

the advantage being that the readings of several different instruments can be recorded by means of a single steel graver, making traces on a varnished copper sheet. The sheet is fixed on a vertical cylinder, which rotates at equal intervals (e.g. every ten minutes); an electric circuit, of which the instrument to be observed forms part, is closed by the movement of the cylinder; this liberates the graver, which then gives a tracing proportional, in length, to the indication of the instrument. At each revolution the graver descends a little; thus a series of equidistant lines are obtained, the extremities of which form the curve of observations. The copper sheet is afterwards dipped in an acid and thus made ready for engraving.—M. Terby communicates some drawings made by M. Schroeter, in the end of last century, which show the configuration of the spots of Mars at that time. He finds, in these, fresh proof of the permanence of the spots.—A letter from Prof. Genocchi, of Turin, on several mathematical questions, calls forth a long report from M. de Tilly with reference to the alleged impossibility of demonstrating the postulates of Euclid by plane geometry, or by any geometrical reasoning.—We further find notes on the congelation of alcoholic liquids, (Melsens), on the motion of projectiles, on hypo-sulphurous acid, on some storms at Aartselaar in July, and other topics.

Bulletin de la Société Impériale des Naturalistes de Moscou, No. 1, 1873.—In this number there is a valuable paper of spectroscopic solar observations in 1872, by M. Bredichin. Four plates are appended, showing the spectroscopic profile of the sun from July 22 to September 10. The author's results confirm, in the main, those of Secchi.—M. Berg gives some particulars as to the successful acclimatisation of a Japan silk worm, the *Antheraea Yama Mayu*, in the Baltic provinces. Cultivators were looking in this direction partly because of the difficulty of acclimatising mulberry in the north; the new animal feeds on oak leaves. One striking fact is, that some of the eggs were exposed, at times, for three days successively, to a temperature of 12° R., without apparent injury. The temperature at which the worms were kept after leaving the egg till spinning time, varied between 12° and 16° R. The entire extra-oval life of the Yama Mayu in Riga is about 16½ weeks; or 9 in the caterpillar, 6 in the chrysalis, and 1½ in the moth stages respectively. Experiments, extending over three years, have fully shown that the scheme in question is a practicable one. We have further to note a long and interesting account, by M. Wolkenstein, of certain ancient cemeteries named "Jalnikis," found on many of the hill-sides in Novgorod. The tombs are made of unhewn stones arranged in form of a rectangular cyst, which contains the skeleton. In his study of the question whether these cemeteries belonged to ancient Novgorodians, or some other people, the author is led to assign a Slavonic origin.—Among the remaining papers are a note by M. Stepanoff on the development of Calyptraea, and a reply by M. Lubimoff to M. Bredichin.

Reale Istituto Lombardo di Scienze Lettere Rendiconti Fascicolo, XV, 1873.—In addition to a large quantity of historical and philosophical matter, which includes a fourth paper on Kant's philosophy, by C. Cantoni, this number contains observations of Comet II, 1873, by S. Tempel; a long paper on the polymorphism of *Pleospora Herbarum*, by Drs. Gibelli and Griffini; and also some anatomical and medical notices.

The Annali di Chimica applicata alla medicina for September contains the usual number of notices on pharmaceutical preparations, &c.

American Journal of Science and Arts, October.—This number contains a description of some valuable improvements in the silt analysis of soils and clays, by Mr. Hillgard. From minute observations on the working of the elutriating apparatus of Nöbel, Schulze, Fresenius, and others, he concludes that all determinations hitherto made with conical vessels are vitiated by irregular currents, and a kind of miniature avalanche formed by the particles. He employs a cylindrical elutriating tube, having a rotary churn attached to its base, but screened by wire from the liquid column. This has given good results.—Prof. Dana has a (continued) paper on the quartzite, limestone, and associated rock of the vicinity of Great Barrington, Berkshire Co., Mass.—Mr. May describes some experiments on the determination of lead as peroxide, and Mr. Remsen communicates a note on isomeric sulpho-salicylic acids.—Mr. Bentham's anniversary address to the Linnean Society is given; also a French Academy notice of Dr. Verneuil, who did valuable service to North American geology.—We further note accounts of various survey operations in Colorado, Sierra Nevada, Utah, &c.

Atti della Reale Accademia dei Lincei Roma, Dec. 1872. This publication contains, among other papers, an interesting description, accompanied with plates, of certain hum 1 bodies found in a remarkable state of preservation in a cemetery at Ferentillo. The authors, MM. Maggiorani and Moriggia, made analyses of the soil, which abounded in salts of lime having, of course, avidity for water. The ground was porous, and readily permitted passage of vapour from one stratum to another. Scarcity of humus and good ventilation were other favouring causes. There was a popular tradition that the soil was brought from Palestine, but this is thought incorrect. The mummies were throughout invaded with sporulæ and various other parasites, which doubtless contributed to the mummification.—A long paper by M. Volpicelli offers a complete and general solution, through the geometry of situation, of the problem relating to the course of a horse over a checkered surface.—Prof. Cantoni has an article on the various modes of electrical testing (*esplorazioni*) and on the influence of hypothesis in electrostatics; in which he makes some strictures on certain passages in Tyndall's little work on Electricity, referring to the existence of two fluids.—We further notice a paper by Prof. Cadet on the functions of the white nerve substance, and one by Prof. Respighi on the shower of falling stars observed November 28, 1872.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, Oct. 20.—M. de Quatrefages, president, in the chair.—The following papers were read:—Theory of the movement of a point attracted towards a fixed centre, by M. J. Bertrand.—On Dr. Reye's explanation of the solar spots, by M. Faye. Dr. Reye considers that the heat of a facula causes an up-rush and expansion of the superincumbent atmosphere, causing a sort of vortex through which the materials of lower strata rise, expand, cool down, and condense. M. Faye, after explaining the theory in question, argued that a very simple fact overthrows it at once. Dr. Reye's theory would make the vortex or spot on the sun, while the measurements of Carrington have shown that it is really in the sun.—Anatomical researches on the tardigrade *Edentata*, by M. P. Gervais.—M. Alph. de Candolle presented the last volume of the "Prodromus Systematis Naturalis Regni Vegetabilis."—The secretary reported on a number of papers on the *Phylloxera*.—Researches on an easy method of measuring the capacity of ships, by M. d'Avout.—Additional note to the monograph on the fish of the family of the *Symbranchida*, by M. C. Dareste.—On the production of galls on vines attacked by the *Phylloxera*, by M. Max Cornu.—On the reproduction of the oak *Phylloxera*, by M. Balbiani.—On the production of certain crystalline borates in the dry way, by M. A. Ditte. The paper in question described several borates of barium and magnesium, and also several double salts of the same class.—Note on the chlorovanadates, by M. P. Hautefeuille.—On the production of methylamines in the manufacture of pyrologeneous products.

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