

We may be led from the consideration of the broad facts nature to conceptions of the most abstract kind, without being conscious of the slightest gap between the facts of Science and the creations of the Imagination. In these days the utmost skill is often displayed in hiding and ignoring or denying the hiatus by which the arguments deduced from the results of observation and experiment are separated from those which are based upon the fictions of the fancy. But, unhappily, the gulf cannot be filled up, or bridged over. It may be obscured by mists and clouds, but, though it be lost for a time, it is sure to be rediscovered and its limits studied by the curious and unphilosophical.

Nowadays analogical argument is employed very freely without any attempt to show, in the first place, that there is any real analogy between the facts upon which the reasoning is based. In order to convince people that a hypothetical gemmule may move long distances through all sorts of tissues, it is only necessary to show that actual matter, millions of times as large, does burrow a short distance through certain textures. Mr. Darwin remarks that it cannot be objected "that the gemmules could not pass through tissues or cell-walls, for the contents of each pollen grain have to pass through the coats both of the pollen tube and embryonic sack."

He might have advanced in his support the fact of fungi traversing tissues, of entozoa of various kinds burrowing long distances through the textures of the living body, and many well-known instances of a similar kind. But such facts do not strengthen the hypothesis of Pangenesis in the slightest degree. They were known before it was advanced, and the objection controverted has not been raised in the form indicated. We know that a thing infinitely larger than the hypothetical gemmule does pass through tissues, but do the gemmules really exist, and do they pass through? Certainly, if they exist, they may pass, but, as I have indicated, there are other matters invalidating the hypothesis besides the question of the gemmules traversing the tissues. Pangenetic gemmules might pass everywhere. They might leave the body, collect in the atmosphere and coalesce, and the compound particle formed might easily wriggle itself back again into the organism through the chinks between the cuticular cells. Such gemmules might move anywhere, up and down and in and out through any cell wall. They might pervade solids and fluids and gases. The pangenetic gemmule cannot be seen or tested, neither can its presence or absence be proved in any way. The phenomena adduced by Mr. Darwin in support of his hypothesis can be demonstrated; but the pangenetic gemmules are of the imagination alone, and the analogy between the actual facts and the supposed facts is surely but an analogy of the imagination. The facts alluded to no more support the pangenetic hypothesis than does the demonstration of living germs in the air support the hypothesis of life in the blue sky. It is possible to supply many arguments stronger than those adduced in support of the hypothesis, nay, perhaps, stronger than any Mr. Darwin himself has yet advanced in favour of Pangenesis; but yet other considerations appear to me greatly to preponderate against the acceptance of the doctrine. Mr. Darwin admits that "from presenting so many vulnerable points" the life of his hypothesis "is always in jeopardy;" but is it not this very jeopardy which lends interest and enchantment to many a hypothesis, and sustains it in the estimation of those who delight in conjectural information and scientific speculation?

LIONEL S. BEALE

MR. DARWIN, in his letter to NATURE of April the 27th, says: "The fundamental laws of growth, reproduction, inheritance, &c., are so closely similar throughout the whole organic kingdom that the means by which the gemmules (assuming for the moment their existence) are diffused through the body, would probably be the same in all beings, therefore the means can hardly be diffusion through the blood." Now, if in the vegetable kingdom pangenetic gemmules are able freely to be "diffused" from cell to cell by endosmosis, we should expect that in the case of grafts, where certainly such diffusion goes on between the cells of the stock and the scion, a bud borne upon the graft would certainly be affected by the gemmules arising in the root and stem of the stock. Yet we all know that the pips from a pear grafted on a quince stock will not give rise to a hybrid between a pear and a quince, neither will the stone of a peach which has been grafted on a plum stock grow into a tree whose stock bears plums, while the extremities of its branches bear peaches.

A. C. RANFORD

Noises at Sea off Greytown

IN NATURE, vol. ii. p. 25, Mr. Dennehy gave an interesting account of a peculiar vibration, accompanied by sound, which is perceivable at night on board all (?) iron steamers which anchor off Greytown, Central America; and in subsequent pages I have read with great interest various speculations as to its origin, which is ascribed (1, the probable solution) to troops of Scienoids (with reservation) by Mr. Kingsley (p. 46); (2) to musical fish or shells, by Messrs. Evans and Lindsay (pp. 46 and 356); and (3) to gas-escape from vegetable mud and sand, by Mr. Malet (p. 47); whilst Mr. Dennehy himself suggests the possibility of some galvanic agency.

I remarked upon this vibratory phenomenon in a communication published in the *Field* newspaper of October 26th, 1867, signed "Ubique," after having heard it myself when on board the Royal Mail steamer *Danube* (Capt. Reeks) during the nights of the 12th, 13th, 14th, and 15th of May, 1867; the new moon occurring on the 4th of the same month. As my statement serves to confirm Mr. Dennehy's report, I may be forgiven for giving it in full.

After giving an account of the sudden appearance of a huge white shark in the deep sea when a man fell overboard, I proceeded to state as follows:—"On embarking on board the *Danube* steamer, lying at anchor in the roadstead off Greytown on the 12th May, 1867, I was informed that the ship was haunted by most curious noises at night since she had arrived, and that the superstitious black sailors were much frightened at what they thought must be a ghost. The captain and officers could make nothing of it, and it afforded a great matter for discussion. On inquiry I found out that other iron ships had been similarly affected. Curiously enough this noise was only heard at night, and at certain hours. Some attributed it to fish, suckers, turtle, &c., others to the change of tide or current; but no satisfactory conclusion could be arrived at. When night came on there was no mistake about the noise; it was quite loud enough to awaken me, and could be heard distinctly all over the ship. It was not dissimilar to the high monotone of an Æolian harp, and the noise was evidently caused by the vibration of the plates of the iron hull, which could be sensibly perceived to vibrate. What caused this peculiar vibration? Not the change of current and tide, because, if so, it would be heard by day. Like everything else that we cannot explain, I suppose we must put it down to electricity, magnetism, &c. If this should meet the eye of any of the officers of the above-mentioned steamer, or others who have noticed this phenomenon, I should be glad to hear whether this effect still continues, or if any satisfactory conclusion has yet been arrived at. I may add that from the hold of the vessel the grunts of the toad-fish could be distinctly heard. I hope that the above notice may lead to some answers from your various correspondents."

This brief notice drew forth a rejoinder from a correspondent (November 23, 1867) who had noticed a somewhat similar sound.

"The singular sound noticed by 'Ubique,' I have also heard without knowing its origin. One moonlight night in 1854, on board a steamer anchored near the Tavoy river (Tenasserim) we were struck by an extraordinary noise which appeared to proceed from the shore about a quarter of a mile off, or from the water in that direction. It was something like the sound of a stocking loom, but shriller, and lasted perhaps five or six seconds, producing a sensible concussion on the ear like the piercing scream of the cicada; and this gave an impression as if the vessel itself were trembling, or reverberating from the sound. One or two Burmans on board said simply, the noise was produced by 'fishes,' but of what kind they did not describe. It was repeated two or three times. I never heard it before or after the occasion referred to, nor have I ever met with any allusion to this singular phenomenon until I perused 'Ubique's' communication in the *Field* of the 26th ult. The steamer in my case, I should add, was a wooden one."

Mr. Evans, in his letter, speaks of the rapid silting up of Greytown harbour this still continues, and the passage over the bar, which is continually shifting, is often a matter of great difficulty, and indeed often so dangerous that the Royal Mail Company will not undertake to allow their own boats to land, and passengers have to land in the local canoes at their own risk. The Nicaraguan Government, however, propose to carry out Mr. Shepherd's plan of diverting the waters of the San Juan river from the Colorado mouth to the Greytown channel, hoping thereby to scour the harbour clear.

Mr. F. J. Evans also refers to the vast amount of animal life, and mentions the quantities of sharks and *alligators* which abound in and about Greytown Harbour. I can fully corroborate this, although I believe that what Mr. Evans terms *alligators* are really *crocodiles* (*Molinia Americana*), I should be glad to have certain information on this point: when not actually visible, their proximity is made evident by a powerful odour of musk. The most notable, however, of the denizens of these waters, besides the turtle, is the Atlantic manatee, which Columbus mistook for a mermaid, and which Agassiz terms the modern representative of the *Dinotherium*. The Mosquito Indians on the Indian, Rama, and Blewfields rivers are great adepts at harpooning this paradoxical mammal, and its flesh salted is a staple article of food all along these coasts, being not unlike to ship's pork.

Southsea, April 28

S. P. OLIVER

P.S.—When at anchor off Greytown, also in the *Danube* steamer, during the night of February 15, 1867, (moon eleven days old) there was no vibration or noise perceived, but then there was a tremendous swell breaking with high surf on the bar, and the vessel rolling heavily. It would be interesting to overhaul the logs of the Royal Mail Company's vessels which have been at Greytown, in order to discover the periods of these vibrations, but I am afraid that no observations have been recorded in their books.

Mechanical Equivalence of Heat

You will see from the proceedings of the Literary and Philosophical Society at Manchester, that, since the discussion there, Dr. Joule has definitely abandoned the reasonings in his famous paper on the mechanical force of electro-magnetism, steam, and horses. I have now had time to test the facts and experiments of this new theory, and find it, as I hope soon to show in detail, as untenable as his former one. Indeed, I am sure that the mechanical equivalence of heat must soon be generally abandoned as inconsistent with facts. You will see that the April number of the "Review of Popular Science," has definitely pronounced a decision in my favour; and I am sure you will soon be convinced yourself that your own first reviewer of my article in the *Quarterly Journal of Science* was more reasonable than your second.

H. HIGHTON

Aurora by Daylight

AN additional well-authenticated instance of this very rare but indisputable phenomenon, may, perhaps, be thought worthy of insertion.

In the Transactions of the Royal Irish Academy for 1788 (embodied in "Memoirs of Science and the Arts," 1798), is "An Account of an Aurora Borealis seen in full Sunshine, by the Rev. Henry Ussher, D.D.," which opens in the ensuing manner:—

"The following phenomenon being very uncommon, if not entirely new, I think it worth communicating to the Academy, principally with a view to learn whether any other person has observed a similar one at any time:—

"On Saturday night, May 24, 1788, there was a very bright aurora borealis, the coruscating rays of which united, as usual, in the pole of the dipping needle. I have always observed that an aurora borealis renders the stars remarkably unsteady in the telescope. The next morning, about eleven, finding the stars flutter much, I examined the state of the sky, and saw whitish rays ascending from every part of the horizon, all tending to the pole of the dipping needle, where at their union they formed a small thin and white canopy, similar to the luminous one exhibited by an aurora at night. These rays coruscated or shivered from the horizon to their point of union. These effects were distinctly seen by three different people, and their point of union marked separately by each of them."

T. W. WEBB

The Coronal Rifts

THE enclosed extract of a letter from Captain Tupman, who observed the Eclipse of December last through the finder of Prof. Harkness's telescope at Syracuse, may interest some of your readers:—

"It is a singular feature in all the photographs that the 'rifts'

are so wide and distinct. They are actinic rifts. As seen in the telescope simply the corona had no such rifts. I watched it during the whole 105 seconds; such a feature would, of course, have struck me instantly. I actually pointed Prof. Harkness's spectroscope in the rifts as being bright parts of the corona!"

A. C. RANYARD

The Name "Britain"

AS "C. L. N. F." has in your last well answered the letter of "A. R. H.," I have now only to reply to Mr. Hyde Clarke's letter, in which he says I should find it difficult in my derivation of "Britannia" and "tin" "to explain on the same basis the conformable names" of the countries and rivers which he mentions, inasmuch as "these names are not explainable in Phœnician, because they were given long before the Phœnicians entered on the stage of history."

His paper read before the Anthropological Institute I have not seen, but as "the learned" Bochart and other authors have considered the name "Britain" to have been derived from the tin which the Phœnicians exported from Cornwall more than 3,000 years ago (Num. xxxi. 22), and as no one will venture to say that "tin" was not then the name of this metal in the most ancient Cornish as well as in the Phœnician language, from which it proceeded, I do not think I can fairly be called upon to go into the "difficult" task suggested by Mr. Clarke.

The original name of our island I have imagined to be *Bretin* ("Tin Mount"), that being at first exclusively the name of the *mount* from which the Cornish *tin* was exported by the Phœnicians, and it is highly probable that the same name was afterwards given by these ancient traders to the entire island, of which the mount was only a part, for it was Britain that gave them nearly all their *tin*, and its most beautiful natural object known to them was St. Michael's *Mount*.

There being other islands close to Britain, the Romans gave the name *Britannia* indiscriminately to them all. When they spoke of Britain as dissociated from its contiguous islands, they called it either *Britannia* or *Insula Britannica*, which is synonymous with *νησος Βρετανική*. This word, *Βρετανική*, used at first adjectively by the Greeks, had in the time of Diodorus Siculus become a substantive, so that he uses it as such when describing the daily insulated port or mount called sometimes *Iktin* (Tin Port), and sometimes *Bretin* (Tin Mount), adjacent to *Βρετανική*, to which *port* or *mount* at low water the tin was carried from the mainland for sale and exportation. The following is the passage:—*εἰς τὴν νήσον προκειμένην μὲν τῆς Βρετανικῆς δύουαζομεν δὲ Ἰκτίν*.

Plymouth, May 6

RICHARD EDMONDS

* * We cannot print any more letters on this subject.—ED.

The Sensation of Colour

PROF. CLERK MAXWELL in his valuable paper on Colour in NATURE (vol. iv. p. 13) commits himself to the opinion that there must be three distinct sets of retinal nerves, one for each of the three primary sensations of colour. It is obvious that demonstrative proof or disproof of this is unattainable: we can only reason analogically. The analogy of the ear is in favour of such an opinion, so far as it goes; for there appears to be proof, or probability almost amounting to proof, that sounds of different pitch are conveyed to the brain by different nerves. But the ear resembles the other organs of sense less than they resemble each other; and there is surely no reason for thinking that there are distinct nerves of smell for every distinct kind of smell, or distinct nerves of taste for every distinct kind of taste. Nor I believe is there the slightest proof of nerves for the sensation of heat distinct from those of touch.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, Co. Antrim, May 8

P.S.—I am not now at home. I intend to write in reply to Mr. Laughton's important letter on the Prevalence of West Winds, when I am at home and have the file of NATURE and other authorities to refer to.

The Cave-Lion in the Peat of Holderness

WHILST engaged in the task of rearranging this Museum, I have been impressed with the value of two specimens in the Palæontological collection.

One is labelled "No. 7, *Felis*—metatarsal inner (Right side),"