

SOCIETIES AND ACADEMIES

LONDON

Royal Society, January 25.—“Description of the Living and Extinct Races of Gigantic Land Tortoises, Parts iii. and iv. The Races of the Aldabra Group and Mascarene Islands” (conclusion), by Dr. Albert Günther, F.R.S.

In continuation of, and concluding, the researches into the history of the Gigantic Land-Tortoises, read before the Royal Society on June 20, 1874, and published in the 165th volume of the “Philosophical Transactions,” the author treats in Parts iii. and iv. of the Tortoises of the Aldabra Group and Mascarenes.

By the addition of the valuable materials obtained by one of the naturalists of the Transit of Venus Expedition to Rodriguez, and by the Hon. Edward Newton in Mauritius, as well as by the aid of supplementary information received from other sources, the author has been enabled to show in the present parts of his paper that the round-headed division of Tortoises is confined to Aldabra and never extended to the Mascarenes proper; and that the Tortoises from the latter islands can be externally, though not osteologically, distinguished as a whole from the Galapagos Tortoises, as will be seen from the following synopsis:—

- Nuchal plate absent. Frontal portion of the skull flat. Fourth cervical vertebra biconvex. Pelvis with broad symphyseal bridge.
- A. Gular plate double; sternum of moderate extent ... GALAPAGOS TORTOISES.
- B. Gular plate single; sternum short ... MASCARENE TORTOISES.
- a. Carapace thin, thickened towards the margins; centre of the last vertebral plate raised into a hump, which is separated from the penultimate vertebral by a transverse depression: *Tortoises of Mauritius* (*T. triseri-rata*, *T. inepta*, *T. indica*, *T. leptocnemis*).
- b. The entire carapace extremely thin and fragile, all the bones very slender: *Tortoise of Rodriguez* (*T. vosmaeri*).
- II. Nuchal plate present. Frontal portion of the skull convex. Third cervical vertebra biconvex. Pelvis with narrow symphyseal bridge. Gular plate double. Carapace thick. ALDABRA TORTOISES (*T. elephantina*, *T. daudini*, *T. ponderosa*, *T. hololissa*).

Linnean Society, January 18.—Prof. Allman, president, in the chair.—Three new Fellows were elected, viz., Dr. W. Miller Ord, Thos. Routledge, and S. D. Titmas.—An interesting and scientific memento of the ill-fated *Polaris* Expedition was exhibited by Mr. R. Irwin Lynch. This consisted of a pot of growing wheat which had been sown from the grain left in *Polaris* Bay, 81° 38' N., by the American Expedition. Capt. Sir George Nares, in a letter to Dr. Hooker, says that the grain in question had been exposed to the winter frosts, 1872-76; notwithstanding the intense cold it had been subjected to, the above sample grown at Kew gave 64 per cent. as capable of germination. A grain of maize, among the wheat, which also sprouted, possessed even greater interest, inasmuch as being a truly tropical plant.—The amphibious and migratory fishes of India formed the subject of a paper by Dr. Francis Day. He first instanced many forms which respire air direct, can live for long periods after their removal from water, and are but little affected by a bandage being placed round their gills, preventing the use of that organ. The *Saccobranchus* was shown to have a distinctly amphibious circulation, venous blood being sent by the pulmonary artery to the respiratory sac, and arterial blood being returned from it to the aorta. He questioned the accuracy of the swim-bladder of fishes, being the homologue of the respiratory bladder of amphibia, and observed that in the *Saccobranchus* both a respiratory sac and a swim-bladder co-existed; the one along the muscles of the back, the other more or less inclosed in bone but possessing a pneumatic duct.—Mr. G. J. Romanes read a second notice on varieties and monstrous forms of *Medusæ*. He expressed surprise that among the jelly fish—at least the naked-eyed group, with their lowly grade of organisation and proneness to exhibit the phenomena of gemmation—examples of monstrous and misshapen forms are comparatively rare. In those cases met with, especially in *Aurelia aurita*, the deviations from the normal type nearly always occur in a multiplication or in an abortion or suppression of *entire segments*. This affects the segments of the umbrella in a symmetrical manner, whilst the ovaries and manubrium, to a certain extent, may or may not be implicated.

Chemical Society, February 1.—Prof. Abel, F.R.S., president, in the chair.—Dr. H. E. Armstrong read a paper on Kekulé's and Ladenburg's benzene symbols, in which he discussed the relative value of the two symbols as a means of expressing the known reactions of benzene and its derivatives, expressly pointing out how Ladenburg's prism symbol was more in accordance with our knowledge of the quinones; but that up to the present time, although it might be considered proved that in benzene six carbon atoms were linked together in a closed chain, we had no evidence to show the manner in which the atoms were united. Subsequently Mr. W. H. Perkin read a paper on the formation of coumarine and of cinnamic, and of other analogous acids from the aromatic aldehydes. These acids, of which twenty are described in the paper, were obtained by the action of a metallic salt and acid anhydride, such as sodic acetate and acetic anhydride on an aromatic aldehyde; the latter part of the paper contained an account of the acids obtained from coumarin.

Anthropological Institute, January 30.—Annual meeting.—Col. A. Lane Fox, F.R.S., president, in the chair.—The Treasurer presented his Report, which showed that the finances of the Society were in a satisfactory condition. The President delivered his anniversary address. It gave a short *résumé* of the papers that had been read during the past year. From the Report of the Council it appeared that there had been an increase of members in 1876 over deaths and retirements. The following Officers and Council were elected to serve for 1877:—President, John Evans, F.R.S. Vice-presidents: Prof. George Busk, F.R.S., Hyde Clarke, Col. Lane Fox, F.R.S., A. W. Franks, F.R.S., Francis Galton, F.R.S., E. Burnet Tylor, F.R.S. Directors and Hon. Secs.: E. W. Brabrook, F.S.A., Capt. Harold Dillon, F.S.A. Treasurer, J. Park-Harrison, M.A. Council: J. Beddoe, F.R.S., J. Barnard Davis, F.R.S., W. Boyd Dawkins, F.R.S., W. L. Distant, Robert Dunn, F.R.C.S., Charles Harrison, F.S.A., H. H. Howorth, F.S.A., Prof. T. McK. Hughes, F.G.S., Prof. Huxley, F.R.S., A. L. Lewis, Sir John Lubbock, Bart, M.P., F.R.S., R. Biddulph Martin, F. G. H. Price, F.R.G.S., J. E. Price, F.S.A., Prof. Rolleston, F.R.S., F. W. Rudler, F.G.S., C. R. Des Ruffières, F.R.S.L., Lord Arthur Russell, M.P., Rev. Prof. Sayce, M.R.A.S., M. J. Walhouse, F.R.A.S.

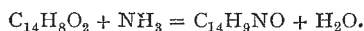
Victoria Institute, January 5.—Dr. C. Brooke, F.R.S., in the chair. Mr. David Howard, F.C.S., read a paper upon the structure of geological formations as an evidence of design. After which, a paper by Principal Dawson, F.R.S., on the recent discovery of numerous flint agricultural implements in America was read.

Institution of Civil Engineers, January 30.—Mr. George Robert Stephenson, president, in the chair.—The paper read was on the combustion of refuse vegetable substances for raising steam, by Mr. John Head, Assoc. Inst. C.E.

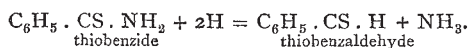
BERLIN

German Chemical Society, January 15.—A. W. Hofmann, vice-president, in the chair. E. Mulder wishes to substitute the following expression, $M = d$, for the usual expression of the law of Avogadro, $M = 2d$, by accepting as the atomic weight of hydrogen not 1, but 0.5.—I. Boguski and N. Kagander, in continuing their researches on the quantity of carbonic acid evolved in a given time by the action on marble of acids of different strength, arrives at the conclusion: that the velocities of the evolution of carbonic acid are inversely proportional to the molecular weights of the acids employed.—A. Christomanos recommended several modifications of the usual methods of analysis of chrome-iron-ore.—A. Basarow described for lecture purposes a miniature torpedo, containing only three grams of gunpowder, and sufficing to throw up water from a pail to the height of twenty or thirty feet.—F. Frerichs proposed, for organic analysis, to heat the compound in sealed tubes with oxide of mercury, and to determine the volumes of CO_2 and of O_2 .—C. Göttig has found that the ordinary method of forming aldehydes from acids by distilling their calcium-salts with formiate of lime, holds good for the production of ethyl-salicylic aldehyde, but not of salicylic aldehyde.—A. Ladenburg has observed slight differences in the two bodies, $\text{N}(\text{C}_2\text{H}_5)_3 \cdot \text{C}_7\text{H}_7\text{I}$ (iodo-benzyl-triethylamine) and $\text{N}(\text{C}_2\text{H}_5)_3 \cdot \text{C}_7\text{H}_7 \cdot \text{C}_2\text{H}_5\text{I}$ (iodo-ethyl-diethyl-benzylamine), the former, treated with HI yielding iodide of benzyl, while the second does not yield this product. He thinks, therefore, that these two compounds are isomeric, that nitrogen is triatomic, and $\text{NH}_3 \cdot \text{HCl}$ a molecular combina-

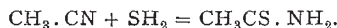
tion. The same chemist states oxythymochinone to have the melting-point, 173° - 174° , and not 187° , as formerly observed. He upholds the views regarding the constitution of this body lately published by him in a separate form.—R. Anschutz and G. Schultz obtained phenanthrenchinonimide by the action of alcoholic ammonia on phenanthrenchinone,



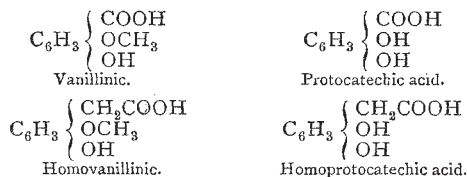
—H. Schwanert reported on several derivatives of dinitrotoluol-sulphonic acids.—A. Berndtsen described the aldehyde of thiobenzoic acid obtained from thiobenzamide by the action of nascent hydrogen:—



A second body formed simultaneously forms the subject of further investigations. The same chemist has succeeded in transforming acetonitrile into acetothiamide, colourless prisms fusing at 108° :—



C. Seuberlich, by the action of sulphuric acid on a mixture of gallic and benzoic acids, has obtained black metallic needles of anthragallo, $C_{14}H_8O_5$.—C. Liebermann communicated that H. E. Armstrong has transformed nitrosothymol into amidothymol and into thymochinone by oxidation, and that R. Schiff has proved that nitrosothymol can be transformed into ordinary dinitrothymochinone. These facts prove the relative position of the constituent groups to be different than supposed by Ladenburg. F. Tiemann described a new acid, $C_9H_{10}O_4$, homovanillinic acid, obtained from acetyl-eugenol by oxidation, which, treated with alkali, yields homoprotocatechic acid, $C_8H_8O_4$. The relations of these substances are:—



Conjointly with A. Herzberg, the same chemist has obtained cinnamic acid by the action of acetic anhydride on benzaldehyde. The reaction gives a better yield than chloride of acetyl, and is also applicable to salicylic aldehyde and to vanilline.—C. Vogel communicated spectroscopic reactions of magnesia with purpurine and with cochineal.—The chairman read a letter of Prof. F. Wöhler, in Göttingen, in which he accepts the office of president of the Society for the ensuing year, with thanks for this acknowledgment of his past services to science.

PARIS

Academy of Sciences, January 29.—M. Peligot in the chair.—The following papers were read:—Note on the stability of arches, by M. Resal. He gives an analytical demonstration of the theorem, that when the thrust at the key-stone of an arch is minimum the curve of pressures is tangent to the intrados at the joint of rupture.—Reply to Dr. Bastian, by M. Pasteur. He defies Dr. Bastian to obtain the result he got with sterile urine, provided only the solution of potash used be pure, water pure, and potash pure, both exempt from organic matters. If Dr. Bastian takes impure potash, M. Pasteur authorises him to take it or anything else in the English pharmacopœia, if only it be heated previously to 110 degrees for twenty minutes or 130 degrees for five minutes.—On the germs of bacteria in suspension in the atmosphere and in water, by MM. Pasteur and Joubert. An inquiry suggested by the discussion with Dr. Bastian. The germs are shown to be very numerous in water, like that of the Seine; they occur in the distilled water of our laboratories, and can traverse all filters. They are absent from water of springs in the interior of the ground that has not been reached by dust from the atmosphere nor by water circulating above ground.—Researches on the irisation of glass, by MM. Frémy and Clemandot. They reproduce at will the irisation sometimes observed in glass (from some old tombs, &c.), by subjecting glass under heat and pressure, to the action of water containing about 15 per cent. of hydrochloric acid. The chemical composition and the conditions of anneal-

ing and tempering, influence the phenomenon. (Particulars later). Bottle glass for holding an acid liquid like wine should not irisate under action of acids; if it does the liquid is quickly altered. The author's method enables him to test the quality of a glass beforehand, by submitting it to dilute hydrochloric acid.—Report on a memoir by M. Henri Becquerel, entitled "Experimental Researches on Magnetic Rotatory Polarisation." He studies the relation between this property and the index of refraction, examining bodies with a high index; and these he finds to have a high rotatory power. In solutions of salts the rotatory power increases rapidly with the concentration. He demonstrates also an anomalous rotatory dispersion accompanying negative magnetic rotation.—On the products obtained by calcination, in a closed vessel, of the wash (*vinasses*) of molasses of beet, by M. Camille Vincent.—On a new arrangement of the rods of lightning conductors, by M. Janiant. The rods are generally six metres long, weigh not less than 120 kilogrammes (involving much strain), and cost, with their copper point, some 300 francs. The author arranges four iron corner channels in form of a quadrangular pyramid connected at the base by iron sockets attached to the timber work. At the top the channels are thinned to the prescribed diameter of 2 cm. for the copper point, and this is screwed on an iron rod, which traverses the system from top to bottom, and ensures metallic communication with all the parts. The system weighs only 20 kilogrammes, and is half the price of the other.—On the effects produced by introduction of foreign substances into carbon, in preparation of carbon points for the electric light, by M. Gauduin. These experiments were made in 1875, with phosphate of bone, lime, chloride of calcium, borate and silicate of lime, pure precipitated silicon, magnesia, borate and phosphate and magnesia, alumina, and silicate of alumina. The salts of lime gave the greatest increase of light; with the first substance, the intensity was doubled. Silicon diminished the light.—Treatment of phylloxerised vines by sulphide of carbon fixed in pulverulent matters, by M. Fournet.—On the necessity of abandoning the Baumé areometer and replacing it by Gay Lussac's densimeter, by M. Maumené.—On the development of the ellipse, by M. Laguerre.—On the two theorems of M. Clebsch relative to curves quarrable by elliptic functions or by circular functions, by M. Marie.—Researches on the spectra of metals at the base of flames, by M. Gouy. The base of the flame gives, up to a very small height, a spectrum resembling the electric spectrum of the metal examined.—On the preparation of alkaline nitrites, by M. Etard.—Researches on the formation of natural sulphurous waters, by M. Plauchud. Sulphurous mineral waters owe their formation to the reduction of various sulphates produced under the influence of living beings acting like ferments. It is possible that not every sulphuration of water is attributable to ferments, as acetic acid may be produced by spongy platinum as well as *mycoderma aceti*.

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