

Both lectures will be delivered in English. Admission to all the above lectures is free without ticket.

APPLICATIONS for a Mackinnon Research Studentship of the annual value of 300*l.* will be received by the Secretaries of the Royal Society until June 19. The studentship, which is awarded in the first instance for two years with a possible extension, is for the furtherance of natural and physical science, and for original research and investigation in pathology. Particulars and forms of application can be obtained from the Assistant Secretary of the Royal Society, Burlington House, W.1.

APPLICATIONS are invited by the Ministry of Agriculture and Fisheries for a number of research scholarships in agricultural science, each of the annual value of 200*l.* and tenable for three years. Candidates must be honours graduates of a British University with special qualifications in chemistry, botany, zoology, physiology, or economics. The object of the scholarships is to train agricultural research workers, and the work undertaken must be approved by the Ministry. Scholars may be required to spend a part of their time at an approved foreign laboratory or university. Conditions of the award and copies of the form upon which applications must be made are obtainable from the Secretary of the Ministry of Agriculture and Fisheries, Whitehall Place, S.W.1. Nominations for scholarships, which must be signed by a professor or lecturer of a university or college, must be received by July 15.

THE *Chemiker Zeitung* of May 11 reports that Prof. K. Freudenberg is to succeed Prof. Pfeiffer at the Technische Hochschule, Karlsruhe.

IT is announced in *Science* that Miss Kate C. Garrick, daughter of the late Sir James Francis Garrick, for ten years agent-general in London for Queensland, has by her will bequeathed 10,000*l.* to the University of Queensland to found a James Francis Garrick professorship of either law or medicine, as may seem best to the University, in memory of her father.

ON Saturday, May 6, the undergraduates of Aberdeen University concluded a week's "Carnival" on behalf of the local hospitals with a sand-castle competition on the beach and a pageant in the Mitchell Hall. There were 20,000 spectators at the building of the sand castles. More than 3000*l.* was collected in the city and surrounding towns to which artistes were dispatched in the early days of the week.

FURTHER Research Studentships, about four in number, are being offered to university graduates by the Empire Cotton Growing Corporation and the British Cotton Industry Research Association. The studentships are each of the value of 250*l.*, with certain additional allowances, tenable for one year with a possible renewal for a second year. They are intended to provide opportunities for further training in scientific research bearing on plant genetics and physiology, entomology, physics, etc., or in special subjects relating to administration and inspection in tropical agriculture. One studentship is offered for a candidate having special interest in bacteriology. Further particulars and forms of application are obtainable from the Secretary of the Empire Cotton Growing Corporation, Millbank House, Millbank, S.W.1, not later than June 19.

WE learn from *Chemiker Zeitung* of April 22 that Prof. A. Gutbier, Rector of the Technische Hochschule, Stuttgart, has succeeded Ludwig Knorr as professor of chemistry at the University of Jena.

## Calendar of Industrial Pioneers.

June 3, 1803. William Reynolds died.—The son of a successful ironmaster at Ketley, Staffordshire, Reynolds invented a method of raising boats from one level to another by inclined planes, with Telford constructed a cast-iron aqueduct at Longden, Shropshire, and in 1799 patented a method of preparing iron for conversion into steel by the use of manganese.

June 3, 1899. John Nixon died.—The pioneer of the steam-coal trade of South Wales, Nixon was born in Durham in 1815 and was trained there as a mining engineer. In 1839 he removed to South Wales and then to France. His observations on the steaming qualities of Welsh coal led to his shipping a cargo to Nantes, and to a contract for the supply of coal to the French Navy, steps which led to the foundation of the great trade in this coal.

June 4, 1907. Sir Charles Mark Palmer died.—The founder of the great shipbuilding and ironworks at Jarrow, Palmer, who was born in South Shields in 1822, was the son of a shipowner. He early became partner in a colliery business, and in 1851 built the first iron steam-collier for carrying coals from Newcastle to London. During the next forty years no fewer than 600 vessels were built at Jarrow.

June 4, 1906. Francis William Webb died.—A prominent locomotive engineer, Webb was an assistant first to Francis Trevithick and then to John Ramsbottom of the London and North-Western Railway, and in 1871 succeeded the latter as chief mechanical engineer, a post he held till 1903. He was a pioneer of the compound locomotive, and in 1881 with the *Experiment* introduced three-cylinder compound engines, and in 1897 with the *Black Prince* introduced the four-cylinder compound engine.

June 6, 1878. Robert Stirling died.—Stirling, who was born in 1790, was for 53 years minister of the parish church of Galston, Ayrshire. Ordained in 1816, the same year he took out his patent for an engine which produced motive power by means of heated air.

June 7, 1884. Richard March Hoe died.—The well-known New York firm of printing-machine makers, Messrs. R. Hoe and Co., was founded by Robert Hoe, an inventor who was born in England in 1784, emigrated to America in 1803, and died in 1833. His son, Richard March Hoe, born in 1812, was the inventor of the high-speed printing press. He devised the means of holding the type on the cylinder, and built machines having ten cylinders and capable of printing 20,000 newspapers per hour. These machines were used in London in 1858. Many improvements were added by Richard Hoe and by his nephew Robert Hoe (1839-1909), who became head of the firm, and it has been said that "to think of 166,000 sixteen-page newspapers printed in an hour, all folded ready for delivery, a feat made possible by the combination of distinct machines, is to think of the name of Hoe."

June 8, 1882. John Scott Russell died.—One of the most eminent naval architects of last century, Russell was born in Glasgow, May 8, 1808. An original investigator, he made experiments on the resistance of water to the motion of floating bodies, discovered the wave of translation, and developed the wave-line system of construction of ships. Removing to London he became secretary to the Society of Arts, and a commissioner of the Great Exhibition of 1851, and established shipbuilding works at Millwall, where Brunel's *Great Eastern* was built. This remarkable vessel, begun in 1854 and completed in 1859, was 680 feet long, 82 feet beam, and of 27,384 tons displacement.

E. C. S.