

caused the death of eleven persons and great injury to the Grand Mosque and numerous dwelling-houses. The amount of damage done in the neighbouring villages is not known.

A GEOGRAPHY of the almost unknown kingdom of Corea has been compiled by a member of the suite of the Japanese envoy to that country. Several valuable papers containing accounts of travels in Corea have been read before the Geographical Society of Tokio, and have appeared in its *Transactions*. As they are written in Japanese they are unfortunately all but inaccessible to European geographers.

THE Prefect of the Seine has established a course of six lectures for the teaching of micrography. An examination has been instituted for inspectors intrusted with the care of detecting trichinæ in the substance of pork and ham of American or German origin.

A CURIOUS experiment will be tried this week at La Villette gasworks, Paris. Two balloons of equal size will be sent up at the same time; one of them will carry an experienced sculler, who is confident that he will produce some effect with a long oar of his invention.

UNDER the title of "School Physical and Descriptive Geography" Mr. Stanford has issued a smaller and cheaper edition of the late Keith Johnston's "Physical, Historical, Political, and Descriptive Geography," reviewed in these pages at the time of its appearance. In the school edition the historical sketch and the elaborately-printed maps have been omitted, while all the strictly geographical information has been retained. In this form it ought to find wide acceptance among all teachers, who aim at making geography both interesting and thorough. No better text-book could be recommended.

THE subject of the address by Shadworth H. Hodgson, LL.D., before the Aristotelian Society on Monday evening will be "The Practical Bearing of Speculative Philosophy."

WE have received from Rothschild of Paris an interesting little volume on Pisciculture in France. It consists of two parts—Pisciculture, Fluvial and Maritime, by Jules Pizzetta; and Oyster-Culture, by M. De Bon.

IN its summary of colonial intelligence the *Colonies and India* mentions the discovery of a valuable coal-seam near Victoria, Huon, Tasmania, which has been traced on the surface for about twenty yards, and increased in width from three to four feet, when it was lost in a hill. The coal has been tried and found to be of good quality.

A VALUABLE archaeological discovery, which may be said to equal that of the celebrated Kertch antiquities at the Hermitage of St. Petersburg, has recently been made near the Cossack village of Sewersk in the Sakuban district, in one of the *kurdans*, i.e. the old tombs, in the steppes of Southern Russia. A number of objects were found, but special attention was drawn to two glass vessels, unfortunately broken, but the pieces of which still give evidence of their remarkable ornamentation. They are profusely covered with gold, the hoops containing large rubies and bearing golden chains, by which heart-shaped pearls are suspended. Another object of cylindrical shape, evidently a cup-holder, consists of pure gold, and shows two griffins in bas-relief. Another important object is a gold plate six inches in diameter, with a fine bas-relief representing a whole episode. M. Felizin, an eminent Russian archaeologist, is of opinion that the tomb in question must have been that of an important personage of the Bosphorean kingdom, and that its origin dates back as far as the period of King Perisad II., who began to reign in the year 284 B.C. A gold coin which was found confirms this view.

AN important discovery of very good rock-salt, affording a sheet seventy-five feet thick, was made some days ago in the district of Bakmut, in the Russian government of Ekaterinoslav, at a depth of 430 feet. The discovery was made according to the indications of the geologist, Prof. Erofeeff.

THE anniversary address of the Hon. Prof. Smith, president of the Royal Society of New South Wales, contains an interesting sketch of the history of the Society, both under its old name of Philosophical Society as well as under its present designation.

MESSRS. BLACKWOOD AND SONS have issued a twelfth edition of the "Elements of Agricultural Chemistry and Geology," by the late Prof. J. F. W. Johnston and Dr. C. A. Cameron.

IN the report sent us of the meeting of the Natural History Society of the Friends' School at York, and printed among our Notes a fortnight ago, the Rev. T. A. Preston is referred to as science master at Marlborough College. Of course this is a mistake; Mr. G. F. Rodwell has long held and still holds the post referred to.

THE additions to the Zoological Society's Gardens during the past week include a Tennant's Squirrel (*Sciurus tennanti*) from Ceylon, presented by Mrs. S. A. Cottrell; a Common Marmoset (*Hapale jacchus*) from South-East Brazil, presented by Mr. J. N. Palmer; a Chacma Baboon (*Cynocephalus porcaricus*) from South Africa, presented by Mr. W. H. L. Long; a Leucoryx Antelope (*Oryx leucoryx*) from North Africa, presented by Mr. John M. Cook; two Leopards (*Felis pardus*) from Ceylon, presented by Mr. Eustace L. Burnside; a Green Lizard (*Lacerta viridis*) from Jersey, presented by Mr. James Thorn; a Tarantula Spider (*Mygale*, sp. inc.) from California, presented by Mrs. John Leechman; five Robben Island Snakes (*Coronella phocarum*) from South Africa, presented by Rev. G. H. R. Fisk, C.M.Z.S.; two Greater White-crested Cockatoos (*Cacatua cristata*) from Moluccas; two Common Cormorants (*Phalacrocorax carbo*), British, deposited; two Blossom-headed Parrakeets (*Palaornis cyanocephalus*) from India, a Nose-horned Viper (*Vipera nasicornis*), a Crocodile (*Crocodilus*, sp. inc.) from West Africa, purchased.

OUR ASTRONOMICAL COLUMN

COMET V., 1863.—With reference to a remark in this column at p. 111 of the present volume of NATURE, suggesting that a further and more minute discussion of the elements of this comet might be desirable, Prof. Valentiner, director of the Observatory at Carlsruhe, has been good enough to draw our attention to a memoir by himself upon the subject which we had overlooked; it is entitled "Determinatio orbitæ Cometæ V. anni 1863," and was published at Berlin in 1869. The observations, about 130 in number, extend from 1863, December 28, to 1864, March 1, and Prof. Valentiner forms nine normal positions upon them. The perturbations of the earth and Jupiter are taken into account (the comet having approached the former at the end of January within about 0.18) and the following parabolic elements result:—

Perihelion Passage, 1863, Dec. 27.79992 M. T. at Berlin.	
Longitude of perihelion	60° 24' 26".4 } M. Eq.
" ascending node	304° 43' 23".2 } 1864.0
Inclination	64° 28' 44".2
Log. perihelion distance	9.8873326
Motion—direct.	

The agreement with the observations is so close as to prove that the orbit did not sensibly differ from a parabola; the conjectured identity with the comet of 1810 is therefore shown to be inadmissible, notwithstanding the striking similarity of the elements, as will appear from the comparison at p. 111.

THE NEW COMET.—Mr. S. C. Chandler, jun., has telegraphed to Lord Crawford's Observatory approximate elements of the comet discovered by Mr. Barnard last month, from which it appears that the orbit does not resemble that of any which has

been previously computed. Expressed in the form usual in our catalogues the elements are:—Perihelion passage, September 15^h 11^m G.M.T.; longitude of perihelion, 250° 4'; longitude of ascending node, 260° 43'; inclination, 72° 33'; log. perihelion distance, 9.70535; motion, retrograde. The intensity of light is diminishing.

MINIMA OF AIGOL.—The under-mentioned Greenwich times of minima of this variable are from Prof. Winnecke's ephemeris, in the computation of which correction depending upon recent observations has been applied:—

Oct. 9	h. m.	Nov. 1	h. m.	Dec. 11	h. m.
12	15 52	4	14 23	14	17 48
15	12 41	7	11 12	17	14 37
18	9 30	21	8 1	20	11 26
	6 19	21	16 5	23	8 14
		24	12 54	23	5 3
		27	9 43		
		30	6 32		

There would appear to have been perturbations in the period during the last few years which are not reached even by Prof. Schönfeld's formula involving two inequalities, which would make the above times about thirty-five minutes later.

A PROBABLY VARIABLE STAR.—Prof. Pickering notifies his observation of a red star, with banded spectrum, the place of which on September 14 was in R.A. 16h. 31m. 32s.; Decl. + 72° 32'. On September 17 its magnitude was 8.6. It is not found in the "Durchmusterung," nor in Federenko, Schwed, or other circumpolar catalogue. Its variability is therefore suggested.

CERASKI'S VARIABLE, U CEPHEI.—Mr. Knott informs us that he obtained a good observation of the minimum of Ceraski's variable of short period on the night of October 2; time of min. 11h. 47m. G.M.T., mag. 9.2. Prof. Schmidt's ephemeris in *Astron. Nach.*, No. 2382, has 11h. 37.5m. The star did not fall quite so low, as in the minima which Mr. Knott observed in March, April, and May last.

[ERRATUM.—In last week's "Astronomical Column" (p. 520), for "add ρ " read "add P."]

CHEMICAL NOTES

MM. SCHUTZENBERGER AND COLSON describe (*Compt. rend.*) several new compounds of silicon. When crystalline silicon is strongly heated in a current of carbon dioxide the compound $(\text{SiCO})_x$ is produced. When nitrogen is passed over a hot mixture of silicon and carbon $(\text{Si}_2\text{C}_2\text{N})_x$ is formed. The authors regard these compounds as the oxide and nitride respectively of the radicle *carbo-silicon* $(\text{Si}_2\text{C}_2)_x$. The nitride of silicon $(\text{Si}_2\text{N}_2)_x$ is also described: it is obtained by the direct union of nitrogen and silicon.

It is well known that certain metallic chlorides, e.g. sodium chloride, are precipitated from aqueous solution by hydrochloric acid; attention has been drawn in these Notes to recent work of Ditté and others on this subject. M. Sabatier describes several hydrates of ferrous and ferric chloride (*Compt. rend.*) produced by this general reaction.

MANY years ago Graham drew attention to the change in properties produced in certain oxides by the action of heat, e.g. ferric oxide is soluble in hydrochloric acid, but when strongly heated it becomes almost insoluble. This "department of corpuscular philosophy"—to use Graham's phrase—has not been much studied. The experiments detailed in *Archiv Néerland* by M. van Bemmelen form an interesting contribution bearing on this subject. It is shown that the amount of water of hydration taken up by the oxides of tin, silicon, and manganese at the moment of the formation and precipitation of the hydrates of these oxides from aqueous solutions, is dependent on the molecular state, i.e. on the as yet unknown conditions of molecular equilibrium, of the solid hydrates. The molecular state being the same, the amount of water of hydration rises with temperature and humidity of the surrounding air; to each temperature and degree of humidity corresponds a certain equilibrium of oxide and water; the relations between the weights of the oxide and water are generally too complex for expression by a simple formula. From an examination of the phenomena attending the action of the amorphous hydrated di-oxides of the above-named elements on acids, alkalis, and salts, M. van Bemmelen concludes that weak double compounds are produced, but that these are very easily dissociated; the amount of dissociation varying with the chemi-

cal nature and the mass of the reacting substances, and with the temperature. In most cases stable compounds are produced simultaneously with these series of unstable and largely-dissociated compounds. The formation and dissociation of such unstable compounds depend also on the conditions of molecular stability of the hydrated oxides themselves. By arranging these conditions so as to insure considerable molecular stability—e.g. by heating the hydrates—the power of forming the unstable compounds is much diminished. That a force of the same nature as chemical affinity is concerned in the formation of some of these weak compounds is shown by the decomposing action exerted by hydrated MnO_2 on the stable compounds K_2SO_4 , KCl , and KNO_3 , compounds which do not show signs of dissociation in aqueous solution. M. van Bemmelen would thus extend the sphere of chemical phenomena, and would see no sharp division line between the actions of the so-called physical forces—adhesion, absorption, &c.—and the force of chemical affinity.

AN ingenious method for determining the total solid matter in solution in different waters is described in *Chem. Soc. Journal* by Dr. Mills. The method is based on the fact that if a small glass bead with an attached weight is allowed to ascend in a saline solution of known strength, it will rise more slowly, the greater the amount of solvent present. Experiments are given showing that the rate of ascent is also dependent on the nature of the soluble matter, i.e. on the viscosity of the solution. For detecting variations in the solids in the same water, for preparing standard solutions, &c., the bulb method is likely to be useful. Experiments detailed in the same paper lead Mills to regard the specific gravity of a potable water as a direct indication of the quantity of total solids in solution.

ANALYSES of the mud deposited round the Buxton thermal spring, by T. C. Thresh (*Chem. Soc. Journ.*), show that when dried at 120° this mud contains about 71 per cent. Mn_2O_3 , with oxides of Pb, Cu, Fe, Al, Zn, Ba, Sr, Mg, and Mo, and closely agrees in composition with many specimens of "wad" or "bog manganese." Analyses of the gas evolved at the spring and of the gases dissolved in the water closely confirm those made by Playfair in 1852: the gas evolved at the spring consists of about 99 per cent. nitrogen and 1 per cent. CO_2 , that dissolved in the water of about 60 per cent. N and 40 per cent. CO_2 . The water in the baths contains as much gas as could be forced into water at a pressure of 1.64 atmospheres.

A LONG and important paper by W. H. Perkin, on "Isomeric Acids obtained from Coumarin and the Ethers of Hydride of Silyl," appears in the same number (August) of the *Chem. Soc. Journ.* Perkin has obtained two series of compounds, differing in properties, but generally convertible, one into the other, by the action of heat. He thinks that the ordinary theory of isomerism, according to which this phenomenon is traceable to the occupation of different relative positions by the atoms in two molecules, fails to explain the cases of isomerism now described by him. He favours the view that the atoms in the molecules of any pair or the newly-described compounds occupy the same relative positions, but are at different absolute distances from each other. It is, however, to be remembered that the present theory of isomerism is applicable only to gaseous molecules; the molecular phenomena of liquid and solid bodies are too complex to find, as yet, any general explanation. Perkin's new compounds seem to belong to this rapidly-increasing group of "physical isomerides," i.e. to liquid or solid bodies whose chemical properties are to be traced to the binding together of molecular groups, the individual members of which occupy relatively different positions, and which groups react as chemical units. The facts concerning molecular volumes of metameric compounds are also, on the whole, opposed to that theory of isomerism favoured by Perkin in his important paper.

A SERIES of papers on the photo-chemistry of silver bromide by Herr Eder has appeared in *Chemisches Centralblatt*. It is shown that silver bromide prepared with an excess of silver nitrate is much more sensitive towards light than when prepared with excess of potassium bromide, provided the silver bromide is disseminated through an indifferent substance, e.g. collodion pyroxylyene. When disseminated through an easily oxidisable substance, e.g. gelatin or gum, silver bromide prepared with a slight excess of soluble bromide is from four to six times more sensitive than when disseminated through indifferent collodion with excess of silver nitrate. An emulsion of silver bromide in gelatin with a slight excess of the soluble bromide after several days digestion at 30°-50° becomes much more sensitive than any