ABSTRACTS.

Abstracts from *Berichte der Deutschen Chemischen Gesellschaft*, by Percy Neymann, Ph. B.

On Synthetical Oxalic Acid. V. MERZ and W. WEITH, (Vol. XV., p. 1507). The idea was taken from the fact that formic acid can be produced from inorganic material, namely, carbonic oxide and caustic soda. Considering the large production of alkali formiates, it seemed possible that oxalic acid might be formed from these materials. Investigation was extended to the potassium and sodium salts of formic acid, also the calcium, barium and magnesium salts. The formiates were subjected to the heat of baths of various substances. In the diphenylamin bath (310°) the sodium formiate is scarcely decomposed. At 360° (mercury bath) it is mostly converted into carbonate, and at 440° (sulphur bath) it is mainly converted into the oxalate. The potassium salt behaves in a similar manner. The other salts gave no oxalate even at 440°.

Vanadintrichlorid from Vanadintrisulphide. W. HALLERSTADT, (Vol. XV., p. 1619.) The sulphide is heated (in a drawn out piece of combustion tubing, the small end of which is connected with a distilling flask) in a current of chlorine at a moderate temperature. The liquid produced is distilled. The residue, which consists of Vanadintrichlorid, is treated in a steam of carbonic acid at 150° C.

An Ammoniacal-alkaline Silver Solution as Reagent for Aldehyde. B. TOLLENS, (Vol. XV., p. 1635.) The author finds a solution of the following composition to be the best :

Three grms. of nitrate of silver are dissolved in 30 grms. of ammonia of 0.923 sp. gr.

Three grms. of caustic soda are dissolved in 30 grms. of water. The two solutions are mixed and used after a few days. The reagent must be kept in a cool, dark place.

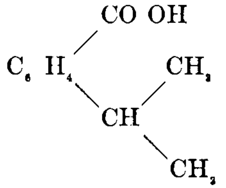
Quantitative Estimation of Fusil Oil in Brandy. L. MARQUARDT, (Vol. XV. p. 1661.) Continued from Vol. XV. p. 1370. Author adds that ether cannot be used in place of chloroform. Common chloral chloroform, such as is used for surgical purposes is not pure enough. Even that known as pure chloroform should be subjected to one or two oxidations with bichromate of potassa and sulphuric acid. The alcohol must also be purified. The author appends a qualitative analysis.

On Soluble Alizarin Blue. H. BRUNCK and C. GRAEHL, (Vol. XV. p. 1783.) The dye is called alizarin blue S. alizarin blue as it occurs in commerce, in a paste of 10—12 % of dry constituents is mixed with a 25—30 % solution of sodium bisulphite. When the solution is filtered, unaltered alizarin blue remains on the filter which can be treated again. The filtrate contains the new compound which can be obtained in cystalline form.

Preparation of Peroxide of Lead. A. FEHRMANN, (Vol. XV. p. 1882.) It is best and most cheaply prepared by treating a solution of chloride of lead (50—60° C.) with chloride of lime until a filtered sample shows no more brown color. It is then filtered off with exclusion of air.

The Synthesis of Cuminic Acid. RICH. MEYER and ERWIN MUELLER, (Vol. XV. p. 1903.) The cumol was prepared according to Gustavson's method, by the action of secondary propylbromid on benzol in the presence of $Al_2\,Br_6$.

The synthetical cumol was transformed into the bromine compound in the usual manner, and the acid produced in the same manner as in the first experiments (Vol. XV. p. 496.698, Ber-d-d-chem Ges.) The melting point was found to be 116°—117° C., and the formula (1.4) :



$$C_6H_4\left\langle\begin{array}{l}CO\,OH\\CH\left\langle\begin{array}{l}CH_3\\CH_3\end{array}\right.\end{array}\right.$$

On the Reduction of Molybdenum Compounds. OTTO FREIHERR VON DER PFORDTEN, (Vol. XV. p. 1925.) The volumetric method is important. Titration is performed in the usual manner, whereby the suboxide is transformed into the sesquioxide which latter is used for calculations. The salt is dissolved in a little water, to which are added 60 cc of a 27 per cent. hydrochloric acid and 8—10 grms. of zinc in bars, the iron in which has been determined by titration. When the solution has assumed a yellow color, and before all the zinc is consumed the flask is cooled, and contents thrown into a porcelain dish containing water, dil. sulphuric acid and manganous sulphate solution of the concentration given by *Zimmermann.* From a pipette more permanganate solution is added and titred to pink color as usual. The results are accurate

$$1 \text{ cc } K\ Mn\ O_4 = 0.000752185 \text{ Oxygen}$$
$$1 \text{ cc } K\ Mn\ O_4 = 0.00451311\ Mo\ O_3$$

Method for determination of phosphoric acid. Otto, Freiherr v. d. Pfordten. (Vol. XV., p. 1929).

The method is based upon the estimation of molybdic acid. The composition of the yellow precipitate is assumed to be that given by Finkener and Pemberton. One mol. $P_2\ O_5$ to 24 mol. Mo 0_3.

The method is applicable in all cases in which the separation of the phosphoric acid with molybdate of ammonium can take place.

On some chinolin derivatives. O. Rhoussopoulos. (Vol. XV., p. 2008). Chinolin and Ethylmonochlor-acetate give rise to a chloride.

$$C_9\ H_7\ N + CH_2\ Cl\ CO_2\ C_2\ H_5 = C_9\ H_7\ NCH_2\ CO_2\ C_2\ H_5\ Cl.$$

It may be termed the chlorohydrate of the chinolin-glycocoll-ethylether.

The Betaïn of Chinolin $C_{11}\ H_9\ NO_2, H_2\ O$ can be obtained from the chlorohydrate by treatment with oxide of silver.

On the application of diphenylamin and anilin in qualitative analysis. Conrad Laar. (Vol. XV., p. 2086).

On azylines, a homologous series of bases containing nitrogen. E. Lippmann and F. Fleissner. (Vol. XV., p. 2136).

Nitrous oxide acts on amines and amido acids, eliminating nitrogen and forming a hydroxyl derivative. When nitrous oxide is passed into an alcoholic solution of dimethyl anilin, the solution is colored deep red, carbonic acid is evolved and crystals are formed. The reaction takes place according to the formula :

$$2\ C_8\ H_{11}\ N + 2\ NO = 2\ H_2\ O + C_{16}\ H_{18}\ N_4.$$

Azylins are compounds containing nitrogen which are obtained by the action of nitrous oxide on bases into which the =N-N= has entered the benzol ring with four free bonds while azo compounds are those which are characterised by the bivalent group —N=N—.

The compounds are insoluble in water but soluble with beautiful red color in hydrochloric acid and with a beautiful green color in acetic acid. The melting points increase with the decrease in molecular weight.

Contributions to the history of conydrin. A. W. HOFMANN. (Vol. XV., p. 2313). The author determines the formula of conydrin to be the same as that given by *Wertheim* $C_8H_{17}NO$.

On the behavior of the alkali phosphates towards some indicators. G. TOBIAS. (Vol. XV., p. 2452). By the action of phosphoric acid on alkalies the changes of color of the indicators are not as decided as with other acids. Experiments with litmus, phenolphtalëin and aqueous solution of cochineal on different solutions (1) a dilute aqueous solution of pure commercial phosphoric acid was taken and allowed to stand for some time, it then was boiled to remove all modifications of phosphoric acid, except ortho–100 cc contained 4.095 H_3PO_4; (2) a solution of double this strength, 100 cc = 8.190 H_3PO_4; (3) potassa, freed from carbonic acid and from K_2SO_4 by means of Ba $(OH)_2$, 100 cc = 4.096 KOH; (4) soda solution, 100 cc = 2.349 NaOH; (5) ammonia, freed from carbonic acid, 100 cc = 1.950 NH_3; (6) di-sodic phosphate, 100 cc = 3.4165 Na_2HPO_4.

In no case were the results satisfactory, the indicators mentioned above should not be used for the titration of phosphoric acid.

Lecture experiments with Zinc dust and Sulphur. H. Schwarz. (Vol. XV., p. 2505). The old experiment employed for demonstrating chemical union by heating sulphur and copper or iron filings is well known. The demonstration can be shown much more brilliantly by heating a mixture of zinc dust and sulphur. When mixed in the proportion of atomic weights, 65 parts of zinc and 32 parts of sulphur in a mortar (but with great care) the mixture can be easily[1] ignited by a match and will burn like gunpowder. The mixture can be partly exploded by a smart blow of the hammer.

When the vapor of bisulphide of carbon is brought in contact with heated zinc dust, the zinc dust immediately begins to glow; sulphide of zinc is formed and carbon separates.

Carbon in statu nascendi easily unites with nascent hydrogen. A mixture of sulphuretted hydrogen and bisulphide of carbon vapor is conducted over zinc dust, which is gently heated. The resulting gas after passing through KOH to absorb undecomposed sulphuretted hydrogen, was found to consist of hydrogen and large quantities of marsh gas.

On the Demonstration of the Flashing Point of Petroleum. J. T. STODDARD. (Vol. XV., p. 2555). Description of apparatus, which is very simple and can be made easily in any laboratory.

Contributions to the Knowledge of the Direct Substitution Products of Azobenzol. H. Janoosky. (Vol. XV., p. 2575). The majority of the substitution products of azo-benzol which have been produced within late years were obtained indirectly by reduction of substituted nitro-compounds or by oxidation of substituted amido-compounds, or by diazotation and subsequent combination. By sulphurizing with fuming sulphuric acid of 10-14 % azobenzol-mono-sulpho-acid is produced ($C_{12}H_9N_2SO_3H+3$ aq). By decomposing with iron and acetic acid anilin and amido-benzol-para-sulpho-acid are produced. The formula of the mono-sulpho-acid would hence be $\underset{(1)}{C_6H_5N}= \,:\, =NC_6H_4.\ \underset{(4)}{SO_3H}$.

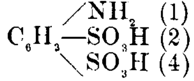
Three acids are obtained by treating one part of azobenzol with four parts of cryst. acid of 20-30 %. The first or alpha-acid is $C_{12}H_8N_2\ (SO_3H)_2+3$ aq., or $\underset{(4)}{SO_3H},\ \underset{(1)}{C_6H_4N}= \,:\, =\underset{(1)}{NC_6H_4}\underset{(4)}{SO_3H}$. It is identical with the acid produced from the nitro-sulpho-acid of benzol (1.4) or from the amido-sulpho-acid (1.4).

The second acid is an amido-benzol-meta-sulpho-acid of the formula :

$$\underset{(3)}{SO_3H}.\ \underset{(1)}{C_6H_4N}= \,:\, =\underset{(1)}{NC_6H_4},\ \underset{(3)}{SO_3H}$$

It crystallises with five molecules of water of crystallisation.

The third acid is probably



$$C_6H_3\left\langle\begin{array}{ll}NH_2 & (1)\\ SO_3H & (2)\\ SO_3H & (4)\end{array}\right.$$

By decomposition it yields anilin and amido-benzol-disulpho-acid.

On the Recognition and Estimation of Titanium. A. Weller. (Vol. XV., p. 2592). The author recommends peroxide of hydrogen as a reagent in testing for titanic acid. A few drops of the peroxide added to 1cc of a sulphuric acid solution of titanic acid will produce and orange-red color, when as much as one milligramme of the acid is present, and a distinct light yellow color when 0,0001 grms. is present. Only when the amount is equivalent to 0,0002 grms. the reaction ceases to be distinct. This reaction is employed for a quantitative colorimetric determination of titanium and gives very good results in as much as the titanium can be determined in the presence of zirconium, tantalum and niobium. When, however, vanadic or molybdic acid is present, great care must be exercised, as these acids are also colored when H_2O_2 is added to a solution containing them.