numerable manifestations of adsorption. The recognition of all these factors will naturally be a somewhat arduous task, but will furnish at the very least a new method of attacking problems which cannot be solved by chemistry—in its narrower sense—alone. E. HATSCHEK.

PROF. J. W. HITTORF.

THE death of Johann Wilhelm Hittorf, at the age of ninety years, removes an eminent and honoured leader from the ranks of German physicists. Born and brought up in Bonn, Hittorf devoted himself to the study of mathematics and natural science at the Universities of Bonn and Berlin, and became Doctor of Philosophy in 1846. Shortly afterwards he attached himself, as privatdocent, to the Academy (later the University) of Münster in Westphalia, the institution with which he was to be associated during his lifetime. Appointed "ausserordentlicher" professor in 1852, Hittorf became full professor of physics and chemistry four years later, and this post he held till 1879. On the reorganisation of the institution in that year, the chair of physics and chemistry was divided, and Hittorf continued as director of the physical laboratories until serious illness compelled him, in 1889, to seek relief from active teaching work. With rest came recovery and renewed activity, to such good purpose that between his seventieth and eightieth years Hittorf published some half-dozen memoirs. He died on November 28 last, as professor emeritus of the University of Münster, full of years and honour.

Hittorf's investigations dealt with a number of problems on the borderland of physics and chemistry, and the results are embodied in about thirty communications to scientific journals. In appraising this output of original work, it must be borne in mind that the earlier researches were carried on under serious disadvantages in respect of laboratory equipment, and that he himself was personally responsible for all the experimental work described in these memoirs.

Some of the first researches were concerned with the allotropy of selenium and phosphorus, and the discovery of the so-called "metallic" variety of the latter element was made by Hittorf. This work, however, is quite overshadowed by the remarkable series of investigations (published 1853–9) on the migration of the ions during electrolysis. Whilst Faraday had studied mainly the nature and the quantity of the substances produced at the electrodes by electrolytic decomposition, Hittorf investigated the more subtle changes of concentration that take place in the electrolyte itself. From these concentration changes, the relative rates at which the ions of an electrolyte move during the passage of a current, and their relative share in the transport of the electricity, were deduced.

This work met with practically no recognition from Hittorf's contemporaries, and indeed was vigorously attacked by the leading German physicists of the time. Twenty years later the significance of these investigations began to be appreciated, and fortunately Hittorf lived to see his great work accepted as a fundamental part of the science of electrochemistry.

A prominent place among Hittorf's researches must be assigned also to investigations, carried out at the suggestion of his master Plücker, on the spectra of ignited gases and vapours. The memoir embodying this work, which was published in the Philosophical Transactions for 1865, deals with the plurality of spectra, and shows, more especially for the case of nitrogen, that the same substance can give two different spectra. Hittorf's association with Plücker may be further traced in a series of important papers on the passage of electricity through gases; the foundation of what is known regarding kathode rays, discovered by Plücker in 1859, was laid in these investigations.

The remarkable activity of Hittorf's later years, already referred to, was shown chiefly in a study of the passivity of metals, more especially chromium; it was found that this phenomenon cannot be attributed to the presence of a film of oxide on the surface of the metal. It is a striking fact that in his last published memoirs Hittorf returns to the transport of electricity in electrolytes, the field of research in which he laboured fifty years before, and with which his name will be inseparably associated.

J. C. P.

DR. N. C. DUNÉR.

THE death of Nils Christoffer Dunér has deprived Sweden of one of her most distinguished men of science, and astronomy of an active and devoted student. Born on May 21, 1839, Dunér entered the University of Lund in 1855, and took his doctor's degree in 1862. He became a member of the staff of the Lund Observatory in 1864, and occupied that position until his appointment, in 1888, as Professor in the University and Director of the Observatory of Upsala. He died at Stockholm on November 10, after a brief illness following his return from a journey to observe the solar eclipse of last August.

Dunér made notable contributions to many departments of astronomy, and his name will be especially remembered in connection with his work on double stars, variable stars, the spectra of red stars, and the investigation of the sun's rotation by the spectroscopic method. His work on double stars during the years 1867 to 1875 at once placed him in the front rank of double-star observers and computers.

Several variable stars were discovered or investigated by Dunér. Two of them—Y Cygni and Z Herculis—have proved to be of exceptional interest. Dunér not only found that the light-changes of these stars could be completely explained by supposing them to be eclipsing variables of the Algol type, with the difference that both components are bright, but was able to determine the elements and dimensions of the two systems.

In 1878 Dunér turned his attention to stellar spectra, and with only a 10-inch refractor at his disposal, courageously entered upon a systematic survey of the red stars. His classical memoir, "Sur les étoiles à spectres de la troisième classe," 1884, gives details of his eminently successful observations of the spectra of 352 stars. Further observations were made with the Upsala 36 cm. refractor in 1893. The interest of such observations is now largely discounted by the entry of the giant telescopes and spectrographs of America into this field of research, but Dunér rightly considered that comparative observations of a large number of stars by a single observer might have a special value.

Another important investigation by Dunér was that on the sun's rotation, carried out at Lund, and later at Upsala, with a powerful grating spectroscope which he designed for this purpose. His memoir, "Recherches sur la Rotation du Soleil" (1891), is a model report on a scientific investigation, and a lasting tribute to the skill of its author. The observations were extended to solar latitude 70°, and showed that the polar retardation indicated by spots was continued far beyond the sun-spot zones.

Dunér was an inspiring teacher, and his amiability and self-sacrificing devotion to their interests gained for him the affection and gratitude of his pupils and fellow-workers. His scientific achievements brought him many distinctions, among which may be mentioned the award of the Rumford medal by the Royal Society in 1892, and election as an Associate of the Royal Astronomical Society in 1889.

NOTES.

INQUIRIES which reach us from time to time suggest that many people would find it a convenience to be able to examine books received from publishers abroad and reviewed in NATURE. These volumes are usually not readily accessible, and often the only copies existing in this country are the few sent to scientific journals for review. We have therefore made arrangements to retain at NATURE office, St. Martin's Street, W.C., for a period of six months after the issues in which the reviews have appeared, all volumes published in countries outside the United Kingdom. Every volume from abroad reviewed in our columns will thus be on view freely to anyone who cares to call to see it. This arrangement will begin with our first issue in the New Year, and we believe that many men of science will welcome the opportunity which it will afford them of inspecting American and foreign books of which reviews have been printed in NATURE.

AFTER a long period of service in that capacity, Mr. W. L. Distant is resigning the editorship of the *Zoologist*.

THE Rome correspondent of the *Times* reports that among the Italian Senators who are to be nominated on New Year's Day is Signor Marconi.

THE death is announced at Los Angeles, in his seventy-sixth year, of Dr. John Muir, member of the Washington Academy of Sciences, and distinguished as an explorer and naturalist, as well as by his work for many years in the cause of forest preservation.

IT is announced in *Science* that in the will of the late Miss Dessie Greer, the American Museum of Natural History is designated as the ultimate beneficiary of a fund of 18,000*l*. By the will of the late Mr. W. Endicott, of Boston, a bequest of 5000*l*. for cancer research is made to Harvard University.

THE death is announced, at sixty-four years of age, of Sir Robert Simon, professor of therapeutics in the University of Birmingham since 1910, and author of a book on "Disease of Brass Workers" and other works; also of Mr. D. Balfour, member of the Institution of Civil Engineers, and a fellow of the Geological and the Royal Meteorological Societies.

WE regret to announce the death, in his seventy-second year, of Dr. Leon Lereboullet, president of the French Medical Association, and associate member of the Academy of Medicine. An obituary notice in the *British Medical Journal* points out that he collaborated with Dechambre on the *Gazette Hebdomadaire de Chirurgie*, and was editor of the "Dictionnaire Encyclopédique des Sciences Médicales." He was also the author of several works on medicine, and of a series of articles on the health service which attracted the attention of Jules Ferry and other leading statesmen.

THE Governor of Bombay unveiled on November 30 a simple marble memorial tablet in Bombay Cathedral to Lieutenant Bowers, Royal Indian Marine, who lost his life with Captain Scott and his comrades in the Antarctic. We learn from the *Times* that the memorial at Finse, in Norway, in honour of Captain Scott and his companions was unveiled on December 28 by Dr. Skattum, vice-president of the Norwegian Geographical Society. The memorial has taken the form of a monument about 20 ft. high bearing the names of the explorers—Captain R. F. Scott, Dr. Wilson, Captain L. E. G. Oates, Lieutenant H. R. Bowers, and Petty Officer Evans—and an inscription reading:—"Erected by Norwegians in honour of Antarctic research and heroic courage."

A MEETING of the Imperial Advisory Council of the Institute of Industry and Commerce was held on December 22 at the offices of the institute on Aldwych Site, Strand, for the purpose of considering, among other matters, the best means of bringing about the standardisation of company law throughout Great Britain, the Dominions and Colonies in order to facilitate commerce within the Empire. The council decided that a memorandum should be drawn up by the institute after consulting with the leading specialised trade organisations, and that this memorandum be submitted to the Agents General of the Dominions and Colonies for submission to their respective Governments. The policy of the institute is to develop a set of satisfactory working conditions