

our globe, and the conclusion arrived at was, to "grant the first rank to the internal, volcanic, or cataclysmic agencies, since, had it not been for their operations, our globe would still have remained a comparatively smooth sphere, surrounded by its external envelope of water, with no visible land for the rivers to traverse or the rain and ice to disintegrate and wear away," &c.

In order that your numerous scientific public may not be led to judge of the lecture by this outline, I trust to your good will in asking you to insert these remarks in your next number.

DAVID FORBES

11, York Place, Portman Square, Aug. 22

A Vivid Mirage

THE illusion known as the mirage is, I believe, not unfrequently observed in the British Isles; but the vividness with which it was displayed on the present occasion will, I trust, be a sufficient apology for troubling you with this letter.

The land bordering the River Neve is protected by banks of from twelve to fifteen feet in height, enclosing a space called the "Wash," which receives the flood waters. It was from one of these banks that the appearance in question was observed, nothing unusual being seen from the level of the fen. I may mention that the Wash at this season is as dry as any other portion of the land.

The day (August 12) was hot, the sky cloudless, and a strong N.E. wind was blowing. About eleven o'clock the phenomenon was first noticed. To the eastward a dark line of trees, some eight miles distant, stood out in bold relief against the clear sky, and in front of this a shining line of silvery brightness was seen, which gradually widened until about twelve o'clock it presented the appearance of a broad expanse of water, ruffled into waves on its near side, but perfectly calm and clear toward the horizon where the line of trees was beautifully reflected on its surface. As I had been approaching the scene all this time, the expanding of the lake appeared perfectly natural, and I could scarcely help thinking the river must have overflowed during the night and drowned the "Wash." This, of course, I knew to be quite out of the question, but the semblance was so perfect that it required an effort to believe that it was but an illusion. Its shores were clearly defined, little bays dimpled it, tiny headlands jutted out from it, and the waves were seen rising and falling with life-like exactitude. The whole appeared quite stationary, and as I approached the spot it gradually faded away, until nothing but a thin blue haze beneath the trees remained, and this at length dissolved.

On looking behind me (*i.e.* westward) another mirage seemed forming, which increased in apparent extent as I went farther from it. In this case the illusion was, if possible, more perfect than in the last, and the comparatively high land of Whittlesea rose like an island from the shining sea. Vehicles passing along the road seemed floating on its surface, their dark drawn-out reflections showing vividly against the sun-lit water, which, in this instance, was quite calm. How long this illusion lasted I know not, but when, about two o'clock, I quitted the bank it was still very distinct.

The dead level of the fen, and the bright sunlight falling upon the parched land, from which the heated air rose tremulous as from a hot plate, render this district peculiarly favourable to the production of such effects. For the accuracy with which the appearance of water was simulated it was quite equal to any mirage I have witnessed on the African deserts.

SYDNEY B. J. SKERTCHLY

Geological Survey, Whittlesea, Cambridge, Aug. 12

Mirages made Easy

THE very interesting account of a mirage in this week's NATURE induces me to send a few observations. The mirage phenomenon is by no means so uncommon in England as many think. Three or four summers ago, on a strip of sand three miles long at Morcambe Bay, I was able to see one almost every hot day, by simply stooping until my eyes were about a yard above the ground. The further part of the sand then appeared as a lake of water, with objects reflected, &c. The nearer edge of this lake receded as the eyes were raised, the whole soon becoming invisible. I saw the same effects last summer off the Holderness Coast, but again only by stooping. At Cambridge I have lately seen a very good lateral mirage, by looking closely

along the surface of a wall fifty yards in length, which had been exposed for some hours to a western sun. Objects near the further end of the wall were distinctly reflected.

CHAS. T. WHITMELL

Trin. Coll. Cambridge, Aug. 4

Science and the Government

THE announcement in your last number of a rumour that the Government is about to withdraw its promise of aid to the Total Eclipse Expedition, seems to bring to a climax the relations of the Government towards science. We can hardly forget that one of the prominent members of the present ministry, and the one considered to have the special control over the spending of the public funds, is member for the University of London. Mr. Lowe was sent to Parliament, irrespective of party considerations, as the representative of a body which thinks it has some claim to a leading place among the scientific institutions of our country. Is it not worth while to consider whether the views of the graduates of London University are represented in the present attitude of the ministry, and whether some representation might not be made to the Government, through the Chancellor of the Exchequer, of the manner in which the present relations between the Government and science are regarded by his constituents?

3, Park Village East, Aug. 20

ALFRED W. BENNETT

AROMATIC GLYCOL*

ALL chemists recollect the profound impression caused by the discovery of glycol in 1855 by M. Wurtz. Up to that time the bodies which were recognised as belonging to the group "alcohol" only included what we now call monatomic alcohols (common alcohol and its analogues), and M. Berthelot hesitated before venturing upon declaring glycerine a triatomic alcohol—an opinion to which Gerhardt never entirely adhered.

M. Wurtz showed that besides ordinary or monatomic alcohols, there are others which, when submitted to certain reagents where ordinary alcohols furnish only one, produce two derivatives. To these substances he gave the name of diatomic alcohols or *glycols*, and recognised that to each monatomic alcohol belonged a corresponding glycol, which only differed from it by the addition of an atom of oxygen. This new view became rapidly extended. It was admitted that belonging to each glycol there was, or might be, a triatomic alcohol or glycerine; that to each glycerine there might be a corresponding tetraatomic alcohol, and so on; these alcohols only differing from one another by the number of atoms of oxygen which they contained, the number being always denoted by the atomicity of the alcohol.

Shortly before M. Wurtz's discovery of glycol, Signor Canizzaro, now Professor at the University of Palermo, but then Professor at Genoa, had announced the discovery of a new alcohol, which he called benzylic alcohol, having to benzoic acid the same relation as vinous alcohol has to acetic acid. He had obtained this substance by the action of potash in alcoholic solution, on the essence of bitter almonds.

Some time later the same chemist discovered that this alcohol might be equally obtained by means of toluol (*toluène*). The method he employed was to subject chlorinated toluol to the action of acetate of potash; and finally to decompose the acetate of benzyl thus obtained by means of potash.

This benzylic alcohol was the starting point of a new series of alcohols known as aromatic monatomic alcohols, and in fact soon afterwards cumylic alcohol was obtained, and Signor Canizzaro himself shortly afterwards published his discovery of tolylic alcohol.

It should, however, be observed that the process by means of which Signor Canizzaro had obtained his benzylic alcohol from toluol, succeeded ill with the homo-

* "Sur un Glycol Aromatique." Par M. Edouard Grimaux.