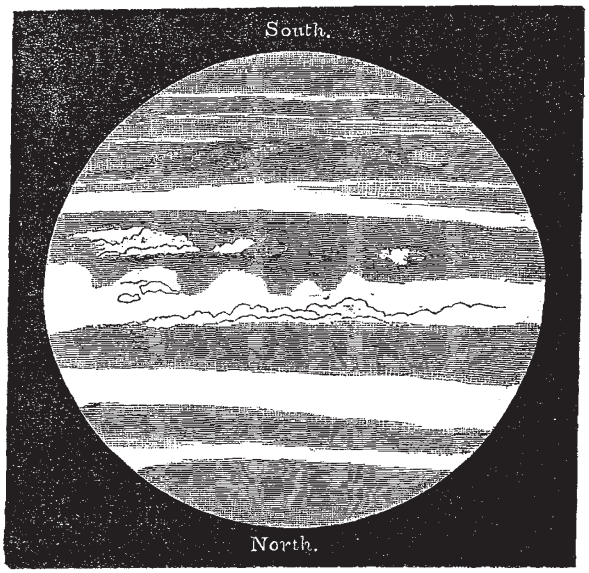
central belt, which has been for years a pearly-white, is now a rich golden yellow.

Three or four dark markings on the lower part of the southern dark belt nearest the equator will be seen to incline to the left. If our earth were removed to Jupiter's distance, its disc would appear no larger than these dark masses, so enormous is their extent. The rotation of the planet is carrying them towards the right: we may assume that the bright vapour between them is left behind by the planet, which is here travelling at the rate of nearly 3,000 miles an hour.



JUPITER, OCTOBER 9, 1869, 11 P.M. G.M.T.

Spectrum analysis has taught us to suspect that any change in the colour of light proceeding from an object, indicates a change in the object itself. If Jupiter, the largest planet in the solar system, has still retained so much heat as to shine partially by his own light, the present considerable change in colour may enable spectroscopists to obtain some information on this interesting subject.

JOHN BROWNING

Cuckows' Eggs

WILL you kindly grant me space for a few remarks in reference to the very interesting paper on the eggs of the cuckoo, by Professor Newton, in your last issue? I have no intention to criticise so able and accomplished a naturalist: my object is simply to elicit information on some points of difficulty; and as Mr. Newton promises a second paper, I should be very glad if he would throw any light on them.

And first as to the colour and markings of cuckoos' eggs. *Are* they so variable as some assert? I must take leave to doubt this. I never met with such extreme varieties, nor can I hear amongst my oölogical friends of any who have done so. One of the most eminent and experienced of living oölogists has stated: "As far as my own experience goes, it teaches me that there are not many birds the eggs of which differ less than those of the cuckoo." On the other hand, Mr. Newton says: "It has long been notorious to oölogists, that the eggs of the cuckow are subject to very great variety of colour." This, then, is a point on which I think further evidence is wanting. Dr. Baldamus mentions sixteen varieties of eggs which he alleges are cuckoos'. Were these seen to be deposited by the bird, or how were they identified as those of the cuckoo? Dr. Baldamus does not appear to have taken them all himself. Is there not room for error here?

Mr. Newton saw these eggs, appears satisfied that they *were* those of the cuckoo, and agrees with Dr. Baldamus in his conclusions, that the object of the practice was that the cuckoo's egg should be "less easily recognised by the foster-parents as a substituted one." How then is this process effected? Mr. Newton's explanation is that each hen cuckoo deposits her eggs only in the nests of one species, that her eggs resemble those of the species whose nest she uses, and that this process is hereditary.

Here it is that I am most in doubt. How is this hereditary habit of laying a particular style of egg maintained? It is quite possible that habits may become hereditary; but is there any instance of a wild species of animal inhabiting one locality and freely intermingling, where some members possess peculiarities of habit which are hereditary which their fellows do not? Mr. Newton will excuse me for saying, that the Golden Eagle he mentions scarcely fulfils these conditions. Is it likely there are sixteen varieties of our common cuckoo which are only to be distinguished from each other by laying a differently marked and coloured egg? Few birds are more vagrant or possess less conjugal or parental affection than the cuckoo. How then are these sixteen varieties to be kept from crossing? And if, as I believe, interbreeding does take place, how can the alleged distinctive style of eggs be preserved? Here I am at fault, and I shall be very glad if Mr. Newton will help me out of my difficulty.

In the face of the alleged object, that the egg shall be less easily recognised as a substituted one, how are we to account for the fact that, in this country at least, a larger number of cuckoos' eggs are deposited in the nests of the hedge sparrow than in those of any other species, the speckled brown egg contrasting *strongly* with the greenish blue ones?

W. J. STERLAND

The Corona

IN connexion with Mr. Lockyer's paper "On the Recent Total Eclipse of the Sun," the following observations may be useful.

I observed the total eclipse of July 1860, in company with my friends Professor Chevallier and Mr. B. E. Hammond, at the village of Pancorbo, in Spain. We were on the summit of a mountain of considerable height, about 5,000 feet above the sea, and were therefore under somewhat peculiar atmospheric conditions. I observed specially four things:—

(1) Venus; which was then extremely near the sun, the thickness of the crescent being only 1 or 2 seconds, and therefore very favourably placed for observing whether it has an atmosphere.

(2) The extent of the corona, and its form. This I am sure was very irregular; very nearly, if not quite, permanent during the three minutes of totality; was nowhere less than 25′ in breadth; in one part, the top in an inverting telescope, 40′ in breadth; and in another, the right, was more than 60′ in breadth, running out in a long wavy line like floss silk. I have before me the drawing I made at the time, during the totality.

(3) The amount of light given by the corona. This was estimated by a photometer, consisting of a wedge of dark glass, with a moveable slit, contrived by Mr. Chevallier, and now, I believe, in the possession of the Astronomical Society, with the place marked through which I saw the corona. It was as bright as a small cloud, distant 8° from the sun, 10 minutes after reappearance; or as the moon when 2½ days old, as the sun was setting.

(4) The colours shown by a variety of coloured ribbons during totality. Of these, the only observation that bears on Mr. Lockyer's paper, was that on the extent of the corona. I estimated it twice; once as reaching, to the right, 2¼ diameters of the sun, and once, later on, at nearly 2½ diameters. I had no micrometer, but could not possibly have been wrong by so much as 10′. I wrote down at the time, that it underwent no perceptible change during the eclipse. It remained visible for six seconds after the reappearance of the sun.

I had, and have, little doubt that the corona is in the solar, and not terrestrial atmosphere.

Rugby School, Nov. 11

JAMES M. WILSON

Lightning in a Clear Sky

WE constantly find allusions in ancient classical authors, to lightning and thunder occurring in a clear sky. The former is often explained as referring to the phenomenon commonly known as "summer lightning," or the reflection in the sky of lightning from clouds below the horizon, which becomes visible at night. I have also seen it stated that in the calm and clear atmosphere of Italy, thunder might be audible under similar conditions. These explanations, however, do not meet the case as stated by good observers amongst the ancients themselves. They do not explain, for instance, what is stated by Cicero amongst the portents which preceded the conspiracy of Catiline—"that a Roman citizen was killed by lightning on a cloudless day." Pliny also mentions this case, adding that it happened at Pompeii. If such a phenomenon as lightning, falling from a cloudless sky, is disbelieved by men of science, may not the circumstance stated above be explained by supposing the man to have been killed by