

A MEMORANDUM on the probable character of the weather in north-west India in January, February, and March 1923 was prepared by Dr. G. T. Walker, director-general of Indian observatories, and submitted to the Government of India on January 5. The data which control the amount of rain and snow to be expected are:—(a) The recent weather conditions in Persia and north-west India; these are slightly favourable. (b) The seasonal change in the upper air in northern India, which is slightly adverse. (c) The atmospheric pressure over India in the previous October and November, which is neutral, October being above normal and November below normal. (d) Rainfall at Seychelles and Zanzibar; rainfall at Seychelles was in defect in November and December, and at Zanzibar it was in excess in December. On the whole the indications point to a slight defect in the winter precipitation, but the indications are said not to be sufficiently pronounced to justify a forecast of a deficiency.

REFERRING to the obituary notice of Prof. George Lunge in NATURE of February 17, p. 228, a correspondent has pointed out the last paragraph might give the impression that Dr. Hurter was of German nationality whereas he was a native of Schaffhausen,

Switzerland. The writer of the notice was concerned rather with the influence exercised at the time by the German universities in providing opportunities, not necessarily for Germans alone, for scientific training as chemists, some of whom came to England to acquire knowledge and experience of the practical applications of the science.

WE have received from Messrs. A. Gallenkamp and Co. a catalogue of "Electrometric Apparatus for determining Hydrogen Ion Concentrations." This includes an apparatus for determining hydrogen ion concentrations both for work of high accuracy and for routine industrial work.

MESSRS. BOWES AND BOWES, 1 Trinity Street, Cambridge, have just issued a very useful catalogue (No. 417) of second-hand books, journals, and portraits of scientific interest offered for sale by them. It contains 1158 titles, which are classified under the following headings: Journals, etc.; Agriculture; Anthropology and Ethnology; Biography; Biology; Botany (including Forestry and Gardening); Geology; Microscopy; Zoology (including Ornithology and Entomology); General Science; Chemistry; Physics (including Einstein Theory); Medical (including Physiology); Portraits.

Our Astronomical Column.

INCREASE OF BRIGHTNESS OF BETA CETI.—There appears to be no reason to doubt the news that this star has brightened by more than a magnitude in the last week or so. The change was first observed by a British schoolboy named Abbott, resident in Athens; being a member of La Société Astronomique de France, he telegraphed to M. Cahille Flammarion at Juvisy, whose assistant, M. Quémisset, confirmed the brightening. Apparently further confirmation has been received from the United States. Unfortunately the star is observable in England only by day or in very bright twilight, and the skies have not been propitious for studying it. Data for drawing the light curve are not yet to hand, so that it is premature to speculate on the probable cause of the increase of light. The news hitherto available comes through the daily press; the Astronomical Bureau at Copenhagen has made no communication.

THE ZODIACAL LIGHT.—Mr. W. F. Denning writes:—During the period from about March 8–20 and April 4–18, the zodiacal light may be well observed on clear evenings in the absence of moonlight. It will be visible about two hours after sunset as a faint glow extending upwards, obliquely, through the constellations of the Zodiac, and broadest at its base on the western region of the horizon. It apparently varies from night to night, for its visibility is evidently influenced by atmospheric conditions. Careful observations of the degree of luminosity, positions, and boundaries of the light on successive evenings will be valuable. The most probable explanation of the phenomenon is that it is due to the sun's reflected light on myriads of meteoric particles belonging to systems of little inclination and situated at moderate distances from the sun.

THE SPECTRA OF VISUAL DOUBLE STARS.—Mr. F. C. Leonard publishes in the Lick Observatory

Bulletin (No. 343) an important contribution to the study of the spectra of visual double stars. If the components of a double star had a common origin, a knowledge of the spectral relationships existing in different systems, presumably at various stages in the course of evolution, might be expected to disclose the general trend and the comparative rates of development of these stars. It was with the intention of gaining more knowledge on this subject that Mr. Leonard commenced this investigation in 1920. From a study of eighty visual double stars specially observed for this work, he finds that the spectrum of the secondary component of a dwarf star is generally of a later class and that of a giant star is of an earlier class than the primary. In both giant and dwarf stars the greater the difference in magnitude between the primary and secondary the greater is the absolute difference in spectral class.

The spectrum of each component of a double star appears to be a function mainly of its absolute magnitude; or in other words, the spectra of the components of double stars are so related to each other that, with but few exceptions, these systems conform to the Hertzsprung-Russell arrangement for individual stars, plotted according to spectral class and absolute magnitude. In this configuration, the fainter component normally precedes the brighter one, regardless of whether the latter be a giant or dwarf in the order prescribed by the Lockyer-Russell theory of stellar evolution. The two earlier conclusions are special phases or necessary consequences of this generalisation. Thirteen binary systems, all stars of which were dwarfs, indicated that as the sum of the masses of the components increased, their disparity in spectral class approached zero. Of any two stars of unequal mass but of otherwise identical physical properties, that with the less mass will in general pass through its life history in advance of the more massive one.