

are too numerous and too varied to be noticed now in any but the most general way. The New York Academy of Sciences appears to lead them all in the number and importance of the papers read before it, in every conceivable department of science. The Philosophical Society of Washington sends us vol. vi. of its *Bulletin*, containing the President's address (on "The Three Methods of Evolution"), as well as the abstracts of a large number of papers. This Society appears to work in conjunction with the Smithsonian Institution. The last number of the *Bulletin* of the Buffalo Society of Natural Sciences is almost wholly occupied with an elaborate paper on the plants of Buffalo and its vicinity, by Mr. Day, the present instalment being occupied by the Cryptogams. The toilers in the vineyard of science in the United States are evidently numerous and enthusiastic, and they have provided themselves with ample means of giving their results to the world.

THE last numbers of the "Encyclopædie der Naturwissenschaften" (Breslau, Eduard Trewendt) are Part 1, No. 37, and Part 2, Nos. 21 and 22. The first forms the continuation of the "Handwörterbuch der Zoologie, Anthropologie, und Ethnologie," and numbers among its writers Shellwald, Reichenow, Pfeffer, Martens, Jäger, Röckl, and others. Among the articles in the present instalment are the pacing of horses, by Prof. Röckl; the brain, by Mojsisowicz; and on the geographical distribution of animals, by Dr. Reichenow. No. 21 of Part 2 continues the section on mineralogy, geology, and palæontology, and contains articles on islands, by Von Lasaulx; the Jura system, the formation of coal in the different geological epochs, and cryptogams, by Dr. Rolle. No. 22 belongs to the chemical section.

DURING the last fifty years several attempts have been made to form oyster banks in the Baltic. The first attempt was made about forty years ago, when a quantity of European oysters were laid down, but it proved a failure, and the oysters soon died. In recent years, however, experiments have been made with the American oyster (*Ostrea virginiana*), which, according to the researches of Prof. Möbius is a different variety of the European. The idea of laying down American oysters in the Little Belt was due to Mr. Meyer, an engineer of Hadersleben, who formed a company for the purpose of carrying it out, to which the Prussian Government granted a concession for forty years to form oyster banks up to lat. 55° N. In the autumn of 1879 Mr. Meyer went to the United States, whence he brought back to Hadersleben a million and a half small and half a million large oysters, which were laid down in ten different places from the Danish frontier to the southern part of the Als Sound. Recent examinations of these spots have shown varying results. In some there are only a few oysters left, and in others considerable quantities. Where seaweed is very plentiful the oysters have died. The best result was found on the south-east coast of Als. During the present summer fresh attempts at oyster-hatching are to be made in these parts, and the German Fishery Association has granted Prof. Möbius a sum of about fifty pounds towards expenses. On the west coast of Norway, too, strenuous efforts have been made in recent years to improve the oyster fisheries there, which were formerly very important. Several companies have been formed for acquiring old banks and restocking them. In some places the results have been very satisfactory.

THE Tung Wen, or Foreign Language College at Pekin, is about to issue a large work on Anatomy by Dr. Dudgeon of that place. It is said to contain prefaces, in the usual Oriental manner, from several of the highest officials at the capital. The work has over 500 cuts made at the Government expense. A large work on Physiology is also ready for the press; while Dr. Dudgeon has ready for the English press a little work on the diet, dress, and dwellings of the Chinese in relation to health.

It is known that the Boyle-Marriott law is true only within certain limits, and that a gas submitted to great pressures, as well as to very low ones, ceases to obey it; the product received by multiplying its volume by its elasticity ceases to be a constant, and decreases under very low pressures: the elasticity decreases at a higher rate than the density of the gas, and to express the relations between the two, a more complicated formula must be resorted to. Another source of complication is due again to the condensation of the gases on the solid surfaces of the recipients, and if this cause be taken into account, the measured elasticities must be lower than the true ones, and in the rarefied gases the ratio between elasticity and density must increase with the increase of elasticity at a higher rate than would result from Prof. Mendeléeff's observations. Such was the idea that guided M. Kraevitch in a series of experiments he undertook a few years ago, with M. Petersen, in order to eliminate the influence of the condensation. These experiments being not sufficiently accurate, M. Kraevitch has now undertaken a new series of researches based on the rate of sound in different gases. They were carried on in tubes of very different lengths and diameters, and it appears from a preliminary communication, now published in the *Journal* of the Russian Chemical Society (vol. xvi. fasc. 6), that the air, when rarefied, does not obey at all the Boyle-Marriott law. The researches carried on on this principle promise to be, on the whole, very interesting, and may lead to conclusions of some value.

A SHOCK of earthquake occurred at Réunion on August 7 at midnight. The oscillation was from east to west, and was preceded by a loud report, like an explosion. No damage was done.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii* ♀) from South Africa, presented by Major Newson D. Garrick; a Moustache Monkey (*Cercopithecus cephus* ♂) from West Africa, presented by Mr. G. A. Broderick; a Rhesus Monkey (*Macacus rhesus* ♂) from India, presented by Mr. H. Johnson; a Macaque Monkey (*Macacus cynomolgus*) from India, presented by the Rev. Walter Hudson; a Squirrel Monkey (*Chrysothrix sciurea*) from Brazil, presented by Mrs. J. M. A. King; a Himalayan Bear (*Ursus tibetanus*) from North India, presented by Mr. Percy H. Cooper; a Red and Yellow Macaw (*Ara chloroptera*) from South America, presented by Mr. P. J. Prior; a Common Cuckoo (*Cuculus canorus*), British, presented by Mrs. William Smith; a Sharp-nosed Crocodile (*Crocodilus acutus*) from Central America, a Hawk's-billed Turtle (*Chelone imbricata*) from the West Indies, presented by the Rev. W. T. Lax; two Spotted Slow-worms (*Acontias meleagris*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; a Common Slow-worm (*Anguis fragilis*), British, presented by Mr. H. Scherren; a Ludio Monkey (*Cercopithecus ludio*) from West Africa, a Kit Fox (*Canis velox*) from North America, a Banded Aracari (*Pteroglossus torquatus*) from Central America, an Æthiopian Wart Hog (*Phacocheerus aethiopicus*) from South-East Africa, a Tiger Bittern (*Tigrisoma brasiliensis*) from Brazil, a Common Boa (*Boa constrictor*) from South America, an Indian Eryx (*Eryx johni*) from India, purchased.

OUR ASTRONOMICAL COLUMN

COMET 1884 *b*.—M. Trépiéd further writes with respect to his observations of the comet discovered by Mr. Barnard:—"I hope you will favourably receive some remarks on the subject of your last article on the Barnard Comet. You say that it would not be prudent to pronounce upon the nature of the orbit on account of the uncertainty which seems to attach to the observations at Algiers. There was in fact an error committed on the first day, in the identification of the star of comparison, but that error was rectified almost immediately, and I am able to state

that the verification to which I subsequently submitted that star (B.A.C. 5457) leaves no doubt as to the legitimacy of the identification. But I wish especially to remark that amongst the published orbits is one in which the observations at Algiers have had no part; it is that calculated by Chandler on the observations of July 16, 21, and 28." M. Trépid suggests that the conjecture of Prof. Weiss as to the nature of the orbit rested not only on the differences in the mean place, but on the agreement of his own elements with those of Chandler. We are now aware, however, as was mentioned last week, that the apparent deviation from parabolic motion was caused by error in the position published for the night of discovery, and that M. Trépid's observations (the comparison star having been identified) prove very exact. The doubt we expressed was occasioned by the large corrections given in the circular of the *Astronomische Nachrichten*.

BORSÉN'S COMET OF SHORT PERIOD.—The following positions of this comet are deduced upon the same assumption with respect to the epoch of perihelion passage as those lately given for the period of absence of moonlight in August:—

12h. G.M.T.	R.A. h. m.	Decl. ° '	Distance from Earth	Distance from Sun
Sept. 15 ...	10 26'6 ...	+13 37 ...	1'416 ...	0'590
17 ...	10 40'0 ...	13 28 ...	1'436 ...	0'593
19 ...	10 53'3 ...	13 15 ...	1'455 ...	0'598
21 ...	11 6'3 ...	12 58 ...	1'475 ...	0'606
23 ...	11 19'1 ...	12 37 ...	1'496 ...	0'617
25 ...	11 31'7 ...	+12 12 ...	1'518 ...	0'630

An acceleration of four days in the time of arrival at perihelion would cause the following differences in the comet's geocentric position:—

On Sept. 15 ...	In R.A. ...	+16'9 ...	In Decl. ...	+31
" 23 ...	"	+15'3 ...	"	+1

The intensity of light on September 15 is 1'43, and the comet would rise about 2h. 8m. before the sun. It should be sought for as soon as the moon is off the morning sky.

M. Trépid writes on August 26 that he had commenced a search for the comet according to the places given in *NATURE*. "Malheureusement," he says, "à Algiers le temps qui peut être consacré à la recherche est très-court, car le crépuscule arrive presque immédiatement. Néanmoins je n'ai pas encore perdu tout espoir."

THE CAPE HELIOMETER.—The Treasury have granted Dr. Gill's application for a heliometer of large size for the Royal Observatory at the Cape of Good Hope, and a contract has been entered into with the Messrs. Repsold of Hamburg. The instrument will be of seven inches aperture, and is to be completed by the end of 1886, at an expense of 2700*l*.

SCIENTIFIC SERIALS

The American Journal of Science, August 1884.—Contributions to meteorology: reduction of barometric observations to sea-level (continued), by Prof. Elias Loomis. The author considers that it is quite useless to seek for a formula exactly representing the barometric reduction to sea-level at all pressures and temperatures, unless the irregular movements in the upper and lower strata of the atmosphere be taken into account. But these movements are greatly modified by the obstruction of the mountains upon which the observations are made, and therefore vary with the locality; hence he concludes that such an attempt seems a hopeless undertaking.—Notes on the rock and ore-deposits in the vicinity of Notre Dame Bay in Newfoundland, by M. E. Wadsworth. The districts examined were chiefly various points between Exploits Burnt Island and Betts Cove, which yielded basalt, diorite, porodite, andesite (?), porphyrite, and argillite, variously impregnated with chalcopyrite, malachite, and copper. But none of the ores were found associated with serpentine, which was nowhere seen except in small quantity at Betts Cove.—On the origin of bitumens, by S. F. Peckham. The author deals with the views of those who regard bitumens (asphalt, naphtha, petroleum, &c.) either as indigenous to the rocks in which they are found, as the product of chemical action, or as a distillate produced by natural causes. He is on the whole inclined to regard these substances as distillations from animal and vegetable organic remains, and argues that if they were the result of a purely chemical process we should not expect to find Palæozoic petroleum of a composition corresponding with

the simple animal and vegetable organisms that flourished at that period, and Tertiary petroleum containing nitrogen unstable, and corresponding with the decomposition-products of more highly organised beings; but we should expect to find a general uniformity in the character of the substance wherever found all over the earth. On the other hand, if petroleum is the product of metamorphism, its formation is coexistent only with that of metamorphic action, which does not seem to have prevailed on a large scale during recent geological periods. Hence on this hypothesis its production must be considered as practically ended.—On the measurement of rapidly alternating electric currents with the galvanometer, by L. M. Cheesman.—Note on some specimens of nickel ore from Churchill County, Nevada, by Spencer B. Newberry. The analysis of these samples gave:—

NiO	33'71 per cent.
As ₂ O ₂	36'44 "
H ₂ O	24'77 "

From the extraordinary purity and richness of these ores, the author considers it probable that the Nevada mines, which run 6000 feet north-east and south-west to the Carson Desert, will eventually become a chief source of the world's supply of this valuable metal.—On the formation of gorges and waterfalls, by W. Morris Davis. The author considers that, although the Colorado Cañon, the greatest gorge in the world, was formed by rapid downward erosion following the rapid elevation of the plateau, most falls and ravines result from the local displacement of streams by blockades of glacial drift, or by temporary obstruction from the glacial sheet itself.—On the influence of light on the electrical resistances of metals, by Arthur E. Bostwick. From a series of experiments with various metals, the author concludes that, if light causes any diminution in the electrical resistance of metals, it probably does not exceed a few thousandths of one per cent.—Note on the rare mineral vanadinite occurring in the Black Prince Mine, Pinal County, Arizona, by Francis Hayes Blake.—Remarks on the united metatarsal bones of the Ceratosauros, an already described new Dinosaurian, by Prof. O. C. Marsh. The author points out that all known adult birds, living and extinct, with perhaps the single exception of Archæopteryx, have the tarsal bones firmly united, whereas all the Dinosauria, except Ceratosauros, have these bones separate. The exception in each case brings the two classes near together at this point, and their close affinity has now been clearly demonstrated.

Bulletin de l'Académie Royale de Belgique, May 1884.—Observations on the shooting-stars made at the Royal Observatory of Brussels on August 9-11, 1883, by L. Niesten.—Description of the effects of a stroke of lightning on the new Palace of Justice, Brussels.—Memoir on the process of segmentation in the Ascidiæ, and its relations with the organisation of the larvæ (two plates), by Edouard van Beneden and Charles Julin.—Some arithmetical theorems, by E. Catalan.—Researches on the absolute power of the muscles in the invertebrates, second part: absolute power of the flexor muscles of the pinchers in the decapod crustaceans (one plate), by Felix Plateau.—Exact dates of the birth and death of Wenceslas Coebergher, by Auguste Castan.—Essay on freedom of conscience in Athens, by M. A. Wagener.—Theories of Plato and Aristotle on the social question, by Ch. Loomans.—Memoir on the best means of improving the moral, intellectual, and physical state of the working classes, by Joseph Danby.

SOCIETIES AND ACADEMIES

SYDNEY

Royal Society of New South Wales, July 2.—II. C. Russell, B.A., F.R.A.S., President, in the chair.—Six new members were elected, fifty-four donations received, and the following papers read:—Notes on gold, viz. (1) a remarkable occurrence of nearly pure gold in Queensland, being 99'7 of gold, the rest copper, with a trace of iron, found in quartz and stalactites of brown hæmatite; (2) preparation of pure gold; (3) volatilisation of gold, by A. Leibius, Ph.D., M.A.—Notes on minerals new to New South Wales, by Prof. Liversidge, F.R.S., accompanied by specimens. Remarkable concretions of friable iron pyrites containing septa of quartz, resembling in appearance the well-known "septaria" of the London Clay, large crystals of axinite, idocrase in association with grossularite from Nundle, tourmaline in large prisms resembling the celebrated Bovey Tracey forms, Scheelite, molybdenum ochre, antimonite containing native gold from near Armidale, and allophane, serving as a