

Increased State-aid would help to solve this problem, for daily observations at one station up to an average of about 15 km. could be carried on in England at a cost of about 1000*l.* per annum, and a daily record of the changes occurring above would be of the greatest value. Increased money aid is also desirable to enable England to join in a general scheme for the production of charts covering the whole known surface of the globe. It is not, of course, certain that any immediate improvement in the forecasts would ensue, but increased knowledge would inevitably in the long run take a practical form, just as it has in every other branch of science.

Increased aid in another form is also much to be desired. The number of observations that have been tabulated and published is immense, but comparatively little working up has been done. The physical processes of the atmosphere present many fascinating problems; to go no further, we may instance the fall of temperature with height, and the abrupt cessation of that fall at about 11 km.; the facts are fairly well known, and the mechanical and thermodynamical principles that should explain them are known. There is plenty of work for many workers, and there are probably plenty of men well equipped with the requisite knowledge of mathematics and physics looking for some useful field of work. I would therefore commend to them the problem of the general and local circulation of the atmosphere.

W. H. DINES.

Watlington, Oxon., January 30.

#### Dr. Bastian's Evidence for Spontaneous Generation.

WE notice, in a communication that appeared in a recent issue of NATURE (January 22, p. 579), that Dr. Bastian is apparently under the impression that we accept his own interpretation of the "organisms" which have appeared in his sealed and sterilised tubes, viz. that they really are *living organisms*.

This does not represent our position. Dr. Bastian has kindly afforded us an opportunity of examining the contents of his tubes, which were opened in our presence, and although the resemblance between the "organisms" in question to living *Torulæ*, &c., was sufficiently striking, it did not seem to us to be proved that the similarity went beyond mere resemblance. We were not, and still are not, convinced of the living nature of these "organisms" at all, still less that they are living organisms spontaneously generated.

One of our colleagues, Mr. Paine, is engaged in repeating Dr. Bastian's experiments with the view of solving the problem as to what may be the actual nature of the appearances in question.

J. B. FARMER.

V. H. BLACKMAN.

Imperial College of Science and Technology,  
January 30.

#### A Possible Cause of Explosions in Coal Mines.

If a cloud of dry dust is suddenly raised by a current of air and projected against an insulated conductor, the latter becomes charged with electricity to such a potential that sparks several centimetres in length may be obtained. It does not matter much—save in respect to the sign of the charge—what the nature of the dust is, for sand, coal dust, flour, or iron filings all give rise to strong charges. Sand gives a positive charge and coal dust a negative one. It therefore appeared possible that a cloud of dust raised by a sudden fall, or other means, in a mine might charge up an insulated conductor to such an

extent that a spark could pass to an earthed conductor near it, and thus fire an explosive mixture of gases if this was present.

Some observations recently taken in the Ludlow Pit at Radstock have more or less confirmed this theory. In conveying the coal from the working seam to the shaft a considerable amount of dust is raised, and, walking behind the train of wagons, any electrification due to the dust was easily indicated by a Wulf electrometer furnished with a radium-tipped wire to act as a collector. With only a moderate amount of dust the electrometer indicated a potential of more than 280 volts, and a hollow insulated conductor held in the dust-cloud was also strongly charged. Sparks, however, could not be obtained in the mine, but on making experiments in the laboratory with coal dust from the mine, it was easy to charge up a metal tube to such a potential that sparks up to 1 cm. in length were obtained from it by blowing through the tube a stream of dust.

The dust actually present in the mine was, save close up to the working seams, never pure coal. In order to minimise the risk of dust explosions, large quantities of fine flue dust from the boilers were scattered in all the workings, so as to cover the coal dust, and this flue dust gave a charge of *opposite* sign to that upon the coal. When tested in the laboratory the mixture would *not charge* a conductor to a sparking potential, whilst pure coal dust, and more particularly the flue dust, gave very strong charges. If, then, such a combination should occur as that of a sudden cloud of coal, or perhaps other dust, an insulated conductor, an earth-connected conductor near it, and an explosive mixture of gases, it is not inconceivable that an explosion might follow. I make the suggestion quite tentatively.

W. A. DOUGLAS RUDGE.

Cambridge, January 28.

#### The Eugenics Education Society.

IN NATURE of January 29, Prof. Pearson complains that the sentence, "but even he (Sir Francis Galton) in the *last few months* of his life saw that the popular movement he had started was likely to outgrow its knowledge, and feared that more evil than good might result from it," which appeared in his letter to *The Times* of October 15, has been misquoted in the January number of *The Eugenics Review*, the words *last few months* having been altered to *last years*. He then goes on to say: "The controversial methods which can change 'last months' into 'last years,' and then cite letters of 1909 are characteristic of that looseness of procedure which must eventually be fatal to any popular movement run by this society." As a member of the editorial committee of *The Eugenics Review*, I passed the final proofs for the press, and so share the responsibility for the mistake with Major Leonard Darwin, who actually wrote the note in question. I do not quite understand what Prof. Pearson means by "looseness of procedure." If he merely means "making mistakes," then, although I have no wish to minimise the evils and dangers of so doing, I cannot agree with him that it "must be fatal to any popular movement run by the society." I hope I shall not be accused of promulgating a dangerously original doctrine if I say that it is human to err. Indeed, Prof. Pearson has on occasion been human enough to do so himself. Yet many human institutions, including those connected with Prof. Pearson, continue to flourish.

It is possible, however, that his words contain a more serious charge, namely, that of deliberately misquoting him in order to contradict him. I do not