change colour from vivid blue to white, suggesting growth of the cloud particles by condensation. When opportunity offers, the new spectrograph at St. Andrews will be employed to investigate such changes in the spectrum. Finally, slides were shown illustrating a remarkably sudden change from their characteristically stable structure to quite chaotic shapes that occurred in the early morning of July 25, 1950. Noctilucent clouds have been observed on twenty-two nights since 1939; but this was the only occasion when turbulence was seen. It may be significant that it was also the only occasion when aurora occurred simultaneously with the noctilucent clouds.

OBITUARIES

Prof. J. T. Hewitt, O.B.E., F.R.S.

PROF. J. T. HEWITT, while crossing the road near his home at Hurst, Berkshire, on July 9, was knocked down and killed by a motor-car. Although he was eighty-five years of age, he was still active, and his death came as a shock to all who knew him. He was born at Windsor in 1868. After an unconventional schooling, he went to the Hartley Institute (now the University of Southampton) and at sixteen was a student at the Normal School of Science (later the Royal College of Science). At eighteen he was a scholar of St. John's College, Cambridge. He took the Normal School associateship in 1887, and three years later had a first in both parts of the Natural Sciences Tripos and a first in the London Honours B.Sc. Before 1893 was out, he had worked in Heidelberg and in Berlin and had acquired the Ph.D. (Heidelberg) and the D.Sc. (London). He was appointed professor at the People's Palace Technical Schools at Easter 1894, at the age of twenty-five. In the next twenty years, during which the Schools had emerged as a school of the University of London under the title of East London College (now Queen Mary College), he had as students or research students many men who later rose to important academic, governmental or industrial posts. To make a selection is always invidious, but the following names might be mentioned to show the range of interests involved: H. A. Phillips, A. E. Pitt, T. S. Moore, A. E. Dunstan, J. J. Fox, J. Kenner, G. M. Bennett, J. C. Drummond, A. D. Mitchell, T. F. Winmill and W. G. Hiscock.

Hewitt, F. G. Pope and Clarence Smith shared the lecturing at East London; Hewitt gave the intermediate inorganic lectures, which were first class and very well illustrated by experiments, and all the general and honours lectures on inorganic and on physical chemistry. He also attempted to teach his students some mathematics. What was so attractive about Hewitt's lectures was his unconcealed interest in any and every branch of chemistry: in dealing with sodium thiosulphate he could not keep out Bernthsen's methylene blue synthesis, nor Willgerodt and Mascarelli when he was talking about iodine. To him, metallurgical processes, the phase rule, and the determination of accurate atomic weights were all intellectually diverting.

When Hewitt was elected into the Royal Society in 1910, he had an international reputation as an authority on the relation between colour and constitution. He had original views on fluorescence, on the connexion between depth of colour and degree of conjugation, on the constitution of phenthiazine and safranine dyes and on other subjects. Any student in his department who showed ability and enthusiasm was encouraged by Hewitt to get through the routine analytical course as quickly as possible and start some research.

Hewitt wrote an excellent practical book, "Organic Chemical Manipulations", which was unfortunately allowed to get out of print. He invented a process for the quick maturing of whisky and was consulted by the French wine trade. He played an important part in the famous aspirin law case which was lost by the Bayer group.

During the First World War, Hewitt first worked out processes for manufacturing acetic anhydride and for converting benzene–xylene mixtures into toluene. In 1915 he was commissioned as major and went to the Dardanelles, where he was concerned with such diverse matters as water analysis and cylinders of chlorine. Early in 1916 he returned to England and was seconded to the Department of Explosives Supply. He controlled a small factory at Chiswick, with Clarence Smith as a colleague. They dealt first with explosives and later with materials for chemical warfare. Hewitt was a great admirer of his 'chief', Lord Moulton.

Hewitt resigned from his chair at the end of the First World War and in 1919 joined with T. D. Morson, C. S. Roy, Clarence Smith, J. L. Baker and Miss Hewitt (his much beloved sister) to manufacture fine chemicals (quinine ethyl carbonate, quinoline, methylquinolines, benzthiazole, phenylhydrazine, phenylmethylpyrazolone, etc.). This concern gradually decayed for one reason or another, and the Hewitts left it during 1940. Miss Hewitt died in 1943 and thereafter Hewitt lived alone in his cottage at Hurst. He often went to London, to the Chemical Society and to meetings of the University Board of Studies, of which he was an original member (1901). He was one of the first Fellows of Queen Mary College.

Hewitt was a good chemist, a very human personality and (there is no other word) a gentleman. He enjoyed his life and his memories. It was always a pleasure to see him enter a room full of people he knew: that characteristic, half-courtly salutation—the irresistible charm of a man who lived and worked with zest.

E. E. TURNER

Prof. H. Frankfort

HENRI FRANKFORT'S most outstanding achievement was to have appreciated and by practical example to have taught others to appreciate the value of archæological evidence as a source of human history. His first work—the two volumes of "Studies in the Early Pottery of the Near East"—was not only an original and pioneer comparison of the then available archæological material from predynastic Egypt, prehistoric Mesopotamia and pre-Hellenic Greece, which despite the unpredictable results of many subsequent excavations still provides the accepted guiding lines for the interpretation of Egyptian prehistory. But his "Studies" also eloquently demonstrated how a detailed objective analysis of ceramic techniques, decorative motives and art styles might disclose a history of very much the same sort as that extracted by philologists from orthodox written sources. Frankfort had been trained in the rigorously literary disciplines of the Classics and Egyptology as taught in Holland during

the 'twenties. But coming as a postgraduate to University College, London, he fell under the spell of Petrie and imbibed something of his flair for the humanist value of material objects made by man. This combination found original expression in the "Studies" and developed ever more fruitfully in his maturer works : for these remained works of scholarship and interpretation.

Of course, Frankfort was no armchair archæologist—he could never have been a great interpreter had he been that. He gained field experience and added to human knowledge first in directing the Egypt Exploration Society's excavations at Tell el-Amarna and then as field director of the Iraq Expedition of the Oriental Institute of the University of Chicago. The latter post gave not only opportunities of studying the monuments in their proper setting but also of organizing a scientific expedition on a lavish scale. The scientific value of the results obtained at Tell Asmer and Khafaje are essentially the fruits of Frankfort's success as its organizer. For though the expedition did uncover some spectacular objects—hoards of early Sumerian statues, for example—it was the (in Mesopotamia) unprecedented thoroughness and accuracy of the planning, recording and conserving of all finds that have invested the latter with unique historical significance. The publication, still far from complete, had been planned by Frankfort, and his own personal contributions—two volumes devoted to the Sumerian statuary—disclose his sensibility as an art critic and vigour in interpretation.

Still, it is in more comprehensive syntheses, written while he was professor in Chicago and later director of the Warburg Institute in the University of London, that Frankfort's genius found fullest expression. In "Kingship and the Gods", and perhaps still more in the introduction and conclusion (written in collaboration with his first wife) to "An Essay on Speculative Thought in the Ancient Near East", entitled in Great Britain "Before Philosophy" and in the United States. "The Intellectual Adventure of Ancient Man", the reader can see how successfully and naturally an archæologist can assume the role of philosopher and sociologist. V. G. CHILDE

Dr. Henri Mineur

WITH the untimely death of Henri Mineur, which occurred after a short illness in Paris on May 7, France has lost one of her most distinguished astronomers, and the Paris Observatory one of the best-known members of its staff.

Henri Mineur was born at Lille in 1899. Entering the army at the age of eighteen, he served for a few months with the Engineers and was demobilized with the rank of second lieutenant. Completing his interrupted education at the École Polytechnique, he graduated in 1921 and took his doctorate in mathematical sciences in 1924. At this stage he decided to make his career in astronomy and accepted a post as assistant astronomer at the Paris Observatory in 1925. Within eleven years of work at the Observatory, he had made such a name for himself that he was appointed, at the age of thirty-seven, as the first director of the newly established Institut d'Astrophysique. Work at the Institute had not got into full swing when, at the outbreak of the Second World War, it was virtually suspended, and he became director of a mathematical laboratory devoted to the solution of defence problems. Enlisting in the Armed Forces in 1940, he was appointed professor at the school of military engineering at Versailles shortly before the fall of France. Demobilized in August 1940, he joined the resistance movement and was dismissed from his official posts by the Vichy Government in 1941. Three years later he was reinstated by the new French Government and served for a short while as captain in an anti-tank unit. Again demobilized in 1946, he turned his energies once more to astronomy, and by the date of his death had re-established the Institut d'Astrophysique as a national postgraduate centre for theoretical and observational attacks on current problems on the frontiers of astrophysics.

Mineur's personal researches covered a wide field in celestial mechanics, pure mathematics, relativity theory and statistics as well as in astronomy. He will perhaps be best remembered for his work on differential galactic rotation, carried out independently of Oort's, but leading by somewhat different methods to substantially the same conclusions, namely, that the Galaxy is rotating about a centre some 8,000 parsecs distant towards galactic longitude 325°, at a rate giving one complete turn in 250 million years in the solar neighbourhood. To his credit are also a number of allied investigations into the equilibrium of open galactic clusters, the time-scale of the universe, and absorption of light in interstellar space. His early training as an observer in the Paris Observatory, and, later, his everyday contact with practising astronomers working in the Institut d'Astrophysique under his general direction, combined to confer on his theoretical work a practical insight which lent increased authority to his results.

M. Mineur was awarded the Damoiseau Prize of the Paris Academy of Sciences in 1944 and the Montyon Prize in 1950. He was created Chevalier of the Légion d'Honneur in 1949. A. HUNTER

Dr. Loyd A. Jones

DR. LOYD A. JONES, who died unexpectedly on May 15 at his home in Rochester, New York, a fortnight after his retirement, was well known for his scientific work in photography. He was born in Nebraska in 1884 and, after graduating in the University of Nebraska, was for two years assistant in the Physics Department of that University, assistant physicist at the U.S. National Bureau of Standards for another two years and then joined the Research Laboratories, Eastman Kodak Company, when they were formed in 1912. He soon became chief physicist and head of the Physics Division.

From then onwards Jones's interests were almost exclusively his work on photography and on scientific committees, and his home and garden. He graduated as an electrical engineer, and something of the qualities of an engineer are to be found in much of his published work. This amounts to about eighty papers. His early work was mainly concerned with the measurement of the properties of photographic materials, the provision of instruments for doing so, and related subjects. The major interest was in sensitometry—the measurement of speed and contrast—and tone-reproduction. The culmination of this work was the paper of 1939, "The Evaluation of Negative Film Speeds in Terms of Print Quality", wherein the criterion of correct exposure of the negative was whether the negative gave as good a