News and Views

Bicentenary of Dr. Charles Hutton, F.R.S.

ON August 14 occurs the bicentenary of the birth of the well-known English mathematician Dr. Charles Hutton, who for thirty-four years held the chair of mathematics at the Royal Military Academy, Woolwich, and who for a long period was a prominent member of the Royal Society. Born in Newcastle-upon-Tyne, Hutton was the son of a colliery labourer and though he attended a dame's school in the Gallowgate, he was almost entirely self-taught. He began life as an assistant teacher at Jesmond, and from 1760 until 1773 he conducted a school of his own in Newcastle and while doing so contributed to the *Ladies' Diary* and other periodicals, and published some excellent elementary works on arithmetic, book-keeping and mensuration. The failure of a bridge in his native city led him to write his "Principles of Bridges and the Mathematical Demonstration of the Laws of Arches", and in 1773 after a severe competitive trial he was appointed to the professorship at Woolwich, where he worked until 1807. In 1774, he was admitted to the fellowship of the Royal Society; in 1775 he made the calculations in connexion with Maskelyne's experiments at Schiehallion, Perthshire, for determining the mean density of the earth, and in 1779 was made LL.D. of the University of Edinburgh and foreign secretary of the Royal Society. This position he held until 1783, when complaints having been made of the way he had carried out his duties, he resigned. Sir Joseph Banks was then president, and Hutton's resignation raised a storm of protest at the way he had been treated. At a meeting of the Society on December 18, 1783, however, when Hutton submitted his "Defence", a resolution was passed stating "that if Dr. Hutton hath been in the opinion of any Member of the Society incriminated, it is the opinion of the Society that he hath fully justified himself".

HUTTON already in 1778 had been awarded the Copley Medal for his paper on "The Force of Fine Gunpowder, and the Initial Velocity of Cannon Balls", and for many years he continued to add to mathematical literature. In 1785 he published his "Mathematical Tables" and this was followed by his "Tracts on Mathematical and Philosophical Subjects", his "Compendious Measurer" and his "Elements of Conic Sections". In 1795 he published his "Mathematical and Philosophical Dictionary" which was described by the "Encyclopaedia Britannica" as the most valuable contribution to scientific biography that had yet appeared in England. In 1803, with the naturalist Dr. George Shaw (1757–1813), and the physician and chemist Dr. George Pearson (1751–1828), he began the abridgement of the *Philosophical Transactions*, an arduous task which occupied him for six years and for which he received £6,000. Retiring from his post at Woolwich in 1807 on a pension of £500 per annum, he took up his residence in Bedford Row, London. Recognized as a most skilful teacher and a man of amiable character, he died on January 27, 1823, in his eighty-sixth year and was buried in the family vault at Charlton, Kent. His "Life" was written by his successor at Woolwich, Dr. Olinthus Gregory.

Digestive Troubles among Omnibus Workers

THE belief that gastric disorders are unduly common among busmen is widespread among the men themselves and their leaders. The problem was placed before the Industrial Health Research Board, and considered by a joint Committee of the London Passenger Transport Board and the Trade Union of Transport and General Workers, and it was the unanimous opinion that an answer should be sought to the following question: Do omnibus workers suffer from digestive complaints more frequently or more severely (or both) than other groups of workers of similar economic and social position? The Committee of the Industrial Health Research Board considered that the investigation of the problem had in the first place to be statistical, and it was decided to make a comparison of the incidence of sickness (limited to periods of more than two weeks' duration) among omnibus workers and tramway workers. The investigation was undertaken by Dr. Bradford Hill, and the results of his inquiry are now published (Report No. 79. Medical Research Council Industrial Health Research Board. H.M. Stationery Office. Price 6*d*. net). An examination was made of the sickness records of omnibus and tramway workers in the employ of the London Passenger Transport Board. The data were extracted for the years 1925–26 and 1933–35, but the records of the first period were found to be unsatisfactory and the analysis of the sickness experience was therefore confined to the data relating to the years 1933–35. The age distributions of the omnibus and tramway workers differ considerably, and it was necessary to compare the occupational groups age by age, and in reaching a comparative figure for all ages to allow for the differences in the age distributions.

IT is found that the omnibus drivers at all ages had in 1933–35 a relative excess of gastric sickness (that is, in proportion to sickness from all causes) of 12–14 per cent over the figure shown by the tramway drivers. In the same way, it is found that the omnibus conductors at all ages had a relative excess of gastric sickness of 15–18 per cent over the figure shown by tramway conductors. But this relative excess varies very considerably with age, for omnibus drivers being confined to the age-group 30–49, and for omnibus conductors to the age-group 20–39, and the higher figures at these ages must be balanced by the lower figures at other ages. When this correction has been made, taking only sicknesses of more than two weeks' duration and a wide group of diseases as

attributable to gastric causes, it is found that there was in 1933–35 some excess of gastric illnesses recorded among omnibus workers as compared with tramway workers at those age-groups to which the majority of the former belongs, though at these ages the total sickness experience, from all causes, of the omnibus workers was rather more favourable than that of the tramway workers.

Japanese Trawlers in Indian Waters

A LEADING article in *Current Science* of May directs attention to the rapidly increasing activity of Japanese trawlers in the Bay of Bengal. On more than one occasion the Government of India has been warned that unless adequate steps were taken to improve and develop Indian fisheries in Indian waters, some other country would sooner or later step in and exploit this area for its own benefit; but with the exceptions of the Government of Madras and, more recently, of Bombay, little or nothing has been done by either the Central or Provincial Governments. For some years past the average catches made by Japanese trawlers operating in the Pacific have been steadily decreasing, partly owing to increased competition but also in the main, no doubt, owing to over-fishing, and in consequence they are now seeking for more profitable areas in other waters. So long ago as 1908–9, the *Golden Crown* carried out a series of experimental trawls for the Government of Bengal, and these showed that there were a number of excellent trawling grounds in this area. The average catch obtained compared very favourably with those taken in European waters. The experiment was a failure from the financial side mainly because of difficulties in the distribution and marketing of the catches.

Indian Coastal Fisheries and their Exploitation

IF the Japanese now working in the Bay of Bengal can overcome the marketing difficulties, there seems to be no doubt that they will very materially increase the supply of fresh fish in those ports to which they bring their catches, and in this respect will benefit the inhabitants; at the same time, it must be remembered that this is but one side of the fishing industry and that much material is obtained in the trawl that can be turned, by suitable treatment, to other uses, such as the preparation of dried and salted fish and the manufacture of fish-oil, fish-meal and even fish-manure. In the past, the bulk of the fish guano that is prepared in the Province of Madras is exported, through Ceylon, to other countries and particularly to Japan; the value of this export rose, under the fostering care of the Madras Fishery Department, from 188 tons, valued at Rs. 13,648, in 1910–11, to 32,000 tons, valued at Rs. 24,40,000 in 1922–23, and in 1927–28 it had risen even further to 100,000 tons. If the Japanese trawling in the Bay of Bengal proves to be a success, it is highly probable that in the very near future there will be a marked falling off in the sales to Japan of these Indian fishery products, to the great detriment of the Madras fishermen.

THE present Japanese invasion of Indian waters appears to have commenced in 1935; but its origin can probably be traced back to several years earlier. In 1929–30 the Japanese commenced a surreptitious exploitation of the *Trochus*-shell beds of the Andaman and Nicobar Islands by divers working from motor-boats that were based on Singapore, and this increased to such an extent that the Government of India appointed a fishery research officer in 1931. Unfortunately, owing to lack of proper supervision, undersized shells were fished and, in the absence of any patrolling vessel, grounds that were supposed to be closed were poached, while considerable poaching on the authorized grounds was carried out by unlicensed vessels: in consequence, the shell-beds were rapidly decimated and will take many years to recover. Some of these motor-boats brought with them their fishing nets, and an experiment carried out off Port Blair showed that these nets could be used in these waters with very considerable success, one boat after an absence of two days returning with a catch of about 1½ tons of fish. The natural resources of the ocean are everywhere open to all nations outside the three-mile territorial limit, but unless adequate patrolling of these Indian coastal waters by fishery-protection vessels is carried out—and in view of the great length of coast-line involved this would seem to be impossible—Japanese trawlers will certainly exploit the inshore waters, should experience prove that they are profitable trawling-grounds. A comparison of the various species of fish brought to market by the local fishermen of Akyab in Burma and Puri in Orissa, on opposite sides of the Bay of Bengal, with those taken by the *Golden Crown*, reveals that a large percentage are identical. These local inshore fishing-grounds extend out from the coast for distances varying from about five miles up to as much as 10–15 miles; thus, even were the territorial limit of three miles strictly enforced for these trawlers, there can be little doubt that such trawling by Japanese vessels will affect adversely, and perhaps seriously, the Indian coastal fishing industry.

National Institute of Sciences of India

PROF. M. N. SAHA informs us that the Government of India has decided to make a grant-in-aid of Rs. 6,000 per annum to the National Institute of Sciences of India, Calcutta, with effect from 1937–38. The grant will be subject to the following conditions: (1) Provision should be made for a nominee of the Government of India on the Council of the Institute. (2) An annual report of the working of the Institute, together with a duly audited statement of accounts, should be furnished regularly to the Government of India. (3) The Institute should tender advice on any scientific problems which may be referred to it by the Government of India and discharge any other functions which may be assigned to it by the Government of India. No provision exists in the current year's budget of the Central Government for this grant. It is proposed, however, to include a sum of Rs. 12,000 in the budget estimates for 1938–39