

size relatively to the accompanying minerals. They commonly occur in drusy cavities of the trachytes associated with specular iron, hornblende, and augite. Details are given of the mode of growth of the twins, their various forms and intimate combinations.—Another paper by the same author describes a remarkable crystal of calc-spar from Lake Superior. It is shown by the formulæ of the faces to be a form which is distinct from any hitherto observed. It is transparent, and occurs with native copper in amygdaloid melaphyre.—Another paper by Von Rath is on a singular combination of rutile and specular iron. The fine spiculæ of rutile are developed from between the plates of a red kind of specular iron, and may be a subsequent formation. It occurs in association with crystals of quartz and adularia in clefts or druses in a fine grained talcose gneiss.—Von Rath's next paper is On remarkable artificial crystals of pure copper. At the meeting last year of the German Geological Society at Weisbaden, Prof. v. Seebach exhibited crystalline copper which Prof. Senft of Eisenach had obtained by galvanic electricity between small rings of zinc and copper. From an aggregation of very small crystals a large mass was formed of the size of four millimetres. The crystals are always twins, with the free end most produced, and have a form which has not heretofore occurred in native copper, though it has been found in galena and binnite. The octahedral faces of the crystals are flat and shining, while those of the icositetrahedron are curved and less perfect.—Another paper discusses the hypersthene of Mont Dore, described by Des Cloizeaux, a mineral which there occurs in druses in trachyte in crystals three millimetres long, associated with crystals of sanidine and tridymite.—Von Rath's last memoir describes a new zeolite, named foresite, from the tourmaline granite of Elba.—Prof. Th. Petruschewsky, of St. Petersburg, who has devoted himself since 1862 to the phenomena of magnetism, now publishes the results of his investigation on the direct and indirect determination of the pole in magnets. Starting with the basis of Biot's curve of magnetic intensity, he points out that it is as easy to determine the pole theoretically as empirically, details his two methods, and the apparatus wherewith they are tested. He then considers the determination of the pole in electro-magnets, and finally enumerates results.—Dr. Gustav Junghann explains a simple law for the development and grouping of crystal zones. He introduces some maps of anorthite into the memoir, in which the formulæ of the faces are all set down in tabular form in square spaces.—Herr G. Hagen contributes a memoir On the resistance offered by the air to plane discs moved through it.—Herr J. J. Müller examines one of the Hamiltonian theories of movement which underlies the principles of mechanics.—Herr von Laspeyres has an interesting experimental paper On the existing and a new thermostat, and Herr Rammelsberg describes the crystalline form and modifications of selenium.—The most interesting reprinted paper is Terquem's account of the vibroscope for accurately determining number of vibrations.

SOCIETIES AND ACADEMIES

LEEDS

Naturalists' Field Club and Scientific Association, Sept. 15.—Mr. Edward Thompson, vice-president, in the chair.—Mr. James Abbott mentioned that he had gathered *Butomus umbellatus* in flower at Kirkstall, on Sept. 12. The plant had not been noted in the Leeds district for upwards of twenty years past, when it grew in the stream at the foot of Woodhouse Ridge.—Mr. Henry Pocklington, in conjunction with Mr. James Abbott, demonstrated the action of the induced current upon the protoplasmic gyrations in the cells of *Vallisneria spiralis*, by means of a simple electric slide and a small inductorium. The effect produced was very marked. The circulation of the protoplasm stopped almost instantly. It was, in fact, as was described by one of the members, as though a strong "break" were put on. The protoplasm was corrugated by the rapid contractions induced, and the results taken altogether were of the most interesting character. Mr. Pocklington will probably communicate a more complete description of his apparatus and its results at an early date.

PARIS

Academy of Sciences, Sept. 21.—M. Bertrand in the chair.—The following papers were read:—Note on barium sulphocarbonate, by M. P. Thenard. Since M. Dumas' proposal to use sulphocarbonates for the destruction of *Phylloxera* these salts have acquired a new interest. The barium salt is

easily prepared by agitating a strong solution of barium sulphide with carbon disulphide. The author describes a process for manufacturing this salt on a large scale, and proposes to turn his attention to the manufacture of the potassium salt.—On a new mercury pump, by M. de Las Marismas. This apparatus is stated to cost 35 francs, and to exhaust a receiver of six litres' capacity to one millimetre pressure in four minutes; all pressures from that of the atmosphere up to an absolute vacuum can be obtained, the gas contained in the receiver can be collected if necessary, and a vacuum can be preserved indefinitely.—On the action of alimentary or medicamentous liquids on tin vessels containing lead, by M. Fordos. The author has tried the action of wine, vinegar, lemonade, &c., upon hospital vessels containing 10 per cent. of lead; this latter metal was invariably found in the fluids used, and the author concludes that the use of this alloy may be attended with great danger.—Researches on the colouring matters of garancine, by M. A. Rosenstiehl. The colouring materials of garancine—alizarine, pseudopurpurine, purpurine, and its hydrate—have all been investigated in great detail by the author. Purpurine and its hydrate are formed at the expense of pseudopurpurine; the products of the reduction of purpurine have been studied, and two isomers of this body obtained, one of which has been prepared by synthesis starting from benzoic acid. Pure alizarine is prepared by heating the commercial substance with water to 200° C. for some hours, a small quantity of caustic alkali being added. Impurities are totally destroyed by this treatment, and the product of the operation is further purified by frequent crystallisations. Pseudopurpurine is a very unstable body; heating with water or alcohol transforms it into a mixture of purpurine and its hydrate. From the present researches it seems that garancine red and the rose colouring matter yielded by garancine flowers cannot be obtained from alizarine alone; the presence of purpurine or its hydrate is indispensable. The product of the action of reducing agents on purpurine and its hydrate is purpuroxanthine, an isomeride of alizarine.—New experiments on the nature of the sulphuretted principle of the waters of Luchon, by M. F. Garrigou. This is a reply to a paper by M. Filhol in the *Compt. Rend.* for Sept. 7.—Observations relating to a recent communication by M. Lichtenstein on some points in the natural history of *Phylloxera vastatrix*, a letter from M. Balbiani. The author again enforces his views as to the non-identity of the *Phylloxera* of the vine and of *Quercus coccifera*.—M. P. Thenard made known to the Academy the measures adopted by M. le Préfet de Saône-et-Loire on the approach of *Phylloxera*.—M. le Ministre de l'Agriculture et du Commerce and M. le Ministre des Finances consulted the Academy on the employment of tobacco juice for the destruction of *Phylloxera*.—Communications relating to *Phylloxera* were also received from MM. J. Bond, H. de Martiny, R. Delpit, &c.—Properties of the "implexes" of surfaces defined by two characteristics, a geometrical note by M. Fouret.—On luminous diffusion, by M. A. Lallemand.—On Warwickite, by M. J. Lawrence Smith. The author assigns to this mineral the formula $Mg_5B_3 + (MgFe)Ti_5$.—On the rôle played by gases in the coagulation of blood, by MM. E. Mathieu and V. Urbain.—On the movement in the bilabiate stigmata of the Scrophulariaceæ, Bignoniaceæ, and Sesameæ, by M. E. Heckel.—Observation of a bolide at Versailles on the evening of the 14th of September, by M. Martin de Brettes.

CONTENTS

	PAGE
HINTS ON MEDICAL STUDIES	435
NOMENCLATURE OF DISEASES	436
LETTERS TO THE EDITOR:—	
The Education of Women.—Lieut.-Col. ALEX. STRANGE, F.R.S.	437
Double Rainbow.—Prof. TAIT, F.R.S.E.; Prof. J. CLERK-MAXWELL, F.R.S. (With Illustration)	437
Curious Rainbow.—T. W. BACKHOUSE; ARTHUR SCHUSTER	437
Mist Bows.—HOWARD FOX	438
Carnivorous Plants—how to be obtained.—G. H. HOPKINS	438
Automatism of Animals.—I. D. WETTERHAN	438
Photographic Irradiation.—JOHN AITKEN	439
Can Land-crabs Live under Water?—J. C. GALTON	439
Salivary Glands of Cockroach.—CHAS. WORKMAN	439
THE AUSTRIAN POLAR EXPEDITION	439
THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE	441
REPORT OF PROF. PARKER'S HUNTERIAN LECTURES "ON THE STRUCTURE AND DEVELOPMENT OF THE VERTEBRATE SKULL," VII. (With Illustrations)	444
NOTES	446
THE BRITISH ASSOCIATION. REPORTS AND PROCEEDINGS	449
SCIENTIFIC SERIALS	453
SOCIETIES AND ACADEMIES	454

ERRATUM.—V ol. x. p. 416, col. 1, line 22 from bottom, for "Norway" read "Moray."