

of sputa, and cessation of dyspnoea. It is claimed that the method reduces the malady to a purely local lesion, all the general symptoms disappearing, even though *râles* may persist. M. Sée related the history of seven of his cases, all of which were relieved and some actually cured. The treatment has been efficacious in fetid bronchitis.

The Physiology of Asphyxia.

That the immediate cause of death from asphyxia, says a writer in the *Lancet*, is the arrest of the pulmonary circulation appears to be proved by the following facts: (1) When the chest of an animal is opened immediately after death caused by ligature on the trachea, the right cavities of the heart are found enormously distended, while the left are comparatively empty. (2) When the heart of an animal is exposed during the progress of asphyxia the right cavities are seen to become distended, while the left cavities, which had been previously gorged, are found to be collapsed and comparatively empty. (3) In the last stage of asphyxia there is a continuous increase of pressure in the pulmonary artery, while the systemic arterial pressure is falling. (4) That the arrest of the circulation through the lungs is due to contraction of the pulmonary arterioles appears to be proved by the influence of agents which are known to paralyze the arterioles,—e.g., nitrite of amyl, atropine, and an excessive dose of curare, the effect of which is that deprivation of air is unattended by distension of the right cavities of the heart, and other evidence of obstructed pulmonary circulation, the life of the animal is prolonged for several minutes, and death ultimately results from the toxic action of venous blood upon the cardiac and nervous tissues. (5) It is an acknowledged fact that these paralyzing agents act alike upon the systemic and the pulmonary arterioles, but the successive phenomena of asphyxia are absolutely inconsistent with the idea that the distension of the right side of the heart is a result of systemic arterial obstruction acting backwards through the left cavities of the heart and the lungs.

The Effect of Strychnine on the Stomach.

The effect of nitrate of strychnine on the functional activity of the stomach has been recently made the subject of a careful research by Dr. Gamper of St. Petersburg, who employed for the purpose of his experiments four healthy young hospital assistants. He found, as stated in the *Lancet*, that strychnine increased the amount of gastric juice secreted, the general acidity, and the quantity of free acid in the secretion. It also hastened the absorption from the stomach, and strengthened the mechanical movements. Its effect, too, continued for some time after its administration had been stopped. Like many other Russian observers, Dr. Gamper seems to have been highly impressed by the value of strychnine in chronic alcoholism, declaring that it is the most effective of all drugs in such cases. The thesis contains a long list of references to the literature of the stomach affections published in six or seven languages during the last ten years.

NOTES AND NEWS.

THE wonderful properties of nitrate of soda are just now being strikingly exhibited at the Ohio Agricultural Experiment Station, where wheat is being grown continuously under different methods of fertilizing. Although the nitrate was not applied until the middle of April, yet it has stimulated such a tremendous growth that the plots which have received nitrate in large quantity carry nearly twice as great a weight of vegetation as can be found on those which have had no nitrate.

—Four trials were conducted at the Wisconsin Agricultural Experiment Station during the fall and winter of 1890-91, under the direction of W. A. Henry, for the purpose of ascertaining the value of sweet whey for pig feeding. The results of the trials show: (1) That pigs can not be successfully maintained on whey alone. (2) Pigs fed on corn-meal and shorts with water required 552 pounds of the mixture for 100 pounds of gain. (3) When whey was added to the corn-meal and shorts mixture, it produced a marked saving in the amount of grain required for good gains.

This was true for mixtures varying from two pounds of whey to one of grain, up to ten pounds of whey to one of grain. (4) It was found when using whey as a partial substitute for grain, that 760 pounds of whey effected a saving of 100 pounds of the corn-meal and shorts mixture. (5) Using these figures, if corn-meal and shorts are valued at twelve dollars per ton, then whey is worth eight cents per hundred pounds; at fifteen dollars per ton for the corn-meal and shorts, whey would be worth ten cents per hundred pounds. (6) Shorts, pea-meal, and oil-meal, or like feeds, should be mixed with whey for growing animals. Some corn may be fed at all times, the proportion increasing as the animal approaches maturity.

—On Feb. 15 there occurred at Glasgow, Scotland, says *Fire and Water*, one of the most remarkable explosions of gas upon record. The illuminating-gas plant of Glasgow is the property of the municipality, and comprises three different stations. The one in question, known as Dawsholm, is situated in a somewhat isolated position outside the town, and includes three gas-holders arranged in line, about twenty-five feet apart, but fortunately as it turns out, at some little distance from the rest of the buildings and plant. The three gas-holders are all similar in respect to diameter, being 160 feet across. Two of these have lately been enlarged by the addition of a third lift, which made them 90 feet in height, and equal to containing more than 1,500,000 cubic feet of gas each. The third remained a double lift, consequently about 60 feet high, and holding something over 1,000,000 cubic feet of gas when full. At about 4.30 in the afternoon the outlet valve of No. 1 was open for the supply of the district, No. 2 shut off, and the inlet of No. 3 was open to receive the make of gas. The valve man opened the inlet of No. 2, with a view, apparently, of diverting the make from No. 3. At this time No. 1 was three parts or more full, No. 2 a little less, but sufficient to cup the lower lift, and No. 3 was not far from being full. Before the man could complete his purpose by closing No. 3 inlet, a large mass of flame was observed shooting high into the air, over the roof of No. 2, the centre holder. It was accompanied by a loud rumbling noise like the shock of an earthquake, together with a concussion that caused windows to rattle violently, and greatly alarmed the inhabitants of the neighboring part of the town. This appears to have been caused by the bursting of the roof of the gas-holder in all parts. It was quickly followed by the destruction, with a second concussion, of No. 1 holder, and in a few minutes the whole structure of both holders lay in a confused mass at the bottom of the tanks. Fortunately this was unattended with loss of life or serious injury. Workmen who happened to be in the vicinity were scorched, and some haystacks one hundred yards off were set on fire; but the enormous volume of some 3,000,000 cubic feet of gas appears to have passed steadily up into the air, and burnt away as fast as it could meet with sufficient oxygen to support combustion. The whole affair was over in four or five minutes. The experts report that they are satisfied that the holders did not contain any explosive mixture, nor did they possess structural defects. But there were "indications of an explosive material having been placed on the crown of No. 2." The explosive power, striking inward, ruptured No. 2, and the concussion was considered sufficient to account for the damage to No. 1. The "indications" appear to be an irregular fracture, having the edges bent inward, and corroded as if by the action of chemicals.

—On Feb. 6 a discovery was made in the necropolis of Thebes which the *Academy* considers second only in importance to the discovery of the royal mummies at Dehr-el-Bahari by M. Maspero, in 1881. About half a mile from Dehr-el-Bahari a pit has been found containing several hundred magnificent mummies. These, like the royal mummies, had evidently been removed from the tombs and concealed in this receptacle, as a precaution, by the servants of the priests, probably at the same time and for the same reasons which caused the royal mummies to be placed in the receptacle where they were found by M. Maspero. This removal is believed by M. Maspero to have taken place in the reign of Aaputh, son of Shasang, of the Twenty-second Dynasty. The coffins hitherto found all belong to the Twenty-first Dynasty, and are those of the priests Ra Amun and their families. The pit is

about forty-five feet in depth, at the bottom of which are two corridors filled with coffins and treasures of every description. In the lower corridor — which as yet has only been explored — it is computed that there are some two hundred coffins, and the second corridor is believed to be not less extensive. The shaft is forty-five feet deep, its mouth is about twelve feet in diameter, and its sides are of rough limestone. One of M. Grébaut's native assistants, who was superintending the work of hauling up the mummy-cases, says that he had been the first actually to enter the corridor where the mummies and treasures lie. The shaft had been excavated only as deep as the mouth of the corridor; and he crept in on his hands and knees, and stood in what he describes as being like a palace of enchantment. The corridor, he said, is some ten or twelve feet high and two hundred and fifty feet long. It runs in a northerly direction from the shaft toward the Theban hill. At the end there is a short corridor branching from it at right angles, and at some height above the floor at the end is the entrance to a second very long corridor, full of treasures, which has been sealed up for the present by M. Grébaut. Groups of mummies are placed at intervals in families. The number in each group varies from two to six or seven, father, mother, and children, and around them, exquisitely arranged, are vases, models of houses, models of *dahabiehs*, cases and boxes full of *ushabtis*, statuettes, and every conceivable treasure of ancient Egypt. Without even a speck of dust upon them, this profusion of treasures had remained unlooked at by any eye for nearly three thousand years. He said that photographs had been taken of the place in its undisturbed state, which he declared to be that of a perfectly-kept and well-arranged museum.

—The ceremony attending the burial of Prince Chun, the late prime minister of China, and father of the emperor, is said, by *The Missionary Herald*, to have been one of the grandest sights ever witnessed in Peking. No burial takes place in China till the astrologers and geomancers have fixed upon a lucky day and a lucky place for the event. On this occasion the astrologers fixed upon four o'clock in the morning as the auspicious time. As the procession started the emperor knelt in front of the coffin and bowed his head three times, each time crying aloud. Others went through the same ceremony, and then the coffin was taken up by eighty bearers. These bearers were clad in blue silk costumes. The pall was a splendid piece of crimson silk covered with gilt embroidery. Then came eight handsomely caparisoned camels and twelve milk-white horses, and men in gorgeous dresses; then four men leading small white dogs; then great crowds of men carrying flags. The umbrellas borne were a special feature. Then came a man bearing a crooked-handled umbrella, which is only carried by the emperor. Then followed images of lions, deer, and storks, all wrought in evergreen shrubs. It was a magnificent sight for Peking. But this is not the end of the funeral; the body will remain in the temple for a long time, and then will be carried with much ceremony to the imperial cemetery.

—Bulletin No. 79 of the New Jersey Agricultural Experiment Station reports an experiment in the use of nitrate of soda as a fertilizer of tomatoes, being a repetition of a similar experiment made in 1889. The experiment was made on plots of one-twentieth of an acre. The land was a sandy loam, level, well drained and in a good state of cultivation. It had been used for more than ten years in growing market garden crops, and had been uniformly cropped and fertilized for the three preceding years. The nitrate was applied, either altogether at the time of setting out the plants, or half at that time and half five weeks later, being spread broadcast. (It should never be used in the hill, as it is liable to kill the plants when used in this manner.) It was used at the rate of 160 and 320 pounds per acre, either alone or in connection with superphosphate and potash. The result was a very marked increase of crop in every case in which the nitrate was used, the most profitable increase coming from the use of nitrate alone, which paid a handsome profit in every case in which it was thus used. The experiments of the two years agree in showing that nitrate of soda, while increasing the yield, did not do so at the expense of maturity when a small quantity was used, or when a large quantity was used in two applications; but that the yield

was increased at the expense of maturity when a large quantity was used in one application. Experiments made at the Ohio Experiment Station leave room for doubt whether, on a strong clay loam, tomatoes would respond so profitably to nitrate of soda as they did in New Jersey; but the trial is so easily made that tomato growers are recommended to experiment for themselves. Any dealer in commercial fertilizers should be able to supply the nitrate.

—At the seventh annual meeting of the Kansas University Science Club, May 29, 1890, papers were read as follows: "On the Chemical Analysis of a Meteorite from Tonganoxie, Kansas," by E. H. S. Bailey; "A Natural Alum from Texas," by E. E. Slosson; "Notes on Periodicity in Rainfall," "Probable Temperature of the Summer in Lawrence," and "Maximum Movements in Beams," by E. C. Murphy; "Notes on some Tertiary Conifers," and "On the Variations of *Anas Obscurus*," by V. L. Kellogg; "The Alkali of Kansas Soil," by E. H. S. Bailey and E. C. Case; "Fossil Diatoms," by Gertrude Crotty; "Douglas County Araneinae" (notes, observations, and a partial list), by F. H. Kellogg; "Notes on Kansas Acrididae," and "Some Undescribed Mallophaga," by F. C. Schraeder; "A Preliminary List of Kansas Odonata," by Hattie Fellows; "Specific Inductivity of Certain Alloys," by Louis Russell; "Analysis of *Solanum Rostratum*," by L. E. Sayre and W. S. Amos; "Telephonic Apparatus for Experimental Purposes," by L. I. Blake and E. W. Caldwell; "Heterocism in Plants," by W. C. Stevens; "A New Method for Determination of Radiation at Ordinary Temperature," by A. G. Mayer; "A Short Account of the Theory of Geometric Inversion," by H. B. Newson; "Sugar-Making in Cuba," by C. S. McFarland; "Taxidermy as a Fine Art" (illustrated by the stereopticon), by L. L. Dyche.

—At the usual monthly meeting of the Royal Meteorological Society, London, on May 20, W. H. Dines read a paper on "The Vertical Circulation of the Atmosphere in relation to the Formation of Storms." After giving an outline of the circulation of the atmosphere, the author refers to two theories which have been suggested to account for the formation of storms; (1) the convection theory, which is, that the central air rises in consequence of its greater relative warmth, this warmth being produced by the latent heat set free by condensation; and (2) the theory that the storms are circular eddies produced by the general motion of the atmosphere as a whole, just as small water-eddies are formed in a flowing stream of water. The author is of opinion that the convection theory is the more probable of the two, but more information about the temperature of the upper air is greatly needed. A paper on "Broken Spectres in a London Fog" was read by Mr. A. W. Clayden. During the dense fogs in February last, the author made a number of experiments with the view of raising his own "spectre." This he ultimately succeeded in accomplishing by placing a steady lime-light a few feet behind his head, when his shadow was projected on the fog. He then made some careful measurements of the size and distance of the spectre, and also succeeded in taking some photographs of the phenomenon. Dr. H. Coupland Taylor read a paper on "An Account of the 'Leste,' or Hot Wind of Madeira." The "Leste" is a very dry and parching wind, sometimes very hot, blowing over the island from the east-north-east or east-south-east, and corresponds to the sirocco of Algeria, or the hot north winds from the deserts of the interior experienced in southern Australia. During its prevalence a thin haze extends over the land, and gradually thickens out at sea until the horizon is completely hidden. It is most frequent during the months of July, August, and September, and usually lasts for about three days. Shelford Bidwell exhibited an experiment showing the effect of an electrical discharge upon the condensation of steam. The shadow of a small jet of steam cast upon a white wall is, under ordinary conditions, of feeble intensity and of a neutral tint. But if the steam is electrified, the density of the shadow is at once greatly increased, and it assumes a peculiar orange brown hue. The electrical discharge appears to promote coalescence of the exceedingly minute particles of water contained in the jet, thus forming drops large enough to obstruct the more refrangible rays of light. It is suggested that this experiment

may help to explain the intense darkness, often tempered by a livid yellow glow, which is characteristic of thunder-clouds.

—The May 21 number of *Nature* states that the Göttingen Society of Sciences has recently offered the following prize in physics for Sept. 30, 1893: From the researches of W. Köntgen and A. Kundt on variation of the optical properties of quartz in the electric field, there appears to be a close connection between the electro-optic phenomena and the elastic deformations which that piëzo-electric substance shows under the action of electrostatic forces. An extension of the inquiries to a series of piëzo-electric crystals with various properties of symmetry seems highly desirable. The investigation should also be directed to determining whether the electro-optic phenomena in piëzo-electric crystals are caused exclusively by the deformations occurring in the electric field or, besides, by a direct action of the electrostatic forces on the light-motion. Prize, £25. The German Society for the Encouragement of Industry offers the following (among other) prizes: (1) How far is the chemical composition of steel, and especially the amount of carbon present, a measure of the usefulness of cutting-tools? Prize, a silver medal and £300; date, Nov. 15, 1891. (2) A silver medal and £150 for the best chemical and physical investigation of the most common iron paints. Date, Nov. 15, 1894. (3) A gold medal and £150 for the best work on the magnetism of iron. This should comprise a critical comparison of previous observations; also personal observations on steel and wrought iron bars of the most various chemical composition possible, examination being made both of the strength of temporary magnetization with absolutely measured and varying magnetizing force, and the strength of permanent magnetism and its durability with regard to temperature-changes and vibrations. Date, Nov. 15, 1893. (4) Investigation of the trustworthiness of the usual methods of determining the carbon in iron. Prize, a silver medal and £150; date, Nov. 15, 1892.

—At the Montreal meeting of the Royal Society of Canada, on May 27, papers were read as follows. In the section on English Literature, History, and Archæology, "Opportunities for the Study of Folk-Lore in Canada," by John Reade; "The Bethucks or Red Indians of Newfoundland," by Dr. Patterson; "Notes and Observations on the Shuswap People of British Columbia," by Dr. George M. Dawson; "Grammar of the Haida Language, Queen Charlotte Islands," by Charles Harrison (communicated by Dr. George Dawson); "Descriptive Notes on Certain Implements, Weapons, etc., from Graham Island," by Alex. MacKenzie (communicated by Dr. G. M. Dawson). In the section on Mathematical, Physical, and Chemical Sciences, the following papers were read: "De la Certitude dans les Sciences d'observation" (presidential address), by Monsignor T. E. Hamel; "Automatic and Multiplex Telegraphy," by F. N. Gisborne; "The Use of a Symbolic Form of de Moivre's Function," by Professor N. F. Dupuis; "An Attempt at Deducing the Pressure Under which a Steam Boiler Explodes from the Dynamic Effects Produced by the Explosion" and "A Steam Boiler Explosion at Sillery, near Quebec," by C. Baillargé; "Etablissement des Formules de Wrouski relatives a le Mécanique celeste," by Dr. A. Duval; "The Variation with Temperature and Concentration, of the Absorption Spectra of Aqueous Solutions of Salts," "The Density of Weak Aqueous Solutions of Nickel Sulphate," and "The Relativity of Force and the Third Law of Motion," by Professor J. G. MacGregor; "The Synthesis of a New Di-Quinoline," by Dr. R. F. Ruttan (communicated by Dr. Girdwood); "Faraday's 'Lines of Force': Suggestion of a Name," and "Newton's Use of the Slit in the Formation of the Spectrum," by Alexander Johnson; "A New Oxy-Ether Lamp," by G. R. Prowse (communicated by Dr. Johnson); "Memoranda as to Preparations for the Proposed Telegraphic Longitude Determination: Greenwich-Montreal," by Professor McLeod (communicated by Dr. Johnson); "Observations of Sun Spots, May, 1890, to May, 1891," by Professor McLeod (communicated by Dr. Johnson); "The Time-Unit" and "The Hour Meridians," by Dr. Sanford Fleming; and "Moral and Personal Elements in Statistics," by George Hague (communicated by Sir William Dawson). In the section on Geological and Biological Sciences papers were read as follows: "The Probable Occurrence

of Gold-bearing Rocks in New Brunswick," by Professor L. W. Bailey; "Notes on the Pleistocene Plants of Canada, with Descriptions of New Species from the United States," by Professor D. P. Penhallow; "The Geological Formation of Quebec, South of the River St. Lawrence," by R. W. Ells (communicated by J. F. Whiteaves); "The Present State of Botany in the Dominion of Canada, with Suggestions as to Promising Lines of Investigation, and a Proposal for United Effort in Systematic Observation throughout the Several Provinces and Territories," by George Lawson; "Note on Carboniferous Batrachians, by Sir William Dawson; "Parka decipiens. — Notes on Specimens from the Collections of James Reid," by Sir William Dawson and D. P. Penhallow; "Hibernation: a Preliminary Communication," by Professor Wesley Mills; "The Orthoceratidæ of the Cambro-Silurian Rocks of Manitoba" and "The Ammonites of the Cretaceous Rocks of the Valleys of the Peace and Athabasca Rivers," by J. F. Whiteaves; "The Geology of the St. Clair Tunnel," by Frank D. Adams (communicated by Sir William Dawson); "Observations on the Distribution and Habits of Some New Brunswick Fishes, including New Forms Lately Identified," by Philip Cox (communicated by Professor Bailey); "Illustrations of the Fauna of St. John Group, No. 6," by G. F. Matthew; "Three Deep Wells in Manitoba," by J. B. Tyrrell (communicated by Dr. G. M. Dawson); and "The Sequence of Strata forming the Quebec Group of Logan and Billings, with Remarks on the Fossil Remains Found Therein," by Henry M. Ami (communicated by Dr. G. M. Dawson).

—The *Perak Government Gazette* states that a portion of an ethnographical collection formed by Signor G. B. Cerruti, in the island of Nias, has been recently acquired by the Government of Perak for the museum. Pulo Nias, as described in *Nature*, is one of a chain of islands bordering the south-western coast of Sumatra. The population is said to be numerous and of one race, though divided into many tribes under independent chiefs. Head-hunting is as common with them as it used to be in Borneo, and most of the houses have skulls hung up in them. Their weapons consist of iron-headed spears, mostly barbed, knives of two patterns, somewhat resembling the Kadubong Achi, with shields of two distinct types. No bows and arrows or blow-pipes seem to be known, nor are throwing-sticks applied to their spears; boats also are not used by them, though rafts are sometimes made to cross rivers on. The ironwork of their weapons is fashioned by themselves, and the upright double cylinder bellows is used to supply wind to their forges — the same in every respect as those used by the Semangs of Upper Parak, and the far-away Malagasy. Helmets of black *ijoh* fibre are worn, somewhat similar to the cocoanut-fibre ones of the Sandwich Islanders. Woven body armor is in use, in the shape of thick coats made of what appears to be the fibre of *Hibiscus tiliacens*. Buffalo hide armor is also said to be used, but is not represented in this collection. Attached to the sheaths of some of the knives are four or five animals' teeth, such as tigers, rhinoceros, etc., also a small carved wooden idol, and one or more bamboo boxes containing stones. In those examined there were twelve pebbles in each box. These stones are supposed to have been taken from a spot on which a man had been slain. All these charms are tied up into a bundle with red cloth, and bound with string on the upper front part of the sheath of the knife.

—A comprehensive study of the influence of forests on the daily variation of air-temperature has been recently made by Professor Müttrich (*Nature*, May 21), the data being from stations in Germany and Austria. *Inter alia*, this influence is greater in May to September or October than in the other months. In pine and fir woods it rises gradually from January to a maximum in August or September, then falls more quickly to a minimum in December; but in beech woods a minimum occurs in April, then there is a quick rise, till the maximum is reached in July. The daily variation itself is greatest in May or June, both in forest and open country. The influence of the forest is to lower the maxima and raise the minima, and the former influence is in most months greater than the latter; in December and January, and occasionally in neighboring months, it is less. The influence on the maxima in

summer is greatest in beech woods, less in pine, and least in fir. The absolute value of the influence in woods of a given kind of tree is affected by the degree of density of the wood, being higher the denser the wood. The character of the climate (oceanic or continental) also affects the results. From daily observations in forest and open country, every two hours in the second half of June, it appears that, soon after 5 A.M. and 8 P.M., the air-temperature in the wood was equal to that in the open; that the maximum was about 0.9° lower in the wood, and the minimum 0.6° higher; that in May to September the difference sometimes reached 2.7° ; that the maximum in the wood occurred about half an hour later, and the minimum a quarter of an hour earlier, than in the open; and that the daily mean air-temperature was about one-third of a degree less in the wood.

—Dr. F. M. Chisolm states, in the *American Journal of Ophthalmology*, that two curious cases, one an adult, and the other a child of ten years, presented the following physiological freak. When first noticed by the patient, it was supposed to be dirt; and when examined it presented a dark bluish line, about half an inch in length, running vertically up from the ciliary border. Under a magnifying glass it was recognized as the shaft of a hair that, in process of growth, had its tip caught as it was emerging from its follicle in the epithelium, and growth had pushed it onwards, wedging aside the epithelium, until it had gained its usual limit of size.

—The extraordinary collection of mummies, papyri, and other objects of antiquarian interest recovered last February at Dehr-el-Bahari, is now safely housed in the Ghizeh Museum. According to the Cairo correspondent of the *London Times*, all the objects are in good condition, although some anxiety was caused by the protracted journey by boats from Luxor. The correspondent says that the mummies mostly belong to the 21st Dynasty, and, though styled Priests of Ammon, are supposed to be the corpses of generals and other official dignitaries who bore ecclesiastical besides other titles. The 163 mummies and the 75 papyri are not yet unrolled, and it is difficult to form an estimate of their archæological value, as many of the sarcophagi bear different names on the outer and inner casings, whilst others have the names usually inscribed on the outer casings intentionally effaced. M. Grébaut thinks that, owing to this circumstance and the magnitude of the collection, some time will be required before any important communications can be made to the scientific world.

—A series of experiments has been lately made by Herr Rubner with regard to the familiar fact that not only dry high temperatures are more easily borne than moist, but dry cold causes much less discomfort than moist cold. Dogs, fasting or fed, being observed in an air calorimeter, it appeared that, in all cases, moist air increased the loss of heat by conduction and radiation. For every variation of the air-moisture one per cent, heat was parted with to the extent of 0.32 per cent. In a previous investigation, says *Nature*, Herr Rubner demonstrated the lessened yield of water by evaporation from animals where the air-moisture is increased, involving lessened loss of heat. Here, then, are two antagonistic influences. He is disposed to regard the increased radiation and conduction in moist air as the primary action, and the diminished evaporation as secondary. The colder feeling of moist cold than dry is readily explained by the increased heat radiation. In moist heat, with the sense of oppression it brings, this factor passes rather into the background. The degree of temperature, and some other influences, of complex nature, also affect the amount of radiation.

—The Seventh International Congress of Hygiene and Demography will be held in London, Aug. 10 to 17. The meetings of the Section of Preventive Medicine will be held under the presidency of Sir Joseph Fayrer in Burlington House, Piccadilly, on Aug. 11 to 14, between 10 A.M. and 4 P.M. On Tuesday, Aug. 11, after a short address by the president, a discussion will be held upon "The Mode of Preventing the Spread of Epidemic Disease from one Country to Another." The discussion will be opened by Surgeon-General J. M. Cunningham, C.S.I., of London. On Wednesday a discussion will be held upon "Diphtheria, with Spe-

cial Reference to its Distribution, and to the Need for Comprehensive and Systematic Enquiry into the Causes of its Prevalence in Certain Countries or Parts of Countries, with a View to its Prevention." The discussion will be opened by Dr. Edward Seaton of London, and continued by leading representatives of France and America. On Thursday a discussion will be held upon "The Relation of Alcoholism to Public Health, and the Methods to be Adopted for its Prevention." The discussion will be opened by Sir Dyce Duckworth, LL.D., M.D., of London, and by Professor Westergaard of Copenhagen. On Friday papers on miscellaneous subjects will be read and discussed. A list of papers accepted by the section will be published later. Gentlemen who are desirous of joining the congress and taking part in any of the discussions, or of communicating papers on other subjects within the scope of the section, are requested to inform the honorary secretaries of the section before June 15. Abstracts of papers to be read in the section must be furnished to the honorary secretaries not later than June 15; and the full text of the papers before July 15. Communications respecting the section should be addressed to Dr. Isambard Owen, 40 Curzon Street, London, W.

—In a paper recently published in the *Meteorologische Zeitschrift*, of which a brief abstract appears in *Nature* of May 21, Professor Hellman of Berlin shows, from observations taken at different British, Continental, and American stations at which barographs are used, that there exists a close coincidence in the daily range of the monthly extremes and in that of the hourly values of the barometer. He finds that the hours of occurrence of the highest and the lowest readings of the barometer during a month agree almost completely with the times in which the normal daily range has its maxima and minima, both curves being so similar in shape that it may be possible to judge of the general character of the daily range of the barometer from knowing only the hours at which the monthly extremes mostly occur. Hence, as the lowest readings of the barometer are accompanied by cloudy and stormy weather, during which the effect of the solar radiation upon the surface of the earth and the heating of the lower strata of the atmosphere are quite insignificant, Professor Hellmann concludes that Professor Hann and others are right in assuming that the normal daily range of the barometer is chiefly an effect of the absorption of the solar rays in the upper strata of our atmosphere. Professor Hann has applied the harmonic analysis to the numbers furnished by Professor Hellman, and, by combining several stations in a group, has found the coefficients of the periodic formula to be practically the same as those for the normal daily range. We should, however, like to see a further confirmation with respect to the coincidence of the lowest readings and the diurnal minima, since the lowest readings occur so frequently during the passage of a severe storm, which can scarcely be said to have any agreement with the ordinary diurnal fluctuation.

—The first paper in the last volume of "Transactions of the Seismological Society of Japan," says *Nature*, is by Mr. Bertin, and describes the double oscillograph and its employment for the study of rolling and pitching. It traces curves automatically, showing the motion produced in a floating body by waves. The second paper is on the "Seiches" of lakes, by Dr. F. A. Forel of Geneva, and discusses those variations in the level of the water of lakes with the investigation of which the author's name has been associated for some years past. Professor John Milne describes the remarkable instrument invented by him for measuring and recording the oscillatory movements of railway trains. Mr. Mason contributes a paper, accompanied by carefully compiled tables, demonstrating the importance of elaborating some uniform system of time-keeping for the purposes of seismological observations. Professor C. G. Knott, in his paper on earthquake frequency, explodes two of the time-honored delusions of the popular mind in regard to earthquakes, viz., that they are more frequent during the night than the day, and that their periodicity is connected with lunar culminations. Mr. Otsuka gives an interesting account of the great earthquake that visited Kumamoto in July, 1888; and Mr. Pereira contributes a carefully compiled record of all the earthquakes noted by him in Yokohama from March, 1885, to December, 1889. Mr. W. E. Forster writes on earthquakes of

non-volcanic origin, caused, it is suggested, by the displacement of masses of land beneath the ocean. The volume concludes with various reports and papers by Professor Milne, such as diagrams of earthquakes recorded in Tokio, a report on earthquake observations made in Japan during the year 1889, and an essay on the connection between earthquakes and electric and magnetic phenomena, which is full of matter of an interesting and suggestive kind.

—Elementary organic analyses are commonly effected in laboratories by what are known as combustion processes. The substance to be analyzed is placed in a long glass tube and heated in proximity to copper oxide, etc., and the products of combustion are then examined. Electricity has been applied to the analysis of gases in the eudiometer, and also in many cases of what are called electrolytic separations. We are not aware, however, says the London *Electrical Review*, that it has been applied to the analysis of organic substances until quite recently. J. Oser has just worked out an entirely new method, which may be described as electro-thermal. The new method partakes of the nature of the old combustion process, of which it is really, perhaps, a modification. The substance to be burnt is placed in a small porcelain dish which is surrounded by a coil of thin platinum wire, and is contained in an ordinary hard combustion tube. A stream of pure oxygen gas is allowed to flow steadily along the tube, and at the same time the platinum wire is heated to redness by means of an electric current, the wires being kept insulated by passing through narrow apertures in a porcelain cylinder fitting into the tube. In order to insure perfect combustion, all the products of combustion, together with the excess of oxygen, are led through a narrow aperture in the porcelain cylinder filled with granular copper oxide and heated to a high temperature by an electrically ignited platinum wire which also passes through this aperture. A number of precautions appear to be necessary in order to insure satisfactory results by this method, and these, together with a table of numerical results which Oser has obtained, are given in the original paper. Oser is engaged in attempting to develop his method so that in one apparatus may be determined both the elementary analysis and the heat of combustion of any given organic substance.

—As it is desirable that uniform usage in regard to geographic nomenclature and orthography should obtain throughout the executive departments of the Government, and particularly upon the maps and charts issued by the various departments and bureaus, the following persons, who have heretofore co-operated for a similar purpose under the authority of the several departments, bureaus, and institutions with which they are connected, have been appointed by the President as a Board on Geographic Names. Professor Thomas C. Mendenhall, United States Coast and Geodetic Survey, chairman; Andrew H. Allen, Department of State; Capt. Henry L. Howison, Light-House Board, Treasury Department; Capt. Thomas Turtle, Engineer Corps, War Department; Lieut. Richardson Clover, Hydrographic Office, Navy Department; Pierson H. Bristow, Post Office Department; Otis T. Mason, Smithsonian Institution; Herbert G. Ogden, United States Coast and Geodetic Survey; Henry Gannett, United States Geological Survey; and Marcus Baker, United States Geological Survey. This board has just issued a bulletin in which it lays down the following principles, adopted for guidance in determining the official form or rendering of geographic names (A.—Within the United States): (1) That spelling and pronunciation which is sanctioned by local usage should in general be adopted; (2) Where names have been changed or corrupted, and such changes or corruptions have become established by local usage, it is not in general advisable to attempt to restore the original form; (3) In cases where what was evidently originally the same word appears with various spellings, sanctioned by local usage, when applied to different features, these various spellings should be regarded as in effect different names, and, as a rule, it is inadvisable to attempt to produce uniformity; (4) Where a choice is offered between two or more names for the same place or locality, all sanctioned by local usage, that which is most appropriate and euphonious should be adopted; (5) The possessive form should be avoided whenever

it can be done without destroying the euphony of the name or changing its descriptive application. (B.—In foreign countries): (6) Geographic names in countries that use the Roman characters should be rendered in the form adopted by the country having jurisdiction, except when there are English equivalents already fixed by usage. In cases where the English equivalent is so different from the national form that the identity of the latter with the former might not be recognized, both forms may be given; (7) The spelling of geographic names that require transliteration into Roman characters should represent the principal sounds of the word as pronounced in the native tongue, in accordance with the sounds of the letters in a system published by the board. An approximation only to the true sound is aimed at in this system. The vowels are to be pronounced as in Italian and on the continent of Europe generally, and the consonants as in English.

—Platinum and palladium crystals may be made by placing topaz dust on a ribbon of the metal heated to a white heat by an electric current, the crystals appearing on the topaz.

—According to the *Colonies and India*, Mr. Alexander McPhee, a West Australian bushman, who has steadily been earning fame lately by his explorations in the central regions of Australia, started inland from Roebourne in July last on another tour of discovery, taking back at the same time an albino aboriginal whom he found and brought to Melbourne a couple of years since. News has been received from which it appears that Mr. McPhee, with the albino, Jun Gun, and a "black fellow" named Timothy, went along the coast some 250 miles to a station called Yinadong, when the party turned inland in an easterly direction. After travelling about 350 miles, Mr. McPhee came upon another albino, a boy of fourteen years, whom he describes as the most extraordinary specimen of humanity he ever saw. One old man in this camp told Mr. McPhee that when he was a boy he heard of a party of whites and horses dying a long way inland. The old fellow could give no particulars about this party, but Mr. McPhee feels certain, owing to his acquaintance with the habits and customs of the blacks, and being thoroughly conversant with their dialect, that a party of white men perished about forty years ago somewhere in the interior. He heard of Warburton's party, and saw a native who told him that he guided them to water. He also heard of two parties of whites who had lately been in the desert, but turned back. From his turning point to the coast of La Grange Bay, Mr. McPhee reckons he was about 250 miles in a south-east direction from that bay. He found the natives very friendly, and on no occasion was it necessary to keep a watch. The country is described as very poor. The only birds observed during the journey were an odd crow and a few sparrows about the water. Not a track of a kangaroo or emu was seen.

—The settlement of a purely philological question (that, namely, as to the position of the French accent), by a physical method, has been recently attempted by Dr. Prigsheim of Berlin. According to *Nature*, the instrument used was König and Scott's phonograph, into which a number of Frenchmen were required to speak, the measurement of the record being afterwards made by means of a tuning-fork curve running parallel with it. This instrument renders possible a determination of the duration, pitch, and intensity of each syllable, and Dr. Prigsheim discusses its indications. As a preliminary result, he finds that two-syllable words have the vowels pronounced with equal length and strength. Noteworthy differences appear in the curve of a word according as it occurs in the middle or at the end of a sentence. In the latter case, there is added to the characteristic word curve a terminal curve with declining pitch and strength, which is nearly the same for different words, and corresponds to the sinking of the voice before a pause. The vowels and consonants show characteristic curves; and notably long wave-lengths occur with *n*, *l*, *b*, and *d*. The duration of syllables varies between 0.1 and 0.5 second; and between the syllables of a word there are often pauses of 0.03 to 0.2 second. The shortest syllable *é* in *été*, with rather slow pronunciation, consisted of 22 vibrations; yet the ear is capable of not only hearing the tone, but of detecting fine shades and differences in the mode of pronunciation. Further experiments in this direction, with an improved apparatus, are contemplated.