

work, I wrote as follows in NATURE for February 17, 1870:—"Analogy is certainly far more appropriate to express what is merely a parallelism, and not a necessary or complementary relationship between light and sound." In the subsequent letter on this subject you adopted the word "analogy;" pardon, therefore, my pointing out an obviously accidental "reversion to the primitive type" which appeared in your paper Sept. 12.

Sept. 16

W. F. BARRETT

The Fringes on the Lighter Side of the Rainbow

AT the place referred to by Mr. Thompson in NATURE (No. 150, p. 393) I merely followed Sir John Herschel; expressing myself, it is true, not very accurately, in my anxiety to save space in NATURE at the end of a letter already too long. If Mr. Thompson refers to Sir John's "Meteorology," sections 219 to 224, and still thinks the point requires fuller elucidation, he may possibly supply the deficiency by devising an experiment to prove that the width of the fringes does not vary inversely as the diameter of the drops.

In answer to Mr. Thompson's concluding question, perhaps no body else will furnish the latest intelligence. I do not know what has happened in the last five years, and I do not know what you call violet; but I believe that in 1867 the extreme rate of vibration for visible rays was about 801 million millions a second.

C. J. MONRO

A Curious Phenomenon

A VERY curious phenomenon was witnessed here on Wednesday afternoon last, September 4, about three o'clock, in a westerly direction. A somewhat heavy thunderstorm, originating towards the south, had divided its fury before reaching this immediate neighbourhood, one branch passing N.E. towards the Peanine Hills, the other taking the N.W. course, that to the N.E., however, being more violent. As the storm was passing, a stream—apparently of water, and fully six inches in breadth—shot with considerable speed from the vicinity of a dark, fiery cumulus across a rain cloud of a very deep blue, murky tinge. Its passage, as witnessed by my boy from its commencement, was similar to that of a rocket, at first assuming a quivering motion, then darting suddenly forward, for some distance horizontally, afterwards obliquely. Its apparent length would be fully twenty yards, being of a very light slate colour. After I saw it the phenomenon remained about two minutes; but its total duration would be not less than five, vanishing gradually during its whole length.

Whatever the phenomenon itself—or its cause, its upward course was certainly very striking, and to me unprecedented—the impression on some people's minds being that it was water drawn up from Lake Ullswater into the clouds by the lightning!! A terrific storm of thunder and lightning occurred on the previous evening at 9 P.M., when several fatal accidents were reported.

T. F.

Blencowe School, Cumberland, Sept. 7

APPEAL FOR SKELETONS OF WILD SPECIMENS OF THE LARGER CARNIVORA FOR OUR MUSEUMS

NEITHER in the Museum of the Royal College of Surgeons nor in that of the University of Oxford is there a skeleton of a wild lion or a wild tiger, and it is probable that there is no such skeleton existing in England. The preparations in our Museums, illustrating the anatomy of the larger carnivora, are almost without exception derived from menagerie specimens.

Lions breed well in confinement, and hence an ordinary menagerie specimen may not only itself have been during its whole life confined in a cage, but its ancestors may have suffered a like fate. At all events it has been trapped whilst still young, and reared in confinement, as is usually the case with the menagerie tiger. Now an animal confined in a narrow space from its youth upwards never has free play for its muscles, and as its food is provided for it, is never called upon to exert them in a violent manner. The result is that the bony framework on which

the muscles act never attains in such specimens its full development, and the ridges and inequalities on the bones corresponding to the origin and insertion of the muscles are not well marked. Moreover, menagerie animals, as is well known, very frequently suffer from diseases of the bones, and the marks of these diseases may be seen on many of the skeletons in every anatomical museum. Now, it is of great importance to possess perfect skeletons of adult wild large carnivora, both for general study, and more especially for comparison with the remains of similar carnivora which are to be found in the more modern geological deposits in Great Britain. Considering the number of tigers and lions which are annually killed by English sportsmen, it is surprising that this desideratum has not yet been supplied. The reason probably is that sportsmen generally do not know that it exists, or do not understand how a skeleton should be prepared. The sportsman is usually content with preserving the skin of his tiger or lion; but no doubt there are many who would gladly aid the cause of science by preserving the skeleton as well, if they knew how much the result of their labours would be valued at home. I propose here to give a few simple directions for the rough preparation of skeletons for transmission to England, merely premising that I trust that if any sportsman may be induced by reading these notes to send home a skeleton, that he will send it to the Oxford Museum, in which I am especially interested, and I hope some old University man may help us in this matter. Any packages should be addressed to Prof. Rolleston, Museum, Oxford. Skeletons of other wild animals are, of course, of great value, and will be most gladly received; they also are too frequently only to be got from menageries.

Directions for Preparing Skeletons.—The skin having been removed from the animal, the abdomen should be slit open, and all the viscera extracted. The limbs should then be severed from the body, the scapula or blade bone being left attached to the fore limb, the hind limb being removed at the thigh joints, and care being taken that the articular surfaces are not injured in the process. The flesh should now be removed roughly from each of the limbs with knives; the several bones which go to form each limb should if possible be allowed to remain attached to one another. On no account should the small bones of the hind or fore foot be separated from their attachments. Mr. Flower, indeed, advises that the skin be not removed from the feet at all. The limbs being thus roughly cleaned, they should be placed in water for several hours to allow the blood to soak out, and they should then be placed in the sun till dry. The head should be disjoined from the neck, and the flesh cut off it. It is most convenient to commence with the strong muscles of the jaw. After these have been cut through, the ligaments which hold the lower jaw in place may be divided, and it may be separated from the skull. The tongue may now be removed, and search must be made in its base for several small bones constituting the hyoid apparatus, which should be carefully taken out, and tied at once to the lower jaw for fear of loss. A considerable quantity of the brain may be removed by means of a spoon-shaped stick through the aperture at the back of the skull where it joins the neck. The rest may be removed by means of large shot put in at the hole, and shaken up with water. The neck may be cut off close to the trunk, and the tail close to the rump, and the flesh removed with the knife. The chest cavity should be left entire, the flesh being removed as well as circumstances will permit. The whole of the pieces should be treated with water, and then dried, as in the case of the limbs. The skull, limbs, tail, and neck may be conveniently placed inside the chest cavity for packing, and if it be necessary to get the skeleton into a short packing case the back bone may be divided behind the chest cavity, and the hinder vertebræ and hip bones laid along side of

it. The tail may also be divided into segments. The skeleton should be well packed in dry hay or straw.

Precautions.—The bones should on no account be boiled or placed in hot water. They should not be allowed to remain in the sun after they are once quite dry. In severing the various portions of the skeleton from one another, great care should be taken that the knife passes between the bones through joints, and that the bones are not cut or injured in the process.

H. N. MOSELEY

NOTICE OF A SUPPOSED NEW MARINE
ANIMAL FROM WASHINGTON TERRITORY
NORTH-WEST AMERICA*

SOME months ago Capt. D. Herd of the Hudson's Bay Company's service, sent me several specimens which at first sight appeared to resemble long thin peeled white willow wands more than anything else. These objects, of which I exhibit examples, are about a quarter of an inch in diameter at their thickest part near the base, and taper gradually to a slender apex. The base also narrows slightly and presents traces of corrugations. The longest are upwards of six feet in length. Capt. Herd merely stated that they had been brought from North West America, and asked me to find out what they were, promising an account of all he knew about them on a future occasion.

Expecting to see Capt. Herd very shortly, I did not myself make any very accurate examination of these objects, but I convinced myself that they were of animal origin, and was inclined to regard them as possibly bones of one of the gigantic Rays. I gave specimens of them to Prof. Flower, Prof. Milne-Edwards of Paris, and several other naturalists,† who visited the rooms of the Zoological Society, and who all said that the objects were new to them and that they did not know what they were, but were mostly inclined to regard them as the axes of an unknown Pennatulide animal.

Knowing that Prof. Kölliker of Würzburg had recently been engaged on a monograph of the Pennatulidæ, I likewise sent him a specimen, in reference to which he was kind enough to write to me as follows:—

"The object you sent me, found near Vancouver Island, is indeed the axis of an unknown Pennatulide, and agrees with none of those described in my monograph. It differs from all axes of Pennatulidæ investigated by me, in showing no radial fibres, not even the very short ones, described by me in *Funiculina quadrangularis* and *Halipterus (Virgularia) christii*, and may therefore belong to a new genus. Except in this respect the said axis agrees most with that of *Halipterus christii*, but there is also a difference, as the axis of *Osteocella*, as we may call it, is absolutely quadrangular in its lowest part for the length of about 3 centimetres.

"I put the four pieces you sent together and found a total length of 1·769 metres.

"The thickest part is found at the distance of about 0·210m. from the lower end, and measures 6·3mm. in breadth. Both ends are broken; the lower measures 1·8 mm. in breadth, and the upper 0·5mm. In general the axis is cylindrical and smooth but there are granulations and warty excrescences on the lower end for a length of about 0·20m. The axis is calcareous, and shows after the extraction of the earthy matter fine fibrils and lamellæ like the axes of all other Pennatulidæ.

* The substance of this paper was read before Section D at the meeting of the British Association at Brighton, August 20, 1872.

† A specimen given to Dr. Günther was handed by him to Dr. Gray, who to my great surprise without consulting me or even ascertaining correctly where I had obtained it, immediately described it in the "Annals of Natural History" (Fourth series, vol ix. p. 405) as a "new species" of his genus "*Osteocella*," whatever that genus may be, for its author considers it "very doubtful whether it belongs to the Pennatulidæ" and states that "it may be the long conical bone of a form of decapod cephalopod."

"I may further add, that no Pennatulide of this size is known from the west coast of America."

Shortly after I had received this communication from Prof. Kölliker, I obtained from Capt. Herd the following account of the manner in which these objects had come into his possession.

"These rods are the back bones of a sort of fish found in great abundance at Barraud's Inlet, Washington Territory, North-West America, whence they have been brought by two Captains in our service. These animals are shaped like a Conger eel, but are quite transparent, their bodies being composed of a mass of jelly—they are about 8 inches in diameter. The head is like a shark's head; it is attached to the thick end of the rod—it has two eyes and a mouth placed low down. The back bone is also transparent in the living animal, but becomes hard when dried on the beach by the sun. These fishes swim about in shoals along with the dog-fishes.

The rods were brought by our ships *Prince of Wales* and *Princess Royal*, Capt. Anderson, who has made me the accompanying sketch of the fish itself."



Found at Barraud's Inlet, Washington Territory, amongst the Dog Fish.

A somewhat similar account of the origin of these objects is given in the subjoined extract from a letter of the Hon. Mr. Justice Crease, of Victoria, British Columbia, who has recently sent a specimen of the same object to the Royal Horticultural Society.

"I send you by this post a specimen, which Mr. Claudet (Superintendent of our Government Assay Office) has sent to me, to inquire what it was, of the bone of a fish taken frequently in Barraud Inlet, near New Westminster, Fraser river, by Messrs. Dick and Nelson at their Saw mills. There has been a great discussion here among brother ignoramuses as to whether it is vegetable or animal production. Though it has a singular breakage it answers to the test as lime. Claudet is a clever man, and thinks with me that it is bone. I have broken it in several pieces for convenience of transmission. Can you tell us what it really is? I have seen several like it and from the same place. Dick and Nelson are both respectable men and Claudet of course is beyond suspicion." (May 10, 1872).

Capt. Anderson being absent from England, I have not been able to ascertain whether the information above given was founded on his own observations or on the accounts given to him by the inhabitants of the district of Barraud's Inlet. Supposing the former to be the case, and that these objects are really derived from such an animal as is described and figured above, I can only suggest that they may be the hardened notochords of a low-organised fish, allied either to the Chimæroids or to the Lampreys, in which the notochord is persistent throughout life. It is quite certain I think, that they cannot be any part of the true vertebral column.

But whether this be the case or the Pennatulide view of their origin be the true one, it is certain that the animal that produces these curious rods is quite unknown to us, and it is highly desirable that specimens of it should be obtained. I have already requested Capt. Herd to communicate with Capt. Anderson on this subject, and trust that on his next return from Barraud's Inlet he will bring us the entire body of this wonderful creature preserved in spirits. I hope also that if any student of "NATURE" in Washington territory may chance to read this article he will not fail to exert himself and assist us in solving this somewhat puzzling zoological problem.

P. L. SCIATER