

"ἴππος, vi., in Compos.; it expressed anything *large* or *coarse*, as in our *horse-chestnut*, *horse-laugh*; v. ἰππῶ-κρημνος, -μάθρον, -σέλιον, -τυρία, -πορνος; cf. βου-."

Long Ditton, Kingston, Aug. 5 M. W. MOGGRIDGE

### The Rotundity of the Earth

WE have seen the statement signed "Parallax," at page 236 of No. 38 of NATURE, and shall be obliged if you will afford us an opportunity of briefly saying in reply, that when we tried the "flag experiment," the person calling himself "Parallax" was not present.

The experiment was conducted in his absence, as he did not come at the time appointed. He did not come at all that we know of; we did not see him.

Norwich, August 10

J. NEWBEGIN  
C. W. MILLARD  
W. H. DAKIN

### Cuckow's Eggs

A SHORT time ago I addressed you on the subject of Cuckow's eggs, giving you some experiences of my own. I now have much pleasure in forwarding to you a portion of a letter on the same subject from an esteemed and observant correspondent, Mrs. Barber, of Highlands, near Graham's Town, to whom I communicated the substance of my letter to you. Mrs. Barber's name is well known in the botanical world as a most accurate scientific observer; of her ornithological acuteness my work on the Birds of South Africa amply testifies, and you may place full confidence in the statements she has made in this communication.

Cape Town, June 1870

ED. LAYARD

"Your remarks on the eggs of the cuckow tribe are very interesting. I confess that I am a believer in natural selection, and Darwinian in my opinions, but nevertheless in this matter I do not see the necessity for the intervention of natural selection; however, I hope you will bear in mind that I am speaking only with regard to the cuckows of my own country (South Africa), and as far as my observation extends, the eggs of these birds bear no resemblance to those of the birds upon which they are parasitic.

"Many of the different species of the cuckows of this country lay white eggs; the whole of those included in the genus *Chalcites* produce white eggs, the birds upon which they are parasitic are the various species of *Fringillidae*, they do not, however, confine themselves entirely to this tribe.

"I have frequently seen the eggs of the 'Dedric' (*Chalcites auratus*) and the 'Metje' (*C. klaasi*) in the nest of the Cape canary (*Fringilla canicollis*) and the 'Streep Koppie' (*Fringillaria vittata*), where they were conspicuous not only for their pure white unspotted appearance, but for their size also, which is nearly twice that of the Cape canary, and considerably larger than the eggs of the 'Streep Koppie.'

"I have also found the egg of the 'Dedric' in the nest of the green Sun-bird (*Nectarinia famosa*), where it was also much larger than the grey speckled eggs of the sun-bird, and likewise dissimilar from its pure white colour.

"The egg of *Cuculus solitarius* is of a dark mahogany brown, and this egg I have seen in the nest of the wood robin (*Bessornorius phanicurus*), when its difference was obvious both in size and colour, my son (F. H. Barber) found one of these dark brown eggs in the nest of the Cape canary! and despite its great dissimilarity compared to the small white speckled eggs of that bird, the work of incubation was quietly going on.

"The birds upon which the 'Honey Guides' are parasitic are *Laimodon leucomelas* (vel *L. undulatus*). I have frequently seen them at the nests of these birds, where great conflicts occasionally take place between the *Indicators* and *Laimodons*, the latter being fully aware that the 'Honey Guide' is an intruder, the egg of the *Laimodon* is speckled, that of the *Indicator* white.

"The 'October bird' (*Oxylophus colinus*) deposits her white eggs in the nest of the large woodpecker; my brother (Bertram Bowker) once met with *three* of the young of this cuckow in the nest of that bird; it is not a common occurrence, I believe, that so many eggs should have been deposited in a single nest; the large woodpecker is, however, equal in size to the 'October bird'; when the birds upon which they are parasitic are smaller, the cuckow deposits but one egg, as the food and space required will in that case be only sufficient for a single individual.

"In the nest of the green sun-bird (*Nectarinia famosa*) I once observed a young 'Dedric,' which nearly filled the nest. It

was not quite full fledged, and its frequent calls for food induced the sun-birds (both male and female) to exert themselves to the utmost, and in fact they had to work hard to satisfy the cravings of this greedy intruder; however they did it with a good will, and apparently without any suspicion that they were being imposed upon. Birds in general have no suspicion on this score, they suspect no trickery, and are therefore willing to incubate any kind of egg, provided it is not too large to fill up the nest. I think I told you how I had occasionally changed the eggs of various species of birds from one nest to another, making fearful confusion in consequence, yet the owners of the nests never suspected that anything was wrong, but proceeded quietly with their work. With regard to eggs, the discriminating power of birds is very obtuse, in fact they have none at all, and therefore in this case the agency of natural selection would not come into play; it would not be required. In nature there is no waste, no failure, no useless expenditure of time and ingenuity, every arrangement is sufficiently perfect to work out its own end without being overstrained or overwrought.—M. E. BARBER."

### Special Modification of Colour in the Cushat

IN reading the chapter on "Mimicry," in Mr. Wallace's valuable collection of essays lately published, I was struck by a remark there made in regard to the special modification of the colour of the wood-pigeon. It is stated (p. 53), on the authority of Mr. Lester, that "the wood-dove, when perched amongst the branches of its favourite fir, is scarcely discernible, whereas, were it among some lighter foliage, the blue and purple tints in its plumage would far sooner betray it." This description may be accurate enough in regard to *Columba oenas*, but our experience is against its application to *Columba palumbus*. It was a common pastime of our boyhood to stalk the cushats in a mixed wood of the usual Scotch trees, and while familiar enough with their habit of making their nests in the spruce, unquestionably their favourite perches were on beeches and other hard-wood trees. Even after surmounting the somewhat delicate task of approaching the roosting-place of a cushat, it was no easy matter to detect the bird, except by its note, so closely did its general colours blend with the smooth, lichen-covered boughs of the beech, even where no leaves intercepted the view. The bird appears to build its nest especially in the spruce, not because its general colour agrees therewith (which it does not), but because the thick nature of the foliage and branches gives it, the eggs and young, sufficient privacy. Under all other circumstances it prefers to perch on the beech and other hard-wood trees, where its colours so adapt it for concealment. Of course the casual alighting on the pinnacles of the spruce during the breeding season is of little moment in the present question.

W. C. MCINTOSH

### Colour Blindness

ALTHOUGH I have no intention of discussing the theory of colour-blindness propounded by Mr. Monck in NATURE of July 28, it may not be inopportune, while the subject is under the notice of your readers, to call their attention to a peculiarity with respect to the perception of colour, of which I have been able to discover no instance.

Some years ago I was sitting in a chapel opposite to a stained glass window, a portion of which (towards my left) was hidden from me by a pillar, and I observed that, as I moved my head to the right, the window flashed out into brilliancy where it had appeared dull before, while the contrary effect was produced as I moved my head to the left. On examining the conditions of the phenomenon carefully I found that it was due to the fact (which I had not the least suspected before) that my right eye is distinctly less sensitive to colour than my left. This I have since verified in various ways, though the difference is not very easily perceived unless the colours are brilliant, as in stained glass, bright coloured flowers, many of Turner's pictures, &c. The difference consists in this, that all colours appear less bright, or, as I should say, *greyer*, when seen with the right eye, and the more delicate gradations of colour cease to be perceived, while in many cases of even strongly contrasted colours, I should find it difficult to distinguish them with certainty with the right eye, especially if I had not previously seen them with the other eye. I have found too that the central part of the retina of my right eye is more defective as to the perception of colour than the lateral portions, since in looking at an extended surface of a

single bright colour, scarlet for instance, a kind of shadow appears to come over any part of the surface to which I direct the eye.

With respect to my absolute power of perception of colour, I believe that though I cannot be said to be colour-blind, my eyes are less sensitive to colour than the average of those who have equally good general sight. For instance, scarlet and green do not appear to present to me the same degree of contrast that they do to most persons with whom I have made the comparison. Close at hand the contrast is sufficiently vivid, but a scarlet uniform seen at some distance in a green field would not attract my attention by contrast of colour, though I could make out the difference under a favourable light when my attention had been called to it; so also the scarlet berries of the mountain ash would at a little distance attract my notice rather by their form than by their colour, especially if seen against the sky or a bright object. Again, I can never pronounce with certainty as to the colour of distant bright lights; the colours of the lights, for instance, used for railway signals, though distinctly enough perceived by me when close at hand, puzzle me much when seen at a distance, while I am quite incapable of assigning with certainty a colour to a star or a meteor.

I should add that my ordinary power of vision is good; though here my right eye has a slight, but unmistakable, advantage as to distinctness over my left. Hence, in looking at a brilliantly-coloured picture I have found that I could appreciate the drawing best with my right eye, the colour with my left, while in using both eyes each appears to remedy the defect of the other.

I think that the facts which I have here stated cannot fail to be of interest to those who are inclined to theorise on the nature of colour-blindness; but apart from all theory it would be satisfactory if the statement of my case should induce others to examine their own perceptions of colour with each eye separately, and in the event of their observing anything confirmatory of, or contrasting with, my observations, to send an account of them to NATURE. I think it quite possible that such cases may not be very uncommon, since the defect is one which may easily escape the notice of the subject of it.

Harrow, August 1

ROBERT B. HAYWARD

#### The Source of Solar Energy

MR. GREG still misses my meaning. I do believe that meteors supply a portion of the solar energy, and I also believe that they fall in enormous quantities into the sun; what I do not believe is that the whole solar energy is derived from meteors, or that any meteors fall in a solid state upon the sun (whose surface is also certainly not solid, even if any part of his mass be).

Mr. Greg's reasoning only proves what I have already pointed out, that none of the meteor systems our earth encounters can supply a meteoric downfall on the sun. This is, however, so obvious as to need no enforcing.

The reasoning by which I show that enormous quantities of meteors must fall upon the sun is wholly untouched by Mr. Greg's arguments, and is, so far as I can see, simply incontrovertible.

Surely Mr. Greg is not in earnest in saying that there would be a loss of solar energy if a large mass of iron fell on the sun before it was quite melted (any conceivable mass would, by the way, be vaporised), *because the sun would have to melt the portion which remained solid*. That solar energy would be consumed in the process is true enough; but if Mr. Greg supposes that the total solar energy would be diminished, he altogether misapprehends the whole subject he is dealing with. If the action of the solar energy in changing the condition of matter forming (as the imagined meteorite would) part of the sun's substance had to be counted as loss of energy, the sun would be extinguished in a very short time indeed. Such processes involve exchange, not loss.

If the earth could be placed on the sun's surface, the action of the sun in melting and vaporising the earth, and producing the dissociation of all compound bodies in the earth's substance, would involve an enormous expenditure of energy, yet the solar energy, considered as a whole, would be recruited, even apart from the fact that the earth would serve as fuel. The absolute temperature of the sun would, I grant, be diminished in this imaginary case, though quite inappreciably, but his total heat would be increased by whatever heat exists in the earth's substance.

Apart from this, however, if the minimum velocity with which a meteor or other body can reach the sun, is such as would—if wholly applied to heating the body—completely melt it, then the size of the body makes no difference whatever in the result. The meteor might not be melted if enormously large, but in that case the balance of heat would be communicated to the sun. In reality, of course, the heat corresponding to meteoric motion near the sun is very far greater than is here implied.

But I really must apologise for bringing before your readers considerations depending on the most elementary laws of the conservation of energy.

RICHARD A. PROCTOR

#### Muller's Physics and Meteorology

FROM Prof. Jack's Review of Müller's "Physics and Meteorology," in your issue of August 4, I infer that he is not aware that an earlier edition of that valuable book was translated into English more than than twenty years ago, and formed one of the volumes of Baillière's *Scientific Library*.

M.A. Cant.

Aug. 7

#### Colour of Water

MR. E. R. LANKESTER, in his letter in NATURE on 21st July, does not mention what is certainly one of the most remarkable known instances of a decided colour in water, I mean the Blue Lake near the road from Frutigen to Kandersteg in Switzerland. It is very small, not a stone's throw across. I think it is fed by springs. Its blue tint is so decided as to give the idea of some colouring stuff mixed with the water—not that it can be really so.

The Lakes of Neufchâtel and Bienne are of the same light-green tint as those of Lucerne, Brienz, and Thun, although the latter are fed by glacier streams and the former are fed by the streams of the Jura, where there are no glaciers. This appears to prove that the solid matter which glacier streams contain in suspension can have nothing to do with causing the green tint of most of the Swiss lakes.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, Co. Antrim, Aug. 5

#### Water Analysis

YOUR article entitled "Water Analysis" consists of a review of a book, a commentary on a paper, and the reviewer's opinions of the character of Mr. Chapman and myself.

I shall not trouble you with any rectification of the statements contained either in the review or in the commentary on the paper; inasmuch as both the book and the original memoirs are accessible to the readers of NATURE, and the entire subject has already been very fully discussed.

In giving his opinion on the character of the authors of the book, the reviewer "deplored that two young chemists, with such undoubted abilities as Messrs Wanklyn and Chapman possess, should have rendered themselves notorious by attacking older workers in scientific investigation."

Perhaps you will allow me to say, that in rendering ourselves notorious in this manner, we have committed no crime, and that I cannot see why it should be deplored.

I believe that a great deal of the work which these older workers have done is unsound, and have endeavoured to sweep away some of that which I believe to be unsound. In this sweeping I have been to some extent successful, successful to an uncomfortable and alarming extent, I suppose your reviewer would say. But, if the rottenness of much that passes current in science is appalling, it is surely matter for congratulation that there are young men who will undertake a crusade against it, even at the risk of incurring the disapprobation of the older men, and of suffering every wrong that the possession of place and power enables these older men to inflict.

London, Aug. 14

J. ALFRED WANKLYN

[Mr. Wanklyn omits the sentence following his quotation:—"It is, no doubt, very laudable in a young and ardent investigator, when he points out that high authorities may err, and frequently have erred, but the manner in which these gentlemen have carried out their corrections has made their matter more distasteful."—ED.]

#### Suckers from the Apple Tree

MOST of the orchards in the west of Herefordshire have had their herbage injured during the present season by the extraordinary profusion of suckers thrown up by the apple-trees. In