

of much use in submarine cables where great permeability is desirable to ensure quick working. The alloy is insulated from but wound round the copper conductor and prevents the interference of stray currents. An alloy of 35 per cent nickel, 35 per cent cobalt and iron, known as perminvar, shows great constancy of permeability. In heat-resisting steels, it prevents corrosion of the steel up to temperatures of 600°-700° C. Nickel chromium alloys are now largely used for electrical heating purposes, ribbons of the alloy arranged along the top and sides providing the heating elements in large annealing furnaces.

Nickel alloyed with copper increases the tensile strength of the latter from 21 tons to 45 tons per square inch. It is now greatly used for condenser tubes, these as compared with brass having a long life without corrosion.

In the discussion following the paper, it was stated that nearly all the nickel used in the world comes from within the Empire, Canada producing 90 per cent of it; there are also small deposits in New Caledonia.

University and Educational Intelligence.

BIRMINGHAM.—On Nov. 13 the new Mining Machinery Laboratory was opened by Mr. Evan Williams, president of the Mining Association of Great Britain. The object of the laboratory is to enable students of mining to get first-hand knowledge of the construction and mechanism of the latest coal-mining machinery, which will be supplementary to the knowledge of the operation of coal-cutting and conveying, which can only be learnt underground. The Miners' Welfare Fund has found the money for the building, and the machinery for equipment has been presented by the manufacturers themselves, no fewer than twenty-two firms having contributed of their products. The opening of this laboratory marks a further step in the policy of the Mining Department, which is to help the coal industry to regain its prosperity by providing it with trained public school and university men who, after acquiring experience underground, should be capable of contributing to the solution of some of the many problems with which the industry is confronted.

CAMBRIDGE.—Mr. D. Portway, St. Catharine's College, has been appointed University lecturer, and Mr. G. S. Gough, Pembroke College, University demonstrator in the Faculty of Engineering.

Dr. E. K. Rideal has been appointed a member of the Board of Research Studies.

MANCHESTER.—Prof. F. E. Weiss will retire at the end of the present session from the George Harrison chair of botany and the directorship of the Botanical Laboratory. He has held these appointments since 1892.

It is announced in the Report of the governing body of the School of Oriental Studies of the University of London that a lectureship in Iranian studies has been founded in the School. The funds for the foundation have been provided for a period of five years by the Parsee community of Bombay. This is not the first occasion on which humane and historical studies in Great Britain have been indebted to the public spirit and munificence of the Parsee community in India, and there can be little doubt that when the first period of five years has elapsed it will once more come forward to meet an increasing need. For, as the report points out, this chair is the only provision in Britain for this important branch of Oriental studies. In fact, the great increase in the study of Sanskrit and Indian history has necessitated the institution of two new lectureships in these departments.

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Calendar of Patent Records.

November 23, 1848.—The idea of perforating sheets of postage stamps was due to Henry Archer, who devised a machine for "cutting or stamping around the margin of every stamp a consecutive series of holes whereby the tearing up of the sheet will be greatly facilitated," and obtained an English patent for his invention on Nov. 23, 1848.

November 24, 1854.—In a patent granted to him on Nov. 24, 1854, Sir Henry Bessemer proposed to give rotation to a projectile when fired from a smooth-bore gun by allowing a portion of the powder gas to escape through passages formed in the projectile and terminating in the direction of a tangent to its circumference. The tangential emission of gas would then act as a turbine and produce a rapid rotatory motion of the projectile. The British military authorities refused to undertake tests of the invention, but Bessemer carried out successful experiments in his own grounds near Highgate and afterwards at Vincennes before the Emperor Napoleon III. It was the necessity of increasing the strength of the guns to enable them to withstand the resulting pressures that led Bessemer to the serious study of the metallurgy of iron.

November 24, 1874.—The earliest proposal for a barbed-wire fencing was made in the United States in 1867, but the most important patent was that granted to Joseph F. Glidden on Nov. 24, 1874, on an application made on October of the previous year. Glidden's application was challenged by Jacob Haish, another prominent inventor of a barbed wire, but the United States patent office decided in favour of Glidden, and it is mainly on his invention that the industry was established. Patent litigation between the rival interests was continuous from 1874 until 1892.

November 25, 1802.—William Dobson was granted a patent on Nov. 25, 1802, for his "new invented method never before applied for that purpose of chasing away flies and venomous insects, and calculated to promote the free circulation of air in rooms". The invention comprised a clockwork-driven fan mounted on a telescopic standard or pendant. The 'Zephyr', as it was called, was adopted by many large houses in Great Britain and abroad.

November 26, 1822.—Joseph Egg, a London gun-maker, who, on Nov. 26, 1822, was granted a patent for improvements in fire-arms "upon the self-priming and detonating principle", is one of the claimants to the invention of the copper percussion-cap. He appears to have been the first to manufacture such caps, but it was stated a few years later that he obtained the idea of the cap indirectly from Joshua Shaw, who probably has a better right to be called the actual inventor.

November 29, 1879.—The early multiple switchboards for telephone exchanges did not completely fulfil their function, because satisfactory means had not been devised whereby any operator could instantly ascertain whether a particular subscriber's line was already engaged by another operator. The first to incorporate a practical 'test' apparatus of this kind in a telephone switchboard was the American, C. E. Scribner, who was granted a British patent on Nov. 29, 1879, for his invention. The earliest known proposal for a switchboard for the purpose of intercommunication between individual subscribers at their own request was made in connexion with the telegraph system, and was patented by François Dumont in France in 1850, also in the month of November, and in England a few months later. A few installations of this character came into use.