The steam shovel seems to be as voracious as a great animal. Sometimes it attacks rocks which are too big even for its own great maw. In its efforts to overcome a great rock it lost its balance and tipped over.

Telegraphy Without Wires.

In a recent number of this magazine Prof. Chant explained the theory of Marconi's telegraphy without wires.

A long and interesting interview with Marconi appears in the *Strond Magazine*, from which it seems that in the opinion of such expert electricians as Mr. Preece, the head of the Electrical Department of the British Post Office, we are on the verge of a discovery which will enable any one to telegraph anywhere without the aid of wires, posts, and cables. At present what Mr. Marconi claims to have done is to send messages with instruments of proper size and power across any number of miles of space. Mr. Marconi was experimenting with the Hertz electric waves, ascertaining how far those waves would travel through the air for signalling purposes. He was sending waves through the air and getting signals at distances of a mile, when he discovered that the wave "which went to my receiver through the air, was also affecting another receiver which I had set up on the other side of a hill." In his opinion that went through the hill, which was three-quarters of a mile thick.

The Hertz waves are stopped by metal and by water. The same amount of energy that is used in generating the Hertz waves will generate Marconi waves; they are excited in the same general way by an apparatus which he is patenting, but their power is entirely different. The Marconi waves are not reflected or refracted. He sent and received waves at the General Post Office through seven or eight walls over a distance of one hundred yards. He thinks a despatch could be sent twenty miles in the same way.

Nay, Mr. Marconi thinks that by establishing a fifty or sixty horse-power engine in a room forty feet square in England, and another of equal size in New York, it will be possible, at a total cost for both of not more than £10,000, to telegraph between London and New York without any difficulty. At present he is experimenting in establishing communication through the air from the shore to a lightship. The length of the Marconi waves varies from ten inches to thirty yards. These waves have an alternation of about two hundred and fifty millions per second. By their use ships can be fitted with this apparatus so as to indicate the presence of another ship at any desired distance; that is to say, in a fog ships will ring each other up by alarm bells whenever they come within a mile of each other, and the direction of the approaching vessel will be indicated by an index.

More than that, Mr. Marconi believes that it is possible for a small ship, fitted with the proper battery, to approach an immense fleet, and at a distance of twenty miles blow up the magazine in every ship's hold. If there happened to be in the powder magazine two nails or wires or plates which were in a position to set up induction, the Marconi destroyer would be able to blow the whole fleet into eternity before it had even been sighted from the mast-head. Mr. Marconi maintains that he has actually exploded gunpowder by his electric waves at a distance of a mile and a half. All that he needs is to put two wires or two plates in the powder, and then to set up an induced current, which would cause a spark and explode it. It is obvious that what can be done in relation to ironclads can also be done in relation to powder magazines of land armies, and, therefore, if Mr. Marconi is correct, the doom of the explosive is near at hand. It would be a strange thing if the evolution of science should practically abolish gunpowder by rendering its use impossible. It would still be used against savages who were not able to generate the Marconi waves, but against civilized foes its presence would be a much greater danger to the army that carried it than to the enemy against whom it would be used.

Utilizing a Glacier.—A huge glacier on the Bornhorn, Switzerland, is being put to economic uses. An enterprising firm of ice dealers are getting their supplies from it. Rents were cut into the ice, and by means of dynamite, blocks weighing many tons were broken from the solid field, and these are again sawed and broken, and allowed to roll down into the valley. Then the blocks are taken by teams to the nearest railway station and transported to Munich.

I saw last summer a similar ice quarry at the lower glacier at Grindelwald. The ice was blasted with gunpowder and carried across the valley in a huge swinging-box which slid along upon a wire rope. I greatly wished to take a ride on this aerial railway, but the workmen refused