continent whose discovery by Cook began the process of events that gave Britain one of the most faithful and loving of her daughters. It has been sent you in exchange. We have taken from you the home in which Cook's father and mother lived, which this day is being opened in Melbourne in one of the loveliest of our gardens. Beautiful English trees overhang it, green English lawns surround it, and glowing flowers form its setting." In the course of his speech Mr. Linton said: "Such men as James Cook are beacons. In our schools it should be our care that men like this should be held up to our children to follow, quite as much as those great warriors whose ultimate building lay through destruction rather than in construction."

The Linnean Society of London

THE annual dinner of the Linnean Society of London was held at the Hotel Washington on October 18. The president, Dr. W. T. Calman, was in the chair, and the official guests were Sir Richard and Lady Gregory, and Dr. G. F. Herbert Smith. Following the dinner, a reception was held by the president and Mrs. Calman in the rooms of the Society at Burlington House. Dr. J. F. G. Wheeler, director of the Bermuda Marine Biological Station, gave a lecture, illustrated with coloured lantern slides, on the natural history of Bermuda. A number of zoological and botanical exhibits were shown in the library, including a series of manuscripts and printed documents, from the Society's archives, relating to the younger Linnæus, and to his visit to England in 1781–82. The Botanical Department of the British Museum (Natural History) had on view a large series of coloured drawings of fungi of the genus *Russula*, and a selection of dried plants from British Columbia. Miss F. L. Stephens exhibited cultures and microscopical preparations of two species of the fungal genus *Neurospora* showing varying degrees of the 'sub-sexual' difference known as heterothallism. A selection of coloured fruits and seeds exhibited by the Royal Botanical Gardens, Kew, attracted much attention. Prof. G. D. Hale-Carpenter showed a series of butterflies with marks on, and mutilations of, the wings caused by the attacks of birds. Capt. J. G. Dollman exhibited a series of skins of certain antelopes showing the uniformity of pattern in the fœtal and young animals, with diversity in the adults. Mr. J. Omer-Cooper had on view a living specimen of the crustacean *Apus*, hatched from mud taken from a pond in the New Forest. This crustacean had not been found in England for about half a century.

Rainfall Records and Drought Periodicity

MR. W. R. BALDWIN-WISEMAN, lecturer in hydraulics in the University of Western Australia, writing in reference to our leading article of August 4 on the "Government and Inland Water Survey", emphasises the need for an organised hydrographic service, and instances the Hydrographic Survey of the Po as one of the most efficient services in the world. From analyses of many lengthy records of rainfall in his possession, he contends that there is little justification in many cases, and no justification in some, for the assumption that any 35-year-mean approximates fairly closely to the true mean, or that a 20 per cent deficiency adequately represents the average annual deficiency of the three driest years in a lengthy rainfall record. Consequently, water works planned on these assumptions may make a too generous allocation of compensation water, while making inadequate provision for a storage sufficient to tide over the contingencies arising from a prolonged, or frequently recurrent, drought. He goes on to point out that Dr. E. Huntington has demonstrated the existence of a climatic pulse of about 640 years, which is probably a multiple of the sunspot period of 11·2 years ($57 \times 11{\cdot}2 = 638{\cdot}4$); if A.D. 1372, the year of maximum sunspot activity in the Chinese record, which has now been unofficially maintained for nearly a thousand years, be taken as a nodal point in this pulse, previous points will have occurred about 543 B.C., A.D. 95, and A.D. 734—all four points being in periods of notorious aridity. If the sequence is maintained, the next occurrence may be expected about A.D. 2010, with a prevalence of drought conditions, either prolonged or frequently recurrent, towards the close of the present century.

The North-East Coast Institution

AT the annual general meeting of the North-East Coast Institution of Engineers and Shipbuilders held at Newcastle-upon-Tyne on October 19, the report for 1933–34 was submitted, and Mr. J. T. Batey delivered his presidential address. In spite of the severe depression in the shipbuilding industries, the membership of the Institution has been well maintained, several valuable papers have been read and attendance at meetings during the past year was the highest recorded. Among other matters referred to were the grant of armorial bearings, the Sir Charles Parsons Memorial and the opening on July 20, 1933, of the Municipal Museum of Science and Industry, the formation of which the Institution did much to promote. The honorary curator of the Museum is Capt. E. W. Swan, a member of the Institution. A part of Mr. Batey's address was devoted to the problem of using technical progress. Technical progress, he said, is like a fine machine; it has to be properly used or it may be dangerous. Mechanical science has outstripped progress in the science of living, and it is evident that in this field there will be many and startling developments before the Institution is a century old. To the question whether the suspension of scientific progress is conceivable, it might be replied that the advance of science is so inevitable that for all practical purposes we may regard it as one of the laws of life. The Institution's purpose, "the advancement of the sciences of engineering and shipbuilding", is a definite function of the organised form of society ruling to-day. The responsibility for the misuse or oversight of technical progress must be accepted by finance, commerce and the State, internationally. In the session just opening, the Institution, he said, would commemorate its jubilee, and he continued:

"I feel that if it were possible for those far-seeing men who founded this Institution to come amongst us to-day, they would consider that the great heritage which they left us has been fully preserved."

Training of Mercantile Marine Officers

SOME important recommendations for the better training of apprentices for sea service are contained in a report just issued by an Advisory Committee to the Manning Committee of the Shipping Federation. To qualify for the position of a junior officer in the British Mercantile Marine, it is necessary to serve an apprenticeship of four years, or three years if a boy has passed through the *Conway*, or *Worcester*, or Pangbourne College, and to pass the Board of Trade examination for second mate. At present, there is no recognised course of instruction or any uniformity in training for apprentices or cadets, and very often it is only with the greatest difficulty that apprentices prepare themselves for examination. Some shipping companies have special schemes of training; but such is not the general case. It is now proposed that a Central Board of Control should be set up with the power to draw up a standard syllabus of instruction, to set annual examination papers, to give practical advice to captains of ships in matters of education, to appoint local boards of examiners and to publish periodical statistics relating to the scheme of education. The Advisory Committee expresses its belief that, if shipowners adopt the scheme and give it their practical support, it will secure the sympathy and assistance of both the Board of Trade and the Board of Education. Apprentices at sea suffer from many disabilities as compared with their fellows ashore, and some recognised course of training such as is proposed has long been overdue. It is to be hoped, therefore, that the recommendations put forward will receive the support they deserve.

Research in the Automobile Industry

AT the annual dinner of the Institution of Automobile Engineers on October 12, Sir Herbert Austin referred to the debt the automobile industry owes to the Department of Scientific and Industrial Research; and the extent to which the industry receives help from the Department is dealt with in the recent annual report of the Research and Standardization Committee of the Institution. During the year ending June 30, 1934, the total income of the committee was £9,963, which included £5,000 from the Society of Motor Manufacturers and Traders, £1,962 from subscriptions and £2,500 from the Department. The year's expenditure on research was about £6,000. To stimulate further research, the Department has offered to increase its contribution to £5,000 if the industry will find £10,000, and to £10,000 if the industry will find £15,000. As the output of motor-cars in Great Britain was stated by Sir Frank Smith at the dinner to be 285,000 a year, it should not be difficult for the industry to find a sum which amounts to practically a shilling a car. Researches are already in hand on cylinder wear, valve seat wear, bearings, oil consumption, piston temperatures, brakes and other matters, and from these valuable information has been obtained.

Battery-Electric Cars

AFTER many years of almost suspended animation, the battery-electric vehicle industry is showing signs of life. At the Exide motor show, Mr. D. P. Dunne stated that the monthly output of these vehicles in Great Britain is larger than it has ever been before. Compared with petrol vehicles, they make less noise and produce less atmospheric pollution. Statistics prove that their life is much longer and their maintenance is much less than that of any other form of mechanically propelled road vehicle. Several corporations are using electric vans in connexion with their electrical apparatus hiring schemes. The West Ham undertaking has vans with a speed of 20 miles per hour and a range of 50 miles per charge. They use an electric motor coupled to the back-axle through differential gearing. The charging arrangements are quite simple: a 'jack' is provided on the dashboard for connecting with the mains and there is an automatic control to limit the rate of charging. This undertaking has introduced a night tariff of 0·66*d*. per unit for vehicle charging. In certain cases, such vehicles will prove more economical than petrol vans.

Investigation of Cosmic Rays by Sounding Balloons

ACCORDING to a recent article distributed by Science Service, Washington, D.C., Dr. Arthur H. Compton, of the University of Chicago, proposes to use small sounding balloons that will automatically send wireless signals recording pressure and temperature of the air and the intensity of the cosmic rays. The idea is not new, having been developed for example by Prof. J. M. Benade, of Lahore, and by Prof. Moltchanoff, of Leningrad (NATURE, Dec. 31, 1932, p. 1006). The risks attending direct exploration of the stratosphere are obvious, and these special balloons are designed to avoid them, while greatly reducing expense; they are said not to exceed 15 ft. in diameter at release, and to weigh only 16 lb. Radio signals are to be emitted from a single valve oscillator. The movements of a special barometer will affect the wave-length of the signals, and the signals will be interrupted by a balance wheel, of which the rate of oscillation will be controlled by temperature. They will also be interrupted at each discharge of a cosmic ray counter—an instrument which discharges at a rate dependent upon the conductivity of the atmosphere, which in turn is affected by the cosmic rays—the length of time between such breaks giving an indication of cosmic ray intensity just as the lengths of the intervals between interruptions previously mentioned will indicate the temperature. It is understood that Dr. Compton's measurements will not entirely replace those made with manned 'stratosphere balloons', but will supplement them and allow some information to be obtained from sparsely populated regions where neither manned balloons nor balloons that release self-recording instruments when they burst can be employed, in the first case