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FIRE AND FIRE ENGINES IN THE OLDEN TIMES.

BY WILLIAM PERRY, HYDRAULIC ENGINEER, MONTREAL.
(Continued from last issue.)

Notwithstanding the superiority of pump engines over the syringe, many years elapsed before they were generally adopted. "The English (observes a British writer) appear to have been unacquainted with the progress made by the German engineers, or to have been very slow in availing themselves of their discoveries, for in the 16th century 'hand squirts' were introduced in London for extinguishing fires, and it was not till the beginning of the next that they began to place them in portable and larger reservoirs; when placed in the latter and worked by a lever, the engines thus obtained were considered a great mechanical achievement, for when in 1633 three of them were taken to extinguish a large fire on London bridge, they were considered such excellent things, that nothing that ever was devised could do so much good, yet none of them did prosper, for they were all broken." The observation that "hand squirts" or syringes were placed in reservoirs and then worked by lever, is not strictly correct. They were small forcing pumps that were employed. A syringe could not act at all if permanently fixed in a vessel, because it discharges the water through the same orifice by which it receives it. Some improvements were made on fire engines by Greatorix in 1656, as mentioned by Evelyn; that they were is not known. The probability is that they related to the carriage or sled. If his engines were the same that were advertised in 1658, this was the case, for they were recommended as "more tra-

versable in less room, and more portable than formerly used."

The oldest account of English fire engines that I have seen is a small old quarto, the title page of which is wanting. From two poetical addresses to the author it appears that the initial letters of his name were I. B., and that the work was entitled "A Treatise on Art and Nature." Two-thirds of it are occupied with "water-works," and the rest with "fire-works," except four or five pages "on voyces, calcs, cryes and sounds," i. e., on making of whistles, etc., for sportsmen to imitate the voices of certain birds and other game. The date of publication was about 1634; this, we infer from its speaking of "The engine near the north end of London bridge (he observes), which engine I circumspectly viewed as I accidentally passed by, immediately after the late fire upon the bridge. Anno 1633" Shops and dwelling houses were built on both sides of the bridge at that time.

After describing several modes of raising water by sucking, forcing and chain pumps, he continues: "Having sufficiently spoken concerning mills and engines for mounting water for meer conveyance, thence we may derive squirts and petty engines to be drawn upon wheels from place to place, for to quench fire among buildings, the use whereof hath been found very commodious and profitable in cities and great towns." Hence engines were at this time not uncommon in England. No less than seven are figured by the author, and all are placed in cisterns or tubs mounted on wheels; neither air vessels nor hose pipes are described or mentioned. Five of the engines consist of single cylinders; of these some are in a perpendicular position, others are laid horizontally, and one is inverted and fed by a branch pipe covered by a valve. The last one figured has two horizontal cylinders, a suggestion of the author's, and the piston rods are shown as worked alternately by pallets or arms on a vertical shaft, to which a reciprocating rotary movement was imparted by pushing a horizontal lever to and fro. One of these old fire engines is a species of bellows pump, the construction of which I will endeavor to explain: Two brass vessels were connected at their open ends to a bag of leather; they resemble, both in shape and size, two men's hats, the linings of which being pulled out and sewed together form a cylindrical bag between them. A circular opening, six or seven inches in diameter, was made through a horizontal piece of plank fixed in the cistern of the engine, and over this opening one of the vessels, with its crown upwards, was placed, and made fast by screws through the rim, the other vessel being suspended from it by the bag and hanging loosely in the water. Within the lower vessel (in the centre of its bottom) a valve opening upwards admitted the water, and on the top or crown of the upper vessel another valve, also opening upwards, was placed. Over the last valve the base of the jet pipe was secured. To work this machine, the rim of the lower vessel was connected at opposite points by two iron rods or slings and a cross head to the end of a lever, by which the lower vessel was moved up