with many uses. The remainder of Van de Graaff's scientific career was dedicated to the improvement and uses of high voltage generators.

In 1931 he followed K. T. Compton to the Massachusetts Institute of Technology, and during the war as director of the High Voltage Radiographic Project there for the Office of Scientific Research and Development, with the help of a small group, he built and installed five generators. This experience suggested that electrostatic generators could be produced commercially as standard instruments for use in nuclear research and medicine and led to the formation in 1946 of the High Voltage Engineering Corporation of which Van de Graaff and Drs. John Trump and Denis Robinson were directors. The phenomenal success and growth of the company are well known and its products are to be found in physical research laboratories and hospitals all over the world. Van de Graaff served the company first as chief physicist and later as chief scientist, and was responsible for many of its major scientific advances, such as the recent ingenious insulated core transformer. His most recent work was directed to the improvement of rotating electrical generators both for the direct production of high voltages and for large powers, and with his usual acumen he was able to circumvent some of the limitations of conventional machines.

As a scientist who left his mark on the science of his generation Van de Graaff received many academic honours including the Elliot Cresson Medal of the Franklin Institute; the Naval Ordnance Development Award; the Dudell Medal of the Physical Society; the Tom W. Bonnor Prize of the American Physical Society, and honorary degrees from the Universities of Alabama, Florida and Utrecht.

Van de Graaff was among the most courteous and considerate of men; he evoked deep affection, admiration and loyalty in friends and colleagues alike, and his conversation, both scientific and social, was stimulating, provocative, just and vivid. Those privileged to know him will, in retrospect, echo Reynolds' tribute to Johnson—"He qualified my mind to think justly".

L. G. H. HUXLEY

Dr. Nabor Carrillo

DR. NABOR CARRILLO, who died on February 19 at the age of 54, was a prominent Mexican scientist. He had represented his country at the U.N. Atomic Energy Commission. He began to teach at the National University of Mexico when he was still a student. Dr. Sotero Prieto, a pioneer in modern mathematics, regarded Carrillo as his most distinguished student. In 1942, Carrillo completed his doctoral thesis at Harvard University.

His best known work includes the first quantitative explanation of the subsidence of Mexico City and the analysis of the subsidence of Long Beach, California. In the latter case his theory of "tension centres" was an important contribution to soil mechanics. One of his notable achievements was the design of the Angostura arch dam, the first such enterprise to be undertaken by Mexican engineers. Carrillo's many publications in physics, applied mathematics and engineering covered such topics as elasticity, plasticity, soil mechanics and the strength of materials.

Carrillo was a professor at the National University of Mexico—here he was for several years co-ordinator of scientific research—at Harvard University and at the universities of New York and Havana. In 1946 he was named adviser on nuclear energy to the Mexican government, and represented his country at the U.N. Atomic Energy Commission and at the experiments at Bikini. From 1956 he was a member of the board of directors of his country's Nuclear Energy Commission. In 1957 he

received Mexico's National Prize for science; he was twice president of the Mexican National Academy of Sciences, and was also president of the Mexican Mathematical Society. Carrillo was awarded a number of honours, including the Humboldt Medal and the Légion d'Honneur, but he regarded his eight years, from 1953–61, as Rector of the National University of Mexico as the highest honour he ever received.

Dr. Joseph Bamforth

THE death of Dr. Joseph Bamforth at the age of 78 on February 10, 1967, deprived clinical pathology of one of its greatest exponents and of one of its most lovable characters. After graduating M.B., Ch.B. from the University of Liverpool in 1911, and taking the Conjoint Diploma in the same year, he held appointments as house physician and house surgeon in Liverpool Royal Infirmary before becoming a Holt Fellow in Pathology and later lecturer in the university. He proceeded M.D. in 1914, his thesis being a histological study of the cyclical changes in the endometrium, thus pointing towards an interest in gynaecological pathology which he was to exploit to the full in later years. The First World War, however, involved service in the forty-ninth General Hospital, British Salonika Force, which not only turned his interests for the time being towards bacteriology but also had a profound effect on his later career, in that association with L. S. Dudgeon, consulting pathologist to this force, resulted in Bamforth becoming assistant bacteriologist at St. Thomas's Hospital, London, in 1922. In 1924 he took the M.R.C.P. and described the first British cases of dysentery caused by Sonne's bacillus. Studies on atypical *Escherichia coli* and investigation of *Staphylococcus aureus* with the production of a "toxoid" for the treatment of furunculosis (which was still in demand for some years after the introduction of antibiotics) followed, together with publications on megakaryocytic myelosis and aplastic anaemia. After Dudgeon's death in 1938, Bamforth became director of clinical pathology at St. Thomas's, and during the Second World War he also served as an Emergency Medical Service sector pathologist when the hospital was evacuated to Hydestile, near Godalming. In 1940 he was elected F.R.C.P.

After returning to London at the end of the war, he concentrated more on histology and especially on diagnostic cytology, in which he had been interested since Dudgeon developed the technique, and to which he contributed much original work culminating in the publication of his book, *Cytological Diagnosis in Medical Practice*, in 1966—when he was 77 years old.

He retired from St. Thomas's in 1953, but his work continued at the Imperial Cancer Research Fund, Royal College of Surgeons, and at King's College Hospital. Election as F.R.C.O.G. in 1958 and as first President of the British Society for Clinical Cytology in 1962 gave him great pleasure.

Such an account of Joe's public achievements gives little idea of his outstanding personal qualities which included a charming and genuine modesty and an enthusiasm for his work which he was able to communicate—without conscious effort on his own part—to students, colleagues or even the first person he happened to meet after making a particularly interesting discovery in his laboratory. His application of laboratory investigations in clinical diagnosis was aided by an astonishing memory of details of previous cases, a characteristic which also made him a stimulating teacher. Neither his enthusiasm nor his vast experience, however, deviated him from his course of strict scientific honesty.

Joe was a great pathologist; his kindness, generosity and wit will be remembered with affection and gratitude by his very many friends who knew him also as a great man.

K. R. DEMPSTER