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 The use of bleaching powder and sulphuric acid for generating the gas has been superseded again by manganese dioxide, salt and sulphuric acid, and the installation of chlorine stills, towers, and solution tanks.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 15*s.* per ton, is expected to be reduced to 12*s.* 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 nebulæ 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 cliche 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 subgutterosa*, ♂) 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 Lyttleton-Annesley; two West African Love-Birds (*Agapornis pullaria*) from West Africa, presented by Mrs. Otto Fell; a Crowned Duyker-Bok (*Cephalophus coronatus*, ♀) from West Africa, two King Penguins (*Aptenodytes pennanti*) from the Macquari 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.

o 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 *b* 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

slit being exposed to the spark. This comparison of terrestrial spectra enables the errors due to temperature and flexure to be determined, and the difference of velocity of the two stars is given by the displacement of the two stellar spectra minus that of the two terrestrial. Evidently the accuracy will depend very largely upon the precision in setting the two stars in the visual telescope; to secure this it is proposed to attach a small photographic telescope to the guiding telescope, and to photograph the two stars, together with a reticule, which will enable the deviation, if any, to be measured and allowed for. To get the absolute velocity of a star, it must be compared with a star of known velocity, or Orbinsky's method (NATURE, vol. lii. p. 155) of measuring the contraction or dilatation of the whole spectrum may be applied. In the latter case, the absolute velocity could be determined directly, since effects of temperature, &c., would be eliminated.

A NEW STAR IN CENTAURUS.[1]

A NEW star in the constellation Centaurus was found by Mrs. Fleming on December 12, 1895, from an examination of the Draper Memorial photographs. Its approximate position for 1900 is in R.A. 13h. 34·3m., Dec. −31° 8′. Attention was called to it from the peculiarity of the spectrum on a plate taken at Arequipa on July 18, 1895, with the Bache Telescope, exposure 52 mins. The spectrum resembles that of the nebula surrounding 30 Doradus, and also that of the star A.G.C. 20937, and is unlike that of an ordinary nebula or of the new stars in Auriga, Norma, and Carina. This object is very near the nebula N.G.C. 5253, which follows 1·28s., and is north 23″. No trace of it can be found on 55 plates taken from May 21, 1889, to June 14, 1895, inclusive. On July 8, 1895, it appeared on a chart plate, and its magnitude was 7·2. On a plate taken July 10, 1895, its magnitude was also 7·2. On December 16, 1895, a faint photographic image of it, magnitude 10·9, was obtained with the 11-inch Draper Telescope, although it was very low, faint, and near the sun. On this date, and on December 19, it was also seen by Mr. O. C. Wendell with the 15-inch Equatorial as a star of about the eleventh magnitude. An examination with a prism showed that the spectrum was monochromatic, and closely resembled that of the adjacent nebula. Although the spectrum is unlike those of the new stars in Auriga, Norma, and Carina, yet this object is like them in other respects. All were very faint or invisible for several years preceding their first known appearance. They suddenly attained their full brightness and soon began to fade. Like the new stars in Cygnus, Auriga, and Norma, this star appears to have changed into a gaseous nebula.

The star which was photographed in 1887 in the constellation Perseus apparently belongs to the same class. Its approximate position for 1900 was in R.A. 1h. 55·1m., Dec. + 56° 15′. Eight images of it were obtained on the Draper Memorial photographs in 1887, all in exactly the same place. Its photographic spectrum showed the hydrogen lines Hβ, Hγ, Hε, and a line near 4060, bright, and from this property it was discovered by Mrs. Fleming and assumed to be an ordinary variable star of long period. The spectrum is so faint that it is impossible to decide from it whether it should be regarded as a new star of the class of Nova Aurigæ, or as a variable star of long period like *o* Ceti, as the hydrogen lines are bright in both these classes of objects. This star soon faded away and does not appear on 81 photographs taken during the last eight years. It has also been repeatedly looked for in the sky without success. No trace of this star appears on two photographs taken November 3, 1885, and December 21, 1886.

A list of the new stars hitherto discovered is given in the annexed table. Some changes would occur in it, if changes were made in the definition assumed for this class of objects. Early observations of several objects frequently called new stars, but which may have been comets, and whose positions are uncertain, have not been included. The stars T Bootis and U Scorpii have not been included, although they also may be new stars, as only one appearance of each has been noted. The name of the constellation is followed by the right ascension and declination for 1900, and the greatest brightness. The year of appearance is followed by the name of the discoverer; or, in the case of the earlier stars, of the principal observer.

[1] *Harvard College Observatory Circular*, No. 4.

NEW STARS.

Constellation.	R.A. 1900.	Dec. 1900	Mag.	Year.	Discoverer.
	h. m.	° ′			
Cassiopeia	0 19·2	+63 36	−5?	1572	Tycho Brahé
Cygnus	20 14·1	+37 43	3?	1600	Janson
Ophiuchus	17 24·6	−21 24	−4	1604	Kepler
Vulpecula	19 43·5	+27 4	3	1670	Anthelm
Ophiuchus	16 53·9	−12 44	5	1848	Hind
Scorpius	16 11·1	−22 44	7	1860	Auwers
Corona Borealis	15 55·3	+26 12	2	1866	Birmingham
Cygnus	21 37·8	+42 23	3	1876	Schmidt
Andromeda	0 37·2	+40 43	7	1885	Hartwig
Perseus	1 55·1	+56 15	9	1887	Fleming
Auriga	5 25·6	+30 22	4	1891	Anderson
Norma	15 22·2	−50 14	7	1893	Fleming
Carina	11 3·9	−61 24	8	1895	Fleming
Centaurus	13 34·3	−31 8	7	1895	Fleming

THE ETHNOLOGY OF THE BRITISH UPPER CLASSES.

IN "L'Anthropologie," tome v. (1894) Dr. Beddoe has published the results of his work on the cephalic index of the inhabitants of Great Britain and Ireland. Part of his work deals with the cephalic indices of the Cambridge undergraduates, which were placed at his disposal by J. Venn, F.R.S. He has also inquired into their height and weight, classing them in accordance with their place of origin; but he has taken no account of the colour of the eyes of these undergraduates, and so I thought it would be as well to continue his researches, now that there is more material to hand, paying especial regard to the colour of the eyes. It will be seen by a glance at the table appended that it is in a mere fraction of the total number that the eyes are described as "light." This is due to the standard of comparison afforded by the Anthropometrical Committee of the Cambridge Philosophical Society, and is a disadvantage which does not apply to the dark eyes, and it is therefore by confining our attention to the percentages of the dark eyes in the various groups that we get our best results.

I have examined, through the kindness of Dr. Venn, some 1400 more instances since Dr. Beddoe published his results in "L'Anthropologie." In the three special cases of cephalic index, height and weight, where my results are only a continuation of Dr. Beddoe's, I have, in the following table, incorporated his results in mine, so as to gain the advantage of having a larger number of instances to deal with. On glancing at the figures below, one is at first inclined to think that the upper classes of the various races, which have given rise to the present population of Great Britain and Ireland, have entirely fused with one another, as the differences between their respective indices are but small; but the following two points indicate, I think, that the fusion is still incomplete:—

(1) *Stature.*—The Welsh are about ·8 inch shorter than the English, and as much as 1·5 inches shorter than the Scotch. They are also a slighter race, they weigh less, are less strong muscularly, and have a smaller breathing capacity.

The English, again, are about ·7 inch. shorter than the Scotch, weigh about 4 lb. less, and are less strong.

(2) *Colour of Eyes.*—The greatest percentage of dark eyes is to be found in those undergraduates whose origin is in the west and south-west (34·76 per cent.). The smallest among those who come from the east and south-east (18·75 and 15·38 respectively).

The cephalic indices of the various groups do not show much difference. The chief point of interest is the fact that the dark-eyed English have broader and loftier heads than is the case elsewhere in England. This is just the reverse of what Dr. Beddoe found: "L'association," he says (p. 662), "de la couleur brune ou foncée des cheveux avec la dolichocéphalie parait être à peu près générale."

I may perhaps incidentally touch on a curious point, which is possibly due to nothing more than the instrument used, and that is, that one can, on the average, see further with the right eye than with the left. The average difference is fairly constant, and amounts to about two centimetres. Whether it is due to anything beyond external causes, I hardly like to say.