have their face often changed by the public disorders there." He at the same time ordered a board to be placed over his door, giving notice when he did and when he did not receive visits.

Nothing can set in a stronger light than this the celebrity and public importance to which he had attained. His reputation, indeed, had spread over Europe, and he was the principal object of attraction to all scientific strangers who visited the English metropolis. Living, as it was his fortune to do, at what may be called only the dawn of modern science, Boyle perhaps made no discovery which the researches of succeeding investigators in the same department have not long ere now gone far beyond. But his experiments, and the immense number of facts which he collected and recorded, undoubtedly led the way to many of the most brilliant results by which, since his day, the study of nature has been crowned. Above all, he deserves to be regarded as one of the principal founders of our modern chemistry. That science, before his time, was little better than a collection of dogmas, addressing themselves rather to the implicit faith of men than either to their experience or their reason. These venerable articles of belief he showed the necessity of examining, in reference to their agreement with the ascertained facts of nature; and, by bringing them to this test, exposed the falsehood of many of them. His successors have only had to contribute each his share in building up the new system: he had also to overthow the old one.

Mr. Boyle died at the age of sixty-four, in 1691.

The air-pump invented by Otto Guericke was improved by Boyle, has been still further improved by the Abbé Noller, by Gravesande, Smeaton, Prince, Cuthberton, and others.

The air-pump has been applied to many useful purposes, not the least of these being the Atmospheric Railway. Vallance, an Englishman, appears to have been the original inventor of this contrivance, in 1824; but it was only in the year 1831 that the first Atmospheric Railway was constructed. The mode of working is simple. A cast iron pipe is placed between the rails the whole length of the

road. In the interior there is a piston with a rod about ten feet long, and terminated by a counter-weight. The first carriage is connected with the piston-rod by an iron plate; to allow of the play of this plate as the piston advances a longitudinal slit is made along the whole length of the pipe; this is covered by a continual band of leather, so that, when the train is in motion, it is gradually raised as it proceeds. The prime mover of the train is the atmospheric pressure. For this purpose, the extremity of the pipe remains open, while the other extremity is shut, and is put in communication with a powerful exhausting machine or air-pump driven by a steam engine. In this part of the piston, therefore, the air is rarefied, and the pressure is thus reduced to one-third or one-fourth of that of the atmosphere, whilst in the rear of the piston the whole of the atmospheric pressure is permitted to act. The piston is therefore driven forward, drawing after it the whole of the train.

ON THE LINE.

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