extend Heisenberg's work, and Gaunt was first in the field. His work has been superseded by that of others, notably by that of Breit, based upon a more thoroughgoing derivation of the fundamental equations from quantum-electrodynamics, but Gaunt made a very substantial contribution to a difficult problem.

In the 1920's the calculation of the absorption coefficient of matter for radiation was of great importance in astrophysics. Kramers' formula, based upon the old quantum theory and the correspondence principle, was in violent disagreement with the value of the absorption coefficient required according to the current astrophysical theories. It was therefore of considerable importance to calculate what the absorption should be according to wave mechanics. This was first done by Oppenheimer, who obtained a formula substantially different from Kramers'. Gaunt, who was working on the same problem, discovered an important mistake in Oppenheimer's calculations and rehabilitated Kramers' formula. He also extended Oppenheimer's work considerably.

These two long papers were completed in little more than twelve months work, and show Gaunt's great ability to handle complicated mathematical problems. It is remarkable that Gaunt should have been able to achieve so much in a single year, since he had already determined to give up theoretical physics for what he considered to be more important work. He was elected a research fellow at Trinity in October 1929, but never resided. Instead, he left England and went, under the auspices of the Church Missionary Society, as an assistant master at St. Stephen's College, Hong Kong, where he taught mathematics, English and Scripture to Chinese and Siamese boys. He acquired a good knowledge of Chinese, and his pupils liked and admired him, but were genuinely perplexed how a man of such ability came to be their teacher.

Gaunt never lost his interest in physics and found time to read such papers as were sent out to him by friends. Music gave him great pleasure, as did the opportunities he had for travel in China, especially in the mountainous regions. When the shadow of war hung over the Colony, Gaunt joined the Volunteer Defence Corps as a gunner, and took part in the brief struggle.

Gaunt was somewhat reserved with most people, but he had a strong sense of humour and a ready sympathy in the everyday affairs of life. It must have cost him much to make the sacrifice of going to China, but it was done with perfect cheerfulness, in obedience to his conviction of the supreme importance of Christianity. A. H. WILSON.

WE regret to announce the following deaths:

Prof. R. Bennett Bean, professor of anatomy in the University of Virginia during 1916–41, known for his work on the distribution, development and evolution of man, on September 3, aged seventy.

Lieut.-Colonel J. W. F. Brittlebank, C.M.G., president of the Royal College of Veterinary Surgeons during 1926–28, on December 18, aged sixty-eight.

The Rev. E. Tickner Edwardes, well known for his popular writings on bees and on general natural history, on December 31, aged seventy-nine.

Dr. J. Fitch King, professor of chemistry in Williams College, Williamstown, Massachusetts, on August 29, aged forty-nine.

NEWS and VIEWS

Prof. A. N. Whitehead, O.M., F.R.S.

THE award of the Order of Merit to Prof. A. N. Whitehead, of Harvard University, announced in the New Year Honours, will be widely acclaimed. Prof. Whitehead was first known as a mathematician, though of an unusual kind. Mathematics for him meant the "development of all types of formal, necessary, deductive reasoning" (preface to "Universal Algebra", 1898). This phase of his career culminated with the publication of "Principia Mathematica" (1910–12). It was afterwards, as most of us thought, that he turned to philosophy—with a remarkable contribution to the theory of knowledge in 1919–20, and later with a complete system of metaphysics expounded in a series of well-known works. It has been pointed out by Prof. V. Lowe (essay in "The Philosophy of A. N. Whitehead", 1941) that there was no sudden change; the philosopher was implicit in the mathematician, as could be seen in a paper of 1905.

Whitehead's later works have been much read and quoted—often misread and misquoted. That is the fate of a writer who is at times obscure, at times brilliantly epigrammatic. It is characteristic of his attitude to emphasize the need for abstract thought and also the fallacies that arise from it; the need for rule and order in life and also that mere order means futility. Whitehead's essays on the aims of education are too little known. Nobody has argued more persuasively for the value of history in education. As is more widely known, few have viewed human history with so keen and comprehensive an eye, and so wide and fine a sympathy.

Organization of Science in Great Britain

AN interim memorandum from the sub-committee on the future scope and organization of science in Great Britain which has been issued by the Parliamentary and Scientific Committee urges as an immediate measure the appointment by the Government of a committee, with the widest powers of securing information, to review the existing position of industrial research and development in British industry, and to plan a programme (covering, say, the next five years) aimed at remedying the most important defects and gaps in that field, so far as the national interest is concerned. Such a review would involve consideration of existing national resources at home, the probable economic position of Britain in the post-war world, and the lines along which the immediate, vigorous and large-scale application of scientific knowledge is likely to yield the most fruitful results. In this connexion the sub-committee stresses the necessity for special attention to scientific research on the treatment of coal. The review would also involve investigation into the points at which British industry in general, and certain industries in particular, have failed in the past to utilize scientific knowledge, the loss to the national interest which has resulted from this failure and the steps which

can be taken to prevent the recurrence of similar failure. The sub-committee does not consider that a review of this type, involving specialized technical knowledge of a number of different industries, combined with a particular appreciation of the facts affecting the position of Great Britain in the world economy, could be adequately carried out by any existing agency. While the proposed committee should take its evidence in secret, an early and informative report is regarded as essential, first as a means of bringing home to industry and the public the realities of the existing situation, and secondly, to afford a basis for settling the plan of action required to recover and maintain the industrial strength upon which our future as a nation depends.

Newton and His Portraits

MR. F. E. BRASCH, of the United States Library of Congress, has selected some of the best portraits of Newton for publication in *Scripta Mathematica* (**8**, 199; 1941). The earliest is by Sir Peter Lely, and is supposed to show Newton (who was born on Christmas Day, 1642, Old Style) as he appeared in 1665 (the year of the Great Plague), but there is grave doubt whether Newton sat for this. The first portrait that can be guaranteed authentic is by Sir Godfrey Kneller, and is dated 1689, two years after the publication of the "Principia". The other portraits all show Newton as president of the Royal Society, a position he held from 1703 until his death in 1727. One is by William Gandy (1706), four by Johann Vanderbank (1720, 1725, 1726 and 1726 again), and one by an unknown artist. There are also photographs of a bas-relief attributed to Wedgwood, of a bronze statue by the American sculptor C. E. Dallin (1897), and of the reconstruction in Wellesley, Mass., U.S.A. of the actual parlour from Newton's house in Leicester Fields, St. Martin's Street, London.

In another article (*Science*, **99**, 437; 1944), Mr. Brasch gives us some information about the influence of Newton on Russian science. For some unknown reason, Newtonian ideas were ignored in Russia long after they had been accepted in France, Germany and other countries. Indeed, it was not until quite recently that the formal recognition of his work became evident. His "Optics" was translated into Russian in 1927, and the "Principia" in 1936. However, the celebrations of the tercentenary of Newton's birth left nothing to be desired. They were on an impressive scale, much exceeding those in Great Britain, and culminated in the founding of fifteen Isaac Newton studentships.

Texas Meteor Cloud

OSCAR E. MONNIG has described the effects of a fireball observed on May 20 over Texas (*Sky and Telescope*, September). It travelled from west to east and left a meteor cloud; photographs, some of which are reproduced, were taken by different people. Unlike some fireballs, this one did not leave a persistent train; two minutes after Ray Dudley, in the middle of Pampa, had taken a photograph, he was able to secure another one which showed a great change, not only in the brilliance of the meteor cloud, but also in the amount of diffusion that had taken place. The sun had set 40 minutes in some places and 20 minutes in others when it was seen, and as it was visible for a radius of more than 300 miles, it must have been a very imposing object at first. Atmospheric resistance slowed down its speed, which was almost below that of incandescence 13 miles north-west of Pampa. Attempts to find fragments of the fireball, which almost certainly disintegrated (though there is no record of a report due to disintegration such as is often heard with fireballs) have so far been unsuccessful, but it is hoped that some of the debris will be obtained. A provisional path has been computed, and it appears that it became visible at a height of 56 miles, the dense cloud being formed at a height of 23 miles (this latter is considered very accurate), and its direction of flight was at an angle of about 45° to the horizon.

Insect Pest Resistance in Plants

THE Imperial Bureau of Plant Breeding and Genetics, Cambridge, has issued a Bibliography on Insect Pest Resistance in Plants (*1s. 6d.*). The sources drawn upon include publications from the British Commonwealth, the main European countries, the United States and various South American countries, the U.S.S.R. and Japan. In all, there are more than 550 references arranged according to subject, the chief of these being cereals, roots and tubers, cotton, sugar-cane, fruits and vegetables. Nematodes are dealt with in a special section. Many of the publications included have been abstracted in *Plant Breeding Abstracts*, and in many instances the original publications cited are available at the Bureau or in some co-operating library, and further information can therefore, if necessary, be obtained on application to the Bureau. It is believed that the bibliography will be of practical assistance not only to the breeder and the geneticist, but also to all who are interested in the solution of the important problem of the fundamental basis of insect or nematode resistance among crop plants.

Poliomyelitis in Argentina

THE July issue of the *Boletin de la Oficina Sanitaria Panamericana* contains an instructive article by Dr. G. Bayley Bustamante, assistant professor of public health, Buenos Aires, dealing with the last outbreak of poliomyelitis in the Argentine (October 1942–May 1943 with 1,948 cases). This was probably the largest outbreak, although epidemics were reported in 1909, 1911, 1916–17, 1919–20, 1924–25, 1932–33, 1934–35 and 1936, mostly in the Buenos Aires and Rosario Area, with smaller outbreaks and sporadic cases in the rest of the country; but paralytic cases figure in the statistics in 1941. There were 355 cases (189 in the Province of Santa Fé), which was an increase on the usual yearly figures. The 1942 epidemic in the southern suburb of Buenos Aires then extended into the city and to the rest of the province, with the peak in November and December; it increased along the coast after January and moved northward. The incidence was highest in the Buenos Aires sector. Half the cases were in children aged 1–3 and another 10 per cent in those less than 1 year. The death-rate ranged from 3·5 to 23–25 per cent, usually being 10 per cent. Of the eight large Argentine epidemics, four began in February and one each in June, September, October and November. The 1942–43 epidemic had its peak in October–November (spring); the year had been characterized by a hard but short winter, an early warm spring and a very hot and dry summer.