

come. And whenever any people forgets the source from which these great things have come, and allows engineering to supplant science, that people is on the way to the civilisation of China."

MESSRS. MARION AND CO. have just commenced the publication of reproductions of a fine series of photographs of "The Empire: its Cities, Palaces and Buildings." The views can be obtained in half-tone process prints or reproduced by collotype process. In the collection of pictures of "Famous Buildings of London," which forms one number of the series, we notice views of the Imperial Institute and the British Museum. The Natural History Museum deserves to be included, but there are few other fine buildings devoted to scientific research and education in London. Fine buildings do not necessarily make fine work, but they facilitate it and show in what regard the nation holds those who contribute to its scientific and industrial progress.

ABSTRACTS of the papers read before the Royal Society of New South Wales appear regularly among our reports of societies and academics. The volume of *Proceedings* containing the complete papers read before the Society in 1900 has now been received, and calls for a note of admiration. Among the subjects dealt with are the sun's motion in space, and the volumes of solids as related to transverse sections, by Mr. G. H. Knibbs; several papers on eucalyptus oils, by Mr. H. G. Smith; customs of Australian aborigines, by Mr. R. H. Mathews, Mr. W. J. Enright and Miss M. M. Everitt; the crystalline structure of some gold, silver and copper nuggets, by Prof. A. Liversidge, F.R.S.; and an experimental investigation of the strength of brickwork when subjected to compressive and transverse stresses, by Prof. W. H. Warren and Mr. S. H. Barraclough.

THE additions to the Zoological Society's Gardens during the past week include a South Albemarle Tortoise (*Testudo vicina*) from the Galapagos Islands, a Conical Eryx (*Eryx conicus*) from India, deposited; a Shag (*Phalacrocorax graculus*), European, purchased; an Axis Deer (*Cervus axis*), born in the Gardens.

### OUR ASTRONOMICAL COLUMN.

NEW VARIABLE STARS.—The following newly-detected variables are announced in the *Astronomische Nachrichten* (Bd. 157, No. 3751):—

94, 1901, *Cygni*.—

A.G. Bonn (B.D. +41° 41'14")  
R.A. = 21h. 17m. 42s. } (1875°)  
Decl. = +41° 51'8"

Herr Fr. Deichmüller states that there is a variation of about half a magnitude; the times are not sufficiently continuous to deduce a value of the period.

95, 1901, *Pegasi*.—Dr. T. D. Anderson announces variability in the star B.D. +24° 44'6", whose position is

R.A. = 21h. 37m. 56s. 0 } (1855°)  
Decl. = +24° 20'6"

The star is sometimes about 10 magnitude, but at intervals becomes much fainter.

96, 1901, *Cygni*.—Mr. Stanley Williams finds from photographs taken with a 4¼-inch portrait lens that variability exists in the star B.D. +29° 42'31".

R.A. = 20h. 49m. 2s. 1 } (1855°)  
Decl. = +29° 51'8"

The following variations are recorded:—

1901 Sept. 21 ... 10·81 mag.	1901 Nov. 1 ... 9·88 mag.
Oct. 7 ... 10·26 "	" 3 ... 10·47 "
" 14 ... 9·79 "	

These indicate a maximum of 9·7 magnitude on 1901 October 21. The star was invisible on plates taken on 1899 October 6 and 9, 1900 October 26, 27 and November 15, so that it must have been fainter than 12 magnitude. The period is at present uncertain.

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BRIGHT METEOR OF DECEMBER 4.—A brilliant meteor was seen by several observers shortly after five o'clock in the evening of Wednesday in last week, December 4. Prof. J. P. O'Reilly, writing from Dublin, says:—"At 5h. 11m. p.m. this evening I saw in the south-eastern sky a brilliant meteor, which appeared at a point about 30° above the horizon and had a course about equal in length to the belt of Orion. The fore part was brilliant bluish-white, the after part red sparks. The direction of movement made with the horizon an angle of about 60° to 65°, the inclination of the line of movement being to the south. There were no stars visible by which I could more distinctly fix its position."

Mr. C. Waterer (Highfield, Northdown Avenue, Margate) and two friends saw the meteor while walking towards Kingsgate, near Margate. He remarks, "The trail remained visible to us all for some seconds. We were then looking west, and its direction was approximately from north to south. The time by my watch was 5·35 p.m."

"COMPANION TO THE OBSERVATORY," 1902.—This almost indispensable handbook for the practical observer has recently been issued for the coming year. The contents and arrangement are similar to those of previous issues. A small addition which will be useful to spectroscopists is the list of spectroscopic double stars, with their periods so far as is at present known.

### THE VARIATIONS IN THE MAMMALIAN EYE.<sup>1</sup>

DR. LINDSAY JOHNSON'S work, in the investigation of the deep anatomy of the mammalian eye as displayed by the ophthalmoscope, has been of a very extensive and persevering, not to say of a very adventurous character; and the volume before us, containing his contribution on the subject to the *Transactions* of the Royal Society, represents no more than a fraction of the material which he has collected, and which he intends, we understand, one day to publish. Not the least interesting part of it will be that which will deal with his methods, with the perils occasionally attendant upon them, and with the contrivances by means of which a living lion and a living whale were compelled to submit themselves to ophthalmoscopic examination. Mirror in hand, Dr. Johnson has not only visited the zoological gardens of many countries, but also the native haunts of many wild creatures; and in the book before us some of his discoveries are displayed in twenty-six plates, containing fifty coloured drawings of eyegrounds, beautifully finished and exquisitely reproduced in chromo-lithography, and in three plates with drawings in black and white, showing variations in the forms of persistent hyaloid artery, rudimentary forms of pecten, and different types of the appendages which are found on the pupillary margins of many of the ungulata.

The general result of Dr. Johnson's observations is to show the existence among mammalia of very wide differences in two respects; first, as regards the vascular supply of the optic nerve and retina; secondly, as regards the presence, coloration and pigmentation of the tapetum.

With regard to the first of these, it may be said that the general type presented by the human eye, that is, the presence of a central artery and vein of the retina, finding entrance and exit among the fibres of the optic nerve, and constituting a practically closed and complete retinal circulation, is more or less preserved in monkeys, lemurs, the carnivora, some of the ungulata, some of the rodentia, and some marsupialia, but is either absent or concealed by tapetum in the Australian fruit-bat, the Indian rhinoceros, Burchell's zebra, the American tapir, the African elephant, the Canadian beaver, the chinchilla, the guinea-pig, the Central American agouti, the Brazilian porcupine, the hairy armadillo, the wombat, the squirrel-like phalanger and the echidna; while among these latter animals there are great differences in the blood-supply of the optic disc itself, which in some of them, as in the Indian rhinoceros and the hairy armadillo, is of a dead white like the whiteness of atrophy in the human subject; while in others, as the zebra, it is abundantly vascular, and is surrounded by a radiation of small

<sup>1</sup> "Contributions to the Comparative Anatomy of the Mammalian Eye, chiefly based on Ophthalmoscopic Examination." By George Lindsay Johnson, M.D., F.R.C.S. From the *Philosophical Transactions* of the Royal Society of London for 1901. Pp. 82, with 26 plates in colour and 4 in black and white. Price 27s.