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CONTENTS OF THIS NUMBER :

PAGE	PAGE		
British Metal Trade with Canada	14	King, R. O., Gold Medalist	19
Canadian Association of Station- ary Engineers—Annual Dinner of Hamilton Branch	15	Metal Trades Review.....	20
Canadian Society of Civil Engin- eers	15	Mining Matters.....	21
Carter, W. F., Valedictorian	18	“Niagara” Injector.....	16
Case Propeller	14	Patent Review	27
Cement Testing	6	Patents, American	23
Cheap Summer Cottage.....	12	Patents, Recent German.....	23
Drouin, Rosario.....	15	Personal	26
Electric Flashes	23	Proposed Canal from the St. Law- rence to the Hudson.....	12, 19
Engineers' Licensing Bill.....	16	Railway and Marine News	22
Engineering Depart'm't of McGill Engineering Firm, New.....	20	Safety Valves.....	16
Fire in McDonald's Tobacco Fac- tory, Montreal	14	Screw Steamer and Steel Tow- Barge Efficiency	9
Fires and Fire Engines in the Olden Times	1	Smith, Cecil B.....	19
Industrial Notes	20	Solution of the “Ball-Nozzle Fire Jet” Paradox	5
		Steam Boiler Explosions, Preven- tion of	5
		Two-Phase System	19

FOR THE CANADIAN ENGINEER.

FIRES AND FIRE ENGINES IN THE OLDEN TIMES.

BY WILLIAM PERRY, HYDRAULIC ENGINEER, MONTREAL.

Long before the appearance of man on the earth, water was the great transporting medium which carried trees and stones down from the hills to the ocean, and it was also the first source of inanimate motive power controlled and directed by the ingenuity of mankind. Water alone might form the subject of many discourses. In the dawn of civilization, it was revered by philosophers as the life-giving principle of the universe, and even in the present day shoals of pilgrims are to be seen travelling to the Ganges, the sacred river of India, to worship the self-same substance. With these people, it is deemed a virtue to think of the river, while to bathe in its waters washes away all sin, and to expire on its brink, or be suffocated in its embrace, is the climax of human felicity.

The subject is a large and important one, and is destined to become of still greater importance. Its rapid progress in recent times is apt to lead one to suppose that the engines, pumps and machines actuated by water are of modern origin, but ancient writers tell us that Archytas, of Tarentum, invented hydraulic machinery about the year 400 B.C.; no description of his inventions has reached our times, but we have records extending nearly as far back. Hero, a celebrated mechanic, of Alexandria, who lived over 2,000 years ago, among other works, wrote a treatise on pneumatics, in which he described several curious devices handed down by former writers, whom he at that time called “ancient philosophers.” Among these devices is one in which water is caused, by its weight, to effect the opening of a temple door.

I shall endeavor to describe it to you. We will suppose we have the interior of a temple, with a door on the right and an altar on the left. The altar contains an air-tight receptacle, in such a position that it will be subject to great heat as soon as a fire is lighted. This receptacle communicates by a pipe with a larger receiver partly filled with water, and placed in the basement, or any excavation below the temple floor. A syphon pipe leads from this receiver into a bucket hanging to a cord, which passes over a pulley, and is wound round a shaft firmly secured to the door above, and pivoted at the bottom. Attached to this shaft is another cord wound in the opposite direction, passing over another pulley and supporting a weight. The action of the apparatus is this: When a fire is kindled on the altar, the air-receiver under it is heated, the air expands, and passing down the pipe, presses on the water in the large receiver, forcing it through the syphon pipe into the bucket. As soon as sufficient water has entered the bucket to overcome the resistance of the suspended weight and the friction of the door, the bucket begins to lower, and, pulling on the cord wound round the upright shaft, opens the door and raises the weight. The apparatus is so proportioned that as the water pours into the bucket and the bucket lowers, the mouth of the syphon pipe keeps just below the level of the water, and the bucket reaches the ground before the pipe is quite withdrawn. When the temple services are concluded and the fire extinguished the air receiver cools down, the air in it contracts and causes a partial vacuum in the large receiver and the water flows back into it from the bucket. The weight has more power than the empty bucket, and now lowers, turning the shaft round and closing the door. Of course, this piece of mechanism below the floor, if ever used, formed part of the esoteric religion, and no vulgar eyes were allowed to see by what earthly means the gods signified their approval of the burning sacrifice by mysteriously opening to them the temple door.

The following anecdote, for which I am indebted to Thomas Ewbank's admirable book on raising water, will show you how and when this force-pump arrangement received its last and most important addition—that of an air vessel:—

About the year 200 B.C., during the reign of Ptolemy Philadelphus over Egypt, an Egyptian barber pursued his vocation in the city of Alexandria. Like all professors of that ancient mystery, he possessed, besides the inferior apparatus, the two most essential implements of all—a razor and a looking-glass or mirror, probably a metallic one. This mirror, we are informed, was suspended from the ceiling of his shop, and balanced by a weight, which moved in a concealed case in one corner of the room. Thus, when a customer had undergone the usual purifying operations, he drew down the mirror that he might witness the improvement the artist had wrought on his outer man, after which he returned it to its former position for the use of the next customer. It would seem that the case in which the weight moved was enclosed at the bottom, or pretty accurately made, for as the weight moved in it and