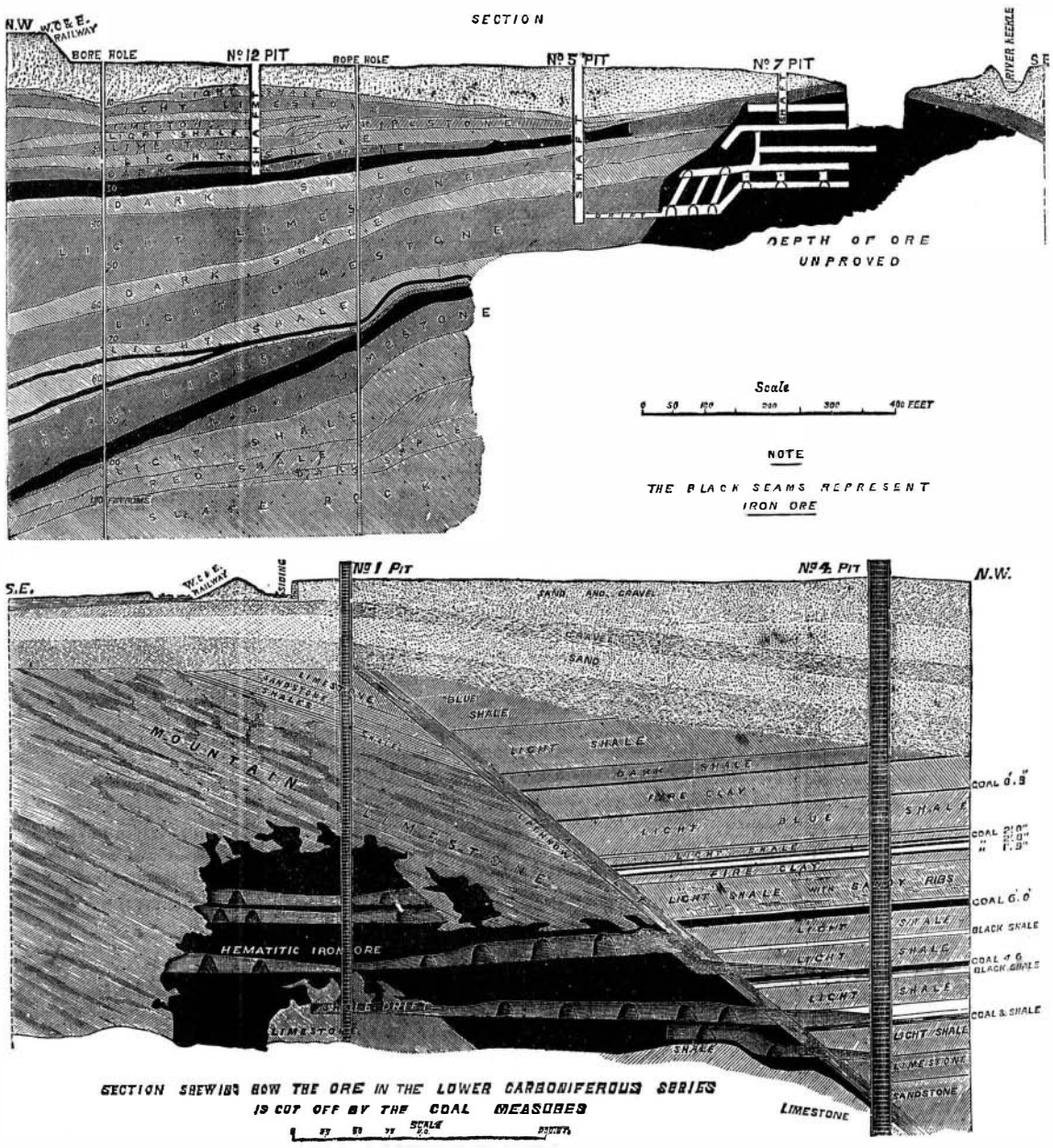
THE HEMATITE IRON MINES OF ENGLAND.

The creation of a new field of iron manufacturing industry in Cumberland and Lancashire, England, is mainly due to the success of the Bessemer steel-making process, for which the hematite ores of that district, although long neglected, are found to be especially suitable. The town of Barrow-in-Furness has grown out of this important trade, and many other busy scenes are largely increasing their population and resources. Landowners and farmers are investigating the strata which underlie their possessions, and companies for raising iron ore and bringing it into market, as well as for manufacturing the metal on the spot, are becoming very numerous. The geological features of the ore-bearing formations are full of interest, and they are generally well defined, and prospectors look upon them as certain indications of the presence of metal.

We publish herewith sections of the Montreal mines of West Cumberland, distant about five miles from Whitehaven. They are the property of Mr. John Stirling, and are situate on a band of mountain limestone, which extends from Egremont to Cleator Moor. On the east of this limestone formation are found slates, the basic rocks of the district, on the edges of which, upturned, the limestone reposes. To the west of the limestone are the coal measures, brought into contiguity with the limestone by a large fault, bearing nearly east and west.

The limestone is in many places capped by the millstone grit; and it is between this latter group of rocks and the underlying limestone that many of the iron deposits in the district are found. The form they assume in this position approaches that of a bed. Other deposits in the limestone are found lying by the side of the large fault, which brings the limestone and coal measures into contact. Among the deposits in the latter position is the one which constitutes the greater part of the Montreal mines, a section of which is shown in Fig. 1. Another set of deposits occurs in shallow basins in the limestone, covered only by the boulder drift, or, at most, with a very thin shell of rock. To that description belong the remainder of the deposits worked by the proprietor of the mines under notice; a section of one of these last is given in Fig. 2.



SECTION SHEWING HOW THE ORE IN THE LOWER CARBONIFEROUS SERIES IS CUT OFF BY THE COAL MEASURES

THE MONTREAL HEMATITE MINES CUMBERLAND ENGLAND.

The method of working the Montreal mines is partly shown by the drawings. When the shafts have been put down to a sufficient depth, a level is put out a few feet below the top of the ore, and when that level has been continued to a sufficient distance, say five or six fathoms—that is, supposing the foot of the shaft to be on ore, as in the case of No. 1 shaft, Fig. 1—levels are put off on each side. From these, other levels are put off in their turn; and so on, until the whole of the deposit at that hight has been opened by a sort of post and stall system of working. The size of the levels—or rather workings, as they are called—is variable; they are sometimes 30 feet wide and about 20 feet high, but as a general rule they are only about 12 feet square in section. The size of the pillars also varies very much, according to the nature of the ground. Sometimes they are very large, consisting almost entirely of rock; but where the ore is not interfered with, or mixed up with limestone, they are from three to five, or even six, fathoms square.

While the first hight of workings is being wrought out in the manner described above, the second is commenced about five fathoms below the first, and carried on in much the same way. A third and fourth hight may also be put out, if the size of the deposit renders such a course advisable, to be worked in the same manner; but by the time the fourth hight has been thought of, it is probable that a great many of the pillars in the first hight, and perhaps in the second also, have been taken away, and the roof allowed to fall in. Unless this extraction of the pillars is accomplished in a very systematic manner, it is more than probable that a great many of them will become buried in the *débris* of the fallen roof; in which case drifts, timbered as they proceed, have to be driven through this fallen rubbish for the purpose of reaching the ore. If much ore is extracted in this way, a very large amount of timber is required, as the ground, when once thoroughly broken up, brings such an enormous weight on to the timber by which the drifts are kept open that it very frequently requires to be repaired.

The output of the Montreal mines is now 250,000 tuns per annum, which is the largest turnout of any mine in either the Whitehaven or the Furness district. The area is about 1,000 acres, of which nearly half is ore-bearing ground. The total number of hands employed above and below ground varies from 1,000 to 1,200, figures which give an idea of the importance of the enterprise. There are altogether twelve shafts, of which three are now in process of sinking, while the remaining nine are in active operation; the greatest depth at present attained is about 75 fathoms. In addition to the shafts there is an open working from half an acre to an acre in extent, but the outcrop ore only is here being worked

SHELDON'S AUXILIARY CAR SEAT.

The fact is pretty generally recognized that, so long as there is an available inch on which a foothold can be got, either inside a street car or on a platform, people will endeavor to

occupy that space, and there they will remain, clinging to strap or bar, in positions uncomfortable both to themselves and to those whom they crowd. Nothing short of a sentry with a sharp bayonet, stationed at each end of every car, will serve as an effective preventive; but as the use of that weapon might lead to disagreeable complications, that plan, together with the scheme of an india rubber car, capable of indefinite extension, must be reckoned as infeasible. They are more civilized than we are in Russia, for there they have a rule that no more people can enter a car than there are seats vacant; the same excellent regulation is enforced in some Paris omnibuses. Sometime in the distant future we may have a similar regulation; but until that happy period arrives, it behooves us to consider the best means for ameliorating the present unfortunate state of affairs.

To Mr. Cevedra B. Sheldon a gentleman thirty-one times a patentee through the Patent Agency connected with this paper, is the public indebted for the happy idea shown in our engraving, for relieving the standing committee in horse cars, who heretofore have had to ride for miles, wearily hanging to a greasy strap, and whose toes woefully attest the solidity of the conductor's pedal extremities as that individual, bell punch in hand, ruthlessly tramps up and down the narrow passage.

Mr. Sheldon's invention provides extra seats, arranged as shown in the engraving, to be folded under the main seat when not in use, and to be readily shifted into position in front of the main seat by means of suitable standards. The standard is bolted to a riser a little below the main seat, and is so shaped that it supports the auxiliary seat far enough forward to be out of the way of the passengers' legs. The standard has a locking joint for holding it up and a lug for maintaining the seat level. The seat is prevented from oscillating; and when folded, the top side turns inward so as to be protected from dust. The mechanism is exceedingly simple and strong, and may be modified in various ways to meet different requirements.

The device is one which might be added to both street cars and stages, with profit both to the passengers and to the owners. It would prevent the crowding of the passage, and would increase the seating capacity of the vehicle probably one half. The companies who manage our public conveyances would do well to put themselves in communication with the inventor. His address is No. 7 State street, New York city.

Salt.

Hall's Journal of Health thus sums up some of the many uses of salt: "It will cure sick headache, make cream freeze, make the butter come, take inkstains out of cloth of any kind, kill wens, kill worms, make the ground cool; so it is more congenial to celery, cabbage, etc. It will ease the itching pain caused by irritating skin diseases, like hives, itch, etc. It will produce vomiting or stop it, as you like; and many other things too numerous to mention. All pure salt will do this to a certain degree, but sea salt is the most effectual in its action."

Salt is a most remarkable and highly useful substance; but we think that onr cotemporary will find, on practical trial, that the article will not do all that is above claimed. For example, salt will not make cream freeze, it will not take inkstains out of cloth, and probably will not do more than one or two of the other things abovementioned.

Tunnel at Rio de Janeiro.

The Brazilian Government have under favorable consideration a project by Mr. Bucknall for connecting the north and south railway system of the empire with the capital, by a tunnel, under the narrow entrance to the bay of Rio de Janeiro, between the capital and the submarine city of Nitheloy, a distance of about two miles. The preliminary investigations clearly demonstrate the practicability of the undertaking; and its important bearing on the future of the country will be apparent to those acquainted with the commerce, railway system, and topography of that part of the empire. Mr. Peter W. Barlow, C.E., has gone to Rio, commissioned to conduct the survey and prepare the necessary plans and estimates.

CORN-fed hens do not lay in winter, for the simple reason there is no albumen material in the corn. When wheat is given to them, there is fat enough in it to supply all that is needed for the yolk, and albumen enough to make the white, and lime enough to furnish the shell; it does not thus seem difficult to understand why corn-fed hens should not lay, as they do not, and why wheat-fed hens should lay, as they do