

transparent, as though the hand were seen through it. This experiment is not new, but I have never seen it described. The explanation of it is quite evident.

2. Drop a blot of ink upon the palm of the hand, at the point where the hole appears to be, and again observe as before. Unless the attention be strongly concentrated upon objects seen through the tube, the ink-spot will be visible within the tube (apparently), but that part of the hand upon which it rests will be invisible, unless special attention be directed to the hand. Ordinarily the spot will appear opaque. By directing the tube upon brilliantly illuminated objects, it will, however, appear transparent, and may be made to disappear by proper effort. By concentrating the attention upon the hand, it may also be seen within the tube (especially if strongly illuminated), that part immediately surrounding the ink-spot appearing first.

3. Substitute for the hand a sheet of unruled paper, and for the ink-spot a small hole cut through the paper. The small hole will appear within the tube, distinguishing itself by its higher illumination, the paper immediately surrounding it being invisible. Many other curious experiments will suggest themselves. For example: if an ink-spot somewhat larger than the tube be observed, the lower end of the tube will appear to be blackened on the inside.

4. While making these experiments, an improvement upon the experiment described in NATURE, vol. xii., p. 502, was suggested, as follows:—Look through a paper tube with one eye at green paper, and through another tube with the other eye, at red paper. The paper should be illuminated by the direct solar ray. The two colours, at first vivid, are rapidly enfeebled. After half a minute, transfer both eyes to either one of the papers, say red. To the eye fatigued by green, the red colour is very brilliant, and the effect is the more striking on account of the simultaneous impressions now received by the two eyes.

Washington University, St. Louis

F. E. NIPHER

Antedated Books

THE evil practice of issuing antedated periodicals has long been a matter of complaint amongst naturalists. The editor of the *Journal für Ornithologie* is a well-known sinner in this respect—the quarterly number of that journal, although invariably dated on the first day of each quarter, being always several months in arrear. But a still more flagrant instance of this practice is now before me in the third number of the new edition of Layard's "Birds of South Africa," which, although only issued to the subscribers within these last few days, is dated on the cover "May, 1875!" As two new genera (*Aithya* and *Neotichia*) are instituted herein, the result is to give these names an unjust priority of fifteen months over what they are legally entitled to. This seems to be a still easier method of gaining precedence than the American practice of publishing telegraphic bulletins of new discoveries, and will not, I trust, be persevered in, if attention is called to it.

August 7

F.Z.S.

Protective Mimicry

I HAVE been reading over in the file of NATURE the controversy that arose out of Mr. Alfred Bennett's paper at the British Association in 1870, on "Natural Selection from a Mathematical Point of View," in which he attacked Darwin's theory on what seems to be one of its strongest points, namely, protective mimicry. I do not feel certain whether he is right or not in denying that natural selection is adequate to produce mimicry. The argument really depends on a question of fact, namely, whether the first variation could be great enough to be useful to its possessor; and from the great comparative variability of colour, I see no decided impossibility in this.

But the writers in that controversy neglected other facts of colour which it seems impossible for natural selection to produce, from the infinite improbability of a first variation ever occurring. One of these is the change of colour with the seasons in such animals as the ermine, which is brown in summer and white in winter. Had the ermine been either permanently brown or permanently white, there would have been nothing wonderful in it, but it seems impossible that the character of becoming white in the winter and brown in the summer could ever have originated in ordinary spontaneous variation, without a guiding intelligence.

Another case of at least equal difficulty is the case of change of colour for the purpose of protection, from moment to moment. The chameleon is the best known instance of this, but I believe there are many such cases among fishes. It seems utterly impossible for such a character to originate in spontaneous unguided variation.

JOSEPH JOHN MURPHY
Old Forge, Dunmurry, Co. Antrim, July 20

A REMARKABLE instance of this phenomenon is shown in a small crustacean, of the genus "Rypton" (Mr. Spence Bate has not yet determined whether it be a new species or no). This very delicate little animal is found only in holes in the coral inhabited by the common "Echinus" of Mauritius; its colour is a deep purple, with four longitudinal stripes of a much lighter tint; and this is precisely the pattern of the spines of the said Echinus.

WILMOT H. T. POWER

λ Ophiuchi

I AM going to undertake the calculation of elements of λ Ophiuchi, which you proposed to calculators in NATURE, vol. xiv. p. 29. I shall also within a short time give orbits of γ Coronæ, which has not been separated as far as I know since spring, 1867, when it was observed in Harvard College, and of ξ Libræ (Scorpii). About the latter binary star we know but very little. Mädler has given a circular orbit with a period of over 100 years, while Thiele gives a highly eccentric orbit with a period of about fifty years. It may very likely be found that the older determination is the most trustworthy, but the case deserves a thorough examination, which I am going to make. I have been engaged in a re-determination of elements of 6 Coronæ, by which the long period has been re-ascertained.

There are different other double stars which with advantage might be inquired into, and thus prevent different investigators from confining themselves to the same objects, while others remain uncared for. I hope that you will be kind enough to publish the above remarks in your widely circulated paper.

Markree Observatory, Collooney,
Ireland, July 17

WILLIAM DOBERCK

The Cuckoo

THE cuckoo is still singing in this part of the country. I may mention, as a point of some interest, that the note of this bird in South Germany is precisely the same in pitch as it is here, the observations in both cases having been made with a tuning-fork in the month of May.

Can any of your readers inform me whether the cuckoo in all parts of the country is in the habit of occasionally singing the *cuc* without the *hoo*?

GEORGE J. ROMANES

Ross-shire, July 24

THE FERMENTATION OF URINE AND THE GERM THEORY

CAN Bacteria or their germs live in liquor potassæ (Pharm. Brit.) when it is raised to the boiling-point (212° F.)? Such is now the simple issue to which certain great controversies have been reduced. If Bacteria germs cannot resist such an exposure, then, by M. Pasteur's own implicit admission, his exclusive germ-theory of fermentation must be considered to be overthrown by the broader physico-chemical theory. The truth or not of M. Pasteur's germ-theory is the central question in dispute, but standing on either side, or in close juxtaposition, are two dependent subjects of controversy whose importance for biological science and for medicine is even greater.

The question whether living matter can or cannot originate *de novo*, for example, depends upon the answer which is to be given to the question whether Bacteria and their germs are or are not killed in boiling liquor potassæ. This, also, is practically admitted by M. Pasteur in his comments (*Comptes Rendus*, July 17) upon my recent experimental evidence.

The other subordinate problem, the solution of which