

artificially prepared penta-methylene-diamine. A short time ago Dr. Bocklisch published (*Ber.* 1887, p. 1441) the results of his researches upon the products of the action of Finkler's bacillus (*Vibrio proteus*) upon sterilized flesh, showing that this bacillus decomposes flesh with formation of the alkaloid cadaverin, $C_5H_{14}N_2$, which is non-poisonous, and ammonia. On repeating his experiments, however, in presence of ordinary putrefaction germs in addition to the Finkler bacilli, he made the remarkable discovery that an entirely different base, methyl-guanidine, of intensely poisonous properties, was the chief product; hence the symptoms of particular diseases may be due to the poisonous alkaloids formed by the joint action of specific bacilli and ordinary putrefaction germs. Bocklisch made several analyses of the cadaverin which he obtained in the first series of experiments, due to the action of pure cultivations of the *Vibrio proteus*, and showed that its hydrochloride forms a crystalline compound with mercuric chloride of the composition $C_5H_{14}N_2 \cdot 2HCl \cdot 4HgCl_2$, and as this differed somewhat from the composition formerly assigned to the artificial preparation by Ladenburg, the subject was involved in some doubt. Happily, Ladenburg has made fresh and purer preparations of his penta-methylene-diamine, and finds that its compound with mercuric chloride has precisely the composition assigned to the double chloride of mercury and cadaverin by Bocklisch. Hence cadaverin is conclusively proved to be none other than penta-methylene-diamine, and, consequently, must be added to the list of products of animal life which have been synthesized. The formation of these alkaloids, during disease or after death, has a most important bearing upon the treatment of cases of suspected poisoning, inasmuch as, whether poisonous or not, their reactions differ very little from those of the deadly alkaloids; and in the interests of justice it is to be hoped that our knowledge of this branch of organic chemistry may soon be rendered as complete as possible.

MESSRS. MACMILLAN announce the following scientific works for the forthcoming publishing season:—"Electricity and Magnetism," by Amédée Guillemin, translated and edited, with additions and notes, by Prof. Silvanus P. Thompson; "The Nervous System and the Mind," by Charles Mercier; "Popular Lectures and Addresses on Various Subjects in Physical Science," by Sir William Thomson; "Radiant Light and Heat," by Balfour Stewart, F.R.S. (the last three belonging to the Nature Series); "Kinematics and Dynamics," by J. G. Macgregor; "Geometrical Conics," by A. Cockshott and Rev. F. B. Walters; "A Treatise on Analytical Statics," by I. Todhunter, F.R.S., a new edition, revised by Prof. J. D. Everett, F.R.S.; "A Key to Mr. Todhunter's Conic Sections," by C. W. Bourne; "A Key to some Examples in Messrs. Jones and Cheyne's Algebraical Exercises," by Rev. W. Failes; "A Key to Mr. Lock's 'Arithmetic for Schools,'" by the Rev. R. G. Watson; "A Companion to 'Weekly Problem Papers,'" by the Rev. John J. Milne; "A Key to Dr. Todhunter's Treatise on the Differential Calculus," by H. St. J. Hunter; "A Treatise on Chemistry," by Sir H. E. Roscoe, F.R.S., and C. Schorlemmer, F.R.S. (Vol. IV. Part I.); "Algebra for Schools and Colleges," by Charles Smith; "The Elements of Chemistry," by Ira Remsen; "Absolute Measurements in Electricity and Magnetism," by Andrew Gray; "A Practical Text-Book of Pathology," by D. J. Hamilton; "A Course of Quantitative Mineral Analysis for Students," by W. Noel Hartley, F.R.S.; "School Course of Practical Physics," by Prof. Balfour Stewart, F.R.S., and W. W. Haldane Gee (Part I. "Electricity and Magnetism"); "Examples in Physics," by D. E. Jones; "Inorganic and Organic Chemistry," by Sir Henry E. Roscoe, F.R.S., and Prof. C. Schorlemmer, F.R.S. (Vol. III. "Organic Chemistry," Part IV.); "Greenland," by Baron A. E. von Nordenskjöld; and "Corea," by W. A. Carles.

MESSRS. SWAN SONNENSCHNIG AND CO.'S announcements of new books include the following works:—"The Microscope," edited from the work of Profs. Naegeli and Schwendener, by Frank Crisp and J. Mayall, Jun.; "Animal Biology," by Adam Sedgwick; "British Fishes," by F. A. Skuse; "Mammalia," by F. A. Skuse; "Reptiles," by Catherine Hopley; "Ants and Bees," by W. Harcourt Bath (the last four in the Young Collector Series); "The Solomon Islands and their Natives" and "The Geology and Physical Characteristics of the Solomon Islands," with maps, by Dr. H. B. Guppy.

MESSRS. LONGMANS announce the following works of scientific interest:—"The Literary Remains of Fleeming Jenkin, F.R.S.S.L. and E., late Professor of Engineering in the University of Edinburgh," edited by Sidney Colvin, with a Memoir by Robert Louis Stevenson; "Picturesque New Guinea," by J. W. Lindt; "A Manual of Operative Surgery, having Special Reference to many of the Newer Procedures," by Arthur E. J. Barker; "A Course of Lectures on Electricity, delivered before the Society of Arts," by George Forbes, F.R.S.

MESSRS. KEGAN PAUL AND CO., London, and Messrs. Appleton and Co., New York, will publish shortly the Hon. Ralph Abercromby's work on "Weather" as a number of the International Science Series. This will be the first book in the English language which deals exclusively with the nature of weather changes from day to day, as distinguished from the climatic or statistical treatment of the subject. There will be ninety-nine charts and diagrams, of which a considerable number will relate to the United States, and others to India and Australia, so as to illustrate the nature of weather on the widest possible basis.

THE additions to the Zoological Society's Gardens during the past week include a Pig-tailed Monkey (*Macacus nemestrinus*) from Sumatra, presented by Mr. B. Lynch; a Fettered Cat (*Felis maniculata*), a Spotted Eagle Owl (*Bubo maculosus*), a Hoary Snake (*Coronella cana*), four Spotted Slowworms (*Acontias meleagris*) from South Africa, presented by Dr. E. Holub, C.M.Z.S.; a Carrion Crow (*Corvus corone*), British, presented by Mrs. MacLochlin; a Martinique Gallinule (*Jonornis martinicus*), captured at sea, presented by Mr. R. Drane; two African Lepidosirens (*Protopterus annectens*) from the River Gambia, West Africa, presented by Mr. H. H. Lee; a Malabar Parrakeet (*Palaornis columboides* ♂) from Southern India, a Malaccan Parrakeet (*Palaornis longicauda* ♂) from Malacca, a Laughing Kingfisher (*Dacelo gigantea*) from Australia, deposited; a Tiger Bittern (*Tigrisoma brasiliense*) from Brazil, purchased; a Red-faced Ouakari (*Brachyurus rubicundus* ♀) from the Upper Amazons, received in exchange; a Collared Fruit Bat (*Cynonycteris collaris*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

BROOKS'S COMET.—Mr. H. V. Egbert, from observations made on August 26, 28, and 30, has computed the following elements for the comet discovered by Mr. Brooks on August 24:—

$$T = 1887 \text{ October } 6^{\text{h}}48^{\text{m}} \text{ G.M.T.}$$

$$\left. \begin{array}{l} \pi - \Omega = 63^{\circ} 18' \\ \Omega = 84^{\circ} 33' \\ i = 44^{\circ} 10' \\ \log q = 0.08718 \end{array} \right\} \text{Mean Eq. } 1887^{\circ} 0.$$

It will be seen that these elements bear a great resemblance to those of Olbers' comet of 1815. Dr. Holetschek, in a supplemental circular of the *Astronomische Nachrichten*, supplies the subjoined ephemeris for the comet, basing it upon the sweeping ephemeris for Olbers' comet given by Ginzl in the *Astronomische Nachrichten*, No. 2696, the comet's orbit being assumed

to be a parabola for the sake of simplicity, and the following observation made by Herr Palisa at Vienna being used:—

August 27, 15h. 27m. 12s. Vienna M.T.
R. A. = 8h. 42m. 55.71s., Decl. 29° 34' 24".7 N.

Ephemeris for Berlin Midnight.

1887.	R.A.	Decl.	Log r.	Log Δ.
	h. m.	°		
September 5 ...	9 21.1	30 16 N.	0.120	0.311
9 ...	9 39.7	30 20	0.112	0.304
13 ...	9 58.8	30 16	0.105	0.297
17 ...	10 18.4	30 2 N.	0.099	0.291

THE MORRISON OBSERVATORY.—The first number of the publications of the Morrison Observatory, Glasgow, Missouri, U.S.A., has just appeared. This Observatory was founded, in 1875, by the liberality of Miss Berenice Morrison, and possesses an equatorial refractor by Alvan Clark, of 12½ inches aperture, and a transit-circle by Troughton and Simms, with objective of 6 inches aperture and 77 inches focal length, the circles being 24 inches in diameter. In this first volume Prof. C. W. Pritchett, the Director, gives a history and description of the Observatory, with an account of the determination of the longitude and latitude of the meridian pier, besides a selection of such observations and notes made at the Observatory as are likely to be of use to astronomers. These latter include measures of double stars, observations of occultations, of the transit of Mercury, 1878, measures of the diameter of Mars, observations of comets, of Jupiter and Saturn, and of the figure and dimensions of Uranus. Prof. Pritchett's work appears to have been seriously crippled through lack of means, and, considering the excellent use which he has made of the resources at his command, it is to be hoped that he may speedily find himself in a position to carry on the operations of the Observatory on a more extended scale.

NEW OBSERVATORY AT JUVISY.—The current number of *L'Astronomie* contains a description of a new Observatory belonging to M. Camille Flammarion, which has just been completed. An admirer of M. Flammarion had presented him some five years ago with a little chateau and park situated on the road from Paris to Fontainebleau of historic name and interest. The house, which was built in 1730, possessed walls so thick and solid as to serve as a perfectly stable base for the equatorial and dome with which M. Flammarion has surmounted it. The dome is 5 m. in interior diameter, and covers an equatorial by Bardou of 0.24 m. aperture and 3.75 m. focal length, with clockwork by Bréguet, furnished with a Villarceau governor. Two smaller telescopes—one by Secretan of 108 mm. aperture, the other by Foucault of 160 mm., stand on the adjoining terrace. The Observatory, the co-ordinates of which are East longitude from Paris oh. om. 8s., N. latitude 48° 41' 36", commands an uninterrupted horizon, and an atmosphere noticeably purer than that of Paris.

THE TOTAL SOLAR ECLIPSE OF AUGUST 19.—We learn from the current number of *Ciel et Terre* that M. Niesten, of the Brussels Observatory, was fairly successful in his observations of the eclipse. It had been his intention to push on as far east as Perm, but a delay in the arrival of his instruments led him to accompany M. Belopolsky to Jurjewitz on the Volga. The sky was cloudy here as at most of the other stations, but cleared a little round the sun at the time of totality, and M. Niesten was able to see the chromosphere and prominences, and the appendices of the corona, and his assistant secured eight photographs, of which six were good. The exposures varied from 8 seconds to half a minute; the chromosphere and prominences were shown on all, and two gave traces of the corona and also of Regulus, which was near the sun. M. Karinne, a Moscow photographer of the same station, also secured several photographs. A drawing which M. Niesten made of the corona showed a strongly-marked coronal ray, about a degree in length, in the direction of the solar equator.

MINOR PLANET No. 267.—M. Charlois, of Nice, who discovered this object, has named it Tirza.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 SEPTEMBER 11-17.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on September 11

Sun rises, 5h. 30m.; souths, 11h. 56m. 36.1s.; sets, 18h. 24m.; decl. on meridian, 4° 35' N.: Sidereal Time at Sunset, 17h. 46m.

Moon (New, September 17, 14h.) rises, 22h. 27m.*; souths, 6h. 22m.; sets, 14h. 22m.; decl. on meridian, 19° 12' N.

Planet.	Rises.	Souths.	Sets.	Decl. on meridian.
	h. m.	h. m.	h. m.	°
Mercury ...	5 28	12 1	18 34	5 48 N.
Venus ...	7 23	12 40	17 57	9 9 S.
Mars ...	1 43	9 29	17 15	18 55 N.
Jupiter ...	9 46	14 48	19 50	12 1 S.
Saturn ...	1 8	9 0	16 52	19 47 N.

* Indicates that the rising is that of the preceding evening.

Sept.	h.	
14 ...	2	Saturn in conjunction with and 1° 39' north of the Moon.
14 ...	18	Mars in conjunction with and 1° 48' north of the Moon.
17 ...	16	Venus in conjunction with and 12° 50' south of the Moon.
17 ...	22	Mercury in conjunction with and 2° 33' south of the Moon.

Variable Stars.

Star.	R.A.	Decl.	Sept. 11.	h. m.
	h. m.	°		
Algol ...	3 0.8	40 31 N.	11	2 19 m
λ Tauri ...	3 54.4	12 10 N.	11	3 6 m
δ Libræ ...	14 54.9	8 4 S.	11	1 59 m
U Coronæ ...	15 13.6	32 4 N.	11	2 34 m
R Draconis ...	16 32.4	67 0 N.	11	12, 4 5 m
U Ophiuchi ...	17 10.8	1 20 N.	11	16, 19 48 m
				and at intervals of 20 8
X Sagittarii ...	17 40.5	27 47 S.	14	23 0 m
W Sagittarii ...	17 57.8	29 35 S.	14	4 0 M
U Sagittarii ...	18 25.2	19 12 S.	14	0 0 m
R Aquilæ ...	19 0.9	8 4 N.	16	0 0 m
η Aquilæ ...	19 46.7	0 43 N.	14	4 0 M
W Cygni ...	21 31.8	44 52 N.	11	11, 2 0 M
δ Cephei ...	22 25.0	57 50 N.	11	15, 20 0 m

M signifies maximum; m minimum.

Meteor-Showers.

	R.A.	Decl.	
Near χ' Orionis ...	88	18 N.	Very swift; streaks.
„ 50 Aurigæ ...	98	43 N.	Very swift; streaks.
„ α Lyræ ...	282	42 N.	Swift; bright; long.
„ γ Piscium ...	346	0 N.	Slow; bright.

SCIENTIFIC SERIALS.

THE most interesting item of information in the *Journal of Botany* for August is the record of an addition to the flowering plants of Great Britain, in the discovery, by Mr. H. C. Hart, of the Arctic *Arabis alpina* in Skye.—Mr. Tokutaro Ito, has an interesting paper on the history of botany in Japan.

Rendiconti del Reale Istituto Lombardo, June 30.—On the normal derivatives of the potential function of surfaces, by G. Morera. This paper forms a supplement to the author's late communication (*Rendiconti*, vol. xx, Part 8) on the derivatives of the potential function of space. The extremely simple analytical method by which he succeeded in determining general conditions for the existence of those derivatives and their effective expressions has also enabled him to solve the analogous question regarding the normal derivatives of the potential function of surfaces.—On the part played by sensuous images on the development and exercise of the reasoning faculty, by Tito Vignoli. In this paper the author investigates the actual form and genesis of perceptions acquired through the senses, from the standpoint of their efficacy in developing and sharpening the intelligence of animals. The subject is treated comparatively, it being impossible to understand any act or fact of human psychology unless studied in connexion with similar manifestations in