	Metallic iron.	Phosphorus.	Sulphur.
No. 1	55.240	.019	less than .001
No. 2	60.376	.037	.007
No. 3	68.33	.016	.0375
No. 4	63.131	.023	.004
No. 5	68.65	.029	.042
No. 6	69.85	.013	.012
No. 7	70.325	.0056	.0023

Titanium none.

The last three analyses were of ore from No. 3 pit, 200 feet distant from Nos. 2 and 3, and upwards of 300 feet distant from Nos. 1 and 4, the intervening spaces apparently containing similar ore.

I can show samples of iron ore from fully 100 different places in Canada, mostly from Ontario, some of which are in large quantity, and of excellent Bessemer quality. It is exceedingly unfair to condemn all Canadian ores because some Ontario mines have too much sulphur, for we have other ores which are remarkably free from impurities.

T. D. LEDYARD.

Toronto, Ont., December 27, 1890.

THE METAL OF THE FUTURE.

THE interest recently awakened in aluminum is justifiably great. Indeed, it is doubtful if any other discovery now thought probable would so thoroughly revolutionize industry as would the discovery of how to make aluminum cheaply. The supply of ore is immense. That word is used in its literal sense of "immeasurable," for aluminum is everywhere about us. As a metal it has qualities that make it a most desirable substance for almost all purposes for which other metals are now used. It melts at red heat, and can be cast in molds. When cast it is as soft as silver, but it can be then hammered or rolled to become almost as hard as iron. It can be drawn into wire as fine as a spider's web, or beaten into leaf as thin as gold. Neither air nor water affects it, for it neither tarnishes nor rusts. It can be alloyed, or made into a bronze, so that the composite metal will have a transverse strength equaled only by the finest quality of crucible steel, and a tensile strength greater than that of any other metal. Most important of all, it is far lighter than any of the metals now in general use.

Imagination shrinks from the possibilities of such a metal. We point with pride and wonder to the advance in civilization during the nineteenth century made possible by steam and coal. Electricity and aluminum may put the twentieth century as far ahead of this as this has led the eighteenth.

Though aluminum is plentiful the existence of its oxide has been recognized only since 1754, and it was seventy years from that time before any of it in separate form was actually produced. For thirty years more it attracted little attention, but in 1855 a French chemist mastered the secret of getting it in compact form, since which time investigators in every part of the world have been working at the problem of cheap production. It has not been found hard to produce it, judging by the number of inventors who have succeeded, but it has been found next to impossible to get it in useful shape. The great difficulty is the strong affinity of the metal for the elements with which it is combined. Its physical properties, such as tensile strength, malleability, flexibility, etc., are greatly affected by the presence of even small quantities of foreign substances, especially silicon and iron, and the trouble has been to separate these. The methods commonly used in extracting gold, silver, iron and lead have for this reason failed utterly when applied. It has been learned that any economical and considerable production must be made either chemically or electrically. The chemical methods have most adherents, and it is by one of them that a Chicago experimenter says he will reduce the cost to much less than fifteen cents a pound. The details of his process are, of course, secret, but it is asserted that the process is surprisingly cheap and easy. It is proposed to get the metal from clay—from 600 pounds of it, 100 of aluminum. If these claims are realized the reduction in cost will indeed be marvellous. For years the market price was about $10 a pound, and most of it was made in France. Then English inventions brought the price down to less than $3, and within five years American manufacturers have come into the market. The announcement of the Chicago project resulted in a big drop in the price.

At the previous price the metal was fast coming into mercantile use, and at $1 a pound it bids fair to become really common. It must be remembered that at $1 a pound aluminum is really not so high as it looks, for the relation of a pound of aluminum to a pound of other metals is something like that of the famous pound of feathers to the pound of lead. Aluminum is almost three times as bulky as iron, weight for weight; it is more than four times as bulky as silver, and more than seven times as bulky as gold. Thus, if silver were $1 an ounce and aluminum $1 a pound, silver would be really fifty times the more costly, bulk for bulk; aluminum at $1 a pound would be only twice as costly as copper at fifteen cents a pound.

As a conductor of electricity aluminum compares favorably with copper, and it is already in great demand for electrical uses. It is in this direction that it is most likely first to find general application. Next will doubtless come its use in connection with transportation, both by land and sea. Arrangements have already been made to construct railway cars with it, and reduced cost is sure to make it common for this purpose. The saving in dead weight, and consequently both in the cost of power and in wear and tear, will be enormous. In shipbuilding there will be even greater gain, for it will reduce by two-thirds the displacement and proportionately increase the tonnage capacity.

Aluminum has already been put to extensive use for alloys. Even very small percentages added to iron, steel, copper, etc., improve their quality remarkably. The most common alloy is that with copper, making what is known as aluminum bronze, consisting of pure copper and 2½ to 10 per cent. of aluminum. As the percentage of aluminum increases there is a proportionately much greater increase in the hardness. While the 2½ per cent. bronze is very easily worked, and even the 5 per cent. can be easily forged, rolled and drawn cold, the 10 per cent. is so hard that it is unexcelled for all purposes where great strength and resistance to wear and tear and to rust are desirable. Indeed, its great hardness and homogeneousness make it an excellent metal for ordnance.—*Bradstreets.*

THE E. & C. GURNEY COMPANY AND THE IRON MOULDERS.

RATHER more than a year ago the E. & C. Gurney Company, this city, were operating their stove and radiator works with union men, and paying every man employed at the rate of $2.40 per day. They felt that they could not afford to pay such wages indiscriminately to good and poor workmen alike, and the following proposition was submitted to the men:

1. That a rate should be fixed for the manufacture of certain goods by the piece.

2. That in case this was not satisfactory a helper should be allowed for every one or two moulders who would do heavy work, such as carrying sand, or, in case this would not suit them,

3. That the company should take the manufacture of radiators into their own hands, employ whom they pleased to turn them out, and leave the other goods to be manufactured entirely in the hands of the union upon old terms.

To none of these propositions would the union agree, and the result was a strike. The moulders would not agree to anything but a minimum rate of $2.40 per day, and did not want helpers in any of the departments. The strike being on the company at once set about filling their shop with non-union men. They succeeded in obtaining all the men required, and have since conducted their business without employing any union labor.

It would appear that the union men have experienced some difficulty in securing positions as lucrative as those they left, and last week a deputation from the union waited upon Mr. Edward Gurney for the purpose of effecting a settlement, if possible. The members of the deputation were: Mr. Martin Fox, President of the Iron Moulders' Union of North America; Mr. James Hickey and Mr. J. Pierce. Mr. Hickey and Mr. Pierce are members of local organizations.

President Fox stated that he had called upon the firm with the view to having the trouble amicably settled and matters so arranged that the shops would again come under the control of the union. He said that the union laws prohibited helpers, for the reason that after a time the helper was liable to displace the union man, and generally did so, at a reduction of wages. Mr. Fox stated that in accepting his present position as president of the organization he had done so with the determination that the Iron Moulders' Union would be run on strictly business principles, and that he considered it his duty to thoroughly investigate the matter of the present trouble, and if possible have an amicable settlement. The utmost good feeling and cordiality prevailed throughout the meeting.

Mr. Gurney stated his case simply and to the point. He said that under the union he had been compelled to pay inferior men the same wages as first-class men; that he had paid $2.40 to men who actually had not earned for him more than $1.50 per day, and