

WE have recently received the Calendar of the Heriot-Watt College, Edinburgh, which provides day and evening instruction in mechanical, electrical, mining, and oil engineering, applied chemistry, brewing, pharmacy, building, printing, commerce, and languages. It is closely associated with the University of Edinburgh, and its courses form an essential part of the training of students for the University's degrees in civil, mechanical, and electrical engineering, mining and metallurgy, and technical chemistry. The mine rescue station for Mid and East Lothian is a portion of its mining department. Continuation classes in the south-east of Scotland, affiliated with its classes, are conducted by city and county education authorities.

THE Council of University College, Cardiff, has executed a new agreement with the Cardiff Royal Infirmary regarding the Welsh National School of Medicine, and the School is therefore re-opening for students in the clinical departments this session. A joint Appointments Committee, on which the students are represented, has been set up by the Council and Senate. A course in general science, shared between all the departments of pure science and open to the public, has been arranged for the current session. Recent appointments include the following: Prof. J. F. Rees, to be principal in succession to Dr. A. H. Trow (retired); Mr. C. N. Strong to be lecturer and demonstrator in anatomy; Mr. J. B. Duguid to be acting professor of pathology and bacteriology.

"PROGRESS of Education in India, 1922-27", by R. Littlehailes, Educational Commissioner with the Government of India (Calcutta, Govt. of India Central Publication Branch, vol. 1, R. 1.10 or 2s. 9d., vol. 2, Rs. 2.10 or 4s. 9d.) is a review of noteworthy interest. This interest is the greater for the almost simultaneous publication of the report of Sir Philip Hartog's auxiliary committee appointed by the Simon Commission to present a review of the same subject (without limitation to the quinquennial period) in relation to political and constitutional conditions and potentialities of progress. This Committee's report directs special attention to the claims of girls' education, to which priority should, it says, now be given in every scheme of expansion. In this matter Mr. Littlehailes declares that the belief that "the education of women is essential to national advancement" is now widespread in India and holds that, in spite of many formidable obstacles, the outlook is brighter to-day than at any previous period. In sections on universities and intermediate education he traces the history of the attempts made to give effect to the policies advocated by the Calcutta University Commission's report of 1919. The separation of the intermediate classes (first half of the usual four years' course of higher education) from the university and the transfer of their work to 'intermediate colleges' would not, it is held, be academically sound without extension of the B.A. course from two to three years, and such extension is economically unacceptable if not impossible; the only provincial government prepared to accept the proposed separation is that of the United Provinces. The devolution policy of the constitutional reforms introduced in January 1921, with the transfer of responsibility for education from the Government of India to provincial governments, and the recent increase in the number and varieties of universities, has rendered increasingly difficult for outsiders the intelligent appreciation of Indian educational problems and especially university problems. Mr. Littlehailes' chapters on administration and control and on universities and colleges afford valuable help towards overcoming these difficulties.

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### Calendar of Patent Records.

**November 17, 1884.**—The foundation of the artificial silk industry was laid by Count Hilaire de Chardonnet, who patented his cellulose-nitrate process in France on Nov. 17, 1884. A factory was set up at Besançon, and manufacture started in 1891, and though Chardonnet's process has been outdistanced by the cheaper viscose method of production, the growth of the industry has been continuous from that time. Sir Joseph Swan's artificial thread of 1883 was used only for electric lamp filaments, and was not taken up for textiles.

**November 18, 1820.**—The first successful calculating machine to be manufactured on a commercial scale was patented in France by Franz Xavier Thomas on Nov. 18, 1820. The adoption of the machine was slow for many years, but by the middle of the century it was being manufactured in large quantities, and machines of the same type are still being made to-day. An original Thomas machine is in the Deutsches Museum at Munich.

**November 20, 1772.**—The Birmingham 'papier-maché' industry was founded by Henry Clay and was based on the patent granted to him on Nov. 20, 1772, for a process of making decorative panels, tea-trays, etc., by pasting sheets of paper together, and japanning or lacquering them. The term 'papier-maché', which had been used many years before in its real sense for articles made from moulded paper-pulp, was not applied to the articles made by the Clay process until the middle of the nineteenth century.

**November 20, 1813.**—The introduction of the vacuum-pan into the sugar manufacturing process—one of the most important inventions in the history of the sugar industry—was due to Charles Edward Howard, who was granted a patent for it on Nov. 20, 1813.

**November 20, 1832.**—The fusee match was patented by Samuel Jones of London on Nov. 20, 1832. The first friction matches were produced by John Walker of Newcastle-on-Tyne in 1826, but his invention was not patented and the fusee patent is the first for a friction match to appear in the records. Jones was the patentee also of the 'Promethean' match, one of the chemical 'instantaneous light' contrivances which preceded the friction match, and he also, in 1829, introduced the 'Lucifer', which was, however, only a copy of Walker's.

**November 21, 1777.**—The patent granted to Robert Stodart on Nov. 21, 1777, for "a new sort of instrument or grand forte-piano with an octave swell, and to produce various tones together or separate, which instrument will be more durable and produce finer and more variable tones than any yet made" supplies the first instance of the use of the term 'grand piano'.

**November 21, 1833.**—A needle-pointing machine which cuts off a length of wire sufficient for two needles, sharpens both ends, punches the eyes, and severs the wire into the two completed needles, was patented by Daniel Ledsam and William Jones on Nov. 21, 1833. Probably the machine never came into use. Apparatus of the kind was first used in Germany; its adoption in England came much later.

**November 21, 1839.**—The first superheater for locomotives—consisting of a chamber in the upper part of the smoke box heated by the furnace gases on their way to the chimney—was patented by Robert and William Hawthorn on Nov. 21, 1839, and was fitted to an engine supplied to the Newcastle and North Shields Railway in 1840. The locomotive superheater did not, however, come into general use until the introduction of the Schmidt fire-tube construction at the beginning of the present century.