

THE formation of organic bases by plants of the orchid family appears first to have been investigated by M. de Wildemann, who in 1892 observed the presence of an alkaloidal product in *Dendrobium nobile*, *D. Ainsworthii*, and other Orchidaceæ. These researches have now been generalised by Dr. E. de Droog, whose investigations are published in the *Mémoires* of the Royal Academy of Belgium. Of the 104 species of orchids examined, nine are to be considered as producing alkaloids, some in all their parts, the others locally, and the author seems to favour the view that the function of these alkaloids is for defensive purposes. Dr. de Droog's paper is illustrated by a lithographed plate, in which the alkaloids present in the cells of *Dendrobium nobile*, *Catasetum Hookeri*, *C. macrocarpum*, and the root of *Phalenopsis Luddeemanniana* are coloured red.

M. CAMILLE FLAMMARION has sent us his interesting annual for the present year, and it is a mine of knowledge, both astronomical and meteorological. The information is not presented in too concentrated a form, but varied in places by explanations and summaries, together with excellent illustrations (fifty-six in number). Some of the main points which call for especial notice may be stated as follows. Under eclipses two clear diagrams are given, showing the most favourable points for viewing the two annular and only solar eclipses of the year. In addition to the ephemeris of each planet, charts are given showing their apparent tracts among the stars. For each day of the year the most interesting phenomena to be observed are inserted in calendar form, and diagrams are added showing the positions of the constellations for each month. A list of the minor planets, arranged in order of their perihelia distances, forms an interesting table. Among the *Notices Scientifiques* may be mentioned a chart of the movement of the terrestrial pole from 1890-95, a note on helium, and a brief reference to the recent total solar eclipse, with Dr. Brester's drawing of the corona. Lowell's chart of Mars on a reduced scale, and some planetary drawings, as well as a short summary of the eclipse cycle of fifty-four years, are also inserted. Besides being serviceable to astronomers, this annual should prove a valuable *vade-mecum* to amateurs, as they have at hand all the information for observing, at the right time, the most interesting celestial phenomena.

WE have received from the compiler, Mr. Arthur Mee, an almanac of moderate size for the use of amateur astronomers. The information is arranged in the form of a calendar, and shows the observer, at a glance, the sequence of the more important phenomena that will occur throughout the year. In addition to data referring to the positions of the sun and moon, attention is drawn to the most favourable times for viewing the planets, variable star and satellite phenomena, besides a selection of special clusters and nebulae most suitable for small apertures. The arrangement of the information is simple and clear, so that this card almanac supplies a really serviceable daily reference sheet to those for whom it is specially intended. There is also a very good reproduction of the moon, taken from a photograph made at the Paris Observatory. One cannot help mentioning that as the almanac is intended for actual observers, the type of both figures and letters will most probably be found too small to be read in any but very good light. As amateurs would be very likely to consult this sheet when observing, it would not be an easy matter to read it by means of the light of an ordinary observatory lamp. It seems to us, however, that the utility of the sheet would be increased if larger and clearer type were in future used. The almanac, nevertheless, contains just that information which an amateur wishes to have at hand, and it should therefore be found to supply a real want.

MR. C. A. BARBER shows, in *Science Progress*, that the present condition of the sugar industry is peculiarly a matter of

British interest. The depressed condition of the British colonies engaged in growing the sugar-cane is due to various causes; chief among these are the competition of European-grown beet and the various diseases at present attacking the canes. In his paper, Mr. Barber deals more especially with the first of these causes. The paper on the cell and some of its constituent structures, read at the Liverpool meeting of the British Association by Prof. J. B. Farmer, is printed in full in the same number of *Science Progress*. Dr. John Beddoe continues his paper on "Selection in Man." From the facts he adduces it seems that dark-complexioned men have a bias towards sedentary and indoor employments, while a certain number of the blond type prefer the outdoor employments connected with the land or with the care of animals. The statistics he gives support the conclusion that, in this country, more criminals than honest men are of dark complexion. Other contributions are:—"The Glossopteris Flora," by Mr. A. C. Seward; "Condensation and Critical Phenomena," by Prof. J. P. Kuenen; "The Origin of Lakes," by Mr. J. E. Marr, F.R.S.; and "The Causes of Variation," by Mr. H. M. Vernon.

FROM Prof. E. Cosserat, of Toulouse, and M. F. Cosserat, of Paris, we have received the first part of their memoir "Sur la Theorie de l'Elasticité," in which the principles of the subject are well put forward.

BY the publication of Part v. of the "Bibliography of American Economic Entomology," the task of bringing together the more important writings of Government and State Entomologists, and other contributions to American economic entomology, is completed up to the year 1888. Efforts will be made to bring the bibliography up to date by publishing occasional supplements. The work is published by the authority of the U.S. Secretary of Agriculture, and the present part of it has been prepared by Mr. S. Henshaw.

THE additions to the Zoological Society's Gardens during the past week include a Pig-tailed Monkey (*Macacus nemestrinus*, ♂) from Java, presented by Mrs. Baillie; two Leopards (*Felis pardus*, ♂ ♀) from Ceylon, presented by the Hon. Sir Joseph West Ridgeway; a Moluccan Kestrel (*Tinnunculus moluccensis*) from Triton Bay, New Guinea, presented by the Hon. Walter Rothschild; two Roseate Cockatoos (*Cacatua roseicapilla*) from Australia, presented by Mr. Richard J. L. Price; a Yellow-backed Lory (*Lorius flavo-palliatius*) from Batchian, presented by Miss A. M. Elwood; a Derbian Zonure (*Zonurus giganteus*), three Angola Frogs (*Rana angolensis*) from South Africa, presented by Mr. J. E. Matcham; seven Common Squirrels (*Sciurus vulgaris*), British; two Indian Dial Birds (*Copsychus saularis*) from India, purchased; a Bennett's Wallaby (*Macropus bennetti*), a Rufous Rat Kangaroo (*Epyprymnus rufescens*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE ALGOL VARIABLE + 17° 4367 W DELPHINI.—Prof. E. C. Pickering publishes in the *Astrophysical Journal* for December the ephemeris and light equation of this variable for the present year. No modification is made in the formula of reduction (JD 2412002.500 + 4.8064 E), although the observations indicate a slight change in the period, making the minima occur about fifteen minutes before the computed times. Prof. Pickering adds, however, that by diminishing the period by about two seconds this difference, caused by an inexact knowledge of the light curve when the ephemeris was first computed, would disappear. A set of photometric measurements with the adjacent star + 17° 4368, exceeding four thousand in number, and made by Mr. O. C. Wendell, has given a very accurate

light curve, which Prof. Pickering reproduced in his note. The average deviation between the photometric measurements and the smooth curve amounts to between one or two hundredths of a magnitude. The observations are not, however, quite sufficiently distributed over the whole curve to eliminate all doubt as to its form in some parts. The light curves of U Cephei, β Persei, and U Ophiuchi have also been similarly determined. W Delphini varies 2.71 magnitudes, a variation greater than any other star of the same class. U Cephei comes second, with a variation of 2.44 magnitudes, while those of β Persei and U Ophiuchi are 1.04 and 0.66 respectively.

COMET NOTES.—The comet discovered by Mr. Perrine, on December 8 last year, is gradually diminishing in brightness; but the ephemeris shows that its now southern declination is beginning to diminish. For those wishing to follow the comet further, Dr. F. Ristenpart has computed some parabolic elements from observations made on December 10, 22, and 27, and the ephemeris obtained from these is as follows (*Astr. Nachr.*, No. 3394, Beilage):—

		Berlin Midnight.					
		R.A.		Decl.		Br.	
1897.		h.	m.	°	'	°	'
Jan.	11	4	2.8	—	0 53.4	...	0.27
	15	...	17.4	...	54.322
	19	...	30.7	...	47.118
	23	...	43.1	...	34.915
	27	...	54.5	...	19.112
	31	...	5 5.2	...	—	0 0.6	...
							0.10

The elements are stated to be not very satisfactory, as the calculation of the "mean position" discloses an error of too great a magnitude to be neglected.

The comet, on the other hand, discovered by Mr. Perrine on November 2, is, according to the ephemeris given by Herr Otto Knopf (*Astr. Nachr.*, No. 3394), increasing rapidly in brightness, and by April 5 will be six times brighter than it was at the time of its discovery. The comet, however, will soon be lost in the sun's rays, but on its reappearance will be visible only from southern latitudes, its southern declination rapidly increasing.

THE UNIVERSAL MERIDIAN.—Among many of the subjects referred to at the meeting of the Société Astronomique de France, on December 2 last year, that of the choice of a universal meridian raised considerable discussion. The subject was brought up owing to the proposition made by M. Deville, before the Chambre des Députés, concerning "the adoption of the meridian of Greenwich by France." M. Bouquet de la Grye commenced the proceedings by saying that the question was one which touched science as a whole, and that the Academy had not been consulted. He then proceeded to state his opinion, which was to the effect that for theoretical reasons Greenwich should not be adopted as the zero meridian. M. Callandreaux, who followed him, took the practical side of the question, and pointed out what progress had already been accomplished in the adoption of the Greenwich meridian. After an able statement of the case by the President, M. Janssen, the question was put to the vote, the great majority adhering to the adoption of the Greenwich meridian. The proceedings of the meeting will be found in the *Bulletin* of the Society for January.

PRIZE SUBJECTS OF THE PARIS ACADEMY OF SCIENCES.

THE following subjects for prizes are announced by the Academy for 1897 and following years; prizes for years other than 1897 are specially indicated. In Geometry, the Grand Prize in the Mathematical Sciences (1898) will be awarded for the best memoir extending the part played in analysis by divergent series; the Bordin Prize (3000 fr.) for a study of the questions relating to the determination, properties, and applications of systems of orthogonal curvilinear coordinates of n variables, indicating particularly the degree of generality of these systems (1898); the Francœur Prize (1000 fr.), and the Poncelet Prize (2000 fr.), for work contributing to the progress of pure or applied mathematics. In Mechanics, the Extraordinary Prize of 6000 fr. is offered for work increasing the efficiency of the French naval forces; a Montyon Prize (700 fr.) for the

invention or improvement of instruments useful in agriculture or the mechanical arts; the Plumey Prize (2500 fr.), for improvements in steam navigation; the Fourneyron Prize, for a complete discussion of the motion and stability of bicycles. In Astronomy, the Lalande Prize (540 fr.) will be given for the observation or work most useful to the progress of the science; the Damoiseau Prize (1500 fr.), for calculations connecting the appearances of Halley's comet, taking into account the attraction of Neptune, and giving the exact time of its next appearance in 1910; also, for 1898, for a study of the perturbations of Hyperion, the satellite of Saturn, deducing the mass of Titan; the Valz Prize (460 fr.), for the most interesting astronomical observation made during the year; and the Janssen Prize (for 1898), for the most important discovery in Astronomical Physics.

In Physics, a La Caze Prize (10,000 fr.), in Statistics, a Montyon Prize (500 fr.), and in Chemistry, a La Caze Prize (10,000 fr.), and the Jecker Prize (10,000 fr.) will be awarded in 1897. In Mineralogy and Geology, for the Grand Prize in the Physical Sciences (3000 fr.), question proposed for 1897, "New experiments and studies on the higher parts of mountains, especially experiments bearing on Meteorology and the conditions of life"; for the Bordin Prize (3000 fr.), "Physical, chemical, and zoological studies of the bottom of the seas touching the coast of France"; for the Vaillant Prize (4000 fr.), question for 1898, "To make known and discuss the indications which complete the microscopical study of the sedimentary rocks (especially secondary or tertiary rocks) from the point of view of their genesis and the modifications they have undergone since their deposit in their structure and composition"; the Delesse Prize (1400 fr.), for work in Geology or Mineralogy; and the Fontannes Prize (2000 fr.) in 1899, for the best palæontological publication.

In Botany, the Barbier Prize (2000 fr.) is offered for a discovery of medical value; the Desmazières Prize (1600 fr.), for the best work on Cryptogams published during the year; the Montagne Prizes (1000 fr. and 500 fr.), for important discoveries bearing on the anatomy, physiology, and development of the lower Cryptogams; the De la Fons Melicocq Prize (900 fr.), in 1898, for work on the Botany of the North of France; and the Thore Prize (200 fr.), for the best memoir on the Cellular Cryptogams. In Anatomy and Zoology, the Savigny Prize (975 fr.) will be given in aid of young zoologists who have specially occupied themselves with the study of the Invertebrates of Egypt and Syria; and the Da Gama Machado Prize (1200 fr.), for the best memoirs on the coloured parts of the tegumentary system of animals. In Medicine and Surgery, there is offered a Montyon Prize; a Barbier Prize (2000 fr.); the Bréant Prize (100,000 fr.), for the discovery of a remedy which shall cure Asiatic cholera in the great majority of cases; the Godard Prize (1000 fr.), for the best memoir on the anatomy, physiology, and pathology of the genito-urinary organs; the Serres Prize (7500 fr.), in 1899, for work on General Embryology applied as far as possible to Physiology and Medicine; the Chaussier Prize (10,000 fr.), in 1899, for a work advancing legal or practical Medicine; the Parkin Prize (3400 fr.), for researches on the curative effects of carbon; the Bellion Prize (1400 fr.), for work especially profitable to the public health; the Mege Prize, for an essay on the progress of Medicine; the Dugate Prize, in 1900, for the best means of preventing premature burial; the Lallemand Prize (1800 fr.), for work on the nervous system; and the Baron Larrey Prize (1000 fr.), for work on Military Hygiene, Medicine, or Surgery.

In Physiology, the Prizes proposed are those of Montyon (700 fr.), La Caze (10,000 fr.), Pourat (1400 fr.), Martin-Damourette (1400 fr.), and Philippeaux (890 fr.), and in Physical Geography, the Gay Prize (2500 fr.).

Of the General Prizes, there will be awarded in 1897, a Montyon Prize for a means of ameliorating an unhealthy trade or occupation; the Cuvier Prize (1500 fr.), for a work on Geology; the Trémont Prize (1100 fr.) and the Gegner Prize (4000 fr.); the Petit D'Ormy Prize (10,000 fr.), for work in Pure and Applied Mathematics, and in the Natural Sciences; the Tchihatchef Prize (3000 fr.), for work on the less known parts of Asia; the Gaston Plante Prize (3000 fr.), for an important invention in Electricity; and the Cahours Prize (3000 fr.), for assisting young chemists in chemical researches.

Of these prizes those bearing the names of Lalande, La Caze, Delesse, Desmazières, and Tchihatchef, are specially stated to be given without distinction of nationality. All memoirs for this year must be sent to the Academy before June 1.