

exclude atmospheric nitrogen from the apparatus employed, the less becomes the apparent excretion of nitrogen by the animal. This, taken in connection with the similar fact already mentioned, regarding the results of experiments by the other method, is significant. If, as we increase the delicacy of our experimental methods, the apparent excretion of free nitrogen becomes less and less, it is not a very bold assumption which regards it as entirely due to the unavoidable errors of experiment. That such is the case is perhaps not proven, but the weight of evidence is decidedly in favor of that belief.

H. P. ARMSBY.

THE BRITISH NAUTICAL ALMANAC.

WE have received promptly, as usual, the "Nautical almanac and astronomical ephemeris for the year 1888, for the meridian of the Royal observatory at Greenwich," the contents and arrangement of which are announced to be the same generally as those of the preceding year. We find no changes in the adopted astronomical constants, nor have any new prediction-tables been substituted for those which have now been employed for many years. The early Struve constant of aberration is not replaced by the recent Pulkowa determination, and Newcomb's mean equatorial horizontal parallax of the sun, 8.848", is wisely retained. The fundamental elements of the moon's position in space are derived from Hansen's tables unaltered, and the apparent positions only are modified by Newcomb's corrections,—a method of procedure which seems to be best adapted to the needs of the future investigator.

For the first time in the history of nautical almanacs, the positions of all the great planets were derived from a uniform system of tables, and so published in the British 'Nautical almanac' for 1882; and the use of these same tables is still adhered to. These are the planetary tables constructed by the late Leverrier, and printed in the fifth, sixth, twelfth, and fourteenth volumes of the 'Annales de l'Observatoire impérial de Paris.' The derivation of the times of the phenomena of Jupiter's satellites is based on the 'Tables éclipiques des satellites de Jupiter, par le Baron de Damoiseau,' Paris, 1836. Professor Adams's extension of these tables, now employed in the British 'Nautical almanac,' will expire in two years more.

This ephemeris is now most deficient in its list of standard stars, the number and relative positions of those in the list being entirely inadequate to the needs of field and observatory work. Catalogues of stellar co-ordinates of high precision are now so numerous that there would seem to be no good reason why the British 'Nautical almanac' should hesitate in following the 'Berliner astronomisches Jahrbuch,' the 'Connaissance des temps,' and the 'American ephemeris,' all of which have within a few years adopted very full lists of standard stars. Also great improvements might be suggested for other parts of the work.

Ever since the year 1834, when the English 'Nauti-

cal almanac' became an astronomical ephemeris as well, the management of this publication has been characterized by a conservatism, which, in these times of change just for change, is delightful to behold. But even conservatism may be unwise; and, if the British 'Nautical almanac,' as an astronomical ephemeris, is to hold in the future the place it has held in the past, a committee of reconstruction, somewhat like that 'relative to the improvement of the Nautical almanac' in 1830, would seem to be required to effect the needed modifications.

DAVID P. TODD.

CONTAGIOUS DISEASES OF DOMESTIC ANIMALS.

THE agricultural department at Washington has just issued a volume of some three hundred and fifty pages devoted to the above subject, as the result of the investigations of its veterinary division,—an office distinct from the more newly established 'bureau of animal industries.' The subject-matter, being made up of the reports of the veterinarian-in-chief and his assistants, is of a sort that will, in a way, be interesting and instructive reading for veterinarians, and to a certain extent for comparative pathologists.

The volume opens with a description of a 'veterinary experimental station' recently located, in connection with the department, near Washington, which seems to afford abundant facility for the proposed work, and from which, in the future, much that will tend greatly to aid in protecting our animal interests from the ravages of disease will undoubtedly result. Then follows a detailed report of outbreaks of contagious pleuro-pneumonia among cattle in Connecticut, New Jersey, Pennsylvania, and Maryland. These have an historical interest, but nothing more, because these states have repeatedly been shown to contain this exotic disease; and it has just as repeatedly been shown that a more or less constant interchange of it goes on with the natural traffic of cattle within their borders.

An exceedingly interesting and carefully written report is made by Dr. Salmon upon an enzootic outbreak of ergotism among cattle in Coffey county, Kan. It is very much to be regretted, for the sake of the department, the cattle interests of Kansas, and the veterinary profession, that, under the circumstances, Dr. Salmon did not himself attend to the matter when first it was reported to be an outbreak of 'foot and mouth disease,' instead of trusting so important a decision to such an unsafe man as 'V. S.' Trumbower proved to be, who, by his own report of the matter given in this same volume, seems to have arrived upon the ground on the afternoon of March 8, to have examined the cattle and their surroundings carefully, and to have then entertained the opinion that the trouble was due to 'foot and mouth disease,' until the 20th of the same month, when he was joined by Dr. Salmon. He then suddenly became as firmly convinced that the trouble was due to ergotism. Is