

in this manner the presence of the ozone, which he states he has detected in the combustion of hydrogenous substances generally, and its absence in the combustion of carbon.

In entering into new combinations, the oxygen molecules must undergo temporary resolution into their constituent atoms. These, while en route to take up new positions in other combinations, and animated by their atomic energy, or energy of the nascent state, may either oxidize the oxygen molecule, or the nitrogen, or the molecule of water. In the first case, ozone would be produced; in the second, regarding water as the basic body and NNO as the nitryl, there might be formed, as Hunt has indicated, ammonium nitrate; in the third, hydrogen peroxide.

It gives me much pleasure to acknowledge the co-operation of my assistant, Dr. Edgar Everhart, in the performance of these experiments.

Abstracts from American and Foreign Journals.

Berichte der deutschen chemischen Gesellschaft.

Abstractor, P. TOWNSEND AUSTEN, PH. D., F. C. S.

On Betuline, N. FRANCHIMONT (Ber. d. d. chem. Ges., vol. xii, p. 7).—By extraction of birch bark with boiling alcohol, distilling off the alcohol, taking up the residue in water, treating with sodium hydrate, and crystallizing the product from benzol or petroleum ether, betuline was obtained in the form of colorless needles, fusing at 251°. The acetate (fusing at 216°) was made according to Hausmann's method. By saponification with alcoholic potash, betuline was regenerated. F., hence, considers that Hausmann's formulæ, $C_{36}H_{80}O_3$ for betuline, and $C_{36}H_{58}O(C_2H_5O)_2$ for betuline-acetate, are correct. To produce a hydro-carbon from betuline, by extraction of the elements of water, phosphorous pentasulphide proved to be the best reducing agent. The mixture, on being heated, fused and evolved H_2S and PH_3 . The operation was hence conducted in a current of carbonic acid. After twelve hours the liquid was distilled off up to 300°. A thick, brown mass was obtained, which, by fractional distillation, drying over calcium chloride, etc., gave a colorless, liquid hydro-carbon. If pure, it would appear to be $C_{18}H_{30}$. Oxidizing agents, fuming sulphuric acid and nitric acid, acted on this hydro-carbon, but no defined products could be obtained. Hydrochloric acid gas gave no reaction.

On Lactucone, N. FRANCHIMONT (Ber. d. d. chem. Ges., vol. xii, p. 11).—Lactucanium, made from *Lactua altissima*, was extracted with water and dilute alcohol. The residue was boiled out with 90% alcohol. On cooling, watery concretions were obtained, which, by repeated crystallization, gave masses of microscopic needles, fusing at 296°. After fusing it is amorphous. It is insoluble in water, difficultly in alcohol, easily in petroleum ether. Analysis gave $C_{14}H_{24}O$, which does not agree with the formula deduced by Lenoir and Ludwig. Acetic anhydride did not act upon it when heated to 200° in a closed tube.

By heating with phosphorous pentasulphide, and distilling in a current of carbonic acid, after the evolution of hydrogen sulphide had ceased, a liquid hydro-carbon was obtained, which, after being washed with potassa, was distilled in a current of steam, dried over $CuCl_2$ and sodium, and fractioned. The fraction between 247° and 252° proved to be a hydro-carbon arising from the extraction of the elements of water, and corresponding to the formula $C_{14}H_{22}$. Author thinks Lactucone to be, at least empirically, homologous with camphor and the zeorine of Paterno.

On Zinc Acetate, N. FRANCHIMONT (Ber. d. d. chem. Ges., vol. xii, p. 11).—Contrary to the statements in several text-books, that zinc acetate contains three molecules of water of crystallization, two of which are evolved at 100°, the author finds the salt contains but two molecules, both of which escape at 100°. The salt does not fuse in its water of crystallization; placed in a capillary tube, it fused at 235–237°; free from water, it fused at 241–242°, and sublimes at that temperature. The sublimed salt does not fuse more easily than the dried, but at the same temperature, and is anhydrous zinc-acetate. Under decreased pressure, the salt is entirely volatile, probably without decomposition.

On the coloring matter of Sandal-wood, N. FRANCHIMONT (Ber. d. d. chem. Ges., vol. xii, p. 14).—It was obtained by extracting rasped sandal-wood with boiling alcohol, precipitating with water, and purifying by means of the lead-acetate compound. It is not crystalline, fuses at 104–105°, and has the composition $C_{17}H_{16}O_6$. It is easily soluble in absolute alcohol, ether, and alkaline carbonates, being precipitated from the latter by HCl, but not by CO_2 . It is difficultly soluble in ether, and insoluble in chloroform and carbon disulphide. Red sandal-wood, treated in the same manner, yielded the same

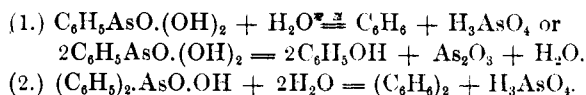
compound. Fused with caustic potash, it gave, besides a small amount of a very volatile body, with the odor of rose-wood, acetic acid, resorcin, and probably protocatechic acid and pyrocatechine. Heated with concentrated HCl in a closed tube, at 150–180°, it gave a strong pressure of chlor-methyl. The amount of chlor-methyl was estimated and found to correspond to one methyl group. The residue from the HCl, treated with alcohol, left a black, glittering substance, from which no analytical results could be obtained. The alcoholic solution contained a substance agreeing with the formula $C_8H_{10}O_5$. The HCl solution, extracted with ether, yielded a small amount of a body crystallizing in colorless needles.

Water was without action on the coloring matter at 180°. Nitric acid gave picric or styphnic acid. Alkaline potassium permanganate gave a strong odor of *vanilla*, but no vanilline could, with certainty, be obtained, while oxalic and acetic acids were formed. Reducing agents had no effect. Hydriodic acid acted similarly to HCl, yielding iod-methyl. Heated in a closed tube at 200° with acetic anhydride, an acet-compound was obtained. The results give no key to the constitution of the coloring matter, but show that it is related to the aromatic series, and particularly to protocatechic acid.

Influence of the Chemical Composition of Water in the Production of Raw Silk, L. GABBA and O. TEXTOR (Ber. d. d. chem. Ges., vol. xii, p. 17).—Those constituents of silk which are soluble in water, give it its appearance, color and strength. They should, hence, remain in the silk, if the best product is to be obtained. Authors have analyzed many waters used by the silk works producing the most excellent products, and conclude that the silk treated in soft water has a less fine appearance, less beautiful color and is weaker, than that treated in hard water, which is owing to the “varnish,” or soluble constituents, being dissolved more easily in the soft than in the hard water. They have confirmed this by numerous experiments, and conclude that the best silk is obtained by the use of water containing lime or alkalies. Such silk, however, is not best for dyeing, since it contains lime, which causes it to take color unevenly.

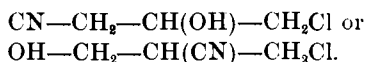
Action of Mono- and Diphenyl-Arsenic Acid on the Animal Organism, H. SCHULZ (Ber. d. d. chem. Ges., vol. xii, p. 21).—As dimethyl-arsenic acid (kakodylic) is not poisonous, author thought that the mono- and diphenyl-compounds would also be harmless. Experiment proved that 0.1 grm. of the mono-, and 0.5 grm. of the

diphenyl-compound produced death, when injected hypodermically. S. supposes that the compounds are decomposed with the evolution of arsenic acid :



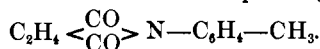
Action of Dimethyl-Arsenic Acid (Kakodylic) on the Animal Organism, H. SCHULZ (Ber. d. d. chem. Ges., vol. xii, p. 22).—Contrary to the observations of Bunsen and Kürschner, kakodylic acid $[(\text{CH}_3)_2\text{AsO}.\text{OH}]$ is found to produce death, with all the symptoms of arsenical poisoning, thus verifying the results of Lebahn (1868).

Action of Hydrocyanic Acid upon Epichlorhydrine, J. v. HÖRMANN (Ber. d. d. chem. Ges., vol. xii, p. 23).—From the result of the action of hydrocyanic acid upon epichlorhydrine, in a closed tube for 120–150 hours, at 40–70°, ether extracts a light, mobile, brownish liquid, with a peculiar odour. Analysis gave $\text{C}_4\text{H}_6\text{ClON}$. The reaction, hence, appears to be $\text{C}_3\text{H}_5\text{OCl} + \text{HCN} = \text{C}_3\text{H}_5\text{ClOCNH}$, and the compound consequently must be considered as the nitrite of a chlorhydroxybutyric acid :



It is easily soluble in water, alcohol and ether ; does not distil, but carbonizes at 200°, with the formation of ammonium chloride. By heating with mineral acids, the corresponding carboxyl acid is formed, which is a thick uncrystallizable syrup, easily soluble in water. It is unstable, and gives no constant analytical results, but changes to an insoluble gum, probably an anhydride. The salts are also not stable, and decompose, forming chlorides of the base.

On Succinyle-compounds of Toluidine, (preliminary notice) G. v. BECHI (Ber. d. d. chem. Ges., vol. xii, p. 25).—By heating 1 mol. of succinic acid with 1 mol. of ortho-toluidine, and purifying the fraction going over at 320° by crystallization from ether, toluylesuccinimide was obtained in the form of glittering needles, fusing at 75°, and distilling without decomposition at 345° (uncorr.), some 60° lower than the corresponding aniline compound. Its constitution is



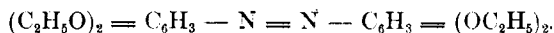
On Acetates of Chlorine and Iodine, B. ARONHEIM (Ber. d. d. chem. Ges., vol. xii, p. 26).—The author finds that Schützenberger's 'acetates of chlorine and iodine,' $C_2H_3O_4Cl$ and $C_2H_3O_4I$, which were supposed to be formed by the action of gaseous Cl_2O upon acetic anhydride, have no existence.

Action of Nitrous Acid on Resorcine Ether, B. ARONHEIM (Ber. d. d. chem. Ges., vol. xii, p. 30).—*Nitroso-mono-ethyl-resorcine-ether*.—Resorcine-diethyl-ether, in acetic acid solution, on being treated gradually with Stenhouse's solution of nitrous acid, gave, instead of nitroso-diethyl-ether, the mono-ethyl-ether, $C_6H_3(OC_2H_5)NO.OH$. The compound is remarkably stable. It is soluble only in caustic alkaline solutions. It gives the reactions of the nitroso-phenoles. Above 150° it decomposes, without fusion. With aniline and acetic acid, an azo-compound is formed. Reducing agents give an easily soluble base, whose solutions turn blue on exposure to the air. Nitric acid gives rise to a dinitro-compound.

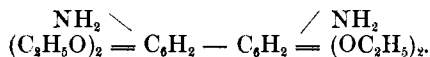
On Digallic Acid, HUGO SCHIFF (Ber. d. d. chem. Ges., vol. xii, p. 33).—Freda found, that, after converting gallic acid into digallic acid, by means of arsenic acid, only gallic acid could be obtained after precipitating the arsenic with H_2S . S. finds that a small amount of arsenic acid will convert a large amount of gallic acid into digallic acid by long continued boiling in alcoholic solution. S. regards the change as one comparable with etherification, and thinks an intermediate compound containing arsenic, may be formed. Artificial digallic (tannic) acid behaves like the natural acid towards alkaloids. The conversion, when performed in an aqueous solution with an excess of arsenic acid, yields much less digallic acid. In the separation of large amounts of arsenic acid by means of hydrogen sulphide, considerable gallic acid is regenerated. Pure anhydrous gallic acid fuses at 240° .

On Some Derivatives of Hydrochinone, R. NIETZKI (Ber. d. d. chem. Ges., vol. xii, p. 38).—*Mono-nitro-diethyl-hydrochinone* is formed by the action of nitric acid on hydrochinone in glacial acetic acid solution. It crystallizes from dilute alcohol in beautiful golden-yellow needles an inch long, fusing at 49° . By heating with alcoholic potash with occasional additions of zinc dust, a mixture of hydrazo and azo compound was obtained. The hydrazo body oxidized so quickly that it could not be procured for analysis. The azo compound fuses at 120° , and forms vivid red leaves resembling

azo-benzol. Concentrated hydrochloric and sulphuric acids dissolve it to a deep violet color. At a high temperature it is to a great extent distillable. Its constitution is:



Diamido-diethyl-hydrochinone.—The reduced mass freed from potash by washing, on treatment with HCl, gave the hydrochloride, long fine needles, difficultly soluble in water and precipitated therefrom by HCl, thus affording an easy method of obtaining it pure. The base forms soft, colorless leaves, similar to benzidine, fusing at 129°. Its constitution is:



Dinitro-diethyl-hydrochinone is isomeric with the body described in a previous paper, and is formed at the same time. It is far more easily soluble in alcohol. It fuses at 130°. By treatment with nitrous acid, the diamine found from this body does not yield a phenole, but a substance crystallizing in colorless needles and containing nitrogen. It fuses at 233°. Analysis gave $\text{C}_{10}\text{H}_{13}\text{N}_3\text{O}_3$.

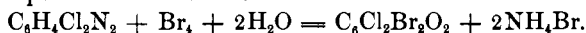
Answer to O. Hesse, CHAS. RICE (Ber. d. d. chem. Ges., vol. xii, p. 44).

Contributions to the Knowledge of Certain Kinds of Sugars. M. HÖNIG and M. ROSENFELD (Preliminary Notice, Ber. d. d. chem. Ges., vol. xii, p. 45).—*Fruit-sugar-sodium*, $\text{C}_6\text{H}_{11}\text{O}_6\text{Na}$, is obtained in the form of a white gelatinous precipitate, by treatment of an alcoholic solution of fruit-sugar with sodium ethylate. When dried, it is yellowish-white, easily pulverized, deliquescent, and almost insoluble in alcohol. At 100° it loses one molecule of water, and forms a dark brown amorphous mass, smelling strongly of caramel.

Milk-sugar-sodium.—Properties same as preceding substance.

On Paraphenyldiamine, A. KRAUSE (Ber. d. d. chem. Ges., vol. xii, p. 47).—Treatment of paraphenyldiamine with chloride of lime and hydrochloric acid, gave a compound, $\text{C}_6\text{H}_4\text{Cl}_2\text{N}_2$. It forms beautiful white needles, decomposing at 120° (bromine gives a similar compound). With reducing agents paraphenyldiamine was regenerated. Treated with strong hydrochloric acid, a body crystallizing in bright red needles, $\text{C}_6\text{H}_4\text{Cl}_4\text{N}_2$, and giving chloranile on treatment with nitric acid, was obtained. The chlor-compound, $\text{C}_6\text{H}_4\text{Cl}_2\text{N}_2$, also gives chloranile on treatment with nitric acid.

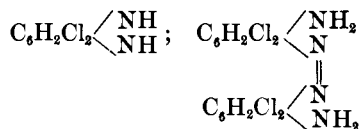
Bichlor-bibrom-chinone, $C_6Cl_2Br_2O_2$, is formed by treating the chlor-compound with bromine.



Bronze colored rhombic leaflets volatilizing at 200° .

Mono-chlor-monobrom-anilic acid, $C_6H_2ClBrO_4$.—The preceding compounds, treated with dilute soda, gave the sodium salt of the anilic acid. The free acid forms, when anhydrous, a minium red powder; when containing water, bright red micaceous leaflets.

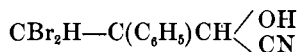
The conversion of the chloro-body into $C_6H_4Cl_2N_2$, into bichlorbromchinone, appears to prove that the chlorine atom has entered the ring, and make the following constitutions probable:



Behavior of Alkaline Alumina Solutions toward Hydrogen Sulphide, GERHARD LÖSEKANN (Ber. d. d. chem. Ges., vol. xii. p. 56).—Alumina in caustic alkali solution is entirely precipitated on treatment with hydrogen sulphide. On boiling the mixture, the precipitate dissolves. Chromium is also precipitated, but does not dissolve on boiling.

On the Decomposition of Bichloracrylic Acid by Alkalies, O. WALLACH and O. BISCHOFF (Ber. d. d. chem. Ges., vol. xii, p. 57).—By treating bichloracrylic acid with barium hydrate, and decomposing the Ba salt formed by HCl, an acid was extracted by shaking with ether. The Ag salt was very explosive. Treated with dilute acid a gas was evolved, which took fire on contact with the air, and when led into bromine, gave tetrabrom chlorethane. It hence arose from monochloracetylene. The acid, therefore, appears to be a chlorpropionic acid, $CCl = C - COOH$, and the silver salt, chloracetylen-silver, $Ccl = C - Ag$.

Dibrom acetophenone treated with HCN, gave instead of the hoped for



carbonic oxide, brommethyl, benzaldehyde and benzoglycolic acid.

Some Reactions of Silver Ultramarine, KARL HEUMAN (Ber. d. d. chem. Ges., vol. xii, p. 60).—By action of hydrochloric acid on silver-ultramarine, two-thirds of the silver separates as AgCl, and

one-third as Ag_2S . By long-continued boiling with sodium chloride, two-thirds of the silver separates as AgCl . The remaining third is not extracted.

On the Relative Affinity of Oxygen to Hydrogen and Carbonous Oxide, H. A. HORSTMANN (Ber. d. d. chem. Ges., vol. xii, p. 64).—Not suitable for abstraction.

On Eikosylene, a Derivative of Peat-Paraffine, E. LIPPMANN and J. HAWLICZEK (Ber. d. d. chem. Ges., vol. xii, p. 69).—Most of the commercial paraffines were found to contain oxygen. It was removed by heating with sodium in a closed tube at 250° . The pure paraffine was chlorinated by heating with phosphorous pentachloride. The mixture of chloro-compounds was distilled *in vacuo*, and yielded $\text{C}_{20}\text{H}_{39}\text{Cl}$, arising from the splitting off of HCl from $\text{C}_{20}\text{H}_{40}\text{Cl}_2$. The former body, on distillation under normal pressure, gave a hydrocarbon, $\text{C}_{20}\text{H}_{38}$, which the authors term eikosylene, having the properties of an olefine, and combining energetically with halogens. Treated with Cl in tetra-chlor-methane solution, a bright yellow, heavy oil, $\text{C}_{20}\text{H}_{38}\text{Cl}_2$, eikosylene chloride, was obtained. The bromine derivative, $\text{C}_{20}\text{H}_{36}\text{Br}_2$, was similar in properties.

The authors, hence, infer the existence in paraffine of a hydrocarbon, having the composition $\text{C}_{20}\text{H}_{42}$, homologous with cetylene, $\text{C}_{16}\text{H}_{30}$.

On Amytiden-aniline, E. LIPPMANN and W. STRECKER (Ber. d. d. chem. Ges., vol. xii, p. 79).—Aniline treated with valeraldehyde, according to Schiff's reaction, gave a base, $\text{C}_6\text{H}_5\text{N}\cdot\text{C}_5\text{H}_{10}$, crystallizing in oblique prisms of a glassy lustre, fusing at 97° . The hydrochloride and platinum salt were examined. The body is the first member of a new series of organic bases in which both H 's of the amine group are substituted by the bivalent aldehyde relic.

On Nitro-cuminole and its Derivatives, E. LIPPMANN and W. STRECKER (Ber. d. d. chem. Ges., vol. xii, p. 76).—*Nitro-cuminole*, $\text{C}_6\text{H}_3(\text{NO}_2) \left\langle \begin{array}{l} \text{CHO} \\ \text{C}_3\text{H}_7 \end{array} \right.$, sulphur-yellow crystals, fusing at 54° .

Nitrocuminic acid, $\text{C}_6\text{H}_3(\text{NO}_2) \left\langle \begin{array}{l} \text{COOH} \\ \text{C}_3\text{H}_7 \end{array} \right.$ By oxidation of the preceding compound with potassium bichromate and sulphuric acid. Small bunches of crystals, fusing at 158° , or large crystals with lustrous faces. The silver and lead salts are amorphous precipitates. The acid is identical with the nitro-cuminic acid produced by nitration of cuminic acid.

On the Compounds of Nickelous and Cobaltous Chlorides with Tar-bases, E. LIPPMANN and G. VORTMANN (Ber. d. d. chem. Ges., vol. xii, p. 79).—*Cobaltous chloride aniline*, $2C_6H_7N + CoCl_2 + 2C_2H_5(OH)$.—By treating 1 mol. of $CoCl_2$ in alcoholic solution with 2 mols. of aniline, a red salt separates in leafy crystals, having the above composition, but soon loses its alcoholic content, and turns blue. It does not combine with platinum chloride, but is decomposed, yielding $CoCl_2$ and $(C_6H_5NH_2HCl)_2$, $PtCl_4$. Water also decomposes it into $CoCl_2$ and aniline.

Nickelous chloride aniline, $2C_6H_7N + NiCl_2 + 2C_2H_5(OH)$, apple-green precipitate, does not lose its alcohol under 100° , giving then a yellowish-green body, crystallizing in small needles.

Cobaltous chloride para-toluidine.—Glittering blue needles, free from alcohol. $2C_6H_7N + CoCl_2$. Ortho and metatoluidine gave no corresponding compound.

Nickelous chloride toluidine.—Green salt, contains alcohol.

Cobaltous chloride xylydine.—Bright blue small needles, free from alcohol.

Researches on the Bessemer Process, I. FRIEDERICH and C. G. MÜLLER (Ber. d. d. chem. Ges., vol. xii, p. 82).—Not suitable for abstraction.

On the Gases Enclosed in Iron and Steel, F. C. G. MÜLLER (Ber. d. d. chem. Ges., vol. xii, p. 93).—Contrary to the accepted idea that the gas consists of carbonous oxide, it was found that the chief constituent was hydrogen. Considerable nitrogen, and a small amount of carbonous oxide were also found.

	a.	b.	c.	d.
H.....	88.8	77.0	67.8	83.3
N.....	10.5	22.9	30.8	14.2
CO.....	0.7	—	2.2	2.5

AMOUNT OF GAS IN PER CENT. OF VOLUME OF METAL :

60%	45%	25%	35%
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a. Bessemer steel. b. Ditto, after addition of spiegeleisen. c. Martin steel. d. Raw iron from cupola.

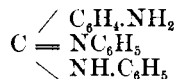
The pressure of the gas in the pores of the metal reached 8 atmospheres.

Further Communications on the Formation of Xanthine Bodies from Egg-albumine, H. KRAUSE and G. SALOMON (Ber.

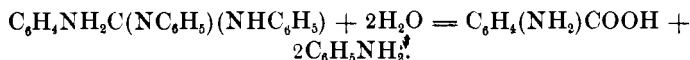
d. d. chem. Ges., vol. xii, p. 95).—In the early stages of the putrefaction of blood fibrine, hypoxanthine is formed.

Oxidation-Products of Cinchonine, W. KÖNIG (Ber. d. d. chem. Ges., vol. xii, p. 97).—By oxidation with chromic and sulphuric acids, an acid was obtained which crystallized from hot water in beautiful glittering, silky needles. The copper salt was indigo blue, which, with the analysis of the acid, proved the latter to be identical with the cinchoninic acid of Weidel, $C_{20}H_{14}N_2O_6$, found by long boiling of cinchonine with conc., HNO_3 . Heated with caustic lime, it gave chinoline. Hence, it would seem as if Weidel's formula should be halved, giving $C_{10}H_7NO_2 = C_6H_5N.COOH$, *chinoline-mono-carboxylic acid*. Heated with potassium hydrate, it gave an *oxy-cinchoninic acid*, $C_{20}H_{14}N_2O_6$, (*oxychinoline-mono-carboxylic acid*, $C_{10}H_7NO_3$), in white needles. Phosphorus pentachloride gave $C_{10}H_6ClNO_2$ (in short needles), thus proving the presence of an hydroxyl-group. The easy substitutability of the OH-group, makes it appear as if the oxy-cinchoninic acid were more nearly related to the fatty, than to the aromatic oxy acids, which are constituted analogously to salicylic acid.

Constitution and Syntheses of Carbo-triphenyl-triamine, W. WEITH (Ber. d. d. chem. Ges., vol. xii, p. 101).—By the action of phosphorus trichloride on a mixture of paranitrobenzoic acid and aniline, according to the formula, $3C_6H_4NO_2COOH + 6C_6H_5NH_2 + 2PCl_3 = 2PH_3O_3 + 3C_6H_4NO_2.C(NC_6H_5)(NH.C_6H_5) + 6HCl$, a *para-nitro diphenyl-amidine* was formed, which by reduction, gave carbo-triphenyl-triamine, identical with the body obtained by Hoffmann, as a side-product in the production of rosaniline by the action of tetrachlor-anethane on aniline, and by Basset from chlor-pikrin on aniline. Its constitution is hence :



By action of HCl under pressure, it splits into para-amidobenzoic acid and aniline.



On the Formation of Hydrocinnamic Acid by Pancreatic Digestion, E. SALKOWSKY and H. SALKOWSKY (Ber. d. d. chem. Ges., vol. xii, p. 107).—Dried and powdered muscle, which had previously

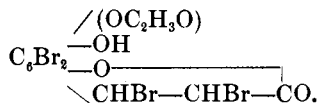
been extracted with water and alcohol, was mixed with the pancreatic glands of a dog, digested, boiled, and dialyzed. There was found to have been formed, besides butyric and valerianic acids, *hydrocinamic acid* (*phenyl-propionic*), $C_6H_5CH_2CH_2COOH$. It was also obtained from fresh flesh.

On Daphnetine, CARL STUENKEL (Ber. d. d. chem. Ges., vol. xii, p. 109).—Pure daphnetine, obtained from the glucoside daphnine, which occurs in the bark of *Daphne alpine* and *Daphne mezereum*, fuses at $253-256^\circ$, with partial decomposition. *Mono-acetyte daphnetine* is formed by the action of acetyte chloride, or acetic anhydride on daphnetine. Long flexible, yellowish prisms, or small glittering needles, fusing at $129-130^\circ$. By boiling with magnesia and water, the acetyte group is split off.

Tetra-brom mono-acetyte daphnetine.—By action of bromine in very dilute alcoholic solution on the preceding compound. Fuses at 290° , and is difficultly soluble.

Monobenzoyte daphnetine.—By action of benzoyte chloride on daphnetine. Fine white needles in warty aggregations. Fuses at $149-150^\circ$. Insoluble in water and ether, difficultly in boiling alcohol, easily in chloroform and benzol.

Oxidizing and reducing agents gave no characterized compounds. Daphnetine is perhaps a di-oxycunarine, in which case the brom-acetyte derivative is



On the Ethers of Tribasic Formic Acid, ALFRED DEUTSCH (Ber. d. d. chem. Ges., vol. xii, p. 115).—*Ortho-formic-ethyl ether*. By action of 7 parts of sodium in 14 parts of ethyl alcohol, and 12 parts of chloroform. By use of these proportions, the formation of a resinous body which is encountered when the method of Wichelhaus and Ladenburg is followed, is avoided.

Ortho-formic-methyl ether.—Colorless, very mobile liquid, boiling at $101-102^\circ$, and possessing a pleasant odor. Easily inflammable. Sp. gr. at $23^\circ = 0.974$.

Ortho-formic-propyl ether.—The reaction with propylic alcohol is less violent. Boils at $196-198^\circ$. Burns with a rose-luminous flame. Sp. gr. = 0.879.

Ortho-formic-isobutyl ether.—Action weak. Boils at 220–222°. Sp. gr. = 0.861. Colorless liquid, not miscible with water. Burns with a luminous flame.

Ortho-formic-iso-amyl ether.—Colorless, oily liquid, not miscible with water. Sp. gr. = 0.864.

A benzyle ether could not be obtained.

Additions to the Law of Volumes, by H. SCHROEDER (Ber. d. d. chem. Ges., vol. xii, p. 119).—Not suitable for abstraction.

On Phospho-metals, OSCAR EMMERLING (Ber. d. d. chem. Ges., vol. xii, p. 152).—In order to avoid loss of phosphorus by the high temperature, the metal in the form of wire was placed in a glass tube with the phosphorus. The tube was heated until the phosphorous vapors had expelled the air, then closed and firmly imbedded in an iron tube with magnesia. The whole was heated to a dark red heat. The glass tube had to be opened in an atmosphere of carbonic acid, to avoid the inflammation of the phosphorus, which had not been entirely converted into the amorphous state.

Phosphorus and copper.—Brittle, fusible mass of a dull silver lustre. Heated in a tube, it lost part of its phosphorus. Insoluble in HCl, easily in HNO₃. Sp. gr. = 5.14. Composition is CuP, and it appears to be identical with Rose's copper phosphide, obtained by heating secondary copper phosphate in a stream of hydrogen.

Phosphorus and magnesium.—Lead-grey, unfused mass, extraordinarily unstable. Exposed to the air, it decomposed in a few minutes to a white powder of magnesium phosphate. In moist air it evolved hydrogen phosphide; with water the action was violent. Analysis could not be made.

Phosphorus and aluminum.—A compound could not be obtained. The metal remained unacted on. Mercury and iron also failed to give reactions.

Phosphorus and silver.—Black, very brittle mass, giving on heating, phosphorus and silver. Formula, AgP.

Phosphorus and cadmium.—The action succeeded only after repeated trials. The cadmium was used in the form of very fine wire. Sintered, grey mass, in some spots silver white, and enclosing brittle needles. Formula, Cd₂P.

Phosphorus and zinc.—Fused crystalline mass, giving off phosphorus at a high temperature, without fusing. Formula, Zn₃P₂.

Phosphorus and tin.—Tin-white body, having the composition SnP. With more phosphorus SnP₂ was obtained. Black, glittering

body, cleaving in very fine lamellae. Not acted on by HCl, but easily by aqua-regia. Sp. gr. 4.91 at 12°.

On the Behavior of Meta-nitro-anisole toward Ammonia, H. SALKOWSKY (Ber. d. d. chem. Ges., vol. xii, p. 155).—Meta-nitro-anisole, when heated with alcoholic ammonia, did not give a nitraniline, but remained unaffected. This reaction, hence, seems to fail with ortho-compounds, in the same manner as the conversion of nitro-amides into nitro-phenoles, by boiling with an alkali.

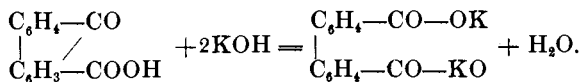
On the Behavior of Concentrated Potassium Iodide Solutions containing Lead, toward Hydrogen Sulphide, and on Potassium Iodide Crystals containing Lead, E. SCHERING Ber. d. d. chem. Ges., vol. xii, p. 156).—As lead is sometimes contained in commercial iodine, it is occasionally met with in potassium iodide. In concentrated solutions of potassium iodide which contain lead, hydrogen sulphide produces at first a precipitate, but all the lead is not thrown down. In order to precipitate the whole of it, the solution must be very largely diluted. The presence of lead affects the crystalline form, as shown by diagrams.

On the Oxidation of Quinine by means of Potassium Permanganate, S. HOOGEWERFF and W. A. VAN DORP (Ber. d. d. chem. Ges., vol. xii, p. 158).—A full translation of this paper has been given on p. 80, No. 4, Vol. I, of this journal.

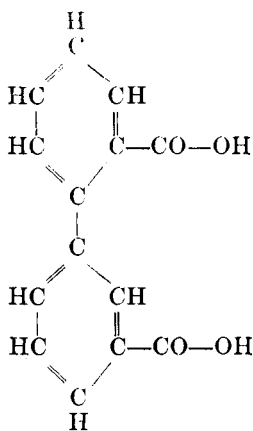
On the Structural Formulæ of Aromatic Compounds, E. WROBLEVSKY (Ber. d. d. chem. Ges., vol. xii, p. 161).—Instead of the terms ortho, meta and para, the author proposes the names of symmetrical, unsymmetrical and adjacent (benachbart), as being more convenient, viz :

Empirical.	Symmetrical.	Unsymmetrical.	Adjacent.
$C_6H_4Cl_2$	$C_6H_2ClH_2Cl$	C_6H_3ClHCl	$C_6H_3Cl_2H$

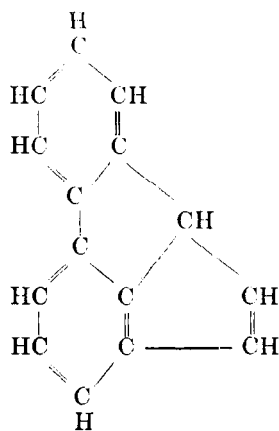
On the Constitution of Isodiphenic Acid and Fluoranthene, R. FITTIG and H. LIEPMANN (Ber. d. d. chem. Ges., vol. xii, p. 163).—By the action of fusing potassium hydrate on diphenyle-ketoncarboxylic acid, *isodiphenic acid* is formed.



The acid, on heating with lime, gives diphenylene-ketone and carbonic acids, thus resembling diphenic acid. Hence, it follows that one of the carboxyle groups is ortho to the mutual point of attachment of the phenyle groups. On oxidation the acid yielded isophthalic acid. Hence the constitution is :



Isodiphenic Acid.



Fluoranthene.

On the Estimation at High Temperatures of the Vapor Densities of substances which Attack Mercury, L. PFANNDLER (Ber. d. d. chem. Ges., vol., xii, p. 165).—Not suitable for abstraction.

Action of Nitrosyle Chloride on Unsaturated Hydrocarbons, PAUL TÖNNIES (Ber. d. d. chem. Ges., vol. 12, p. 169).—Bodies, similar to the addition-compounds of nitrous anhydride with unsaturated hydrocarbons, were obtained. With amylene, a beautiful crystalline compound, $C_5H_{10}NOCl$, was formed. Anethole gave $C_6H_4 \begin{matrix} \diagup OCH_3 \\ \diagdown C_3H_5NOCl \end{matrix}$. On reduction of the amylene compound, amylamine was formed. The anethole derivative gave $C_6H_4 \begin{matrix} \diagup OCH_3 \\ \diagdown C_3H_6NH_2 \end{matrix}$.

This, then, is a convenient method for the formation of primary amines.