of gums, gelatine, albumin, starch, tragacanth, and adhesive materials generally; in the clarification of wines; in filtration processes, treatment of sewage, river sludge, and the function of charcoal purifiers; in the de-emulsification of water in steam turbines; in the preparation of medicinal emulsions; in the manufacture of margarine and other foodstuffs; in brewing and fermentation industries; in catalytic reactions, such as the hydrogenation process; in chemical analysis, electro-analysis, and electro-deposition processes; in the coagulation of rubber latex and in vulcanisation; in the manufacture of celluloid and celluloid products; in the flotation process of ore separation; in the manufacture and setting of cements, plaster, and mortar; in the preservation of building materials; in the manufacture of ruby glass, opaque glass, and enamel; and in the application of electrical endosmose to peat drying and the preparation of pure colloids for medicinal purposes.

The above rather heterogeneous list—by no means exhaustive—will give some idea of the variety and extent and consequent importance of colloid chemistry for the chemical manufacturer. It is an urgent matter that the great significance of this branch of chemistry should be recognised by all interested in the progress of chemical industry.

In the first report of the British Association Committee on Colloid Chemistry and its Industrial Applications, now before us, several of the processes mentioned above are discussed. The committee has aimed at compiling information regarding the advances which have been made in colloid chemistry itself and in its applications to industrial processes, with the object, in the first place, of making such information as widely available as possible, and, in the second, of emphasising the need for much greater attention being paid to this wide, but hitherto neglected, branch of chemistry. Each subject has been treated by an expert, so that the selection and presentation of material may be regarded as authoritative. It is evident that at the present time there is a very considerable "lag" between scientific knowledge in this field and industrial practice. The result is that the majority of working processes are largely empirical, their mechanism obscure, and the probability of improvement consequently small. This is obviously an extremely unsatisfactory state of affairs. The remedy lies, of course, in the vigorous prosecution of research over the entire range of colloid chemistry in the research laboratories of manufacturers and in the chemical departments of our universities. In this connection it is perhaps worth while to point out that there is not a single chair or independent department of colloid chemistry in any of our universities or university colleges. The time has surely come for development in this direction, in order that a subject of such present importance and possessing great possibilities may become a real source of strength to our chemical industries.

W. C. McC. LEWIS.

DR. G. J. HINDE, F.R.S.

BY the death of Dr. George Jennings Hinde on March 18 another pioneer in the modern methods of studying fossils has passed away. Dr. Hinde devoted the greater part of his long life to the investigation of the remains of the lower invertebrate animals, which need careful and often laborious preparation for the microscope before they can be examined. He thus contributed much to geology by adding to our knowledge of rock-forming organisms, and at the same time promoted the advance of zoology by his discovery and description of many kinds of calcareous and siliceous skeletons, which were either entirely new or revealed new facts in distribution.

Dr. Hinde was born at Norwich in 1839, and emigrated in early life to the Argentine Republic, where he was engaged in sheep-farming. He was always interested in natural history, and as soon as the opportunity occurred at the beginning of the 'seventies he decided to retire from business and follow more congenial pursuits. He left Argentina for Canada, and proceeded to the University of Toronto, where the late Prof. H. A. Nicholson was then starting his professorial career. Stimulated by Nicholson's lectures and personality, Hinde began to follow his teacher in studying the Silurian and Ordovician fossils of Canada. He also became interested in the remarkable glacial deposits, which are so conspicuous a feature of the region in which he dwelt. Nicholson had specially devoted attention to the microscopic structure of the corals and obscure organisms which abounded in the limestones, and it was to the microscope that Hinde naturally turned as the chief instrument for his researches. He travelled extensively and collected industriously in Canada and the United States, where he remained for seven years. Among minute fossils his most important discoveries were conodonts and jaws of annelids in the Ordovician rocks.

Returning to England, Hinde found similar jaws of annelids in the Silurian rocks of this country, and described them in the Quarterly Journal of the Geological Society in 1880. In 1879 he recovered and prepared a remarkable collection of sponge-spicules from a hollow in a chalk-flint at Horstead, near Norwich, and soon recognised that most of them were new. He accordingly went to study his little collection at the University of Munich, under the direction of Prof. K. A. von Zittel, who had just completed there an important revision of the fossil sponges. Hinde published his results in 1880 in the form of a thesis, for which he received the degree of Ph.D. Returning finally to England, he next prepared a descriptive illustrated catalogue of the fossil sponges in the British Museum, which was published by the trustees in 1883; and this was followed by the first volume of a monograph of the British fossil sponges, issued by the Palæontographical Society between 1887 and 1893. Several smaller papers were also the outcome of his researches, the most important being an account of the cherty sponge-

beds of the Greensand formation contributed to the Philosophical Transactions in 1885.

Hinde continued to pay much attention to cherts in later years, and showed that many of them were rich in the skeletons of radiolaria, which he described in detail. His skill in making preparations was indeed matched only by the patience with which he studied them; and it would be difficult to find more conscientious plodding work than that he accomplished when he examined and described the core from the boring in the coral-atoll of Funafuti for the report of the Royal Society's committee in 1904.

From 1882 onwards Hinde resided near London, and until 1900 he took a very active share in the administration of the Geological Society, serving three terms on the council and being a vice-president from 1892 to 1895. From 1897 until 1915 he was also an active member of council of the Palæontographical Society, and held the office of treasurer from 1904 to 1914. Whatever he undertook he carried out with intense thoroughness, and whenever he formed a judgment as to the right course to pursue, neither argument nor persuasion could alter his determination. He sometimes therefore found himself at variance with his colleagues, but his honesty of purpose was always so evident that he never lost their highest respect and esteem. His scientific worth led the Geological Society to award him the Wollaston fund in 1882, the Lyell medal in 1897, and he was elected a fellow of the Royal Society in 1896.

NOTES.

IT was stated in the *Times* of March 21 that Dr. Addison, Minister of Reconstruction, had informed a deputation of Welsh members that a Government Bill for the establishment of a Ministry of Health would probably be introduced in the House of Commons immediately after the Easter recess. Agreement has been reached on the main principles of the measure as the result of conferences with the various departments and parties affected.

A WELL-ILLUSTRATED article by M. H. Volta on the relation of inventors to the problem of dealing with hostile submarines appears in *La Nature* for February 23. It seems that the French authorities have been overwhelmed with suggestions which as a general rule show a lamentable want of consideration of the conditions under which the search for submarines and the attacks on them, when found, have to be carried out. Half a dozen ingenious arrangements for netting them and either communicating the fact to the shore or to an attendant destroyer, from which the submarine is then bombed, or providing automatically for the explosion of a bomb when the net is touched, are described. Almost any of them would act in still water not used by surface boats, but none of them are of the least use in water constantly in tidal motion, often tempest-tossed, and with craft of all kinds on its surface. In the same way many of the suggestions for dealing with the problem by the help of aeroplanes display ar extraordinary amount of ingenuity, but at the same time a candid ignorance of the conditions of flight and of stability of an aeroplane.

THE House of Lords, by a majority, has recently dismissed an appeal from a decision of the Court of Appeal affirming a judgment of Mr. Justice Astbury. The action was brought by the British Thomson-Houston Company to restrain "Duram," Ltd., from infringing a patent granted to the appellants for a process for the treatment of tungsten. The respondents disputed the validity of the patent. The appellants claimed that their invention consisted in the discovery that a mere built-up body of particles of tungsten which had hitherto been known only as a powder could be sufficiently consolidated together by prolonged heating below the melting point, and could then, if worked hot, be treated as though it were a solid piece of metal, that continuous lengths of wire of filament size could be produced therefrom, and that these particles of tungsten could be made so coherent that if hot they could be hammered, rolled, or drawn. Mr. Justice Astbury held upon the construction of the specification that the patent was void for lack of subject-matter in that it covered the working of tungsten while hot, and that the working of a hot metal was merely the utilisation of the tools and routine of the metal-worker, and was not the subject of invention. His judgment has been upheld, both in the Court of Appeal and in the House of Lords.

IT is sincerely to be hoped that the very timely appeal of the Duke of Rutland, in the *Times* of March 21, will not fall upon deaf or apathetic ears. His Grace directs attention to the very serious diminution of our truly insectivorous wild birds, and appeals to the authorities at Whitehall, when sending out their commands respecting the destruction of grain-eating wild birds, to urge strongly the advisability of sparing the truly insectivorous species. In May of last year Dr. W. E. Collinge pointed out in these columns the need for the Board of Agriculture to compel the preservation of such birds, and had the suggestion that this Board should establish a Bureau of Ornithology (*cf.* NATURE, October 15, 1915) been acted upon, the authorities would have been in possession of evidence which would have shown the real state of affairs as regards such birds, and would ere now have been ready to act. Since the commencement of the war up to the present time tens of thousands of acres of woods and forests have been destroyed in the British Isles. What the effect of this drastic change will be upon wild bird life it is difficult to foretell, but it seems very likely that it will mean a large decrease in the number of insectivorous birds, and as the stumps of recently felled trees in many cases provide an ideal breeding ground for insects, we shall probably, for some years to come, be troubled with plagues of various kinds of insects, in particular those that are injurious to forests. The unusually trying winters of the past two years have taken an enormous toll of tits, flycatchers, warblers, etc., and every protection should be afforded them at once.

THE meeting of the Institution of Mechanical Engineers on March 15 was eventful in that a paper was read by a lady—Miss O. E. Monkhouse—on the employment of women in munition factories. Roughly speaking, there are now close on one million women engaged on munitions; these may be divided into three types: (1) The educated type; (2) the domestic type; (3) the ordinary factory type. The first type are already half-educated for the better class of engineering work, and are taught easily; the second train readily into good charge hands and forewomen; and the last-mentioned type are best employed on purely unskilled work of a repetition nature. There are many cases where women have acquired a knowledge of engineer-