sodium, by N. Beketoff. The amount of heat disengaged during the complete hydration of sodium has been found equal to 55,000 calories, which figure, combined with that of Thomsen, gives 100,260 calories for the heat of oxidation of one molecule of sodium (50,130 for each atom).—On the naphtha lamp for burning heavy oils, examined at the Chemical Society's competition, by M. Andréeff.—On the naphtha of Caucasus, by MM. Markovnikoff and Ogloblin; second part.—The chief constituent parts of this naphtha, about 80 per cent. of it, would be hydrocarbons of the C_nH_{2n} series—C_8H_{16}, C_9H_{18}, and so on to $C_{15}H_{30}$. The authors propose to call them naphthenes, and describe their properties at length. The aromatic hydrocarbons constitute about 10 per cent. of the naphtha, partly known before, and partly seeming to belong to new series isomeric with the styrol series and its isologues. The oxygenated products, partly acid and partly neutral, play also an important part in the naphtha, which contains also a few phenols and lower hydrocarbons.—On naphtha; an answer to MM. Markovnikoff and Ogloblin, by Prof. Mendeléeff.—On the continuous graphic determination of the depth of shallow waters, by Prof. Petrushevsky. The author proposes to adjust to a boat a pole whose longer end would be dragged at the bottom of the river, whilst its shorter end would draw on a board the configuration of the bottom.—On the determination of the average coloration of a surface painted with different colours, by the same.—On the influence of light on the electrical conductibility of selenium, by N. Hesehus.

Archives des Sciences Physiques et Naturelles, July 15.—Verification of some atomic weights, by M. C. Marignac; first memoir, bismuth and manganese.—American ants, by Henry MacCook.—Ripple marks studied in Lake Leman, by Dr. F. A. Forel (one sheet of illustrations).—New researches on the Saturnian system, by W. Meyer.—Hypoxanthine in potatoes, by A. Weber.—Chloride of calcium, by V. Meyer.—Remarks on methods of determining vapour densities, by Alois Janny.—Acetoximes, by J. Petraczek.—On the aldoximes, by V. Meyer.

Rendiconti of the Royal Lombard Institute of Sciences and Letters, July 12, 1883.—Descriptive catalogue of a new series of rare or unpublished Greek coins and medals preserved in the Royal Numismatic Cabinet of Milan, by the curator, E. B. Biondelli. Amongst the 128 extremely rare and in some cases even unique specimens here described are medals of Julius Cæsar with Augustus from Achulla in Zeugitania, and of the two African Gordians from Cilicia, besides several coins from Sabrata, Thæna, Clypea, and other North African towns, including one of the Mauritanian king Ptolemy, son of Juba II., absolutely unique. The general catalogue of all the oriental and mediæval series, together with the historic and commemorative medals, is making rapid progress, and its publication is promised in a short time. The complete legends as far as legible are given in all cases, together with a brief description of the subjects.—The structure of the seeds in the family of the Oleaceæ fully described, by Prof. R. Pirotta.—On the functions of a single variant with more than two periods, π, π', π'' . . ., by Prof. F. Casorati.—Meteorological observations at the Observatory of Milan, with tables of barometrical and thermometrical changes, and records of relative humidity, direction of the winds, and cloudiness during the month of June.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, August 20.—M. Blanchard, president, in the chair.—Observations on the smaller planets made at the great meridian of the Paris Observatory during the second quarter of the year 1883, by M. Mouchez.—On a letter of General Stebnitski concerning the figure of the earth, by M. Faye. The Russian *savant* holds that the actual form of the globe, as expressed by the ideal continuation of the sea-level beneath the continents, differs from the theoretic ellipsoid not only in the undulations produced by the attraction of mountain ranges, and of the denser parts occurring here and there in the crust of the earth, but also in the deformations due to the attraction of the continents. In reply M. Faye contends that the mathematical surface of the globe is not modified by these causes, and that the level of the oceans is not sensibly affected by the influence of the mainland.—A study of the deformations and development of heat produced by the use of round-faced hammers in forging, by M. Tresca.—Observations touching a passage in M. V. Burg's recent communication on the use of copper as a preservative against cholera, by M. Vulpian. The author explains that a statement attributed to him by M. Tresca, regarding the use of copper as a prophylactic by English and French officers in Egypt, India, and Cochin-China, is groundless. He adds that he regards the advantage of the use of copper as a preservative as extremely doubtful.—On the separation of gallium (continued). Separation from tungsten and phosphoric acid, by M. Lecoq.—Experimental researches on explosive gas motors, by M. A. Witz.—Researches on the iodide of nitrogen; on chemical radiometers or iodide of nitrogen photometers; on the preparation in a low temperature of nitrogen, iodide of ammonium, and iodate of ammonia under the influence of light, and on the double iodide of copper and nitrogen, by M. Antony Guyard.—A contribution to the history of the formation of coal, by M. B. Renault. The author concludes that in many cases fossil coal is produced by the transformation *in situ* of the constituent elements of the plants whose forms it has preserved; that both the wood and bark have entered into the formation of coal, and that in the process of transformation the organic elements have diminished in size in a determinable proportion depending on the primitiue density of the constituent organic matter.—Remarks on the *Phylloglossum Drummondii*, by M. C. Eg. Bertrand.

BERLIN

Physiological Society, July 27.—Prof. H. Munk spoke regarding the doctrine of the functional restoration of the cerebrum first deduced by Flourens from experiments he made on the cerebrum of doves. Flourens had observed that, on the excision of but a small part of the greater brain, the disorders which resulted in the sensuous perceptions and intelligence of the animal operated on ceased after some time, and the animal then acted as before in its normal state. On the excision, however, of a larger part from the cerebrum, the subsequent restoration was only incomplete. Were, again, a very large part cut off from the greater brain, the resulting disorders continued to the end of the animal's life. Flourens had further concluded that the functions of the whole of the cerebrum were strictly equivalent to one another, and that every part of it was capable of vicariously taking the place of every other part. This doctrine propounded by Flourens regarding cerebral functions having, however, been overthrown in consequence of investigations by Fritsch and Hitzig and replaced by that of the localisation of particular functions in particular parts of the cortex cerebri, the phenomenon which to all observers, on the removing of less than a quarter from the hemisphere of the cerebrum, had suggested the idea of functional restoration of the brain, now received a different interpretation. By some investigators it was maintained that the restoration was to be explained by the function of the excided part of the brain being taken over either by the corresponding part of the other side or by some other part of the brain situated on the same side, in the cortex, or in the interior, in either case in addition to its own special function. Others, again, deemed the restoration only an apparent one; in reality no function was suspended by the removing of a part of the cerebrum, it was only a check that was imposed through the irritation of the act of separation, and when that was relieved, the normal functions came again into play. Prof. Munk has for several years carried on investigations into the functions of the cortex cerebri, leading, as is known, to the conclusion that a limited part of the cortex situated on the flap of the occiput was the seat of the central visual perceptions (the sphere of vision) and that another exactly defined part of the cortex, situated on the flap of the temples, marked the site of the acoustic perceptions (the sphere of hearing), while a third region was appropriated to the sphere of feeling. He has further prosecuted his inquiries into the question of the restoration of cerebral functions, and by experiment has endeavoured to determine whether the assumed restoration of functions previously discharged by parts of the cerebral cortex now removed were a true statement of the fact, and if so how this was accomplished. He first affirms the universally recognised fact that the restoration of matter lost to the brain by the excision of a part or parts of it in no case ever happened, but in every case after the excision the remaining mass only cicatrised. As regards functional restoration, then, his experiments in the spheres of sight and hearing led him to the following conclusions:—Were the spheres of sight or the spheres of hearing removed from an animal, it remained blind or deaf for the rest of its life; no restoration of the faculty in question ever took place in either case, though only limited por-

tions of the brain were removed and the whole of its remaining mass were left intact; this latter could nevertheless in no case ever take the place of the excided parts. Were, again, only one sphere of sight or one sphere of hearing removed, the animal became blind or deaf on the opposite side, and this one-sided blindness or deafness likewise continued throughout the whole of the rest of the animal's life. Even should only small parts of one sphere of sight or one sphere of hearing be removed, restoration of the functions of these parts never followed. Were, for example, the outer half on the left side of the sphere of sight taken away, the median half of the right retina would then continue blind so long as the animal survived this operation. Were the inner half of the sphere of sight taken away, the lateral half of the opposite retina would be rendered blind throughout the rest of the animal's life. Were the hinder part of the sphere of hearing destroyed, the animal would for the rest of its life continue deaf to deep tones. Were the anterior half of the sphere of hearing taken away, the animal would be rendered for ever insensible of high tones by the corresponding ear. Even though ever so small portions of the sections in question of the cerebral cortex were removed, the corresponding part of the retina would be rendered blind, and the animal become deaf to the tones appropriate to the part where the excision was made. It is true that in time the animal learns to make up for the defects caused by the operations and with the remaining unaffected parts of the retina (supposing the operation has reference to the sight) will contrive to see so well, and act in general in such a way as to superficial observations to convey the impression of an animal endowed with normal powers of sight. On close examination, however, of the particular parts of the retina it will in every case be found that the parts corresponding with the excided part in the central cortex is blind. Functional restoration of an excided part of the cerebral cortex never therefore occurs, however small be the part excided. Otherwise, notwithstanding, it would seem to be the case with another function of the sphere of sight which is concerned not with the first visual perceptions but with visual representations or conscious images consequent on perceptions. Has an animal, for example, taken from it the central sphere of sight, it then loses all conscious images; the mere seeing of objects with the intact peripheral parts of the retina is still possible for it, but not the recognition of them. After some time, however, the animal will regain the power of forming conscious images, and will then recognise the objects it sees. Here, then, we have the restoration of a lost function on the part of the cerebrum. In this case, however, the functional restoration is, according to Prof. Munk, only an apparent one. The actual state of the case is as follows:—Conscious images are formed in this way. Visual perceptions becoming an object of attention produce visual representations which give rise in one place of the central organ to a change which, existing as latent conscious image, is aroused by an equivalent or similar visual representation, which in its turn is begotten of perception and attention. These conscious images have their seat in the central part of the sphere of sight corresponding with the central part of the retina, the place of clearest vision. If this central part of the sphere of sight be removed, the animal loses its conscious images, it is soul-blind. According to Prof. Munk's conception, however, the seat of conscious images lies in the centre of the sphere of sight only for this reason, that usually the visual perceptions coming from the central part of the retina, and therefore the most distinct, alone become the subject of attention, and are transformed into visual representations. The images of perception, on the other hand, reaching from the peripheral part of the retina to the peripheral part of the sphere of sight, being less distinct, do not become the subject of attention, and are therefore not transformed into visual representations. If, however, with the central part of the sphere of sight conscious images are taken away—if the animal is soul-blind—attention can now fasten only on the images which are seen by the periphery of the retina, the central part being quite vacant in consequence of the operation. In this case, then, visual perceptions in the peripheral parts of the sphere of sight are by attention transformed into representations, whence now conscious images are drawn. If you render an animal soul-blind on one side, it will never of itself draw conscious images from that side, it will see only with the central parts of the sound eye. If now, however, you blindfold the animal on its visual side, and so compel it to look with the peripheral parts of the side operated on, the soul-blindness on this side will vanish. Restoration is consequently a word totally inapplicable here. On the contrary, all that we here find is that cerebral parts are utilised as a repository of conscious images, which by the normal animal are not turned to account simply because it has other parts with more distinct powers of perception to answer its purpose. The circumstance that former observers have always been impressed with the idea of restoration of sensuous activity is to be explained by the fact that the sphere of sight and the sphere of hearing lie only to a small extent on the surface which is more exposed to injury, and therefore, in the case of a simple excision from the cerebrum, they are always only partially affected.—Prof. Zuntz related briefly that last year he had inoculated guinea-pigs with bacillæ of septicæmic rabbits and mice, and that they had all escaped harm. When, however, he repeated these experiments this year, the inoculated guinea-pigs all fell sick, but not from septicæmia, but from peritonitis. When, again, rabbits and mice were inoculated with bacillæ of guinea-pigs who had died of peritonitis, they bred lepticæmia and *vice versâ*. Under the microscope both kinds of bacillæ were seen to behave quite alike.

VIENNA

Academy of Sciences, June 14.—F. Steindachner and L. Doederlein, contributions to knowledge of Japanese fishes (second paper).—E. Hann, on the climate of Bosnia and Herzegovina.—C. Etti, on the history of the tannic acid of oak bark.—M. Neumayr, on the morphology of the valve of bivalves.—L. Teisseyra, contribution to a knowledge of the Cephalopoda fauna of the Jura in the Risan Government (Russia).—Zd. H. Skraup and G. Vortmann, on the derivatives of dipyridine.

June 21.—H. Hammerl, a study on the copper voltameter.—R. Benedikt and M. von Schmidt, notes on halogen derivatives.—K. Hazura, on nitro-sulphoresoreinic acid.—H. Bittner, on *Micropsis veronensis*, a new Echinus of the Upper Italian Eocene.—Contributions to a knowledge of Tertiary Brachiura fauna.—A. Lieben and S. Zeisel, on the constitution of butyrochloral.—K. Natterer, on dichlorocrotonaldehyde.—J. Kachler and F. V. Spitzer, on the action of the isomeric camphor bromides on nitric acid.—Zd. H. Skraup, a sealed paper on the constitution of quinine.—S. Exner, on the defective excitability of the retina by light of abnormal incidence.—J. Woldrich, on the diluvial fauna of Zuzlawitz in Bohemia.

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