

in making a wire carrying an electric current rotate under the influence of the earth's magnetic field alone. The second, larger, quarto volume covers the period December 1823 to November 1832. Its contents are also largely chemical, and it contains the record, in May 1825, of the discovery and analysis of bicarburet of hydrogen (benzene).

The second quarto is no more than two thirds filled. Evidently in 1831 Faraday decided to keep his notes on loose sheets of foolscap paper, and from that date onwards (there is some overlapping between the second quarto and the first folio) the "Diary" is on sheets of this character which have been afterwards bound up into volumes. The slim folio volume I (February 1831 to June 1832) must be one of the most significant, as it is certainly one of the most interesting scientific manuscripts in existence, for besides some experiments of a miscellaneous character, it contains substantially the record of the work communicated to the Royal Society in the first and second series of the experimental researches in electricity,

embodying the discovery of electromagnetic induction. The induction of an electric current in a coil of wire was first successfully obtained, by 'make' and 'break' of the current in an adjacent voltaic circuit, in the famous ring experiment on Aug. 29, 1831.

It is impossible, within the limits of a short article, to give even a summary of the contents of the "Diary". Moreover, one at least of the published volumes will be available, it is hoped, in time for the Faraday Celebrations in September 1931. The notes are carried on from 1831, through the eight folio volumes down to the year 1862, when his powers were failing and his experimental work was at an end. An entry for Mar. 12, 1862, records an experiment which seems to be the last he ever made. He was hoping to obtain an effect of magnetism on light. He failed to find it. It was not the first time he had made this experiment unsuccessfully; but his scientific intuition was not at fault, for others have since found the effect that he was seeking.

Obituary.

PROF. ADOLF ENGLER.

THE death of Heinrich Gustav Adolf Engler, aptly described as the *Altmeister* of systematic botanists, on Oct. 10, in his eighty-seventh year, removes a prominent and striking personality from the botanical world. 'Engler's System' is a phrase familiar to all students of the science, and has been in recent years a subject of warm discussion among those interested in phylogeny and more especially in the 'natural' arrangement of the families of flowering plants. In his student days, Engler came under the influence of the great German systematist Eichler, whose 'System' was a definite attempt to arrange plant-families in series advancing from the more primitive to the more highly specialised; the simplest type of flower was regarded as the earliest and advance implied an increase in number of parts and specialisation of structure. Engler's 'Syllabus', which was a modification of Eichler's system, has been widely used in systematic works and a large proportion of Continental and American 'floras' follows his arrangement. The criterion of primitiveness has been challenged by the school which regards the simplest types of flowers to be reduced and not primitive forms, but in the recently published edition of his 'Syllabus' the veteran botanist vigorously defends his position and suggests that the less-known parts of the African continent may conceal forms which will provide links in support of his theory.

The 'Syllabus' was the basis of arrangement of "Die natürlichen Pflanzenfamilien", a systematic description of the families and genera of plants, initiated by Prof. Prantl and Prof. Engler in 1887 and carried to completion by Engler after Prantl's death early in the progress of the work. The "Pflanzenfamilien" had a wider appeal among botanists than the more erudite and more strictly technical "Genera Plantarum" of Bentham and

Hooker. The distribution of the work of compilation among a large number of botanists led to a certain inequality of treatment; but it went far beyond any previous production as a revision of the families and genera of all the groups of the vegetable kingdom. A new and enlarged edition is in course of publication, and of two large volumes issued during the present year under his editorship, Engler was also the author of the greater portion of one and of part of the other, a tribute to his remarkable virility and continued power of work.

A still more ambitious production was the "Pflanzenreich", begun, with Engler as editor, in 1900: a series of complete monographs of the families of flowering plants; a large number of volumes have already appeared.

Engler was in the prime of life when in 1889 he went from the University and Garden of Breslau to Berlin, as professor in the University and Director of the Botanic Garden and Museum. His first scientific post was under Prof. Nägeli in Munich, and his earlier work dates from that University and Botanical Museum and Garden.

One of his early interests was the Saxifragaceae, on which he published a monograph in 1872. He also contributed (1878-82) monographs of several families to Martius's monumental "Flora Brasiliensis"—which was continuing under Eichler's editorship. Among these was the Aroids, a family Engler made specially his own, and monographed in de Candolle's "Monographia Phanerogamarum", where he elaborated an arrangement of the genera on genetical lines. A developmental study of world floras found expression in his "Versuch einer Entwicklungsgeschichte der Pflanzenwelt seit der Tertiärperiode" (1879-82); and the series of volumes entitled "Die Vegetation der Erde" organised by the late Prof. Oscar Drude and himself in 1895 continues to provide authoritative accounts by experts of the

vegetation of specific areas of the earth's surface. German overseas expansion found in Engler a helpful exponent in organising the botanical exploration of the German spheres of influence in tropical Africa and New Guinea, and in the collation and publication of the results.

In 1881 Engler founded his "Botanische Jahrbücher", a medium for the publication of communications on taxonomy, plant-geography, and plant-history. The increasing importance of the Berlin Garden and Museum under his directorship as a centre of taxonomic work was reflected in the growth of the publication, which still appears regularly.

A conspicuous monument of the abundant energy and organising power of Adolf Engler is the fine Botanic Garden and Museum which he planned at Dahlem, outside Berlin, to replace the former restricted quarters in the city. Here in the open country he was able to develop his ideal, and the Berlin-Dahlem establishment holds a high place among the botanical institutions of the world. Here he continued to work after his retirement, and here, we gather from an appreciation by his pupil and successor, Prof. Ludwig Diels, he found his last resting-place. Few men have equalled his output of botanical work or exercised directly or indirectly a greater influence on the development of the branches of botany to which he devoted sixty years of unremitting and fruitful labour.

A. B. R.

MR. B. B. WOODWARD.

BERNARD BARHAM WOODWARD died on Oct. 27, aged seventy-seven years. He was the only son of Bernard Bolingbroke Woodward, Librarian of the Royal Library, Windsor, and of his second wife, Emma, daughter of Mr. George Barham of Witherdale Hall, Suffolk. He was grandson of Samuel Woodward, the Norwich geologist and archaeologist, and nephew of S. P. Woodward, the well-known author of "The Manual of the Mollusca", and of Dr. Henry Woodward, Keeper of Geology in the British Museum (Natural History). He was educated at Merchant Taylors' and University College schools, but his education was interrupted by the early death of his father, and he started life as a clerk in Messrs. Robarts, Lubbock and Co.'s bank.

In 1873 Woodward was appointed Curator to the Geological Society, and was responsible for the removal of the Society's collection from Somerset House to Burlington House and its rearrangement in the new premises. In September 1876 he entered the Printed Book Department of the British Museum, and on Oct. 13, 1881, he was transferred to the new Natural History Museum at South Kensington and was placed in charge of the General Library there, being promoted first-class assistant on Aug. 22, 1887. He retired on July 21, 1920, but was further retained until the beginning of 1922 to carry on the work of the Library Catalogue. He was twice married, his second wife dying in 1904, but leaves no children.

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With the scientific environment of his youth it is no wonder Woodward formed a collection of shells when he was ten years of age, and though in early manhood an ardent geologist, serving five years as secretary of the Geologists' Association, all through his long life malacology was his favourite study. Apart from a few popular articles, his first serious contribution was on the Pleistocene Mollusca of the Barnwell gravels in 1888, and from then forward, although hampered with ill-health, he was the author or joint author of a very large number of papers dealing with many aspects of malacology, published in the *Annals and Magazine of Natural History*, the *Journal of the Linnean Society*, the *Quarterly Journal of the Geological Society*, the *Proceedings of the Zoological and Malacological Societies*, the *Essex Naturalist*, *Geological Magazine*, and in many scattered reports on archaeological excavations.

Woodward was responsible for the Molluscan portion of the "Zoological Record" from 1893 until 1896, whilst the articles on the non-marine mollusca of the various counties in the Victoria County Histories are from his pen. He was author of "The Life of the Mollusca", 1913, "Catalogue of the British Species of Pisidium", 1913, and joint author of "The Synonymy of the British Non-Marine Mollusca", 1926, the two latter being published by the Trustees of the British Museum. In his official capacity, he was responsible for the formation of the finest natural history library in the world, whilst his "Catalogue of the Books, Manuscripts, Maps and Drawings in the British Museum (Natural History)", five volumes, 1903-15, and supplement, 1922, will always remain as a permanent memorial to his knowledge and painstaking accuracy. This scientific knowledge was always at the service of all students, and he contributed many paragraphs upon malacological papers to the columns of Research Items in NATURE. His death is mourned by a large circle of friends.

DR. LUDWIG MOSER, director of the Institute for Analytical Chemistry at the Technical High School in Vienna, and president of the Verein Oesterreichischer Chemiker, died on Sept. 26 after a motor accident in which his wife was also killed. We learn the following particulars from the *Chemiker-Zeitung*: Born at Vienna in 1879, Moser studied under Vortmann at the Technical High School, and after spending some time in industrial work was appointed assistant to Vortmann. In 1920 Vortmann retired and Moser succeeded to the chair. He reorganised the Institute, which was transferred to new premises, and a department was devoted to micro-chemical analysis. Moser was an untiring investigator, and up to the time of his death more than ninety publications had appeared under his name, many of which related to the rare earths. He also published volumes on the estimation of bismuth and on the preparation of pure gases. At the time of his death he was engaged on the manuscript of a "Lehrbuch der analytischen Chemie", which is not more than half completed.