

THE issue of the "Statesman's Year-book" for 1910 has been published by Messrs. Macmillan and Co., Ltd. This is the forty-seventh annual publication of an invaluable work of reference. The information throughout the 1500 pages has been corrected to the latest available date, and the changes made necessary by the death of King Edward VII. and the accession of King George V., as well as those arising out of the Union of South Africa, have been recorded. The proposed changes in the administration of the Belgian Congo are indicated; the sections on China and on the Anglo-Egyptian Sudan have been improved. Among matters of current interest, reference may be made to the articles on "Second Chambers" and the results of the census of production. As usual, the annual provides a number of new maps, and among them may be mentioned those showing the development of the Congo, the proposed Central Scotland and Georgian Bay Ship Canals, the United South Africa and South African railways, and South America, showing the railways. Altogether, this edition of the "Year-book" is well up to the high standard one associates with Dr. Scott Keltie's editorship. The price of the book is 10s. 6d. net.

MESSRS. REBMAN, LTD., hope to publish during the present month a new book by Dr. Bernard Hollander entitled "The Mental Symptoms of Brain Disease," with a preface by Dr. J. Morel, Belgian State Commissioner in Lunacy.

A SECOND edition of Dr. Washington's "Manual of the Chemical Analysis of Rocks" has been published by Messrs. John Wiley and Sons in New York and Messrs. Chapman and Hall, Ltd., in this country. The first edition appeared in 1904, and was reviewed in these columns on January 5, 1905 (vol. lxxi., p. 219). The present issue has been revised and somewhat enlarged.

#### OUR ASTRONOMICAL COLUMN.

HALLEY'S COMET.—Dr. Ebell's ephemeris for Halley's comet is continued in No. 4423 of the *Astronomische Nachrichten*, and gives the positions, &c., up to September 18. On July 16 the comet will be in R.A. 10h. 59.4m., dec.  $-4^{\circ} 2.7'$ , and its estimated magnitude will be 6.3, so that further observations in these latitudes are impossible. The distances from the earth and sun, on that date, will be 197 and 162 million miles respectively.

Owing to its apparent proximity to the sun, the comet could not be extensively photographed at any one observatory, but it is hoped that when the results from various observatories come to be compared, there will be a fairly continuous record which will enable the changes in the tail to be closely followed. An example of such change is afforded by the negatives secured at Johannesburg on April 21 and Kodaikanal on April 22, the latter showing, among other changes, a large contorted streamer on one side; the similarity to the tail of Morehouse's comet is thus emphasised.

A spectrum of the comet, taken at Mount Wilson, was described by Prof. Fowler, at the last meeting of the Royal Astronomical Society, as being of the usual type. Dark Fraunhoferic lines, due to reflected sunlight, are shown in the narrow strip of the spectrum due to the nucleus, and in that of the coma the bands at  $\lambda\lambda$  473, 421, and 388 are seen. Prof. Fowler suggested that the unequal intensities of the five heads in the cyanogen, 388, band were, possibly, indications of a rather low pressure condition. A comparison of this spectrum with that of Daniel's comet (1907), taken by Prof. Campbell, shows that they are practically identical.

In the *Comptes rendus* (No. 1) for July 4 Prof. Eginitis describes the appearance of the comet at Athens since its inferior conjunction. An increased activity of the nucleus ejected large masses of matter to great distances, and on May 31 an aigrette was seen, which was brighter than the nucleus itself and turned away from the sun; this was made up of straight streamers  $50^{\circ}$  long diverging to form

an angle of  $60^{\circ}$ . It was also noticed that, after the passage, the tail became much more brilliant than before, an effect which the author ascribes, in great part, to the change in the relative positions of the comet, the sun, and the observer. From this he deduces that the brilliancy of the tail is largely due to reflected sunlight, and suggests that it affords further evidence that the tail is, to an appreciable extent, made up of fine, solid particles.

Photographic and visual observations of the spectrum, made at the Madrid Observatory since the conjunction, are described by Father Iniguez. Photographs taken on June 1, 3, and 6 show the continuous spectrum and seven superposed monochromatic images of the coma. The three least refrangible of these were observed in May, and of the four new ones the two brightest are in the extreme ultra-violet, beyond the continuous spectrum. The plate taken on June 1 shows each of the three less refrangible bands doubled. Three of the four more refrangible bands are well defined, and their wave-lengths are given as 437, 425, and 391; the other is broad, extending from  $\lambda$  399 to  $\lambda$  407. The visual observations indicate an intrinsic change in the band recorded as  $\lambda$  567 on May 27 and as  $\lambda$  559 on May 30; on the former date the red edge was sharp, whereas on the latter it was diffuse, and was not the most intense part of the band. The green band at  $\lambda$  512 on May 27 and  $\lambda$  516 on May 30 was sharp and apparently composite, and the difference of wave-length is attributed to a relative change in the intensities of the components *inter se*. Apparently the band at  $\lambda$  472 did not change. The visual and photographic observations of the tail showed various, although not pronounced, changes, which are discussed in the note; until May 6 the tail was of the first type, but from then until the passage of the comet it was of the second, reverting to type i. after the passage.

PREVENTION OF DEW DEPOSIT UPON LENS SURFACES.—In a paper published in No. 7, vol. lxx., of the *Monthly Notices*, Mr. Franklin Adams states that the Mervel Hill photography of the northern hemisphere stars could have been completed in two years instead of nearly six if some means had been devised for preventing the deposition of dew on the lens surfaces.

He then describes a method by which the difficulty has now been overcome. An air-pump, driven by a motor, delivers a current of dried air on the lens surfaces, inside the camera, and on the film of the plate, thus preventing the dew deposits. The air is dried by forcing it over pumice stone soaked in sulphuric acid and then over glass wool.

A VARIABLE STAR AS A TIME CONSTANT.—Having regularly observed a variable star, No. 33 in the Harvard list, in the cluster M. 5 (Libra), Prof. Barnard discusses its light-changes in No. 4409 of the *Astronomische Nachrichten*. This star was compared with a neighbouring star, which is designated *k*, and for ten years its period has apparently remained unchanged. Therefore Prof. Barnard suggests that it, and other similar variables, might prove useful for providing a check on the constancy of the earth's rotation, or any other possibly variable elements of the solar system. It rises sharply to a maximum, at which it seems to remain for only a few minutes, and then declines quickly until it is as bright as *k*; after that the decline is more leisurely. At minimum the magnitude is 14.6, and the increase is rather more than 1.2 magnitudes, the period being  $0.50147+d$ . To facilitate observations of this interesting time-standard, Prof. Barnard gives an ephemeris which is useful up to the year 1918.

RADIATION AND ABSORPTION.—In discussing various astronomical phenomena, the observer often has to study numerous laws concerning radiation and absorption, and this frequently necessitates looking them up especially. To obviate waste of time in this direction, Prof. Humphreys brings together, in No. 4, vol. xxxi., of the *Astrophysical Journal*, the chief laws, and discusses the general formulæ by which they are expressed. Thus the equations for the Doppler, Maxwell-Bartoli, Zeeman, and other effects are explained, and the most convenient formulæ for general use are collected in an invaluable summary which should prove of great convenience.