

	ft.	in.	ft.	in.
1. A thin layer of stalagmite.				
2. Black impure guano	0	3	to	1
3. White clay with <i>Potamidus decollatus</i>	1	0	„	2
4. Guano			variable	
5. Débris of clay and guano, with fragments of limestone and stalagmite in abundance... ..	?	2	0	to 3
6. Pure yellow felspathic clay	4	0	„	5
7. Limestone floor.				

This particular cave could not be readily worked owing to the influx of water, but other caves exist at higher levels which would be more promising. The expense for six months' work, according to Mr. Everett's estimate, would not be more than the mere passage-money of anyone going out from England. I may add that Mr. Everett quite understands the proper mode of working, having had personal communication with Mr. Pengelly on the subject at Kent's Cavern. He is now thoroughly familiar with the country and the workmen to be employed, and it seems a great pity that advantage should not be taken of his residence in so interesting a locality, the proper exploration of which may throw light on a variety of biological problems.

ALFRED R. WALLACE

"You will recollect that some three years ago I came to Sarawak with the object of making general collections of natural history and, more particularly, of investigating the cave-deposits of Borneo.

"From time to time I made excavations in various caves situated in Upper Sarawak, being assisted pecuniarily by the Rajah to a certain extent. These excavations varied in depth from 4 ft. to 14 ft., and were made in different situations in the caves. No remains of interest, however, were discovered beyond some teeth of a *Hystrix*, and bones of man, bats, geckoes, &c., in the most superficial deposits, and the only result worth recording was the find of a stone axe-head in a bed of river-gravel. This celt was forwarded to Sir C. Lyell, and such remains as were obtained from the caves were sent to Messrs. Busk and Pengelly at intervals; but the latter, together with a recent tooth of *Rhinoceros* and two collections of miscellaneous specimens, appear to have been wrongly trashed in Singapore, and I have never been able to trace their whereabouts.

"After considerable observation and experience I now wish to state with all frankness my belief that my work was not carried on as it should have been, and that the non-existence of ossiferous deposits in the Bornean caverns is very far from being a proven fact. The inquiry as conducted by myself was not thorough, and it was unsatisfactory partly because I was in serious pecuniary difficulties myself, and partly because what I saw of the poverty of the Government and the remarks I heard dropped about the folly of expending money on such objects made me very shy of taxing the Rajah's liberality. I was, and am still, persuaded that the expense of cave-working in a country like this would have proved very much heavier than the Rajah had any idea of, and hence I worked with inadequate support.

"In the event of those who are interested in the exploration being desirous of having it continued, I venture to suggest that the person chosen for the work must either possess considerable private means or he must be employed at a regular salary; and further, that the work should be carried on with sufficient funds to render it independent of any assistance the Government here might afford. Money is so scarce here, and public wants so many and pressing, that assistance for purely scientific objects is not to be expected. Coolies are not procurable now under a wage of 2*l.* a month, and, owing to the rivers being the only roads, travelling expenses are heavy. For tools, lights, gunpowder for blasting, and such preliminary expenses, a sum of 15*l.* would be sufficient; and the monthly working expenses would vary from 10*l.* to perhaps as much as 15*l.*, according to the accessibility of the cave to be explored; so that for working a cave for three months a sum of 65*l.* would probably be required.

"As I am now employed in the Government service, I do not think I could undertake the work unless a formal application was made to the Rajah for the necessary leave of absence. Even were leave obtained, I do not suppose that I should continue on Government pay, and I could not afford to undertake the work under a salary of 25*l.* per month. The cheapest way of conducting the exploration would be to send out a gentleman of independent means who would do the work for its own sake, and then only the actual working expenses need be subscribed for. Supposing

remains were ultimately found, the item of freight would have to be added to the working expenses.

"I am induced to write you this letter from reading a note in NATURE for June 13, 1872, with regard to the Victoria caves, in which two years of constant but seemingly fruitless work has in the end proved successful. Trusting that another exploration may be attempted in this far more important field, and with like success, I remain, &c.,

"A. EVERETT

"To A. R. Wallace,
"Sarawak, February 1, 1873"

A Fact for Mr. Darwin

THE interesting fact contained in the following passage appears to me to deserve disinterment from the pages of a very large book, a work too, which, so far as I know, has never been translated. It occurs in the "*E-pétologie Générale*" (Par Duméril et Bibron, tome vi. p. 467), and I met with it while employed in working out a collection of reptiles, which I was engaged in classifying. The passage is as follows:—"Dans les villes d'Égypte, on rencontre souvent des charlatans exposant à la curiosité publique des *Eryx* javelots vivants auxquels, afin de les faire passer pour des *Cerastes*, ils ont en le soin d'implanter, en manière de corne, au-dessus de chaque œil, un ongle d'oiseau ou de petit mammifère, par le même procédé que celui qu'on emploie dans nos fermes pour fixer deux ergots sur la crête de certains coqs quand on les chaponne.

"C'est d'après des individus ayant la tête ainsi armée de deux fausses cornes, qu'Hasselquist a fait son *Anguis cerastes*. Nous avons dans les collections du musée des individus dont la tête porte ainsi des ongles recourbés d'oiseau, avec leur cheville osseuse, dont l'adhérence à la peau est parfaite."

Here is a fact, not only well authenticated, but capable of verification, demonstrating such close affinity of intimate structure and function between animals of different classes, that the skin appendage of one has been actually engrafted upon the skin of the other; the claw of a bird has formed perfect union with the skin of a snake. A good illustration of the affinity between birds and reptiles pointed out by Prof. Huxley.

I do not notice that statement about the claw of a small mammal being used for this purpose, because specimens illustrating it are not referred to.

The snakes alluded to in the passage are the *Eryx falcatus* (one of the *Erycidae* or sand-snakes of Dr. Günther), which is perfectly harmless: and the *Cerastes Hasselquistii*, a small but fierce and venomous viper; both inhabiting Egypt, and the latter supposed to have been the "asp" of Cleopatra. The *Cerastes* obtains its name from the so-called "horns," peculiar to the males, which are developed from modified scales over the centre of each orbit, attaining the length of about half an inch. The *Eryx* is about the same size as the *Cerastes*, for which it is passed off by the Egyptian snake-charmers, when manufactured as above described.

H. D. MASSY

Grenada Villas, Netley, near Southampton

The Phœnician Vademecum

It is gratifying to see (vol. vii. p. 351) that you express a doubt whether the Cowrie shells in the Pomeranian barrows must necessarily, as Wagner supposes, have been brought by the Phœnicians. Because the earliest Greek historians introduced the Phœnicians to us they have been employed as a universal machinery for carrying out all kinds of operations. This theory is in fact incompatible with our present knowledge of the duration of the human race, and, we may say, with the relative antiquity of the Phœnician epoch, which can date but little beyond the historic period. Thus we are led to neglect the evidences of skulls, weapons, tools, monuments, and languages, which show that there must have been communications between distant regions long before the rise of the Phœnicians. There are many prehistoric races which had a sufficiently wide distribution to provide for the dissemination of such a small object as the Cowrie. Among these may be named the dwarf or short races, of which the Mincopies of the Andamans are a type; the race now represented by the Agavs of the Nile, Avkhass of Caucasus (Achivi), and Omagua and Guarani of Brazil; and the Dravidian race. Populations which could distribute men over the continents and islands of Europe, Africa, Australia, and the Americas must have been capable of distributing cowries and beads without Phœnician intervention. At present the Phœ-

nicians are blocking the road to prehistoric research, as the Hebrews formerly did.

HYDE CLARKE

32, St. George's Square, S.W.

Earthquake Waves

THE observations at p. 385, on the operation of self-resisting tide-gauges of the U. S. Coast Survey, in illustrating the phenomena of earthquake waves, suggest the expediency of the same means being adopted in the basin of the Mediterranean. This could possibly, by a little correspondence and agitation, be effected at Naples, Athens, Constantinople, and Alexandria. The Turkish and Egyptian Governments are very likely to listen to any representations on behalf of the cause of science. Although the Mediterranean is considered tideless, there is a daily fluctuation of two feet in parts of the Levant, but what is material is that earthquake waves are known to have been manifested at Smyrna.

If our Government could be induced to encourage observations at Gibraltar and Malta, we should obtain a combination of points of contact for two allied regions.

HYDE CLARKE

Spectrum of Aurora

I WISH to make a correction with reference to my observations on the spectrum of the aurora, as given by J. R. Capron on p. 182; for he has credited them with greater accuracy than they profess to have: I have no doubt that my line No. 5, seen at wave-length 500 or 510, is the same as Lord Lindsay's and Elger's No. 4, and probably as Procter's. This is the more likely, seeing that the two former placed the principal line much nearer the red end than I did; for I assumed Angström's position (5567) to be correct. This leaves but one observer of No. 5 (Barker), and possibly his line also is the same; in that case his No. 4 will be the same as Lord Lindsay's No. 3.

I have seen published the following determinations of the positions of the auroral lines, in addition to those J. R. C. has given:—

	Wave-length.
No. 1. R. J. Ellery	635
No. 2. O. Struve	5545
Angström	5567
German North Polar expedition	5569
Peirce (as reported by Winlock)	557
Respighi	5573
R. J. Ellery	560
No. 3. Peirce has two lines near here—5315 and 5205; the latter is probably Lord Lindsay's "line near E," and possibly A. Clark, Jun.'s line also.	

	Wave-length.
No. 6. Peirce	464
No. 7. Peirce	431
Peirce also gives lines at 545 and 486.	

My latest determinations from my own observations are as follows:—

No.	Wave-length.
1.	606
2.	566
3.	5165
4.	5015
6.	4625
7.	4305

I have never seen a line at 532 again.

As to the continuous spectrum, it reaches from No. 2 to No. 7, being brightest from a little beyond No. 2 to No. 6. This part of the spectrum does not give me so much the idea of a true "continuous spectrum broken up by dark bands," as of a series of bright bands too close to be distinguished.

Sunderland

T. W. BACKHOUSE

Spectrum of Nitrogen

IN a paper communicated to the Royal Society by Mr. Arthur Schuster, it is stated that the line spectrum of nitrogen may be obtained under all pressures and temperatures if every trace of oxygen be removed by heating sodium in the vacuum tube.

I should be glad to learn whether any of your readers have successfully treated Mr. Schuster's experiments.

My friend, Mr. Lee, and myself have, on several occasions, attempted to do so, but always without success.

On heating the sodium we invariably find that an increase of pressure takes place from the liberation of hydrogen which, although very greatly lessened, is not entirely removed by drying the gas with sulphuric acid. On again exhausting we obtain, with the simple current, a spectrum of lines, not of nitrogen, but, in every instance, those of the second so-called hydrogen spectrum first described by Plucker, and afterwards noticed by Wullner and Angström.

This spectrum disappears as soon as the Leyden jar is used, and only the ordinary hydrogen spectrum is then visible.

The only effect which the sodium appears to produce is the liberation of hydrogen; for the same line spectrum can be obtained by exhausting a tube filled with hydrogen, or even with unpurified atmospheric air.

I was struck by the fact that only a few of the lines given by Mr. Schuster in his table of wave-lengths coincide with those of the known spectrum of nitrogen, while many of its most brilliant lines, including that which is its chief characteristic, the double green line (wave-length 5005-5002, Thalen) are not represented in his spectrum.

That the line spectrum of nitrogen can be obtained at all pressures, has been shown in a paper by Mr. Lee and myself, which has been sent elsewhere for publication; but that it can be obtained at all temperatures, by which, I presume, Mr. Schuster means either with or without the Leyden jar, is certainly contrary to our experience.

Liverpool

C. H. STEARN

Instinct

The Heredity of Instincts

THE following may perhaps serve as a contribution to the question so much discussed of late concerning the transmission or acquirement of likes and dislikes amongst the lower animals. It is an extract from a letter of a brother of mine, an officer in India:—

"I have at present a little tiger-cub, about the size of a spaniel, a most interesting pet, though it will soon be a dangerous one. He made friends at once with my fox-hound puppies, and romps with them incessantly. When he sees a cow or a goat his real nature betrays itself. He has no fear whatever of any dog; but, *strange to say, is thrown into a paroxysm of terror at the sight of a kitten or a tiger-skin.*"

This hardly seems to bear out the assumption so commonly made, that manifestations of this kind must have a history in the experiences if not of the animal itself, at least of its ancestors. We can hardly suppose the parents of this cub to have adopted a frame of mind respecting the race of tigers equivalent to misanthropy amongst ourselves, and the experience of cats or kittens must be small indeed in the jungles of the Decan.

St. Asaph, N. Wales

J. G.

Sense of Direction

IN Mr. Darwin's article in NATURE for last week there is a passage about "the sense of direction being sometimes suddenly disarranged," that brought to my mind assertions I had frequently heard made when travelling some years back in the wild parts of the State of Western Virginia. It is said that even the most experienced hunters of the forest-covered mountains in that unsettled region are liable to a kind of seizure; that they may "lose their head" all at once, and become convinced that they are going in quite the contrary direction to what they had intended, and that no reasoning nor pointing out of landmarks by their companions, nor observations of the position of the sun, can overcome this feeling; it is accompanied by great nervousness and a general sense of dismay and "upset;" the nervousness comes after the seizure, and is not the cause of it. I was present in a company of hunters when a tale of this "getting turned round" was told as a good joke against one of the party—a Nimrod of renown—the leading features of which he was reluctantly obliged to confess to the truth of, while denying some minor points that had been added to embellish it, as making him more ridiculous than he was: it would take up too much of your space to tell the particulars of the story. The feeling is described as sometimes ceasing suddenly, and sometimes wearing away gradually. Would it not be strange if it should appear that there is a "sense of direction" other than an acquired sense of