

are characterised by a variety of algebraic treatment and a wealth of illustrations and examples, but nowhere does technical manipulation outrun the geometry. The first of these, a provocative little book, appeared at a time when metrical systems alternative to that of Euclid were known only to the few. It is not surprising that such a teacher carried throughout his life the esteem and appreciation of his students. One of his most distinguished pupils, A. C. Aitken, writes of the critical time in his own student days when the University of Otago was temporarily without a professor of mathematics, and how willingly Sommerville filled the gap by weekly correspondence. The written solutions and comments went far beyond what was necessary for mere elucidation.

Beginning in 1905, Sommerville wrote more than thirty original papers and notes which have been published in well-known journals at home and abroad. The first, entitled "Networks of the Plane in Absolute Geometry" (*Proc. Roy. Soc. Edinburgh*, 25) is typical of the sequel. The main theme is that of combinatory geometry, exemplified by a systematic investigation of "The Division of Space by Congruent Triangles and Tetrahedra" (1923) in the same journal, and extended to n dimensions (*Palermo*, 48, 9-22; 1924). Out of this grew the work upon the relations connecting angle sum and the volume of a polytope in space of n dimensions (*Proc. Roy. Soc. London*, 1927).

Sommerville was ever ready to apply his special gifts to unusual examples, as in his analysis of preferential voting and a highly original treatment of the musical scale. He was also much interested in astronomy, and was one of the founders of the New Zealand Astronomical Society and its first secretary. At the Adelaide meeting of the Australasian Association for the Advancement of Science held in 1924 he was president of Section A. His was a life of unsparing activity, and the fruits of his work will abide. There has passed from Scotland one who had already become her leading geometer of the present century.

H. W. TURNBULL.

WE regret to announce the following deaths:

Dr. James Mackintosh Bell, O.B.E., formerly of the Canadian Geological Survey, and in 1905-1911 director of the Geological Survey of New Zealand, on March 31, aged fifty-six years.

Dr. James Munsie Bell, dean of the School of Applied Science in the University of North Carolina, who has carried out important researches in physical chemistry, on March 3, aged fifty-three years.

Prof. Arthur Ranum, professor of mathematics at Cornell University, on February 28, aged sixty-three years.

News and Views

Caleb Whitefoord, F.R.S. (1734-1810)

CALEB WHITEFOORD, friend of Benjamin Franklin in the hey-day of the latter's fame, was born in 1734, at Edinburgh (the exact date would seem to be unrecorded). Whitefoord was the natural son of Col. Charles Whitefoord, himself the third son of Sir Adam Whitefoord, Bt., of the shire of Ayr. He died on February 4, 1810, at his home in Argyle Street, in the vicinity of Soho, and was buried in Paddington Churchyard. Graduating at the University of Edinburgh, Whitefoord sought London as the best field for the exercise of his varied gifts, chief among these being a faculty for satirical journalism. Eventually there were few literary, scientific and political celebrities of his period outside his circle. Intimacy with Franklin (they were then neighbours in Craven Street, Strand) led to the opinion that Whitefoord would make an eligible diplomatic agent for the purpose of assisting in the restoration of peace with America. Accordingly, he became secretary to the Commission which concluded peace with the United States at Paris, in 1782. He was elected a fellow of the Royal Society on June 24, 1784, when Sir Joseph Banks was president. A fellow of the Royal Society of Edinburgh, and of the Society of Antiquaries, London, he was a vice-president of the Society of Arts, and a member of the Philosophical Society of Philadelphia. Whitefoord's portrait was painted by Sir Joshua Reynolds in the eventful year 1782, and

hangs in the National Portrait Gallery; a mezzotint of this by S. W. Reynolds is prized. A pleasing drawing (head and bust), by R. Cosway, is reproduced in the *European Magazine* for 1810. In 1790 Whitefoord presented a fine portrait of Benjamin Franklin, by Joseph Wright, to the Royal Society. Such interesting connexion with the Society is further emphasised by the circumstance that Whitefoord, with Count Rumford, signed, in 1801, the certificate of recommendation for the election of Warren Hastings.

Industrial Research and the State

MR. STANLEY BALDWIN, as Lord President of the Council, may be regarded as a Minister of Research, since he is responsible to Parliament for the Committee of the Privy Council for Scientific and Industrial Research. He is keenly alive to the possibilities of scientific and industrial research, and this attitude marks the message he sent recently to the conference of industrial research associations, reference to which was made in *NATURE* of March 31, p. 504. Mr. Baldwin confirmed his promise on behalf of the Government in replying to a question in the House of Commons on March 27, when he said:

"ABOUT two years ago, steps were taken by the Department of Scientific and Industrial Research to ascertain the views of the Councils of Research Associations connected with the Department on a

proposal that powers should be obtained to require firms in an industry to contribute towards co-operative research where the large bulk of the industry was in favour of such a course. The result was unfavourable to the proposal. Evidence has, however, been received that there may have been some change of opinion in the interval and the Department propose to consult the Associations again on the subject. If it appears that there is now a consensus of opinion in favour of such a Bill and if it is the opinion that a levy for research would be found practicable in a sufficient number of cases and that advantage is likely to be taken fairly generally of the provisions of such a Bill, . . . the whole matter will receive sympathetic consideration by the Government."

THIS reply is encouraging, and has an important bearing on the investigations undertaken by a Joint Committee of the British Science Guild and Association of Scientific Workers as to whether the research associations should be financed by a levy on the industries concerned, or by a State grant for a limited number of years of a sum of money designed to form an endowed capital for research—such grants to be provided from the new revenue from tariffs, wireless licences or other sources.

The Panda or Cat-Bear

THE arrival at the Gardens of the Zoological Society of London of three specimens of that rare and most interesting animal the panda, or 'cat-bear' (*Aelurus fulgens*), should form an addition of no small interest to those visiting the Gardens during the summer months. The coloration of this animal is striking. The fur is of a rich chestnut-red, with white markings on the head, and black rings round the conspicuously long tail, while the under parts are almost black instead of the normal white. Though strictly speaking a carnivore, it is nevertheless almost omnivorous. For while small mammals and birds, eggs, insects and their larvæ form their principal diet, they also feed largely on fruit and many kinds of shoots, especially of the bamboo, of which they are said to be very fond. Having regard to their typically carnivorous dentition, this very mixed diet is noteworthy.

THE present geographical distribution of the panda is restricted to the Himalayas from Nepal to Xunnan, at an elevation of 6,000–11,000 ft., where they haunt trees or hide among boulders as circumstances determine, emerging in the early morning and evening to forage for food. Not much is known of their habits, as may be imagined from their almost inaccessible haunts, but observations on captive specimens have revealed some interesting facts, especially in regard to their mode of sleeping. Thus at times they will curl up like a cat, turning the long tail over the head; and at times they are said to sleep standing, with the head turned downwards between the forelegs after the manner of their near relations the racoons. When excited they emit a strong odour of musk. The panda is evidently a species which is dying out, for its range in past times

was vastly greater. This much is shown by the fact that a panda one and a half times larger than the existing species has been found in the English Pliocene. No fossil remains of pandas have yet been found in America. But having regard to its very near kinship with the racoons, they may yet be found.

Cane-Rats

ANOTHER addition to the Zoo worthy of note is three young cane-rats (*Aulacodus swinderianus*) from West Africa. These animals attain a considerable size when adult, the body measuring nearly two feet in length, exclusive of the tail, and weigh as much as 10 lb. They range from the Sudan to the Cape, and up the west coast as far as Sierra Leone. The fur is conspicuously bristly, speckled with yellow and brown. The incisor teeth are of great size and very powerful. The upper pair are marked by three vertical grooves, sufficiently deep to leave their mark on anything gnawed by these animals. They feed on roots and shoots, and sugar-cane where it is to be had.

Archæological Studies in Peru

IT would appear that the celebration, or rather the 'commemoration', to use the term preferred locally, of the fourth centenary of the Spanish capture of Cuzco, the capital of the Inca empire of Peru, has given rise to a wave of popular enthusiasm for archæology which has taken the practical form of a vote of £30,000 (according to a dispatch in the *Times* of March 27) to be expended on, *inter alia*, the establishment of an archæological institute for the study and display of Peruvian antiquities and on archæological exploration and research. Already substantial discoveries have been made in the excavation of Sachsahuaman, a site near Cuzco, where hundreds of workmen are engaged in uncovering the walls, buildings, conduits, etc., in beautifully hewn stone of this once important fortress, which has been pronounced to be the "most wonderful achievement of ancient man in the two Americas". Excavations have also been begun at Tambo-machal and Pisac, and are in contemplation at Ollantaytambo and Macchu Picchu, the last stronghold of Inca power. These operations are under the supervision of the Director General of the National Museum and are being conducted in accordance with the principles of scientific archæological research. Even at this early stage, attention has been directed to the problem of pre-Inca civilisation and the opportunities which it offers for investigation. Happily the foundations for its study on scientific lines have been laid down by the work of Prof. Max Uhle and others, and if funds which hitherto have been lacking for extended exploration are now to be available, many vexed and obscure problems of Central and South American archæology will come under review. The presence of a number of distinguished archæologists in Peru during the celebrations, which began on March 23 and will go on until July 18, will no doubt guide, as well as stimulate, local effort, which is inspired by motives not entirely unmixed. Even in Peru, archæology is not immune from the spur of over-enthusiastic nationalism.