

the Pampas. During the long periods of drought which are so great a scourge to the country, these animals are starved by thousands, destroying, in their efforts to live, every vestige of vegetation. In one of these siecos, at the time of my visit, no less than 50,000 head of oxen and sheep and horses perished from starvation and thirst, after tearing deep out of the soil every trace of vegetation, including the wiry roots of the Pampas grass.

Under such circumstances the existence of an unprotected tree is impossible. The only plants that hold their own, in addition to the indestructible thistles, grasses, and clover, are a little herbaceous oxalis, producing viviparous buds of extraordinary vitality, a few poisonous species, such as the hemlock, and a few tough, thorny, dwarf acacias and wiry rushes, which even a starving rat refuses.

Although the cattle are a modern introduction, the numberless indigenous rodents must always have effectually prevented the introduction of any other species of plants, large tracts are still honeycombed by the ubiquitous biscacho, a gigantic rabbit, and numerous other rodents still exist, including rats and mice, Pampas hares, and the great nutria and carpincho on the riverbanks. That the dearth of plants is not due to the unsuitability of the subtropical species of the neighbouring zones, cannot hold good with respect to the fertile valleys of the Andes beyond Mendoza, where a magnificent hardy flora is found. Moreover, the extensive introduction of European plants which has taken place throughout the country has added nothing to the botany of the Pampas beyond a few species that are unassailable by cattle, such as the two species of thistle which are invading large districts, in spite of their constant destruction by the fires which always accompany the siecos. EDWIN CLARK

Marlow, January 15

### Japanese Magic Mirrors

IN your last week's issue (p. 249) appears a paragraph from a paper by Dr. H. Marooka of Tokio on "The Magic Mirror of Japan," and reference is made to the interest these mirrors have excited, and the large number of writers and lecturers who have taken up the subject of their construction. I have read most of what has been written and stated upon the subject, and dissent from all that has come under my notice, especially the ingenious theories of non-continuous convexity of surface. My reason for dissent is that I have seen one, and for some time it was placed in my care by a friend who made it himself in this country.

He, and I have no doubt correctly, assumed that the difference in reflection was due to difference of density, and that by hammering the flat surfaces of the large letters on the back of the mirror, an increased density would be produced which would extend to the front of the mirror, which would then receive a slightly higher polish, sufficient to give the magical figures. From this reasoning he concluded that any metal which could be polished so as to reflect well could be treated in the same way with the same results.

His first experiment was with a half-crown piece, and the success was complete; he had the reverse rubbed down, until a perfectly smooth and polished surface was produced, the reflection from which, on white paper and with a strong light, showed the head of the obverse quite distinctly, but differing from the magic mirrors in this respect, that it was less bright than the other portion of the disk, because the coining-press would bring its greatest pressure upon the field and not upon the type. T. C. A.

Edinburgh

### Peculiar Ice-Forms

I INCLOSE a letter with which I have been favoured giving another case of the curious ice-structure lately described in NATURE. The circumstances are very similar to those of the other cases. B. WOODD SMITH

Hampstead, January 16

Regent Road, Leicester, January 13, 1885

DEAR SIR,—Pray excuse my troubling you with an extract from my note-book as to a peculiar form of ice which I saw on the morning of September 21, 1880. I started to descend from the Egg horn hotel a little before 6, and when I suppose that I was about a thousand feet down, just before coming to the wood, I noticed some curious-looking ice just along the bottom

of the sloping sides of the path, which here runs in a shallow gully two or three feet deep. The ice ran along the side of the path for some yards. I took up several pieces in my hands and examined them, and made a rough sketch, which I reproduce without any additions. The ice was made up of bundles of little rods about one-sixteenth of an inch in diameter and half an inch long. They were roundish and rough or fluted on their sides, and tapered at each end, and in some cases the ends finished with a little thread of ice about a quarter the thickness of the body of the rod. The rods stuck together and were a little curved, and formed roughly two layers, or tiers, one above the other. My note states that these bundles of ice-rods lifted up the dirt and small stones on the top of them. The day before there had been snow with a thaw.

My impression was at the time that water, rising through the ground and being frozen just before it reached the surface, gave rise to these peculiar ice-forms.

You are quite at liberty to make any use you please of this note. I am, dear Sir, yours faithfully,

JOHN D. PAUL

### Iridescent Clouds

THE iridescent colours in clouds, observed in England and Scotland in December last, were also visible here December 8, 9, 10, and 12. On the first day, about 3 p.m., the coloured clouds were arranged in a horizontal layer about 20° high, between 20° and 80° azimuth west. In the half altitude a fine stripe broke forth from the background of the ordinary (but not dense) cumulo-stratus.

The opinion of one of your correspondents that a connection exists between this and the sky-glow of the last two years, is contradicted by the circumstance that the phenomenon has been observed here several times before, viz. 1871, February 22, March 1, May 10; 1874, January 13; 1875, February 17; 1881, December 27; 1882, January 11, February 22, July 13. I make the following extract from the observation of 1882, January 11, showing the peculiar changes in the colours:—at 3.30 p.m. (sun set at 3.20) extremely beautiful iridescent cirro-stratus in south-west, in an altitude of 8°–12°. The upper borders, later also the lower, were red, with yellow brims, the rest of the borders and the inner parts very variegated and variable; the light red, commonly seen in mother-of-pearl, changed through crimson into blue-green, and then into grass-green. On some spots this change was repeated twice. The variation of the colours continued till after 4 o'clock; at 4.30 the colour was the ordinary red. The form of the clouds varied very slowly.

1881, December 27, an isolated brilliantly-coloured cloud was observed through two hours at least. A drawing of it by Dr. Reusch (in woodcut) is inserted in the Norwegian *Naturen* 1882, No. 1.

The most striking cases of this phenomenon have been observed here when mild and dry weather set in after frost.

H. GEELMUYDEN

University Observatory, Christiania, January 11

### Solar Phenomenon

AS I see no record of what I witnessed on the afternoon of the 14th instant in NATURE of the 15th, I trouble you with this brief statement. At 3h. 20m. p.m. on that day I was struck by the appearance of the sun, which was crossed by a light stratus cloud of a clearly-defined outline, below which appeared what seemed a column of light of uniform width, down to the horizon, the width being somewhat less than the sun's diameter. By 3h. 30m. the definition of this parallel beam was less marked, but the sun presented to me the appearance of an oblong, suggesting three partially-superposed disks. Soon afterwards the sun was wholly obscured. The day had been cold, the temperature being never far from freezing-point in the shade. I have on former occasions, and in summer, seen the parallel beam striking upwards, once in association with a mock sun.

Valentines, Ilford

C. M. INCLEBY

### A Carnibal Snake

WITH reference to notes as to Ophiophagous snakes, which appeared at pp. 216, 269, 312, and 408 of the last volume of NATURE, I inclose a communication received by me this morn-

ing from Borneo. The habit seems general, and, according to the above letters, not confined to venomous or non-venomous varieties.

EDWARD F. TAYLOR

St. Augustine's College, Canterbury, January 13

"Sarawak, Borneo, November 11, 1884

"The inclosed cutting from NATURE was sent me by H. Brooke Low, Esq., resident of Rejang, with a desire that I should forward my experience (which was similar to Mr. Evans's) to your paper. A young Dyak youth was walking up the hill towards my house, when a snake sprang out of the bank and fastened itself on the boy's jacket, just under the right arm. Fortunately, its fangs got caught in the cloth, and the boy escaped unhurt. Eventually, the reptile was killed and brought to the house. It measured five feet and some odd inches in length. In examining its fangs I noticed in its mouth the tail of another snake, and, on pulling it out and comparing them, I found it to be a few inches longer than the outside snake, though not quite so thick. I have come to the conclusion that this snake is the *Ophiophagus elaps* of the Straits. The native name for it is 'Ular Kendawang.' It is more deadly, more agile, and more beautifully marked than the 'Ular biliong' mentioned by Mr. Evans. So fascinatingly beautiful is the appearance of this snake, that in Dyak poetry one of their heroes is described as 'Crowned with the cast skin of the Ular Kendawang,' thus attributing to the hero that comeliness, agility, and fearlessness for which the 'Kendawang' is noted. I have reason to believe that the 'Ular biliong,' or axe snake (from the shape of its head), mentioned by Mr. Evans is an *Ophiophagus*, but it is not what is called the 'Elaps.' Its movements are sluggish, and its poison is not nearly so deadly as that of the 'Kendawang.' The distinctive marks of the 'Kendawang' are a reddish head and tail, the red of the tail being about twice the length of the head. The ground colour of the body is generally of a dark gray, but I have seen them of a silver gray, and also dark brown. A light streak of flesh-colour runs down the back, and the edges of it are variegated with vermilion and metallic-green spots, with just enough of white and yellow to make a most pleasing combination of colour. Besides these two, there are two other species belonging to the *Ophiophagus* class. The native names are 'Kengkang mas,' or 'Tinchin mas,' i.e. golden-ringed; and 'Matikor,' i.e. dead-tailed, and these four species are, I believe, very common throughout the Malay Archipelago.

"M. J. BYWATER,

"S.P.G. Missionary in Sarawak"

### The Canadian Geological Survey

A PHRASE used in your condensed report of my remarks after Sir J. H. Lefroy's paper, read on January 13 at the Colonial Institute, may, I fear, be misunderstood by some of my friends in Canada. I am reported speaking of the Geological Survey of that country as "being slowly conducted." My remarks were not intended to imply the slightest reproach. I explained that progress could not be rapid because of the vast extent of the territory and the natural difficulties of many parts of it. I think, indeed, that it is surprising that, having regard to the means at their disposal, the Survey have accomplished so much. I urged that, as it was impossible for the present staff to prospect specially for minerals without abandoning the general work of surveying, which is of the more importance for science, some specialist should be added to it, to whom the former duty should be assigned. I did not use quite so strong a phrase as that I "believed the district north of the St. Lawrence was rich in valuable minerals." My opinion is that, as certain parts are known to be rich, and as there is great uniformity in the geology of the district, it is very probable similar deposits exist in the (very large) unexplored portion.

T. G. BONNEY

23, Denning Road, Hampstead, N.W., January 19

### ASTRONOMICAL PHENOMENA FOR THE WEEK

1885, JANUARY 25-31

(AS an experiment we have here adopted for the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24.)

### At Greenwich on January 25

Sun rises 7h. 50m.; souths 12h. 12m. 40.9s.; sets 16h. 35m.; Decl. on meridian 18° 50' S.; sidereal time at sunset oh. 55m.

Moon (1 day past First Quarter) rises 11h. 55m.; souths 19h. 29m.; sets 3h. 12m.\*; decl. on meridian 15° 59' N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury ...	6 23 ...	10 27 ...	14 31 ...	21 47 S.
Venus ...	6 31 ...	10 29 ...	14 27 ...	22 44 S.
Mars ...	8 6 ...	12 29 ...	16 52 ...	18 54 S.
Jupiter ...	19 6* ...	2 7 ...	9 8 ...	11 10 N.
Saturn ...	12 43 ...	20 46 ...	4 49* ...	21 32 N.

January 26, 16h.—Mercury at greatest elongation from the Sun, 25° W.

### Occultations of Stars by the Moon

Jan.	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to left
			h. m.	h. m.	
26 ...	B.A.C. 1526 ...	6 ...	19 13 ...	19 49 ...	19 328
27 ...	B.A.C. 1930 ...	6½ ...	20 38 ...	21 30 ...	33 316
29 ...	λ Geminorum ...	3½ ...	2 23 ...	3 21 ...	132 284
30 ...	B.A.C. 3122 ...	6½ ...	20 54 ...	21 59 ...	30 237
31 ...	π Leonis ...	5 ...	17 53 ...	18 35 ...	5 255

### Phenomena of Jupiter's Satellites

Jan.	h. m.		Jan.	h. m.	
25 ...	4 1	I. tr. ing.	27 ...	0 47	I. tr. egr.
	6 21	I. tr. egr.		19 8	I. ecl. disap.
	21 40	IV. tr. egr.		21 33	II. ecl. disap.
26 ...	0 40	I. ecl. disap.		21 58	I. occ. reap.
	3 31	I. occ. reap.	28 ...	1 33	II. occ. reap.
	3 52	II. tr. ing.		19 13	I. tr. egr.
	6 47	II. tr. egr.	29 ...	19 54	II. tr. egr.
	7 27	III. ecl. disap.		23 19	III. tr. ing.
	22 28	I. tr. ing.	30 ...	2 54	III. tr. egr.

\* Indicates that the rising is that of the preceding, and the setting that of the following nominal day.

### DUST<sup>1</sup>

MY business this evening is to talk about dust: meaning by dust all suspended foreign matter of whatever kind, and including smoke and fog under the one heading. Coming from England I should naturally begin by saying, well, we all know what dust and smoke are; and even in Canada, I suppose, I may venture to say the same, though I am bound to say that your country, at present, shows a remarkable deficiency in this respect. In an English town dust and smoke are the most noticeable features, and are always ready to perform any insanitary or other function that may be expected of them. In this clear atmosphere none of these functions can be properly performed; disease-germs must languish and die, and their sworn foes, the white corpuscles of the human blood, must thrive amain. Let me say, however, that the air here is not so absolutely free from smoke as I had hoped to find it. Compared with an English town it is a splendid contrast; compared with one's ideal it falls short. Your houses may indeed burn anthracite and wood, but your passenger locomotives do not: I can attest from very recent personal experience, in a journey across this continent, that some of your locomotives emit almost as much smoke as a Clyde steamer, and that the journey would have been much pleasanter if they had emitted less. I also see some factory chimneys rising here and there. If you be not warned in time, you will not realise the blessing of fresh and pure air until you have lost it. It is good to have large manufactures, it is better to retain healthy and pure air. But with proper care the two may go together. Once lose ground in this respect, as we have done in

<sup>1</sup> Evening discourse to the British Association at Montreal, on Friday August 29, 1884, by Oliver J. Lodge, Professor of Physics in University College, Liverpool