

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his Correspondents. No notice is taken of anonymous communications.]

Scientific Queries

MAY I venture to ask you, or one of your readers, for information on the following points:—

1. What is Le Verrier's Law of Storms?
2. What the latest state of our knowledge regarding the peculiar changes undergone by the Mexican Axolotls during their metamorphoses? Have changes, similar to those observed in 1866 by Duméril been noticed in the Zoological Gardens or elsewhere? Have any observations regarding generation in the so-called Pereniobranchiata been made on any other animals besides the Axolotl and the Siredon?
3. Where can I find any account of the earliest observations on the peculiar nesting arrangements of the Hornbills, as described by Wallace? I see that Captain Layard has sent a note on this subject to the Zoological Society, but I have no means of ascertaining what he states.
4. In a lecture published by Blanchard in the *Revue des Cours Scientifiques* a few months ago, on the Progress of Natural History in the Departments of France (excluding Paris), I see that a medal has been lately awarded to M. Lespes for his entomological researches. Are these recent researches, or are they those described several years ago by Mr. (now Sir John) Lubbock in the *Natural History Review*?
5. Is it not the general opinion of your readers that Sir John Lubbock would confer a great favour on those who possess the first edition of his *Prehistoric Times*, by publishing in the form of a pamphlet the chief additions which are introduced into his second edition?

F. R. S.

Haze and Dust

DR. TYNDALL, in his lecture upon Haze and Dust, says "that if a physician wishes to hold back from the lungs of his patient, or from his own, the germs by which contagious disease is said to be propagated, he will employ a cotton-wool respirator;" and, further on, "time will decide whether in lung diseases also the woollen respirators cannot abate irritation, if not arrest decay."

May I ask if there is any necessity for the unsightly respirators one sees over the mouths of people during the winter months and cold evenings? Has not Nature already provided us with an efficient one—one which, on experiment, will doubtless prove to be quite as trustworthy as the artificial one, without any of its inconveniences? I refer to the hair-sieve with which the sinuosities of the nasal passages are supplied; the hairs besetting its path freeing the indrawn air from contaminating particles of dust, whilst it is effectually warmed in its inward passage.

That the air is thus filtered might, I think, be ocularly demonstrated by inhaling exclusively through the nostrils, and then expiring through the glass tube, when the floating matter will be found absent, having been arrested in the nose; I suggest this experiment, because, from the eminent professor applying a handful of wool to his *mouth* and *nose*, I infer that he did not give his natural respirator a fair chance of showing its capabilities.

Apart from the use of respirators, *en passant*, I may perhaps be allowed to echo the opinion of our best medical men in saying that the mouth is not *the* organ for respiration; if it were, should we not find the olfactory nerves developed there also? By respiring through the mouth you do not properly exercise your sense of smell, you allow the hairs lining the nasal cavities to dwindle away and become suppressed through non-use, and finally, you clog up the minute tubercles of the lungs with all kinds of rotten matter.

It is a well-known fact, that people who habitually breathe through the nose are less liable to infectious diseases and pulmonary complaints, one very common benefit derived by such who sleep with the mouth closed, is that they never awake with the painful and disagreeable sensation produced by a parched throat and cracked lips. This may be a small matter, but I think it is deserving of attention. When we break Nature's laws we must pay the penalty.

A. L.

The Solution of the Nile Problem

I HAVE read with much pleasure Mr. Keith Johnston's remarks in your impression of the 27th ult. on the subject of Dr. Livingstone's explorations, not only because they manifest

an intimate acquaintance with the general physical features of the field of inquiry and a proper estimate of the merits of the question; but because they help to establish the correctness of my opinion, that the Chambeze and its lakes belong to the Nile system, and not to that of the Congo. I have only to explain that, in my letter of December 1st (*NATURE*, No. 9), I did not "give the opinion that the river which forms the main part of the great traveller's latest discoveries is the head stream of the Nile," but merely said that it "joins" it.

On the question of levels your correspondent is substantially correct, and if he will look to the *Illustrated Travels* of the 1st inst., he will see how far I agree with him. From Dr. Livingstone's statements it appears that the general drainage level of the basin of the Chambeze does not exceed 3,000 feet; and it is not improbable that in the passage of the waters northwards on the west side of Tanganyika, they fall two or even three hundred feet lower, so as to descend nearly if not entirely to the level of the Albert Nyanza. But even if this be the case, I fail to see how the difference in height, however small, "could not give a sufficient lowness to the latter lake (Albert Nyanza) to allow this river (Chambeze) to flow down to it through the five degrees of latitude which separate them." The levels of the Lakes Liamba, Tanganyika, and Albert Nyanza—of which the first is in about 10° S. lat. and the last has its northern end in about 3° N. lat.—are respectively *circa* 2,800, 2,844, and 2,720 feet; and as the continuity of these three bodies of water is assumed by Mr. Keith Johnston, it follows that there is here a virtual dead level extending over not five, but *thirteen* degrees of latitude, or 780 geographical miles! If then it is possible for the waters of Lake Liamba, the head of Livingstone's "eastern line of drainage," to flow into the Albert Nyanza, it is equally possible for those of the Chambeze and its lakes, forming that traveller's central line of drainage, to do so.

In his last letter from Ujiji, Dr. Livingstone says that "the western and central lines of drainage converge into an unvisited lake west or south-west of this"—that is to say, situated in the unexplored regions west of Tanganyika, in the north-north-west direction in which he saw the Lualaba (as he calls the lower course of the Chambeze) flowing, after it had emerged from the crack in the mountains of Rua, north of Lake Moero. This "unvisited lake" is evidently the Lake Chowambe of the traveller's former communications, which by his now calling Baker's Albert Nyanza by the name of "Nyigi Chowambe," he would seem to identify with it. But this is quite consistent with Baker's own statement, that, to the south of about 1° 30' S. lat., the Albert Nyanza "turns suddenly to the west, in which direction its extent is unknown."

"Albert Nyanza," "Nyigi Chowambe," and this "unvisited lake west or south-west of Ujiji," are, therefore, one continuous body of water, which, being on the lowest level of all, must form not merely the "western line of drainage," but the *main* drainage of the upper Nile Basin; and as, on its eastern side, it is the recipient of the waters of the lakes Victoria Nyanza and Tanganyika, so, on its western side, it receives those of the great lake discovered by Signor Piaggia, with an elevation (as I believe) of four or five thousand feet.

This is entirely in accordance with the opinion I have always entertained that the water-parting between the basin of the Nile and those of the rivers flowing into the Atlantic—the Ogowai the Kuango (Congo), the Kwanza, and the Kunene—is on about the twentieth meridian of east longitude, as it is, in fact, marked on my maps of "The Basin of the Nile" of 1849, 1859, and 1864. The Mossamba range of mountains, situate to the east of the Portuguese colony of Benguela, on the west coast of Africa, forms the southern extremity of this water-parting, and it is in these mountains that I find the head of the great river, which with the Lufira forms Livingstone's "western line of drainage," or, as it should be more correctly designated, the main stream of the Nile. This river is the Kasáí, Kassávi, or Loke, whose sources are in the forests of Quibokoe or Kibokoe, on these Mossamba Mountains, within 300 miles of the Atlantic Ocean; which river was crossed by Dr. Livingstone within 160 or 170 miles of its head, on February 27th, 1854, in his adventurous journey across the African continent, and is described by him in page 332 of his "Missionary Travels," and the lower course of which river was followed down by the Hungarian traveller, Ladislaus Magyar, in 1850, as far as about 6° 30' S. lat., where he heard that it flowed eastward into Lake "Nhanja"—a statement strikingly in accordance with Mr. Cooley's assertion, adverted to in my former communica-