

lections among schools and libraries. The number of pupils reached by this outside work cannot be less than a million.

To this direct appeal of the museum specimens the publications are supplementary. Confining our attention to those of educational character, we find, as elsewhere, guides, handbooks, and leaflets, for



FIG. 2.—Bryozoa group: detail. By the courtesy of the American Museum of Natural History, New York.

use primarily in the museum. But reaching far beyond its walls is the well-known *Journal of the Museum*, now issued as a bi-monthly under the title *Natural History*. A copy of this is received by every member, and additional subscriptions amount to 1,570 dollars. The circulation may therefore be taken as well over 6000. Besides its own publica-

tions, the American Museum avails itself of the newspaper Press, and by the steady contribution of interesting paragraphs obtains valuable advertisement.

We have by no means finished with the ways in which the American Museum increases its membership and otherwise raises its funds. There is, for example, the luxuriously furnished members' room "near the elevator" (Natural History Museum, please note!), and there is the exchange of membership privileges with other museums. But enough has been said to show that all the energy is spent on lines that are productive, and that fact explains how it can be done. In the larger cities of our own country circumstances are not the same. There are limited appropriations for definite purposes, and the governing body, whether municipal or bureaucratic, is not going to take risks with the taxpayers' money. Possibly some of our museum officials rejoice that they do not have to spend their time beating the big drum, and prefer to devote most of their energy and the services of their museums to the advancement of learning rather than to its vulgarisation. Research, they say quite rightly, must come first. None the less, there are features in the educational work of the American Museum which could and should be imitated by more of our Government museums. With them, as with the private corporation of the American Museum, the question reduces itself to one of business. Additional officers must be appointed in charge of these activities, and these officers must be paid. But the public is ready to pay for what it wants, and the case of the guide-lecturers has shown that the Government will respond to intelligently directed and strongly enforced public opinion

### Obituary

DR. EDWARD HOPKINSON, M.P.

THE news of the death of Edward Hopkinson will be received with acute regret by a very wide circle of friends in all branches of science and engineering. Since the General Election of 1918, when Dr. Hopkinson became Member for the Clayton division of Manchester as a Unionist, he was the victim of repeated attacks of influenza, for want of a better name, and was little seen in London; gradually failing, he died on Sunday, January 15, at the age of sixty-two years.

Dr. Hopkinson was the fourth among five sons in a Manchester family, peculiarly united and brilliant, belonging to an aristocracy of industry. His father, John Hopkinson, sometime Mayor of Manchester, was of the firm of Wren and Hopkinson, mechanical engineers, who constructed the machinery for grinding the glass for Chance's lighthouses, a successful demonstration of science and higher industry. His mother, always the true focus of the family, was a Dewhurst of Skipton. The Wills's of Bristol were relatives. The eldest brother, John, the great electrician, whose work was cut short by his untimely death in the Alps, is nobly com-

memorated in Cambridge; he started on his work as Senior Wrangler. The next brother, Sir Alfred Hopkinson, K.C., of Lincoln College, Oxford, formerly a Member of Parliament for a division of Manchester and for the Cricklade division of Wiltshire, who is still active, had a distinguished legal career, was principal of Owens College, and first vice-chancellor of the University of Manchester. The third son, Charles, a consulting engineer, who died recently, was the trusted counsellor of the whole family. Albert, the youngest brother, of Emmanuel College, Cambridge, became a successful medical practitioner in Manchester, and is now back again in Cambridge as a teacher of anatomy. Of the next generation, Bertram, the lamented head of the Engineering School at Cambridge, lost his life in a flying accident in 1918, and Austin, a successful manufacturer and M.P., is a very vigorous controversialist in social questions. These different distinctions merely represent prominences of characteristics which all shared.

Edward Hopkinson was born in Manchester, and, after completing the course at Owens College, joined Emmanuel College, Cambridge, as scholar,

was ninth Wrangler in 1881, and D.Sc. of London in the same year. He became a fellow of Emmanuel in 1883. He began his fellowship by installing electric light in the hall and chapel for the tercentenary of the college in the following year, and thus anticipated by a few weeks the installation which Lord Kelvin introduced into Peterhouse. He was first with Siemens Brothers, and was resident electrician for the Portrush and Bushmills Railway and the Bessbrook and Newry Railway. He afterwards joined the firm of Mather and Platt when they began electrical work, and ultimately became vice-chairman of the company. He carried out the scheme for the City and South London Railway, and while engaged upon industrial work of that kind he joined his brother John in a paper on dynamo-electric machines in the Transactions of the Royal Society, a paper which speedily became classical. Thereafter he was engaged in electrical and engineering work which brought him into contact with all the active electrical and engineering experts of the country. During the war he was engaged in India on the Indian Industrial Commission. He was president of the Institution of Mechanical Engineers in 1919, but not well enough to deliver the presidential address which he wrote for that body.

Electricity and machinery were not Dr. Hopkinson's only interest; like other members of his family, he was deeply and sanely interested in social questions, and his latest writings are to be found in letters to the *Times* and *Morning Post* on financial matters. Like all the rest of his family, too, he was a keen Alpine climber and member of the Alpine Club, and, like so many climbers, was a remarkably genial host and an ever-welcome guest. He lived in an atmosphere of business, science, and common sense, to which access was easy on account of his family associations; but he contributed his own full share to its maintenance, and the loss of his knowledge and experience is a grave misfortune. He and his brother Charles married sisters, the daughters of John Campbell, of Whiteabbey, near Belfast. His wife survives him. They have one son, formerly an officer in the Army, who is now devoted to anthropology at Cambridge, and a daughter.

NAPIER SHAW.

#### SIR WILLIAM MATTHEWS, K.C.M.G.

THE civil engineering profession has lost an eminent personality by the decease of Sir William Matthews, who died on January 8 at the age of seventy-eight. From the obscurity of a little Cornish town he rose in the practice of his profession to become the trusted consultant of Government authorities on the most important harbour undertakings in the Empire. His name will long be associated with the annals of harbour construction, and substantial breakwaters in various parts of the world remain as a testimony to his engineering skill. The firm of Coode, Matthews, Fitzmaurice, and Wilson, of which he was until lately the senior surviving partner, have acted as technical advisers to the Admiralty, the Board of Trade, and

the Crown agents to the Colonies. At home they were chief engineers for the National Harbour at Dover; abroad they have been consulting engineers for similar undertakings at Gibraltar, Malta, Cyprus, Colombo, Singapore, and Hong-Kong. They are also consultants to several Colonial Governments, the Mersey Conservancy, the Humber Conservancy, and the Tyne Commissioners.

Sir William Matthews was a native of Penzance, where he was born in March, 1844. He served part of his apprenticeship in an engineering works at Hayle, a few miles away. Afterwards he entered the office of his father, who practised as a civil engineer in Penzance. There in 1864 he came under the notice of the late Sir John Coode, who had been called in to advise the Corporation of Penzance. The young assistant was employed to make a survey of the harbour, and acquitted himself so creditably that Sir John took him into his office in London, and ultimately in 1892 into partnership.

The value of Sir William Matthews's services to the Government gained him the C.M.G. in 1901, and the K.C.M.G. in 1906. In 1907 he was elected president of the Institution of Civil Engineers. He became a member of the International Commission on the Suez Canal in 1908, and during the later portion of his career served on a number of committees of public and scientific utility.

COL. CHARLES EDWARD CASSAL, who died on December 22 last, in his sixty-fourth year, was public analyst for the Metropolitan Borough of Battersea, the Royal Borough of Kensington, the Parts of Holland and Kesteven (Lincs), and Chipping Wycombe (Bucks), and joint public analyst for the City of Westminster. He was educated at University College School, and received his professional training at University College, London, where he was demonstrator in the department of hygiene and public health from 1879 to 1888. He was a fluent and forcible speaker, and, having qualified, by examination, for the fellowship of the Institute of Chemistry, he took a prominent part in the discussions relating to the interests of his profession, particularly those of public analysts and official agricultural analysts. Col. Cassal served on the council for six periods of three years each, and as a censor for one year. He frequently accompanied deputations from the institute to Government departments. For fifteen years he was editor of the *British Food Journal*, to which, as well as to other journals, he contributed many articles on the chemistry of food and drugs, on water supplies, and on sewage treatment and disposal.

WE regret to have to record the death of Mr. B. P. LASCELLES, who was a science master at Harrow from 1885 to 1901. His great success as a teacher rested on his unbounded interest in everything which appealed to him. It was not enough for him to know about dyes; he made them and coloured his own ties to his fancy! That was in the early days of the synthetic industry. Such