

penetrating to the Independent Indians of Eastern Yucatan from the western part of the peninsula, which remains Mexican. But should this not be possible from Belize (British Honduras)? I have heard that the coloured people of the colony trade with the Mayas. Would it be possible then to obtain some information in this way?

As to the interest of a visit to the Maya country by an educated traveller it would bear especially (1) on the condition of the people since they are free from their white masters. How does it compare with the condition of the Mayas of Western Yucatan, who live in a *de facto* serfdom to the large landowners? (2) The antiquities, of which we have a description by Stephens, but certainly would know more. Very likely the Mayas will allow a white man who is not a Spanish-American to travel in their country; they have no special reason to hate anybody except the latter.

A. WOJIKOF

Jurschtatskaya, 9, St. Petersburg, March 25

Deltaic Growth

IN reference to the question as to the amount of sediment brought down by Delta Rivers, I had occasion in 1877 to ascertain the amount of sediment carried by the waters of the River Plate, and found it to amount to the $\frac{1}{11}$ and part by weight. Mr. J. F. Bateman, the well-known hydraulic engineer, in his report on the proposed harbour of Buenos Ayres, fixes the minimum flow of the River Plate at 670,000 cubic feet per second. Assuming its mean volume at 700,000 cubic feet per second (a quantity very much under the mark), it would appear that this river carries seaward some 224,000 tons of sediment every twenty-four hours—or say, in round numbers, 82,000,000 tons every year.

Some portion of this sediment is deposited in the 100 miles of river that intervene between Buenos Ayres and the sea, forming the great banks that render the navigation of the River Plate so troublesome, but a large portion is carried out to sea and deposited beyond the mouth.

I have been informed by captains of steamers trading with Buenos Ayres that the soundings shown on the chart of the coast of Uruguay vary considerably, in many places, from the actual ones now existing, and I have little doubt that a correct re-survey of this coast would show changes as marked as those discovered by Mr. Doyle near Rangoon.

The subject is one of great importance, as the coast of Uruguay is a difficult and dangerous one to make, and from the low character of the coast, the frequency of fogs, and the great uncertainty of the currents, captains have frequently to depend a great deal on the lead to ascertain their position when making this land. During the last few years several fine steamers—French, German, and English—have been lost on this coast near the Castillos, when making the land.

GEORGE HIGGIN

3, Great George Street, Westminster, S.W., April 10

Temperature Equilibrium in the Universe in Relation to the Kinetic Theory

My attention has been called to an ambiguous phrase in my recent paper¹ on the above subject (NATURE, vol. xix. p. 460) which it is necessary to rectify. On page 461 is the sentence "Let us suppose now the excessive temperature to fall, or, in other words, the total energy to diminish." This is meant as a supposition, not as a possible case. The imaginary rise and fall of temperature in the universe are given merely for the sake of aiding the conceptions of the actual facts, by affording imaginary cases to show what the effects would be if such cases were possible.

S. TOLVER PRESTON

London, April 15

Transportation of Seeds

THE penetration of seeds of the so-called "flechilla" grasses into the flesh of Australian sheep is too well known to squatters. On some "runs" these grasses are so abundant that the annual loss of stock is a very serious matter. The ripe seed falls upon the wool, and, owing to the re-curved barbules with which it is armed, easily penetrates to the skin, when, its point being as sharp as a needle, every movement of the animal tends to drive

¹ "On the Possibility of Explaining the Continuance of Life in the Universe Consistent with the Tendency to Temperature-Equilibrium."

it into the flesh. I have found the internal organs so crowded with seeds that they felt like a bag of needles if squeezed in the hand.

ARTHUR NICOLS

Earthquakes

A SHOCK of earthquake was felt in this neighbourhood on the evening of Tuesday, April 8, at 8'35 (about). We were sitting in the drawing-room of this house, when we heard a sound like the rumbling of a heavy waggon, or distant thunder. It increased in loudness till the room slightly vibrated and the window rattled, as it seemed to pass the house. From the peculiar nature of the sound, and the fact that we are some 50 feet above the road, and 80 or 100 yards from it, I felt certain the disturbance was due to an earthquake and not a passing waggon, but walked to the window to listen, when I heard the sound dying away in the distance. It seemed to come from the south-east, and travel towards the north-west, and to be audible, from first to last, for some seconds, perhaps five or six, because we spoke one to another during the time. I find that the shock was noticed by other people in the neighbourhood, and that in a cottage near Bettws Gormon, a mile or so from here, two glass bottles were thrown down from a high shelf and broken.

T. G. BONNEY

Bron Celyn, near Bettws y Coed, North Wales, April 10

WE were visited by an earthquake of some violence this morning at 2 A.M. (Cadiz mean time). The shock was preceded by a profound subterranean noise like that of a distant carriage, and it extended to Port St. Mary and Port Royal (six miles). The earthquake travelled from south to north approximately; some clocks stopped.

AUGUSTO T. ARCIMIS

Cadiz, April 3

OUR ASTRONOMICAL COLUMN

BESSEL'S NEBULA IN PERSEUS.—On November 8, 1832, in zone 527, Bessel observed an object, which he recorded as a nebula, distant about one degree from 20 Persei. It is No. 1,063 of Weisse's second Catalogue, where, though called a nebula, it has 9m. attached. D'Arrest, in his "Resultate aus Beobachtungen der Nebelflecken und Sternhaufen," has two observations, in January, 1856, to the first of which he attaches a note that no nebulosity was visible in Bessel's position, and that possibly a comet was observed; the second observation records a star 9'10m., without trace of nebulosity or diameter, the place of which was found to be within a few seconds of arc from Bessel's position, preceded 24'25s. by a star 9m., 76" to the north. In "Siderum Nebulosorum," &c., D'Arrest remarks: "Star 9m. quæ Besselio quondam nebulosa apparuit . . . Argelandro in Perustratione ceu fixa 9'3 magn. apparuit; nobis sæpius insipientibus nunquam nebulosa visa." This refers to the star in the "Durchmusterung," at 2h. 43m. 56'5s. + 36° 54'2"; Argelandro has another star of the same magnitude, 9'3, 10' south. Are we to infer that Bessel's star was surrounded in 1832 by nebulosity so conspicuous that it was caught at once in his zone observations, which had wholly disappeared in 1856, or, as appears the more probable conclusion, that at the time of his meridian observation a comet happened to be centrally over the star? In this case the observation gives its place for 1832 November 8 at 10h. 10m. 25s. G.M.T.; the catalogued position for 1825'0 is in R.A. 2h. 42m. 5'56s., Decl. + 36° 46' 46"7.

This observation of Bessel's might at first sight appear of some interest, considering that the comet of the November meteors (1866 I.) must have been near perihelion about November 1832, but upon further examination it will be found that with the elements of 1866 it is not possible to bring the comet near the observed position of the "nebula," upon any assumption as to the time of its arrival in perihelion.

BROSEN'S COMET.—Comparing the second of the two observations on April 4, in Major Tupman's letter pub-