

## SCIENTIFIC SERIALS

THE *Quarterly Journal of Microscopical Science* contains several papers of importance. The first is by Dr. Klein, entitled "Observations on the Early Development of the Common Trout (*Salmo fario*)," in which the condition of the blastoderm between the third and thirteenth day is described. The subject is minutely treated, and the bibliography is very complete.—Mr. John Priestley gives a *résumé* of recent researches on the nuclei of animal and vegetable cells, and especially of ova, and afterwards collates the various statements, indicating their points of divergence.—The investigations of Prof. E. Auerbach and Strasburger, of Dr. Oscar Hertwig and Van Beneden, are those discussed.—M. Edouard Van Beneden's valuable "Contributions to the History of the Germinal Vesicle, and of the first Embryonic Nucleus" contains much of special interest with reference to the relation of the germinal vesicle and the first cleavage nucleus of the egg, especially with reference to the different results arrived at by the author in his study of the ovum of the rabbit, and M. Hertwig's investigations on the echinoderm *Toxopneustes lividus*.—Mr. H. R. Octavius Sankey gives a new method for examining the structure of the brain, and reviews some points in the histology of the cerebellum. The dye employed for the staining is aniline blue-black, in which sections of fresh brain should remain twelve hours or so, and afterwards be dried.—Dr. James Foulis gives a lengthy memoir on the development of the ova and structure of the ovary in man and other mammalia. Three plates accompany his paper. The author mainly devotes himself in this communication to the description of the appearances in the ovaries of young kittens, and of the human fetus, with the object of demonstrating, in particular, that whereas the eggs are derived from the germ epithelium, the nutrient cells of the ovum, or the follicular epithelial cells, are derived from the cells of the stroma of the ovary.—Dr. Carpenter, in a paper on the genus *Astrorhiza* of Sandahl, lately described as *Haeckelina*, by Dr. Bessels, reintroduces the earlier account of the genus, and figures it.

*Journal of Botany*.—Among the more important articles on descriptive and systematic botany in this periodical since the commencement of the current year are a description of *Rumex rupestris*, Le Gall, as a British plant, by Dr. Trimen, with a plate; a description of four new species of *Fuchsia* from South America, by Mr. Hemsley, and a conspectus of the genus *Glycosmis*, by Mr. Kurz, with two plates. Mr. Sorby contributes a paper on the colouring matter associated with chlorophyll, in which he combats some of the conclusions of Pringsheim, and Prof. Church some further notes on plant-chemistry, with analyses of *Lactuca salivra*, *Chondrus crispus*, in which the ash reaches the very large amount of 14.15 per cent. of the air-dry plant, and *Nasturtium officinale*, and of the ash of the bud-scales of the beech, and of the female flowers of the elm. In the April number is the commencement of Prof. De Bary's very important report of researches into the nature of the potato-fungus, *Phytophthora infestans*.

Although the articles in the *Scottish Naturalist* are mainly of local interest, two notable exceptions are furnished by those on "Animal Psychosis," by the Rev. J. Wardrop, and "Illustrations of Animal Reason," by Dr. Lauder Lindsay, portions of which occur in the numbers for January and April, both of which we hope to see reprinted in a form to reach a larger public. There are a large number of notes on the zoology of Scotland, and Mr. A. Sturrock records an addition to the flora of that country in the discovery, in Loch Cluny, Perthshire, of *Najas flexilis*, hitherto confined to Ireland as far as the British Islands are concerned. Dr. Buchanan White and Dr. Sharp continue their lists of the Lepidoptera and Coleoptera of Scotland respectively.

*Poggendorff's Annalen der Physik und Chemie*, No. 1, 1876.—In Regnault's experiments on the specific heat of gases, it was necessary that the spiral through which the gas streamed should have considerable length, so that the gas might fully take the temperature of the heating vessel, and fully yield up its heat in the calorimeter. A correspondingly large size of vessel and a large quantity of gas were required. In a new investigation by M. Wiedemann, here described, the chief object was to diminish the calorimeter, and yet not compromise the yield of heat of the gas, that is, to afford the heated gas as great a surface in as small a space as possible. His heating vessel was a copper cylinder stuffed with copper turnings and enclosed in another

copper vessel containing water or paraffin to be heated. In the calorimeter the gas passed successively through three vertical and connected silver pipes filled with silver turnings, and gave its heat to the surrounding liquid. The author shows that his method is not behind that of Regnault in accuracy, and as the quantity of water was only a tenth of that which Regnault used, only a tenth part of the gas was required, to obtain as great elevation of temperature. Thus extensive results could be had in shorter time. The tabulated numbers for the seven gases examined do not materially differ from those of Regnault.—A paper by Dr. Dvorak follows, describing many interesting experiments on acoustic attraction and repulsion. He studies the case of rods in transverse vibration; also the action of a screen in a sound wave; acoustic attraction and repulsion of resonance; also that in liquids and the phenomena in air columns thrown into continuous vibrations.—The observations of M. Plateau on liquid films are extended by Dr. Sondhaus, who endeavoured to determine the extent to which different liquids could be stretched in films in wire rings, observed such lamellæ in closed vessels excluding external disturbances, measured with a balance their tension, and, with a manometer, the pressure of bubbles on the enclosed air; he also measured the weight of such lamellæ and bubbles, whence their thickness might be inferred. With a simple contrivance, consisting of a thin wire bent horizontally to an angle and a straight wire placed across and drawn gradually away from the angle, it may be shown that all liquids can be stretched in lamellæ, and different liquids may be compared in this respect. But Dr. Sondhaus prefers the circular wire rings. He compares (as to size) the films got from forty-six different liquids. Among some facts relating to durability of films, we note that one film from a guillaja decoction, to which a little glycerine had been added, was produced in a vessel on 1st Sept., 1872, and lasted till 11th March, 1873, or over half a year.—M. Groth communicates the results of a study of the elasticity of rock salt by observation of the velocity of sound in different directions in it, a method more easily carried out than that of M. Voigt, who measured the elastic bending of rods of the substance. The researches of both leave no doubt that in regular crystals the coefficient of elasticity, and therewith the velocity of sound, is a function of the direction; and in accordance with Neumann's theory, they vary symmetrically with reference to the planes of symmetry of the crystal. A geometrical plane of symmetry of a crystal is at the same time a physical plane of symmetry. A crystal may be defined as a homogeneous solid body whose elasticity varies with the direction.—We further note the first part of a valuable paper by M. Grotian, on the constants of friction of some salt solutions and their relations to galvanic conductivity; and some observations of M. Edlund on the connection of galvanic induction with electro-dynamic phenomena; also, extracted papers on the occurrence of nitrogenous iron among the fumarole products of Mount Etna, and on the thermo-electric properties of some calcareous spar, beryll, idocrase, and apophyllite.

*Revue des Sciences Naturelles*, December, 1875.—The most interesting original observations recorded in this number are contained in a short paper by D. A. Godron, on fertilisation of flowers by Hymenoptera. Near Nancy it is found that the hybrid produced by the fertilisation of *Primula grandiflora* with pollen of *P. officinalis* results from the intervention of bees, but the converse hybrid does not occur. M. Godron published an account of this in 1844. The reason for the non-occurrence of the second hybrid is that *P. grandiflora* flowers earlier in this locality than *P. officinalis*. M. Godron was able to produce the hybrid *P. grandiflora-officinalis* artificially, but never saw it as a natural product till March, 1874, when it was brought to him from a locality two kilometres distant from the first. On investigation it was found that only *P. officinalis* grew at this spot, and that owing to situation and surroundings it flowered much earlier than in the other locality; but the hybridisation could only be effected by the carrying of the pollen of *P. grandiflora* two kilometres by bees.—The summaries of French memoirs on science are full and valuable; foreign summaries of moderate extent are likewise given.

## SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 4.—"On the Absorption-Spectra of Bromine and Iodine Monochloride," by H. E. Roscoe, F.R.S., and T. E. Thorpe.

The paper contains the results of an exact series of measurements of the absorption-spectra of the vapours of the element bromine and of the compound iodine monochloride, made with the object of ascertaining whether the molecules of these two gases vibrate identically or similarly, their molecular weights and colour of the vapours being almost identical.

A careful comparison of these Tables and of the map shows that, although both spectra contain a large number of lines which are nearly coincident, the spectra as a whole are not identical, either when the vapours are examined at high or low temperatures, or when the length of the columns of absorbing gas are varied.

Linnean Society, April 20.—G. Bentham, F.R.S., vice-president, in the chair.—Mr. Hudson, Dr. Prior, Mr. Stainton, and Mr. C. Stewart were appointed auditors for the current year.—Dr. Hooker, P.R.S., exhibited some specimens illustrating a communication from Dr. J. Kirk, which was read. This latter referred to the identification of the modern copal tree, *Trachylobium Hornemannianum*, with that which yielded the Zanzibar Copal or Gum Animi, now found in the earth on the east coast of Africa, and often where no copal yielding tree now exists. Little doubt now rests as to the identity of the semi-fossil with the living tree, inasmuch as bijugate leaf, flower-bud, flower, ovary and stamens, characteristic of the latter have been discovered in the so-called Animi. Dr. Kirk is inclined to account for their difference in quality by a molecular or chemical change in the buried material; improving it thereby, and as a consequence increasing its market value.—Mr. W. P. Hiern read a paper "On the African species of the genus *Coffea*, Linn." As at present understood this genus belongs to the Old World, and the numerous American species that have previously been referred to it, now find places in other genera. All the species most valuable for economic or commercial purposes are confined to Africa or are of African origin. Of the seven Indian species, one formerly was cultivated, but from its inferiority has since been discarded in favour of the African plants. The so-called wild coffee of Sierra Leone and Fernando Po, and other berries, are occasionally used by the inhabitants of those places as coffee; but they do not belong to the genus in question. The author distinguishes and technically characterises some fifteen species of coffee plant as indigenous to Africa and its adjacent islands. They are:—1. *C. arabica*, 2. *C. liberica*, 3. *C. stenophylla*, 4. *C. sanguinaria*, 5. *C. brevipes*, 6. *C. melanocarpa*, 7. *C. mauritiana*, 8. *C. Macrocarpa*, 9. *C. hypoglauca*, 10. *C. microcarpa*, 11. *C. afzeltii*, 12. *C. subcordata*, 13. *C. rupestris*, 14. *C. jasminoides*, 15. *C. racemosa*. He rejects some six supposed species of African Coffees, showing these belong to other groups. Of the 15 species, 13 inhabit the African Continent, and 2 pertain to Mauritius and Bourbon; so far as yet explored, West Africa furnishes 11 species, and but two are found in East and Central Africa. Mr. Hiern describes numbers 2, 5, 11, 12, and 13, viz., five in all as new species, and three others are MS. names of specimens in the herbarium of the late distinguished botanist, Mr. Welwitsch. He alludes to a pale-berried variety of the *C. arabica* found by Vogel in Sierra Leone. By far the most interesting new plant commercially and otherwise is the Liberian Coffee introduced into this country in 1874, by Mr. W. Bull, the horticulturist. This is said to be far superior to the ordinary coffee of commerce, *C. arabica* having larger berries, a finer flavour, and being at the same time more robust and productive.—A paper "On the Classification of *Narcissus*," by Mr. Shirley Hibberd, was announced.—Mr. Thiselton Dyer read a note "On the Plant yielding Lattakia Tobacco," and exhibited specimens corroborating the conclusions arrived at by him. These latter are that Lattakia tobacco is produced by a different species to the Turkish, and that as imported into this country it consists of the flowering twigs made up into bundles which have been smoked with pine wood.—Prof. Dickie had a summary read of a further contribution of his to the botany of the *Challenger* expedition, viz., a List with Remarks of the Polynesian Algae collected by Mr. Mosley. Only a very few species appear to be new to science.—Dr. Hooker communicated a paper of P. F. Reinsch's, on New Freshwater Algae obtained by the Venus Transit Expedition in the Island of Kerguelen. This being technical in character, was taken as read.

Chemical Society, May 4.—Dr. Gilbert, vice president, in the chair.—Eight communications were made to the Society, namely:—On glycerophosphoric acid and its salts as obtained from the phosphorised constituents of the brain, by Dr. J. L. W. Thudicum and Mr. C. T. Kingsett.—On some reactions of

biliverdin, by Dr. Thudicum.—On the relation between chemical constitution and colouring power in aromatic substances, by Dr. O. Witt.—On certain bismuth compounds, by Mr. M. M. P. Muir.—A new method for preparing the hydrocarbons diphenyl and isodinaphthyl and on the action at a high temperature of metallic chlorides on certain hydrocarbons, and a note on the occurrence of benzene in rosin light oils, both by Mr. W. Smyth.—On the action of water and of various saline solutions on copper, by Mr. T. Carnelly, and notes on some experiments made to ascertain the value of a proposed method of determining the mineral strength of soils by means of water culture, by Mr. G. W. Hight.

Zoological Society, May 2.—Robert Hudson, F.R.S., vice-president, in the chair.—Mr. G. Dawson Rowley exhibited and made remarks on a specimen of *Machærirhynchus nigripectus*, from New Guinea, believed to be the first example of this rare bird which had reached this country.—Extracts were read from several letters received from Dr. George Bennett, F.Z.S., giving some account of the proceedings of Mr. L. M. D'Alberis, and of his recent expedition up the Fly River in December, 1875.—Mr. J. H. Gurney, jun., exhibited and made remarks on an example of the Lesser White-fronted Goose, from Egypt, being the first record of the occurrence of this species in Africa.—Mr. Osbert Salvin, F.R.S., exhibited and made remarks on a piece of a trunk of a pine from Guatemala, which had been perforated by a Woodpecker (*Melanerpes formicivorus*), for the purpose of storing acorns.—Mr. A. Grote exhibited and made remarks on Col. Gordon's drawing of *Ovis polii*, which was the original of the figure given in the Society's *Proceedings* for 1874.—Mr. George Busk, F.R.S., read a memoir on the Ancient or Quaternary Fauna of Gibraltar, as exemplified in the Mammalian remains of the ossiferous breccia, which occurs in the caves and fissures recently explored in different parts of the rock.—Mr. Busk, after a preliminary description of the geological features of the rock and its fossiliferous caverns and fissures, treated specially of the various bones of the bear, cat, horse, rhinoceros, stag, ibex, and other animals, of which the remains occur there, and proceeded to refer them to the species to which they seemed to belong.—Prof. A. H. Garrod read a paper on the anatomy of the Colies (*Colius*), which he regarded as belonging to the Piciform group of the division of Anomalognathous birds according to his arrangement, but constituting an independent family.—A communication was read from Mr. E. L. Layard, containing the description of a new Blackbird (*Turdus*), from Taviuni, one of the Fiji Islands.—The Rev. Canon Tristram read a note on the occurrence of the Roebuck in Palestine.

Geological Society, April 26.—Prof. P. Martin Duncan, F.R.S., president, in the chair.—The Rev. Edwin Hill, M.A., was elected a Fellow, and Prof. Beyrich, of Berlin, a Foreign member of the society. The following communications were read: A translation of the notice by Capt. Miaulis of the Greek royal navy, of the occurrence of a submarine crater within the Harbour of Karavossera, in the Gulf of Arta. Communicated by the Secretary of State for Foreign Affairs.—"The physical history of the Dee, Wales," by Prof. A. C. Ramsay, F.R.S. The author stated that he regarded the valley of the Dee as mainly preglacial throughout, and sketched the physical history of the region through which it runs. The Silurian rocks were much disturbed and denuded before and during the Carboniferous period, and the carboniferous limestone was deposited very unconformably on the upturned edges of both lower and upper Silurian strata, and once spread all over the region, probably overlaid by the millstone grit and coal-measures, as now in the east of Denbighshire and Flintshire. The region was again disturbed and elevated during the formation of the Permian deposits, and then by sub-aerial denudation a great part of the carboniferous series was removed down to the old plain of denudation of the Silurian rocks, the surface of which thus probably stood higher than it does at present, being in the midst of a broad continental area. From a consideration of the conditions of deposition of the Mesozoic and Tertiary formations the author concluded that, from the beginning of the Permian to that of the Glacial epoch, the higher ground of Wales was land well raised above the sea, except perhaps during the deposition of the chalk, and that during all this period it was exposed to the influence of sub-aerial agents of denudation. He indicated the conditions of elevation of the old table-land of carboniferous rocks, and showed that it had probably a slope towards the east and north-east to the extent of about 23 feet in a mile. The drainage of this land then flowed in an easterly and north-easterly direction

along the earliest channel of the Dee, which would be at an elevation from 1,300 to 1,400 feet higher than the present channel. During the Glacial epoch ice-action deepened, and more or less modified the existing channel, and scooped out the basin of Bala Lake, which was not previously in existence. The general results of this investigation are as follows:—After the last important disturbance of the pre-Permian rocks, North Wales was carved slowly and by sub-aërial agencies into its present mountainous form, chiefly between Permian and Preglacial times. The work of the glaciers of the latter period somewhat deepened, widened, smoothed, and striated the minor outlines of the mountains and valleys, and excavated many rock-bound lake-basins, but did not effect any great changes in the contours of the country. A minor submergence of part of Britain during part of the Glacial epoch produced no important effects on the large outlines of the rocky scenery; and the effects of sub-aërial waste subsequent to the Glacial epoch have been comparatively small.—On the Ancient Volcano of the District of Schemnitz, Hungary, by Mr. John W. Judd. The old volcanoes of Hungary have long been known to present some very interesting illustrations of the relations between the igneous rocks erupted at the surface, and those which have consolidated at a considerable depth beneath it. The district in which these phenomena can be best studied is that of Schemnitz; but although this area has been very carefully mapped and explored by a number of able investigators, the greatest diversities of opinion still exist concerning the relations of certain of the rock-masses exposed within it. Over an area nearly fifty miles in diameter enormous accumulations of *andesite* and *quartz-andesite* lavas and agglomerates have been erupted, these now forming a group of mountains rising from 3,000 to 4,000 feet above the sea-level, and culminating in a great ring of precipitous heights overlooking a depressed central area of oval form, the site of the famous mining towns of Schemnitz, Kremnitz, and Königsberg. In the midst of this depressed central area there occurs a considerable development of *rhyolitic* lavas and tuffs, and more scattered outbursts of *basalt*. From the magnificent floras associated with the various volcanic tuffs, we know that the andesitic rocks were erupted during the earlier portion of the Upper Miocene period and the rhyolitic towards its close, while the basalts are probably of as late date as the Pliocene. Besides the rhyolites and basalts, however, there are certain other rocks exposed in the central area of the Schemnitz district, the relations of which it is very difficult to understand. These consist of (1) strata of Lower Trias and Nummulitic age, through the midst of which the volcanic outbursts have evidently taken place; (2) masses of highly metamorphic rocks, including quartzites, crystalline limestones, various schists, gneiss and aplite; and (3) undoubted eruptive rocks, which have usually been called "syenite and granite," but for which the names of "diorite and quartz-diorite" would perhaps be more appropriate, inasmuch as the prevailing felspar in them is always a plagioclase variety. By Deudant and other early writers the andesitic lavas were recognised as volcanic products of a comparatively recent geological period, while the "granite, syenite, and greenstone," were regarded as being of far more ancient date. By von Pettko, Richthofen, and all the more recent investigators of the district, however, it has been clearly perceived that the "greenstones" are certainly, like the andesites, of Tertiary age, and hence such names as "greenstone-trachyte" and "propylite" have been applied to them. The studies of the author of the present memoir, both in the field and in the cabinet, have led him to the conclusion that the granitic, porphyritic, and lava rocks—which were formerly called "syenite," "greenstone," and "trachyte" respectively—are all of similar composition and equivalent age, and that they differ only in their more or less perfect state of crystallisation, the result evidently of variations in the conditions under which they have consolidated. He is further led to regard the metamorphic masses, around the several intrusive centres as being not, as has hitherto been maintained, of "Primary" (Devonian or Permian) age, but simply Triassic rocks affected by local or contact metamorphism. The real structure of the great Schemnitz volcano was first recognised by von Pettko in 1848, though this author erroneously regarded it as presenting an example of a "crater of elevation." The history of the formation and destruction of this volcano is now shown to be as follows:—After some small and scattered outbursts of rocks of acid composition towards the close of the Oligocene period, the grand eruptions of andesitic lavas of the Miocene began, through the agency of which a volcano of larger dimensions than Etna was gradually built up, by both central and lateral eruptions. In the midst of this

volcano a crater of enormous dimensions was formed, doubtless by some great paroxysmal outbreak, and by the subsequent subsidence of the mountain the sea gained access to, and by denudation greatly enlarged the area of this "Caldera." Then in the central lagoon of the caldera a number of minor eruptions, first of acid and then of basic rocks took place; and the volcano, which at this period of its history must have closely resembled the existing island of Santorin, was again upheaved from beneath the sea, and exposed to the wasting effects of subaerial denudation. The gradual decline of the volcanic forces in the district was marked, as is usually the case, by the appearance of hot and mineral springs, discharges of gas, occasional earthquakes, &c. While affording such remarkable examples of the perfect transition between the so-called plutonic and the volcanic classes of rocks, and of the phenomena of contact metamorphism, the granitic masses of the Schemnitz district are without question truly *intrusive*; and a careful study of them lends no support whatever to the hypothesis that such rocks may be formed by the extreme metamorphism of sediments *in situ*. There is the most complete proof that in the Schemnitz district the formation of true mineral veins, containing gold, silver, and other metals, has taken place within the most recent geological periods; in some cases, indeed, at a later date than the Pliocene.

Institution of Civil Engineers, April 25.—The first paper read was descriptive of the "Dhu Heartach Lighthouse," by Mr. David Alan Stevenson, B.Sc.—The second paper read was "On the changes in the tidal portion of the river Mersey, and in its Estuary," by Mr. James N. Shoolbred, B.A., Assoc. Inst., C.E.

May 2.—Mr. George Robert Stephenson, president, in the chair.—The paper read was on fascine work at the outfalls of the Fen Rivers, and reclamation of the foreshore, by Mr. W. H. Wheeler, M. Inst. C.E.

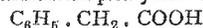
## BERLIN

German Chemical Society, Feb. 28.—A. W. Hofmann, president, in the chair.—H. Ritthausen described a crystalline constituent of *vicia saliva* vicin,  $C_9H_{15}N_3O_6$ , which, treated with sulphuric acid, yields a sulfoconjugated acid, exhibiting blue reactions with baryta water and ammonia.—R. Schiff has transformed chloracetyl-aldehyde by heating it with acetate of potassium into the diacetate of ethylidene. The former body is therefore chloro-acetate of ethylidene,

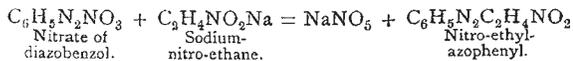


—R. Barth, by treating resorcin with hydrochloric acid, has produced an anhydride of resorcin,  $C_6H_4.OH.O.C_6H_4.OH$ , a dichroic substance, green in reflected light and red in solution.—O. Wilf published considerations on the constitution of organic dyes.—M. Nencky has found indigo in the urine of dogs fed with indol.—A. Oppenheim reported on various researches on aceto-acetic ether. Together with H. Precht, he has simplified the method for obtaining this substance in large quantities. The vapour density has been taken, and it has been explained why no hydrogen is evolved during the action of sodium on acetic ether; the reason being the transformation of acetyl,  $CH_3CO$ , into oxethyl,  $CH_3CH_2O$ . The same chemists have discovered a practical method for obtaining dehydracetic acid,  $C_6H_8O_4$ , by passing aceto-acetic ether through heated iron tubes. They described its ethyl-compound and the action of potash on dehydracetic acid:  $C_6H_8O_4 + 3H_2O = 2C_6H_4O_2$  (acetic acid) +  $C_2H_6O$  (acetone) +  $CO_2$ . Baryta forms at the same time a substance resembling orcin. The same chemists found acetic ether, when heated, to yield ethylene and acetic acid.—A. Oppenheim and C. Emmerling have studied the action of oxidising agents on oxyuritic acid. The result is an acid,  $C_7H_8O_9$ , to which they give the name of hydro-oxybenzoic acid. By fusion with potash, it yields benzoic acid and water.

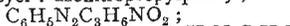
March 13.—A. W. Hofmann, president, in the chair.—Dr. Radziszewsky has transformed phenylacetic acid



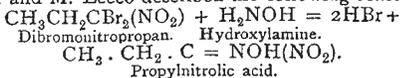
into the corresponding aldehyde and alcohol;  $\frac{1}{2}$  phenyl-ethyl-alcohol  $C_6H_5 \cdot CH_2 \cdot CH_2OH$ , liquids boiling at  $207^\circ$  and  $212^\circ$ .—F. Salomon has compared the properties of oxalurate of ethyl obtained by synthesis from urea with chloro-oxalate of ethyl with that obtained from oxalurate of silver. He has found them identical in the properties. Amongst other reactions he remarks that both with oxide of silver yield parabanate of silver.—V. Meyer and several of his pupils revert to the reaction which mixed azocompounds:—



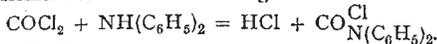
By generalising this reaction the following compounds have been prepared:—By V. Meyer : azonitropolyphenyl,



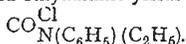
by T. Barbieri : azonitroethylparaboly,  $C_6H_7N_2C_2H_4NO_2$ ; and azonitrophenylorthoboly,  $C_7H_7N_2C_2H_4NO_2$ ; by H. Wald : azonitroethylparabromophenyl,  $C_6H_4BrN_2C_2H_4NO_2$ ; by F. Hallmann : azonitroethylnitrophenyl,  $C_6H_4NO_2N_2C_2H_4NO_2$ .—V. Meyer and M. Lecco described the following reaction:—



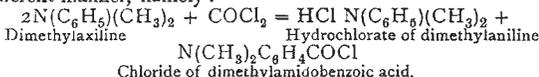
—W. Michler described the following reactions:—



This, with ammonia, yields the urea,  $CO(NH_2) \cdot N(C_6H_5)_2$ ; and with aniline the urea,  $CO(NHC_6H_5) \cdot N(C_6H_5)_2$ . Oxychloride of carbon and ethylaniline yields the chloride—



If, instead of monoethyl-aniline, dimethylaniline is submitted to the action of oxychloride of carbon, the reaction passes in a different manner, namely:—



The acid is easily obtained, and proves to be identical with dimethylamidoparabenoic acid.—P. Claessen proved the identity of rhodan-acetic acid of Heintz with what Vollhardt called isosulfocyno-acetic acid.—C. Reimer has obtained the following very remarkable result of the action of chloroform on an alkaline solution of phenol, viz., salicylic acid. This reaction may be generalised. Cresol and other phenols offer similar results.—O. Braun described an apparatus destined to retain the solid and liquid parts of smoke, as also those parts that may be absorbed by solids or liquids. He likewise described a similar apparatus for retaining sparks.—E. Schunk and H. Roemer gave details on the preparation of isoanthraflavinic acid and a comparison of its properties with anthraflavinic acid. The described substitution-derivatives with four atoms of bromine and with two molecules of acetyl, ethyl, and methyl respectively.—F. Tiemann has transformed vanilline by acetic anhydride into a coumarine. The corresponding acid is ferulic acid. He drew attention to the relation of vanillinic and coniferylic derivatives which corresponds to that of benzoic and cinnamic compounds.—F. Tiemann and H. Haarmann have found in vanilla besides vanilline, vanillic acid, resin, and fat.

PARIS

Academy of Sciences, May 1.—Vice-Admiral Paris in the chair.—The following papers were read:—Discovery of the small planet (163), M. Leverrier. It was discovered at Toulouse, April 26, by M. Perrotin.—On the electro-motive forces produced on contact, of liquids separated by capillary diaphragms of any nature, by M. Becquerel. Using dilute instead of concentrated liquids, he finds the electromotive force increases with the time of contact reaching a maximum. The action probably consists of a condensation of acid and alkaline particles on the faces of the diaphragm, just as gases are condensed in porous bodies.—On the oscillations of temperature of half January, half February, and half April, 1876, by M. Sainte-Claire-Deville. In April there was a minimum about the 15th; in January and February about the 12th.—On microclimic felspar and on andesine, by M. Sainte-Claire-Deville.—Microscopic examination of orthose and of various triclinic felspars, by M. Des Cloizeaux.—On electric polarisation, by M. Du Moncel. An electrified plate sheathed with oxygen may produce a different effect from an unelectrified plate so sheathed, the electric vibrations continuing after the electric source has ceased (phosphorescence is analogous). The author studies this with hard stones; he also studies the effects of polarisation with induced currents, effects of local currents in stones, &c.—Note on the theory of several hydraulic machines of his invention, by M. De Caligny.—On the embryogeny of Ephemera, especially that of *Palmodgenia virgo* (Olivier), by M. Joly.—On fishes of the Ceratodus group in the river Fitzroy, Australia, by M. de Castelnau.—New researches on gallium, by M. Lecoq de Bois-

baudran.—Experiments on solar heat, by M. Salicis. A sealed packet (of 1868) relating to utilisation of solar heat by reflectors, &c. He describes a heliodynamic and a heliostatic apparatus.—Researches on the compounds of pure carbon in meteorites, by Mr. J. Lawrence Smith.—On the Phylloxera which comes from the winter egg, by M. Boiteau. Direct application of sulphide of carbon in the treatment of phylloxerised vines, by M. Allies.—On a new mode of cultivation of the vine without pruning, by M. Martin.—On the employment of the method of articulation in education of deaf mutes, by M. Houdin.—Observations of planets at the Observatory of Marseilles, by M. Stephan.—Phenomena of interference obtained with thin sheets of collodion, by M. Gripon.—On the distribution of magnetism in cylindrical bars, by M. Bouty.—On the transmission of electric currents by derivation across a river, by M. Bouchotte; an experiment made in 1858. An air line of 300 m. (with battery) on one bank of a river, was connected by both ends to earth, and a similar line on the other bank contained a galvanometer. On the battery circuit being closed, the needle was deflected.—On a new system of electro-magnet with flat spirals, by M. Serrin. The wires of bobbins of electro-magnets, used in regulators of powerful electric lights, sometimes become so hot as to fuse the insulating matter surrounding them. M. Serrin forms his electro-magnetic spirals of metallic helices without insulating cover, and so arranged that the spirals cannot touch one another. He hollows out his helice from a copper cylinder of thickness equal to that of the bottom, and he covers the core with vitreous enamel. The spiral may be raised to a red heat without the sensibility of the apparatus being affected.—On a new sulphate of potassium, by M. Ogier.—On the origin of stripe in puddled iron, by M. Le Chatelier. The stripe results from small fusibility of partially peroxidised scorie, and from the comparatively low temperature at which the puddling is done.—On a new crystallised organic substance, by M. Loiseau. It is called *raffinose*, and was got in investigating the most favourable conditions for extraction of sugar from molasses by means of the sucrate of hydrocarbonate of lime. Crystalline raffinose has the formula  $C_6H_7O_7$ .—On a new method of studying the respiration of aquatic animals, by MM. Jolyet and Régnard. The object is to keep the medium always in the normal state, however long the experiment. In a limited closed space, containing determinate quantities of water and air, it was required to make air circulate in the water, to absorb the  $CO_2$  in proportion as it was exhaled, and replace O as it was consumed. A figure of the apparatus is given.—On the crystalline system of various substances presenting optical anomalies, by M. Mallard.—The elephants of Mont Dol; dentition of the mammoth; distinction of upper and lower molars, right and left, by M. Sirodot.—On the cranial cavity and the position of the optic orifice in *Stenosaurus Heberti*, by M. Morel de Glasville.—On a new thermo-cautery, by M. Paquelin. It depends on the property which platinum has, of becoming incandescent (once it has been raised to a certain degree of heat) in a gaseous mixture of air and of certain hydrocarbonised vapours.

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