

number of shell was filled with amatol by the methods supplied from this country. Again, tetryl, trinitrophenylmethylnitroamine, not "tetrinitro-dimethylaniline," as stated, was not used exclusively in Germany before the war, but was made here also on the manufacturing scale.

The address, however, is of interest as showing a practical appreciation of the need for the application of scientific method in the development of old, and the acquisition of new, industries.

### University and Educational Intelligence.

BIRMINGHAM.—The reports of the Council and of the Principal to be presented to the Court of Governors at the annual meeting on February 9 have been issued. The Principal appeals for more liberal provision of both undergraduate and post-graduate scholarships, and lays stress upon the difficulties which financial stringency imposes on the advancement of research. He reminds the Governors that "the war revealed the obvious, but often forgotten, truth that trained minds cannot be improvised, and that success in international competition will go to the nation which, by laborious and patient organisation, provides, through its universities, disciplined workers."

The extension of the University library is reported with satisfaction as a step in the direction of a more complete provision of that vital need of research workers. The overcrowding of the Mason College buildings is regarded as a grave menace to the continued expansion of the departments of medicine, biology, arts, and education. The obvious remedy is to transfer the biological departments to new buildings at Edgbaston, but as this would involve great expenditure of money the alternative of restricting entries to all the departments at present housed in Mason College may have to be faced in the near future.

The Principal appeals especially for more support from the districts surrounding the city, which send a large proportion of the students at present in the University, reminding them that "we cannot have it both ways: unrestricted admission of all the fully qualified and the withholding of a substantial contribution towards the financial cost of a university education."

Reference is made to the problem of adult education and the way in which the University is trying to do its share of this important work. "All who keep closely in touch with the main currents of educational opinion are impressed with the increasing insistence of the demand as well as with the complexity of the task involved in an 'educated democracy.' It would be disastrous if the handling of the problem became political; the provincial universities by sympathy and wise statesmanship, perhaps more than any other organisations, can avert this danger."

The Court of Governors is to be asked to confer the title of emeritus professor on Prof. J. H. Muirhead.

The assistance of the Birmingham Chamber of Commerce in completing the fund for a chair of Italian (which was started by Mr. Arthur Serena's gift of 500*l.*) is gratefully acknowledged by the Council.

The appointment of Mr. Maurice Nicoll to the lectureship in psychotherapy, endowed by Sir Charles Hvide, is reported.

In commemoration of the work of Prof. P. F. Frankland, a fund has been subscribed for providing a Frankland medal and a prize of books to be given annually to the best student in practical chemistry.

A bequest of 2000*l.* under the will of the late Richard Peyton becomes available, by the death of his widow, "for the advancement of music."

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### Calendar of Industrial Pioneers.

**January 26, 1891. Nicolas August Otto died.**—Originally a commercial traveller, Otto began work on the gas engine in 1854. In 1867 with Langen he brought out the Langen and Otto atmospheric engine, and in 1876 he introduced the engine working on the Otto cycle, which proved to be the turning point in the history of gas motors.

**January 27, 1848. Josiah Christopher Gamble died.**—A pioneer among alkali manufacturers, Gamble was born in Ireland in 1776. He graduated at Glasgow University and became a Presbyterian minister. After a few years he abandoned the Church, started small works at Dublin for the manufacture of sulphuric acid, bleaching powder, and alum, and in 1828 with Muspratt founded the first chemical works at St. Helens.

**January 27, 1885. Edward Davy died.**—A contemporary of Wheatstone and Cooke, Davy invented an electric telegraph, experimented with a mile of wire in Regent's Park, and in 1837 at Exeter Hall exhibited his needle telegraph. In 1839 he sailed for Australia, where he became medical officer of health and Mayor of Malmesbury.

**January 28, 1829. Thomas Tredgold died.**—Known for his valuable writings on carpentry, the strength of materials, and the steam engine. Tredgold began life in the North of England as a journeyman carpenter. He studied mathematics, chemistry, and architecture, contributed to the "Encyclopædia Britannica" and the *Philosophical Magazine*, and made original investigations. He died in London at the age of forty, worn out by his labours.

**January 28, 1864. Benoit Paule Emile Clapeyron died.**—From the Ecole Polytechnique Clapeyron entered the mining service, taught in the School of Public Works at St. Petersburg, and on his return to France took part in the construction of some of the earliest French railways. He wrote on the mechanical theory of heat, and it was through his work that Kelvin was led to the study of Carnot's famous memoir. Clapeyron in 1858 succeeded Cauchy as a member of the Paris Academy of Sciences.

**January 29, 1882. Alexander Lyman Holley died.**—A graduate of the Brown University, Providence, Holley engaged in practical engineering, and in 1860 published an important work on American and European railway practice. He afterwards became a great iron-master. The inscription on his monument in Washington Square, New York, states that he was "foremost among those whose genius and energy established in America and improved throughout the world the manufacture of Bessemer steel."

**February 1, 1885. Stanislas Charles Henri Laurent Dupuy de Lôme died.**—In 1848–52 Dupuy de Lôme built the *Napoléon*, the first steam line of battleship. About five years later he converted the finest two-decker in the French Navy, also called the *Napoléon*, into the *Gloire*, the first fully armoured sea-going ship ever seen. She was 256 ft. long, of 900 h.p., carried thirty-six guns, and was protected by 5 in. of iron and 26 in. of timber. Dupuy de Lôme was for some years Chief Constructor of the French Navy.

**February 1, 1885. Sidney Gilchrist Thomas died.**—A clerk in a London police court, Thomas studied chemistry and in 1870 attacked the problem of the dephosphorisation of pig-iron in the Bessemer converter. By 1875 he had solved the problem, and with the assistance of his cousin, Percy Gilchrist, and others, the commercial triumph of his important discovery was assured. His grave is in the Passy Cemetery in Paris.

E. C. S.