

# Modern Fire Fighting Machines

## Two Centuries of Development

**H**ISTORY is full of accounts of the devastation caused by fire to life and property. Villages, towns and cities in all parts of the world have suffered at some time or another from the destructive force of this disastrous element. We in this country have on many occasions witnessed terrific conflagrations, an outstanding instance that every reader will be aware of being the Great Fire of London in 1666. Another great fire occurred at Gateshead in 1854, when 50 persons lost their lives and over £1,000,000 damage was done. In recent years, however, there have been no fires of this magnitude, and this is due to the great improvements that have been made in the means employed for the prevention and extinction of fires.

In fighting fires, water is the chief agent employed; and in towns where the supply of water is abundant, and where there is a constant and high pressure in the public mains, the task of the firemen is much simplified. In such cases it is generally only necessary to attach the fire-hose to the hydrants, and the pressure in the mains is sufficient, without the aid of any pumping engine, to throw a jet over the whole burning mass. All districts, however, are not so favourably situated, and for the equipment of an ordinary fire brigade completely equipped fire engines with powerful pumps are required.

The high speed motor fire engines of to-day, which are capable of throwing powerful jets of water to heights of hundreds of feet, and which are often equipped with great telescopic escape ladders, have been developed from the early manual operated pumping carts, and in this article we are describing some of the many interesting stages in their history.

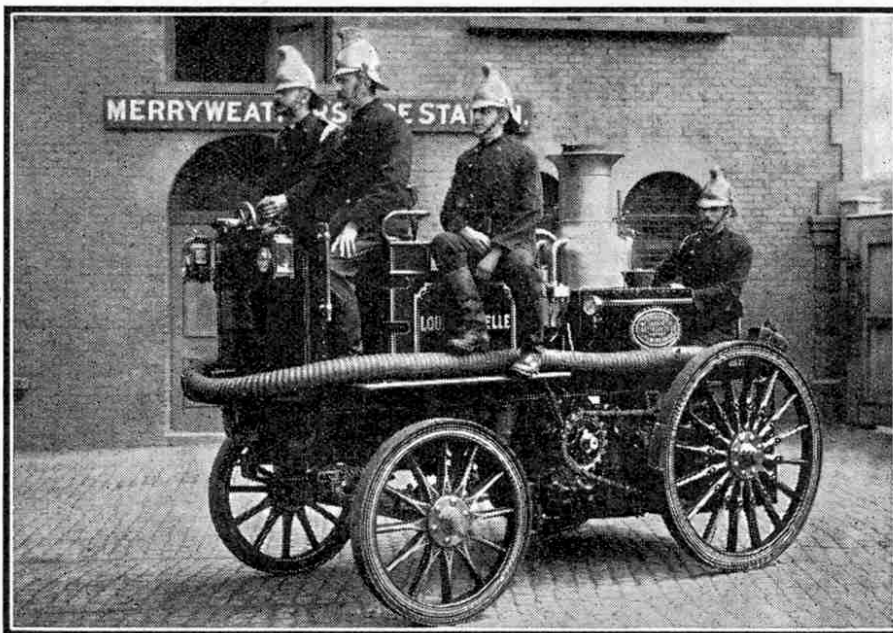
Probably the most famous name connected with the development of fire engines is that of Merryweather and Sons Ltd., London, the well known firm of fire appliance manufacturers. The firm of Merryweather has been in existence for over two centuries. Their oldest ledgers date back to the year 1799, and the firm has in its possession at their Greenwich works some of the ancient appliances that were used

in the Great Fire of London in 1666.

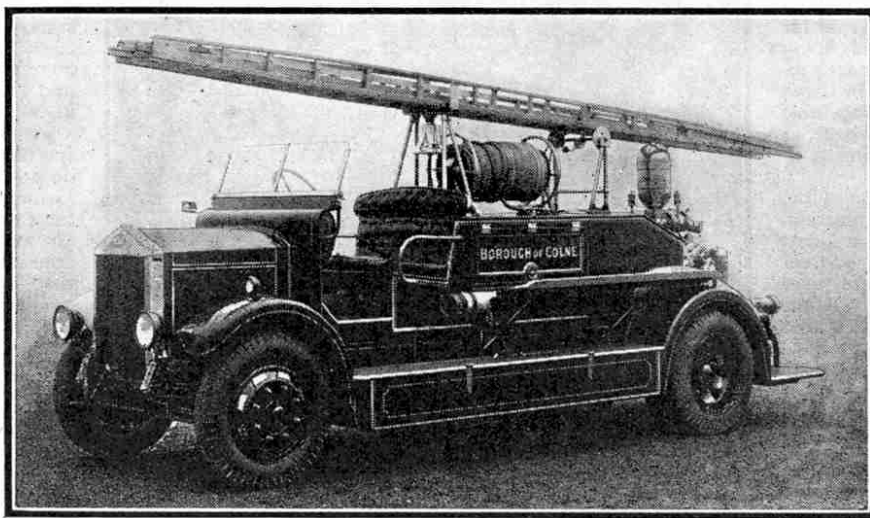
In 1792 a patent was granted to their predecessors for a fire engine pump. This pump may be said to be the forerunner of the manual pump as it stands to-day, for very few improvements have been found possible since that time. In 1829 John Braithwaite produced the first horse-drawn steam fire engine, but it was not until some 30 years later, when a Merryweather machine won the first prize against competing engines of other makes at the Crystal Palace, that these machines came into general use. This engine was subsequently purchased by the Admiralty and used for the protection of Devonport Dockyard. It remained in commission until 1905, and has now found its way back to the makers' works, where it will remain as a specimen of the earliest steam fire engine.

From the latter half of the last century onward progress in the construction of every description of fire appliance has been continuous and rapid. In 1899 a machine was built in which the steam engine that drove the pumps was also used to propel the vehicle along the ground, thus displacing horses. This engine was made for

the municipality of Port Louis, Mauritius, and it was steered from the front by means of a handwheel. The engine drove the pumps direct, and a counter-shaft and gears were provided by means of which it could be disconnected from the fire pump and made to drive the two rear wheels through roller chains. The pumps delivered 300 gallons of water per minute, and could throw a single powerful jet to a height of 150 ft., or several jets to a somewhat lower height. Coal bunkers were provided on each side of the fire door, which was placed at the rear so that the fire could be regularly stoked while the



The first modern steam motor fire engine. It was built by Merryweather and Sons Ltd., London, to whom we are indebted for our illustrations.



A fine "Greenwich Salamander" fire engine supplied recently to the Borough of Colne. It is driven by a 65 h.p. petrol motor and carries an extending escape that reaches to a height of 35 ft.

engine was travelling to a fire.

This machine was capable of climbing an ascent of 1 in 10 at 10 m.p.h., while on more or less level roads a speed of between 20 and 30 m.p.h. was reached. It proved so successful that others of the same kind were built, but most of these were provided with oil

fuel burners in place of coal fired furnaces.

With the introduction of the internal combustion engine Merryweathers turned their attention to the manufacture of petrol driven fire engines in place of the older horse drawn and steam propelled vehicles, and were the first British manufacturers to construct an engine of this type. In June 1903 a combination petrol motor chemical and fire escape was supplied to the Tottenham Fire Brigade. It was placed in service at Harringay, which incidentally, was to become the first all motor station in the world, and it was stated of this machine that for rapidity in starting, speed on the road, and efficiency in dealing with fires it was absolutely unparalleled by any other life saving appliance then in existence.

On April 30th 1904 a new type of engine, which was destined to revolutionise fire brigade practice, left the Merryweather Greenwich Works. This was the first motor "Hatfield" fire engine, which had been built for Baron A. de Rothschild for the protection of his French estates. This machine was fitted with the now well known "Hatfield" pump, which was originally introduced as an electrically-driven reciprocating pump for fire service at Hatfield House, the residence of the Marquess of Salisbury. The "Hatfield" pump was adapted to meet the requirements of fire engine service and the name was then given to the whole vehicle. The original "Hatfield" fire engine had a 30 h.p. petrol engine, a 300 gallon pump, chain drive to the road wheels and drive to the pump through a raw hide pinion and spur wheel. The engine had magneto ignition as well as an accumulator and coil.

At the latter end of 1904 the Finchley Fire Brigade took delivery of the first combination pump and first aid machine ever built. This motor also was fitted with a "Hatfield" type pump, with a capacity of 200 to 250 gallons per minute, and also a first aid cylinder which held 60 gallons. A 50 ft. sliding carriage fire escape completed the equipment.

Two years later a machine fitted with a centrifugal or turbine pump made its appearance. The pump was made of aluminium and was capable of delivering 600 gallons of water per minute, and in all essential features its design corresponded with the turbine motor fire engine of the present day.

The first station of the London Fire Brigade to be equipped entirely with motor driven appliances was opened in 1906 and was supplied with three Merryweather automobiles, large numbers being subsequently ordered to replace the horse drawn machines previously in use.

For many years continental manufacturers had been making machines fitted with turntable escapes, but there was no demand in this country for such equipment. In 1908, however, Merryweathers built the first British machine of this kind for service in the Shanghai Fire Department. This machine was also the first one to be made in which the engine that propelled the vehicle was used also for raising and extending the ladders. There were four ladders that together extended to a total height of 80 ft. In the travelling position they rested horizontally on the carriage, but on reaching the scene of operations the power of the propelling motor was transferred to the escape machinery, and the raising and extending of the ladders to

their full extent was effected in less than a minute. These operations were carried out entirely by one man through two levers arranged side by side in the rear of the machine.

Although few radical changes have been made in the design of fire engines during recent years, continual improvements have been made to the chassis and engine unit and also to the pumps and other equipment in order to render the machines as efficient as possible. The lower illustration on the opposite page shows an up-to-date

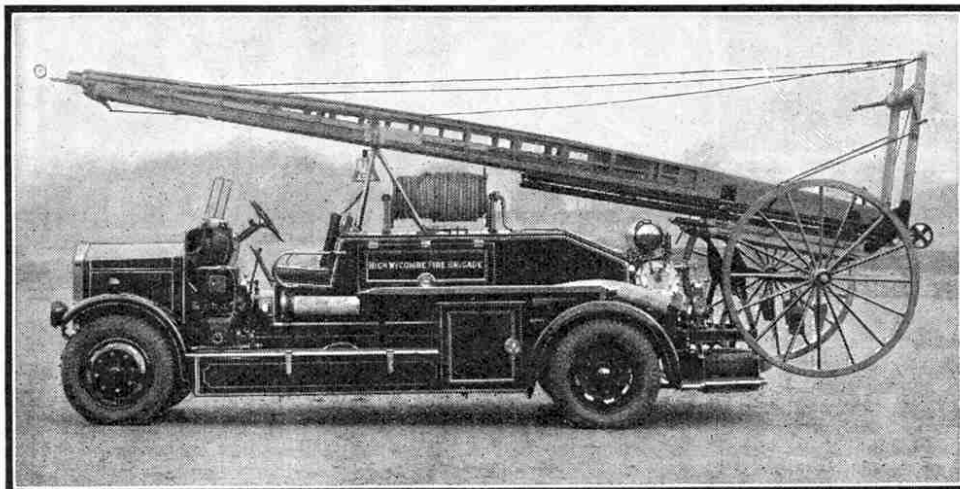
machine that embodies all the most modern improvements. It is in service with the Colne Fire Brigade and has a four cylinder petrol engine that develops 65 b.h.p., and is fitted with steel disc type wheels and pneumatic tyres. The rear wheels have twin tyres, and four wheel brakes are provided. The main fire pump is a 400 gallon "Hatfield" pump, and a 30 gallon first aid tank also is provided and takes its supply from the main pump. The machine is fitted with a two section

Merryweather extension ladder that will reach a height of 35 ft. The equipment includes a five lamp dynamo lighting set, electric starter, carillon bell, mechanical tyre pump and a towing bar fitted at the rear of the chassis.

One of the most interesting fire engines now in service in this country is the streamlined Merryweather machine owned by the Lancaster Corporation, and which is shown in one of the accompanying illustrations. The superstructure of this machine is of special streamline design, the body being of the covered-in-type and constructed with steel panels. Longitudinal seats on each side of the interior provide accommodation for six to eight men, and they are hinged to open upwards to allow access to the hose lockers. Access to the lockers can also be obtained by means of doors on the outside of the body. Narrow boxes are provided at the back of the locker seats to house standpipes, etc.

The fire pump, which is arranged outside the body behind the back partition, is a Merryweather patent "Hatfield" of rustless metal, and will deliver 275 gallons of water per minute at a pressure of 170 lb. per sq. in. A 40-gallon first aid tank connected to the main pump also is provided.

A first aid hydraulic hose reel is mounted on the rear locker inside the body, and the first-aid hose can be paid out through a porthole at each side, fitted with suitable rollers. The hose reel carries 120 ft. of



A modern Merryweather machine equipped with a "Hatfield" pump capable of delivering 400 gals. of water per minute, and a 50 ft. portable extending escape.



A streamlined fire engine owned by the Lancaster Corporation. It has a 65 b.h.p. petrol engine, "Hatfield" pump and an extending ladder, which is carried in a trough in the roof of the body.

hose, branch pipe and shut-off nozzle.

At the rear is a towing bar for towing a trailer pump when desired, and an aperture is provided in the back partition of the body to enable one of the firemen to operate the line controlling the brake of the trailer pump. Two towing hooks are also fitted at the front end of the chassis frame.

An extension ladder is carried in a trough in the roof of the body and is provided with suitable rollers and a locking device that can be operated from the front seat. Among the numerous fittings are an amber spotlight for use in fog, a powerful searchlight in a swivelling bracket complete with 150 ft. of cable and tripod for use off the machine, siren, four 7 ft. 6 in. lengths of rubber suction hose and one 10 ft. length of armoured section hose. The machine is painted vermilion, picked out in gold and fine-lined white.