reasonable explanation of why the α particle ceases to produce ionising and other effects at a stage when it possesses a much greater amount of energy than that which is known to be required by a positive ion to produce other ions by collision. These effects would cease when the uncharged particle was no longer able to become ionised by colliding with a neutral atom. The energy (about 10^{-6} ergs) which it then possessed would represent the minimum energy which an uncharged particle must possess in order to shake out an electron on collision with a neutral atom.

Even if these speculations are ultimately disproved by the facts, it is interesting to note that, with such a constitution for the α ray, the experiments would measure the velocity correctly, whereas the mass, and therefore the kinetic energy, would be erroneous to the extent indicated.

Princeton, N.J., U.S.A. O. W. RICHARDSON.

The Effect of Radium on the Strength of Threads.

WE have carried out some experiments with cotton threads in continuation of those described by Miss Martin and one of us in NATURE of August 17, 1905. The following is a summary of the results obtained :—

No difference in the effect was found when the emanation was continuously removed during the exposure by a current of air. The same negative result followed an experiment in which it was sought to remove oxygen and moisture from the neighbourhood of the threads by enclosing radium and threads along with phosphoric anhydride in a tube from which the air was exhausted, some metallic sodium being afterwards heated to fusion in a side tube.

When threads or a piece of filter paper, after exposure to radium, are dyed with methylene blue, the exposed part is found to take a deeper colour than the rest. This is given as a test for the presence of oxycellulose.

A series of three-day exposures was made at increasing distances from the radium. The effect was found to become inappreciable at 18 mm. distance. When the weakening produced was plotted against distance, the curve showed a corner at 9 mm., suggesting the similar feature found by Prof. Bragg and others on the ionisation curves of α rays to mark the end of the effective range of one set of rays.

A comparison under the microscope of the broken ends of exposed and unexposed threads showed that the fibres in the former case were straight up to their ends, while the unexposed fibres were curled back on themselves. This would indicate a loss of elastic quality through the action of the radium.

J. L. MCKEE.
W. B. MORTON.

Queen's College, Belfast, December 27, 1906.

The Upheaval of the Sea Coast by Earthquakes.

THE question so long discussed by geologists concerning the upheaval of the land by earthquakes has been impressively revived by recent events. In the San Francisco *Argonaut* of November 3, 1906, Prof. H. D. Curtis, of the D. O. Mills Expedition of the Lick Observatory at Santiago, Chile, reports that the harbour at Valparaiso is now 10 feet shallower than before the earthquake of August 16, 1906, and he concludes that the movement was mainly vertical. In the Bulletin of the Geological Society of America for May, 1906, Messrs. Tarr and Martin give a memoir on the changes of level at Yakutat Bay, Alaska, produced by the great earthquake of September 3–20, 1899, two of the most terrible shocks of which occurred on September 10 and 15. The investigators prove conclusively that an uplift occurred extending along the whole Yakutat coast for more than a hundred miles, the maximum movement in Disenchantment Bay being 47 feet 4 inches. Uplifts of 7 feet to 20 feet were common, while slight subsidences also occurred in a few places.

In view of these facts, how can anyone claim that the earth is entirely solid and deny the vertical movement of the land under earthquake forces, as is done by Prof. Suess in his great work on "The Face of the Earth"?

T. J. J. SEE.

U.S. Naval Observatory, Mare Island, California, December 8, 1906.

THE observations of Messrs. Tarr and Martin in Yakutat Bay undoubtedly form a valuable addition to the knowledge we possess respecting sudden adjustments in the earth's crust.

In September, 1899, a portion of the west coast of Alaska was shattered. Fault lines were created or extended, and the displacements along these lines have been measured. On January 31, 1906, off the coast of Columbia, and on April 18 of the same year in Central California, rock movements similar to those at Yakutat were recorded. Every world-shaking earthquake—and there are about sixty of these per year—is an announcement of a molar movement. We do not know the magnitude of the masses involved, but from measurements like those made by Messrs. Tarr and Martin we may estimate them as being represented by one or two million cubic miles of rocky material.

J. M.

Emerald Green Sky Colour.

THE account of the colour of the sky on December 10, 1906, sent by your correspondent from St. Moritz closely resembles an experience of a friend and myself on December 27.

We were returning from a geological ramble to the west of Crediton, in Devonshire, and were walking eastward, while behind us and gradually overtaking us there had been for several hours a thick snowstorm which later on was to envelop us. Between three and four o'clock in the afternoon we remarked the peculiar appearance of the sky; in your correspondent's phrase, there was "instead of the usual blue, a fairly large expanse of vivid emerald green." I may add that the ground was everywhere white from previous snow.

It will be seen that the conditions in Devonshire on December 27 correspond as regards time of day, point of compass, and state of atmosphere with those observed at St. Moritz on December 10.

With J. W. Noble I shall await with much interest the explanation.

F. G. COLLINS.

Exeter.

Perception of Relief by Monocular Vision.

THE following fact seems to show that the aperture of the pupil plays an important part in the perception of relief by monocular vision.

When a polyhedron made of wire is looked at through a small pin-hole pierced on a piece of card, and the pin-hole is moved about slightly, the polyhedron seems to rotate a little about an axis perpendicular to the direction of motion of the pin-hole. The effect is most remarkable by lamplight, when the pupil is more dilated than it is in broad daylight.

T. TERADA.

Science College, Imperial University, Tokyo, November 15.

THE GEOLOGY OF THE GERMAN ANTARCTIC EXPEDITION.[1]

THE most striking geographical achievement of the German Antarctic Expedition was its determination that Antarctica occurs farther north in western Wilkes Land than had been inferred by some authorities from the work of the *Challenger*. Prof. von Drygalski and his comrades have re-established faith in Wilkes's Termination Land; as from their Kaiser Wilhelm Land they saw high land to the north-east, only about one hundred miles from the site assigned by Wilkes to his Termination Land. The most fully investigated locality in the newly discovered Kaiser Wilhelm's Land is the Gaussberg, a basalt mountain on the southern shore of the bay in which the *Gauss* reached its farthest south.

1 "Deutsche Südpolar-Expedition, 1901–1903." Edited by Erich von Drygalski. II. Band, Kartographie, Geologie, Heft i. Pp. 87, 1 map, 8 plates. (1) E. von Drygalski: Der Gaussberg, seine Kartierung und seine Formen. (2) E. Philippi: Geologische Beschreibung des Gaussberges. (3) R. Reinisch: Petrographische Beschreibung der Gaussberg-Gesteine. (Berlin: G. Reimer, 1906.) Price 18 marks.