Forty-Mile Hole for Power

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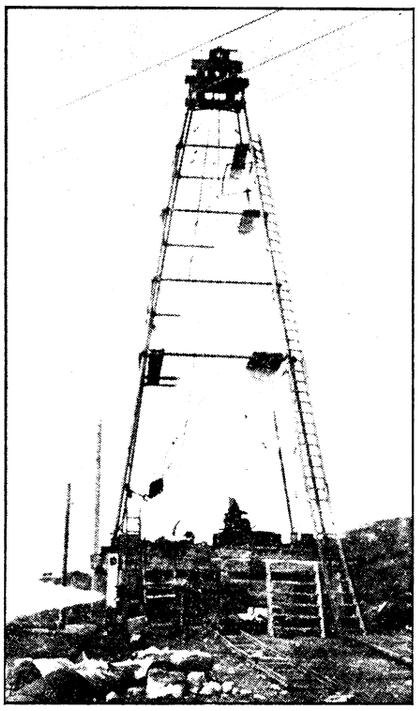
As the rock in the immediate neighborhood of the hole would give up its heat first, the yield would be greater at first. But even after 4,000 years, he estimates, the cooling would not have extended farther than 2,000 feet from the hole. If the hole were made larger, the yield would be somewhat increased, but the greatest advantage would come from making it deeper. Taking a hole 30 miles deep and a foot in diameter, an increase to ten feet in diameter would only increase the heat yield a third. But making it 40 miles deep instead of 30 would increase it about one and a half times.

Mr. Hodgson, as an engineer, has not been content with calculating what such a hole would do if we could dig it, but has actually worked out a scheme for making the hole!

Present mining methods make the limit of a hole by their use about 2 miles. Below that depth the pressures of the rocks become too great. But. Mr. Hodgson proposes a method of getting around this by something similar to hydraulic mining. Instead of using a stream of water to cut away the rocks, he suggests the use of a stream of molten metal—an alloy of aluminum. With this alloy, which has the same average density as the rocks it encounters, their pressure is balanced. Pebbles of quartz or flint carried by the liquid metal aid its work, while it is kept molten by electric circuits. When the desired depth has been reached the metal is removed and replaced by water.

Of course, since it is not even known whether the method would prove practicable, it is hard to estimate the cost of such a hole. However, he makes some rough comparisons of the cost of operation with that of an ordinary steam plant. An investment of about $2,500,000 at five per cent. would be required to yield 4,250 horsepower from coal at $5.00 per ton according to his estimate.

"The cost of a high temperature bore hole to produce the same amount of heat should scarcely be more than ten times this amount when the technique of making such bore holes has been adequately worked out," says Mr. Hodgson, "while the cost of the much shallower high temperature heat bore holes possible in volcanic areas should be able to compare very favorably with the cost of producing heat by any other method."



IF A DEEP BORE HOLE, such as is proposed by John L. Hodgson, British engineer, is ever made to utilize power from the earth, the top of it might look something like this. The installation shown here is at Lardarello, Italy, where Prince Ginori Conti has made use of natural steam as a source of power.

But the "high temperature" hole is not the only possibility. The engineer also proposes what he calls a "low temperature" hole. This consists of two bore holes, about 5 miles deep and connected by horizontal passages about 30 miles long. This 30 miles of horizontal passage, for the first 1,000 years, would produce an average of more than 4,250 horsepower, he believes. Such a system of holes, in his opinion, would not cost any more than ten times the cost of the present steam plant of like power. Then there is also the possibility of sinking it in regions where valuable ores are to be obtained and so reducing its cost indefinitely. Already a world shortage in such metals as zinc, tin and lead is in sight because all the pockets in which they occur within a mile of the surface are becoming exhausted.

With this system, a few workers would be required underground, and Mr. Hodgson suggests that they could be encased in heat proof suits through which air at about 60 degrees Fahrenheit circulated. This air could be obtained from tanks of liquid air either carried on trucks or by the workers themselves.

Apparently, then, our present methods of producing power are cheaper, but Mr. Hodgson's conclusion admirably summarizes the problem. This is what he says:

"We are, with regard to the problem of using the Earth's Internal heat, very much in the position of an eighteenth century 'outcropper' quarrying for coal in the hillsides of Yorkshire. Noting the dip of the strata, he could quite well reason that far below the surface there must be immense reserves of coal, which on the one hand he did not need to exploit because the hillside quarry provided for all his immediate needs, and which on the other he could see no possibility of exploiting at a profit because he knew nothing of such devices as the steam engine, the electric motor and the air compressor.

"Yet because the problem of making use of the deep lying coal seams was not lost sight of, men in Yorkshire today are mining coal thousands of feet below the surface by the methods and applications that were not even dreamed of by the 'outcropper' of two hundred years ago."

Science News-Letter, December 31, 1927

ZOOLOGY

The Hunters

Far in the north
  Wing through the night
Goblin-eyed owls
  Spectrally white.

Far in the south
  Saucer-fed snakes
Weave through the attics
  When the moon wakes.

Triune is death
  For the race of the rat—
Winged owl, scaled snake
  And velvet cat.

—*Elizabeth Coatsworth, in the New York Times.*

Science News-Letter, December 31, 1927

Aluminum was discovered just 102 years ago by Dr. Hans Christian Oersted, Danish physicist.

New York schools are experimenting with the use of moving picture reels to teach current events.

Travelers in the desert sometimes quench their thirst by drinking water stored by some of the desert plants.

The modern device of dressing sports contestants in different colors was a custom of the Romans.