

barrels take a charge of ten tons of ore, instead of only five. The filter inside the barrel is retained, but the expensive asbestos cloth, which lasted for only a few charges, is replaced by a cheap sand-filter, which, it is stated, is not shifted by the rotation of the barrel, and does not become clogged until after it has been used for about 100 charges, or say a month. While the Americans are thus engaged in perfecting the barrel process, the Australians have abandoned it altogether. At the Mount Morgan Mine, where there is the largest chlorination plant in the world, the vats have been reintroduced, but are much enlarged, each having a capacity of twenty-five tons. Chlorine water is used, the consumption of chemicals being less, and the reagent more under control than if gas is pumped into the charge. The use of bleaching powder and sulphuric acid for generating the gas has been superseded again by manganese dioxide, salt and sulphuric acid, and the installation of chlorine stills, towers, and solution tanks. The extraction of gold at Mount Morgan is about 95 per cent. of the total amount in the ore, and the cost of treatment, now about 15s. per ton, is expected to be reduced to 12s. per ton by the more extended use of revolving furnaces. The total production at the mine is at the rate of over 100,000 ounces of gold per annum. The impetus given to the barrel chlorination process a few years ago seems, from the above facts, to have spent its force.

THE *Bulletin* of the Kansas Experimental Station records instances of the poisoning of cattle by eating the stalks of Indian corn, from the very large amount of potassium nitrate which they contain.

OUR attention has been drawn to two laborious investigations by E. Mazelle, of the Trieste Observatory, recently presented to the Vienna Academy of Science, relating to the daily and yearly range of variability of temperature, and to the relations between the usual mean value and the "most frequent" values of temperature, as deduced from the records of fifty years, 1841-90. The difference between the mean and most frequent values has been discussed by various authorities, notably by Dr. J. Hann in the second edition of his "Climatology." The observations for each month, or year, are grouped so as to show how often a certain value, or interval of temperature occurs, and from these a curve is drawn which differs, according to circumstances, from one showing the mean values, and, while not superseding the latter, is of considerable interest for comparison with it. For various interesting details we refer our readers to the original papers.

THE third edition of M. Faye's "L'Origine du Monde" (Gauthier-Villars, Paris) has lately been published. In this volume M. Faye states and discusses various theories and beliefs held as to the mode of the genesis of worlds, from the Mosaic record to the views of Kant and Laplace, and of their successors. Within the past ten years much work bearing upon the evolution of worlds has been done. Long-exposure photographs of nebulae have given astronomers more information upon cosmical genesis than all that was known before their era, and photographs of spectra have enabled spectroscopists to arrange celestial objects in order from the youngest to the oldest. We naturally turned to the new edition of M. Faye's book expecting to find the work of recent years set down with the fulness which it deserves. But we were disappointed. Instead of a picture of Dr. Roberts' photograph of the Andromeda nebula, there appears a venerable cliché which ought to be banished from every book that pretends to represent astronomical knowledge of to-day. The same remark applies to the picture and the spectrum of the Orion nebula, of the spectrum of Sirius, and to most of those in the volume. When the first edition of the book appeared, such illustrations might have passed muster; but in these days of abundant photographs

and cheap process-blocks, there is no excuse for offending the sight with them. We cannot see any difference between the third edition of M. Faye's book and the first edition, as regards illustration, and little difference as regards the text.

THE additions to the Zoological Society's Gardens during the past week include a Persian Gazelle (*Gazella subgutturosa*, ♂) from Persia, presented by Mr. F. Greswolde-Williams; two Polecats (*Mustela putorius*, ♂ ♀), British, presented by Mr. A. H. Cocks; a Yellow-fronted Amazon (*Chrysotis ochrocephala*) from Guiana, presented by Lieut.-General Arthur Lytton-Annesley; two West African Love-Birds (*Agapornis pullaria*) from West Africa, presented by Mrs. Otto Fell; a Crowned Duck-Bird (*Cephalophus coronatus*, ♀) from West Africa, two King Penguins (*Aptenodytes pennanti*) from the Macquarie Islands, purchased.

ERRATUM.—In the article on "The Habits of the Cuckoo" (p. 176), for Dr. Reh read Dr. Rey.

OUR ASTRONOMICAL COLUMN.

HIND'S VARIABLE NEBULA.—Further confirmation of the variability of the nebula N.G.C. 1555, discovered by Dr. Hind in 1852, has been obtained by Prof. Barnard (*Monthly Notices*, vol. lvi. p. 66). It may be remembered that so recently as February 1895, the nebula was an easy object in the Lick telescope, while Struve's nebula, in the immediate neighbourhood, was absent, and the nebulosity round τ Tauri was imperceptible (*NATURE*, vol. lii. p. 180). Under the very best conditions of observation in September last, however, Hind's nebula seemed to have entirely vanished, although every means was tried to see it. This appears to definitely prove that the light of the nebula fluctuates, and it is therefore desirable that the place of this object should receive careful attention. τ Tauri was involved in a small hazy nebulosity, but the definite nebula in which it shone in 1890 did not exist four months ago.

α CETI.—The last two or three maxima of this well-known variable star have occurred considerably later than the computed times, and the present, or perhaps approaching, maximum is similarly behindhand. According to the ephemeris in the *Companion to the Observatory*, there should have been a maximum on December 9, but on January 8, the star had barely reached 4th magnitude. The star is now much more favourably situated for observation than during several preceding maxima; and, in view of the irregularity to which reference has been made, it is important that the magnitude should be recorded as frequently as possible. Spectroscopic observations will also be valuable, and it may not be out of place to suggest a special look-out for bright lines of helium and the associated gases, as well as observations of the varying relative brightness of the carbon fluting slightly more refrangible than the δ group of magnesium.

STELLAR VELOCITIES WITH OBJECTIVE PRISM.—The great advantages of the objective prism over the slit spectroscope for photographing the spectra of stars have been abundantly demonstrated, but hitherto the latter form of instrument has been considered essential for precise determinations of velocities in the line of sight. An adaptation of the objective prism for the latter purpose is proposed by M. Deslandres (*Observatory*, January). In the arrangement suggested, the collimator of an ordinary spectroscope is placed in a direction perpendicular to the rays proceeding from the star, and the light passing through the slit from the comparison spark is reflected upon the objective prism by a small totally-reflecting prism. The collimator, objective prism, and photographic telescope, thus constitute a complete slit spectroscope. With the aid of the auxiliary visual telescope, the spectrum of the star is photographed with the objective prism in the ordinary way, and during the exposure the terrestrial spectrum is photographed nearly alongside that of the star, the adjustments having been so made that lines of equal refrangibility in the two spectra are in the same straight line. The spectrum of a star with which a comparison of velocity is desired, or may be that of the same star after an interval, is then photographed adjacent to the first, with the help of the visual telescope; and another terrestrial spectrum is photographed alongside the previous one, a different part of the