

double-acting Plunger force pump, 5 x 10.

All the above steam and force pumps are so connected that they can be used either on the furnace water jackets, tuyeres, for general fire purposes, or for boiler feed.

All the suction pipes in connection with new engine house are laid through a stone tunnel, which leads from engine house to river, and are always beyond the action of frost, and so arranged that alterations and repairs can be made at any time, as the tunnel is large enough to allow a man to pass or work.

Hoisting Power.—This consists of a Crane pattern double cylinder hoisting engine; size of cylinders, 8 x 10 inch. This engine is connected with two hoisting cages, having a lift of 15 feet from floor of weigh-house to floor of top-house.

Charcoal Kilns.—Radnor Forges Battery consists of:—8 rectangular kilns, capacity 55 cords each; 3 beehive pattern kilns, capacity, 55 cords each.

Grandes Piles Battery consists of:—14 beehive pattern kilns, capacity, 55 cords each. Others in course of construction.

Charcoal also made and supplied from pits in the Swedish manner.

The buildings and real estate in connection with the entire plant is the property of the Company in fee simple.

Ore Supply.—Investigation carefully carried on by practical men, under the immediate direction of the officials of the Company, and verified by actual work in the field, has proved beyond a doubt that there is not only an abundant supply of ore in sight to last for many years to come, but that it is steadily growing, and new discoveries are being made daily. These ores of course vary in analysis, but the supply is so large that the Company are able to make such selection from the various deposits as to be able to produce fixed results. The Company have their own laboratory, and a practical chemist is permanently employed in the selection of ores, and the analysing of the furnace product.

Limestone.—There is a splendid limestone quarry side by side with the furnace, furnishing a valuable flux at the minimum of cost.

Charcoal.—The Company have two batteries of kilns, one situated at Radnor Forges, and the other, the main battery, at Grandes Piles on the River St. Maurice. The supply of hard woods suitable for charcoal making is almost inexhaustible. The main kilns located on the Company's property at Grandes Piles can draw supplies from the banks of the St. Maurice for half a century to come. The location of these kilns secure to the Company the practical control of the navigable waters of the St. Maurice, Grandes Piles being the terminus not only of the railroad but also of navigation. The Laurentian range of mountains presents a barrier to the railway going farther north, whilst the succession of magnificent water falls and rapids between Grandes Piles and Three Rivers absolutely prevents the navigation of the St. Maurice to the south. This property also gives the Company control of the Grandes Piles Falls, which with a drop of 40 feet has a volume of water representing a power not less than 35,000 h.p. It is difficult to estimate the value of this great natural water power. Naturally it is much enhanced by the fact that it occurs at the junction of railway and navigation, and sooner or later its development will offer a splendid investment.

The vast territory to the north watered by the St. Maurice and its tributaries and estimated as 200,000 square miles, contains an immense quantity of pine and spruce, and at the present time its limits are attracting the attention of American capitalists, as evidenced by the fact that the American Laurentides Pulp Co. have already expended hundreds of thousands of dollars in the erection of a pulp mill and in perfecting the water power at Grande Mère, a few miles below Grandes Piles. Aside from the manufacture of pulp, the lumber produced from the spruce of the St. Maurice is of a class coming more into use every day, as taking the place of the more expensive pine. Hard woods, such as maple and birch, are to be found in an almost inexhaustible growth all along the banks of the St. Maurice, and are especially suitable for the manufacture of charcoal for the smelting of iron. It is from this section the Company will draw its supplies for some years to come, and with great benefit not alone to itself but also to the settlers on the river, who find that in clearing their lands they are able to chop and dispose of their standing wood to the Charcoal Works at good paying figures, thus finding a cash market for what would otherwise be to them practically worthless material.

In addition to the valuable ore deposits and wood limits controlled by the Company they possess rich deposits of ochre, suitable for metallic paint, and also (on the property at Radnor Forges) valuable clay deposits suitable for making the finest quality of re-pressed brick.

The work of bringing the furnace plant and accessories to its present condition has been no easy task, and if in many respects Radnor Forges may seem to be behind American furnaces at the present moment, yet given sufficient time for a further development and proper systematizing, there is no reason to fear but that the works will eventually make a very creditable showing. American furnace men, the majority of whom are able to purchase their raw material, such as ore and charcoal, in the open market, will appreciate the difficulties of establishing a new furnace in what may be termed "The Wilderness." The Canadian furnace man has, so to speak, "to live within himself," to provide workmen for his entire cut of wood, to transport same to his charcoal kilns, and the charcoal to the furnace. He has also to "mine" his full supply of ore, and other necessary material. All this the officials of the Canada Iron Furnace Co. have had to do, and the greater part of the reorganization and systematizing has

been carried out within the space of one year, and that too concurrently with the construction of the plant itself.

Among the serious difficulties the Company have had to contend with, was the fact that owing to stagnation in the lumber interests of the St. Maurice district, there was at the time of the inauguration of the Company, a great scarcity of labor, the workmen having left the country in large numbers. Further the officials had to contend with great difficulties in their attempt to change the weights and measures that had been in vogue in this territory for many years, for instance, the *habitants* at first positively refused to supply wood of greater length than three feet and the Company desiring to be in the same position as their American competitors had to set to work to change this to the present standard of four feet, in the face of considerable opposition from the *habitants*. These alterations have been carried out without undue friction, and the American standard is now used in all departments. Furnacemen will fully appreciate the difficulties referred to.

In carrying out all the operations of the Company, upwards of 800 men are directly and indirectly employed during the season, the majority of whom are engaged in the securing of ore and wood supplies. Through proper systematizing the Company's employees are now taken largely from the ranks of the farmers or *habitants*, who work for the Company during their slack season between seed time and harvest, and in the winter months. These men find the work profitable in clearing their lands by supplying wood to the charcoal kilns, and in raising ore on portions of their farms which would otherwise be unproductive. In this way the work of the Company goes on almost continually over a very large territory, and the supplies of both labor and material so obtained are therefore now practically unlimited.

The Excursion.

(By our Junior Reporter.)

To have your "innocent sleep," the sleep that has "knitted up your ravelled sleeve of care," broken by a fusillade of vigorous knuckles upon your door; and to rise from a comfortable bed at half-past six, a.m., when you are not in practice for the seeming hardship, appears an action, heroic in itself, which should require some strong and alluring incentive. One remembers, doubtless, the time of life when we rose at five—or earlier, if the sun set the example, for we never let him get ahead of us in those days—to go fishing with some Tom Sawyer or Joe Harper, of our youthful and adventurous bosom. But that was very long ago, we think with a sigh, as we grope sleepy-eyed for our watch. For we want to see the time, to make very sure that the porter is not making us get up an hour too soon; and who still lingers outside, not feeling quite certain that we are up. But our chronometer has stopped in the Waterbury watches of the night; and so we viciously pull on our clothes and shout to the doubting Thomas outside that we are up, feeling the case is quite hopeless, and that the incentive is too potent to admit of even dreaming of going to bed again—and dreaming.

For the reward of this particular morning is the long talked-of trip to Radnor Forges! It is a glorious day, anyway, we say, as we wrestle with our refractory collar stud, and look out of the window at the God-given sunshine laying its long golden fingers caressingly upon the white tresses of the dying Winter. We are dressed at last, as the ladies say, and we hurry down and get breakfast; and, half an hour later, are aboard the excursion train gliding out of the old Dalhousie Square (Canadian Pacific Railway) station on this brisk Canadian morning.

The excursion train in question left Montreal about 8 a. m. with a jolly, rollicking lot of representatives of the American and Canadian Mining Associations. There was a fair element of ladies, too, on board, serving as a sort of sprinkling of delicious perfume upon the kerchief of pleasure; and tempering with their fine eyes and presence the men of steel. Hygeia and Boreas appeared to have been propitious to the excursion; for every individual on the train seemed the embodiment of good health and spirits, and the old North Wind god had gone himself on a holiday of his own. It was one of those still, white Canadian days when all the earth seems wrapped in a mantle of dazzling sunshine, and which makes the visitor of sportsman-like proclivities, experiencing it, exclaim hungrily: Gad! What a day, and what a climate! Say, you fellows, wouldn't you like to be out there with pair of snowshoes on, after some game, with Ed. W. Sandys for a guide?

Continually passing through the cars to see that each one is thoroughly enjoying himself, the hosts of the occasion, Mr. T. J. Drummond, and his brother Mr. G. E. Drummond, of the Canada Iron Furnace Company make everyone feel perfectly at home; if such an expression can be used in relation to such an unstable business-like affair as a train. About eleven o'clock a luncheon, that was a little poem in itself, punctuated by the popping of numerous corks, was served; and between twelve and one o'clock Radnor Forges was reached.

Here everyone alighted, and went and saw and was conquered. To one conversant with the technique of an industry such as that of the Canada Iron Furnace Company, the visible working of that industry and the evolutions of the ore must of necessity be intensely and specifically interesting. But to a novice, to one who has only partially understood and appreciated the value and vastness of a great industry, the visible working in ques-

tion has a peculiar charm. He realizes that he must see to understand and to estimate fairly.

The party first visited the casting-house where the ore come down from the furnace and is run off into pigs weighing about 150 pounds. There were about 200 or more of these pigs in this one building alone, lying in their little graves of earth which the workmen were throwing upon them, and looking to the wide-eyed treasure dreamer in their great heat like so many bars of red gold. Miss Poulin's famed hidden wealth would be as nothing to it!

Then we all went up to the furnace, crossing at a leap on our way the stream of hot slag that flowed away to the side of the building, and that made one think of the lava of a volcano. Here, at the furnace, we saw the bog ore and the charcoal and the limestone poured liberally into the gaping mouth of the funnel-like throat of the furnace, that seemed a veritable insatiate dragon, whose breath was flame.

Later on we adjourned to the new and neat little Episcopalian church, which had not at that time been opened. It is a bright little building, built for the accommodation of Episcopalians and Roman Catholics alike, the Roman Catholics attending the Church of England service held in the Sabbath evenings. It is capacious, too, this church, for no one would have thought by an exterior glance that it could hold such a number of excursionists and villagers as flocked to it on that memorable occasion of the 25th February.

So we all filed in and took our seats, and Capt. Robert C. Adams of Montreal, took the chair.

THE CHAIRMAN.—After mentioning the fact that the gathering had only a very limited time to spend in the church and listen to the gentlemen who were to speak said: "We are met in this church to do honor to an industry which has existed for many years, and which has come to a joyous condition of being; and we believe that under the able and continued management of the gentlemen of whom it has been our very good fortune to be the guests to-day, there is a very great future before this industry. We can but regard these gentlemen as philanthropists, who, by the medium of such an industry, provide a means of livelihood to many people, and help to sustain and elevate the vigor and industrial greatness of a country. I say it is right that a celebration should be held in a church in honor of an industry which is so closely united with the sentiments and practices of philanthropy. I observed in the admirable souvenir which these gentlemen have prepared for us that this delightful and romantic region is also likely to prove one of advantage to the treasure hunter; and I now understand why we had such an easy journey down here this morning, because I am reminded of an old saying: *facilis decensus Averno*. But now that we have taken refuge in a church we shall escape any advances which his Satanic Majesty might be pleased to make.

I have received letters of regret from the following distinguished gentlemen, who were to have been with us to-day, but who for one reason or another have been prevented from doing themselves and us the honor of attending: Consul-General Knapp; The Lieutenant-Governor of Quebec; The Hon. Mr. Flynn; The Hon. Mr. Louis Beaubien; The Hon. A. R. Angers; The Hon. Mr. Mackenzie Bowell; The Hon. Mr. Tupper; The Hon. Mr. Costigan; The Hon. Mr. Patterson; The Hon. Mr. Ives; The Hon. Mr. Haggart; The Hon. Mr. Ouimet; The Hon. Mr. Smith; The Hon. Mr. Laurier; Sir A. P. Caron; Sir Joseph Hickson and Mr. L. J. Sergeant of the Grand Trunk Railway.

I have now much pleasure in calling upon Dr. Howe to address you.

DR. HOWE (Boston).—Mr. Chairman, ladies and gentlemen: I firmly believe that an idle man's brain is the devil's workshop. How often has been deplored through Northern New England and Canada the lack of suitable employment for the farmer and his household during the months of winter, when the necessities of the farm do not call for the exercise of much labor. The greatest benefactor to Northern New England would be the man who would bring to the farmer an industry which would occupy the members of his household during the spare and idle time of the year. A long and important step in this direction has been taken by our hospitable young hosts of to-day in teaching the farmer how to mine bog ore, which everywhere in this district surrounds him, and in furnishing him a steady and valuable market, enabling him to use his spare time to advantage, and to utilize a waste product; transforming a noxious article into a priceless one. For this they deserve the thanks, sympathy and support of the whole community, and for their kindness and unbounded hospitality we all thank them cordially, and wish them God speed in their good work.

DR. R. H. RAYMOND (New York).—Mr. Chairman, ladies and gentlemen: Agriculture and mining are, I would say, two great industries, neither of which can get along alone. We have found out one side of this truth in the United States, where the mining engineer and the mining pioneer have attempted almost in vain, and with unfortunate sacrifices, to put that industry into operation in countries where it was not supported by any other, and where the business of mining had to carry upon its back the load of all the necessities in the life of man.

Here we have an illustration of the opposite side of the same truth, where mining comes to the rescue of agriculture; as our president has expressed it, by utilizing those forces and also by putting into the very neighborhood of the man who brings forth the products of agriculture, and the man who wishes to use those forces, the wealth of the mines; and into the hands of each the power to