

ends of the two systems meet and the folds fall into line.

In Africa, according to Wegener, the ancient gneiss foundation shows a sudden change of strike at the head of the Gulf of Guinea, and in South America there is a similar sudden change at Cape St. Roque. When the two continents are brought together the two different strikes and the line of separation between them become continuous. But in bringing about this coincidence he gives to the gneiss north of the Gulf of Guinea a north-east to south-west strike, and this is very far from the truth. Over a large part of the area the actual observations indicate that the prevalent direction is from north to south.

In South Africa a folded mountain range runs from east to west. In Buenos Ayres a folded range belonging to the same period has been described. According to Wegener one was the direct continuation of the other. But before they reach the western coast the South African folds, and the range that they have formed, turn to the north and run roughly parallel to the western coast. Wegener's explanation of this deviation is far from convincing.

It will thus be clear that the geological features of the two sides of the Atlantic do not unite in the way that Wegener imagines, and if the continental masses ever were continuous they were not fitted as Wegener has fitted them.

Obituary.

PROF. GEORGE LUNGE.

ON January 3 Prof. Lunge died in his eighty-fourth year. For more than thirty years, from 1876 to 1907, he held the professorship of applied chemistry in the Polytechnic Institute of Zürich, directing the destinies of this department with characteristic energy, and with a success that attracted students from far and near, who sought to equip themselves for a career in industrial chemistry by a training under one who was recognised as the authority, especially in the branch of the manufacture of "heavy chemicals."

Dr. Lunge by his literary activity, as in other ways, contributed greatly to the advancement of chemical technology. His treatise on "Sulphuric Acid and Alkali," which has passed through several editions, is not only indispensable to the technologist, but is also replete with knowledge. As Mr. T. W. Stuart, himself a leader in the alkali industry in this country, and one of the few early contemporaries of Dr. Lunge, recently stated, "When you refer to these books on any obscure subject in the Alkali industry, you never go empty away, but always find in them a wealth of information."¹ A similar statement might justly be made in respect to Lunge's "Coal Tar and Ammonia," his "Technical Chemists' Handbook," and his "Handbook of Methods of Technical Gas Analysis," etc., each and all of which are essential to the equipment of the chemical technologist.

George Lunge was born at Breslau on September 15, 1839; from 1856 to 1859 he studied at the universities of Breslau and Heidelberg, graduating as Ph.D. In 1864 he came to England, with the object of obtaining technical experience. For a part of the twelve years spent in this country he was employed in the tar distillery of Messrs. Major and Co. at Wolverhampton, and in 1868 he was appointed chemist and manager to the Tyneside Alkali Company at South Shields. Dr. Lunge's efforts to obtain a footing in one or other of the twenty-six chemical works on the Tyne were at first far from encouraging, for, as Mr. Stuart tells us, a partner in one of the largest of these works offered Dr. Lunge the post of chemist at 1*l.* per week, which even at that time was but 2*s.* above the wage of a labourer! In the small works at South Shields Dr. Lunge continued until 1876, when he received the call to the chair of applied chemistry at Zürich. It is not without interest

to note that his chief publications and researches deal with those phases of chemical industry, with the actual practice of which his sojourn in England had made him familiar.

At the time of his residence on Tyneside the Newcastle Chemical Society was founded, with Mr. Isaac Lowthian Bell (later Sir Lowthian Bell, Bart.) as its first president. Dr. Lunge became a member of this society, taking an active part in its proceedings and was elected president in 1872. In 1883 this society became merged into the Society of Chemical Industry and was formed into a local section of that society. However, Dr. Lunge, until the time of his death, retained his membership of the local section, using its Proceedings as the medium of publication from time to time of important scientific communications, and in many other ways evincing his sustained interest in its welfare.

The first Hurter Memorial Lecture was delivered in 1899 by Dr. Lunge before the Liverpool section of the Society of Chemical Industry, who selected for the subject of the lecture—"Impending changes in the general development of industry, and particularly the Alkali industry."

Drs. Hurter and Lunge, like many German chemists, *e.g.* Caro, Pauly, Otto Witt and others, came to England in the sixties of last century to gain a practical knowledge of British chemical industries. Dr. Hurter remained in this country and became identified with the Lancashire alkali industry, while Dr. Lunge returned to the continent, and based his teachings and writings on experience gained in the rival industry of the Tyne. Dr. Lunge had a complete command of the English language, writing and speaking it with ease and fluency. He married Miss Bowron, the daughter of a member of the firm of the owners of the Tyneside Alkali works at South Shields.

P. P. B.

PROF. JAMES RITCHIE.

WE much regret to record the death of Prof. James Ritchie, Irvine professor of bacteriology in the University of Edinburgh. Up to the end of the summer term of 1922 Prof. Ritchie carried on his work with his customary energy and zest. In the holiday which he took during August in Perthshire, however, the early symptoms of his last illness began to give anxiety, and he died on January 28.

The record of Ritchie's life shows that since he

¹ *Chemical Trade Journal and Chemical Engineer*, January 19.

graduated in medicine in Edinburgh in 1888, at twenty-four years of age, there can have been few unoccupied hours. In 1889 a happy chance took him to Oxford to be assistant in general practice to Mr. Horatio Symonds. This post gave him a wide clinical experience, and at the same time he was able to develop his scientific bent in the laboratories of the Oxford Medical School. His mental and physical energy seemed inexhaustible. At first his available time was spent in original research in bacteriology: on the nature of bacterial toxins; the theory of germicidal action; the relation of toxic action to chemical constitution of the toxins; the reaction of immunity, etc. Following this, he undertook to teach the subject in the Medical School at the request of Sir Henry Acland, and while preparing for this he wrote, with Prof. Muir, the "Manual of Bacteriology," which was at once accepted as the standard English text-book in this subject.

After Sir John Burdon Sanderson was appointed to the Regius chair of medicine the teaching expanded into a full three terms course in pathology and bacteriology, and in 1902 Ritchie was appointed professor of pathology. In 1907 he returned to Edinburgh. As a result of his work in Oxford he had risen to the front rank in his subject. In Edinburgh he first carried on with great success the work of Superintendent of the Laboratory of the Royal College of Physicians, and in 1913 he was appointed to the newly established chair of bacteriology in the University. The Royal College, the Infirmary, and the University had endless profit from his labour.

For the interests of his subject in the medical schools of the country generally he did exceptional service as secretary of the Pathological Society, and as one of the editors of the *Journal of Pathology*. He held many offices, and his influence on the progress of medicine extended far, and in all his relations with his fellow-men his idealism and faithfulness called forth deep trust and affection. J. L. S.

MR. W. W. BRYANT.

WALTER WILLIAM BRYANT, whose death on January 31 we much regret to record, was born on January 9, 1865, at Forthampton, near Tewkesbury, where his father was a schoolmaster. He obtained a scholarship to Pembroke College, Cambridge, and secured a first-class in the Mathematical Tripos in 1887, and a second-class in the Natural Science Tripos of 1888. He was for a short time a master at Dulwich College, and in February 1892 obtained a post as assistant at the Royal Observatory, Greenwich. His work was mainly connected with meridian astronomy. He was a most expert observer with the transit circle and was largely responsible for raising the output from 5000 to 10,000 observations. This increase in the annual number of observations remains as a permanent result of Bryant's enthusiasm. His skill and enthusiasm was also shown in observations of double stars made with the 28-inch refractor. He continued to observe regularly with this instrument till the present time.

In the year 1904 Bryant was appointed senior assistant and given the superintendence of the magnetic and meteorological department. He took up magnetic

work about the time when the instruments were being set up on a new site in an enclosure in Greenwich Park. He made a large number of absolute observations, and during the war had little, if any, assistance. He took a great interest in meteorology and was for many years on the council of the Royal Meteorological Society, being secretary from 1916 to 1920, and vice-president 1920-1922. His interest in astronomy did not cease when he took up meteorology. He was a regular attendant at the meetings of the Royal Astronomical Society and the British Astronomical Association, and was the author of a "History of Astronomy," published in 1907, and of biographies of Galileo and Kepler in the "Pioneers of Science" series.

Bryant's recreations were music and hockey. He was one of the founders of the hockey club associated with the Observatory and played regularly up to 1914, and from 1919 onwards he acted frequently as referee.

Bryant married in 1894 and had ten children, of whom one died in infancy, and one was killed in Gallipoli. He was at the Observatory until within a few days of his death. His colleagues were greatly shocked by the announcement of his death following an operation. He was conscientious and industrious and a very pleasant man to work with, who will be greatly missed by his astronomical and meteorological colleagues.

MR. T. V. HOLMES.

MR. THOMAS VINCENT HOLMES, whose death at the age of eighty-two occurred on January 24, was for long a familiar figure in the ranks of English amateur geologists. From 1868 to 1879 he held a temporary post on the Geological Survey, when he was occupied about Carlisle and was the author of the Survey's memoir on that district; he also took part in the mapping of the Yorkshire coalfield in collaboration with the late Prof. A. H. Green, and later had similar experience in the south-eastern counties. Though Mr. Holmes so soon relinquished his official duties for a more leisured life, he maintained to the end his keen interest in local geological problems. An acute observer, he did much useful work in recording new exposures in the south-east of England, and was one of the active members of the Geologists' Association and Essex Field Club, being president of the latter in 1886-1888. He was a fellow of the Geological Society and of the Royal Anthropological Institute.

Mr. Holmes contributed a considerable number of short papers to the Association and Essex Field Club; others appear in the Transactions of the Cumberland Association and the *Essex Naturalist*. His last association with the Geological Survey was a large share in the compilation of the memoir "On Thicknesses of Strata," published in 1916.

WE learn from *Science* that Dr. Fritz Wilhelm Woll, professor of animal nutrition in the University of California, died on December 6 at the age of fifty-seven. Dr. Woll was born and educated in Norway; on going to the United States, he became attached to the University of Wisconsin and was appointed assistant chemist in