

ment of frogs or mules, as you may easily surmise by the size of the motors in this city.

WHEN I left home I met a man who took a fancy to me, and agreed to pay my fare to the mines, whither he was himself going. Just as we were passing through this spot the locomotive blew out a cylinder-head, and my friend and I left the cars to stretch our muscles and explore around a little. When we returned we discovered that the train had continued on its way. We had not heard its warning whistle. Without food or shelter we were in a predicament, but my friend was used to adventure and the novelty pleased rather than frightened me. Chance led us to a cave, which proved to be of enormous proportions, and there we started a fire near the entrance and passed the night. Frequently I was awakened by a whistling noise which was wafted from the inner recesses, a noise like boiling water. In the morning we investigated. A small spring emptied on what looked like sulphur mixed with lime, and the moment it touched the solution it changed to hissing steam. At once there recurred to me the old dream of perpetual motion. But it was long years before I learned how to adjust this accidentally discovered principle to harness, though as we walked to the nearest town my head was full of visions.

"Through the struggle years of my mining life I thought time and again of that water turned to steam by natural chemistry. In the more fortunate years I ceased to think of perpetual motion until one day I was in a wreck out in Utah. The engine had left the rails near a wild crag, and the broken boiler was hurling vast columns of steam against this crag, but the moment the steam touched it back it came tumbling, congealed instantaneously to water. Hurriedly I examined the stone of which the cliff was composed. It was honeycombed with little cells, and the very touch of it seemed to wither my skin. There exuded from it an odor like strong ammonia. This stone had the unheard of property of converting steam to water. You may judge how excited I was, for I now held the full secret of perpetual motion. I knew a chemistry of unending, endless and unlimited mechanical propulsion. That was a supreme moment, the joy of it so intense that it almost blended into pain, just as the sky blends with the ocean on the horizon's edge.

"I acted at once. With my hoarded savings I bought a mighty turbine, built after my own designs, with double escapements to act with water

and steam. This turbine was made for me in Chicago, and though the firm was used to making huge machinery, the men were fairly astounded at its colossal dimensions. "Where do you expect to get a Niagara to run this ninth wonder of the world?" asked one of the engineers. That gave me an idea, and I answered that presumably Niagara would some day be running just such wheels. As the initiated knew that such plans were even then on foot, the Chicago people believe to this day that my turbine is churning by the force of the falls.

"I had the turbine shipped in cases, and the freight hands were not startled to receive orders that the cases were to be unloaded in the wilderness. They had seen too many towns spring up over night to

ask any questions when they discharged the freight here. But the ticklish thing was to keep the carpenters and machinists from prying into my secret when they came to set the turbine up in the cave. I made it a point to appear odd and abstracted and to say queer things. The men decided, so the foreman told me in substance, though he did not use very elegant language, that I was a harmless lunatic, and that so long as I paid the bills liberally, the foolishness was all mine.



"I presented myself at Judah's door."

AT length the turbine was in place. It was set horizontally and encased in strongest steel. Inside the case a platform was arranged and covered with tons of stone and on the floor below we had placed quantities of the limy sulphide which was so abundant in the cave itself. My mechanics now installed twelve dynamos of the utmost capacity in the cave, and connected them with the thousand-ton fly-wheel that was on the projecting shaft of the turbine. Then we laid great electric cables in a conduit and brought them to the locality where I had planned to have the factories built. The entrance of the cave was concealed by a house which was constructed over it, and which is now known as my experimenting shop. Then I paid the men a bonus and sent them on their way rejoicing.

"With something of apprehension, in spite of the confidence I had in my calculations, I turned the faucet which connected the little spring with the wheel-box. It touched the floor, met the lime-sulphides, became steam and went up with a whirl until it reached the ammonia-stone, from whence it came hurtling down in the form of water on the other side of the turbine. My expectations were fulfilled. But it was weeks before there had

flowed sufficient water from the spring to generate the immense energy required to set the machine in motion. Then it began so reluctantly to move, hardly revolving once in a whole day, but all the time it was accumulating speed. Faster and faster it moved, until the huge fly-wheel spun with frightful rapidity. I turned off the water and was rejoiced to read on the indicator that the speed remained constant. I had perfected the grand invention of civilization.

"You know the rest. I went in partnership with such reliable manufacturers as I could interest, and I have now built and dominate a city which is destined to become the metropolis of the middle west. I have the very digestion and propagation of energy, perpetual motion, unlimited power through the irritation and reaction of certain chemicals and water. These natural agents never lose their potentiality, and do not have to be renewed, as at first I thought would be the case. The interaction is perfect. To get more power I pay a visit by night to the cave and turn on a little more water. The upward rush of the hissing steam and the downfall of water give a double impetus which is almost irresistible.

"So here is my secret, understood by no other man in the world to be a secret, revealed in its fullness only unto you, my old chum. Don't you think you and I can make a successful flying ship through the application of this chemical force of mine? We can work together, you putting in your knowledge as a professional aeronaut, I co-laboring in the construction of the engines. Perhaps you will reach the North Pole and the South one too, before Walter Wellman gets started."

Here ended the narrative. I sat in a half-haze, meditating that the day of alchemy and marvels is still with us. There was a gleam of joy beaming through my haze, giving me new hope that some day I shall be king of the air, in spite of all my previous failures.

ON the following morning I was admitted into the hidden cave, and I know beyond peradventure that the motive force which drives the great factories of that city and lights and heats it is nothing else than the chemical combination of ammonia-stone, water, and a complex solution of sulphur and lime, most cleverly applied to machinery.

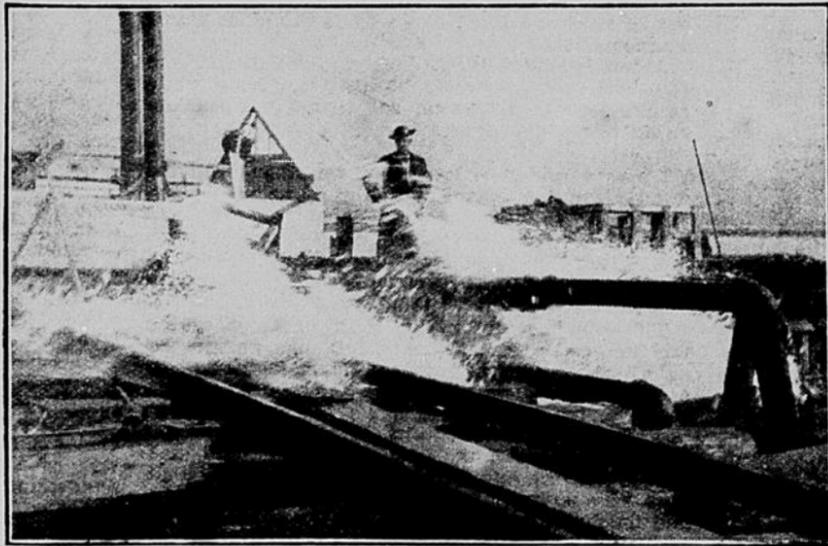
My friends who read this, some of you may be living in the very place whose origin is here described, without knowing that there is anything unusual about it. Matter of fact citizens, will you ever know that Niagara is not your servant? It is doubtful. If in the beginning you had been informed whence the current was derived, the mystery of it might have been disconcerting, and you would have been unlikely to risk your capital in putting up factories dependent upon it. Were you to be told the whole secret now you would go to making electricity for yourselves and Judah Bradford would cease to have an income from his discovery.

Puzzleopolis? Well, that is the equivalent of the name, not the spelling of it. Indian nomenclature was borrowed from when the town was christened. But there it is today, making cereals, woolens and many other wares, unconsciously owing its existence and prosperity to the Vermont boy who left home because his mule-power churn was a failure in the eyes of his practical father.

Building the World's Biggest Dam--By W. T. Walsh

IN the process of digging a new channel in the Detroit river fourteen miles below the city of Detroit, government contractors have built the biggest coffer or "dry" dam ever constructed. It is more than a mile in length, a third of a mile in width and it has been pumped, to the very bottom, as dry as a bone, while the whole might of the river pressed and crowded against the walls of stone and clay. The feat was thought by many veteran contractors to be impossible, especially as a portion of the work had to be carried on under exceptional conditions which required that navigation in the meantime must not be interfered with.

Ever since 1874 the federal government has attempted to improve what is known as the Lime Kiln crossing in the Detroit river. Year by year the sailors of the Great Lakes have found it more difficult to pass this point. Wrecks and disasters have been innumerable. This state of affairs has been augmented by two things—the constantly increasing traffic and the huge dimensions of the vessels now engaged in the passenger and freight business of the lakes. Today freighters sail



An air lift through which 50,000,000 gallons of water flowed daily.

through laden with 10,000 tons of iron ore or 400,000 bushels of wheat. More tonnage passes in a season over the Lime Kiln crossing than enters

any of the ocean ports of the world in a corresponding length of time.

Stony Island, a bit of marshy land several acres in extent, was used as a base for the new operations. The area of a third of a square mile was first laid off. Then a wall forty feet through at the base and designed to rise ten feet above the surface of the water, when completed, was begun. The force of the current, the wash of passing vessels, very greatly impeded the workmen.

After the completion of the wall—a matter of several months' continual struggle—the real problem presented itself: Would this wall stand the pressure of the river against its sides when the counteracting pressure of the water within the dam were removed? The work, however, had been too well done for worry. Within ten days after a combination of pumps, with a capacity of 50,000,000 gallons, every twenty-four hours, had begun their operations, 130 acres of land could be crossed dry-

shod. Old mariners, from the decks of their vessels, stared amazed at the great gap in the course of the Detroit river.