Calendar of Scientific Pioneers.

December 15, 1890. James Croll died.—Known for his writings on physical geology, such as his "Climate and Time," 1875, Croll was successively a joiner, an insurance agent, an assistant at the Andersonian College, Glasgow, and keeper of maps in the Geological Survey of Scotland.

December 16, 1798. Thomas Pennant died.—The author of "British Zoology" (1766), "British Quadrupeds" (1781), and "Arctic Zoology" (1785), Pennant, who was the friend of Linnæus, Buffon, and Voltaire, was one of the leading British zoologists of his time.

December 16, 1809. Antoine François Comte de Fourcroy died.—A teacher and organiser with a talent for oratory, Fourcroy did much to popularise the doctrines of Lavoisier among his countrymen, and with Lavoisier, Guyton de Morveau, and Berthollet published the "Méthode de Nomenclature Chimique," 1787.

December 17, 1907. Sir William Thomson, Baron Kelvin of Largs, died.—The son of James Thomson, professor of mathematics at Belfast and Glasgow, Kelvin was born in Belfast, June 26, 1824. After studying at Glasgow and Cambridge, and at Paris, where he came under the influence of Liouville and Regnault, in 1846 he was appointed to the chair of natural philosophy at Glasgow, a post he held with great distinction until 1899. Kelvin was pre-eminent in the realm not only of theory, but also of practical application. In pure science he did important work in thermodynamics, magnetism and electricity, hydrodynamics, and the theory of the æther. Besides co-operating with Tait in their famous treatise on natural philosophy, he wrote several hundred papers. As an inventor of delicate scientific instruments he was unrivalled. To him are due electrical measuring instruments of all kinds, the mirror galvanometer, siphon recorder, standard compass, and sounding and tide-predicting machines. He was president of the Royal Society from 1890 to 1894 and in 1892 was raised to the peerage. He is buried beside Newton in Westminster Abbey.

December 18, 1829. Jean Baptiste Pierre Antoine Monet de Lamarck died.—Lamarck is regarded as the founder of invertebrate zoology. His "Philosophie Zoologique" appeared in 1809, his "Histoire des Animaux Sans Vertèbres" in 1815–22. He put forward views on evolution and enunciated the doctrine of the transmission of acquired characters.

December 18, 1892. Sir Richard Owen died.—The first Hunterian professor of comparative anatomy, and later superintendent of the natural history collection of the British Museum, Owen was one of the greatest contemporaries of Darwin and Huxley. His anatomical and palæontological researches refer to every class of animal from protozoa to man.

December 19, 1887. Balfour Stewart died.—A meteorologist and magnetician, Balfour Stewart made important researches on radiant heat and spectrum analysis. He was director of Kew Observatory and then professor of natural philosophy in Owen's College, Manchester.

December 20, 1913. Julius Scheiner died.—An assistant to Schönfeld at Bonn, Scheiner, in 1887, joined Vogel at Potsdam, where he carried out a great variety of investigations in astrophysics.

December 21, 1912. Paul A. Gordan died.—A contributor to the study of the calculus of invariants and co-invariants, Gordan for many years held the chair of mathematics at Erlangen. E. C. S.

Societies and Academies.

LONDON.

Association of Economic Biologists, November 18.—Sir David Prain, president, in the chair.—E. J. **Butler**: Meteorological conditions and disease. The meteorological conditions known to influence diseases of plants are chiefly temperature, humidity, and radiation. The influences are most marked in Continental climates, as the amplitude and duration of the variations are greater than in countries like England. They act both on the host-plant and the parasite, but to judge of their full effect it is often necessary to test them on the host-parasite complex, since the influence on either host or parasite alone may not give a true picture of what occurs in the interaction of the two which constitutes disease. Small variations, amounting to not more than 5 per cent. in relative humidity or 10° C. in temperature, if prolonged, may be sufficient to determine whether a parasite will cause nearly 100 per cent. infection or none at all. In India the author has found that several diseases are so sharply restricted in their distribution by these factors that it is possible to demarcate the areas in which they cannot occur, and also those in which they occur only in special conditions arising in exceptional years, from those in which they normally occur every year. The same is true in the United States. Exact evaluation of the factors concerned is possible by rigidly controlled experimental methods, but not by field observation alone.

Faraday Society, November 28.—Prof. A. W. Porter, president, in the chair.—J. N. **Greenwood**: The effect of cold work on commercial cadmium. Chill-cast commercial cadmium undergoes spontaneous recrystallisation at the ordinary temperature without the application of cold work. Deformation hastens this change. Deformation at 20° C. softens chill-cast cadmium, and during the subsequent annealing further softening occurs. It is concluded that two forms of cadmium are being dealt with, and that the quick cooling has suppressed the transformation. Recrystallisation and hardness experiments indicate the position of the allotropic change to be in the neighbourhood of 60° C. This accords with Cohen's transformation $Cd_\alpha \rightarrow Cd_\beta$. Spontaneous recrystallisation of cast unworked cadmium takes place suddenly after about twelve days, and the hardness falls continuously during the same period. This would appear to indicate a gradual change from Cd_β to Cd_α. A third modification has sometimes been obtained, but its range of existence has not been determined.—J. N. **Pring** and E. O. **Ransome**: Reaction between cathodic hydrogen and nitrogen at high pressures. The electrode potentials with metals during electrolysis indicate that an accumulation of gas at very high pressures occurs at, or immediately within, the surface of the electrode. When cathodic hydrogen is liberated in contact with nitrogen, particularly at high pressures, the conditions appear to be favourable to the synthesis of ammonia. With nitrogen at atmospheric pressure the mean percentage current yield of ammonia by direct union of the elements amounted to 0·04 per cent. At pressures of from 60 to 104 atmospheres it was 0·09 per cent. Experiments at from 300 to 500 atmospheres showed a loss of acidity, but no ammonia was indicated. The small quantity of ammonia formed at lower pressures is ascribed to a thermal action of the heated conductors. The results indicate that no reaction takes place between nitrogen and hydrogen liberated at the cathode.—F. H