the surface of the sea; while the amount of all known elevations is irregular, and increases towards some axis of elevation.

Mr. Murray believes the true explanation to be that the sea is gradually diminishing in volume; and he regards the Coral islets as a proof that it is so; at any rate, he remarks that if we apply this condition of things to an area of coral reefs, all as near the surface of the sea as the polyps can make them, we should have a result exactly in accordance with the state of things now existing in Polynesia.

The author then states that the fossils of the older formations being wholly marine, and the thickness of those formations largely exceeding those of later periods, afford evidence in support of the view that the globe was then enveloped in water. In opposition to Sir Charles Lyell's view, that the proportion of dry land to sea was always the same, and the volume of the land above the sea a constant quantity, he maintains that the latter is constantly increasing, and that both the mean and the extreme depth of the sea are constantly diminishing; and he believes the cause of this constant diminution to be the extreme affinity which water has for the constituent elements of minerals.

Mr. Murray is careful to state his admission that whether there be more or less free water now than at the beginning, there can be neither more nor less of the elementary constituents out of which it is composed. He then refers to volcanic action as showing that the process of the cooling of the earth's crust, and the attendant abstraction of water from the surface are still going on; and he remarks that although not a particle of water can be present in the molten mineral core of the earth, yet every particle of that core will, when cool, be largely composed of water—and that therefore the amount of water on the surface of the earth must continue to diminish until the earth is cool or the water wholly absorbed. In conclusion, he quotes the case of the Moon as one in which this process of absorption of not only its water, but of its atmosphere also, has been brought to a conclusion.

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4. *Has the ASIATIC ELEPHANT been found in a FOSSIL STATE?* By A. LEITH ADAMS, M.B., F.G.S. With some ADDITIONAL REMARKS; by G. BUSK, Esq., F.R.S., F.G.S.

IN December 1867 my attention was directed by a friend residing in St. John, New Brunswick, to a tooth in his possession, and which had been presented to him by the discoverer with the following note:—"A fossil tooth found by Dr. Duggan, in company with Mr. Hodgson, one of H.M. Consuls in Japan, in 1859. At a distance of over forty miles from the sea-shore between Kanagawa and Jeddo, and at the base of a surface coal-bed (80 feet, or thereabouts, from

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the general level) the accompanying tooth was found. To what animal does it belong?

(Signed) "R. N. DUGGAN, M.D., Ph.D.,
"Member Royal Asiatic Society."

The accompanying plaster-of-Paris cast* will suffice to indicate the dimensions and general characters of the tooth in question. As to its

Fossil Tooth of Elephas Indicus from Japan (three-fourths the natural size).

condition, it is in a splendid state of petrification, with several superfi-

* Deposited in the Society's Museum.

cial cracks (sun-cracks?) on its crown and sides. The weathered state of the tooth and its weight and hardness clearly prove its fossil condition, although the black alveolar-margin stain still borders the sides of the crown, as represented by the brown paint on the cast. The weight equals $3\frac{3}{4}$ lbs.

This penultimate true molar, right side, upper jaw, although partaking of the characters of *E. Armeniacus*, Falc., differs from the latter in its thick plaits, their less approximation, the festooning being carried round the loops of the disks of wear, and the total absence of any mesial expansion.

There is a notice of a fossil elephant's tooth mentioned in the late work on Japan by Sir Rutherford Alcock. I can find no record of the animal having existed in recent times in Japan; and considering the importance of the subject as connected with the Elephant of Asia, I herewith forward an exact cast of the molar, now in the possession of Dr. Fiske, of St. John, New Brunswick, in the hope that future inquiries may be made regarding such an interesting discovery as that of the Asiatic Elephant in a fossil state.

ADDITIONAL REMARKS. By G. BUSK, Esq., F.R.S., F.G.S.

THE foregoing brief notice and the accompanying cast having been recently sent to me by Dr. Leith Adams, I have hastened to lay them before the Society, fully agreeing with Dr. Adams as to the interest attaching to the discovery he records, and especially if, as seems highly probable, he is right in referring the fossil to *E. Indicus*.

With reference to the latter point, I beg to offer one or two remarks. In the British Museum there is a large part of a fossil molar tooth from China, which, on comparison with the teeth presented by Colonel Gills from Armenia, so exactly resembles them in every respect, that no doubt can be entertained as to its belonging to the same species, namely, *E. Armeniacus* of Dr. Falconer; and as such, I believe, it was regarded by that eminent palæontologist. The occurrence, therefore, of the same form in Japan would not have been very surprising; but, so far as I am able to judge, it is impossible to identify Dr. Duggan's specimen with *E. Armeniacus*. In the first place, as pointed out by Dr. Leith Adams, the crimping of the enamel extends quite round the ends of the disks, and is not limited to the middle portions of them only, as it is in the typical *E. Armeniacus*; and, secondly, the Japanese tooth is at least an inch narrower than those from China and Armenia, or than those described by Dr. Falconer as belonging, in all probability, to the same species, and observed by him in Italy.

The only other species with which any comparison need be made is Dr. Falconer's *E. Columbi*, with some specimens of which, as described by him, the dimensions of the Japanese tooth appear to accord, although the majority of teeth of *E. Columbi* seem to be much wider. The tooth is much curved, a character upon which Dr. Falconer lays much stress in his account of *E. Columbi*. But it differs from that species in the apparently less thickness of the

plates, and especially in the smaller size, and proportionately greater number, of the apical digitations in the hindermost plate.

The dimensions as taken from the cast are as under:—

	inch.
Length when entire, probably	7·4
Greatest width (8th plate)	3·0
Height (8th plate)	4·3
Average thickness of plates on side of } tooth	0·56

Ten plates are exposed by wear on the surface of the crown; and one, or it may be two more have been worn away in front, whilst a small plate or talon has been broken off at the hinder end. The disks of wear of the seven anterior plates are entire, the eighth nearly so, whilst the ninth shows three oblong divisions, and the tenth, as above said, exhibits traces of eleven or twelve, or more, apical digitations just beginning to wear. The cast unfortunately affords no clear indication of the sculpturing of the enamel-surface.

The disks are very slightly arched transversely, and have no tendency whatever to a median expansion. The sides are parallel and the ends rounded, and not in the least retroflected. The enamel is strongly crimped, and the crimping extends round the ends of the disks.

From the number of plates and the length of the tooth, I regard it, not as the *penultimate*, but as the *antepenultimate* upper left molar. If met with in the recent condition, no one, I think, would hesitate for a moment to refer it to *E. Indicus*; but when regarded as a fossil, it is interesting and important to notice the points in which it appears to differ from a corresponding tooth of that species. These are:—(1) its considerable curvature; (2) its somewhat greater proportionate breadth, which in M 1 of *E. Indicus*, so far as I am aware, rarely, if ever, exceeds 2·5 or 2·6 inches; and (3) the greater thickness of the plates, which in the Indian species averages about ·48 inch, though it occasionally reaches ·53 inch, and in the lower molars very rarely as much as ·6 inch. But these differences do not appear to be of much importance, and there seems to be every reason to believe that the Japanese fossil tooth belonged to a form of *E. Indicus*, with teeth somewhat larger than the average of the existing one.

5. On the CHARACTERS of some new FOSSIL FISH from the LIAS of LYME REGIS. By Sir PHILIP GREY EGERTON, Bart., M.P., F.R.S., F.G.S.

OF all the noted localities for fossil remains in Great Britain not one exceeds Lyme Regis for the number, variety, and interest of the forms of ancient life which have been there discovered. Ever since the earliest results of Miss Mary Anning's extraordinary success in collecting remains of extinct animals were made known, scarcely a