CENTENARIES

Bugge, Thomas (1740-1815)

THOMAS BUGGE, a Danish astronomer, was born at Copenhagon, October 12, 1740. After a course in theology, he devoted himself to mathematics, astronomy, physics and mensuration. In 1761 he made observations on the transit of Venus. In 1777 he became professor of astronomy in the University of his native town. Next year he took charge of the observatory of the Round Tower. In 1798 he was deputed to work with the National Institute of Paris for securing uniformity of measures and weights.

The extreme accuracy of the excellent charts of Denmark, published by the Academy of Sciences, is mainly owing to him. His work on the coastal survey had considerable value. By his careful indication of every coast, harbour, island, rock and sand bank, the navigation of the Danish waters was made quite safe.

Bugge wrote more than a dozen papers of astronomical and geographical importance. The first of these was *Beskriveise over den Opmanlingsmethode som bruges ved de denske geographiske korter* (1779). The most used books of his are *De forste Grunde til den suhaeriske og theorestiske Astronomie, sand der mathematiske geographie* (1796) and *De forste Grunde til den rene ciller abstracte Mathematic* 3 D1. 1813–14.

Bugge died January 15, 1815.

Vigors, Nicholas Aylward (1785-1840)

NICHOLAS AYLWARD VIGORS, a British ornithologist, was born at Old Leighin in 1785. While he was at the Trinity College, Oxford, he wrote his *Enquiry into the nature and extent of poetick licence* which was published in 1810. After seeing military service in the Peninsular War, he qualified himself for the M.A. Degree in 1918. He was also created D.C.L. in 1832.

From early age Vigors had been forming extensive collections of birds and insects and these he presented to the Zoological Society which he helped in founding in 1826. He was the first secretary of the Society and held the office till 1833. His famous paper *On the natural affinities that connect the orders and families of birds* was published in 1819 in the *Transactions* of the Linnean Society. Between 1825 and 1836 he wrote some forty papers on ornithology. He assisted Sir William Jardine and Prideaux John Selby in their *Illustrations of ornithology* (1825–39) and wrote the section *Ornithology* for the *Zoology of Captain Beechy's voyage* (1839). He was also for some time joint editor of the *Zoological journal* (1828–35).

After sitting in Parliament for about eight years, as an advanced liberal, Vigors died at his house in Chester Terrace, Regent's Park, London, October 26, 1840.

Kohlrausch, Friedrich Wilhelm (1840-1910)

FRIEDRICH WILHELM KOHLRAUSCH, a German physicist, was born at Rinstein, October 14, 1840. Having studied at Gottingen and Erlangen, he became a professor of his University in 1866. After seeing some other appointments he became professor of physics in the University of Wurburg in 1875 and of Strassburg in 1888.

Physics was in the family so to speak. Kohlrausch's father was himself a physicist of great distinction. In conjunction with Weber he carried out for the first time a determination of the ratio of the electromagnetic to the electrostatic unit of electrical quantity and thus laid the foundation for the absolute system of electrical measurements. The son also specialised in the same subject. He also did much original work on the conductivity of solutions.

Kohlrausch wrote many papers and he is best known among students for his justly famous *Leitfaden der praktischen Physik* (1870) which was the first and also pronounced to be the best of its kind. It reached the eighth German edition in 1896 and went through two editions in English.

Kohlrausch died at Merburg, February 1910.

S. R. RANGANATHAN.

University Library,
Madras.

SCIENCE NOTES AND NEWS

Rare Fossils of Extinct Animals.—The discovery in the Badlands of South Dakota, of fossil bones of seventy-three specimens of extinct animals of the American West was announced recently by the *National Geographic Society*. The finds, many rare, and some probably new to science, were made by a paleontological expedition under the joint auspices of the Society and the South Dakota State School of Mines, under the leadership of Dr. Joseph P. Connolly, President of the School.

One of the outstanding specimens is. the largest rhinoceros skull and jaws yet found in the Badlands, the skull approximately 28 inches long. Another is a pig skull and jaws, 30 inches long, probably a new genus; and still another the joined skull and jaws of a protoceros, a queer six-horned creature remotely related to deer and antelope. Leg bones of a bird which had a body larger than that of the domestic turkey of to-day are believed to have belonged to a wading bird comparable to a crane, of a previously unknown species. Bird bones are extremely rare in the Badlands formations.

Other important and interesting specimens found include a fossil egg not yet identified; and bones of three-toed horses about the size of sheep; peccaries; tapirs; oreodonts, small, long-tailed, cud-chewing animals; ancodonts, somewhat similar creatures; ancodus, a sort of pig-hippopotamus; a wild dog; a small insect-eating creature, apternodus, the fossil remains of which are extremely rare; and other insect-eaters, as well as rodents. An unusual discovery turned up several skulls of baby rhinos, their youth shown by their "milk teeth".

The Total Solar Eclipse of October 1.—The expedition organised by the *National Geographic Society* and the *National Bureau of Standards* to observe the total solar eclipse of October 1, will go down to history as one of the most carefully planned and best equipped expeditions. The observation post lay in the neighbourhood of the village of Patos, in the heart of one of Brazil's most important cotton growing regions, some 200 miles from Recife (Pernambuco), Brazil. The programme followed by the expedition included "a complete motion picture record, in colour, of the eclipse from the appearance of the first nick in the sun's disk until the moon completely passed across its face; photographs of the 'flash spectrum' of the sun at the two instants when this phenomenon is visible (just before the beginning and just after the end of totality); repeated photographs of the spectra of the corona during the five minutes of totality; special large photographs of the corona, both in black-and-white and in colour, with varying exposures; records of the polarization of the coronal light; radiation, sky spectra, and temperature and density changes in the atmosphere during totality".

The two spectrographs used by the expeditionists are of unusual design; they are slitless, using concave gratings and no lenses. One instrument was employed for photographing the spectrum between 3,000 and 5,500 Å and the other between 5,000 and 10,000 Å. One of the gratings with 15,000 lines to the inch was prepared by Robert W. Wood of John Hopkins, and the other by Henry G. Gale of the University of Chicago, had 30,000 lines to the inch. Almost all the instruments used for observation were "tied together" by a combined electric and vacuum control system, making the operation of the numerous units almost completely automatic.

The results of the expedition are awaited with much interest.

Adult Education in India.—Appendix III to the *Proceedings* of the fifth meeting of the **Central Advisory Board of Education in India** is really, for the most part, a Report on Adult Education in India, as indicated in its sub-title. The Committee which makes the Report was set up by the Central Advisory Board on Education in 1939.

Adult education is a problem in which not only officers of government but all persons interested in education must be well informed. Therefore a valuable Report such as this should be published in a form likely to attract the attention of the general public.

The first twenty pages of the booklet, which contains the main body of the Report, presents a most careful consideration of the problem of adult education in this country in all its aspects. To begin with, the problem is defined and distinguished from what goes on in Europe under the same name. Thereafter, various practical suggestions are offered in regard to the organization, technique, aids and appliances, preparation of teachers, and finally, administration and finance. No less than twenty-six separate recommendations are made, and with most of these the Advisory Board is in substantial agreement. The rest of the booklet is occupied with an account of the measures taken in recent years by the various provincial governments as well as by the governments of the larger Indian States in order to promote adult education.

It is sometimes complained that valuable official publications remain in obscurity because they are not well got up and given arresting titles. There is no doubt that this is the case here. The booklet is got up in a format which affords no clue as to the value of the material inside its covers. On the contrary, everything about the booklet is suggestive of matters of passing interest. The light is thus hidden under a bushel.