

SCIENTIFIC SERIALS

THE *Geographical Magazine*, May.—The principal article in his number is a translation by Col. Yule, C.B., of some of the notes appended to the Russian edition of his "Essay on the Oxus," by the late Alexis Fedchenko; they are extremely interesting.—Mr. E. D. Morgan contributes a paper on the new Russian province of Amu Daria, which is accompanied by a map.—Mr. E. G. Ravenstein's paper On the Viti or Fiji Islands, with the excellent map which accompanies it, will be very acceptable to many at the present time.—The number contains a very curious and interesting paper purporting to be the autobiography of a slave, under the title of My parentage and early career as a slave.

THE *Geological Magazine* for May, contains the following original articles:—The shell-bearing gravels near Dublin, by the Rev. Maxwell Close, F.G.S.; On some new Devonian fossils, by Prof. H. Alleyne Nicholson, F.R.S.E.; On the substitution of zinc for magnesium, by E. T. Hardman, F.R.G.S.I.; The volcanic history of Ireland—address to the Royal Geological Society of Ireland, by Prof. Hull, F.R.S., president; On a raised beach at Tramore, by E. T. Hardman.

THE *American Journal of Science and Arts*, April 1874.—We have here the continuation of Prof. Leconte's interesting paper On the great lava flood of the North West, and the structure and age of the Cascade mountains. There has been much speculation as to the origin of the "prairie mounds," which consist of a drift soil of earth, gravel, and small pebbles. Prof. Leconte considers they are entirely the result of surface erosion acting under peculiar conditions, viz. a treeless country and a drift soil consisting of two layers, a finer and more movable one above, and a coarser and less movable one below.—Mr. Chase gives an account of the auriferous gravel deposit of Gold Bluff.—Mr. Meek continues his notes on some of the fossils figured in the recently issued fifth volume of the Illinois State geological report; and Mr. Verrill gives results of recent dredging expeditions on the coast of New England.—In a paper On the lignites and plant-beds of western America, Mr. Newberry calls in question some of Mr. Lesquereux's conclusions, and seeks to show that several of the beds are Cretaceous and not Eocene.—Among the remaining matter we find notes on a mass of meteoric iron found at Howard co. Ind. (with remarks on the molecular structure of meteoric iron); on the parallelism of coal seams; and on recent earthquakes. We may also notice, in the *Scientific Intelligence*, a lengthy abstract of a paper by Josiah Cooke, jun., On the vermiculites, their crystallographic and chemical relations to the micas, with a discussion of the cause of variation of the optical angle in these minerals.

Poggendorff's Annalen der Physik und Chemie, Jubelband.—The hearty co-operation with which the proposal was met, to commemorate the jubilee of the scientific veteran who has for years edited the *Annalen*, is here represented in a collection of more than sixty papers of original research, many of them by well-known investigators. We can do little more than briefly glance at some of the subjects that are treated, of which there is great variety. Electricity and magnetism meet with a considerable share of attention; and we may first of all note some interesting studies, by M. Willner, on discharges of the induction current in spaces filled with rarefied gases. This research betokens considerable minute care. Variations were made, in the form of the tubes used, degrees of rarefaction, direction of spark, velocity of rotating mirror in which the light was reflected, &c.; the influence of magnets was also observed, and some striking peculiarities of striation in the image of the discharge are brought to light, and shown in drawings.—M. Hittorff examines from a different point of view the conduction of electricity by gases.—Prof. Blaserna, of Rome, studies extra currents; and he points out that at the moment of closure the current begins to flow, first slowly, then more quickly, till it reaches a maximum, from which it descends, by a series of oscillations, between maxima and minima, to zero.—M. Reiss, in reference to what he terms the electric induction of a non-conductor in itself, enunciates the proposition that at the under surface of a free non-conducting plate, whose upper surface is electrified, there is an electric layer of the same sign with the electricity of this surface, while immediately above there is an electric layer of the opposite sign.—The heat-action of electric disjunction currents forms the subject of a communication from M. Edlund; and M. Kohlrausch describes the action of polarisation on alternating currents; also a

sinus-inductor. The electromotive force of liquid batteries, the thermo-electric properties of topaz, spar, and arragonite, the action of magnets on discharges in rarefied gas, the conductivity of glass for electricity and heat, and some peculiarities of galvanic polarisation, are also treated; and of the more theoretical papers, we may specify one by Prof. Feilitzsch, On the poles of equal normal intensity in the magnetic field of a galvanic battery current, and one On a general theorem for calculating the action of magnetising spirals, by Dr. von Waltenhofen.—Perhaps no scientific serial presents such a rich collection of material in the department of mineral chemistry as *Poggendorff's Annalen* during these fifty years. The influence of Berzelius has made itself powerfully felt; both his spirit and his method being evidently reflected in the researches by his students, among whom Prof. Heinrich Rose occupies the first rank. Those who are interested in this branch will find in the *Jubelband* a valuable *résumé*, by Prof. Rammelsberg, of the work of the *Annalen* in reference to it; and a list is given of forty young chemists who have laboured on various mineral forms, under Rose's direction.—In a paper On the struggle for existence among molecules, by M. Pfändler, an ingenious parallel is drawn between the phenomena of production of certain chemical compounds through partial dissociation and reciprocal reaction, on the one hand, and production of species through natural selection (according to Darwin's theory) on the other; and this article is followed by one On the equivalent of *vis viva*, by M. Wilhelm Weber.—The phenomena of light and heat are studied in various aspects. In a note On the spectrum of aurora, Prof. Angström considers that the yellow light (characteristic of all auroras) arises from fluorescence or phosphorescence. An electric discharge is supposable, which, though in itself faintly luminous, is rich in ultra-violet light, and is thus capable of producing strong fluorescence. It is also known that oxygen, and several compounds of it, are phosphorescent. Prof. Angström thinks it unnecessary to have recourse to "variability of gas-spectra under varying conditions of pressure and temperature."—M. Zöllner has a paper of photometric researches on the physical character of the planet Mercury, in which he comes to the conclusion that Mercury has a surface closely resembling that of our moon; it is without an atmosphere.—Mr. Bolzmann studies the connection between the turning of the plane of polarisation and the wave-length of various colours; M. Ketteler, the specific law of so-called anomalous dispersion; M. Knoblauch, the reflection of heat and light rays from inclined diathermanous and transparent plates; and M. Dufour the reflection of solar heat from the Lake of Geneva.—A curious phenomenon is discussed by Prof. Lommel, viz. the appearance of a luminous halo round the shadow of one's head in wet grass, especially when the sun is low. He supposes it to arise from light being refracted through the drops, received by the surface below, and sent back through the drops to the luminous source; the light thus suffering a fourfold refraction, and also a diffuse reflection. It is a like cause to that which explains the shining of cats' eyes in the dark.—In experimenting on the specific heat of water at various temperatures, M. Bosscha arrives at results somewhat different from those of Regnault.—M. Hagenbach continues his experiments on fluorescence.—There are several papers referring to new and improved instruments. The practical physiologist will be interested in some new arrangements, by Dr. du Bois Reymond, for studying the physics of nerve and muscle, including a mercury key, a double commutator, a "frog pistol," and a spring myographion.—M. Barentin describes an improvement on Poggendorff's machine for demonstrating acceleration; M. Gorst a spectroscope with fluorescent eye-piece; M. Melde a wave-apparatus for showing Chladni's sound-figures; M. Rudorff an improved Bunsen photometer; while M. Jolly makes a new determination of the expansion coefficients of some six gases, and investigates the action of air thermometers.—The theoretical limits of capability of the microscope forms the topic of an able memoir by M. Helmholtz.—Some hydraulic researches by M. Meyer prove that pressure is propagated in water with the velocity of sound; and that the Poiseuille law holds good for outflow of water not only through capillary tubes, but also through wider tubes, provided these are sufficiently long (thus it was found to hold for 250 to 3,000 m. length in a tube 7 mm. diameter).—M. Karsten communicates an instructive account of recent scientific researches on the temperatures, saltness, &c., of the Baltic and North Seas.—In mechanics we have a number of bending-experiments from M. Buff, in reference to elasticity of various substances—iron, glass, wood, &c.; and among the few chemical subjects treated

(not to prolong our enumeration) are the constitution of chlorhydric acid and its salts (Thomsen), new sulphur salts (Schneider), and the volume constitution of some oxides (Schröder).—The only paper from an English source appears to be that of Prof. Tyndall's, On propagation of sound through the atmosphere.—A well-executed portrait of Prof. Poggenдорff is prefixed to this interesting volume.

Astronomische Nachrichten, Nos. 1,984, 1,985, and 1,987.—These numbers contain a long paper by Prof. E. Kayser on some new applications of the level to astronomical instruments, especially to the alt-azimuth.—A table of the eclipses of Jupiter's satellites, observed at Toulouse from Jan. 4 to April 1, appears in No. 1,985.—Observations of planets 135 and 136, are given by H. G. von der Sande Bakhuyzen, J. Paliser, and E. Stephan.—No. 1,987 contains a paper by C. Hornstein, On the daily variation of the horizontal magnetic force of the earth. The author points out the correspondence between the sun-spot period and the variation above mentioned, the maximum and minimum of each, according to the table, appears to occur at the same time.—R. Luther gives a number of observations on the positions of the minor planets and variable stars. The elements of Winnecke's comet are given by W. Schur as follows:—

$$\begin{aligned} T &= \text{March } 14^{\text{h}} 03^{\text{m}} 56^{\text{s}} \text{ Berlin mean time} \\ \Omega &= 274^{\circ} 7' 5'' \\ \Pi &= 302^{\circ} 15' 41'' \\ i &= 31^{\circ} 32' 26'' \\ \log. q &= 9.947502. \end{aligned}$$

Prof. Winnecke communicates the discovery of the above comet.—Prof. Weiss gives an ephemeris of Winnecke's comet I. Position for May 18, R.A. 15h. 22m. 15s., D. + 43° 8', decreasing in R.A. about 15' a day, and increasing in D. a few minutes.—C. Bruhns gives positions of Winnecke's and Coggia's comets.—Dr. J. Holetschek gives an ephemeris for Coggia's comets as follows:—

		12h. Berlin time.		R.A.		D.	
		h.	m.	s.	°	'	"
May 23,	6	13	38	+ 67	21	0	
June 4,	5	51	14	+ 63	9	5	
"	16,	5	12	0	+ 47	5	0
"	28,	4	49	50	+ 11	6	1

Prof. Peters, A. de Jasparris, and G. Bümher also give observations on the two above-mentioned comets,

Journal de Physique, April.—This number begins with a note in which M. Desains describes an improved method of studying Newton's coloured rings; the plane is made movable to and from the lens by means of a fine micrometric screw, so that the pressure can thus be varied; and the rings are observed with monochromatic light, either direct from a flame, or isolated from the spectrum.—In a paper On transformation of optical achromatism of object-glass into chemical achromatism, M. Cornu finds that, given an achromatic astronomical telescope, the object-glass of which is formed of a convergent lens of crown glass and of a divergent lens of flint glass, this object-glass may be transformed into one capable of giving satisfactorily distinct photographic images, by separating the two lenses to an extent dependent on the nature of the two glasses. With the glasses used in optics, a separation of 1½ per cent. of the focal distance of the object-glass is sufficient, and the chemical focus is very near the optic focus. The aberrations produced by this separation may, the author thinks, be entirely neglected. Using an excellent telescope 100 mm. aperture and 1'40 m. focal distance, and separating the two glasses 15 mm. he succeeded in photographing a scale, divided into millimetres, placed at 40 metres distance; the lines were quite distinct; and the relation of the empty spaces to those filled in was quite recognisable, and with a microscope and micrometer it was possible to measure the thirtieth part of the intervals.—This paper is followed by the first part of one in mathematical physics, in which M. Blavier studies the electric resistance of the space inclosed between two cylinders.—A new rheostat is described by M. Crova, in which two platinum wires pass down to the bottom of a long graduated tube containing mercury, the height of which can be varied through elevation or depression of a spherical vessel communicating with the bottom of the glass tube, through a tube of caoutchouc.—There are, further, notices of M. Seebeck's recent researches on motion of sound in bend and bifurcating tubes, M. Dufour's on reflection of solar light at the surface of Lake Lemman, &c.

Bulletin Mensuel de la Société d'Acclimatation de Paris.—The February number of this *Bulletin* commences with a paper by M. Decroix, on the consumption of horse-flesh in France, as meat, from which it appears that hippophagy is largely on the increase.—The question of silkworm culture again occupies a prominent position in the report, and a statement of the services rendered by acclimatisation in Egypt is very interesting. The *Eucalyptus globulus*, the cocoa tree, the silkworm, the *Cytisus cajan* of Madagascar, or Ambrevade, are among the recent acquisitions of that country.—The cultivation of tea in Java is the subject of a valuable paper by M. E. Prillieux; in 1826 the first seeds of the tea-plant were sown in that island; and in 1867 the annual production was 1,600,000 lb. The very best qualities often thrive in that country.—The introduction of the African ostrich into France is proposed. The plumage of a male ostrich is valued at from 300f. to 500f. (12l. to 20l.); that of a female at about half that, while the plumage of the American ostrich is sold at 15f. to 20f. the kilogramme (12s. to 16s. per 2 lb.)—The system of oyster-culture, till recently so successfully adopted in France, is threatening to collapse; and some valuable hints thrown out by M. D. de Mayréna may be of service in assisting to arrest the decay.—In the Jardin d'Acclimatation 335 mammalia and 2,647 birds were received during January and February, amongst which were a new monkey, *Lemur catta*, two St. Hubert bloodhounds, some Viollet's pheasants of Java, two emus, a very fine ostrich, and an Indian duck (*Anas pacillo-rhynca*), a curious-looking bird, with a beak orange at the root, black in the middle, and pure white at the tip; the plumage is a grey colour.

Bulletin de l'Académie Royale de Belgique, No 3, 1874.—This number opens with a tribute to the memory of M. Adolphe Quetelet, in the form of six discourses delivered at the funeral of that eminent *savant* on Feb. 20 last, by MM. Keyser, Ed. Mailly, &c., representing various learned Societies.—In the department of Science we find an account of M. Louis Henry's continued researches on diallylic derivatives. In a previous paper he had shown that allylic compounds combine directly with hypochlorous acid to produce glyceric compounds; and he here extends the observation to diallylic compounds, diallyl having been found to combine directly with hypochlorous acid and form a diallylic dichlorhydrine.—In a second note of researches on camphor, M. Dubois describes an advantageous mode of preparing brominated camphor. It rests on the previous formation of an additional brominated product, C₁₀H₁₆OBr₂; which is then decomposed into brominated camphor and bromhydric acid, C₁₀H₁₅BrO + BrH. Among the numerous products obtained from action of iron, heated red, on camphor-vapour, M. Dubois finds a terpene C₁₀H₁₆, which he regards as important with reference to the composition of camphor.

Archives des Sciences Physiques et Naturelles, April 15.—This number commences with a chemical paper, by M. Eugene Demole, On distillable oxygenated bases derived from glycol and aromatic amines. It appears that when a primary amine is in presence of oxide of ethylene it is not a molecular combination that is produced, but a true product of substitution of glycol. The secondary base which thus forms possesses still a hydrogen replaceable by alcoholic radicals, and the product of this substitution is a tertiary base; which, again, is susceptible of the addition of alcoholic iodides to form quaternary iodides indecomposable by alkalis.—In the next paper, M. Dufour studies the phenomenon which occurs when two masses of air, differing in hygrometric state, are separated by a partition of porous earth; a diffusion takes place, in which the more abundant current passes from the drier to the more humid air. The activity of diffusion depends on temperature only indirectly, in so far as this occasions difference of vapour-tension on the two sides of the partition. It depends little, if at all, on fraction of saturation. The difference between the quantities or tensions of water-vapour on the two sides is the important element; the diffusion is nearly proportional to this difference.—A spectroscope with fluorescent ocular is described by M. Soret. The method consists in placing a plate of a transparent and fluorescent substance (uranium glass, or a fluorescent liquid between two thin plates of glass) in the eye-glass of a spectroscope, at the focus of the object glass, and observing the spectrum with an ocular inclined to the axis of the eye-glass. It is specially applicable to solar light, and renders distinctly visible the spectrum from H to N, without the necessity of working in a dark chamber. It is less delicate than the photographic method, but much quicker.—M. Achard investigates the action of differential manometers with two liquids.