

of Mammoth-tusks in the frozen mud of Siberia, and by the wonderful aggregation of Hippopotamus-bones revealed to us by Dr. Falconer's explorations in the Palermo caves—be also taken into account, we can scarcely, as it seems to me, avoid the conclusion, that the period in the later stages of which we get the first indubitable evidence of Man's existence (to say nothing of any anterior to it) was much more distinguished than the present for the aggregate bulk and wide distribution of the largest members of its fauna.

WILLIAM B. CARPENTER

CAN Mr. Wallace throw any light on Mr. Allen's somewhat extraordinary sentence: "I feel a genuine respect for every donkey I meet, *when I remember that it was the mere accidental possession of an opposable thumb* that gave my ancestors a start over his in the race for the inheritance of the earth towards the very close of the tertiary period." I take Mr. Allen to be an evolutionist, but there is no place for accident in evolution, or in any other scientific theory. The "opposable thumb" must be the result of some conditioning factor, and this being so the word accident is quite out of place.

¶¶

February 27

Moths Attracted by Falling Water

WHILST watching the great horse-shoe falls of the Skjál-fandafljót near Ljósavatn in Iceland, I saw moth after moth fly deliberately into the falling water and disappear. Some which I noticed arriving from a distance, fluttered at first deviously, but as they neared the water flew straight in. The gleaming falls seemed at least as attractive as artificial light, and if the fact has not been observed in this country I should suppose it is because the moths likely to be attracted, fly by night, whilst in Northern Iceland there is no night during the summer. The preference trout show for pools near falls is more likely to arise from the extra food they find there, than the more aerated state of the water. The latter supposition, seeing the number of species of lake trout, always seemed to me a lame one, invented for want of a better, whilst the former explains why broken water is always inhabited by insectivorous fishes. The instinct of self-destruction in moths must be older than the introduction of artificial light, and cannot be of use exclusively to collectors, but though its benefits to salmon and trout are obvious enough, its advantages to the moths are not so apparent, unless this self-devotion checks an increase that otherwise would be disadvantageous.

J. STARKIE GARDNER

Hypothetical High Tides

I HAVE no desire to constitute myself a champion of Mr. Ball's high tides, but I do not think that the testimony of the Coal-Measures, to which Mr. S. V. Wood calls attention, will decide much. These deposits are mainly of non-marine origin, the plants being terrestrial, and the prevailing mollusc, *Anthracosta*, closely resembling *Unio*. Marine strata do indeed occur, but in almost inappreciable proportion. If it be objected that, in these marine episodes, the hypothetical tidal wave must have wrought fearful havoc; I would suggest that there is no proof that in the Carboniferous epoch the speed of the wave was enormously greater than at present. When we reflect that by that time nearly, if not quite all the classes of the animal kingdom had come into existence; we can hardly avoid the conclusion that the Coal-Measures were formed in a period which, in comparison with the age of the globe, must be regarded as comparatively recent. Considering how slight is the denuding power of modern tides, I doubt if even a treble velocity would materially increase the effect.

Mr. Eldsen's suggestion that the accelerated tidal wave may account for the absence of estuarine deposits before the Carboniferous epoch, takes for granted what remains to be proved. How do we know that there were no pre-Carboniferous deltas? We recognise estuarine strata by the intermixture of terrestrial or fresh-water fossils with marine organisms. The Old Red Sandstone of Britain, being a lacustrine deposit, does not bear upon the question; but I see no reason why the Devonian strata of Russia, in which, according to Murchison, fresh-water fishes are associated with marine shells, may not be in part of estuarine origin. Below the Devonian, the evidence of terrestrial life is very meagre; and to infer from its absence in a set of beds that they must be marine, would be hazardous reasoning.

I do not make these observations in the interests of any theory, but simply to evoke discussion on a very interesting question.

Wellington, Salop, March 3

C. CALLAWAY

Rime Cloud observed in a Balloon

I SEE in NATURE, vol. xxv. p. 385, an interesting letter from a German physicist, who comments on the recital of my last balloon ascent (January 25, 1882) as published in your columns. I am very grateful for the numerous instances of *frost-rime* that he quotes as having been observed on former occasions, but I cannot possibly admit his theory of the liquidity of minute water-drops suspended in the air at a low temperature. The reason why I object to this view was explained more than a century ago by the celebrated Bouguer, when describing in 1744, to the French Academy of Sciences the corona he observed in the Andes on the occasion of his ascending the Pichincha. I beg leave to quote this interesting account of a quite forgotten exploration:—

"On voit presque tous les jours sur le sommet de ces montagnes un phénomène extraordinaire qui doit être aussi ancien que le monde, et dont il y a bien de l'apparence que personne n'est été témoin avant nous. Chacun de nous vit son ombre projetée sur un nuage qui n'était point à trente pas. Le peu de distance permettant de distinguer toutes les parties de l'ombre—on voyait le bras, les jambes, la tête; mais ce que nous étonne c'est que cette dernière partie était ornée d'une gloire ou d'une aureole formée de trois ou quatre petites couronnes concentriques d'une couleur très vive, chacune avec le mieux nuance que l'arc-en-ciel primaire, c'est à dire le rouge en dehors.

After having insisted on the description of the phenomenon (*Mémoires de l'Académie* pour 1744, p. 264 and 265), Bouguer says:—"Le phénomène ne se trace que sur les nuages formés de gouttes de vapeur et même sur ceux dont les portraits sont glacées, mais non sur les gouttes de pluie comme l'arc-en-ciel." Having seen the *corona* for more than an hour, almost without interruption, and nothing resembling a rainbow, I cannot possibly admit any liquid water in the cloud, and I am obliged to oppose the surfusion theory as advocated by M. Jamin, to explain the crushing by ice-crystals of the loftiest trees of the Forest de Fontainebleau.

W. DE FONVIELLE

Paris, February 26

The Markings on Jupiter

MR. DENNING's interesting communications in NATURE (vol. xxv. pp. 223, 265) led me to consult my notes of observations of Jupiter made in the summer of 1878. I used a telescope of only $3\frac{3}{8}$ inches aperture, but of exquisite definition, made by John Byrne, of New York. Under date of July 7, 1878, I find this entry:—"10 p.m.—There is a remarkable light spot near the centre of the light equatorial zone of Jupiter."

On July 27 I wrote:—"I saw on the bright equatorial belt of Jupiter a spot of obviously greater brightness than any other part of the disk. Just above and to the west of it was a dark spot on the southern belt. The bright spot grew more distinct as it approached the centre, and caught the eye the instant it was placed at the eyepiece. The bright spot was equal in diameter to about two-thirds of the width of the south belt."

Again on July 31:—"Saw a white spot on the light equatorial belt, probably the same seen on the 27th."

I have also sketches of Jupiter made in the fall of 1879, from which I see that on September 4, at 10 p.m., there was a distinct white spot indenting the northern border of the great south belt, and opposite the forward end of the red spot. On September 6 this white spot had advanced, so that it was ahead of the red spot. Other fainter white spots are shown in my sketches. These rude observations may be of some use in assisting Mr. Denning to trace back the history of the remarkable markings that for three or four years have attracted so much attention to Jupiter.

G. P. SERVISS

New York, February 9

The Level of the Mediterranean

AMONG the "Notes" in NATURE, vol. xxv. p. 395, I read Prof. Naudin's opinion on the apparent lowering of the level of the Mediterranean along the whole Riviera during the months of January and February; but I think there is a far more simple explanation of the phenomenon. In Genoa we had for many days as much as 43 centimetres below the standard level, but that was

caused by the northerly winds that prevailed during the above-mentioned period, and which drove the water off the coast. Just now the lowering of the atmospheric pressure, that had been as high as 778 millimetres, gave a prevalence to southerly winds, and the sea reached again its former level.

L. LUIGGI,

Resident Engineer at the Pier Works, Genoa, Italy
February 28

A Strange Phenomenon

RELATIVE to the letter of Mr. James Moir, under the above title, which appeared recently in NATURE, I beg to observe that in the Highlands of Perthshire, some forty years ago, two men found themselves enveloped in flames, somewhat in the same style as Mr. Moir was on February 18 last. One Mr. John Stewart, who, for many years, drove the Mail gig between Dunkeld and Aberfeldy, told me that on a certain dark night, he and another man, climbing a rocky, heathery height in Rannock, were all at once set on flames by some mysterious fire, which appeared to proceed from the heather, which they were traversing, and the more they tried to rub the flames off the more tenaciously they seemed to adhere, and the more the fire increased in brightness and magnitude. Moreover, the long heather agitated by their feet, emitted streams of burning vapour, and for the space of a few minutes they were in the greatest consternation. They believed that they barely escaped a living cremation. Of course their liberal share of native superstition, along with the weird gloom of the night in the weird wilderness remote from human habitation, rendered their position the more alarming. Mr. Stewart did not mention whether the weather was stormy or not; but without doubt the object of their fear was St. Elmo's Fire. The ignis fatuus has been frequently seen in these Highland districts hovering over marshes, rivers, and churchyards, which was believed by the superstitious to be the ghosts of the dead. When the ignis fatuus was seen flickering over the graveyard, it was a sign—with them—that some one was to be buried there soon, and when seen floating over a river, it was a sign that some one was to be drowned there that night or soon after, the floating, wandering lights being their ghosts. Drainage, in this respect, has effected many changes.

DONALD CAMERON

45, Calder Street, Govanhill, Glasgow, March 6

MR. JAMES MOIR, in last week's NATURE (p. 410), mentions a probable peculiar manifestation of St. Elmo's Fire, and asks if any one can give instances of a similar occurrence. About twenty years ago I was returning, during the evening, to my house from Great Yarmouth, a distance of three miles, and took the road of the Denes, intending to cross by the lower ferry. Before reaching it a dark cloud coming from the south-east, off the sea, suddenly surprised me, and drenched me with rain. I jumped into the boat, and when the boatman had pushed off, I remarked that every drop of rain hanging from my hair, beard, and clothes was luminous with white light, well seen, as it was very dark at the time. I found the same appearance had been observed by several pilots exposed to the same shower. I always attributed the occurrence to a species of St. Elmo's fire. It was mentioned at the time by a friend of mine at a scientific meeting in London, and thought curious.

W. H. C. B.

Cheltenham, March 7

Parhelia

OF the parhelia of January 27 seen by M. Albert Riggerbach (NATURE, vol. xxv. p. 364) I was a spectator, and noted my observations at once. I was walking near Pavia when I observed the phenomenon about 3.45. A mock sun (one only) was in the same altitude with the sun on the horizon; M. Riggerbach's *faint cirrus* obviously corresponds to the *filamenti nebbiosi* in my note; they were as I well remember, with the mock sun in the eastern part of the sky, while in the opposite region some blackish *cumuli* approached slowly.

FRANCIS PORRO

Pavia, Lombardy, February 27

Red Flints in the Chalk

ARE red flints common in the Chalk? A portion of our College farm lies on a gentle slope on the Upper Chalk, which rises westward from the banks of the Hampshire Avon. On the

higher parts of this slope black flints are excessively abundant, so much so that after sheep have been folded on the land, the fields present the appearance of a newly macadamised road, and the flints are picked up and put into heaps until an opportunity offers to use them for road-metal; in the course of a year they "grow" again as thickly as before. But one field on a ridge near the foot of the slope is remarkable for the number of red flints it contains; on the dusty soil they look just like bits of broken earthenware, and might at first fail to attract attention. Their size is much less than the average size of the black flints; some are rounded and some angular, others almost flake like. As to the frequency of their occurrence, I found I was able to pick up at least one at every step I took.

W. FREAM

College of Agriculture, near Downton, Salisbury,
February 28

THE SALMON DISEASE¹

FOR some years an epidemic disease, followed by a very large number of deaths, has been observed to prevail among the salmon of certain Scottish and British rivers, from the Tay, on the north, as far as the Conway on the south.

The first obvious symptom of the malady is the appearance of one or more whitish patches upon the skin of parts of the body which are not covered with scales, such as the top and sides of the head, the adipose fin, and the soft skin at the bases of the other fins.

Such a patch, when it first attracts attention, may be as big as a sixpence. It is nearly circular, with a well-defined margin and a somewhat raised softer centre, from which faint ridges radiate towards the circumference. It is important to observe that a single small patch of this kind may be seen on the skin of a fish which, in all other respects, is perfectly healthy, and when there is no indication that the skin has ever been bruised or abraded in the place occupied by the patch. The patch, once formed, rapidly increases in size, and becomes confluent with any other patches which may have appeared in its neighbourhood. The marginal area, as it extends over the adjacent healthy skin, retains its character; but the central part undergoes an important change. It takes on the consistency of wet paper, and can be lifted up in soft flakes, as if it were a slough, from the surface of the derma or true skin, which it covers. In fact, it is obvious that this papyraceous substance has taken the place of the epidermis, so that the sensitive and vascular true skin is deprived of its natural protection. As the patch spreads, the true skin beneath the central papyraceous slough ulcerates and an open bleeding sore is formed, which may extend down to the bone, while it passes outwards into burrowing sinuses.

When the disease has reached this stage it obviously causes great irritation. The fish dash about and rub themselves against stones, and thus in all probability aggravate the evils under which they suffer. One vast open sore may cover the top of the head from the snout to the nape, and may extend over the gill covers. The edges of the fins become ragged; and, sometimes, the skin which invests them is so completely frayed away that the fin-rays stand out separately.

Although the affection of the skin appears, usually, if not invariably, to commence in the scaleless parts of the body, it does not stop there, but gradually spreads over the whole of the back and sides of the fish, though I have not yet seen a specimen in which it covered the whole ventral surface. The disease extends into the mouth, especially affecting the delicate valvular membrane attached to the inner sides of the upper and the lower jaws. It is said to attack the gills, but there has been no sign of it on these organs in any fish which I have had the opportunity of examining.

Fish which succumb to the disease become weak and

¹ A Contribution to the Pathology of the Epidemic known as the "Salmon Disease." Paper read at the Royal Society, March 2, by Prof. T. H. Huxley, LL.D., F.R.S.