

sac's alcohometer, and which dissolves starch sugar with great difficulty.

By a dexterous use of this process, it seems probable that very approximate results may be obtained, although what is said here is merely in the nature of a suggestion to those who may have use for quantitative results.

Abstracts from American and Foreign Journals.

Bulletin de la Société Chimique de Paris.

Abstractor, E. H. S. BAILEY, Ph. B.

On the Sulphocyanate of Platinum of M. Marcano, G. WYRONBOFF (33, 402).—The body described by M. Marcano (*Bull. Soc. Chim. de Paris*, 33, 250) is not a sulphocyanate of platinum, $(\text{CyS})_6\text{Pt}$, but rather a sulphoplatinate of potassium, $(\text{CyS})_6\text{PtK}_2$, a body previously described.

A Combination of Tetrachloride of Titanium and Chloride of Acetyl, A. BERTRAND (33, 403).—By mixing tetrachloride of titanium with chloride of acetyl, yellow octahedral crystals are obtained, having the symbol $\text{C}_2\text{H}_3\text{OCl} + \text{TiCl}_4$.

Some Properties of Mixtures of Cyanide of Methyl with Ordinary Alcohol and with Methyl Alcohol, C. VINCENT and B. DELACHANAL (33, 405).—This subject is discussed under the topics:

1. Boiling point of mixtures of alcohol and cyanide of methyl.
2. Density of the preceding mixtures.
3. A method for the separation of cyanide of methyl from ordinary alcohol.
4. Boiling point and density of mixtures of methyl alcohol and cyanide of methyl.

On the Determination of Urea by Hypobromite of Sodium, C. MÉHU (33, 410).—Will be noticed elsewhere.

Oxalic Acid, A. VILLIERS (33, 415).—Fine crystals of normal oxalic acid, $\text{C}_2\text{H}_2\text{O}_4$, can be obtained by dissolving, with the aid of heat, small quantities of ordinary oxalic acid in concentrated sulphuric acid. After some time crystals are deposited which are in the form of right octahedrons with rhombic base, and are very transparent. Ordinary hydrated oxalic acid crystallizes in clinorhombic prisms. A number of other characteristics of the normal acid are also noticed.

Electrolysis of Malonic Acid, E. BOURGOIN (33, 417).—From the experiments made, the following characteristics of malonic acid are deduced :

In a free state, it is possessed of considerable stability when acted upon by the electric current and becomes gradually more concentrated at the positive pole. These characteristics distinguish it from its lower homologue, oxalic acid.

In a concentrated alkaline solution, no hydrocarbon is in any case set free. This distinguishes it from succinic acid. These differences are such that if free methylene had not to the present time been undiscovered, we should be tempted to believe that the malonic acid of synthesis is not a true homologue of oxalic and succinic acids.

Acetobenzoic Anhydride, W. H. GREENE (33, 424).—The experiments of M. Loir in regard to the properties of acetobenzoic anhydride, described in *Bull. Soc. Chim. de Paris*, 32, 164, have been repeated by the author. He concludes that there is no difference between the benzoate of acetyl and acetate of benzoyl. In whatever way they are made their constitution and reactions, in the same conditions, are identical.

The Constitution of Salts of Rosaniline and of Analogous Coloring Matters, A. ROSENSTIEHL (33, 342 and 426).—This is an exhaustive discussion in which two questions are examined. The first is general in regard to the chemical cause for the coloration of these bodies ; the other is special and refers particularly to the constitution of rosaniline. It is shown that there can be coloration without supposing a double union between one of the atoms and the rest of the molecule. This union is at least an unverified hypothesis. This fact has been lost sight of by some who have used it as a basis of demonstration. If it is simply an hypothesis, it is not necessary to introduce it into the formula of rosaniline.

On the Resin of Palissandre Wood (Purple Ebony), A. TERREIL and A. WOLFF (33, 435).—This resin is extracted with alcohol. It is readily soluble in chloroform, carbon disulphide, fixed alkalis and conc. sulphuric acid. An analysis shows it to have a composition nearly corresponding to the formula, $C_{21}H_{21}O_6$.

Mineral Waters Containing Iron and Nitrates, ED. WILLM, (33, 450).—Analyses of a number of waters are given in detail.

The Waters of Bourboule, A. RICHE (33, 452).—The arsenic, which is a notable constituent of these springs, has not altered in

quantity in two of them. In two others it appears to be slowly decreasing.

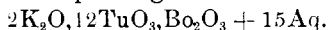
Preparation of Acetonitrile, E. DEMARÇAY (33, 456).—By the distillation of acetamide there is obtained at first ammonia, water and acetonitrile, and afterwards water, acetonitrile and a little acetic acid. From these facts it is evident that if acetamide be heated somewhat above its boiling point, it will be decomposed into acetonitrile and water, that the water thus produced decomposes a little acetamide into ammonia, which escapes, and acetic acid, which nearly all remains. When a certain quantity of acetic acid is present, this last reaction does not take place, but simply water and acetonitrile are formed.

Advantage may be taken of this reaction to obtain acetonitrile in large quantities. Acetamide is heated with crystallizable acetic acid, observing proper precautions, and the distillate is dried over potassic carbonate.

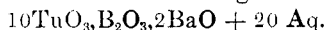
A new Method for Making Acetal, R. ENGEL and DE GIRARD (33, 457).—To produce acetal a current of hydrogen phosphide is passed through a cooled solution of aldehyde, in a little more than its own volume of absolute alcohol, for three days. From this mixture water causes a liquid to separate which, upon fractional distillation, gives off, at 102° , a substance which is proved to have all the properties of acetal.

On the Commercial Analysis of Bituminous Rocks, P. KIENLERO (33, 459).—Will be noticed elsewhere.

Borotungstates, DANIEL KLEIN (33, 466).—By boiling together equal weights of tungstic hydrate and pentametaborate of potassium ($\text{Bo}_5\text{O}_{10}\text{KH}_4 + 2\text{Aq}$) crystals are readily obtained, which on analysis show a composition corresponding to the formula,



Another salt described is borodecitungstate of barium,



Action of Water on Zinc Tanks and Lead Pipes, X. ROCQUES (33, 499).—Zinc, lead and copper are attacked very slowly by ordinary water, and by ordinary saline solutions (chlorides and bicarbonates).

The action is more intense when several metals are in contact, because magnetic force is added to chemical force. The presence of nitrogenous matter and ammonia intensifies the action, especially when in contact with zinc.

These phenomena have their maximum intensity where most oxygen is present. This is particularly the case on the surface of a reservoir, or where there is alternate contact with air and with water. A deposit in the bottom of some tanks contained oxides of zinc, lead and copper. A deposit in a reservoir, connected with lead pipes, contained 0.027 per cent. of carbonate of lead. Iron pipes are to be recommended as a substitute for lead.

On the Heat of Formation of Ammonia, BERTHELOT (33, 505).—After discussing and pointing out the errors of previous determinations, the author gives the results of a method which consisted in burning the ammonia gas in free oxygen. By this process the numbers + 21.0 cal. and + 12.2 cal. are obtained for ammonia solution and for the gas.

The Heat of Formation of Oxides of Nitrogen, BERTHELOT (33, 509).—It is possible that errors have crept into the methods of previous experimenters, because the heat has been determined very indirectly. In any determinations where the heat of formation of ammonia is a factor, the results must be modified by the data obtained in the article above. A new series of experiments has been devised in which a steel detonating vessel was used. Binoxide of nitrogen is exploded in this with a proportional quantity of cyanogen or ethylene. The heat of combustion of cyanogen and of ethylene in oxygen are also determined. From these data the heat of formation of binoxide of nitrogen is found to be 21.6; combustion of oxide of carbon in oxygen and in protoxide of nitrogen gives 10.8 for CO. A corrected table for the thermic formation of oxides of nitrogen, of nitrates and of ammoniacal salts, is also given.

Observations in Reference to a Note of Messrs. Vincent and Delachanal regarding Pure Cyanide of Methyl, A. GAUTIER (33, 515).—A reclamation of priority.

Researches on the Determination of Heavy Mineral Oils and Resin of Fatty Oils and Resin in Commercial Oils, A. RÉMONT (33, 461 and 525).

Chemical Stability of Matter under the influence of Sonorous Vibrations, BERTHELOT (33, 547).—It is a well known fact that sudden shocks will produce chemical combination. In order to ascertain whether similar effects will be produced by sonorous vibrations, various substances, as ozone and oxygen, arsenic and hydrogen, ethylene and sulphuric acid, and also hydric peroxide, and persulphuric acid were connected with an apparatus whereby they were

subjected to vibrations of 100 per second and of 7,200 per second. No sensible effect was produced. It seems, therefore, that matter is stable under the influence of sonorous vibrations, but is readily affected by ethereal vibrations. In this connection it is worthy of note that the vibrations of heat and light waves are infinitely more rapid than those of sound waves.

On the Preparation of Ashes used for the Extraction of Iodine from Marine Plants called Seawrack, Dr. THIERCELIN (33, 559).—An extended description is given of the method of collecting the seaweed, drying, fermentation, and incineration. This is also accompanied by a description of the furnace used in the latter operation.

Manufacture of Phosphoric Acid, A. COLSON (33, 563).—The natural, unground phosphate is digested in dilute hydrochloric acid for about twenty-four hours; the clear solution is decanted off, and the residue washed with water. This wash water is used to dilute another lot of acid. The acid solution is mixed with enough sulphuric acid of 50° B. to precipitate all the lime. The sulphate of lime is then separated by pressure, the acid liquid is concentrated, and the hydrochloric acid evaporated off and condensed in towers. A solution is thus obtained containing 400 to 500 grms of phosphoric anhydride per liter, with some hydrochloric acid also.

On the Complex Acids containing Boric Acid, Dr. FRANCESCO MACRO (33, 564).—These researches cover nearly the same ground as those described by M. Klein (*Bull. Soc. Chim.*, 33, 466).

The Combination of Tetrachloride of Titanium with Protochloride of Phosphorus, A. BERTRAND (33, 565).—By mixing solutions of tetrachloride of titanium with protochloride of phosphorus, small crystals are obtained which melt at 85°.5. They have a composition corresponding to the formula, $TiCl_4, PCl_3$, and are acted upon by ammonia in accordance with the equation:
 $TiCl_4, PCl_3 + 9(NH_3, OH) = TiO_2 + PO_3(NH_4)_2H + 7NH_4Cl + 4H_2O$.

Combination of Tetrachloride of Titanium with Oxide of Ethyl, A. BERTRAND (33, 566).—If the vapors of ether are mixed with those of tetrachloride of titanium, fine yellowish-green crystals are produced.

Reduction of Nitrate of Ethyl by Alcohol, A. BERTRAND (33, 566).—If a solution of nitrate of silver in absolute alcohol is treated with iodide or bromide of ethyl, iodide or bromide of silver is precipitated, $AgNO_3 + C_2H_5I$ or $C_2H_5Br = AgI$ or $AgBr$. But the alco-

holic solution does not yield nitrate of ethyl. Some oxide of ethyl distils over, and from that portion coming over below 70°, nitrite of ethyl and aldehyde are obtained in accordance with the reaction:



Substances contained in the Coke from Petroleum, L. PRUNIER and EUG. VARENNE (33, 567).—The authors have treated petroleum coke with various solvents. By acting upon it with bisulphide of carbon, they obtained an insoluble residue containing some sulphur and about 98 per cent. of carbon, and by evaporating the bisulphide of carbon solution, a product containing about 94 per cent. of carbon. This latter was treated successively with alcohol, ether and crystallizable acetic acid, and in the residue insoluble in these, but dissolved in bisulphide of carbon, the hydrocarbon (C_{14}H_2)_n was obtained. The original bisulphide of carbon solution gave, upon fractional distillation, hydrocarbons having from 97.7 to 98.11 per cent. of carbon. The experiments tend to confirm the theories of Berthelot previously announced. In these compounds it will be noticed that the percentage of carbon is always very high, and the molecular weight constantly increasing.

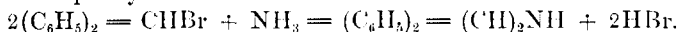
Preparation of Malonic Acid, E. BOURGOIN (33, 572).—After numerous experiments upon methods previously described the author recommends the following synthetical method: A solution of monochloroacetic acid, in double its weight of water, is saturated with a solution of potassic bicarbonate, some pure potassic cyanide is added, and the solution is slowly heated on a water bath. After the ebullition, attendant upon the combination, has ceased, double the volume of conc. hydrochloric acid is added, the precipitated potassic chloride is removed, hydrochloric acid gas is passed through the liquid, and the precipitated salts are again removed. The acid solution is then evaporated in a water bath to dryness, and from an ethereal solution of this mass perfectly pure malonic acid separates on evaporation. This process is easy of execution, and yields almost the theoretical amount of acid.

On the Heat of Formation of Gun-cotton, SARRAU and VIEILLE (33, 581).—The substance experimented upon is a mixture of bi- and trinitrocellulose, and was decomposed at different pressures, varying from 100 atmospheres to 6,000. The heat of combustion is not a constant quantity. Only the heat of formation can give data independent of the conditions of the experiment. The numbers found are, 542 calories per kgrm. of this complex molecule, and 640 for its equivalent.

Isomeres of Phloroglucine, A. GAUTIER (33, 582).—From a study of many vegetable substances, it is noticed that there is a tendency to dehydration of the glucosides, and a decomposition into saccharine bodies and aromatic substances. It may be possible also that dehydration of these different saccharine substances which go to make up the original glucoside, will give different triatomic phenols. The name *glucines* has been adopted by the author for a series of bodies, $C_6H_6O_3$, which have different properties from phloroglucine. Among those investigated are anoglucine and querciglucine, the former derived from the coloring matter of wines, and the latter from quercitron by fusion with alkalis.

Action of Monobromodiphenylmethane upon Ammonia, C. FRIEDEL and M. BALSOHN (33, 587).—When monobromodiphenylmethane is acted upon by a cold alcoholic solution of ammonia, bromohydrate of ammonia separates out, and from the alcoholic solution, by the addition of water, the mixed ethylbenzhydrolie ether is obtained.

If a conc. aqueous ammonia solution is used in place of an alcoholic solution, the crystals of bromide being dried and placed in contact with an excess of ammonia, they are gradually decomposed and after some time contain no more bromodiphenylmethane. From this solid mass, dissolved in alcohol and crystallized, the secondary amine derivative of diphenylmethane is obtained:



From the alcoholic mother liquor, the primary amine is obtained, viz: $(C_6H_5)_2 = CHNH_2$. If the hydrocarbon of benzhydrol be called benzhydrol, these two amines may be called benzhydrolamine and dibenzhydrolamine.

Synthesis of Diphenylacetic Acid, C. FRIEDEL and M. BALSOHN (33, 589).—A new method for the synthesis of this acid is to heat at 165° for eighteen hours, monobromodiphenylmethane with two-thirds its weight of cyanide of mercury. The mass is then acted upon by benzene and by water. The benzene solution, after being decanted, is distilled and gives a product which is treated with alcoholic potassa, agitated with water and ether; and after decantation of the ether the aqueous solution is heated to drive off the dissolved ether, hydrochloric acid is added, and the diphenylacetic acid thus precipitated is purified by recrystallization. The purified product melts at 148° .