A LEAFLET DESCRIBING THE REMARKABLE

"ROCKET"

BEING A MODEL

LOCOMOTIVE STEAM ENGINE

MANUFACTURED IN ONLY THE

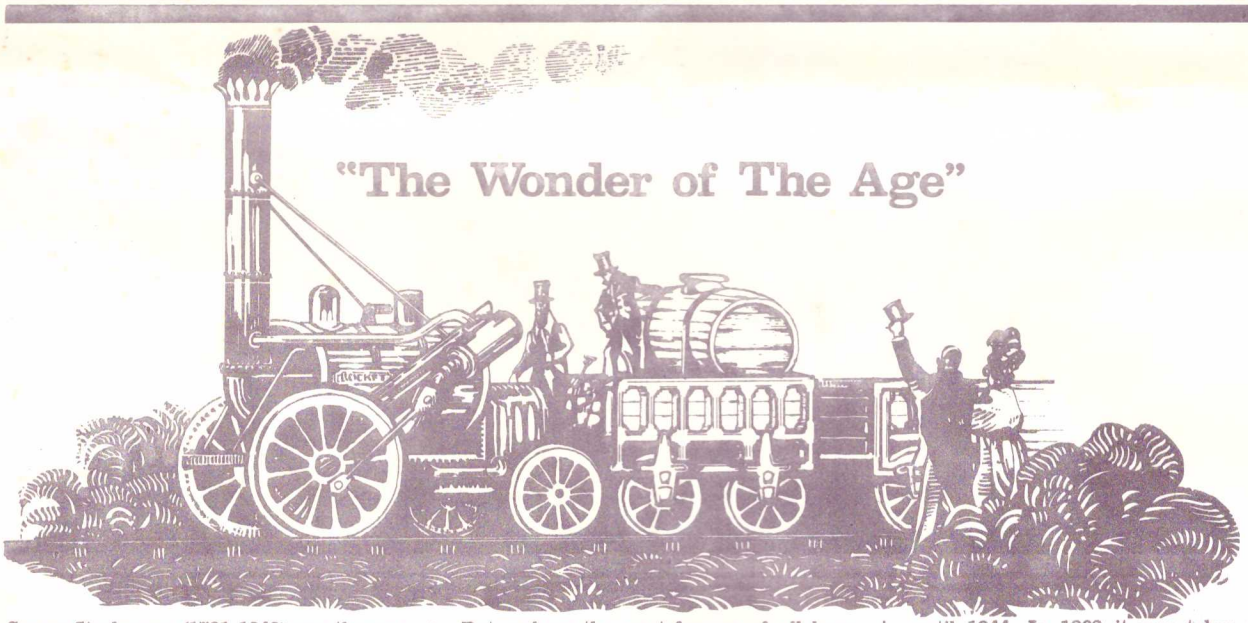
FINEST QUALITY

MATERIALS

BY MESSRS.

HORNBY

AT MARGATE



George Stephenson (1781-1848) was the son of an engineman at Wylam Colliery, Northumberland, England. In 1813 the locomotive "Puffing Billy" was built by William Hedley and Timothy Hackworth to work at the colliery and Stephenson, watching it at work, used it as a basis for his first steam engine "Blucher" (named after the famous Prussian general) which he built in 1814. It wasn't a great deal more successful than the "Puffing Billy". In 1825 George Stephenson and his son Robert built the "Locomotion", a much improved engine for the Stockton and Darlington Railway, the first public steam railway in the world. This was followed by the "Hope", "Black Diamond", "Diligence" and "Experiment" which all helped the Stephensons to gain experience.

But perhaps the most famous of all locomotives is the "Rocket" built in 1829 by Robert Stephenson & Co. to compete for the £500 prize offered by the Directors of the newly formed Liverpool and Manchester Railway for the locomotive that proved most successful at a trial to be held at Rainhill, near Liverpool, in October 1829.

The trial lasted for eight days and the "Rocket" won without the slightest difficulty achieving a speed of over 29 m.p.h. Some years later it actually ran 4 miles in 4½ minutes, a speed of 54 m.p.h. The "Rocket" was bought by the Liverpool and Manchester Railway and worked on the line until 1837 when it was sold for £300 to the Midgeholme Railway, near Carlisle, where it continued until 1844. In 1862 it was taken to the Science Museum in London.

The "Rocket" was of the 0-2-2 wheel arrangement, the driving wheels being 4′ 8½″ in diameter and the trailing wheels 2′ 6″ in diameter. The two cylinders of 8″ bore by 17″ stroke were placed at the rear of the boiler and inclined downwards at an angle of 37°. This positioning caused the "Rocket" to have an uncomfortable swaying action and the cylinders were later dropped down to a horizontal position. The boiler was a cylindrical shell, 40″ in diameter by 6 ft. in length. Steam pressure was 50 lbs. per square inch and the horsepower about 20.

INDESTRUCTIBLE PAPER

PRINTED BY STEAM POWER IN ENGLAND

"ROCKET"

OPERATING INSTRUCTIONS

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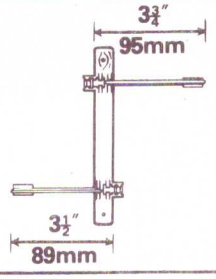

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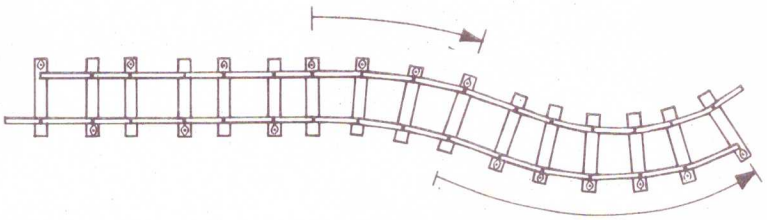

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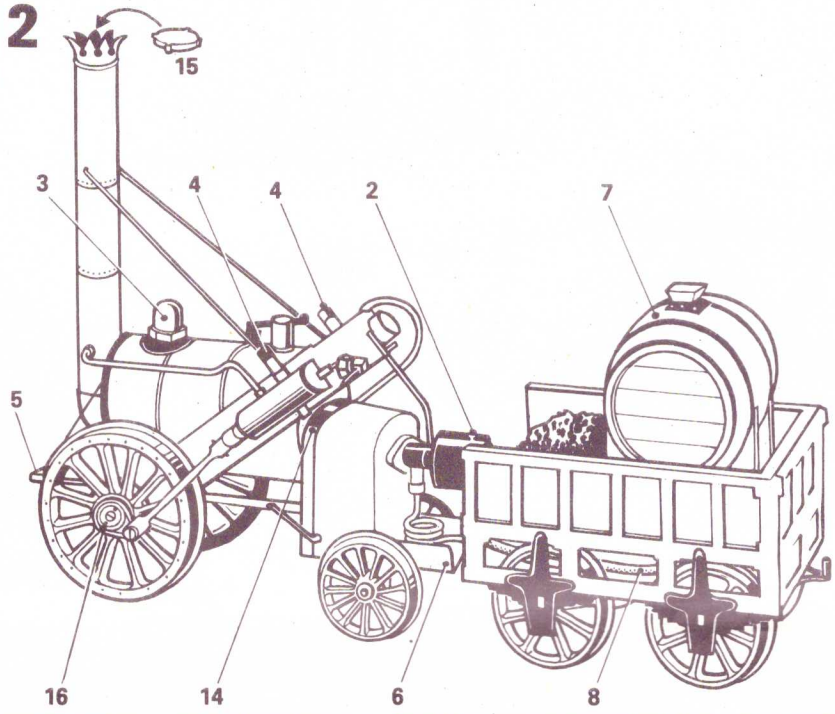

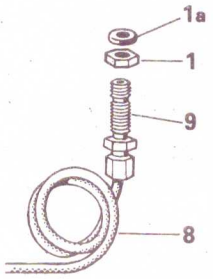

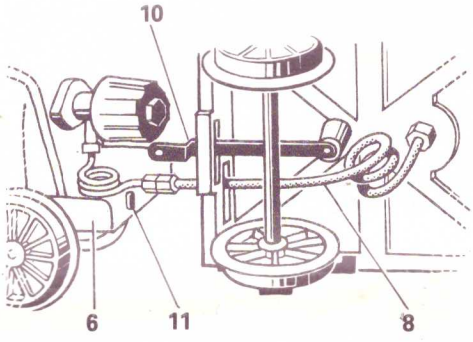

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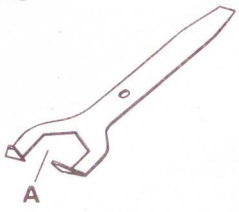

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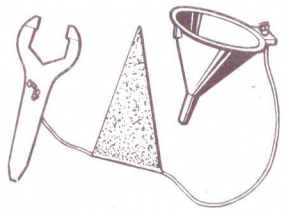

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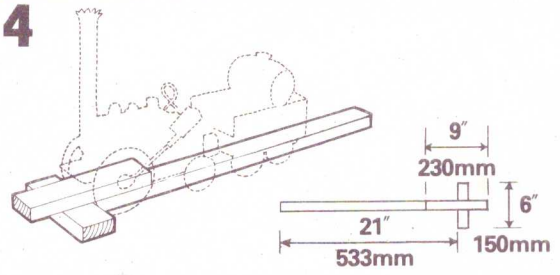

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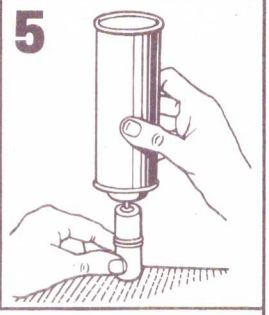

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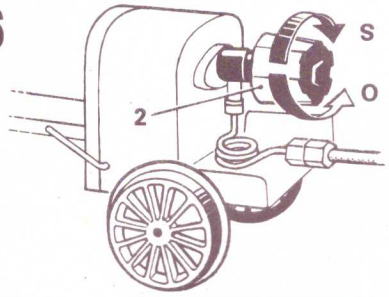

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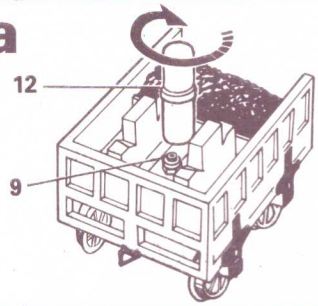

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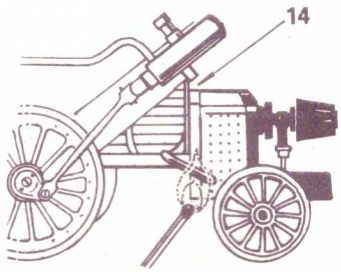

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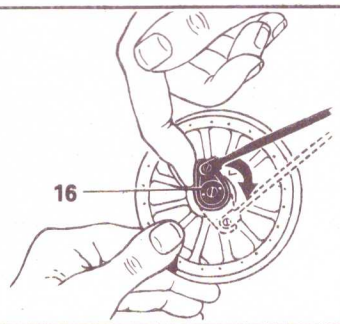

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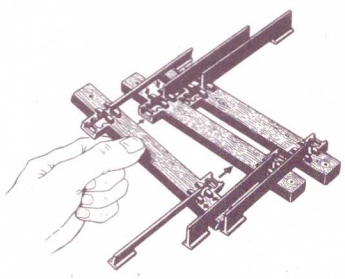

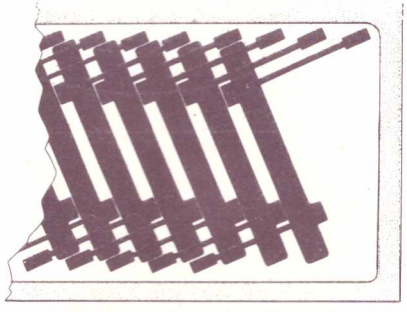

IMPORTANT SAFETY NOTES

Whilst the model has been designed with safety particularly in mind, it does require a live flame to heat water to boiling point. Therefore, when building up steam, when running and after running, parts of the model will be at a temperature that will cause pain and possibly injury if allowed to come into contact with any part of a human body.

Also condensed steam turns back into hot water and it is inevitable that some of this will leak from the model onto the operating surface.

THEREFORE WE STIPULATE THAT THE MODEL SHOULD ONLY BE RUN UNDER COMPETENT SUPERVISION AND ON A SURFACE THAT WILL NOT BE MARKED OR DAMAGED BY HOT WATER.

1. The Track

The Track *(British Patent App. No. 40200/77)* supplied consists of 96 identical sleeper elements *(Diagram 1)*, of 3½ in. *(8.9 cms)* gauge. The rail projecting from the end of the sleeper with a simulated "knot" on the "wood" graining is slightly longer than the rail projecting from the other end of the sleeper. When the elements are pushed together with all the long rails on the same side the track will make a circle using 78 elements and requiring a clear space of 7 ft. 6 in. × 7 ft. 6 in. *(2.3 × 2.3 metres)*. If the elements are pushed together alternately with long and short rails on the same side the track will be straight. The track joints are deliberately made tight but, after a little practice, are quite simple to put together.

A simple oval is thus made by having two semi-circles each of 39 elements joined by two straight lengths each having 9 elements. If required all the elements may be joined to form a straight length of approximately 26 ft. *(7.9 metres)*. It will be seen that almost any variation of track formation may be built up *(Diagram 1a)*. Supplies of additional track are available from Hornby Dealers. Assemble the track into the required layout on a suitable surface, indoors or out. It is a good idea to slide a sheet of cardboard under the track where the locomotive is to stand while being filled and raising steam. If running outdoors it is recommended to run only in good weather with no strong wind. It is preferable to avoid gradients as these may cause wheelspin on going up and possibly derailing through excessive speed on descent.

2. The Locomotive and Tender

First study the model in conjunction with Diagram 2 to identify the names of the parts.

The Rocket—Parts Identification

1. Gas Tank Connector Nut
1a. Rubber Seal
2. Burner Control Knob
3. Water Filler Cap
4. Oiler Cap (two)
5. Front Chassis Extension
6. Rear Footplate
7. Barrel
8. Flexible Fuel Pipe
9. Gas Tank Connector
10. Drawbar
11. Footplate Spigot
12. Gas Tank
13. Gas Tank Pressure Valve
14. Firebox Slots
15. Chimney Cap
16. Crank Plate

3. Tools

The Filler Funnel included with the model is self-explanatory while the Spanner Tool *(Diagram 3)* serves two purposes. The hexagonal cut-out **(A)** is for unscrewing and screwing up the Water Filler Cap **(3)**. The Screwdriver Blade **(B)** is for unscrewing and screwing up the Oiler Caps **(4)**. To avoid losing these important implements it is suggested they be tied together with a piece of string and a yellow marker be attached to the string *(Diagram 3a)*.

4. Handling

Do not hold the model by the Chimney, Cylinders or other fittings. If hot it should be carried on a heatproof tray or on a homemade wooden transporter *(Diagram 4)*.

Preparing To Fill

Remove the Barrel **(7)** from the Tender for access to the Gas Tank Connector **(9)**. Hook the tender Drawbar **(10)** over the Footplate Spigot **(11)** on the locomotive so that no strain will be placed on the Flexible Fuel Pipe **(8)**.

Filling Boiler

The actual copper boiler into which the water is to be poured is appreciably smaller than the yellow outer casing which encloses it. The water capacity of the boiler is approximately 2.4 ozs. which is equivalent to 0.12 pints or 68 grams/millilitres. Effectively, this amounts to about 4½ level tablespoonfulls.

It is a good idea to measure out the right amount of water into a separate container before filling the boiler. This will avoid the possibility of excess water collecting inside the yellow casing which makes a mess and will delay raising steam.

Undo the Water Filler Cap **(3)** using the spanner. At the same time ensure that the Oiler Caps **(4)** are screwed in as they create an airlock in the boiler which prevents it being overfilled. Fill the boiler with water. Distilled water, available from most garages, is best, clean rainwater is good.

Ensure the model is standing level when filling. A special internal fitting limits the amount of water the boiler will take to exactly the right amount. Stop pouring immediately it is full. Refit the cap with the spanner. ***ALWAYS ENSURE THE BOILER IS COMPLETELY REFILLED BEFORE EACH FUELLING.*** The locomotive cannot run without water!

For your longer enjoyment TAP WATER IS NOT RECOMMENDED.

We cannot change nature and in certain areas tap water will contain an appreciable amount of calcium which may cause furring in time, just as in a domestic kettle. Equally sedimentation can result and solid bits of this may break off causing blockages in the mechanism.

Oiling

Unscrew the two Oiler Caps **(4)** and put a drop of oil in each. **SAE 90** oil, as used in car gearboxes, is suitable. This mixes with the steam supply to the cylinders and valves, lubricates them and helps maintain a seal between the pistons and cylinders. Refill with oil before fuelling for each run. It may cause a crackling noise when exhausting into the chimney and this is quite in order.

5. Fuelling

The flame for heating the water in the boiler is provided by Butane Gas as widely used for gas lighters. Canisters of butane for lighter refills are generally available from tobacconists. The Rocket Gas Tank **(12)** contains a **Ronson** type valve and therefore a refill canister with a suitable nozzle must be used. Each refill will take about 6 grams. *Only buy lighter refill canisters, not those made for blowtorches, camping stoves, etc.*

The Gas Tank Pressure Valve **(13)** is opened only when the nozzle of a refill canister is pushed into it for filling or when the Gas Tank itself is screwed onto the tender Gas Tank Connector. To fill the Gas Tank, place it on a firm surface with the Pressure Valve pointing upwards. Insert the nozzle of the refill canister into the Pressure Valve and press in hard *(Diagram 5)*. The liquid butane gas will flow into the Gas Tank until the pressure in it has equalised with the pressure in the canister. This should normally take about 8 seconds. Fuel escaping from the Gas Tank Valve indicates that the Gas Tank is full. Remove the canister and hold the Gas Tank up to the light to check that it is charged. The liquid gas should be about ¾ in. *(19 mm)* from the top of the Gas Tank.

Any liquid butane gas escaping from the Gas Tank during fuelling will be at a very low temperature. Should this occur, wait a few moments before fitting the Gas Tank into the Tender. This will avoid the Rubber Seal "freezing" and becoming too hard to provide a satisfactory seal.
Filling is a simple operation but it may take a little practice to exert the right pressure when pushing the refill canister nozzle into the Gas Tank.

DO NOT FILL NEAR A NAKED FLAME OR IN A CONFINED SPACE.

6. Fitting the Gas Tank

It is essential that the Burner Control Knob **(2)** on the locomotives is in the closed position **(S)** *(Diagram 6)* **BEFORE** fitting the Gas Tank into the tender, otherwise the gas will escape and be wasted. When it is closed, screw the Gas Tank tightly onto the threaded Gas Tank Connector **(9)** *(Diagram 6a)* compressing the Rubber Seal. If hissing of gas can be heard check Rubber Seal for damage. Now replace the Barrel on its seating. It is a good idea occasionally to put a little grease on the Rubber Seal to prevent it drying out.

Before lighting recheck as follows: —

i. The track is correctly laid and all sleeper elements properly joined together.
ii. A rag is available for mopping up any spillage.
iii. Locomotive is fully watered and oiled.
iv. If windy, stand the locomotive and tender on a heatproof tray and raise steam in a sheltered place. The Chimney Cap **(15)** acts as a cowl to minimise down draughts and should be placed on the chimney while raising steam.
v. The Crank Plate **(16)** on the *left hand* front wheel is fully rotated in an *anti-clockwise* direction when looked at from side on and the one on the *right hand* wheel is fully rotated in a *clockwise* direction when looked at from side on.

7. Lighting Up

Butane gas is liquid when in its pressured container. It has to vaporise for burning and this is the purpose of the coil of copper pipe between the Flexible Fuel Pipe and the Burner. It is advisable to use a long match for lighting up. Study Diagram 7 to see where the lighted end of the match should be held before attempting to light the burner.

Light the match, apply the flame beneath the burner nozzle which is up inside the firebox, and watching through the firebox slots **(14)** to see that it lights correctly, open the Burner Control Knob ***gradually.*** If it does not light first time, turn the Burner Control Knob off and then repeat with another match, *waiting a few moments to ensure that there is no build up of unburnt gas.*

DO NOT HOLD HEAD OVER CHIMNEY

When it has lit, wait for about 30 seconds for the nozzle to warm up and then progressively increase the Burner Control Knob setting until there is a narrow blue flame and a slight "roaring" sound. A yellow flame accompanied by a pungent smell indicates that the Knob has been turned on too far before the nozzle has warmed up sufficiently. Once the burner has warmed up the flame will be at its most efficient and the water should take up to 3 minutes to boil.

8. Running

When steam has been raised, there will be drops of water *(from steam that has condensed)* appearing around the cylinders and from the hole under the chimney seating. It may be necessary to "push start" the model when first starting from cold to disperse the condensation, but thereafter the model will start on its own when steam has reached the required pressure. Speed may be adjusted by altering the setting of the Burner Control Knob by small amounts. To reverse direction, stop the model, hold the driving wheels stationary, and rotate the Crank Plates **(16)** half a turn *(180°) (Diagram 8).*

The model should steam for approximately 8 minutes on one filling but the actual length and duration of run will depend on the ambient temperature and conditions. **When it stops immediately turn the Burner Control Knob to "Off" (S).** There is no steam regulator or shut-off, but if it is desired to hold a steamed-up model in a stationary position, rotate **ONE** driving wheel only through 180° thus creating a condition in which one wheel is driving forwards and one backwards. In this condition, with the burner alight, steam will escape through the safety valve. The locomotive can be set going again by reversing the rotation of the wheel.

9. After Use

Allow to cool then wipe off any moisture. Unscrew the Gas Tank and discharge any remaining fuel *outdoors* by depressing the valve with a ballpoint pen or similar. It is not practicable to empty the boiler totally, but it is a good idea to turn the locomotive upside down and to shake out as much water as possible. Put oil in both oilers and, without replacing the caps, rotate the driving wheels. This will ensure there is oil in the cylinders. Then replace caps, finger tight. Track can be repacked into the box as illustrated *(Diagram 9).*

Lubrication

Additionally to the oiling of the cylinders, already described, it is necessary, from time to time, to lubricate the front wheel geared drive and axle bearings. Use **'3 in 1'** oil or similar and apply sparingly.

Operating Check List

i. All track elements to be firmly engaged, one with another.
ii. Locomotive filled with water.
iii. Locomotive oilers filled.
iv. Butane gas canister has correct **Ronson** type nozzle.
v. Gas tank filled and firmly screwed to connector in tender.
vi. Lighted match applied in correct position.
vii. Crank plates on driving wheels are turned to full forward positions.

For any communication please quote this number:—

G.100 – 03069

Spare Parts

In the event of parts such as oiler caps, etc., being lost, replacements are available from the ***Rovex Service Centre, Albert Street, Ramsgate, Kent CT11 9HD.*** Make sure you provide an accurate description of the part(s) required.

Footnote

This leaflet is printed on special weatherproof material which will not deteriorate under operating conditions out of doors. The design on the front page is based on advertising posters which were printed in the 1820's and 1830's and were thus contemporary with the Rocket. A variety of type faces was used, quite extravagant claims were made and as much as possible of the paper was filled with text. Illustrations were done from woodcuts giving a similar effect to that shown.

Enquiries regarding spares and service should be addressed to:
Rovex Service Centre, Albert Street, Ramsgate, Kent, CT11 9HD.

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