were well defined; on the front one the crystals were best developed where the stream was most active.

In accordance with the above rate of increase of deposit, namely, $\frac{3}{4}$ in. in fifteen years, 5 in. would require 100 years, 4 ft. 2 in. 1,000, and 41 ft. 8 in. 10,000 years. The data given to arrive at these results may be relied on as being accurate. In the case now related, the rate of increase of deposit was likely to continue tolerably uniform; as the surface water could have no appreciable influence in augmenting or lessening the flow from the adit.

Boltsburn, Nov. 26 JOHN CURRY

Shooting-stars in the Red Sea

ON my way to India, in November 1872, I witnessed in the Red Sea the splendid phenomenon of a star-drift, a note about which may be of interest, in comparison with the observations at the same time in Europe.

November 24, at 8 P.M., about 600 miles to the south of Suez, I first saw a series of shooting-stars falling from about 70° W.N.W., but not in such a quantity that my attention was much attracted; I only made a note about it in my diary.

In the night of the 25th–26th I noticed nothing particular, but in that of the 26th–27th again many shooting-stars were to be seen.

But in the night of the 27th–28th, about 100 miles to the west of Aden, the phenomenon reached its height. Through the whole night many thousands of shooting-stars were falling from every quarter of the heavens, and in all directions. It was impossible for me to count the average number falling in one minute, although I tried several times to do so, because the eye could not be everywhere, and the shooting-stars did not come from one point only. I sat the whole night on deck, to witness this sublime phenomenon of nature, which certainly was far more splendid here in the tropics than in Europe, on account of the generally greater brightness of the stars in these latitudes.

A. B. MEYER

Cuckoos

IN vol. v. p. 383 of NATURE, you were so good as to publish a note of mine, in which I tried to describe exactly all that took place when I saw a young cuckoo throw a young pipit out of the nest.

I am much flattered to find that Mr. Gould has thought my note fit to be transferred to the introduction of his magnificent "Birds of Great Britain," and a rough sketch of mine worthy to be made the foundation of one of his large coloured plates. As, however, I have always tried in my drawings of facts in natural history to express neither more nor less than what I saw, I think it right to say that I am not the authority for many of the details in the large plate.

None of us saw the parent pipit looking on while the young cuckoo behaved so naughtily; we saw only two young pipits besides the young cuckoo, and no egg-shells. The young cuckoo was absolutely naked and blind, the young pipits partly fledged and bright eyed.

One curious point I tried to call attention to in my former note in these words:—"The nest . . . . was below a heather-bush on the declivity of a low abrupt bank . . . . The most singular thing of all was the direct purpose with which the *blind* little monster made for the *open* side of the nest, the only part where it could throw its burthen down the bank." This peculiarity my rough sketch could not, and Mr. Gould's plate does not, express. J. H. B.

*ASTRONOMICAL ALMANACS**

VII.—*Continuation of the History of the "Nautical Almanac."*

UNTIL towards the end of the life of Maskelyne, its founder, the *Nautical Almanac* had the approbation of the English, and knew how to deserve the praise of foreigners; it was, according to Lalande, the most perfect ephemeris that had ever existed.* But, in 1808, death deprived Maskelyne, who was then about 76 years of age, of his pupil and industrious *collaborateur*, R. Hitchins, upon whom he had depended for ten years for the most important part of his work, the verification of the calculations, and who was during that time the real editor of the *Nautical Almanac*. The advanced age of Maskelyne no longer permitting him to undertake any active occupation, the work passed into irresponsible hands, the calculations fell into great confusion, and "while astronomy advanced, the *Nautical Almanac* remained stationary, and even retrograded."† Maskelyne died shortly afterwards, in 1811, and Brown of Tiedeswill (Derbyshire), was appointed to succeed him. The new director did not improve the *Nautical Almanac*, and English mariners and astronomers complained loudly; a reform was necessary. The Board of Longitude being incompetent to improve the work of which it had charge, Government abolished that body in 1818, by advice of the Admiralty, to which the publication of the work was entrusted, and which replaced the former body (which numbered sixteen members) by another much less numerous.

This new Board of Longitude was ingeniously formed; it was composed of a Resident Committee "of three persons well versed in mathematics, astronomy, and navigation, nominated by Government," to which was added, a Commission of the Royal Society, consisting of the president and three members, charged to support it, and, if need be, to control it. The members of the resident committee had to live in London, or its neighbourhood, and to lend their aid to the Commissioners of the Royal Society for the scientific questions within the domain of the Commission. They received a salary of 100*l.*, and the secretary of the committee, who was charged with the publication of the *Nautical Almanac*, a salary of 500*l.* Captain Kater, Dr. Wollaston, and Dr. Young were appointed resident members, and the latter, the secretary of the committee, had the editorship of the *Nautical Almanac*.

Young did much to improve the work, to restore to it the reputation for accuracy which Maskelyne had given it, and to render it capable of satisfying the constantly increasing wants of navigation. Thus, he introduced into the *Almanac*, in 1822, the apparent position, for every ten days, of twenty-four fundamental stars, which number was increased to sixty in 1827; mariners had thus constantly at their command the exact position of their reference points. Moreover, it is to him that we owe the publication of the elements by means of which we can predict occultations of stars by the moon, phenomena so useful to astronomers on an expedition, and to sailors whose ships are in a foreign harbour.

But these improvements were by no means the only ones which English astronomers and mariners demanded; as it was, the *Nautical Almanac* satisfied neither the one nor the other of these; sailors stood in need of the ephemerides and planetary distances of Schumacher, and astronomers of the supplement to these ephemerides.‡ Moreover, it often happened that these ephemerides appeared too late to be of any service to mariners who were setting out on a long voyage. Thus Young was exposed to criticism, very just, no doubt, but sometimes extremely violent. The result was an excessively sharp controversy, which, although sustained by most of the English

* Continued from p. 70.

* "Correspondance astronomique francaise," of Baron de Zach, vol. iv. pp. 87, *et seq.*

† Sir James South's Address to the Royal Astronomical Society, February 12, 1830.

‡ The first of these ephemerides was due to the Baron de Zach, and Rear-Admiral Hövernörn caused them to be adopted by the Danish Governor in 1800. The Director of Copenhagen Observatory, Thomas Bugge, was then entrusted with their editorship; they were continued by Schumacher, and a little later were published, partly at the expense of the British Government. They gave the position of the planets Venus, Mars, Jupiter, and Saturn for every day in the year, and their distances from the moon every three hours.

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