

News and Views

Nature of the Nerve Impulse

THE intimate nature of the nervous impulse has long been a subject for speculation by physiologists and psychologists. Simple models to explain the mode of transmission of an impulse along a nerve, like the electrical one of the marine telegraphic cable or like the chemical one of a train of gun-powder, have proved to be totally inadequate to explain the various phenomena observed in nerve. Until recently, the relative unfatiguability of nerve favoured a simple physical and non-chemical hypothesis. Modern refinements in technique, however, have shown that nerve during activity utilises chemical energy and produces heat. It is only in the last few years that the two phases of heat production in nerve have been analysed, and an account from the leading investigator in this field, Prof. A. V. Hill, appears in the special supplement to this week's issue of NATURE. Prof. Hill favours an electro-chemical theory of a self-propagating wave of disturbance to explain the various forms of behaviour exhibited by an impulse in its passage along a nerve. Interesting experiments on the ionic distribution of potassium ions lend convincing support to the theory. The supplement will also be found to give a useful summing-up of the present position reached by investigators in this branch of nerve physiology.

Sir Charles Peers, C.B.E.

SIR CHARLES PEERS, Chief Inspector of Ancient Monuments and president of the Society of Antiquaries, has been awarded the Royal gold medal of the Royal Institute of British Architects for his services to architecture. The presentation took place at the Institute on April 3. Sir Charles Peers has now held office as Chief Inspector of Ancient Monuments for twenty years. It is largely owing to his zeal in carrying out his duties and the breadth of his practical knowledge in archæological matters that, not only have a large number of our antiquities been preserved from vandalism, but also the co-operation of the Office of Works, of which he is an officer, has been sought readily and with confidence by those who are interested either as owners, as archæologists, or as members of the public in the future as well as the past of ancient monuments. At the same time, the powers and duties of his office and his department, which were anything but adequate at the time of his appointment, have been enlarged by successive Acts of Parliament, until, with notable reservations to which attention has been directed with emphasis recently, such monuments are now within a measurable distance of a reasonable assurance of safety.

Trevithick Centenary Exhibition

IN connexion with the celebration of the centenary of the death of the great Cornish engineer and inventor Richard Trevithick, the 'father' of the steam locomotive, a memorial exhibition has been arranged in the main gallery of the Science Museum, South

Kensington. Trevithick was an inventor of astonishing fertility but his main contribution to engineering progress was his invention of the high-pressure non-condensing steam engine and its application to both road and rail locomotives. His outstanding patent was taken out in 1802, and engines were made all over England to his designs. Of these engines two excellent specimens are shown, one with a cast iron boiler, made in 1805, and another made in 1811 with a wrought iron boiler. Unfortunately, nothing remains of his several locomotives, but various documents and drawings are exhibited and there are also some of the cast iron rails from Penydarran, South Wales, on which his first locomotive ran. This engine, the first rail locomotive in the world, is known to have drawn five wagons with a load of ten tons in 1804, and four years later Trevithick exhibited a locomotive, afterwards named *Catch-me-who-can*, "in the fields adjoining the Bedford Nursery near Tottenham Court Road", London. The next locomotive of importance was that constructed by Matthew Murray for John Blenkinsop at Leeds in 1811, but the original drawings for this were supplied by Trevithick, who received a royalty on the engine. The exhibition also includes Linnell's portrait of Trevithick painted in 1816, Burnard's bust and many interesting letters and documents.

Memorial to Thomas Tompion

ON Saturday, April 1, a plaque in memory of Thomas Tompion, the clockmaker, was unveiled in St. Mary's Church, Northill, Bedfordshire, where he was born in 1639, and simultaneously a wreath was laid on his tomb in Westminster Abbey, where he was buried in 1713. The plaque is the gift of the Clockmakers' Company and was unveiled by the Master, Mr. B. Kettle, the address at the service being delivered by the Archdeacon of St. Albans, the Ven. A. H. Parnell. At the ceremony at the Abbey, Sir Francis Newbolt, the Deputy Master of the Clockmakers' Company, said Tompion was honoured by the Company as one of its greatest Masters. So great was his mechanical genius and incessant industry that he was appointed clockmaker to the Royal Observatory at Greenwich at its foundation. He was a brilliant craftsman and made practical the theoretical inventions of others. He left English watches and clocks the finest in the world and the admiration of his brother artists. The grave Tompion lies in, it may be remarked, also contains the remains of his famous pupil and successor, George Graham, who died in 1751. The slab now to be seen in the Abbey, on which Graham's remarkable skill is referred to, was removed in 1838 and a small lozenge-shaped stone substituted. Thanks, however, to Dean Stanley, the original was replaced in 1866.

Centenary of Maurice Loewy

ON April 15 occurs the centenary of the birth of the distinguished astronomer, Maurice Loewy, who, from 1896 until 1907, held the directorship of the

Paris Observatory, a post to which he was appointed on the death of Felix Tisserand. Born in Vienna in 1833 of Jewish parents, Loewy passed through the Polytechnic School and University of Vienna and then entered the old Imperial Observatory of the capital, where he was trained by Karl Littrow. Being invited to France by Le Verrier, he became a naturalised Frenchman and in 1864 joined the staff of the Paris Observatory, serving under Le Verrier, Delaunay, Mouchez and Tisserand. He took an active part in the completion of the great Paris Catalogue of Stars and in the inauguration of the International Star Chart. So early as 1871 he proposed to Delaunay the new form of telescope since known as the equatorial *coudé*, but it was not until 1882 that the first instrument of this kind was erected, the cost of the telescope then being defrayed by the generous banker Raphael Bischoffsheim (1823-1906), the founder of the Nice Observatory. A description of the instrument appeared in *NATURE* of November 8, 1883, p. 36. For thirty years Loewy was director of the *Connaissance des Temps*, and from 1872 was a member of the Bureau des Longitudes, taking part with Mouchez in the inauguration of the observatory in the Parc de Montsouris for the instruction of navigators and explorers. From 1873 onwards he was also a member of the Academy of Sciences. He received many honours from learned societies and in 1889 was awarded the gold medal of the Royal Astronomical Society. He died suddenly on October 15, 1907, at the age of seventy-four years, when addressing a meeting of the Conseil des Observatoires astronomiques.

Priestley Bicentenary Celebrations at Warrington

WHEN non-conformists were debarred from studying at Oxford and Cambridge, a number of dissenting colleges came into existence, among the most famous and successful of which was the Warrington Academy, through which, during its existence from 1757 until 1783, some four hundred pupils passed. It was in this Academy that Priestley taught from 1762 until 1767, and it was there he wrote his "History of Electricity". In 1898 the Warrington Society was formed with the object of preserving the building which originally housed the Academy, and to-day it possesses an interesting collection of Priestley pictures, books and medallions. In conjunction with the Warrington Philomathic Society, therefore, it held a Priestley commemoration meeting in The Old Academy on March 17, when the Priestley relics were shown to visitors and two addresses were given, the first being by Mr. J. Hawthorn on "Joseph Priestley and Warrington" and the second by J. S. Broome on "Priestley's Scientific Work in Warrington". When Priestley was offered a post at the Academy, he followed Dr. Taylor as tutor in languages although, as he himself wrote, "I should have preferred the office of teaching the mathematics and natural philosophy, for which, I had at that time a great predilection". In spite, however, of being employed five hours a day in lecturing on English, Latin, Hebrew and other subjects, he yet found time to make experiments and carry on a corre-

spondence with Franklin, and it was his scientific work at Warrington which led to his being admitted to the fellowship of the Royal Society.

Stereochemistry and Physics

THE Faraday lecture of the Chemical Society was delivered at the Royal Institution on March 29 by Prof. Peter Debye, of the University of Leipzig. He took as his subject "The Relations between Stereochemistry and Physics" and gave a brilliant exposition of certain methods used for the elucidation of molecular shape and dimensions, methods to which his own contributions, both in theory and in experimental technique, have been all-important. Until comparatively recently, the two factors which essentially determine the dielectric constant of a substance were not clearly distinguished from one another. Prof. Debye showed how the total polarisation in an electric field is compounded of the natural polarisation inherent in the molecules themselves and of an induced polarisation, due to their electrical deformability; how the relative contributions of these two effects can be estimated by investigating the influence of temperature on dielectric constant; and how the magnitude of the natural dipole moment thus obtained can give valuable information on the degree and the nature of symmetry of the molecule. Examples were quoted from the work of Errera, Smyth and Williams.

In the latter half of the lecture, Prof. Debye dealt with his pioneer investigations on X-ray interference patterns produced by isolated molecules, describing the technique, the application of the numerous necessary corrections to the experimental data, and the interpretation of the latter in terms of the inter-atomic distances in the molecule. Mention was made of the related electron ray method of Mark and Wierl. He illustrated his fascinating topic by reference to work on the chlorine substitution products of methane, and to the problem of free rotation of single bonds. The interest and enjoyment of his hearers were obvious. One may indeed be excused for thinking that very seldom are occasion and lecturer, theme and audience so completely attuned to one another as happened at this lecture. Prof. Debye had no difficulty in establishing Faraday as a pioneer of ideas in the fields both of the electrical properties of molecules and of the spatial arrangement of atoms within them. All felt that Sir William Bragg was right when he claimed that Prof. Debye and Faraday were akin in spirit; Prof. Donnan was equally right when he termed Prof. Debye the friend of the chemist, of the "hydrophobic organic chemist equally with the hydrophilic physical chemist".

The Chemical Society

PROF. G. G. HENDERSON, the retiring president of the Chemical Society, devoted his presidential address on March 30 to an examination of the present position and the future of the Society. Scientific societies, he said, must be ready to modify their policies in accordance with changing conditions. The work of the Chemical Society in pursuing the