

SCIENTIFIC SERIALS

THE *Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg*, t. xxii., No. 1, contains the following papers of scientific interest:—On the absorption of carbonic acid by sulphuric acid and its mixtures with water, by J. Setschenow.—On tartronic acid, by N. Menschutkin.—On ethyl- and methylsuccinimid, by the same.—On the geological age of the North-Caucasian Jura coal sandstones, and on natural saltpetre occurring in the same in the valley of Kuban, by H. Abich.—On diethyl-methyl-acetic acid, a new isomeric variety of cœnanthyllic acid, by M. E. Idanow.—On the formation of buds in *Equisetum*, by Prof. A. Famintzin.—Observations made at the astronomical observatory of the Académie des Sciences de St. Petersburg, by A. Sawitch.

Journal de Physique, September.—M. André here investigates the subject of diffraction in optical instruments and its influence on astronomical observations. He shows that the diameter of Venus and Mercury during transit must always be less than in ordinary conditions of observation, and less by day than by night, with an instrument of the same aperture; also that it is less, the smaller the aperture of the instrument, the variation being equal to the difference of constants of instrumental diffraction of the instruments employed.—It is known that sulphur affects two incompatible crystalline forms, the right octahedron with rectangular base, and the symmetrical oblique prism. M. Gernez specifies the circumstances in which they are produced without intervention of any solvent.—M. Egoroff gives a description, with figure, of his differential electro-actinometer, an instrument for determining the co-efficients of absorption of ultra-violet rays by different substances.—M. Lecoq de Boisbaudran describes the physical properties of gallium. *Inter alia*, even a few degrees under its point of fusion + 29°·5, it is hard and remarkably tenacious for a metal so fusible; it can be cut, however, with a knife. It crystallises with great facility. The spectrum got by passing the spark in a saline solution, has two violet lines, the brighter with wave length 4170, the other 4031. In gas flame the former is hardly observable. The density is 4·7; the equivalent, not yet quite fixed, seems to be near the number deduced from the position of gallium between iodium and aluminium.

Sitzungsberichte der naturwissenschaft. Gesellsch. Isis in Dresden, July to December, 1875.—In this number will be found an interesting account of the Auckland Islands, by M. Hermann Krone, of the German Transit Expedition. The copper-bearing strata of Lake Superior, a potato exhibition at Altenburg, in October, Dr. Dohrn's zoological station at Naples, and an instance of lightning with a clear sky, are among other subjects treated; there are also a few archaeological papers.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, October 23.—Vice-Admiral Paris in the chair.—The following papers were read:—Theorems relating to systems of three segments forming a constant length, by M. Chasles.—Remarks on a critique of Dr. Boué on the theory of *trombes*, by M. Faye. The gyration of the base of a trombe is generally too rapid to be perceived; but on reaching the ground or the sea, a quantity of dust or of water-droplets is raised by the escaping air, and passes obliquely before the trombe, with a perceptible slow movement. The spectator may by mistake attribute this motion to the trombe itself, and conclude that the trombe pumps the water (e.g.) up to the clouds. The trombe's motion is really a descending gyratory one.—On the order of appearance of the first vessels in the aerial organs of *Anagallis arvensis*, by M. Trécul.—Report to the Academy on the works of M. Francis Garnier, naval lieutenant. M. Garnier died about three years ago. His travels in China have had important results. The Minister of Public Instruction, on the recommendation of the Academy, has appointed an annual pension of 1,200 francs to be given to his widow.—Note on electric effluves, by M. Boillot. To obtain the dark effluves the conducting tubes for the electricity should be sufficiently apart to prevent any phosphorescent glow in the darkness. M. Boillot describes some modifications of his apparatus.—On determination of the depth of the sea by means of the bathometer, and without use of a sounding line, by Dr. C. W. Siemens.—On the industrial applications of phosphuret of copper and phosphorised bronze, by MM. de Ruolz, Montchal, and De Fontenay. Of two bells presented to the Academy, one made with phosphuret of copper in proportion of $\frac{1}{100}$ gave sounds much superior in acuteness, intensity, and timbre, to those

of the other bell, which was of an ordinary bronze (78 copper, 22 tin). Its composition was also more homogeneous. By reducing the proportion of phosphorus to a few thousandths, red copper may be cast in sand without its physical properties being sensibly altered as regards industrial use. A bronze alloy with the proportion of $\frac{1}{1000}$ of phosphorus, sustains friction well, and can be indefinitely recast without appreciable loss industrially.—On the cure of hypertrophic elongation of the neck of the uterus by igneous utero-vaginal myotomy, by M. Abeille.—On the industrial preparation of nitro-glycerine, by MM. Boutmy and Faucher. (This note was in a sealed packet, deposited in August, 1872.) In the ordinary manufacture the reaction liberates much heat, which tends to decompose the nitro-glycerine formed. The authors first make sulpho-glyceric acid treating glycerine at 30° with three times its weight of sulphuric acid at 66°; and sulpho-nitric acid by mixing equal weights of sulphuric acid at 66° and nitric acid at 48°. Then these two acids are united, giving a mixture like this: glycerine, 100; nitric acid, 280; sulphuric acid, 600. The rise of temperature is then limited to 10° or 15°. The reaction is finished in about twenty-four hours. The nitro-glycerine forms in a distinct layer above the acids, from which it can be separated by decantation.—Report on experiments made, in several communes of Charente, with a view to destruction of phylloxera, by M. Boutin. To succeed well with sulpho-carbonate of potassium, alone or with water, or with coal-tarred sulphur carbonate, the operations should be done in October, November, or even December (if not too cold), then again from March till the end of May.—On a general proposition of the theory of conics, by M. Halphen.—On the effects of eddies observed in water-courses, by M. Bouquet de la Grye. If there be poured into a glass vessel first a dense liquid like aniline, then water, then oil, and the upper liquids be put in rotation with paddles, a central depression forms at the surface of the oil; a cone of the liquid descends in the centre, while a protuberance of niline rises from the bottom. A similar action of the eddies in rivers accounts for the raising and removal of sand, and the form assumed by the river's bed. And the movement of liquid threads in a river-bead may be compared to that in the vessel, taking as centre the successive points of the convex bank, and as border the concave part. There are vortices with horizontal axes also. The author thinks that by suitable dams, &c., the *vis viva* of the water might be utilised for deepening the channel.—On the laws of vibratory motion of tuning-forks, by M. Mercadier. The duration of the period of vibratory motion increases or diminishes with the amplitude. This variation, even for considerable amplitudes of 1 cm., is very small, and extends only to the fourth figure. If a certain limit, which may be fixed at 4 mm., be not exceeded, the duration of the period may be regarded as constant.—On the electrical apparatus of the torpedo, by M. Rouget. A histological description

CONTENTS

	PAGE
THE ARCTIC EXPEDITION	1
SCHIMPER'S "MOSES OF EUROPE"	3
OUR BOOK SHELF:—	
Rutherford's "Outlines of Practical Histology"	4
Dale's "Study of the Rhætic Strata of the Val di Ledro in the Southern Tyrol"	4
LETTERS TO THE EDITOR:—	
"Geographical Distribution of Animals."—V. BALL	5
European Polygalas.—ALFRED W. BENNETT, F.L.S.	5
The Solidity of the Earth.—W. MATTIEU WILLIAMS	5
Are We Drying Up?—JOSEPH JOHN MURPHY	6
Antedon rosaceus (Comatula rosacea)—W. R. HUGHES, F.L.S.	7
Caterpillars.—J. A. OSBORNE	7
Electro-Capillary Phenomena.—DR. P. HIGGS	7
THE CAPERCAILLIE IN NORTHUMBERLAND. By W. TOPLEY	7
NEWTON ON FORCE. By P. T. MAIN	8
PRINCIPLES OF TIME-MEASURING APPARATUS, IV. By H. DENT GARDNER (With Illustrations)	9
THE RESULTS OF THE ARCTIC EXPEDITION (With Map)	11
OUR ASTRONOMICAL COLUMN:—	
μ Doradus	14
Southern Double-Stars	14
The Intra-Mercurial Planet Question	14
The Fourth Comet of 1857	15
BIOLOGICAL NOTES:—	
Pock-Lymph	15
Algid swarm Spores	15
Diseases Germinated in Hospitals	15
Marine Mosses	15
Notes from St. Petersburg	15
Colours of Animals	16
NOTES	16
SEXUAL SELECTION IN RELATION TO MONKEYS. By CHARLES DARWIN, F.R.S.	18
SCIENTIFIC SERIALS	20
SOCIETIES AND ACADEMIES	20