changes of crystalline bodies with omni- or uni-lateral pressure, by the same.—On the absorption of heat by gases and a method based thereupon for determination of the amount of carbonic acid of atmospheric air, by H. Heine.—On the absolute system of measurement, by P. Volkmann.—Deduction of the fundamental law of crystallography from the theory of crystalline structure, by L. Sohncke.—On the molecular-kinetic laws of heat of vaporisation and the specific heat of bodies in various forms of aggregation, by A. Walter.—On the different systems of measures for measurement of electric and magnetic quantities, by R. Clausius.—On the metallic galvanic battery of Perry and Ayrton, by B. J. Goosens.—The Waltenhofen phenomenon and the demagnetisation of iron bodies, by F. Auerbach.—On the behaviour of electricity in gases, by F. Narr.

Rea'e Istituto Lombardo di Scienze e Lettere, Rendiconti, vol. xv. fasc. xi.—On some formulæ relative to calculation of errors of observation, by S. A. Maggi.—On two fossiliferous planes of the Lias in Umbria, by C. F. Parona.—On the variability of *Cobitis tænia*, by E. Cantoni.—On caffeic acid obtained from *Cinchona cuprea*, by G. B. Körner.—On an herbarium about 3000 years old, by G. Cornalia.

SOCIETIES AND ACADEMIES

LONDON

Anthropological Institute, June 27.—General Pitt-Rivers, F.R.S., president, in the chair.—Mr. Villiers Stuart, M.P., exhibited and described a drawing of the funeral canopy or tent of an Egyptian queen, and some casts of bas-reliefs discovered by him within a short distance of the tent.—Mr. E. H. Man read a further account of the natives of the Andaman Islands, in which he treated more particularly of their home life; the food and methods of cooking were fully described; also the games, amusements, and dances.—A communication was received from Mr. H. C. R. Becher on some Mexican terra-cotta figures found near the ancient pyramids of San Juan Teotihuacan; from a comparison of these figures with those in the museum at Palermo the author argued that they were produced by people of the same race, and that the builders of these ancient monuments were Phœnicians.

Royal Horticultural Society, June 27.—Sir J. D. Hooker in the chair.—*Hollyhock attacked by Fungi:* Mr. W. G. Smith exhibited fruits, and an enlarged drawing, showing them to be often badly attacked by *Puccinia malvacearum*, and a *Cladosporium*, which would probably account for the presence of the Uredo noticed by Mr. Berkeley in the germinating plants.—*Hybrid Lily:* Mr. G. F. Wilson exhibited a very remarkable hybrid between *L. Washingtonianum* and *L. superbum*, which had the foliage of the former, but flowers more like those of the latter.—*Synanthic campanulas:* Mr. G. S. Boulger mentioned that Mr. Gibbs, of Chelmsford, had fertilised a common form of Campanula (with catacorolla), with the pollen of a synanthic blossom. He had raised 200 plants, and many had synanthic flowers.—*Retinospora sport:* Dr. M. T. Masters exhibited a specimen of *R. squarrosa*, which had borne a branch with the characters of *R. pisifera*, proving these supposed species to be one.—*Monstrous Flowers:* Dr. Masters exhibited virescent flowers of Auricula; Mr. Laing, a rose-pink double Begonia, with axillary prolifications of double flowers besides a terminal one, all proceeding from the centre of a male flower; the female flowers being compact and double, but not proliferous to the same extent.—The Rev. G. Henslow exhibited a branch of wallflower covered with minute and almost capillary leaves.

July 11.—Dr. M. T. Masters in the chair.—*Hollyhock disease:* Mr. W. G. Smith exhibited fruits of *Malva sylvestris* with *Puccinia malvacearum*. They confirmed the correctness of his view that the fruits infected by this fungus fall to the ground, and are then capable of producing seedlings diseased with *Uredo* without the intervening *æcidium* stage, as in the case of the hollyhock mentioned above.—*Scolopendrium, diseased:* he also showed the harts-tongue fern attacked by *Didymium effusum*, Lk., a myxomycetous fungus, new to Great Britain. It occurs on both sides of the frond, and grows over the ruptured masses of spore-cases, and even amongst the free spores (for description and figures see *Gardeners' Chronicle*, July 15, 1882).—*Clematis and oat* roots attacked by vibrio (*Tylenchus*, sp. ?): Dr. Masters showed specimens and observed that it was only one variety of black oat which was attacked, but that to such an extent as to destroy whole crops.—*Gardenia and Petroleum:* he brought a spray to show its healthiness after being treated by syringing with this oil and water (a wine-glass to a gallon), to destroy mealy bug.—*Water-lily with foliaceous sepal:* he also exhibited a specimen in which one sepal had developed a leaf-blade at its apex, proving that (as is usually the case) a sepal is homologous with the basal part of the petiole only.—*Coloured pea-pods*: Mr. Laxton of Bedford sent green, purple, and speckled pods, the latter a result from crossing the two former. The purple colour appears to overlie the chlorophyll, which it thereby conceals.—*Antirrhinum Hendersoni:* Mr. Cannell forwarded sprays of this race, which has white flowers with crimson border, but which will not set seed, this being apparently due to atrophy of the pollen. The anthers had dehisced even in bud, and such few pollen-grains as were present were minute and abortive. The ovules, however, appeared to be normal; yet the race does not seem capable of being crossed. Mr. Henslow remarked that when white and purple snapdragons werh crossed the result is usually a streaked corolla with no certainty in the markings as in the present case.—*Aerial petato-tubers:* the Rev. G. Henslow exhibited tubers found in the axils of leaves. He also showed plum leaves perforated with small circular holes, caused by raindrops concentrating the sun's rays, which had thus burnt them.

EDINBURGH

Royal Society, July 3.—Prof. Maclagan, in the chair.—Prof. Tait, in a note on the kinetic theory in relation to dissociation, stated that it followed from that theory as ordinarily enunciated that dissociation should take place at all temperatures, though of course very slowly at low temperatures. This, according to the chemists, was irreconcileable with the facts. It appeared, then, that a slight modification of the kinetic theory is necessary, so as to restrict the utmost ratio in which the velocity of an individual particle may exceed the velocity of mean square. This would entirely remove the difficulty, while in no way interfering with the success of the theory in other directions. A strong analogy in favour of this is afforded by the equation of diffusion and of conduction, from which an infinite velocity is assigned under certain cases to a particle of salt in water. This arises at once from the assumption that the diffusion is always directly proportional to the gradient of strength, however small that gradient may be.—Dr. Knott communicated a brief paper by Mr. Albert Campbell on experiments on the Peltier effect, in which the author had obtained by a very simple method the ratio of the Peltier effect for a given pair of metals at 20° C. to that at 100° C. The pairs he experimented on were iron-lead, iron-zinc, iron-german silver, and lead-silver; and the ratios obtained for these differed in no case more than 8 per cent. from the values indicated on Prof. Tait's thermo-electric diagram—a remarkably close agreement, considering how much metals of the same name differ in their thermo-electric properties.—Prof. Marshall read the continuation of the paper by himself, Prof. C. Michie Smith, and Mr. R. T. Omond, on the lowering of the maximum density point of water by pressure. They had repeated their former experiments with fresh water, and had investigated similarly salt water of about the same density as sea-water. Salt water apparently had no maximum density point at ordinary pressure—a fact previously known—or rather the maximum density point as calculated from a modification of Thomson's formula expressing the thermal effect due to any sudden compression in terms of that compression, is, so to speak imaginary, lying below the freezing-point. The results with salt water are important, as giving greater confidence in their method, so that the lowering of the density-point of fresh water by 5° C., by a pressure of one ton weight on the square inch may be accepted as not far from the truth.—The Rev. J. L. Blake read a paper on vocalisation and articulation, which was a continuation of his former paper on breath-pressure, and in which he considered specially the actions of the various muscles on the lungs and vocal organs in producing speech, pointing out what he considered the chief differences in the actions which accompany breathing, speaking, and singing.

BERLIN

Physiological Society, June 2.—In our account of this meeting (NATURE, vol. xxvi. p. 216), by an oversight a page of the report was omitted. At the close of the notice of Prof. Kronecker's report on Dr. Melzer's experiments on the action of the vagus, and before the words "Since Hunter's time," the following paragraph should have been inserted:—"Prof. du Bois-Reymond read a second report on the recently instituted researches of Prof. Fritsch in Egypt and the Mediterranean, on electric fishes. After Fritsch had satisfied himself

as mentioned in the former communication, that Mormyrus was an electric fish, he thoroughly examined its central nervous system. He found the spinal marrow, when in a fresh state, to be a soft mass, which could be hardened by no medium so as to be made accessible for examination. On the other hand, the brain was of so high a degree of development, that it is even beyond that of the birds, and has a resemblance to that of a rabbit. Furthermore, Prof. Fritsch has examined a great number of Torpedoes from the Mediterranean, and he had made out four distinct species with their respective varieties. Into the specific diagnoses he introduced the number of the columns or pillars in the electric organs, and this because he found—as the result of a long series of careful countings—that the proposition as to the pre-formation of the electric organs (*i.e.* the doctrine that in the electric organs, after their first formation, no new elements are added), was true. The opposite view, that during growth new pillars were continually being formed, until very lately was almost universally held, and seems to have rested on Hunter's authority, who, towards the end of the last century, had made two series of countings, one on a common Torpedo, eighteen inches long, in which were 470 pillars, and one on a giant Torpedo, caught at Torbay, four feet in length, which contained 1182 columns. Hunter seems to have taken it for granted that the larger animal was but an older specimen of the same species, and had thence concluded that the pillars had increased during growth."

June 30.—Prof. du Bois-Reymond in the chair.—Dr. G. Salomon read a paper on his attempt to investigate more exactly the xanthin bodies of urine. He especially investigated the hypo-xanthin and its reactions, and in doing so found a new substance which easily crystallised, and which for the present he called para-xanthin, from its relation to xanthin. From the small quantity it was as yet not possible to make an accurate analysis of it, even though 500 litres of urine had been used in the investigations.—Dr. A. Baginski spoke of the anatomy of the colon in children. He endeavoured to find in the minute anatomy of the colon in infants, an explanation of the well-known fact that children during the first few years of their life can either not digest food containing starch, or at least do so with greater difficulty than adults. He found on the examination of the colon of the human embryo, and of infants up to their fourth year, that in the fœtus, and even after birth, there were no drusæ as yet in the mucous membrane of the stomach and colon, while in the infant the deeper lymphatic vessels were more strongly developed than in the adult.

PARIS

Academy of Sciences, July 10.—M. Blanchard in the chair.—The following papers were read:—On the differential equation which gives immediately the solution of the problem of three bodies to quantities of the second order inclusively, by M. Gyldén.—On various hydrates formed by pressure and release from pressure, by MM. Cailletet and Bordet. They compressed phosphuretted hydrogen in presence of water; on sudden release, crystals of what is doubtless a hydrate of phosphonium were formed within the tube. The critical point was + 28°. Other hydrates were had on treating similarly equal volumes of carbonic acid and phosphuretted hydrogen with water, dry phosphuretted hydrogen, and sulphide of carbon, and ammoniac gas in presence of a saturated solution of that substance (a hydrate of ammonia was formed in the latter case on the admission of some air).—Note on Brisinga, by M. Perrier. The *Travailleur* expeditions have yielded a splendid specimen, almost complete, sixteen well-preserved discs, two very young individuals, and a great many isolated arms. They are mostly *B. coronata*, the large one *B. endecacnemos*. A distinct form got in the Atlantic in 1880 is named *B. Edwardsii*. The development of *Brisinga*, bordering with that of crinoids on the one hand, is singularly like that of Ophiurides and Stellerides on the other.—Researches on the law of activity of the heart, by M. Dastre. He gives experimental proof that the law of periodic variation of the excitability (Marey) is an attribute of muscle, and that the law of uniformity of work or of rhythm (E. Cyon, Marey) is an attribute of the nervous apparatus.—Generalised and contagious *acné indurata*, having for origin varioliform or varioloïd acné, by M. Brame.—On a linear equation with partial derivatives, by M. Darboux.—On the ratio of the circumference to the diameter, and on the Napierian logarithms of commensurable numbers or of algebraic irrationals, by M. Lindemann.—Rectification, by M. Tannery.—On the conditions of achromatism in phenomena of interference, by M. Hurion.—Apparatus, with which may be recorded, in the form of a continuous curve, the liberation or the absorption of gases, and specially those which result from phenomena of fermentation and of respiration, by M. Regnard. Briefly, the gas from a vessel of liquid in fermentation acts on mercury in one arm of a manometer, a float in the other arm rises and pushes up one arm of a balance, making a platinum wire on the other arm dip in mercury and close a circuit. The current passes through two electro-magnets, one of which affects a style on a rotated blackened cylinder (through a ratchet and screw arrangement); the other, by raising a small bell out of mercury, releases the gaseous tension, so that the circuit is broken, and so on. The second apparatus, for respiration, is a slightly modified form.—Reply to M. Berthelot on the subject of the note "On the electromotive force of a zinc-carbon couple," by M. Tommasi.—On basic salts of manganese, by M. Gorgeu.—Action of bromine on quinoleine and pyridine, by M. Grimaux.—Researches on the curves of solubility in water of the different varieties of tartaric acid, by M. Leidie.—Botanical, chemical, and therapeutical researches on globularia, by MM. Heckel, Mourson, and Schlagdenhauffen. They differ from Walz about the chemical nature of the glycoid *globularine*, obtained (along with tannin, colouring matter, and cinnamic acid) by means of boiling water from the leaves. Instead of two products of decomposition under acids, they obtain only one, for which they keep the name *globularetine;* it is oily and resinous-looking after preparation, and becomes a transparent uncrystallisable mass. In hot caustic alkalis it dissolves, fixes the elements of water, and is transformed into cinnamic acid. Globularine contains also a little of a very volatile aromatic substance, which seems to be partly formed of cinnamate of benzyl.—On the presence of glycol in wine, by M. Henninger.—On the duration of the luminous perception in direct and indirect vision, by M. Charpentier. The person gave an electric signal on perceiving light through a hole in the bottom of a dark lined box, when a shutter fell from it. The interval studied (duration of luminous perception) varies in the same individual under like conditions, from simple to double, but a constant mean may be reached (*e.g.*, 13-hundredths of a sec., with daylight). It varies with different persons; is about the same with both eyes; is notably increased by other brain occupation; is greater in indirect than in direct vision; exercise attenuating but not suppressing the difference. Exercise for many days lessens the duration, but in certain curious ways for different parts of the retina.—Regeneration of peripheric nerves by the process of tubular suture, by M. Vanlair.—Experimental researches on the contractility of the uterus under the influence of direct excitations, by M. Dembo. The remarkable uterine excitability of the rabbit, may be connected with the fecundity of that animal. Dogs and cats gave slight contractions.—Analysis of the waters of the isthmus of Panama, by M. Aillaud. The waters of the Rio Grande, at a certain height, and before entrance into the marshy region, are potable.—On the coal basins of Tong-King, by M. Fuchs. The workable coal, to only 100 m. below the sea level, is estimated to be over five million tons. There are four different species in distinct groups of beds.

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