

silting up nor growth of coral water-worn caves, now well above high-water mark in the sandstone cliffs of Albany Island, and those of the mainland opposite, and in the existence along many parts of the coast, especially towards the north of the peninsula, of extensive tracts of level country now covered with sand dunes, bearing a scanty vegetation, stretching inland 10, 15, and 20 miles off, but which once bordered the sea" (Ratray, *Geology of Cape York Peninsula, Australia, Mine Journal*, vol. xxv. p. 297).

"An immense portion of the continent of Australia is known to be uprising. . . . The whole coast round to a distance of several miles inland is covered with recent shells; the drainage of the country is apparently altering. Lakes known to have been formerly filled with salt water are now filling up with fresh or becoming dry. The lagoons near the coast are filled with salt and brackish water, and their banks are filled with marine shells with their colours in many cases preserved. Reefs of rocks are constantly appearing in places where there were none formerly. At Rivoli Bay the soundings have altered so much as to make a new survey requisite. A reef has lately almost closed this harbour. Other reefs have appeared at Cape Jaffa, &c. It would appear that a vast movement is taking place in the whole of the south of Australia. In Melbourne the observations of surveyors and engineers have all tended to confirm this remarkable fact. In Western Australia the same thing is observed at King George's Sound, the same," &c., &c., and so on, for many pages. (See Wood's *Geological Observations in South Australia*, 135-207, and *passim*.)

The facts I have enumerated, which might be almost indefinitely multiplied, are sufficient to prove the position that every large mass of land near the South Pole which we can examine shows signs of upheaval, and justifies the conclusion that the circumpolar land is rising at both poles, and that there is a general thrusting out of the earth's periphery in the direction of its shorter axis.

I must modify the opinion expressed in a previous paper that the 57th parallel is the southern limit of upheaval in the northern hemisphere. The limit of upheaval is an irregular line. I believe that the district intervening between the two projecting poles, with its focus along the equator, is an area of subsidence. This conclusion I believe to be of crucial importance in solving both geological and meteorological problems.

H. H. HOWORTH

New Zealand Trees

I HAVE been greatly astonished by the perusal of a paragraph on New Zealand timber trees, which appears on p. 14 of the current volume of NATURE (No. 105, Nov. 2, 1871). Almost all that is said, either directly or inferentially in that paragraph is so grossly inaccurate that I cannot understand how such statements found their way into a periodical like yours. In the first place, the Rimu (*Dacrydium cupressinum*), the Matai (*Podocarpus spicata*), and the Totara (*P. totara*), are spoken of as if peculiar to the North Island, whilst the truth is that they are common to all parts of New Zealand. These trees are never "cut down wholesale" for firewood, except perhaps now and then when bush land is being cleared so far from other settlements that transport of the timber to any market is a physical impossibility. The woods enumerated are, Kauri (*Dammarris australis*), and the white pine (*Podocarpus dacrydioides*), the principal building timbers of the colony. The Rimu is not "valuable for furniture and all ornamental work," although some choice sections of it look well when carefully polished. Totara and Kauri look better when polished, but their brittleness spoils their usefulness for ordinary furniture work. When I deny that these timbers are "valuable" for cabinet work, I mean that they have not, and never will have, the value which attaches to mahogany, rosewood, walnut, and similar woods. That the Rimu, Matai, and Totara "are none of them Coniferae," is news to botanists on this side the world. All these trees are to be found in horticultural collections in England and Scotland, and it is to be regretted that the writer of this paragraph did not acquaint himself with them before he undertook to instruct others as to their botanical characteristics. But the most amazing of all the statements in this paragraph is that about the Rata (*Metrosideros lucida*). This appears to have been quoted from somewhere. I should very much like to know who is responsible for such a monstrous fiction. I can only conceive that its author has confused the Akakura (*Metrosideros scandens*) with the Rata

in his memory—he could never have confused the objects themselves when before his eyes. The whole story of the manner of growth of the Rata is utterly without foundation.

I may take this opportunity of mentioning that the description of *M. lucida* in Hooker's "Handbook of the New Zealand Flora" is inaccurate. The tree is there described as a small one, whereas it grows in the South Island to the dimensions of a large forest tree. Probably Dr. Hooker had to depend on information derived from North Island sources only. W.

Dunedin, N. Z., January 13

Earthquakes in the Philippine Islands

IN the middle of December, 1871, the volcano Albay in the S. E. of Luzon began to play, and threw out smoke, stones, and lava for several weeks.

The following phenomena have also to be recorded:—

1871.—October 8 and 9, at Pollok on Mindanao, sulphurous springs arose in the neighbourhood.

December 8 to 14, at Kottabato on Mindanao, very heavy earthquakes, which destroyed all the houses.

1872.—January 29, at 7 P.M., at Manila, three slight shocks from E. to W., which I witnessed.

Manila, Feb. 5

A. B. MEYER

Height of Auroras

ALLOW me to suggest the following rules, to be attended to by those who incline to make observations on the heights of auroras:—

1. Observations to be made at the exact hours and half hours, Greenwich mean time.

2. If there is an arch, the position of the apex of its central line should be noted with reference to the stars; or else its altitude should be ascertained carefully, and its azimuth approximately. If the lower or the upper edge of the arch is well defined, give similar particulars respecting it. State the width of the arch; state whether it is regular or not. If it is somewhat irregular, instead of its actual position, give that of an imaginary arch having its average position.

3. If there is any other very conspicuous feature, its position among the stars may be observed; care being taken to describe it sufficiently for it to be recognised in any account from another place. But the position of the corona, or point to which the rays converge, is of no value for determining the height of the aurora, for it is merely an apparent phenomenon.

Observers must not consider themselves tied down to observe on every occasion; any observations, if made in accordance with these rules, may be useful. If they are sent to me, I will endeavour to calculate the aurora's height from them, unless some one else volunteers to take them in hand.

T. W. BACKHOUSE

West Hendon House, Sunderland, March 20

Eccentricity of the Earth's Orbit

I SHALL feel obliged if some of your correspondents would inform me if, with the exception of Grant's Physical Astronomy, there is any treatise or encyclopædic article on Astronomy, published in this country before 1864, where the superior limit of the eccentricity of the earth's orbit, as determined by Lagrange or by Leverrier, is given; or even any reference made to the researches of these geometers on the subject.

Edinburgh, March 11

JAMES ELLIS

Barometric Depression

IN Mr. Monck's article on barometric variations in NATURE of 21st inst. there is a serious mistake about the theory of trade-winds. He says the trade-winds would probably extend to the poles were it not that the parallels of latitude become so narrow before reaching them. The trade-winds are east winds; and if, as is certainly the case, the only motive power acting on the earth's atmosphere is the sun's heat, it follows from the law of the conservation of rotation that the total force of the east and west winds must exactly balance each other. This must be the case even were the earth of some other form than a sphere.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, March 25