

transformer in an ordinary-sized room giving ten million kilovolts to a vacuum tube. Such a piece of apparatus would be a great help in physical research; and considering the great progress made by engineers in recent years, Sir Ernest believes that the design of such a device does not offer insuperable difficulties. He congratulated the

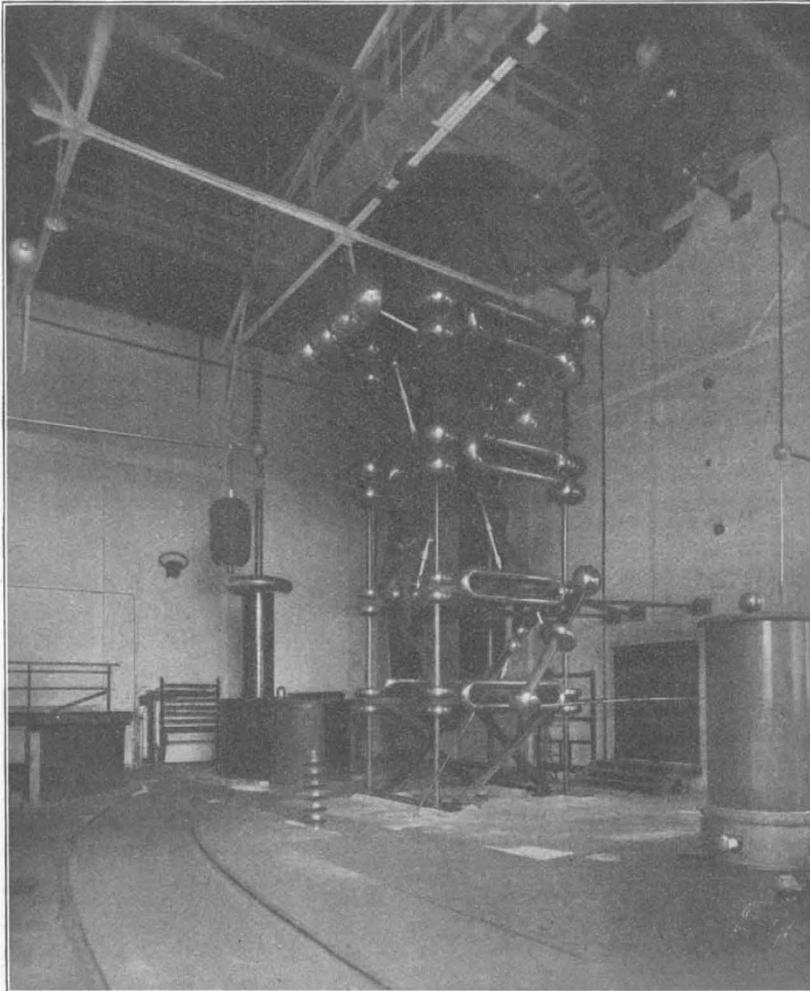


FIG. 3.—Impulse generator in Surge Laboratory.

of apparatus would be a great help in physical research; and considering the great progress made by engineers in recent years, Sir Ernest believes that the design of such a device does not offer insuperable difficulties. He congratulated the Metropolitan-Vickers Electrical Co., Ltd., and its research department on its far-sighted policy in initiating high voltage research.

Obituary.

MR. A. A. CAMPBELL SWINTON, F.R.S.

BY the death of Alan Archibald Campbell Swinton on Feb. 19, scientific research loses one who has done valuable work especially in X-rays and radio communication. The third son of Archibald Campbell Swinton of Kimmerghame, Berwickshire, he was born on Oct. 18, 1863. His father was a professor of civil law in the University of Edinburgh from 1842 to 1862 and was also Brigadier-General in the Royal Company of Archers. He could prove direct descent from the

Royal House of Scotland. Prof. Swinton's second son was Captain George S. C. Swinton, who was chairman of the London County Council in 1912 and chairman of the town-planning committee of the new city of Delhi. He was also Lord Lyon King of Arms. Prof. Swinton's sister was the mother of Archbishop Lord Davidson.

When a child, Alan Campbell Swinton showed a bent towards engineering. An oil painting of him when aged nine, with a steam-engine in his hand, was shown at the Royal Scottish Academy

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Exhibition in 1872 and was labelled prophetically "A Young Engineer". The headmaster of his first school, Cargilfield, Edinburgh, encouraged his mechanical tastes. When at this school he gave exhibitions with a magic lantern and became skilled in taking photographs. In 1877 he took a good photograph of Prof. T. H. Huxley which, with other portraits, is included in a book entitled "Autobiographical and other Writings", which was in the press when he died. In 1878 he was sent to Fettes College, but as he hated games he found the school life very uncongenial. In his opinion the way Latin and Greek were taught in public schools, especially the unnecessary stress laid on grammar, took away all the romance from the wonderful stories of Greece and Rome. He also considered that compulsory games had a tendency to damp out any originality a boy might possess. He, however, enjoyed the work in the carpenter's shop at Fettes.

In 1879, after reading the description of the working of a telephone given by Prof. Dolbear, Campbell Swinton constructed a pair of telephones which functioned excellently. As the telephone had only been invented some two years previously, this would have been a good piece of work for a scientific worker; for a boy of fifteen it was admirable. His house master, thinking that his scientific absorption interfered with his classical studies, made him send the telephones home.

In the easter of 1881, Alan was sent at his own request to Havre, where he had lessons in mathematics and French, but he seems to have spent much of his time in taking snap photographs of ships and fishing boats. He also visited the lighthouse on several occasions and studied how the electric arc was fed by a de Meritens dynamo which had permanent steel magnets. He was puzzled by the fact that the current seemed to have no effect on a little compass needle brought near it, the reason being that it was alternating current.

Campbell Swinton was a great believer in self-education. The passing of advanced examinations he regarded as pure waste of time. He attributed his success to cultivating scientific friends and to attending lectures at institutions like the Royal Institution and the Royal Society of Arts.

In 1881, Campbell Swinton visited the Paris Exhibition and was most impressed by the wonderful electrical inventions he saw. In 1882 he was apprenticed to Lord Armstrong in the works at Elswick. During this period he fitted a Chilian battleship with electric gun-firing control which enabled any number of guns to be fired simultaneously. In 1887 he left Elswick and set up in London as an electrical contractor and consulting engineer. He installed the electric light in many town and country mansions.

Early in January 1896, after reading an account in the morning paper of Prof. W. C. Röntgen's discovery of X-rays, Swinton was successful in obtaining a shadow photograph by means of a

Crookes tube which he happened to possess. A few days later he obtained a shadow photograph of the bones in his own hand. The present writer remembers him showing this at the Camera Club, which was then in Charing Cross Road. This was the first photograph produced by Röntgen rays in Great Britain. It was reproduced in NATURE of Jan. 23, 1896. On Feb. 4, 1898, he showed many interesting experiments with cathode and X-rays at the Royal Institution. In conjunction with Sir Charles Parsons, he converted diamond into coke by heating it in a vacuum by cathode rays. As the diamond became carbonised, it split up and frothed and became much larger in size. The temperature at which this conversion took place was 1890° C.

In 1904, Campbell Swinton gave up contracting work and became exclusively a consulting engineer. He was specially interested in radio work. When the Marchese Marconi first came to England he called on Swinton, who introduced him to Sir William Preece and rapid developments in radio telegraphy soon ensued. When in Copenhagen in 1910, Swinton first heard articulate speech by radio when listening to tests with the Poulsen system. He was associated with the development of the Parsons turbine and was a director of the Parsons Marine Steam Turbine Co., Ltd. He went out on many of the trials of the pioneer turbine boat, the *Turbinia*, which created a sensation at the Naval Review in 1897 by going at the record speed (at that time) of 33½ knots. Swinton was one of the pioneers of motoring in England.

Campbell Swinton was associated with many electrical works and supply stations. He was a director of Crompton, Parkinson, Ltd., and of W. T. Henley's Telegraph Works, Ltd. In 1911 he was president of the Röntgen Society and in 1913 of the Radio Society. For several years he was chairman of the council of the Royal Society of Arts. In 1915 he was elected a fellow of the Royal Society and twice served on the council. In 1926 he presented the Royal Society with £1000 to form the nucleus of a general purposes fund. He undertook to defray the costs of the charter which was recently granted to the British Association. He had been a member of the general board and of the executive committee of the National Physical Laboratory. He was well known at the Athenæum Club, of which he had been a member for nearly thirty years; he was unmarried.

Campbell Swinton was a member of the three professional engineering institutions—the Civils, the Mechanicals, and the Electricals. He had been a vice-president of the Electricals for four years and had served energetically on many committees. In his home in Chester Square he was most hospitable, and enjoyed showing to his guests the photographs he had taken of many eminent scientific workers and demonstrating the latest developments in radio communication. He will be missed by many, and especially by his old assistants, with whom he maintained a warm friendship.

A. R.