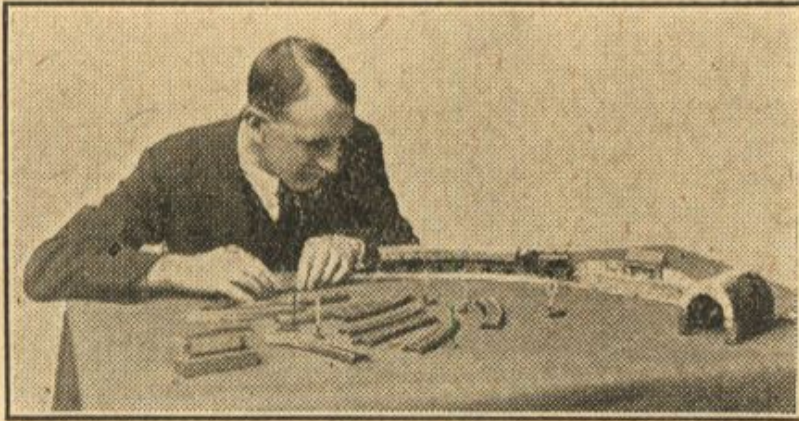


FOR THE YOUNG ENGINEER!



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**An Interesting and
Instructive Article
on the Working of
Model Locomotives.**
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THERE must be very few boys who have not, at some time in their lives, announced their firm determination "to be an engine-driver!" It is a profession that quite naturally grips the boyish imagination—to control the fiery monster that whisks the Limited Mail through the local station at seventy miles an hour, in a swirling shower of smoke and steam and sparks!

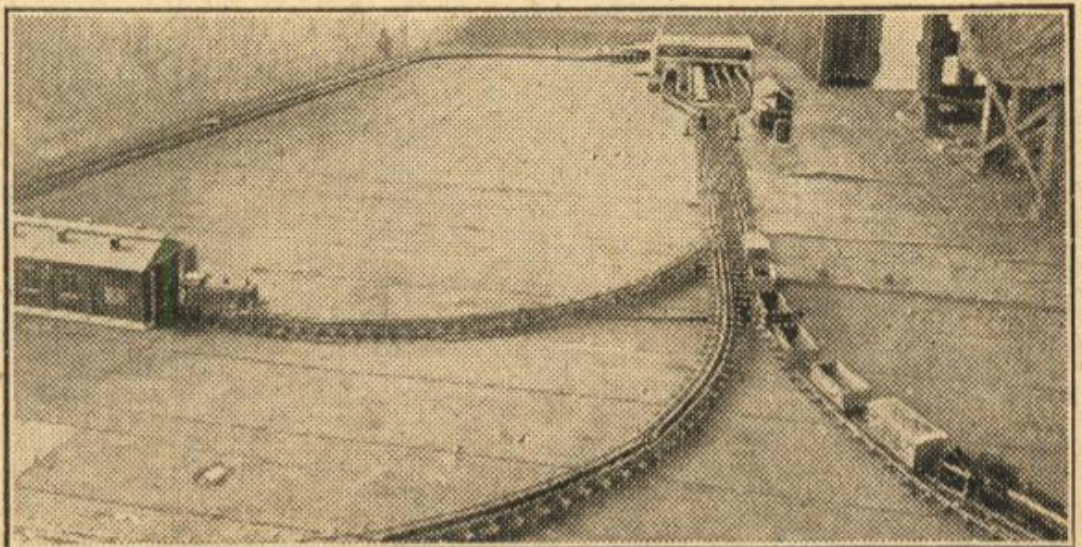
Equally natural is the boy's desire to possess a miniature "Limited Mail" of his own, in other words, to have a model railway to control and operate, which shall approximate as closely as possible to the real thing. And so it comes about that, among mechanical playthings, the model railway easily holds pride of place in the affections of the modern boy.

Thus among the many thousands of HOLIDAY ANNUAL readers there must be quite an army of model locomotive owners whose pastime, fascinating as it is, has also a definite educational value. Now, a model engine, like any other piece of mechanism, requires

proper handling if the best results are to be obtained from it, and it is with the object of assisting owners to get the best results, that the following notes have been compiled. They are culled for the most part from the life-long experience of Mr. J. W. Bassett-Lowke, the head of the famous Northampton firm of model engine makers, than whom HOLIDAY ANNUAL model locomotive owners could have no better guide, philosopher and friend.

Notes on Clockwork Locomotives.

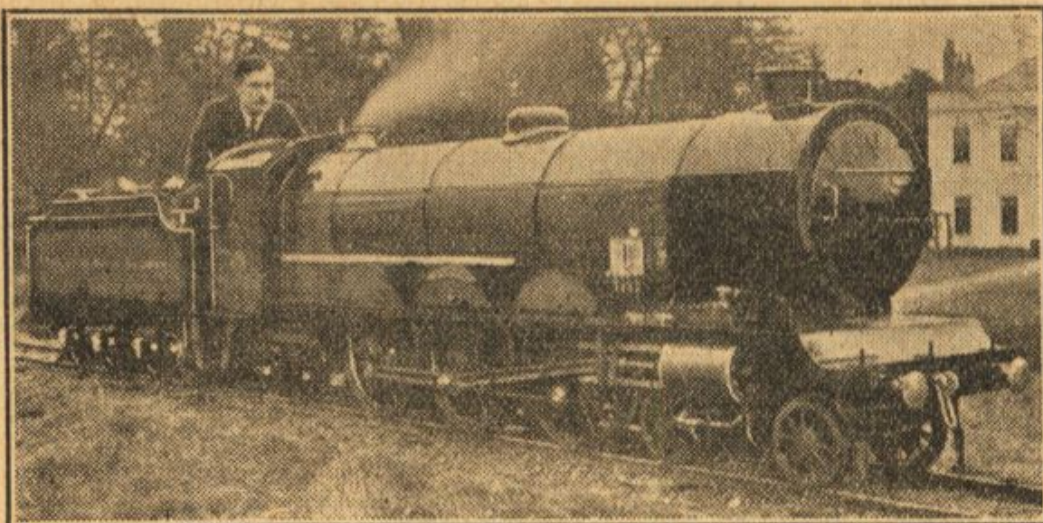
In the matter of clockwork locomotives the "directions for use" given with the engine are generally explicit enough.



A fine miniature railway system laid out on the floor. This particular system is electrically-operated.

A MODEL ENGINE BIG ENOUGH TO RIDE ON!

The life of a clock-work locomotive is prolonged by keeping it clean, washing the mechanism out with petrol and re-oiling afterwards should it become clogged; never



This magnificent model "Pacific" type engine has a gauge of 15 inches, and is now in use on the Ravenglass and Eskdale Railway in Cumberland.

leaving it wound up; and under no circumstances hastily manipulating the change-speed and reversing gear with the locomotive held in the hand while the wheels are spinning round in the air.

Steam Locomotives.

The important precautions to be observed by the small model steam engine driver may be summed up by saying that (1) The boiler should not be filled more than two-thirds full with water. (2) The flame of the lamp should be regulated to the needs of the boiler—if the wicks are too short insufficient steam will be generated; if too long, the excess pressure of steam will require to be relieved either by the whistle or by lifting the safety-valve; and (3) The cylinders, especially if they are of the piston-

valve or new balanced slide-valve type, should be well lubricated before starting. The safety-valve should be examined from time to time, to see that it is working

properly. Furthermore, when the house supply water is hard or chalky, do not use anything but clean rain-water; chalky water is the cause of innumerable failures due to the seizure of the piston-valves by the grit carried over with the steam from the hard feed water.

Testing the Safety-Valve.

Every model steam engine is fitted with a safety-valve, and a very important fitting it is; as, of course, unless it is working properly, there is a danger of the boiler exploding if the pressure of steam inside becomes excessive.

As long as the valve is working properly there is no danger whatever of this catastrophe happening, so that it is very necessary, as mentioned above, to test the valve at intervals.

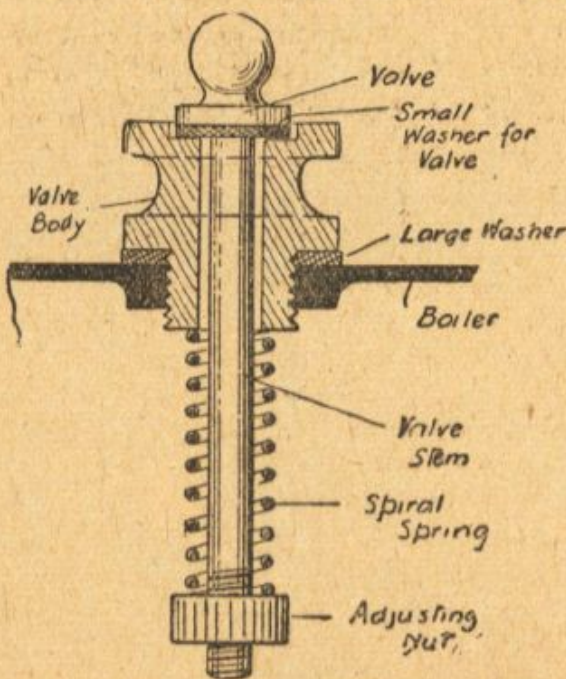


Fig. 1—Enlarged Section of Safety Valve.

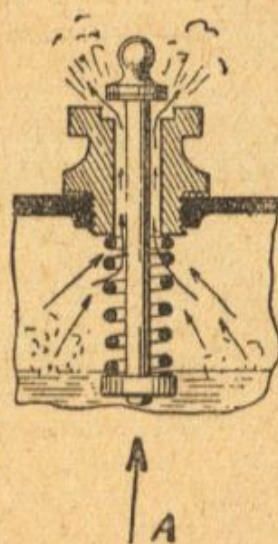


Fig. 2—Safety Valve in Action.

The safety-valve screws into the top of the boiler, the hole which receives it forming the filler-hole through which water is poured in.

The sketches on page 26 show an enlarged section of the valve, both at rest and in action.

The pressure of the steam, when it reaches a given point and overcomes the tension of the spring, lifts the valve and allows the surplus steam to escape. To ensure its action all parts should be free to move, and as in the case of an engine not used continuously, the parts may corrode or stick, the tension of the spring should be periodically tested. Hold the valve between the fingers and push the

bottom as shown against the pressure of the spring, in the direction shown by the arrow at A in Fig. 2. Washers of fibrous material are provided to ensure steam tightness; the lower and larger one makes the joint between valve and boiler

tight, and the upper one renders the spring valve tight when the valve is not in action.

Both washers may require to be reversed, and spares are usually provided. In fitting a new one (smaller sort) to the valve, care should be taken only to screw up the tension nut approximately as far as it was before the new washer was fitted. Note should be taken of the exact position of the adjustment nut before the valve spindle is taken out.

The Spirit Lamp.

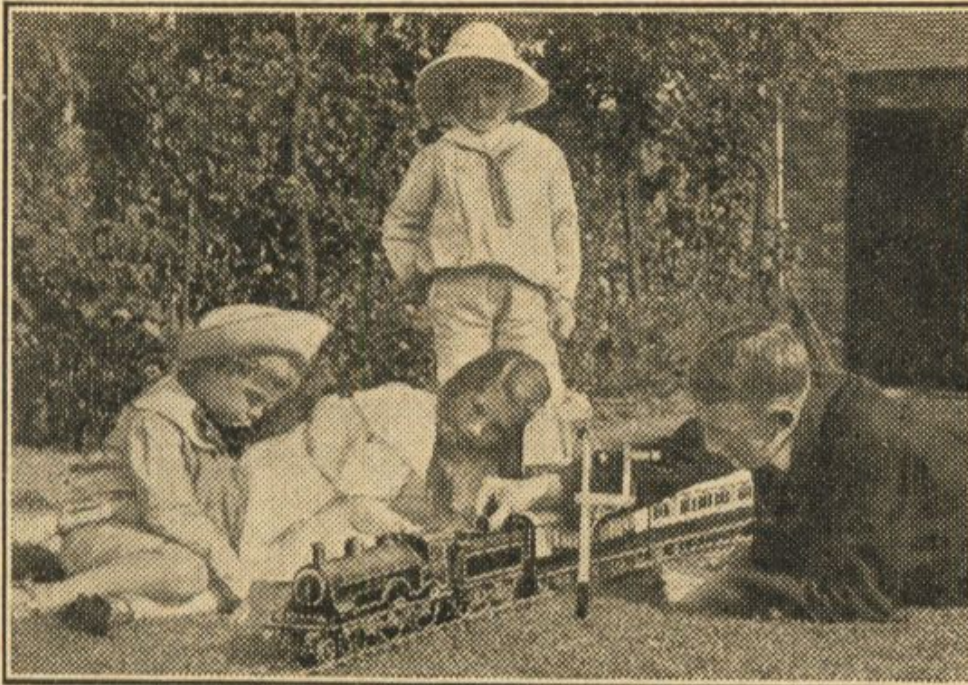
Except in the case of the more expensive models, most engines are externally fired by means of a spirit lamp. The spirit lamp is

usually proportioned so that it will remain alight for a shorter time than the charge of water in the boiler lasts; by this means there is no danger of burning the boiler. This gets over the chief difficulty and removes the great element of danger which may be feared by many would-be model engine owners.

How to Treat a New Engine.

On receiving a new model steam locomotive, the young enthusiast will be anxious to get it working at once. If the following points are carefully attended to, in the order given, there is no fear of the first run proving a disappoint-

ment. (1) Dust all parts free from any of the fibre used for packing, and shut all cocks and taps. Push the reversing-lever into forward gear. If this latter cannot be otherwise identified, run the engine along the track with starting



An Early Lesson in Engineering.

valve open, and then open the whistle.

If it blows when the engine is pushed backward, then the locomotive is in forward gear, and vice versa.

The reversing lever should be placed fully one way or the other previous to this test, and the starting valve should be open.

(2) All movable parts, such as bearings, piston-rods, and coupling-rod joints, eccentrics, and axle-bearings of engine and tender, should be carefully oiled. The oiling of valves and cylinders is also most important.

(3) The next thing is the filling of the boiler. Where the water is chalky or inclined to be

hard, boiled or distilled water is recommended, or filtered rain-water.

Remove the safety-valve (which also acts as the boiler-filler) and fill it two-thirds with water. Do not move the locomotive after the boiler has been filled, or the water may be drawn into the cylinders. Test the safety-valve before replacing it.

(4) Remove the spirit-lamp from the engine, unscrew the filling-plug and fill the lamp nearly

full. Insert the measure of spirit which is stated in the instructions as the correct quantity and light up.

(5) The whistle should now be opened, and will give warning when steam has begun to generate. This may then be closed and the steam cock opened, the locomotive being then pushed gently along the rails to clear the condensation from the cylinders.

(6) The speed and steam pressure of the engines can be varied by the height of the wicks in the lamp. These should be regulated to suit the load and curves.

(7) When the spirit lamp has burned out, the boiler should be refilled, and the same routine followed before the engine is worked again. The lamp wicks will require to be renewed at intervals.

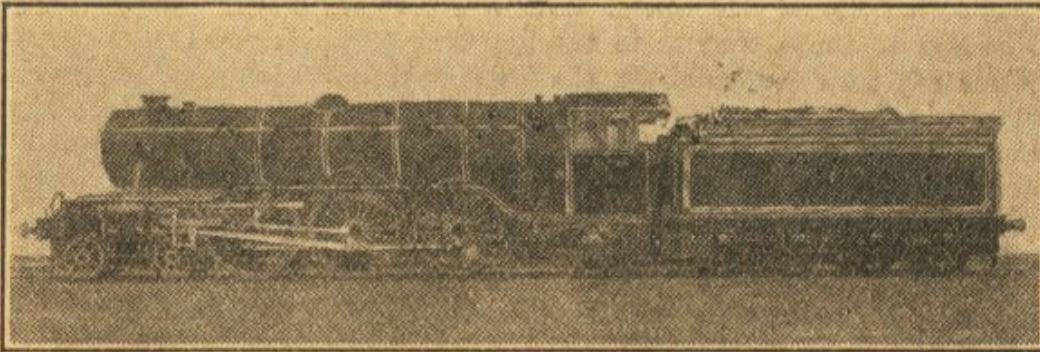
Some Important Precautions.

The boiler must not be filled more than two-thirds with water.

The flame of the lamp must not be too large or too much steam will be generated and the paint spoiled.

The safety-valve should be examined carefully from time to time to see that the washers have not stuck, as already recommended.

The locomotive must always be kept clean and free from dust.



A Famous "Pacific" type Express Locomotive, and—

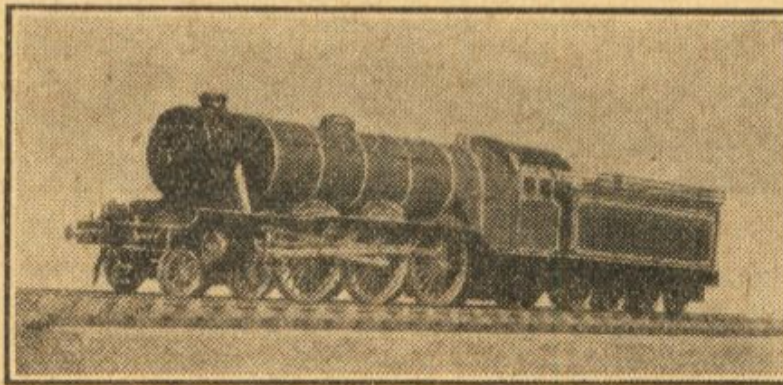
locomotive is standing still at stations, etc.

Careful attention to the practical points enumerated above should ensure to the young owner complete success with his model locomotive from the very beginning.

Choice of Models.

A wide choice of model engines, both clock-work and steam,

is now available. The more elaborate scale models are naturally expensive, but well-made working models can be purchased from half a guinea upwards. The miniature clockwork set shown in our heading-picture on page 25 costs even less



—a Bassett-Lowke model of the same engine, on a scale of $\frac{1}{2}$ -in. to the foot. It is a perfect working reproduction of the original

than that, complete with engine, three coaches, and rails. This novel little set was designed by Mr. W. J. Bassett-Lowke as a Table Railway, in a gauge somewhat smaller than the No. 0 $1\frac{1}{4}$ inch standard gauge, and it will solve the problem for many young enthusiasts who wish to start a model railway on the smallest possible outlay.

The whistle may always be used to relieve the boiler of any excess of steam, and also when the