

tion of the 'velocity-distance proportionality', often called Hubble's Law. This law underlies all modern theoretical cosmology and the concept of the expanding universe. Recent refinements due to Hubble himself have called in question the interpretation of the red-shifts as velocities; but, in whatever form, the apparent increase of velocity at the rate of about 500 km. sec.<sup>-1</sup> per 10<sup>6</sup> parsecs is a fundamental world-datum. Hubble's more recent researches have been concerned with the distribution of the nebulae in space and the discovery of their average homogeneity, modified by a tendency to form groups and clusters; with the determination of the mean density of matter in space, another fundamental constant; with space absorption and obscuration in the galactic plane; with the effects of red-shifts on apparent magnitudes; and with the character of the 'local' group of nebulae. It may fairly be claimed that the modern picture of the universe of extra-galactic nebulae is largely due to Hubble's researches. He has recently collected them in a book, "The Realm of the Nebulae", a work of epic quality. His contributions are characterized by the power and originality of his methods, by his observational skill, by the objective character of his deductions and by the general brilliancy of his results.

### The Earthquake in Turkey

THE first official estimate of the earthquake losses was given to the Kamutay on January 11 by the Health Minister, who said that there were 23,131 dead and 7,994 injured and that 29,131 houses had been ruined. Further news of the disaster comes from the affected areas as communications are restored. The Susheri district north-east of Erzinjan had been completely cut off for a fortnight except for the dropping of food and medicaments by a squadron of aeroplanes. There were 3,950 dead and 590 injured. It appears that the Malatia Erzinjan railway was not so greatly affected by the earthquake as the Sivas Erzinjan line, though the blizzards and snow affected this line tremendously. According to eye-witness accounts from Rechadiye, there were crevices 400 yards long and several yards wide in different directions. Streams and rivulets have changed their courses. At a place 12 kilometres from Rechadiye a mountain had its shape completely altered, giant precipices being formed and roads being blocked. The Yeshil-Irmak overflowed and further threatened Amasya.

Sailors report that between Kerasun and Shebin-Karihisar an entire mountain has subsided. Photographs from Erzinjan show that movement there took place in all directions, as there appears to have been no predominant direction of fall of the columns and other debris. The town of Erbaa near Tokat has apparently suffered almost as much as Erzinjan, and in many places the bursting of drains due to the earthquake and floods has added new terror. It is reported that typhoid has broken out at Fatsa. After-shocks of decreasing intensity have been felt at intervals in the widely separated areas of Samsun, Amasya, Bursa, Kersund, Yozgad, Inebolu, Bolu,

Burdur, Isparta, Karahisar, Erbaa, Akhissar, Odemish, Duzic, Sivas, Tokat, Bergama, Smyrna and Kikili, that is from northern to south-western Anatolia, according to a *Times* report.

The entire body of survivors from Erzinjan, numbering 3,200, have been removed to Alexandretta, Mersin, Adana and other towns of Southern Anatolia, except about 130 injured, who have been placed in hospitals in Istanbul, and the surviving military cadets who have been sent to Konia. It is reported that the Government is discussing a proposal to rebuild Erzinjan on its present site, and temporary wooden cottages are to be erected. Dr. G. Van Dyk states that the first pulse to arrive at De Bilt (Holland) after the earthquake was dilatational, and that possible after-shocks were registered there on December 27 at 22h. 44m. 3s. G.M.T. and on December 28 at 3h. 30m. 45s. and 3h. 35m. 15s. G.M.T. We are indebted to Rev. J. P. Rowland, S.J., of the Stonyhurst College Observatory, for a copy of the seismogram of the principal earthquake. This seems to indicate the possibility of three distinct shocks having occurred within the first minute. They appear to have been of increasing intensity and from very nearly the same epicentre.

### Drug Standardization

THE Harrison Memorial Lecture was delivered by Mr. A. D. Powell, chief analyst of Boots Pure Drug Co., Ltd., at the evening meeting of the Pharmaceutical Society on January 9. His subject, "Drug Standardization", was chosen, he said, in token of the work done in that connexion by the late Colonel E. F. Harrison prior to his undertaking the responsibilities of his post as chief of the Defensive Gas Warfare Department during the War of 1914-18. Mr. Powell surveyed the progress of standardization from the time when, as a result of the disclosures of the *Lancet* Analytical Sanitary Commission, the Adulteration Act 1860 was passed, and concluded by outlining his own ideas of the desirable features of a satisfactory drug standard.

Mr. Powell put forward five points: (1) The description and principal requirements of strength should be free from ambiguity, and the descriptive paragraph, if it referred to a drug of definite chemical composition, should not be so restrictive as to insist on a particular method of preparation. (2) The degree of purity in terms of the substance, or of an active principle, should be defined wherever possible, unless, as with many organic chemicals, the melting point gave a sufficient indication of a high degree of purity. (3) The tests for purity should be diagnostic, and preferably capable of application under conditions varying within reasonable limits. (4) The number of tests for purity should cover all the impurities likely to be present in significant proportion, but should be limited by this consideration. (5) Tests to detect traces of unlikely impurities, or a redundancy of tests for the same impurity, may weaken rather than strengthen a standard. In general, standardization should be definite and free from ambiguous interpretation; this should not

enforce an academically high degree of purity involving artificially high cost of preparation without corresponding advantages in safety and therapeutic activity.

### A Pioneer of the Oil Engine

As long as there are oil engines, there will be discussions as to the relative merits of the work of Herbert Akroyd Stuart in Great Britain and of Rudolph Diesel in Germany. Designers of engines to-day utilize the ideas of both, but whereas the name of Diesel has become a household word, that of Stuart is known only among engineers. It was said at the time Stuart died that he "belonged to that rather tragic fraternity of inventors whose achievements have not secured from the world at large the recognition they merited". That his work is fully appreciated in engineering circles was shown by the Diesel Engine Users' Association, which on January 11 held a luncheon at the Connaught Rooms, London, to commemorate the fiftieth anniversary of his most important patents.

After the luncheon, a sketch of Stuart's life and work was given in a paper by Mr. T. Hornbuckle and Mr. A. K. Bruce. Stuart was born in Yorkshire in 1864 and died in West Australia in 1927. He was among the earliest students of the Finsbury Technical College. While engaged at his father's engineering works at Fenny Stratford, Buckinghamshire, he began experimenting with internal combustion engines, and in the years 1886-92 took out nine British patents for improvements. His leading patents were No. 7146 of May 8, 1890, and No. 15994 of October 8, 1890. These were taken out in collaboration with C. R. Binney. In that of May 8, 1890, he claimed the novelty of compression ignition. Diesel's patent was not taken out until February 28, 1892. The manufacture of oil engines according to Stuart's patents was taken up by Messrs. Hornsby and Sons, Ltd., of Grantham, in 1891, and Stuart had little more to do with them. Unfortunately, the engines became known as "Hornsby-Akroyd" engines, and in America even as "Hornsby-Diesels". At his death, Stuart left instructions for his papers to be destroyed, but he bequeathed sums of £500 and £700 respectively to the Institution of Mechanical Engineers and the Institute of Marine Engineers for prizes for papers on oil engines.

### British and American Civil Engineers

IN September last it had been arranged that representatives of the Institution of Civil Engineers should visit the United States in response to an invitation from the American Society of Civil Engineers, but international unrest in Europe resulted in the cancellation of that visit. Had the visit taken place, it was intended that Mr. W. J. E. Binnie, who was then president of the Institution, should present to the American Society of Civil Engineers a replica of the Myddelton Cup, as a token of the friendly relations which have existed between the two societies. Lord Lothian has now, however, on behalf of the Institution, handed the replica to

Colonel D. H. Sawyer, president of the American Society, at a gathering of the members of that Society held in Washington on January 9.

The original Cup was presented to Sir Hugh Myddelton in 1613 by the Worshipful Company of Goldsmiths of London for his services in providing London with a supply of potable water. It remained in the possession of the Myddelton family until 1922, when it was acquired by the Goldsmiths' Company. Lord Lothian has, by completing the ceremony of presentation, cemented the cordial feeling between the two societies and strengthened that part of the bond of international friendship which is based upon the creative genius of the civil engineer in all parts of the world.

### Non-Political Work of the League of Nations

A REPORT by the Secretary-General on the work of the League of Nations (July-mid-November, 1939), which has just been issued, is an immediate sequel to the regular report on the work of the League, 1938-39; but is the first of a series which will be published periodically to keep the States Members informed of the progress of the League's work (League of Nations. Report on the Work of the League (Continuation), July-mid-November, 1939. (Official No. A.6(a), 1939.) Pp. 62. (Geneva: League of Nations; London: George Allen and Unwin, Ltd., 1939.) 1s. 6d.). The report shows that with certain exceptions—the European Conference on Rural Life, which was to have met at Geneva in October, for example, had to be postponed *sine die*—the League has been able to carry on, in spite of the War, its essential activities in the non-political fields in which it has been responsible for so much successful and constructive work in recent years. For the development of international co-operation in economic and social affairs, the creation of a Central Committee to direct and supervise the work of the League's Committees dealing with those questions has been recommended and a draft constitution submitted for the approval of the Assembly.

A section in the report on economic and financial questions refers to the meeting of representatives of National Nutrition Committees held at Buenos Aires in October and to measures taken to adapt the publications of the Economic Intelligence Service to the new conditions. Other sections deal with communications and transit, health questions, and traffic in opium and other dangerous drugs. It is interesting to note that maintenance of supervision of this traffic in war-time has been strongly urged by the United States of America, although not a member of the League.

### Vital Statistics of a Primitive People

A STUDY of the vital statistics of the lowland Sənoi (Sakai) of Perak, Malay Peninsula, by H. D. Noone (*J. Fed. Malay States Mus.*, 15, 4; 1939) is of interest in its bearing on the effect of the inter-racial and cultural contacts of a primitive people on their chances of survival. A generation ago it was regarded as a matter of time only before the then