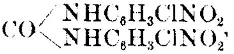
given off, and brilliant yellow crystals of dichlor-dinitro-diphenylurea separate out. This body has the formula:



$$CO\begin{cases}NHC_6H_3ClNO_2\\NHC_6H_3ClNO_2\end{cases},$$

and is insoluble in water, slightly soluble in alcohol, and fuses at 208–210°.

*Idem, Nos. 6 and 7.*

***Iodimetry, based upon the use of Permanent Standard Solutions***, E. ALLARY.—Modified method of J. Pellieux and E. Allary. Noticed elsewhere.

***On the Oxidation of Formic Acid and Oxalic Acid by means of Ammoniacal Oxide of Copper***, P. CAZENEUVE.—If oxalic or formic acid is heated in a sealed tube, at 150°, with ammoniacal oxide of copper, it is quickly changed to carbonic acid. The reaction is represented thus for formic acid:

$$CH_2O_2 + 2(CuH_2O_2) + 2(NH_3) = CO_3H_2(NH_3)_2 + Cu_2O + 2H_2O.$$

$$CO_3H_2(NH_3)_2 + Cu_2O + O = CO_3Cu(NH_3)_2 + CuH_2O_2.$$

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Abstractor, EDGAR EVERHART, PH. D.

***Pyromeconic Acid***, HERMANN OST (**19**, 177).—The free acid has a constant boiling point of about 225°, and leaves only a slight carbonaceous residue after distillation. Its vapor density could not be estimated on account of its slow evaporation and partial decomposition. It has only feeble acid properties, turning litmus only slightly wine-red.

There are two classes of salts formed, both being well characterized, and crystalline; the neutral, $C_5H_3O_3M$, and $C_5H_3O_3M + C_5H_4O_3$. The latter are called dipyromeconates. Both classes of salts are unstable, have alkaline reaction, are decomposed by water at 100°, and deflagrate when heated strongly. When the base is added in excess, the pyromeconic acid is quickly decomposed with the formation of much formic acid.

HCl and $H_2SO_4$ form compounds with the acid, having the respective formulæ, $C_5H_4O_3HCl$, and $2C_5H_4O_3.H_2SO_4$. Both compounds are decomposed by water. Nitric acid, added to a solution of $C_5H_4O_3$ in acetic acid, forms a nitro-pyromeconic acid, $C_5H_3(NO_2)O_3$, which is decomposed by boiling water. The nitro compound crystallizes in yellow prisms, and easily forms salts with bases. Sn and HCl reduce it to the corresponding amide, $C_5H_3(NH_2)O_3$, which crystallizes in colorless needles, and acts as a powerful reducing agent.

Nitroso-dipyromeconic acid is obtained as a yellow precipitate, by conducting nitrous acid into an ethereal solution of the pyromeconic acid. An excess of the precipitant produces nitro-pyromeconic acid. The nitroso compound is very unstable, and, by water and alcohol, is changed, first, into pyromeconic acid and nitroso-pyromeconic acid, but, after longer standing, into a product having the composition, $C_5H_5NCl_4 + C_5H_4O_3$. This last crystallizes from cold water in monosymmetric tables, and, on boiling with chloroform, is split up into pyromeconic acid and an insoluble $C_5H_5NO_4$, which the author calls oxy-pyromecazonic acid. It crystallizes either anhydrous in colorless needles, or with water, in short, thick prisms which are soluble in hot water and alcohol, but insoluble in ether and chloroform. It is a monobasic acid. An excess of the base, however, easily decomposes it. It acts as a reducing agent, and is no nitroso compound. The soda, potash, baryta and lime salts have been prepared. With hydrochloric acid it forms a hydrochlorate, $C_5H_5NO_4HCl$. By long digestion with tin and hydrochloric acid, it is reduced to pyromecazonic, an isomere of amido-pyromeconic acid. This last body crystallizes in plates; is soluble, with difficulty, in water and alcohol, and insoluble in ether. It reduces silver solutions immediately, and forms an indigo blue color with ferric chloride. Can be partially sublimed. In alkalies it is easily soluble, but may then be readily oxidized by the oxygen of the air.

***On the Constitution of the α-diamido-anthraquinone obtained by the Reduction of that Dinitro-anthraquinone, which is made by the Action of a Mixture of Nitric and Sulphuric Acids on Anthraquinone,*** H. VON PERGER (19, 209).—Since, by the melting with potash, alizarine is obtained, while the action of ammonia or alizarine produces another diamido-anthraquinone having quite different properties, it was converted into the monosulphonate by the action of fuming sulphuric acid at the ordinary temperature. The acid was crystallized out of alcohol. When the two amido groups were eliminated from the diamido-anthraquinone-sulphonic acid, an anthraquinone-sulphonic acid was obtained that was identical with that obtained directly from anthraquinone, and which, when heated with potash to 150–160°, yielded oxy-anthraquinone; by a higher temperature, however, alizarine.

***An Analysis of the Mineral Spring at Rosheim, in Alsatia,*** F. B. POWER (19, 223).

***On the Neutral and Acid Sulphates of Methyl and Ethyl Alcohol,*** P. CLAESSON (**19**, 231).—In order to avoid the formation of water which would take place were $H_2SO_4$ used, the author employs chlorosulphuric acid, $SO_2(OH)Cl$. Among some earlier investigators on the action of $SO_2(OH)Cl$ on the alcohols, Orlowski stated that, by the use of an excess of alcohol, the neutral sulphates were formed, which were insoluble in ether and could be purified by the same. These sulphates are decomposed by the smallest trace of water into methyl- or ethyl-sulphuric acid. The methyl sulphate of Dumas, and the ethyl sulphate of Wetherill, were regarded as the ethers of oxyethyl-sulphuric acid. Claesson found that the chlor-sulphuric acid and methyl alcohol yielded methyl-sulphuric acid and hydrochloric acid. The $HO.SO_2OCH_3$, when heated in vacuo to 130–140°, was almost quantitatively decomposed into the neutral ether and $H_2SO_4$. The neutral ether was found to be identical with that described by Dumas, and the product described by Orlowski was methyl-sulphuric acid. Claesson found, however, that the methyl-sulphuric acid is miscible with perfectly anhydrous ether, while in ordinary ether it forms two layers, owing to the fact that the acid combines with the water and becomes insoluble.

The action of $SO_2(OH)Cl$ on ethyl alcohol was attended with the same results. When equal molecules of the alcohol and acid were used, from 54.57 per cent. of the ethyl-sulphuric acid was obtained, while if three molecules of alcohol were used, the yield was 77.4 per cent. Herr Claesson also studied the action of ethyl-chlorsulphuric acid on alcohol. If the ether be allowed to drop into the alcohol a stormy disengagement of hydrochloric acid, ethyl chloride and ether takes place, and ethyl-sulphuric acid is formed; if, on the contrary, the alcohol be added to the ether, there is first a disengagement of ethyl chloride, then hydrochloric acid, a very little ether, and finally ethyl-sulphuric acid is left. The neutral sulphate is best prepared by conducting sulphuric acid anhydride into the ether and distilling in vacuo. It boils with but slight decomposition at 208°, is slowly decomposed by water—more quickly by alcohol—into ether and ethyl-sulphuric acid. The neutral ethyl sulphate is also formed during the preparation of the acid sulphate, and may be separated by means of chloroform.

***On the Volume Constitution of the Sulphates, Selenates and Chromates of the Metals of the Magnesium Group,*** H. SCHROEDER (**19**, 266).

***On the Behavior of Glue and the Carbohydrates with Chromates, under the Influence of Light,*** J. M. EDER (**19**, 294).—It was found that chromic acid, in the light, forms a coagulum with glue, which dissolves on warming. Further, that glue with a bichromate, in dry condition, could be kept in the dark for a long time without change, but if moistened and heated, it became insoluble. In the light, even when perfectly dry, the glue and bichromate are changed in a few seconds, the glue becoming insoluble in hot water, and the chromic acid becoming reduced to chromium trioxide. Formic acid is produced in considerable quantities by the oxidation of glue. Sugar, when mixed with a chromate, is much less sensitive to the light. The mixture loses its hygroscopic character, but not its solubility. Dextrine behaves like sugar. Albumen, with chromates, is very susceptible to the influence of light.

***Contributions to the Chemistry of the Bile,*** G. HUEFNER, (**19**, 302).—The secretion of glycocholic acid, the separation of several important constituents of the bile, and on the preparation of cholic acid and cholamide.

***On the Source of Hippuric Acid in the Urine of Herbiverous Animals,*** O. LOEW (**19**, 309).—Quinic acid was found in ordinary meadow hay. This acid would be changed into hippuric during the process of digestion. Benzoic acid was also recognized in cranberries.

***On the Constitution of Dichlor-azophenol,*** R. SCHMITT (**19**, 312).—R. Hirsch had advanced the opinion that the body obtained from para-amidophenol, by chloride of lime, could not be dichlor-azophenol, but rather chlorquinonimide, because hydrochloric acid changes it directly into dichlor-amidophenol. In order to throw some light on the subject, para-azophenetol was digested a long time in sealed tubes, with hydrochloric acid, at a temperature of 150°. The result of the reaction was para-amidochlorphenol; hence, azo compounds can be changed directly into chlorinated amides by hydrochloric acid. Para-azophenol yielded, under like treatment, benzidine, aniline and para-chloraniline. Para-amidophenetol, however, did not yield with chloride of lime azophenetol, but the same product as para-amidophenol. The conclusion arrived at was that Hirsch was justified in his opinion, since in the formation of quinoniniide the ethyl group must be eliminated from the amidophenetol.

***A New Dye-Stuff from Ortho-amidophenol,*** G. FISCHER (**19**, 317).—The author has found that, by the oxidation of ortho-amidophenols (best oxidized by means of ferricyanide of potassium), a red coloring matter is obtained that can be purified by sublimation. It forms garnet-red needles which sublime without melting at 241°. It is scarcely soluble in water, and, with difficulty, in alcohol, ether, &c., with a green fluorescence, possesses feeble basic properties, and dissolves in acids with a blue or deep violet color. The composition of the dye-stuff is $C_{24}H_{10}N_3O_2$.

***On a Grey Modification of Tin,*** A. SCHERTEL (**19**, 322).—Schertel obtained a piece of tin that had been found in a walled-up window niche of the Cathedral at Freiberg, and that had lain there for several centuries. This modification of tin can be pulverized between the fingers ; its specific gravity is 5.8 ; by heating merely in the vapor of aceton, it changes into ordinary tin ; its color is leaden grey, and its fracture uneven. It is electro-negative to ordinary tin in a weak solution of caustic potash, hydrochloric and sulphuric acid, but electro-positive in nitric acid.

***Notice on Malonic acid,*** HERR V. MILLER (**19**, 326).—The author finds that the best method of preparing this acid consists in treating potassium chloracetate in a concentrated solution with potassium cyanide (not in excess), and in decomposing the potassium cyanacetate, so obtained, by potassic hydrate. Potassium malonate crystallizes with two molecules of water in transparent monosymmetric crystals, which deliquesce in moist air. In the electrolysis of this salt, carbonic acid and hydrogen, with minute traces of ethylene, are given off.

***On the Preparation of Crystalline Albumen Compounds,*** E. DRECHSEL (**19**, 331).—The preparation of these, according to Schmiedeberg, is attended with difficulty, but it can be easily effected by dissolving the crystalloids, freshly precipitated by carbonic acid, by digestion in water and magnesia, and bringing in a dialyzer placed in absolute alcohol. When the water diffuses in the alcohol, the granular crystals can be readily separated from the liquid. This method of "alcohol dialysis," the author recommends for the preparation of other albumen compounds in a crystalline condition. By this means urea in blood may be easily detected.

***The Possibility of the Existence of Fungoid Growth in the Absence of Oxygen,*** M. MENCKI (**19**, 337).—This research is intended to refute the conclusions of Gunning (Berichte d. d. Chem. Gesell., **11**, 1380), who thinks that without access of oxygen decomposition cannot take place. From his experiments, the author concludes that the fungi die in sealed tubes, not by reason of the absence of oxygen, but because of the gaseous products produced from themselves.

***On Para-oxysalicylic acid,*** A. GOLDBERG (**19**, 359).—This acid was made by melting iodosalicylic acid with caustic potash. The iodosalicylic acid was not obtained directly from salicylic acid, but by treating para-diazosalicylic acid with a concentrated aqueous solution of hydroiodic acid. The oxysalicylic acid, 1:2:5 ($CO_2 = 1$) melts at 196°, and, on distillation with pumice, yields hydroquinone. It crystallizes in prisms, soluble in water, alcohol and ether; in its aqueous solution, ferric chloride colors it deep blue, and in its ammoniacal solution, argentic nitrate produces a precipitate, which soon turns brown and forms the silver mirror. An alkaline solution, in contact with air, is colored a reddish-brown. Its ammonium salt crystallizes in needles, as also does its barium salt. The ethyl-ester of oxysalicylic acid melts at 75°, is volatile with water vapor, and possesses a fruity smell. In decomposing the diazosalicylic acid directly with water, a good yield was obtained only when the acid suspended in water was saturated with concentrated sulphuric acid, and the sulphate decomposed by boiling with water.

***On Ortho-diamidodiphenetol,*** R. MOEHLAU (**19**, 381).—A research on the base obtained by the decomposition of ortho-hydrazophenetol with acids. This base stands in the same relation to benzidine and toluidine as hydrazophenetol to hydrazobenzole and hydrazotoluol, and can, therefore, be called ortho-diamidodiphenetol (ortho-diethoxybenzidine), $C_6H_3(OC_2H_5)NH_2—C_6H_3(OC_2H_5)NH_2$.

The free base crystallizes from hot water in colorless needles or leaves, melts at 117°, distils under partial decomposition; is scarcely soluble in cold, more easily in hot water—easily in alcohol and ether, and is easily oxidized in the air. The hydrochlorate salt obtained by the action of hydrochloric acid on the hydrazophenetol, crystallizes in needles or plates that are easily acted upon by air, melts with decomposition above 120°, and is colored red by oxidizing substances. The stannous double chloride is adapted to the preparation of pure ortho-diamidodiphenetol. It crystallizes in rhombic plates. The hydrochlorate reduces the salts of the precious metals. A platinum double salt, however, can be prepared by adding a solution of platinic chloride in concentrated hydrochloric acid, to an alcoholic solution of the hydrochlorate. The salt is easily decomposed by water, and appears to contain three molecules of $H_2O$. The sulphate forms shining needles, soluble in warm water, and is decomposed at 100°. The nitrate forms colorless needles.

***On the Action of Chloride of Lime on Ethyl Alcohol,*** R. SCHMITT and Dr. GOLDBERG (**19**, 393).—By the gradual warming of alcohol with chloride of lime, a yellow oil is formed, which explodes under the influence of light and heat. The explosive yellow oil could not be isolated or determined, but the author supposes it to be an ethyl-ether hypochlorite. The products of the decomposition of the oil have been investigated and recognized as aldehyde, monochloracetal, dichloracetal, and a yellow oil that boils at 77–78°, and supposed to be chlormethyl-ethyl-ether.

***An Advantageous Method of Preparation of Phenolglycollic Acid, and on Pyrogalloltriglycollic Acid,*** PIERO GIACOSA (**19**, 396).—The method recommended is to melt on the water bath equivalent amounts of phenol and monochloracetic acid, and to add, with constant stirring, four parts by weight of caustic soda (spec. gr., 1.3). A violent reaction takes place, and, after cooling, the mass solidifies. The sodium salt freed from the mother liquor and treated with hydrochloric acid, yields the free acid, $C_6H_5O.CH_2CO_2H$, which may readily be purified by crystallization from warm water. With bromine water the acid yields a monobromine derivative. In like manner, from monochloracetic acid and pyrogallol, is made pyrogalloltriglycollic acid, which crystallizes in long, rhombic needles. It is soluble in hot water, melts at 198°, and yields crystallizable salts. The neutral potassium salt is changed by acetic acid into a difficultly soluble acid salt, $C_{12}H_{11}O_9K + H_2O$.

***On Cyanamide,*** G. PRAETORIUS-SEIDLER (**19**, 399).—The author attempted to prepare oxyguanidine from hydrochloric hydroxylamine and cyanamide. He succeeded in obtaining a platinum salt having the composition, $2CH_5N_3OHClPtCl_4$, but neither the free base nor its hydrochloric acid salt could be isolated. By heating cyanamide with salicylic acid in an absolute alcohol solution, salicylic acid ether and urea were obtained, but the action of cyanamide on lactic acid yielded only urea and no lactic acid ether.

***Results of the Norwegian North Sea Expedition,*** HERCULES TORNÖE (**19**, 401).—The author communicates his investigations on the gases held by the sea water at different depths. He confirms the results obtained by Jacobsen. Tables are given with the amounts of N and O, held in solution at different depths.

***On the Antiseptic action of Acids,*** NADINA SIEBER (**19**, 433).—In a variety of experiments, the author has determined what percentage of acid was necessary to prevent putrefaction in solutions that were favorable to the development of fermentation. He found that 0.5 per cent. of hydrochloric, sulphuric, phosphoric or acetic acid was fully sufficient for the purpose, while of butyric acid 1 per cent. was necessary, and of lactic acid somewhat more. Even 4 per cent. of boracic acid was not capable of entirely stopping fermentation. Finally, phenol was found to possess extraordinary antiseptic qualities in a 0.5 per cent. solution. In these acid solutions, however, there was always a mould.

***On the Antiseptic Qualities of Pyrogallol,*** V. BOVET (19, 445).—It was found that pyrogallol, in a 1 to 1½ per cent. solution, was able to prevent the decomposition of animal tissue. A solution containing from 2 to 2½ per cent. pyrogallol removed the smell from a strongly smelling substance filled with bacteria, and destroyed the bacteria. Finally, 2 per cent. was enough to hinder alcoholic fermentation, as well as the vegetation of mould.

***On the action of Chlorine on Dibenzyl,*** R. KADE (19, 461).—If chlorine be conducted over dibenzyl that has been previously melted with iodine, the dibenzyl melts, and if the operation be interrupted at the proper time, dichlor-dibenzyl is obtained. It crystallizes in shining plates that melt at 112°. It can be distilled unchanged, and by oxidation yields para-chlorbenzoic acid. If the dibenzyl, mixed with iodine, be powdered, and chlorine be conducted over it, at first toluylene, and afterwards dichlortoluylene, are produced. Toluylene is also made when chlorine is passed into dibenzyl vapor. Toluylene melts at 120°, dichlortoluylene at 170°. Finally, by the action of potassic chlorate on dibenzyl, toluylene ($C_{14}H_{12}$) is produced.

***Methods of Estimating Chemical Affinity,*** W. OSTWALD (19, 468).—Not suitable for abstraction.

***Notice on Cyanethine*** ($C_9H_{15}N_3$), E. v. MEYER (19, 484).—Cyanethine, which, according to the experiments of the author, behaves with ethyl iodide and acetyl chloride as a trivalent base, when heated with moderately dilute sulphuric acid to 180–200°, gives off ammonia and takes up the elements of water, yielding a beautifully crystallizing base containing oxygen, and having the composition, $C_9H_{14}N_2O$.

***On the Composition and Basicity of Hyposulphuric Acid,*** H. KOLBE (19, 485).—The author has tried all possible means to form acid salts of hyposulphuric acid, but in vain. He, therefore, regards it as a monobasic acid, having the composition, $HSO_3$, not $H_2S_2O_6$, as generally given.