

of 1660, built in the style of the Dutch vessels of that period.

The wholesale disappearance of the earliest forms of technical instruments, to which reference has already been made, has often deprived us of all but a single specimen of its type. An accurate copy is then the only way of representing it in a collection, and in recent years a number of reproductions of this kind have been acquired by the Museum. They include an astronomical instrument of Egypt (the 'merkhet') which was used for setting out lines, and for determining the time by observing the passage of selected stars over the meridian, and a shadow clock of the same country, both dating from about the eighth or tenth century

B.C.; the 'groma,' as used by the Roman land surveyors, and also one of their 10-foot rods; two telescopes made by Galileo, which are now preserved at Florence; Newton's reflecting telescope, made by himself, and now in the possession of the Royal Society; and a copy of a fourteenth century rain-gauge from Korea.

It only occasionally happens that the life-work of one of the great inventors of the past can be suitably shown in a museum, but in the case of James Watt, the attic workshop in which he worked during the last twenty years of his life has been reproduced, and in it are placed all the machines, tools, and other contents of the original room at Heathfield, near Birmingham.

Obituary.

PROF. OTTO NORDENSKJÖLD.

DR. OTTO NORDENSKJÖLD, professor of geography in the University of Göteborg, died on June 2, at the age of fifty-eight, as the result of a street accident sustained two days before. A nephew of the great Swedish explorer and scholar, Baron A. E. Nordenskiöld, his attention was turned to natural science at an early age, and as a student at the University of Upsala he specialised in geology. He was appointed lecturer on mineralogy at Upsala after taking his degree in 1894.

The spirit of Linnæus broods over his old university, and the young Otto Nordenskiöld felt the old urge which for nearly two hundred years has sent out Swedish naturalists as pioneer-explorers to all parts of the earth. In 1895 he organised his first expedition, when he led a party of Swedish men of science for a summer's work in Tierra del Fuego in order to compare the geological formations, the fauna and flora of that southern archipelago, with those of north-western Europe. The glacial deposits attracted his attention in particular, and after the return of his companions he proceeded to the little-known lake-district of southern Patagonia, where the Cordillera of the Andes is interpenetrated by the fjords of the Pacific and where a narrow zone of sharp transition separates the wooded slopes exposed to the wet west winds from the dry gravel plateaux of the pampas. The region, then unexplored and uninhabited, was of special interest at the time, because of the dispute between Chile and the Argentine Republic as to the delimitation of the boundary set out in the treaty as "the highest summits of the Cordillera forming the watershed," and Nordenskiöld's demonstration that the watershed showed no relation to the Cordillera foreshadowed the compromise which Sir Thomas Holdich's subsequent arbitration commission happily settled. In the summer of 1898, Nordenskiöld conducted a small scientific expedition to the Klondyke region of Canada, then at the height of the gold rush.

On returning from this expedition Nordenskiöld found the interest of European geographers concentrated on Antarctic research, to which his own attention had first been directed at the Sixth

International Geographical Congress in 1895. The *Belgica* expedition had just returned from its experience of the first Antarctic night, the *Southern Cross* expedition under Borchgrevink was wintering for the first time on the Antarctic continent, and preparations for two great national expeditions, working on a common plan in different regions, were going forward rapidly in Great Britain and Germany. Nordenskiöld determined that Sweden should take its part in Antarctic research; he set himself to the tremendous task of raising funds by private and public appeals to the small circle of scientifically minded Swedes. In order to gain personal experience of polar conditions he went to East Greenland as a member of Amstrup's expedition of 1900. He succeeded in fitting out an expedition in time to take part in the simultaneous series of observations. He was fortunate in securing Capt. C. A. Larsen, a Norwegian who had already had experience in the Weddell Sea, to command his ship the *Antarctic*, and in enlisting a very able body of scientific assistants. Early in the Antarctic summer of 1901-2 he reached his base at the farthest accessible point in the Weddell Sea on the east coast of Graham Land, while the *Gauss* under Prof. E. von Drygalski (now the sole survivor of the Antarctic leaders who started their work with the present century) and the *Discovery* under Capt. Scott took up their stations at two far-distant points on the circumference of the continent. A year later the *Scotia* under Dr. W. S. Bruce completed the first of the great combined international efforts to study the physical conditions of Antarctica.

Nordenskiöld alone of the four decided to send his ship back after landing, in the expectation that she should return the following year to take him off. He passed the winter of 1902 at Snow Hill in 64° 27' S., carrying on meteorological and magnetic observations, and on the approach of summer making large geological and zoological collections. He found the conditions adverse to any extended sledge journeys from his base, though he discovered King Oscar Land, and followed its coast to 66° S. On returning he eagerly awaited the return of the ship which never came. A second winter had to be spent in the hut, but the observations were

continued steadily until in the summer of 1903-4 an Argentine vessel appeared to bring him back to civilisation. The *Antarctic* had found the ice conditions of the previous year so bad that a party was landed to attempt to reach Snow Hill by sledging over the coastal ice, while the vessel returned northward in the hope of getting in towards the land farther east. The Weddell Sea proved inexorable and the ship was crushed and sank. Larsen and his crew wintered in a hut, Gunnar Andersson and his land-party in another, and by the most dramatic coincidence in the history of exploration, both parties arrived at Snow Hill just in time to return as a united expedition with Capt. Irizar in the *Uruguay*.

On his return to Europe, Nordenskjöld was appointed professor of geography in the University of Göteborg, where he continued to occupy himself in preparing the full report of the results of his expedition, the publication of which was facilitated by a grant from the Swedish government. The Antarctic gives no rest to a man who has once come within the field of its attraction, and Nordenskjöld, like Scott and Shackleton, set his heart on a second and greater effort to get at the baffling problems of south polar geography, glaciology, and geology. By 1913 he had worked out, in conjunction with Admiral Palander, a scheme for an Anglo-Swedish expedition, and obtained promises of support from his own government and from influential authorities in Great Britain. The outbreak of war in 1914 put an end to the preparations, and he never saw the Antarctic again. In 1909 he had visited West Greenland, and since the War he made frequent visits to Spitsbergen and Iceland, continuing his earlier studies in Arctic geology. In 1920 he revisited Patagonia with a party of Swedish geologists, following the discovery of remarkable fossil reptiles.

During his tenure of the professorship at Göteborg, Nordenskjöld had always inspired his students with the spirit of research and maintained the high traditions of Swedish explorers and students of Nature. He was modest and unobtrusive in his manner, but insistent and persevering in the promotion of exploration and research. As a leader he was less a commander than a trusted comrade and a constant friend. An enthusiast in the search for knowledge, he was indifferent to the spectacular publicity which gratifies small-minded ambition. He always maintained the happiest relations with the geographers and polar explorers of other countries, and he will be greatly missed by many friends in all parts of the world, whose sympathy goes out to his widow and children.

HUGH ROBERT MILL.

DR. J. A. THOMSON.

DR. JAMES ALLAN THOMSON, who passed away on May 6, was at the time of his death director of the Dominion Museum in Wellington, New Zealand, and also president of the New Zealand Institute. Notwithstanding ill-health, he had a very distinguished career. He was the first New Zealand Rhodes Scholar, and went to St. John's

College, Oxford, in 1906, where he was awarded the Burdett-Coutts Scholarship, and later he was appointed to a lectureship in geology at St. John's.

Leaving Oxford in 1908, Thomson worked on the geology of the Western Australian goldfields, and published several papers relating to them. He was chosen senior geologist for the second Scott Expedition in 1910, and went to Sydney to work with Sir Edgeworth David with the view of preparing himself for his work. Unfortunately, at this point in his career, the first signs of the disease to which he ultimately succumbed began to show, and, greatly to his own disappointment, and that of others, he was not allowed to go with the expedition.

Returning to New Zealand, Thomson joined the Geological Survey as palæontologist, a position which he held until 1914, when he was appointed to succeed the late Mr. A. A. Hamilton as director of the Dominion Museum, and in spite of failing health he continued to occupy this position until the end. Though repeatedly forced to lay aside his work and battle with disease, his scientific activities never ceased for long and his interest in scientific matters was never dulled. He published many papers on geological subjects, and during the last six years of his life he was busily occupied on a monograph on the brachiopods, a work which he lived just long enough to finish and to see in print.

For his geological work, Thomson was awarded the Hutton Medal of the New Zealand Institute, and last January was elected president of the Institute; he was also one of its original fellows. His death removes a scientific worker of the highest ideals and a man of exceptionally attractive personality; in the face of much physical weakness he maintained an unconquerable cheerfulness. He died of tuberculosis at the early age of forty-seven years.

C. C. F.

PROF. JOHANNES GADAMER, Director of the Pharmaceutical-Chemical Institute in the University of Marburg, died on April 15 at the age of sixty-one years. A native of Waldenburg, in Silesia, he was appointed professor of pharmaceutical chemistry at the University of Breslau in 1902, and in 1919 he succeeded the late Prof. Ernst Schmidt at Marburg. Gadamer worked upon many alkaloids and glucosides. He also edited the *Archiv der Pharmazie* and published a "Lehrbuch der chemischen Toxikologie." After the death of Prof. E. Schmidt, Gadamer undertook the completion of his book, "Ausführliches Lehrbuch der pharmazeutischen Chemie."

PROF. G. SCHULTZ, Director of the Chemical Technical Laboratory in the Technische Hochschule at Munich, died at the end of April, aged seventy-six years. A native of Finkenstein, in West Prussia, Schultz spent several years in the Berlin laboratories of the aniline dye factories, becoming later factory director at Basel. In 1896 he was appointed to the chair of chemical technology in Munich. He was the author of well-known standard works, including "Die Chemie des Steinkohlenteers" and "Farbstofftabellen."