

History Department; the rest are in the possession of Mr. Robert Damon, of Weymouth. In addition to Prof. Lewis's collection, Mr. Davis has availed himself of the material already existing in the British Museum, chiefly from the fine collections of the late Sir Philip Egerton and the Earl of Enniskillen, the latter of whom, we notice, communicated this memoir to the Royal Dublin Society, of which he was a very old member.

The two principal localities in which fish remains are found in the Lebanon are at Hakel and at Sahel Alma. In order to reach Hakel, it is necessary to go to Djebail, the ancient Byblos, a small village situated on the coast, about seventeen miles north of Beyrout. Hakel is about six miles and a quarter from Djebail, in a north-easterly direction. M. Botta describes the locality as being in a deep valley, situated at a great height above the sea-level. The beds containing the fish remains are upon the slope of the hill on the right, in ascending towards the village of Hakel. The beds are considerably displaced, and vary much in their direction and inclination; the sides of the mountain are covered with debris, and it is in this debris that the fishes are found. The debris is in the form of thin foliated slabs, exhaling when struck a strong odour of sulphureted hydrogen; these contain irregular beds of flint, or siliceous limestone, which inclose the fossils. The Sahel Alma locality is situated below the convent of this name, which is about eleven miles from Beyrout. The convent is built on ground sloping rapidly towards the sea, the surface soil is covered with mulberry-trees, and beneath this is the marly chalk containing the fish remains. It is an argilo-calcareous stone, sometimes laminated, soft, and without appreciable odour. There are parts of a deep gray colour, almost resembling a plastic clay. The fish impressions occur in considerable numbers, both of species and individuals, mixed with some species of Crustacea. The species of fish found in the two localities are very seldom the same. The opinions of authors vary as to the geological age of these fish beds. Agassiz hesitated as to whether they should be considered as pertaining to the Jurassic epoch or to that of the chalk; whilst Haeckel was doubtful whether to place them between the chalk and the Tertiary formations. Pictet considered that the large number of extinct forms, and the great differences between the fauna of the fish beds and that existing in the sea at the present time, made it impossible to attribute the remains to a Tertiary period; on the other hand, the entire absence of ganoid fishes appeared to indicate that they are of a period anterior to the Jurassic, and that they must consequently have belonged to that of the Cretaceous period. Dr. Oscar Fraas places the beds as the upper ones of the Turonian group, corresponding to the chalk marl, and below the white chalk and the Maestricht beds.

No less than sixty-three new species are described by Mr. Davis, and a number of species of other authors are re-described. Extremely beautiful drawings of most of these, from the original specimens, by Miss E. C. Woodward, accompany the memoir, which will be received with interest by all palæontologists.

The printing and paper of this volume well deserve our praise, and are fully up to the style of the recent memoirs published by the Royal Dublin Society.

#### COMPLIMENTARY DINNER TO PROFESSOR TYNDALL.

WE are glad to be able to announce that a complimentary dinner is to be given to Prof. Tyndall on the occasion of his retirement from the Chair of Physics in the Royal Institution. Prof. Tyndall has still before him, we hope, many a long year of fruitful research, but it would have been strange if the present opportunity had been allowed to pass without an adequate expression of the grati-

tude which is felt by large classes of his countrymen for the services he has already rendered to science. His great reputation he has won by severe and long-continued labour, the value of which is most highly estimated by those who are most capable of forming a judgment on its worth. Prof. Tyndall has not only made additions to the sum of human knowledge; he has done much to aid the process by which the English public are acquiring a new conception of the place that properly belongs to science in modern life, and of the need for applying scientific method to departments of thought and work from which it has hitherto been too often rigidly excluded. Moreover, by his popular expositions of the results of inquiry in various branches of physics, he has shown that science, so far from being in any sense hostile to literature, can receive full justice only when it is handled by writers who are masters of literary expression. The books in which Prof. Tyndall has appealed to the general public have marked an era in the intellectual development of many of his readers, and his works will always serve to remind men of science of the possibility of presenting profound and accurate thought in luminous and attractive forms.

We print the letter which the Honorary Secretaries are now sending to the members of scientific Societies and to various representative men.

*Science Schools, South Kensington,  
June 6, 1887.*

DEAR SIR,—The retirement of Prof. Tyndall from the Chair of Natural Philosophy in the Royal Institution affords a fitting occasion for a formal recognition of the great services which he has rendered to the cause of scientific progress.

Prof. Tyndall has therefore been invited to a complimentary dinner which will take place at Willis's Rooms on Wednesday, June 29, at 7 o'clock.

The chair will be taken by the President of the Royal Society, who, it is hoped, will be supported by a large and representative body both of scientific men and of others who appreciate the importance to the nation of scientific instruction and of the promotion of natural knowledge.

The Committee hope that you will be able to attend, and in this case we shall be glad if you will kindly fill up the accompanying form and return it to us at your earliest convenience.

Tickets will be 30s. each, and the Committee request us to state that it will be necessary to hold gentlemen who receive tickets responsible for that sum, even if they should unfortunately be prevented from attending the dinner.

The early return of the accompanying form is desirable, as it will be impossible to find room for more than 280 persons. Should more than that number apply, the Committee will, as far as possible, distribute the tickets in the order of application. In any case, a further communication will be addressed to you.

We are, dear Sir,

Faithfully yours,

J. NORMAN LOCKYER }  
ARTHUR W. RÜCKER } *Hon. Secs.*

The following is a list of those who have up to the present consented to serve on the Committee:—

- Chairman*, Prof. G. G. STOKES, President of the Royal Society.  
The MARQUIS OF SALISBURY, K.G., F.R.S., Chancellor of the University of Oxford.  
The DUKE OF DEVONSHIRE, K.G., F.R.S., Chancellor of the University of Cambridge, and of the Victoria University.  
The DUKE OF ARGYLL, K.G., F.R.S., Chancellor of the University of St. Andrews.  
The Right Hon. JOHN INGLIS, D.C.L., LL.D., Chancellor of the University of Edinburgh.  
The EARL OF ROSSE, F.R.S., Chancellor of the University of Dublin.  
The EARL GRANVILLE, K.G., F.R.S., Chancellor of the University of London.  
Sir F. ABEL, C.B., F.R.S., ex-President of the Chemical Society.

Prof. J. C. ADAMS, F.R.S., ex-President of the Astronomical Society.  
 Prof. W. G. ADAMS, F.R.S., ex-President of the Physical Society.  
 Sir GEORGE B. AIRY, K.C.B., F.R.S., ex-Astronomer-Royal, and ex-President of the Royal Society.  
 Sir W. BOWMAN, Bart., F.R.S., formerly Secretary to the Royal Institution.  
 Sir F. BRAMWELL, F.R.S., Secretary to the Royal Institution, and ex-President of the Institution of Civil Engineers.  
 Prof. CAYLEY, F.R.S., ex-President of the British Association.  
 Prof. CLIFTON, F.R.S., ex-President of the Physical Society.  
 W. CROOKES, Esq., F.R.S., President of the Chemical Society.  
 W. H. M. CHRISTIE, Esq., F.R.S., Astronomer-Royal.  
 WARREN DE LA RUE, Esq., F.R.S., ex-President of the Royal Astronomical and Chemical Societies.  
 Prof. DEWAR, F.R.S., Professor of Chemistry in the Royal Institution.  
 Colonel DONNELLY, C.B., Secretary to the Science and Art Department.  
 Prof. P. M. DUNCAN, F.R.S., ex-President of the Geological Society.  
 W. T. HISLTON DYER, Esq., F.R.S., Director of the Royal Gardens, Kew.  
 Dr. EVANS, Treasurer of the Royal Society, and President of the Society of Antiquaries.  
 Prof. FLOWER, F.R.S., Director of the Natural History Department, British Museum.  
 Prof. G. CAREY FOSTER, F.R.S., ex-President of the Physical Society.  
 Prof. M. FOSTER, Secretary of the Royal Society.  
 F. GALTON, Esq., F.R.S., President of the Anthropological Society.  
 Prof. GAMGEE, F.R.S., Professor of Physiology in the Royal Institution.  
 A. GEIKIE, Esq., F.R.S., Director-General of the Geological Survey.  
 Sir W. GROVE, F.R.S., ex-President of the British Association.  
 Dr. HIRST, F.R.S., ex-President of the Mathematical Society.  
 Sir J. HOOKER, F.R.S., ex-President of the Royal Society.  
 Prof. HUXLEY, F.R.S., ex-President of the Royal Society.  
 Prof. JUDD, F.R.S., President of the Geological Society.  
 Sir JOHN LUBBOCK, F.R.S., ex-President of the British Association.  
 HUGO MÜLLER, Esq., F.R.S., ex-President of the Chemical Society.  
 Prof. ODLING, F.R.S., ex-President of the Chemical Society.  
 Sir LYON PLAYFAIR, K.C.B., F.R.S., ex-President of the British Association.  
 Lord RAYLEIGH, Secretary of the Royal Society.  
 Admiral Sir G. H. RICHARDS, K.C.B., F.R.S., ex-Hydrographer to the Navy.  
 Sir H. E. ROSCOE, F.R.S., ex-President of the Chemical Society, and President-Elect of the British Association.  
 Prof. BALFOUR STEWART, F.R.S., President of the Physical Society.  
 General R. STRACHEY, F.R.S., President of the Royal Geographical Society.  
 Sir W. THOMSON, F.R.S., President of the Royal Society of Edinburgh.  
 Captain WHARTON, R.N., F.R.S., Hydrographer to the Navy.  
 Professor A. W. WILLIAMSON, Foreign Secretary of the Royal Society.

#### M. BOUSSINGAULT.

STUDENTS of agricultural chemistry have received with much regret the tidings of the death of M. Boussingault, one of the earliest and most eminent investigators in this branch of science. He was born at Paris on February 2, 1802, and obtained his scientific education at the School of Mines of St. Étienne. When little more than twenty years of age, he went as a mining engineer to Columbia, South America, where he remained ten years. During his residence in South America he made the acquaintance of Alexander von Humboldt, who warmly praised his work in chemistry, meteorology, geography, and astronomy. On his return to France, M.

Boussingault was appointed Professor of Chemistry at Lyons. He married the sister of M. Lebel, who had been his fellow student at St. Étienne, and by his marriage he became, with his brother-in-law, joint proprietor of the estate of Bechelbronn, in Alsace. Here he set up the first laboratory that had ever been established on a farm, and carried on a long series of important researches.

From the time of his marriage, Boussingault generally spent about half the year in Paris, and the other half in Alsace. In 1836, he published a paper on the quantity of nitrogen in different foods, and on the equivalents of the foods, founded on the amounts of nitrogen they contained. This was his first important contribution to agricultural chemistry. It was soon followed by others, which secured for him, in 1839, the honour of being elected a member of the Institute. Among his publications in 1837 and 1838, were papers on the amount of gluten in different kinds of wheat, on the influence of the clearing of forests on the diminution of the flow of rivers, on the meteorological influences affecting the culture of the vine, and on the principles underlying the value of a rotation of crops. In connexion with this last subject he brought out many new facts, which seem to have been of essential service to Liebig. In 1843, much attention was attracted by a work entitled "Économie Rurale," in which M. Boussingault embodied the results of many of his original investigations. A translation, under the title of "Rural Economy in its Relations with Chemistry, Physics, and Meteorology," was published in this country, and made the author's name widely known among English agriculturists. In a review of this translation in 1845 the *Agricultural Gazette* described the work as "the most important and valuable book for farmers which the chemists of the present century had produced—not so attractive as the clever paragraphs of Prof. Liebig, but much more than compensating for want of brilliancy by solid worth."

In an excellent biographical sketch of Boussingault, printed in the *Agricultural Gazette*, January 6, 1879, it is pointed out that, although his attention was by no means limited to subjects bearing on agriculture, by far the greater number of his researches had relation to the problems it suggests. "Thus," says the writer, "the amount and condition of the combined nitrogen in the atmosphere, in the aqueous depositions from it, in rivers and springs, and in the soil, have been investigated. The amounts of nitrogen, phosphoric acid, &c., in different manuring substances have been determined, and their comparative values estimated accordingly. The question of whether or not plants assimilate the free nitrogen of the air has again and again been taken up, the weight of the evidence always serving to confirm the conclusion that they do not. Very recently, too, he has made experiments in regard to some functions of the leaves of plants. Lastly, in the sphere of animal chemistry, he has from time to time devoted himself to the elucidation of important points, such as the sources in the food of the fat of the fattening animal, the assimilation of mineral constituents, the question whether any of the nitrogen of the food or of the animal is exhaled, and so on." Most of the results of his investigations relating to agricultural chemistry are given in his work "Agronomie, Chimie agricole, et Physiologie," published in seven volumes, the first of which appeared in 1860, the last in 1884.

M. Boussingault received many honours from foreign Governments and from scientific Societies both at home and abroad. In 1878, the Council of the Royal Society awarded the Copley Medal for his numerous and varied contributions to science, especially for those connected with agriculture.

In 1848, Boussingault was elected a member of the National Assembly, where he sat as a Moderate Republican, and for a short time he was a member of the Conseil d'État. In 1851 he was dismissed, on account of