

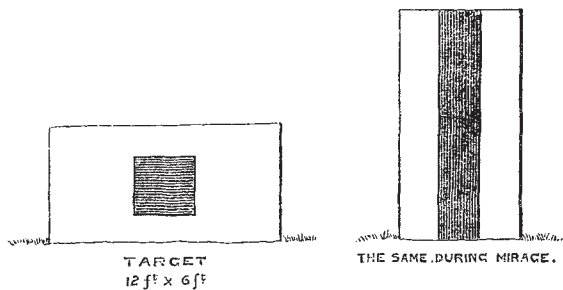
scarlet berry could be seen on the adjoining trees of the common kind. A friend informs me that a mountain ash (*Pyrus aucuparia*) growing in his garden bears berries which, though not differently coloured, are always devoured by birds before those on the other trees. This variety of the mountain-ash would thus be more freely disseminated, and the yellow-berried variety of the holly less freely, than the common varieties of these two trees." It appears to me that a hollyberry falling by its own weight from the bush would be borne vertically downwards; and though nourished by a soil impregnated with the decayed leaves of the parent tree, the young plant would be almost entirely deprived of light, and would soon succumb to its more vigorous rivals in "the struggle for existence." Perhaps in a country where but little land is left uncultivated, "the great majority" of seeds transported by birds "would be deposited on arable or pasture land," and thus succeed no better than the others; but so far as my limited experience extends, the most usual positions in which seedlings of the holly naturally spring up, seem to be at the bases of steep rocks or of trees whose branches are not sufficiently low and spreading to exert an unfavourable influence. If Mr. Reeks's speculations be correct, they appear to me to point to the ultimate extinction of the species in a state of nature rather than to its gradual modification.

W. E. HART

Mirages

THE reading of the two letters of your correspondents in the last number of NATURE has called to my mind the fact, which may not be generally known to your readers, that mirages are of frequent occurrence (and I need not add annoyance) to riflemen, especially "small-bore shots."

The most remarkable case of which I have heard was seen at Wimbledon, during the meeting of the National Rifle Association, in July last. The target at the 1,000 yards range is of an oblong form, 12 ft. wide by 6 ft. high, and with a bull's-eye three feet square. On lying down to shoot on the level ground, the target appeared in a reverse position, with the bull's-eye running through the entire height, from top to bottom, thus—



the quasi-phantom target continually moving from right to left, backwards and forwards. But this was only visible when lying on the level ground; for in shooting from a mound about four feet high the target appeared quite natural; and what seems stranger still, the lateral motion did not follow the direction of the wind; for it sometimes moved with the wind and sometimes against it. Friends of mine have seen exactly the same phenomenon both at York and at Altcar.

I have several times, on the range here, seen the bull's-eye appear to slide up to the top of the target, or down into the ground; and this latter seems the most common and universal form of mirage.

I need not add, that in all these cases the sun-light was intense.

W. PERCY SLADEN

Halifax, Aug. 29

Kant's Transcendental Distinction

HAD I cherished the wish to involve Mr. Mahaffy in a war of words (*λογομαχία*), so often degenerating into a war about words (*λογουμαχία*), his straightforward and sensible letter, wreathed with courtesy and generosity, would have extinguished it. But, with some desire to justify my own censure, I had no such wish; and now that I know exactly what he had in mind, in the examination question, as in the note on page 57 of his work, I will say my say as briefly as possible on his view of Kant's "distinctions."

I thought, and still think (and here the learned translator of Fischer, has misapprehended me), that Kant intended to contrast *general Sense* (not particular sense, as colours, odours, &c.) with Understanding. Otherwise, the repeated reference to "Herr von Leibnitz" would be unintelligible. (See Hartenstein's Ed. of the K. r. V., p. 241 *et seq.*) To suppose, as Mr. Mahaffy suggests, that something more recondite, something quite radical was meant by Kant, seems to me a gratuitous refinement; for *a priori* elements of sense, as those of understanding, are *transcendental*; and the distinction would have only a *logical* difference; or, in Kant's language, it would be a distinction of logical, not of transcendental, reflection. No one, I am sure, knows better than Mr. Mahaffy, that all transcendental distinction is the result of transcendental reflection; and to this the doctrine of Time and Space is a necessary preliminary; that doctrine, therefore, is not based on the transcendental distinction. I cannot doubt that Kant called the generic distinction between the two faculties (Affection and Function) *transcendental*, not because he was contrasting transcendental elements, but because the distinction was drawn by *transcendental reflection*; i.e. reflection which, by the vantage of a transcendental *πῶς οὐδ'*, refers a conception to this or that faculty.

Accordingly, we are not called upon to give a more recondite meaning to the distinction in question in order to explain the use of *transcendental* as applied to it. Rather let us bear in mind what Dr. J. H. Stirling pointed out to me some months ago, that Kant somewhat loosely applies that adjective to other matters besides the *a priori* elements of experience. In fact, he applies it to the said *distinction* and *reflection*, and also to the thing in itself, an object exercising an unknown function, feigned to account for a known state. The unknown function indeed might be called transcendental, but the object is in itself a mere nullity. If Sensation be referred to the *kick* (as Dr. Stirling calls it) received by us from the feigned object, that *kick* is transcendental; but "das Object bleibt uns unbekannt und *transcendental*." We say, then, that the two forms of sense and the four forms of thought (in apperception) are *transcendental* and *constitutive of experience*; but the object in itself is *transcendent* and *regulative of thought*. If Kant departs from his own nomenclature in the case of the noumenon, we need not be surprised if he does so in the case of the distinction between sense and understanding.

The bearing of this question on "Kant's View of Space" (which was the topic of controversy between Mr. G. H. Lewes and Dr. J. J. Sylvester in the columns of NATURE) is noteworthy here. The sensibility, according to Kant, is not spontaneous or active, like the understanding. The forms, then (i.e. the institutions of Time and Space), are not, cannot be, products of the activity of any faculty, and therefore time and space cannot be forms of Thought in any legitimate sense of the word. Let it be used in the widest sense possible; let it stand for the *active faculty of mind in general*; and then it can be proved that Kant would have refused to refer to it the forms of general Sense, because he denied to general Sense any activity whatever.

C. M. INGLEBY

Valentines, Ilford, E., Sept. 6

Volcanic Agency v. Denudation

MR. DAVID FORBES holds that, in instituting "a comparison between the relative magnitude of the operations of internal and external forces in determining the main external features of our globe, we must grant the first rank to the internal, volcanic, or cataclysmic agencies, since, had it not been for their operations, our globe would have remained without any visible land for the rivers to traverse, or the rain and ice to disintegrate and wear away."

The latter part of the statement cannot, of course, be called in question. But does the conclusion necessarily follow? Suppose I say that a father who died before his son was born, ought, as far as that son's education was concerned, to rank before the schoolmaster who taught him, because but for the father there would have been no boy to teach; or that the quarryman who extracted a block of marble from the quarry ought to rank before the sculptor who shaped it into a statue, because but for the quarryman the sculptor would have had nothing to work upon. In truth, in a case like this, it is hard to attach any definite meaning to the idea of rank. If Mr. Forbes had said that in the task of bringing the earth's surface into its present shape, internal forces have done more work than external

I should have known exactly what he meant, and made bold to differ from him.

I feel sure, however, that those geologists who have endeavoured to revise the almost forgotten teaching of Hutton as to the important part played by subaërial denuding forces in forming the present surface of the ground, are by no means forgetful of the obligations they are under to upheaval for furnishing them with materials to be shaped; and in cases of great mountain chains they have always admitted that the superior elevation of the ground is mainly due to internal action, though they hold that all the sculpturing of the upheaved mass into gorge and peak is due to atmospheric agency.

A. H. GREEN

79, Dodworth Road, Barnsley, Sept. 3

Geology of Devonshire

A RAILWAY of eight or ten miles is now in course of construction between Totnes and Ashburton in Devonshire. To a geologist the cuttings near the latter town are most interesting. I am not a geologist, although the science is deeply interesting to me. I returned from Ashburton ten days ago. The rocks there at one part of the line were evidently volcanic. They appear exactly as if they had been melted, and in boiling up a scum or froth had risen on the surface, and in cooling had left air-bubbles, now nearly filled with sometimes yellowish crystals. The rock is very hard, and has a stratum of what was once slate, ten or twelve feet thick, and as the workmen work it out it bears the colour which great fire would give it. As blocks of the other rock are torn out by powder, they are found to contain or enclose fragments several inches square of the superincumbent slate rock, too hard to be melted. This rock is not stratified, but breaks into any form. A few hundred yards off they are working through ironstone as hard as iron itself. The heavy sledge hammer rings on the blocks as on an anvil. At the east end of the town are two pits worked forumber, indeed there are several fields of which the soil a few inches below the surface consists wholly ofumber. I do not expect there is any one in the neighbourhood who feels an interest in geology. I saw a letter in NATURE on a geological subject from Mr. Pengelly, of Torquay and I wrote him on the above subject. I have no doubt the line is very interesting in the other parts, as the rocks greatly vary thereabouts.

A learned geologist would have made what I have attempted to describe more interesting. He would find much to employ him in that neighbourhood.

W. LUSCOMBE

Hereditary Deformities

IN the lessons in Ethnology in "Cassell's Popular Educator," it is stated, on the authority of Dr. Theodor Waitz, and the Secretary of the Anthropological Society, that "an officer, whose little finger had accidentally been cut across, and had, in consequence, become crooked, transmitted the same defect to his offspring. Another officer wounded at the battle of Eylau, had his scar reproduced on the foreheads of his children." And again, "In Carolina, a dog which had accidentally lost its tail transmitted the defect to its descendants for three or four generations." Do these stories rest on a good foundation? We know that congenital peculiarities of form and disposition are transmitted from parent to offspring, but that an accidental deformity should be so transmitted is a very different affair, and if substantiated would introduce *Accidental Distortion* as a co-worker with natural selection in the modification of species.

Faversham, Kent, Aug. 27

WM. FIELD

Poisoning by *Ænanthe crocata*

PERMIT me to send you the following notes with regard to the case of poisoning by *Ænanthe crocata* which appeared in your issues of 18th August and 1st September.

I. As to the poisonous properties of *Ænanthe*, Prof. Christison found that plants gathered in certain localities were harmless, while others from different places were highly poisonous.

II. As to the mode of death. This seems materially to differ from that observed and recorded with regard to poisoning with hemlock (*Conium maculatum*). In the case of poisoning with hemlock which took place in Edinburgh in 1845 (recorded in the *Edin. Med. and Surg. Journal*, No. 164, and also Prof. Bennett's "Principles and Practices of Medicine") the mind remained clear till the end, and death resulted from asphyxia produced by slow

paralysis of the muscles of respiration. The muscular paralysis commenced in the feet.

In the recent case of poisoning by *Ænanthe* there seems to have been coma and convulsion for half an hour previous to death; no paralysis seems to have occurred over the body. From the account of the hemlock case to which I have referred, that plant also seems not to have any particularly acrid taste. The part that seems strange to me is the difference in the mode of death with plants so nearly allied to each other as the *Ænanthe* and the *Conium*.

J. W. E., EDIN.

NOTE ON SOME INSTANCES OF PROTECTIVE ADAPTATION IN MARINE ANIMALS

THE various phenomena of mimicry and protective adaptation have recently received much attention, notably from Messrs. Darwin, Bates, and Wallace, and some very interesting facts and reasonings on the subject are contained in the recently published "Contributions to the Theory of Natural Selection" by the last-named author. It can scarcely be needful to explain at much length the nature of the phenomena in question. Well-marked instances of mimicry are not very common; some of the most surprising are those of the leaf and stick insects of the Tropics, which it is almost absolutely impossible, when at rest, to distinguish from dead leaves and twigs. The importance of these resemblances, in conferring protection from attack, will be at once evident. Commoner instances of adaptation, which may indeed be noticed wherever we turn our eyes upon the animal creation, are those of more or less complete resemblance of colour between the animal and its surroundings. The most remarkable instance of this kind which has come under my own observation is perhaps that of the caterpillar of the Emperor moth (*Saturnia pavonia minor*), which, with its green ground and brilliant pink spots, is almost undistinguishable from the heather upon which it frequently feeds.

Numerous instances of this kind amongst terrestrial animals might be brought forward, but less attention has been paid to similar points in the less highly-organised of marine animals. They are, for the most part, much less easily observed in their natural haunts, and their habits and the dangers to which they are exposed are of necessity imperfectly understood. We may note, however, that fishes very commonly assume the colours of surrounding objects; the flounder is almost exactly of the colour of the sand on which it lies, and fishes which bask amongst groves of seaweeds are often of brilliant and variegated colours corresponding very much with the vegetation around them.

The two instances which form the subject of this notice came under my observation while dredging in June last in the Frith of Clyde. In one spot the dredges brought up many plants of *Laminaria* with their roots, which consist of a conical mass of contorted and intertwined fibres about a line or two in diameter; amongst these were imbedded quantities of nullipores—a calcareous seaweed of the genus *Melobesia*—(*M. calcarea*). The larger weed had, in fact, grown in a bed of the nullipore, which came up abundantly in the dredge, and indeed now forms on a closely adjacent part of the coast a raised beach of several feet in thickness. Amongst the nullipore which matted together the laminaria roots were living numerous small starfishes (*Ophiocoma bellis*), which, except when their writhing movements betrayed them, were quite undistinguishable from the calcareous branches of the Alga; their rigid, angularly-twisted rays had all the appearance of the coralline, and exactly assimilated to its deep purple colour, so that though I held in my hand a root in which were half a dozen of the starfishes, I was really unable to detect them until revealed by their movements.