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Mr. Woolidge
" Maxwell.
Col. Blewinsop. RB

14th May, 1952.

Conservator (East)

Headquarters Mechanical Development
Committee

Report No. 14

Hathaway and Worthington Simpson Fire Pumps

I attach, for your information, a copy of
the above report dated 7th instant received
from the Machinery Research Officer.

for Director (Scotland)

Enc.

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REPORT NO. 14

M.R.1/4

HATHAWAY AND WORTHINGTON SIMPSON FIRE PUMPSORIGIN

A specification giving the minimum requirement for a forest fire pump was drawn up by the Director of Forestry for England in 1949. Ability to deliver 10 gallons per minute against a 90 ft. head was required in addition to easy starting, minimum weight and bulk, self priming and convenience of handling. A number of British pumps were tested and the Hathaway Mark 1 was chosen.

Since 1949 other pumps which appear to be suitable have been considered, amongst them the Worthington Simpson - Type I.T.P.S.4.E. - which, though not primarily designed as a fire pump was attractive from the point of view of size and weight.

DESCRIPTION

Both pumps use similar capacity engines (98 c.c. 4 stroke) to drive a single stage centrifugal pump, the main difference in the assembly being that in the case of the Hathaway the pump unit is separate and is driven through a shaft and flexible coupling whilst that of the Worthington Simpson is bolted direct onto the engine crankcase.

<u>Weight</u>	Hathaway complete	=	77½ lbs.
	Worthington Simpson	=	56 lbs.

These figures are not comparable as the latter included no cradle mounting. The "all up" weights would probably be about the same.

Photographs of the two pumps are attached to this report.

STARTING

Rope starting is used in both cases. During the tests the Hathaway was the better starter but it would be unreliable to draw any final conclusion on starting tests of individual pumps.

PRIMING

Both pumps are self priming, the Hathaway being fitted with a hand operated plunger suction pump. The Worthington Simpson relies on a small quantity of water remaining in the pump housing which is less reliable for forest use owing to the possibility of this water being lost through tilting the pump or freezing.

CONVENIENCE
OF HANDLING

The Hathaway is mounted in a cradle specially designed for easy man handling in the forest. The Worthington Simpson could be similarly mounted and is the more convenient of the two if back-pack mounting were required owing to the compact overall dimensions.

PERFORMANCE

Trials were conducted on behalf of the Forestry Commission by the Fire Research Station D.S.I.R. with the following results:-

	Hathaway Mark 1	Worthington Simpson	Hathaway * Mark 1
Maximum Pump Outlet Pressure	54 lbs. sq. in.	55 lbs. sq. in.	52 lbs. sq. in.
Equivalent Head	124 ft.	127 ft.	120 ft.
Delivery at 90 ft. head	9 G.P.M.	4½ G.P.M.	9 G.P.M.

* The second Hathaway Mark 1 was taken for test at random from the Commission's stock. The other pumps had been submitted by their respective makers.

CONCLUSIONS

1. Whilst none of the pumps submitted to this test fully complied with the delivery of 10 G.P.M. at 90 ft. head required by the specification, the Hathaway at 9 G.P.M. very nearly did so.
2. The delivery of the Worthington Simpson at 90 ft. head was less than half the specified requirement.

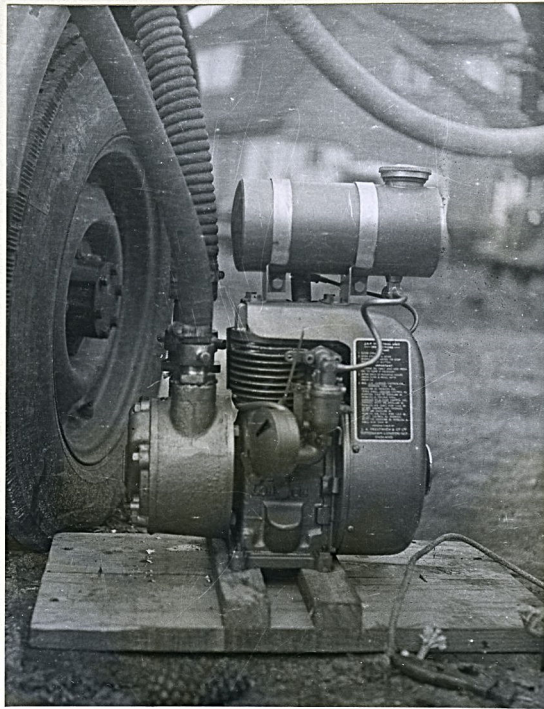
FURTHER
ACTION

A Hathaway Mark 11 pump has just been produced and the makers claim a maximum output pressure of 72 lbs. per sq. in. (164 ft. head). One of these pumps will shortly be on test in the Commission.

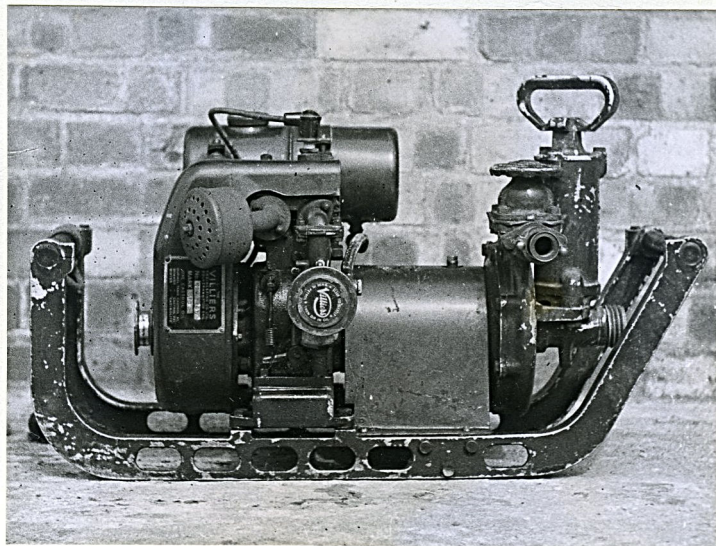


R. G. SHAW

Machinery Research Officer
7th May, 1952



The Worthington Simpson Pump - Type I.T.PS.4.E.



The Hathaway Mark i Pump.