

Science, No. 1, pp. 32-33, and No. 4, pp. 231-2-3, published in the present year,—it will, I think, be admitted that Mr. Jeffreys can hardly claim originality in his statement.

But to prove that Mr. Jeffreys was well acquainted with my previously published observations on the subject, I invite attention to two distinct statements of his which appeared in his Reports on Dredging, and were published in the *Annals and Magazine of Natural History*, on the respective dates given below:—

Annals, Nov. 1866, p. 391.

"Dr. G. C. Wallich, in his admirable and philosophic treatise, with which all marine zoologists and geologists are, or ought to be, familiar, believed," &c. &c. "As to the accuracy of his statements, no reasonable doubt can be entertained."

Annals, Oct. 1868, p. 305.

"Coccospheres and Foraminifera cover the bed of the Atlantic at enormous depths. The occurrence, therefore, of such organisms on the floor of the ocean, at great depths, does not prove that they ever lived there. I should rather be inclined to believe that they dropped to the bottom when dead, or after having passed through the stomachs of other animals which had fed on them."

It thus becomes manifest that Mr. Jeffreys had studied my writings, but that the opinions entertained by him in 1866 became revoked in 1868; whilst those held by him in 1868 were in turn superseded by views formed and published in 1869! This circumstance is the more significant, inasmuch as Dr. Carpenter, in his "Official Report on Dredging," for 1868 (p. 181), actually singles out the opinion published by Mr. Jeffreys, as above, in the autumn of the same year, as an authoritative illustration of the want of credence which my discoveries had met with!

With regard to Mr. Jeffreys' new division of oceanic animals into *zoophagons* and *sarcophagons*, I have nothing to urge beyond my avowed inability to discern any physiological difference between creatures that are zoophagous and those that are sarcophagous. It only remains for me to express my belief that, up to the present period, I have stood alone in maintaining, against Ehrenberg and others, that plant-life, even of the lowest types, becomes extinct at depths exceeding four or five hundred fathoms; and in endeavouring, by a series of observed facts, to prove that the nutrition of the Foraminifera and certain other oceanic Rhizopods is effected by a special vital process, which enables them to eliminate and apply to the formation and sustenance of their body and shell-substance, through their surfaces only, the materials which exist in the medium in which they reside.

Kensington, Dec. 21

G. C. WALLICH

Colouring of the Cuckoo's Egg

As I see Professor Newton has, in his very interesting paper on Dr. Baldamus' theory of the colour of Cuckoo's eggs, noticed my "stigmatising" the Doctor's theory as "wild," in my "Birds of Somerset," will you be kind enough to allow me space for a few lines on the subject? Although it is with great diffidence that I venture to differ from Professor Newton, I still cannot help considering Dr. Baldamus' theory as "wild," not perhaps as it appears under the manipulation of Professor Newton, for he seems to me to have pruned and pared it down so nicely that there is but little of the original left; and I think he would not much differ from me in my opinion as to the wildness of the theory, if he had to accept all the allegations in Dr. Baldamus' paper published in *Naumannia*.* For instance, compare the following passage in Professor Newton's paper in No. III. of *NATURE* with some passages from Dr. Baldamus' paper:—"Having said thus much, and believing as I do the Doctor to be partly justified in the carefully-worded enunciation of what he calls 'a law of nature,' I must now declare that it is only 'approximately,' and by no means universally true, that the Cuckoo's egg is coloured like those of the victims of her imposition. Increase as we may by renewed observations the number of cases which bear in favour of his theory, yet, as almost every bird's-nesting boy knows, the instances in which we cannot, even by dint of straining our fancy, see resemblances where none exist, are still so numerous as to preclude me from believing in the generality of the practice imputed to the Cuckoo. In proof of this I have only to mention the many eggs of that bird which are yearly found in nests of the Hedge-Sparrow in this country, without ever bearing the faintest similarity to its well-known green-blue eggs. One may grant that an ordinary English Cuckoo's egg will pass well enough, in the eyes of the dupe, for

that of a Titlark, a Pied Wagtail, or a Reed Wren, which according to my experience are the most common foster-parents of the Cuckoo in this country; and indeed one may say, perhaps, that such an egg is a compromise between the three, or a resultant, perhaps, of the three opposing forces; but any likeness between the Hedge-Sparrow's egg and the Cuckoo's so often found alongside of it, or in its place, is not to be traced by the most fertile imagination. We must keep, therefore, strictly to the letter of the law laid down by Dr. Baldamus, and the practice imputed to the Cuckoo is not universally, but only approximately true." This certainly is very different from Dr. Baldamus' own statement:—"If Mr. Braune, the forester of Griezland, had not cut this large Willow Wren's (*Shippolais*) egg (as it seems) out of the ovary of the Cuckoo, which was killed as she was flying out of the Willow Wren's nest; if Count Röderm, of Breslau, was not a reliable authority that this apparent Redstart's egg was taken out of the nest of the Redstart (*Ruticilla phoenicurus*); if M. Halricht had not taken this large Tree Pipit's egg out of the nest of a Tree Pipit (*Anthus arboreus*); if I myself had not taken out of the nests of the Red-backed Shrike (*Lanius collurio*) this reddish and this green-greyish peculiarly marked Cuckoo's egg, one might indeed entertain doubts whether this variously-coloured collection—these green eggs, with and without markings; these on white, grey, green, greenish, brownish, yellowish, reddish, and brown-reddish ground; these grey, green, olive/green, ash grey, yellow brown, yellow red, wine red, brown red, dark brown and black; these spotted, streaked, speckled, grained and marbled eggs could one and all be the eggs of our Cuckoo! And yet this is indeed the fact!" How different this from the much more cautious and limited statement of Professor Newton, first quoted, which would entirely sweep away some of these varieties, especially those resembling the eggs of the Redstart or the Hedge-Sparrow, for the eggs of these two species do not differ much from each other, and what might be said of the eggs of the one would apply equally to those of the other; yet these are two of Dr. Baldamus' selected species, for, a little further on, he gives a list of the various species from the nests of which Cuckoo's eggs have been taken resembling those of the foster-parent. Of the eggs of the Redstart he says:—"These four specimens, which were found in the nests of *Ruticilla phoenicurus*, are all of a light-green ground colour; two of them have the larger and more or less brownish spots, which on one of them form a zone; the third has similar markings, but only sparingly scattered over the whole surface, whilst the fourth is without any marking at all—herein it is identical with one in the possession of Dr. Dehne, which is uniformly light-greenish blue, without any markings whatsoever."

Of the single specimen of the egg resembling that of the Hedge-Sparrow, No. 15 in his list, he says:—"One of the most interesting of the Cuckoo's eggs is a beautiful blue-green one, which was taken out of the nest of *Accentor modularis*, without any markings, and which even to the shell, the grain, and the size (bis auf Shale, Korn, und Grösse) is like a very dark egg of the Hedge-Sparrow." On reading this quotation from the statement of the facts on which his theory is founded by Dr. Baldamus in the paper in *Naumannia*, and comparing it with Professor Newton's paper above quoted, we cannot help seeing that there is a decided issue of fact between them, especially as to the eggs of *Accentor modularis*.

The conclusion which Dr. Baldamus draws from the facts stated by him is that Nature, by means of such arrangements, has ensured and facilitated the preservation of a species otherwise much exposed to danger, and that she has attained this object by investing every hen Cuckoo with the faculty of laying eggs coloured exactly like the eggs of the bird of whose nest she prefers to make use, according to the locality. Now if this were really the case, and it were really true that this colouring of the eggs were essential for the preservation of the species, would it not be just one of those laws of Nature which we should expect to find universal, or so nearly so that there would be but very few exceptions? But according to Dr. Baldamus himself the exceptions are numerous, and Professor Newton would make them still more numerous, and would no doubt be quite right in doing so. How, then, do the eggs in the exceptional cases prosper? Does the Hedge-Sparrow or the Redstart throw the egg of the Cuckoo out of its nest because it does not resemble its own? or do the birds to whose tender mercies the Cuckoo, according to Dr. Baldamus himself, is occasionally obliged to entrust its eggs when it cannot find a fitting nest in which to place them, do so? This does not appear to be at all

* Where I have quoted from this paper, I have quoted from the translation by the Rev. A. C. Smith, published in the *Zoologist* for 1868, which professes to be an accurate translation, and there seems to be no possible reason to doubt its being so.

the case, but the eggs remain in the nest in which they were originally placed by the parent Cuckoo, and are duly hatched by the foster-parent. That being so, the necessity for the law of nature which the Doctor wishes to establish falls to the ground. I do not like to put forward my own opinion against such great authorities as Dr. Baldamus and Professor Newton, but I think the inquiry now set on foot in this country by the publication in English of Dr. Baldamus' paper in *Naumannia* will be to show that Cuckoo's eggs do not in fact vary from each other more than those of many others, and that the resemblances to the eggs of many other species are not greater than sometimes arises in many ordinary cases.

CECIL SMITH

The Cloaca Maxima

YOUR correspondent "Ignoramus" will find some account of the drainage of Rome in Pliny ("Hist. Nat." xxxvi. 15, s. 24). He will also find further particulars in Livy (i. 38), and in Ulpian ("Dig." 43, tit. 23, s. 1).

History repeats itself. Just as the London sewers were originally natural brooks or artificial ditches by which the rainfall of the district was carried off, and into which it was penal, down to the year 1815, to turn any "sewage" proper; so the Cloaca Maxima was built originally, in very early times (by Tarquinius Priscus, according to Livy), to carry off the rain-water from the Forum. Afterwards, however, all kinds of liquid refuse were allowed to find their way into it; and this seemed such a convenient way of getting rid of troublesome matter, that the whole city was eventually undermined by a network of sewers, including small pipes of wood and earthenware connecting the houses with the main sewers. Whether "traps" were also used I am unable to say, but I think it very probable that some simple combination of trap and cess-pit, in masonry, was used to prevent an up-blast of foul gas into the *atrium*.

What became of the solid refuse I do not know, but from all that I can gather I imagine it must have been carted away periodically. I trust some of your readers may have compassion for our ignorance, and, by enlightening us on this point, completely restore to "Ignoramus" that peace of mind which he lost in early childhood.

I trust also that the days of river cloacal pollution, in this country at least, are numbered, and that the advances which other sciences have made in the last 2,000 years will at last make our engineers ashamed of their ignorant violation of what I hope I may be allowed to call one of the laws of Nature.

W. HOPE

Hydro-carbon Colours

CAN your readers inform me of any book in which I can get to know all that is known on the "Hydro-carbon colours, and their application to Art industry," or direct me to any sources where the information can be obtained?

Plymouth, December 18

T. W. FRECKELTON

NOTES

THE *Journal of Botany* will pass into new management with the commencement of the year. The leading English botanists have promised their co-operation towards making it a complete record of the progress of botany at home and abroad during the month. It will in future be edited by Mr. W. H. Trimen, M.B., of the British Museum, author of "A Flora of Middlesex."

THE persistent decrease in the yield of our sea-fisheries has assumed a serious aspect, and urgently calls for systematic investigation at the hands of the Government. The usual machinery for such investigations, namely, a Royal Commission, could, however, hardly obtain the exact kind of information necessary for a determination of the probable cause of the mischief. Nothing short of the appointment of Inspectors of Sea Fisheries, with analogous functions to those discharged (with such beneficial results) by the Inspectors of Salmon Fisheries, can afford the opportunity for a thorough examination of the subject, and prepare the way for useful legislation. This course is ably advocated in the last number of *Land and Water*, and we feel it incumbent upon us strongly to second the recommendations of our contemporary on this point.

THE Ethnographical Section of the Geographical Society of Berlin, which has existed in a more or less definite form for about three years, has just separated itself from the parent organism, and entered upon an independent career as the Society for Anthropology and Ethnology. The first ordinary meeting of the new society took place on the 10th instant, when a paper was read by Professor Virchow on the North-German Pile-works. As compared with the great majority of such remains in Switzerland and South Germany, the pile-works of the North are not of very high antiquity. There is only one colony, that of Wismar, which belongs to the Stone period; even the older forms of bronze are rarely met with. The mode of construction of the pile-works likewise indicates an advance on that employed in Switzerland. Professor Virchow is of opinion that some, at least, of the earth-works found in certain districts are contemporary with the lake habitations: evidence on this interesting point is promised at some future time. That the pile-works, although of comparatively recent date, are really pre-historic, is indicated by the discovery of the remains of beaver and elk. The latter animal is not mentioned by the old chroniclers of Brandenburg and Pomerania; neither do we find mention of any lake-dwelling people in the ancient Scandinavian or Polish historians.

WE understand that steps are being taken to found an anthropological society in Hamburg, but no particulars have as yet reached us.

WE extract the following from the last Weekly Bulletin (26th inst.) of the Scientific Association of France:—"The vine occupies in France almost 2,500,000 hectares (6,175,000 acres). This constitutes the one-and-twentieth part of the French territory, and the sixteenth part of its soil capable of cultivation. The gross produce amounts to more than 1,500,000,000 francs. This industry occupies six million men, women, and children, and nearly two million merchants, agents, traders, &c. Sixty-nine departments cultivate the vine, from the Gironde, which reckons more than 150,000 hectares (370,500 acres), to the department of Ille-et-Vilaine, which only possesses 104 hectares (256 acres)."

THE commission appointed by the Imperial Academy of Medicine in Paris to investigate the subject of vaccination has just concluded its labours by the presentation of its Report, which has been adopted.

MR. J. MIERS, so well known for his researches in the Botany of South America, is about to publish the second and third volumes of his "Contributions to Botany," which will include a complete monograph of the *Menispermaceae*, and of the South American species, of *Ephedra*, showing that this genus does not belong to the Gymnosperms or naked-seeded plants, as generally believed.

IN a letter of the 17th ultimo, addressed to the *Astronomische Nachrichten*, Dr. Oppolzer discusses the observations of a faint comet discovered by Pons in February 1808, and arrives at the conclusion that it is exceedingly probable that the comet referred to is identical with that named after Winnecke. Dr. Oppolzer is at present engaged in working out the observations of the latter comet, more especially in reference to its supposed identity with Comet II. of 1766.

WE regret to learn from the recent report of the Miners' Association for Cornwall and Devonshire, that that useful body is in danger of being dissolved in consequence of the inadequate support it receives from the mining interest. The importance of combining scientific knowledge with practical experience, if we intend to maintain our present position in mining and metallurgy as against the highly-trained miners of other countries, is acknowledged by every competent person. Surely, then, when owners of mines and shareholders in mining companies learn that the Miners' Association not only discusses and publishes important scientific papers of a practical character, but is at the present