

mentioned increase in the number of secondary students in private schools. The increase was—in Roman Catholic schools from 20,150 to 76,054; in other denominational schools from 39,106 to 53,965; in non-sectarian schools from 47,951 to 54,134; in all from 107,207 to 184,153. The increase in the number of secondary students of negro race in private schools is also noteworthy—from 2774 in 1905 to 9526 in 1920. Less than half of the total number of these schools are co-educational, 385 being for boys only and 728 for girls only.

"We should have a dynamic education to fit a dynamic world" is the burden of the address delivered by Dr. James Harvey Robinson, on "The Humanising of Knowledge," before the American Association for the Advancement of Science, at a meeting with the Pacific division in Salt Lake City on June 23-24. Once it was well to dehumanise science; now it must be rehumanised. Dr. Harvey thinks there is a real danger threatening the progress of science itself in neglecting the protest of philosophy, that the ideal of dehumanising scientific investigation loses sight of the fact that the onlooker is one of the essential elements in the observing and recording. The danger is not that the scientific ideal is faulty, but that mankind will not accept an idea unless it is attractive as well as true. "The politicians in the Kentucky legislature think themselves competent to decide whether the State should grant funds to any institution in which man's animal extraction is taught; the politicians in the New York legislature have provided that no one shall teach in the schools of the State who is known at any time to have expressed any distrust of our institutions." We on this side may smile at these fears; but after all it is well to be reminded that the scientific investigator is prone to take himself for granted and not to realise "what an altogether astonishing and even grotesque mystery he and his doings constitute" for the general mass of social human beings.

"CO-OPERATION and the Problem of Unemployment" is the title of a pamphlet issued last month by the Calcutta newspaper *Capital*, being a reprint of a series of articles contributed by Captain J. W. Petavel, Principal of Maharajah Kasimbazar's Polytechnic Institute, together with correspondence between Captain Petavel and the Vice-Chancellor of the Calcutta University. The recent establishment by this university of a Poverty Problem Study Fund, to meet the cost of lectures and publications devoted particularly to the exploitation of a definite scheme of social reform, constitutes a new departure in university policy in regard to research in applied sociology. This scheme "to organise the children and the adolescents in schools and continuation schools, so as to make them form the trunk of a great tree of co-operative production and exchange, whose branches will extend in all directions and carry health into every part of our social system," is not new. Among its earliest supporters were the late Lord Roberts and Sir Horace Plunkett. Of late "economists and educationists in almost every part of the world," says the Vice-Chancellor of Calcutta University, have been canvassed, with the result that there has been a steadily increasing volume of opinion in favour of the scheme, and steps are being taken towards operating a large-scale trial application of it in schools in Bengal by means of self-supporting school market-gardens and school workshops. The experiment cannot fail to arouse keen interest, not only in India but wherever attempts are being made to extend and improve education without increasing its cost.

Calendar of Industrial Pioneers.

August 27, 1898. John Hopkinson died.—Distinguished as an engineer and a mathematical physicist, Hopkinson was a graduate of Trinity College, Cambridge, and in 1871 was senior wrangler and Smith's prizeman. For some years he was scientific adviser to Messrs. Chance, of Birmingham, and made improvements in lighthouse apparatus. As a consulting engineer in London he took up the study of electrical problems; in 1882 patented the three-wire system, and four years later, with his brother Edward, published an important memoir on the principles of the design of dynamos. In 1890 he became professor of electrical engineering at King's College, London, and on two occasions served as president of the Institution of Electrical Engineers. His death was the result of an Alpine accident.

August 27, 1914. William Thomas Lewis, Lord Merthyr of Senghennydd, died.—Coal owner, iron master, steel maker, engineer, and a captain of industry, Lewis began life as an apprentice in a South Wales engineering works. In 1860 he became mining engineer to the estates of the Marquis of Bute, and twenty years later was made sole manager. He was a pioneer in the construction of steel works.

August 31, 1751. Christopher Polhem died.—A famous mining engineer of Sweden, Polhem was born in 1661, in 1693 became engineer of the mines at Fahlem, and in 1716 was raised to the nobility and was made a member of the council of mines. He travelled extensively, carried out important engineering works, and was one of the original members of the Academy of Sciences of Stockholm.

August 31, 1865. John George Appold died.—After amassing a considerable fortune as a fur skin dyer, Appold turned his attention to mechanical pursuits and at the Great Exhibition of 1851 attracted attention by his centrifugal pump. Among his other inventions was the brake used in connexion with the laying of the first Atlantic cable.

September 2, 1834. Thomas Telford died.—The son of a shepherd of Eskdale, Dumfries, Telford was born on August 9, 1757. Apprenticed to a mason, he afterwards worked in Edinburgh, London, and Portsmouth, became surveyor of public works in Shropshire, engineer of the Ellesmere Canal, and in Scotland built the Caledonian Canal and opened up the country by the construction of 920 miles of roads and of 120 new bridges. Many other bridges, canals, and harbour schemes were due to him, and among these were the Gotha Canal between the Baltic and North Sea and the famous suspension bridge over the Menai Straits. An acknowledged leader in the world of civil engineering, in 1818 he became the first president of the Institution of Civil Engineers and held that position till his death. He died at 24 Abingdon Street, Westminster, and was buried in the nave of Westminster Abbey. His statue stands in the Chapel of St. Andrew.

September 2, 1883. Cromwell Fleetwood Varley died.—One of the pioneers of the Atlantic Telegraph Cable, Varley as a boy entered the service of the Electric and International Telegraph Company and of this firm became engineer-in-chief. After the failure of the first Atlantic cable he constructed an experimental line for studying the phenomena of signalling, and during 1864-5 tested the whole of the new cable for the Atlantic Telegraph Company. Retiring from active work in 1868, he continued his investigations and in 1870 transmitted musical sounds over an ordinary telegraph wire. E. C. S.