

can the main results arrived at by foreign geologists. I have found a wonderful unanimity in these results—geologists working apart and in widely-separated countries coming as near as may be to the same conclusions.

(To be continued in our February number.)

NOTICES OF MEMOIRS.

I.—MEMOIRE SUR LE CŒLACANTHUS HARLEMENSIS, par DR. T. C. WINKLER. Haarlem, 1871. 8vo.

THIS is one of several memoirs by Dr. Winkler, descriptive of new, rare, or of more perfect examples of previously-described vertebrate fossils, preserved in the Teyler collection at Haarlem, and which originally appeared in the third volume of its Archives. It is an addition to the literature of the small but interesting group of fossil fishes which constitute the family of CŒLACANTHINI, as established by Prof. Huxley in his "Preliminary Essay on the Systematic Arrangement of the Fishes of the Devonian Epoch,"¹ the genera and species being more fully described and illustrated in a subsequent Memoir.²

Since the publication of this essay, Professors Wagner, von Alberti, Kner, and Quenstedt, have each written and added to our knowledge of the subject. And, more recently, M. Willemoes-Suhm has published an excellent memoir on the species of *Cœlacanthus* in the 17th volume of the "Palæontographica," 1869. The group is an exceedingly interesting one to the palæ-ichthyologist, both as regards its peculiar anatomical structure and its long persistence in geological time; its range extending from the Upper Carboniferous beds to the Chalk inclusive. And during this long lapse of time it has (so far as our knowledge extends) only been represented by about 20 species.

The typical genus of the family—*Cœlacanthus* of Agassiz—first appears in the Coal-measures, and is found in the Permian and Triassic formations, and also in the Upper Oolite or Lithographic stone of Bavaria. *Holophagus* of Egerton occurs in the Lower Lias at Lyme Regis, and is known only by a single species.³

Macropoma, Agass., is represented by three species, one in the Kimmeridge clay, and two in the Cretaceous deposits; and, according to Sir Philip Egerton, an undescribed species occurs in the Purbeck beds near Swanage. Thus, of the twenty recorded species, sixteen are referred to *Cœlacanthus* and *Undina*; but this last name has been set aside, as a synonym of the first, by later writers, which our author greatly regrets, seeing that Count Münster was the first to observe and describe the principal characters of the peculiar organization of these Fishes, and that his genus *Undina* had the priority of Agassiz's *Cœlacanthus*.

¹ Memoirs of the Geological Survey. Decade X.

² Illustrations of the Structure of the Crossopterygian Ganoids. Memoirs of the Geological Survey. Decade XII. 1866.

³ Memoirs of the Geological Survey. Decade XII. Pl. 6.

The specimen on which Dr. Winkler founds his new species is from the Lithographic stone of Eichstadt. It is in a good state of preservation, its length being thirteen inches; the head is somewhat mutilated, but the orbital, opercular, and maxillary bones, are easily recognized, but, unfortunately, there is no trace of the teeth. A slender line which extends from the neck to nearly the end of the tail, marks the position of the spinal marrow (moëlle épinière), or dorsal chord, forming a ribbon divided into small squares, and which is protected above and below by bifurcated bones, which terminate in single points,—the neural and hæmal arches. The fins are entire and in their natural positions. A large portion of the integumentary envelope is preserved, which our author thinks is naked or devoid of scales, but covered with numerous small spots or groups of very fine striæ, and these groups have between them spaces which are not striated. On examining these striæ with a magnifying glass, he finds that they are composed of long tubercles, a little undulated, and sometimes bifurcated, and they are covered by a fine coat of enamel. Upon comparing his specimen with the figures and descriptions of the other most perfect example known, the *Cœlacanthus striolaris*, Münster, our author finds that both specimens are alike in size and general form, and in the relative size of the head to the body; in the number and position of the fins, and in having a principal, and an accessory caudal fin placed at the end of the dorsal chord; and also in the dorsal and anal fins being each supported by a broad flat bone, and not upon interapophysary osselets. He says they differ in the following particulars:—

1. *C. striolaris*, according to M. Willemoes-Suhm, has 19 rays in the second dorsal fin, his has but 13 or 14.

2. The anal and second dorsal fins have each 19 rays in *C. pencillatus*; in his specimen there are but 10 or 11 rays.

3. A difference of a few rays is also observed in the first dorsal.

4. The difference in the number of the rays of the pectoral fin is also great between the two species,—13 or 14 in *C. pencillatus*, 20 in his.

5. The ventral fin in *C. striolaris* is small; in his specimen it is the largest of all the fins.

6. *C. Kohleri* shows plainly fulcra to the first dorsal and the caudal, but none of the fins of his specimen have these small spines on the edges of the rays.

7. The specimens in the Munich Museum have scales, and also fulcra, which are but modified scales, and the absence of fulcra in his specimen coincides with his view that the skin was naked or covered with small dermal tubercles.

These differences, he thinks, are quite sufficient to prove that his *Cœlacanth* is a new species, and which Dr. Winkler names *Cœlacanthus Harlemensis*, for the very noble reason that it was first studied and described in the town of Haarlem.

The memoir is illustrated with a fine tinted plate.—W.D.

II.—MEMOIRS OF THE GEOLOGICAL SURVEY OF INDIA. Vol. VII.
Art. VII. The Káranpúrá Coal-fields. By Theo. W. H. Hughes,
F.G.S., Assoc. Roy. School of Mines, Geological Survey of India.

IN this Memoir Mr. Theodore Hughes, of the Indian Geological Survey, brings before us the history of the mineral wealth of the Damúdá valley, in connexion with its coal and iron-bearing deposits,

which was commenced by the issue of the Report on the Rániganj field, and systematically continued in those of the Jherriá, the Bokáro, and the Rámgarh fields.

The total area of all the Damúdá Coal-basins is about 2000 square miles, estimated as follows:—

1. Rániganj.....	1000 square miles.	4. Jherriá.....	200 square miles.
2. Káranpúrá.....	472 "	5. South Káranpúrá	72 "
3. Bokáro.....	220 "	6. Rámgarh.....	40 "

The size of the Rániganj field is stated approximately. Its known area is 600 square miles, but there is every reason to suppose that it extends for many miles eastward beyond its furthest known or mapped point in that direction. The areas of the other Coal-basins are accurately given, as they differ from the Rániganj field in having their boundaries definitely terminated by the appearance of the crystalline series, which, in the Damúdá valley, forms the floor upon which the Coal-measures and their associated rocks rest.

Although the Rániganj field is by far the most important of the Damúdá Coal-basins, owing to its superior size compared with the others, and its geographical position as regards Calcutta, the Káranpúrá Coal-fields will also be of considerable value as areas of supply to the towns of Hazáribagh, Ránchí, and Gya; and for economic purposes in connexion with the Sone irrigation works, which have lately been initiated by the Government of India.

The area of the Káranpúrá fields is 544 square miles, and they have been roughly estimated to contain 8835 million tons of available coal.

Associated with this coal there are valuable deposits of iron-ore, which have within the last few years attracted much attention; and some preliminary surveys have been commenced with a view to setting up ironworks, and connecting them by means of a branch line with the main system of the East Indian Railway Company.

The size and importance of the Coal-fields of our great dependency are little known, and it may be of interest and high importance to learn that in extent the coal-area of India stands third in the list of countries, and that in thickness its seams are unsurpassed by any in the world.

Mr. Hughes' memoir concludes with some important general considerations regarding the physical conditions under which the coal-rocks were deposited, and the organic contents of the period. He argues that the entire series of formations developed in the Damúdá Valley Coal-fields is of land and freshwater origin, and adduces as proof: evidences of water (current) action resembling those which may be seen in the recent valley deposits of Indian rivers; and the absence of marine organic remains highly favours the views of Mr. Hughes—this being borne out by the great preponderance of fossil plants over other organic remains in the Damúdá and Panchít plant-bearing formations.

It would appear that the coal-bearing rocks of the Káranpúrá Coal-fields, and consequently the Coal-flora of this part of India, belong to the Trias, or even later; and such plants as *Glossopteris*, *Tæniopteris*, and *Priessleria*—also occurring in Queensland in rocks

which are unquestionably of Secondary age—may through closer investigation be found to be of nearly the same epoch. Associated with the flora are Labyrinthodont and Dicynodont remains, the latter significant of the Poikilitic group in India, Africa, and Europe.

The Economic Summary shows the local value and importance of this Coal-field and the industrial wealth associated with this important fuel.

Estimates as to quantity are assuring for the future of India. Analyses of iron-ores associated with the coal are given and bear comparison with our British deposits.

The surveys of our colonies are looked upon in a different light by the general population when immediate utility is impatiently looked for, or when material gain almost entirely sways the public and official mind. Under these circumstances the usefulness of such a memoir as this by one of the officers of the Indian Survey in keeping alive the interest in the proceedings of our Colonial Geological Surveys cannot be over-estimated.

REVIEWS.

L.—THE EARTH: A DESCRIPTIVE HISTORY OF THE PHENOMENA OF THE LIFE OF THE GLOBE. By ELISÉE RECLUS. Translated by the late B. B. WOODWARD, M.A., and Edited by HENRY WOODWARD, British Museum. Continents:—Sections I. and II. Two vols. 8vo., pp. 666.¹ (Chapman and Hall, 1871.)

JUST as our stage is indebted to French writers for the plot and groundwork of the numerous "adaptations" which form the bulk of the *répertoire* of our actors of light comedy, so are our popular scientific gift-books mostly translations of French compilations, such as the one whose title stands at the head of this article. But there is this difference. While French comedies require for an English audience so much "adaptation" of their ornament and incident that they cease to be sparkling, the compilations of French *savants* can be allowed to retain their brilliancy. The latter possess a sufficiently polished surface, and leave nothing to be desired but a more solid background to reflect their light and irradiate their readers; but the former require the aid of a moral Nemesis to neutralize the artificial attractiveness of their vice. In a word, French science is too poetical, just as French comedy is too prurient.

The book before us well represents a French scientific compilation of the first rank; and its possession of the idealism characteristic of its nationality serves chiefly to invest its theme with a "harmony" and even with a "rhythm" which are not the less attractive because they are inconsequent. Thus, although "the Earth" has been the subject of many books by many writers, from Hutton's "Theory" to Gosse's "Omphalos," and from Strabo amongst the ancients to the Goldsmith of our schooldays, we do not remember any book which has covered exactly the same ground as M. Reclus's "La Terre."

¹ The two remaining volumes are now in the press.—EDIT.