brian Pickett, St. Annes Y.M.C.A., St. Alban's Road, St. Annes, Lytham St. Annes, Lancs.

SHEBBEAR COLLEGE (BEAWORTHY) M.C.—Members have been busy completing their large Meccano model of a hammerhead crane, and it is now looking most impressive with its long and powerful boom swivelling smoothly on a circular track erected on top of the two-foot high tower. This tower is well braced with Strips secured diagonally to the main Girders. The load trolley itself is completed, and is in position with its pulley blocks track laid along the boom. The crane is powered by a 20v. electric motor, and has been found to be capable of lifting about 20 pounds in weight. *Secretary:* M. R. J. Kent, Shebbear College, Beaworthy, N. Devon.

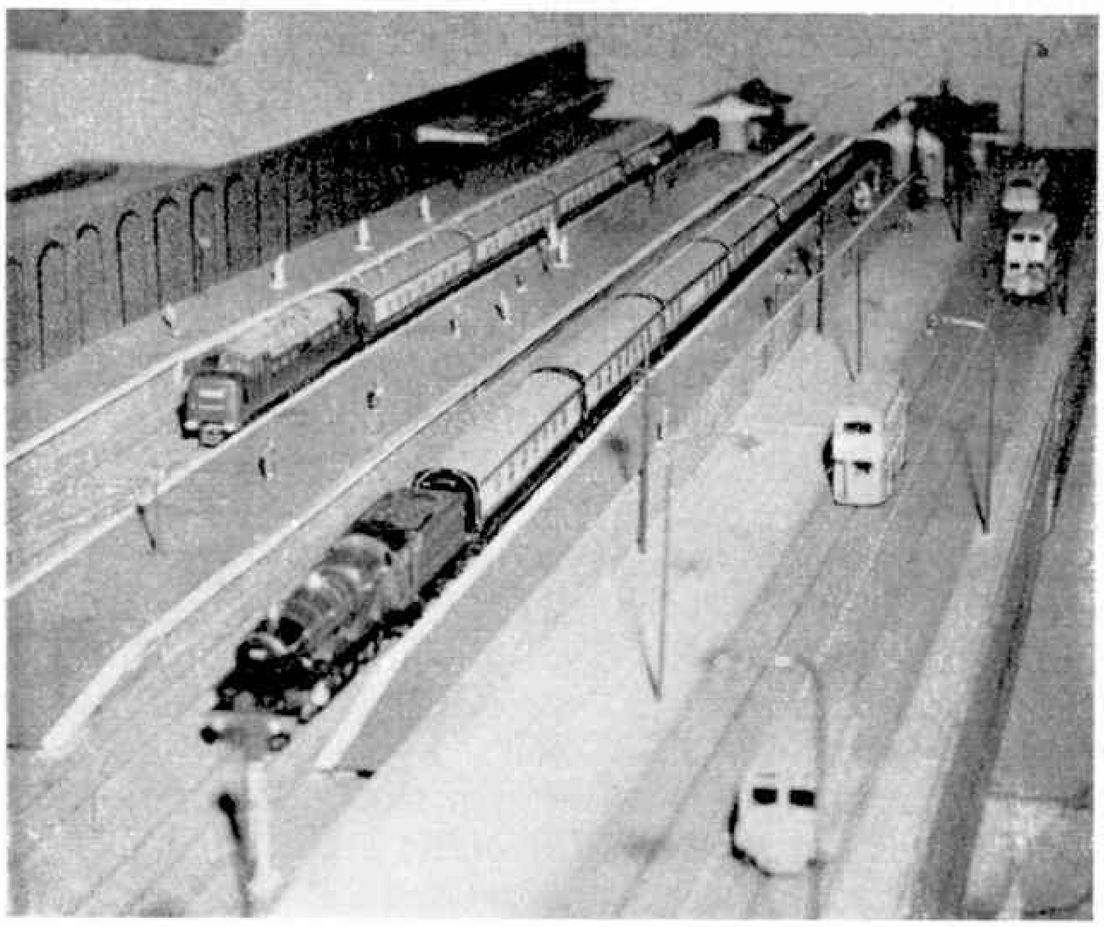
AUSTRALIA

MAYLANDS M.C. — The Club membership now totals fifty. Members are having a very interesting and enjoyable time building some of the models featured in the pre-war series of Meccano Super Model Leaflets. Bruce Manning has been busy building the travelling bucket dredger, while Malcolm Criddle has already built the single cylinder steam engine and is now on the assembly of the original super model Meccanograph. Meanwhile Trevor Criddle is at work on the log saw and Chris Ridley is busy on the model of the high-speed ship coaler. A new member—Charles Croft—is assembling the 4-4-0 passenger locomotive and tender which are featured in Leaflet No. 12 of the current series of Leaflets for Outfit 10 models.

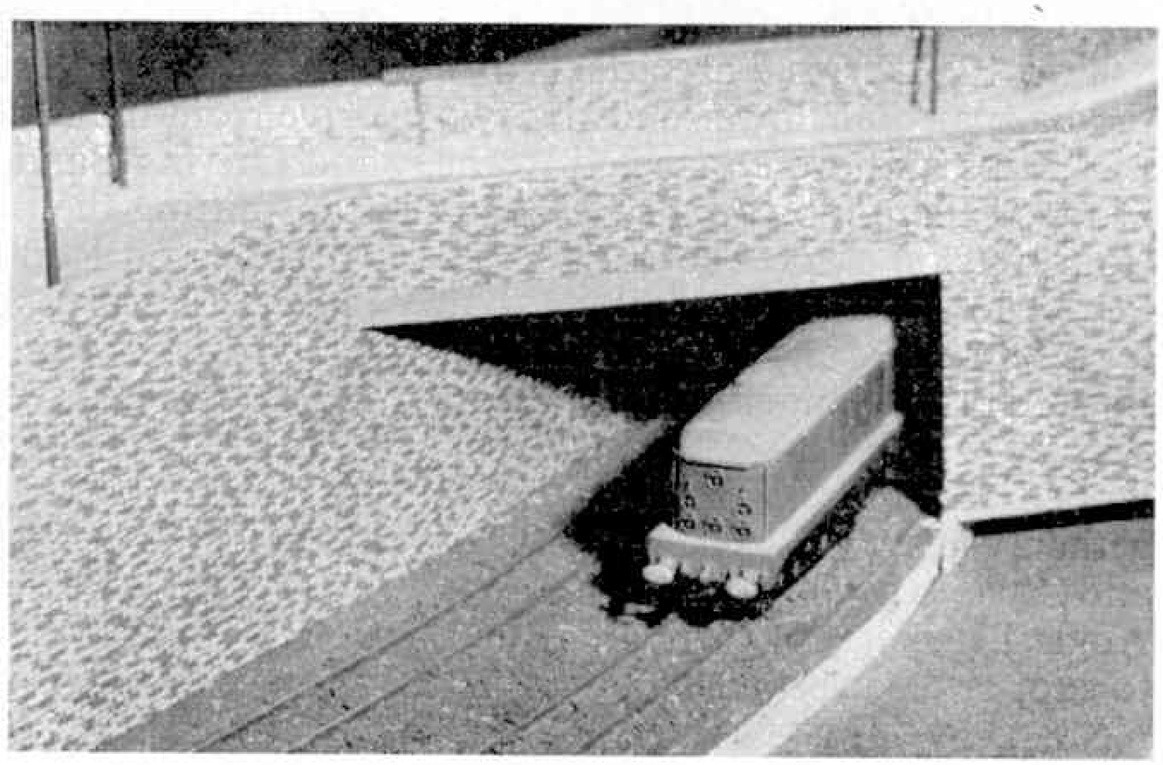
It has been decided to add variety to the Club programme by introducing several new hobbies, the first of which is puppetry. The puppetry section is being organised by Bruce Manning and the Secretary, and all boys taking part have been allotted different jobs to do. Small groups of boys are attending to the actual manipulation of the puppets, others are looking after the scenery, lighting, script writing, and woodwork. Several of the boys are making the puppet theatre, with some help from the Leader. Members taking part are starting with glove and rod puppets, and later on string puppets will be used. *Secretary:* Trevor Criddle, 17 Kenilworth Street, Maylands, Western Australia.

BRANCH NEWS

NORTH END (PORTSMOUTH)—The fourth section of Mr. Enfield's new layout is well under way, and the necessary track-laying, on ballast, is progressing rapidly. A Two-Rail Tank Goods Set has been bought, and a layout for it will be put down shortly. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.



Two interesting pictures from the North End (Portsmouth) H.R.C. Branch showing parts of Mr. Enfield's new layout. (Left) Terminal station scene with passenger train headed by Hornby-Dublo Co–Co Diesel locomotive at the far platform, and another passenger train, headed by Hornby-Dublo 4–6–0 Castle class engine, at the nearer platform. (Right) Hornby-Dublo Bo–Bo Diesel locomotive emerging from tunnel. Photographs by Bertram Lemmon, Portsmouth.



Some Rare Birds

• In the world of buses, as in other aspects of life, one comes across the "odd man out". Below, you can read about some of the more unusual types of buses that have been used, or are still in service, in Britain.

The unique Leyland "Badger" single-decker bus, which ran as a Bradford schools' bus, and is now in the Lincolnshire Vintage Vehicle Society's collection. This picture was taken at the Spilsby Show, last summer.

WE live in a world of increasing standardisation where one or two designs for teapots, mowing machines, armchairs and buses sweep through the market, because it is cheaper to mass produce for the huge home market a few patterns than to add that variety which is called "the spice of life". Hence it is refreshing to come across a few "odd men out", such as the only Leyland "Badger" p.s.v. shown on this page, and now preserved by the Lincolnshire Vintage Vehicle Society for us to enjoy during the years that lie ahead. Also up in Lincolnshire runs the sole Dennis "Pelican" bus. This was produced by the Guildford firm to compete in the under-floor engine single-deck field, but 1956 was a little too late to launch it, for by then Leyland's "Royal Tiger", "Tiger Cub" and "Olympic", together with A.E.C.'s phenomenally successful "Reliance", had already conquered most of the market.

CALLING ALL BUS SPOTTERS

By David Kaye

* * * *

Pelican 530 BPG ran in the fleet of Yellow Bus Services, in its native Surrey town, until this independent concern was taken over by Aldershot & District, who re-sold the bus to Trimdon Motor Services in County Durham, who in their turn sold it to Daisy Bus Service Ltd., of Brigg, Lincs. The "Pelican" has a lightweight chassis and is fitted with a 44-seat Duple body.

The arrival at the 1962 Earl's Court Show of the Bedford V.A.L. brought back memories of the Leyland "Gnu" and "Panda", which were produced twenty years ago. Nos. WG 6608, FGC 593, HVW 213–7 and WG 9519 (the last-named being the "Panda") have, alas, disappeared, but then, in those days, twin front axles were not so necessary with coaches limited to 30 m.p.h. and no motorways to speed along. These strange beasts were powered by the same 8.6 litre, six-cylinder oil engines as were used in the Leyland "Tiger", but they had to carry 40 passengers compared with the normal "Tiger's" 32. Incidentally, a third axle would have been compulsory for these vehicles since they were 30 feet long, but usually such an axle was positioned at the rear of the chassis.

* * * *

If you are shopping in either Guildford or Horsham you may be privileged to witness another rather rare bird on service —the Leyland "Comet"—a model which one normally associates with cement lorries, although large numbers of this chassis have been exported for p.s.v. purposes. Brown Bus Services of that delightfully Surry-sounding village Forest Green operate six vehicles, including "Comet" OPB 536. King of the Road at Worthing have a similar vehicle (LPO 874), but this does not run on a stage carriage route. Still on the subject of Leyland single-decker chassis, Birch Bros. in 1951 bought four Leyland PS2 "Tiger" chassis and had Willowbrook 53 seat double-deck bodies placed on them! K 220–3 (LXV 220–3) ran regularly on their route 203 between Rushden and King's Cross via Bedford and Hitchin for years. The opposite happened with the West Monmouthshire Omnibus Board. They replaced their Leyland "Bull" (No. 13, AAX 27) by a Leyland "Titan" PD 2/38 chassis bearing a single-decker body for the tremendous climb up the notorious Bargeod Hill, which rises at 1 in 4¼ in places!

The recent publication of the last booklet in the Ian Allan English series "British Bus Fleets" (No. 10—North-Eastern Area) reminds us that there are still a few Atkinson "Alphas" in service, for Venture Transport of Newcastle-upon-Tyne have four batches of these fitted with Willowbrook single-deck bodies, as follows: 166–171 (RPT 126–131), 172–7 (RUP 433–8), 178–83 (TPT 108–13) and 184–9 (VPT 547–52).

On the other side of the Pennines, Ribble had, until recently, some Sentinels numbered 278–97 (CRN 211–6 and DRN 341–54). These were of integral construction and fitted with either 40 or 44-seater bus bodies, mostly built by Sentinels themselves. However, the fleet of Yorkshire Traction contains both these rare birds, for on New Year's Day 1961 they acquired from Camplejohn Bros., of Darfield, two Atkinsons (TTC 882 and XTD 665) together with three Sentinels (HAW 577, LWT 880 and 775 ERF).

Lancashire United Transport chose a wide variety of chassis over a comparatively short period. Not only did these include Atkinsons (479–88, 490–9, 522–31 and 552–61), but in addition they have Foden PVD 6 buses with 57-seat Northern Counties bodies (447–51). A second Lancashire operator of this make of double-decker was Warrington Corporation, who purchased two batches of PVD 6's in 1948–9 (36–42 EED 15/6 and FED 588–92), followed by other batches in 1954 (102–4 MED 168–70) and 1956 (108–12 OED 213–7).

* * * *

It is only a matter of time before the once-popular Crossley DD 42 chassis becomes quite a rarity, and then yet another make will have become just a memory—unless, of course, some enterprising people decide to preserve a couple. A few years ago it looked as if Daimler would follow suit, but the remarkable success of their "Fleetline" rear-engined double-decker has prevented that from happening.

When we turn to the smaller firms we can still find quite a wide range of unusual makes, but with the passing of every season they become fewer and fewer. I shall be interested to hear from any reader who knows of the existence of any of these rare birds, and—better still—can lend me a photograph of one of them.

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FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 93

For Stamp Enthusiasts

Mergers

By F. E. Metcalfe

EVER since the second world war the business world has been shaken up periodically by rumours (and sometimes more than rumours) of mergers and take-overs. This unrest and change is not confined to the business world, as countries, too, are on the move, and mergers and changes among these affect our hobby of stamp collecting, although—for a reason I will give later on—perhaps not as much as seemed likely when all these mergers of countries were first mooted.

There was, for instance, the proposed West Indian Federation, which came to nothing because the larger components, such as Jamaica and Trinidad, backed out. These two countries are now "going it alone" (with outside aid) and, of course, continue to issue their own stamps. At the time that the full merger was being discussed I was given to understand that even if all the West Indian colonies did join together it was proposed to continue as at present, with each island still issuing their own stamps, but—as used to be the case with Leeward Islands—having also a set which could be used by the whole group.

This is my reason for stating at the beginning of this article that our hobby might not be affected as much as was once thought, as it had been presumed that if the West Indian merger materialised, the various colonies concerned would stop issuing their own particular stamps in favour of a single set for all. If this had come about, how we would have missed those attractive issues of Barbados, etc.

Well, there is still a plan for the other West Indian colonies to join up, and for a still more important merger in the British Commonwealth, right at the other side of the world. I mean the proposal for the Malayan Federation (Johore, Kedah, etc.), Singapore, Sarawak, North Borneo and, perhaps, Brunei to become one nation. It is likely that before 1963 ends this great event may have come about. If a single set of stamps were to replace the present lot there would be a change, for at the time of writing these notes the Malayan Federation alone jointly issues eleven sets, apart from the one used by the entire group. And, of course, the four other countries included in the proposal have their own sets as well. In all, sixteen sets would be replaced by a single issue which—as any dyed-in-the-wool collector will tell you—is quite unthinkable.

But do not worry, the Federation has never made the slightest attempt to issue a single stamp with an eye on catching collectors (the Malayans are not that kind of people). I think that, as at present, the various states will follow the old Leeward Islands plan; that is, one set which all can use, to mark the Federation, with each component also having its own particular issue, although perhaps the individual sets will be limited.

I understand various attempts have been made by private agencies to get the present Malayan Government to allow the exploitation of their postage stamps with the sole object (apart from the commission's own rake-off, which is substantial where countries have fallen in with the idea) of "soaking" stamp collectors. But there was nothing doing at all, for basically the Malayans are, to quote one old resident who has been out there for a long time, nature's gentlemen. So just as there has never been any philatelic exploitation in the past, I feel sure there will be none in the future. This is an important point, and I have no hesitation in suggesting that any collector who now wishes to advance, as it were, from forming a general collection—which can never really get anywhere because of the huge numbers of stamps that are being issued all the time—would be wise to consider the Malayan group.

To recapitulate, the countries concerned in the proposed merger are the Malayan States, Johore, Kedah, Kelantan, Malacca, Negri Sembilan, Pahang, Penang, Perak, Perlis, Selangor and Trengganu. In addition there are Singapore (with its delightful fish stamps), North Borneo and possibly Brunei. A fine little group, and with such important political changes pending, which are certain to have philatelic repercussions, one really worth a collector's consideration.

Take the Malayan States, for instance. Quite a good show of "used" can be got together at very little cost. Of course, the stamps of states such as Perlis and Trengganu are scarce, used, as their postal

services are small, but although each of these countries has its own particular stamps (the designs are similar, but each shows the name of the state issuing them) they can be used postally all over the Federation. All this adds to the fun, bringing in different postmarks for which you can be on the look-out. And then there is Singapore; here again used stamps are mostly plentiful and cheap, right up to the $5 values. As for designs, who could want more than the issue now partly replaced by stamps featuring ships, etc.?

Coming to the outsiders—soon, probably to be insiders—Sarawak, etc., used stamps are also fairly plentiful, and not difficult to pick up for moderate sums. A stamp which is surprisingly cheap is the Sarawak KGVI $5. Under normal circumstances it would have been quite scarce, but after the war several people living out there, who had, I am afraid, more loose cash than judgment, bought up a lot of these stamps as an investment and later, when they came to unload their acquisitions, had to take well under face value to do so. Actually, hundreds of copies were disposed of in this way. They came over here, and then went back to be used for air mail postage. This means that nice, used, high values, which normally would have been scarce, are obtainable at a reasonable price.

Anyhow, if you are one of the many stamp enthusiasts wanting to change ground—we collectors are like that—then consider Malaya and the other countries mentioned, as your new stamping ground.

Stamp Gossip

Cracked Paper

OUR own Post Office is gradually getting into the way of releasing a special issue now and again. The Assistant Postmaster General, when opening last year's London Stamp Exhibition, actually asked for suggestions in this line, as at that time (March) they had apparently not decided on any for 1962, but were "showing willing"—a great change from the old attitude. Well, they thought up an idea, and the two sets issued on November 14 last to mark "National Productivity Year" were the result. Two sets? How come? Most collectors of British stamps at least will know that the designs of the two sets were the same; in fact, they were all of the one printing, more or less, but those sold in Southampton, Liverpool and London S.E. (including the surrounding districts) had the "phosphor" lines on the face, one line for the 2½d. and two lines on

the 3d. and 1/– values. Of course, collectors will look upon all this as two sets. By the way, if you have noticed that the watermark on the 2½d. and 3d. values is inverted please do not think you have landed a winner, for that is not the case.

There is, in fact, an interesting little story to be told of how the watermark got upside down. Apparently the paper had edge cracks after coating (the paper is given a chalk, etc., surfacing) and it was feared that during the gumming the cracks would spread, so the edge of reels were trimmed. This additional trimming resulted in the paper being wound in the reverse direction to normal, and to save time and expense the stamps were printed off without any further re-winding, hence the inverted watermark of the two low values. For the 1/3d. value things went according to plan, so on these the watermark is normal.

AFRICA

Recently, I had a talk with a young collector who was interested in the idea of beginning a collection of stamps of the new "free" African countries and was asking me for advice. He had seen some of the recent issues, and colourful as they undoubtedly are (if colour is all you want in stamps) they had attracted him, and I rather imagine quite a few others as well. But without beating about the bush I told him that I knew of no stanps I would be less inclined to collect. Why? Simply because far too many of these new countries have realised that there is easy money to be picked up issuing flamboyant stamps for collectors wanting a change.

The kind of thing I mean is the set of stamps issued by Togo in honour of her first postage stamps. The set consisted of seven stamps, each depicting (as you will see from that reproduced here) stamps which had appeared in the past when the country was under the rule of the hated Imperialists. All very fine, and no one would mind an odd new set once in a while in the manner in which most countries in the British Commonwealth issue them, but when you get new sets every few weeks you cannot keep up with it. So my advice to him was, and is, leave them alone.

WHAT ABOUT CUBA?

A collector who, like many others, seems to be interested in all American stamps asked me in a recent letter why I never mentioned Cuban stamps, and what about the interesting sets which that country issues from time to time, such as the set released October 13 last year to commemorate the "First Latin American University Games", etc. These stamps were, apparently, issued, but I must admit I do not know much about the games, which were to be held in Havana—where those wonderful cigars come from. Cuban stamps used to be particularly popular in the United States, but at the time of writing their importation into that country is prohibited. A good deal of correspondence passes between Cuba and Britain, however, so used stamps are not hard to come by, and I imagine my correspondent is able to get some, hence his inquiry.

TAKE CARE

I have often advised collectors to take good care of their stamps, but from what I see from time to time it cannot be repeated too often. Do please handle your stamps carefully, for nowadays with so many stamps coming out all the time only copies in impeccable condition are considered worth having, unless a rarity is concerned, and even then condition is all-important.

I saw an example of this not very long ago. A collector was offering for sale to a dealer what had been a mint copy of the current £1 Great Britain stamp. Normally the dealer would have bought without much fuss, and would have paid face value, less than a shilling or so, if the stamp had been in perfect condition. As it was, the copy offered looked rather grubby, so the dealer would not buy at any price. He remarked after the would-be seller had left that even if he had bought at several shillings below face value, who would have bought the stamp from him? Moral, *do* watch your mint stamps, for if you handle them with those grubby fingers—say, after a romp in the garden—your stamps have "had it". As for used, leave those heavily cancelled copies for someone else.

TIP OF THE MONTH

For some time I have been wanting to write about the stamps used recently by Norfolk Island but I never seem to have got down to it. However, these stamps are becoming so popular, thanks to the beautiful flower design as well as the overprints, etc., that I think they are

(*Cont. in col. 3, next page*)

By E. W. Argyle

The Royal Navy On Stamps

H.M.S. VENGEANCE

BUILT in 1945 by Swan, Hunter and Wigham Richardson, at Wallsend, H.M.S. Vengeance was commissioned in 1945. In 1948–49 she was fitted out for an Arctic cruise and was lent to the Royal Australian Navy in 1953, returning to the Royal Navy in 1955. She was sold to Brazil in 1956 and renamed "Minas Gerais".

H.M.S. BERWICK

This armoured cruiser was launched in 1902 and completed in 1903 by Beardmores, Glasgow, at a cost of £750,984. The stamp gives a false impression of the cruiser's duties; it would appear that she has been engaged in transporting the West Indies' Contingent back to their homeland from the war. This, of course, was not the case. H.M.S. Berwick was on her way home from the Pacific Station in July, 1919, and had called at Kingston after she had passed through the Panama Canal. The B.W.I. Contingent arrived in their transport at the same wharf as the cruiser.

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.....
3. What country issued the first TRIANGULAR stamp in the world—the "Cape Triangular" of 1853?
.....
4. Which country NEVER puts its name on its stamps?
.....
5. If "Perf." means "With Perforations", what does "IMPERF." mean?
.....
6. Which country has SUOMI on its stamps?
.....
7. What was the former name of GHANA?
.....
8. What country has "C.C.C.P." on its stamps?
.....
9. Are all genuine stamps always printed on Water-marked paper?
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Stamp Gossip—*(Cont. from previous page)*

entitled to be the Tip of the Month. A dealer tells me that latterly the stamps of that far-away island are almost "best sellers", and he puts that down mostly to fine printing and the really attractive designs. I will refer to these stamps again

in the near future. In the meantime, the Australian Note and Stamp Printing Works at Melbourne, who are responsible for the stamp production, really do deserve the congratulations of the collectors who find themselves so attracted by their fine work.

Road and Track—(*Continued from page 55*)

power amounts to 109 b.h.p., but as a road car it is kept down to 89 b.h.p., which I understand from someone who has sampled it allows a speed of something like 110 m.p.h.

Suspension is independent all round. Moderately geared rack and pinion steering is used, and Girling disc brakes are fitted to all four wheels. It has a wheelbase of 7 ft. 6 in., front track of 4 ft. 0 in. and rear track of 4 ft. 1 in. Overall length is 12 ft. 10 in. and width is 5 ft. 1 in. The Mustang is an extremely low-built car with a scuttle height of only 2 ft. 4¾ in., while its maximum height at the roll bar behind the driver, for use in sports car racing, is 3 ft. 3½ in. I understand it has an extremely good road performance.

Not long ago, I had an opportunity of driving the improved 1963 "E"-Type Jaguar. Although it is unchanged mechanically, driver comfort has received a good deal of attention. New foot wells allow better pedal control, nor is there any danger now of catching heels in the floor mat. In addition, the driving seat can be pushed further back to the huge joy of the long-legged. My car was an open two-seater with detachable hardtop, which made a very snug car for winter motoring. Having covered little more than 2,000 miles it was still a trifle tight at the top end; even so, it would run up to 148 m.p.h. and go from 0 to 120 m.p.h. in the remarkable time of only 25 seconds, while 100 m.p.h. could be reached in 16 seconds. So flexible is the twin overhead camshaft 3.8 litre engine, the "E"-Type Jaguar can be driven at 11 m.p.h. in top gear. My verdict—a wonderful motor car with first-rate handling and greater comfort.

CHALLENGE DRIVE

When journalist-driver Richard von Frankenberg accused Lotus of contravening Formula Junior regulations, by using over-size engines to win races, Colin Chapman, of Team Lotus, sportingly settled the matter out of court with a £1,000 challenge drive, offering to repeat Lotus Formula Junior performance on any circuit of von Frankenberg's choice. The Germans chose Monza's 3.54 miles road circuit, near Milan. They agreed that the journal *Auto Italiana* should act as arbitrator and arrange to have the car weighed and the engine measured at the conclusion of the run. Driver was Peter Arundell who had to cover 30 laps on a circuit made slippery by ice. Before Arundell even set off von Frankenberg confirmed that conditions were difficult.

Arundell had to beat or equal his previous race average of 113.47 m.p.h. made in June sunshine at Monza. So well did the Formula Junior Lotus perform on this chilly December morning that he returned an average speed of 115.23 m.p.h. over the full race distance and set up an unofficial Formula Junior lap record with a speed of 117.14 m.p.h.

Afterwards, engine measurements were confirmed at 1,097 c.c. So Lotus won their £1,000 challenge and over the lunch that followed the Lotus was bought by an Italian who was most impressed by Arundell's performance.

Visit to a Baltic Bird Sanctuary—

(*Continued from page 63*)

on deer, he merely smiled and said that what interested him most was that his stags should have the finest possible antlers, and that he was buying specially blended powders, consisting of various minerals, to mix with their food. Good results were said to have been obtained with these powders in Sweden and I must say the stag I saw seemed to be a particularly fine specimen.

On two of the smaller islands, one called Ormskar, or "Snake Island", the other Brandskulkobben, Mr. Kreuger has introduced otters. They have settled down well and have bred and multiplied. On several other islands he has introduced a breed of wild sheep known as Mufflon, which originated from Corsica and Sardinia. These are extremely hardy beasts.

Our talk over coffee turned to birds, which are perhaps Mr. Kreuger's first love, and on which subject he is an acknowledged authority. There is a list in Roman script pinned up on his sitting-room wall which names 65 species of breeding visitors, as he calls them. Another column is devoted to 63 birds classified as non-breeding migrants, and beneath is a short list of ten, under the heading of residents Mr. Kreuger has introduced. This list, strangely enough, mentions the peacock and I asked where he kept these decorative birds. It seems that a tragedy overtook them when foxes raided the island the previous winter and the majority—thirteen, in fact—were killed in the pen where they were kept. One or two only escaped and I thought I heard the harsh cry of a peacock as I walked through the woods later in the day.

The lists interested me, although I am not an ornithologist. The breeding visitors included the usual species of duck and various gulls, as one would expect, but I was surprised to find listed the buzzard—I had last seen one circling high up in the air by the Cornish coast—and the capercaille, that large bird which our ancestors considered a great delicacy for the table and which is now, I believe, a rarity, except in Scotland.

Before seeing me off at his jetty, Mr. Kreuger invited me to climb to the highest point of the home island where he had built an observation tower. From here, one got a magnificent view over all the islands included in this sanctuary. He pointed out "Snake Island" where the otters breed, and the islands of sheep, and we even searched through powerful field glasses for a glimpse of the elusive Fallow Deer. But I was not too disappointed that we could not locate them. I had seen enough that day to realise that here was a naturalist who, with no thought of commercial gain, had poured out money to feed and protect wild birds and animals, and in return had satisfied a wish to be in close contact with nature, something many of us would like to imitate but, through force of circumstances, cannot possibly achieve.

Railway Notes—(*Continued from page 67*)

a stretch of Welsh territory, included King, Castle and Grange 4–6–0s. Hauling through trains between Liverpool or Manchester and South Wales or the West of England, via Hereford, in some cases with an engine change at Shrewsbury, were standard B.R. class 5 4–6–0s; ex-L.M.S. Royal Scot, rebuilt Patriot and class 5 4–6–0s; W.R. Castle and Hall (double-heading and single) 4–6–0s; also Warship and Beyer–Peacock (Hymek) diesel-hydraulic, and Type 4 English Electric diesel-electric, locomotives. Shrewsbury–Swansea trains, which traverse a scenic, hilly route were worked by L.M.R. class 5s that afternoon.

Along the attractive coastal or more mountainous single lines in the one-time Cambrian Railway territory, now W.R. or L.M.R., connecting Welshpool, Aberystwyth, Barmouth, Ruabon, Pwllheli, etc., and providing many fascinating journeys, all-steam motive power included locomotives of the following classes: Manor 4–6–0 on the combined portions of the *Cambrian Coast Express* and B.R. class 4 4–6–0, sharing principal main line duties; W.R. 2–6–0 and 0–6–0; 0–6–0 and 0–4–2T. L.M.R. light 2–6–0 No. 46503 and the similar standard B.R. 78000 type and B.R. class 3 2–6–2T numbered in the 82000 series. There were a few combinations of tender or tender and tank engines double-heading certain trains owing to severity of gradients, or for operating convenience.

The quaint little 2–6–2T locomotives numbered 7 and 9 in the unique W.R. 1 ft. 11½ in. gauge Vale of Rheidol series, were busy climbing up from Aberystwyth to Devil's Bridge, then gently descending. This is indeed a grand sightseeing trip.

Mr. Harvey recorded a notable effort up the long 12-mile climb, partly at 1 in 90–100, beginning soon after departure from Shrewsbury, by Warship diesel No. D801, *Vanguard*, on a through Glasgow and Manchester to Plymouth and Torquay express.

It was a full and heavy 13-coach train, gross weight about 470 tons, and might well have required two steam 4–6–0s to gain time in a similar manner. Up the easier stages of the ascent 50 m.p.h. was twice attained, speed gradually dropping on the steepest rises into the wooded hills to 32–36–30 m.p.h. Church Stretton, 12¾ miles, was passed in barely 22 minutes, leaving plenty of time in hand on to Hereford over an easier but sharply-undulating course. The route beyond to the West Country includes another severe gradient with numerous lesser ones and is by way of Abergavenny, Pontypool Road, the Severn Tunnel and Bristol.

"Quilted" House— (*Cont. from page 68*)
consisting of two layers of 'Terylene' taffeta with fibreglass insulation in between. At each join in the tubing a separate insulated band, fitted with nylon guy ropes, is drawn tightly around the arch, thus sealing off any draughts.

A flue outlet is provided for the stove, as well as electric wiring in harness form (attached to the frame assembly) in case electricity is available from a generator or other source.

Initially, the cost was fixed at about 8.00 dollars per square foot of floor space. Overall cost would thus depend on the number of 2 ft. sections in the house. One with nine sections (a house 16 ft. × 16 ft.), for instance, would cost about 2,048 dollars (roughly £750). To extend the house in size you add sections for each additional four feet of length required.

The entire 16 ft. × 16 ft. unit weighs less than 13 cwt. Equipped with the latest ideas in folding beds, collapsible chairs and tables, and capable of being fitted with light and heat by electricity, gas or oil, the housing unit has proved most comfortable, irrespective of terrain or weather.

You can imagine the scope this quilted house offers to sportsmen and hunters and other seekers after adventure in cold climates, where game is abundant but established camps are few and far between! Parties of hunters using this type of shelter will be able to set up camp anywhere, moving it quickly and easily wherever and whenever they wish.

Ball Games Through the Ages—
(*Continued from page 75*)
or with cores floating in liquid, and many another weird and wonderful ideas. Balls made of leather stuffed with feathers preceded the present type. It is an astonishing thing that, although rubber was discovered centuries ago, and was known to the American Indians, it was not used in relation to ball games until the nineteenth century.

"Linesman" article—(*Cont. from page 80*)

The diagram on page 80 shows Hand-Operated Points, but there would be advantages in having these Points Electrically-Operated, especially those situated remotely from the control centre. In any case, a bank of switches at the control centre adds to the realism of a miniature railway, and the remote control of Points and Signals is extremely fascinating.

Where the Points form crossovers from one track to another, an insulating gap must be arranged between each set of Points, and this is accomplished by substituting Nylon Fishplates for the metal ones. The positions where Nylon Fishplates are required have been indicated by a black dot on the diagram.

If Electrically-Operated Points and other accessories are added to the layout, one of the power control units must have an extra output suitable for working them.

"Hullo, beautiful . . ."

Fireside Fun

A member of the faculty of a medical college was appointed honorary physician to a king, and announced the fact proudly to his students by writing a notice on the blackboard. When he returned to the class-room in the afternoon he found written below the notice the line "God save the King."

"And now viewers, coming into your picture are the first men ever to climb this mountain."

Hostess: This is Captain Wilson, who has just returned from an exploration journey to the Artic regions.

Gushing Guest: Oh, Captain, do come nearer the fire. You must be terribly cold.

* * * *

An angry little man bounced into the post office. "For some time now," he shouted, "I've been pestered by threatening letters and I want something done about it."

"I'm sure we can help," soothed the postmaster. "That's an offence. Have you any idea who is sending you these letters?"

"Certainly," snapped the little fellow. "It's them pesky Income Tax people."

Indian (at a tribal conclave), "Soon this land will be ours again! Palefaces go to moon!"

"Schooldays are still the happiest days of my life!"

The psychiatrist was interviewing his new patient. "You say you're here," he asked, "because your family is worried about your taste in socks?"

"That's right," muttered the patient. "I like wool socks," he added sullenly.

"But that's perfectly normal," exclaimed the psychiatrist. "Many people prefer wool socks to silk. "Why," he continued, "I, myself, like wool socks."

"You do?" asked the patient brightening. "How? With oil and vinegar, or just a squeeze of lemon?"

* * * *

"I once had a wonderful idea for making money."

"How much did you ultimately get?"

"Six years."

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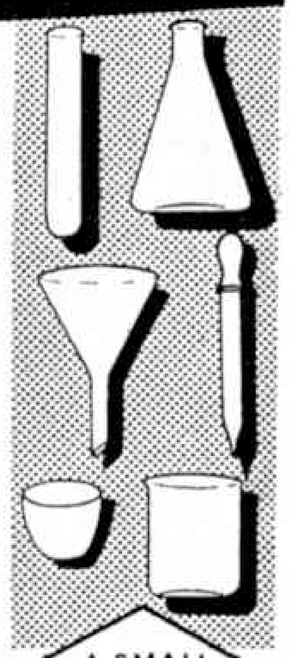

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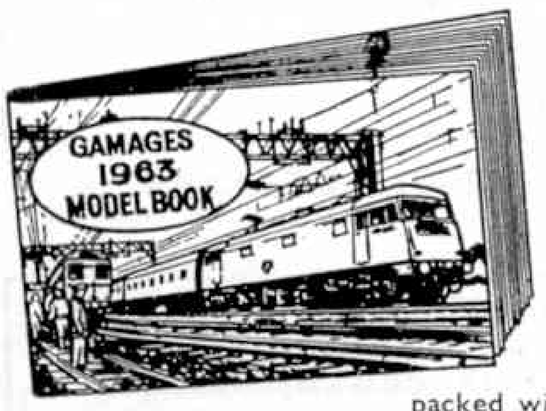

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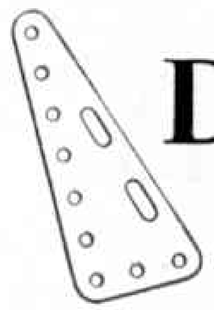

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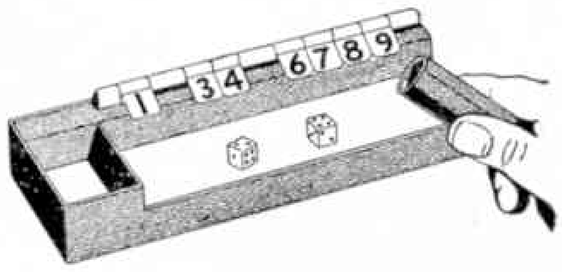

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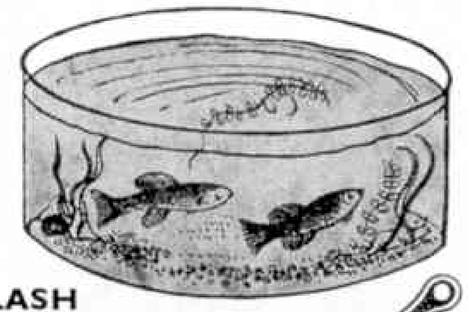

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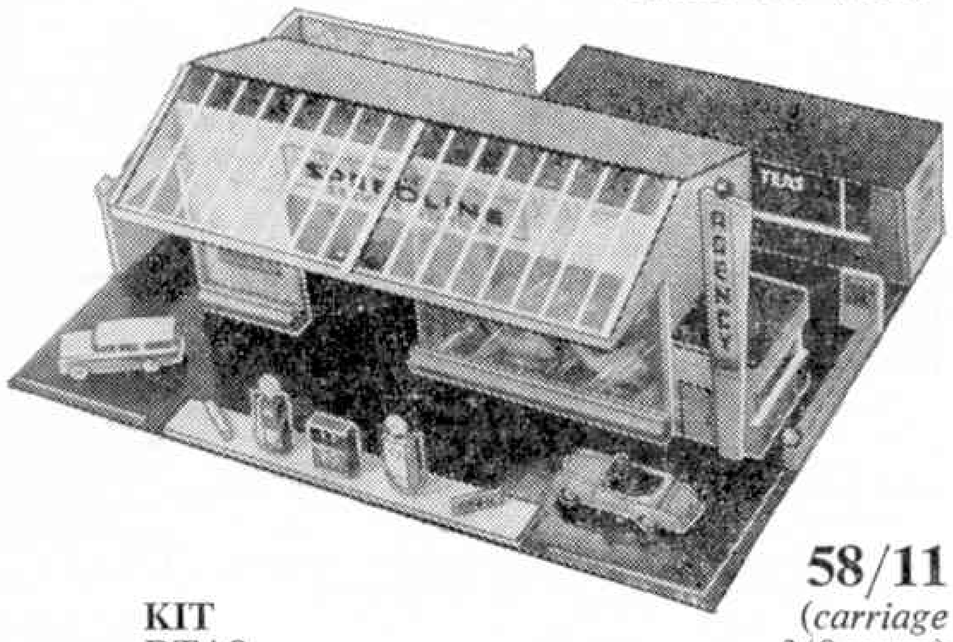

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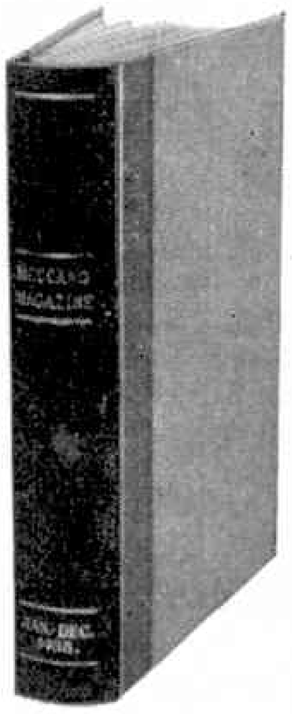

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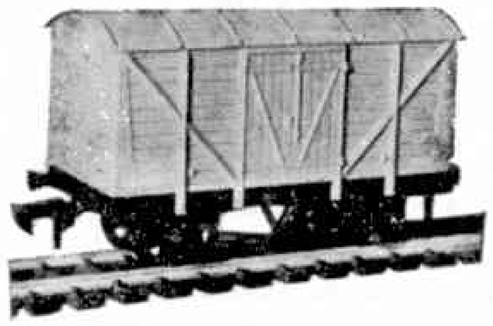

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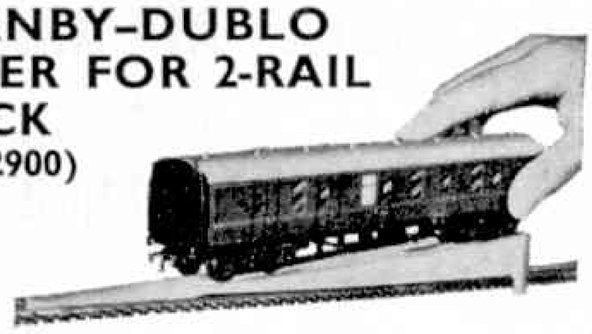

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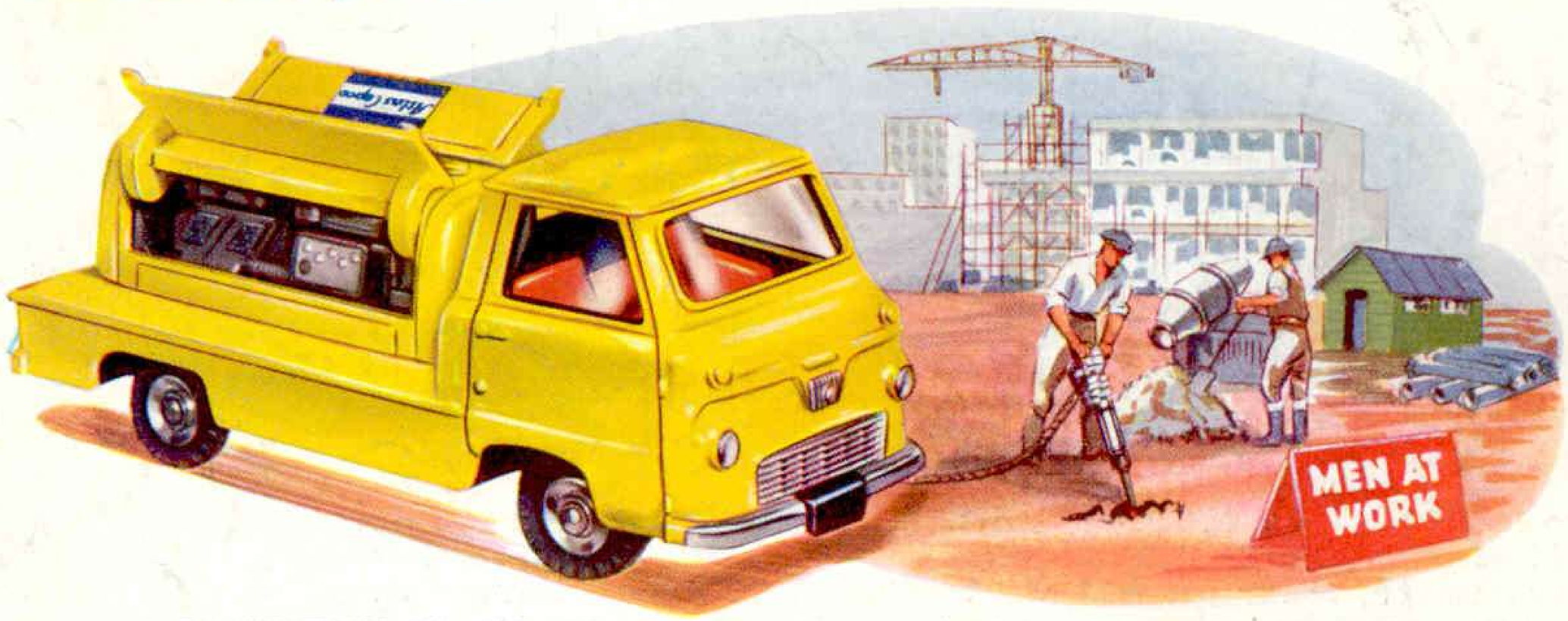

DINKY TOYS No. 436
ATLAS COPCO COMPRESSOR LORRY

An excavating site necessity! This vehicle consists of a detailed compressor unit mounted on a Ford Thames chassis fitted with Prestomatic steering, 4-wheel suspension, windows and cab interior fittings. Panels on either side of the unit open to reveal the compressor mechanism and points are provided at the rear to which the pneumatic drill hose, included with the Road Maintenance Personnel Set, can be attached. The model is finished in yellow with the maker's name on each side.
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