

previously published investigations into the theory of earthquakes" (p. 260). The reviewer may not have been able or not taken the trouble to distinguish the old from the new; but as a fact, the greater part of those forty-six pages is of matter never before published.

So also it is scarcely candid to object that "no reference is found to any of the Continental men of science who have done so much for terrestrial vulcanicity," which is contrary to the fact, for I have referred by name or by their labours to the few who have in any way advanced our knowledge as to the nature and origin of volcanic heat, without noticing that within that scope only was I by space obliged to confine myself, as stated in pp. 48, 49, 54, 76, &c.; the phenomena occurring at volcanic vents, which have chiefly engaged the attention of Continental and all other volcanic authors being avowedly outside my limits, and, I might add, but too often of secondary importance.

The nomenclature generally of my "Translation of Palmieri" is said to be objectionable, because such terms as sulphide of potass and terrochloride of ammonia are encountered. I have looked through the pages since without being able to discover these dreadful terms. However I am ready to take the reviewer's word that such a slip in proof correcting may be found in some place, and I humbly bow to such microscopic, profound, and valuable criticism, though, as stated, the conclusion is a good deal wider than its premises. ROBERT MALLETT

Enmorz, The Grove, S.W., March 5

Effect of Resistance in modifying Spectra

IN a review of M. Guillemin's work "The Forces of Nature" which appeared in last week's *Alteuauum*, the following reference, by M. Guillemin, to the experiments of M. Mitscherlich is quoted: "Suivant ce physicien il arrive que la presence de certaines substances dans une flamme a pour effet d'empêcher de se produire les spectres des autres substances, d'entendre leurs raies principales." The English editor adds that the effect "may probably be explained by the observations of Frankland and Lockyer."

In relation to this subject of the extinction of the bands of one metal by another, you will perhaps permit me to quote a paragraph from one of the lectures which I have recently had the honour of delivering in the United States. The arcs of thallium and silver had just been compared, and their similarity of colour pointed out. The power of prismatic analysis to show that, notwithstanding the apparent identity of colour, the arcs really belonged to two different metals, was then demonstrated. The metals were afterwards subjected together to the action of the Voltaic current, and it was shown that the band of thallium fell midway between the two bands of silver. Hence the similarity of colour. The lecture then proceeds thus:—

"But you observe here another interesting fact. The thallium band is at first far brighter than the silver bands; indeed the latter have wonderfully degenerated since the bit of thallium was put in. The reason of this is worth knowing. It is the resistance offered to the passage of the electric current from carbon to carbon that calls forth the heating power of the current. If the resistance were materially lessened, the heat would be materially lessened; and if all resistance were abolished there would be no heat at all. Now thallium is a much more fusible and vaporisable metal than silver, and its presence facilitates the passage of the current to such a degree as to render it almost incompetent to vaporise the more refractory silver. But the thallium is gradually consumed; its vapour diminishes, the resistance consequently rises, until finally the silver bands are rendered as brilliant as at first."

In the spectra of mixed substances derived from the electric spark the action here referred to must come frequently into play. If neither the fact, nor its proposed explanation, be new, I would thank you to commit this document to your waste-paper basket. JOHN TYNDALL

Royal Institution, March 1873

Perception in the Lower Animals

THE theory of taking olfactory notes by the way, as suggested by Mr. Wallace in explanation of the faculty possessed by animals of finding their way home, seems to meet with general acceptance amongst your correspondents; yet it totally fails to account for those instances in which the animal finds its way back by quite a different route to that by which it was taken away.

A good example is given by "F. R. G. S.," in the last number of NATURE; the anecdote of his riding-horse, by Mr. Darwin, also seems to illustrate this point. In an article on the "Consciousness of Dogs," in the *Quarterly Review*, of last October, the following remarkable instance, amongst others, is mentioned on indisputable authority. A hound "was sent by Charles Cobbe, Esq., from Newbridge, county Dublin, to Moy-nalty, county Meath, and thence, long afterwards, conveyed to Dublin. The hound broke loose in Dublin, and the same morning made his way back to his old kennel at Newbridge, thus completing the third side of a triangle by a road he had never travelled in his life."

Now as Mr. Wallace's theory does not explain these and similar instances, it clearly cannot be received as a solution of the question. Moreover, not only does the faculty exist in other animals not remarkable for their sense of smell, but we find it in cases where this sense has nothing to do with it. Take, for example, the direct homeward flight of the carrier pigeon. Under the same head may be brought the migrations of birds and fishes, and the habits of the turtle, as mentioned by Mr. Darwin.

The writer in the *Quarterly* suggests a sense of the magnetic currents of the earth—a sort of internal mariner's compass in fact. But it is difficult to see how this could have helped the dog to find its way from Dublin to Newbridge, for instance, unless it was also able to consult a map so as to ascertain the relative position of the two places.

It seems then that the problem still remains unsolved. Either we must extend almost indefinitely the range of smell and sight; or, we must suppose the existence of some peculiar sense of the nature of which we are ignorant, which enables its possessor to retain, as F. R. G. S. expresses it, "a constant perception of the bearing of its old home." J. T.

Bath, March 17

POSSESSION ISLES

AS the idea of occupying Possession Islands as a station for observing the Transit of Venus has been lately propounded, I have been requested to communicate to NATURE the results as to its climate, which we have obtained in this office from the logs of H.M.S. *Erebus* and *Terror*, which we are now re-discussing with a view to publication.

Possession Isles are in lat. $71^{\circ} 56' S.$, long. $171^{\circ} 7' E.$ H.M.S. *Erebus* and *Terror* were within lat. 70° to $72\frac{1}{2}^{\circ} S.$, and long. 170° to $175^{\circ} E.$ from 10th to 17th January, 1841. During these eight days the mean height of the barometer was $29\cdot143$, mean temperature of the air $29^{\circ} 7$, and of the sea $30^{\circ} 5$; the wind was variable, but chiefly from S. and SSW, force 6; the weather was clear ten times, cloudy twenty times, overcast eighteen times, from forty-eight double sets of four-hourly observations, while snow was noted nine times, and squally weather ten times.

The ships were within the same area on 20th and 21st February, 1841; and, during these two days, the mean height of the barometer was $28\cdot920$ inches, mean temperature of the air $23^{\circ} 5$, of the sea $30^{\circ} 1$; wind WSW. to SE., force 9 to 5; the weather was cloudy and overcast.

In addition I am permitted to enclose a letter from Dr. Hooker, which he kindly sent me in reply to my inquiries as to his reminiscences of his visit to these inhospitable regions, and which he has allowed me to publish.

Meteorological Office

ROBERT H. SCOTT

Letter from Dr. Hooker

Possession Island, or rather Possession rock, is in a very inaccessible position. The chance of landing a well-equipped party upon it when reached, and the prospect of its subsequent removal by ships, if landed on, is very small. In any case I feel little uncertainty as to what would be the fate of a party left there for the winter, and the prospect of their seeing the transit would be absolutely *nil*.

To reach it we "took the pack" January 3, 1841, and had not penetrated it till the 9th, aided at last by a furious gale. We then discovered South Victoria, and traced its coast from lat. $70\frac{1}{2}^{\circ}$ to lat. 78° , without finding a spot where it was possible to approach the shore. During the