tion tubes costing an equal sum ; with the certainty of perfect combustion that is assured in their use, the convenience of seeing the substance under combustion disappears.

The tubes of platinum seem to suffer little in use. One of them has sufficed for about fifty combustions and is still perfectly good.

ABSTRACTS.

Abstracts from the *Journal of the Chemical Society*, London, by Arthur H. Elliott, Ph. B., F. C. S.

On Oxypropyltoluidine. By H. Foster Morley, M. A., Fellow of University College. (Vol. XL., p. 387).

Propylene oxide was dissolved in an equivalent of paratoluidine, and heated for hours on a water bath. On distilling no propylene oxide was obtained, but at 285°–288° a liquid was obtained, which afterward solidified and by crystallization from benzene gave the formula $N(C_3H_7O)(C_7H_7)H$. A better yield is obtained when the toluidine solution of propylene oxide is allowed to stand some days at ordinary temperatures. In the latter case 20 grms. of the base were obtained from 46 grms. of toluidine. Oxypropyltoluidine melts at 74° and boils at 293°. It is insoluble in water, soluble in benzene, ether, alcohol, and petroleum. Dissolved in solution of oxalic acid it gives crystals of the formula $C_{10}H_{15}NO,H_2C_2O_4$, which melt at 151°. On heating the oxalate to 150° it melts and gives off water, carbonic oxide, and carbonic acid, leaving a syrup.

Author also gives a description of the distillation of oxypropyltrimethylammonium hydrate. This base (see *J. C. S.*, Vol. XXXVIII., p. 877) resembles neurine when heated giving trimethylamine, propylene-glycol with other liquids, and carbonic acid.

On some Halogen Compounds of Acetylene. By R. T. Plimpton, Ph. D. (Vol. XL., p. 391).

The acetylene was obtained by Jungfleisch's method from coal gas. By passing the acetylene through bromine the author obtained the tetrabromide and a solid C_2HBr_3 melting at 174°. By treating the tetrabromide in alcohol with zinc powder the dibromide was made ; it boiled at 110–111 and at 17° was still liquid. Its specific gravity at 0° C. was 2.268. The di-iodide was made by passing acetylene over iodine wet with alcohol. Crystallized from alcohol, it gives needles melting at 73°, and distilling without decomposition; it boils at 192°.

Acetylene chloriodide was prepared by passing the gas over iodine monochloride. The crude product was washed, dried and distilled. The chloriodide obtained was a heavy liquid boiling at 119° and has the formula C_2H_2ClI. Acetylene chlorobromide is prepared by adding bromine to acetylene chloriodide under water, dissolving the separated iodine in sodium thiosulphate, drying, and distilling the liquid. It boils at 81°–82°, and has the formula $C_2H_2Cl\,Br$. Warmed with alcoholic soda it gives a spontaneously explosive gas.

Acetylene bromide was made by shaking acetylene with bromine iodide in bottles from which the air had been previously abstracted. The crude black oil is washed with sodium thiosulphate and purified by distillation with steam. It is a heavy colorless liquid, boiling at 150° and solid at 8°.

This paper is accompanied with a table showing the relation of the above compounds to those of ethylene and ethylidine.

On Dihydroxybenzoic Acids and Iodo-Salicylic Acids.

By A. K. Miller, Ph. D. (Vol. XL., p. 398).

In this research the author has obtained the sixth acid of the formula $C_6H_3(OH)_2COOH$. Two methods were employed; one by heating catechol with ammonium carbonate and water in sealed tubes, and the other by fusing iodosalicylic acid with potassic hydrate. By the first method very little of the dihydroxybenzoic acid was obtained; but it gave a *pure blue* coloration with ferric chloride, which turned violet red with sodium carbonate. Analysis gave figures for the formula $C_7H_6O_4$. For the second method the author made iodosalicylic acid by the direct action of iodine on salicylic acid. Lautemann, Lischti, Demole and Goldberg, worked upon iodosalicylic acids, but their results were so divergent that the author repeated the work. Having found that Lautemann's and Goldberg's work agreed in some points, the author made iodosalicylic acid by Lautemann's method, by boiling salicylic acid and iodine in alcohol. To separate mono- and di-iodosalicylic acids, the mixture was boiled with barium carbonate and water, and the barium salts crystallized from hot water; but the method did not give definite salts and was abandoned. To effect the separation of two iodosalicylic acids a tedious process of fractional crystallization was undertaken. By this means the two acids were separated, the more insoluble melting at 197° and the other at 198°. The first of these is paraiodosalicylic acid, it crystallizes from water in long needles, which give a violet color with ferric chloride. The barium salt of this acid crystallizes with 4 mol's of water and dissolves in 120–125 parts of water at 8°. The second more soluble acid obtained above is ortho-iodosalicylic acid; it gives a violet coloration with ferric chloride. The barium salt of the last acid requires 190 parts of water for its solution at 8°, and it crystallizes with 3½ molecules of water.

By fusing the para-acid with potash dihydroxybenzoic acid is obtained, which crystallized in anhydrous needles. Its aqueous solution gives *no* precipitate with lead acetate, gives a deep blue color with ferric chloride, changing to red with sodium carbonate, but destroyed by excess of the reagent. By fusing the ortho acid with potash, another dihydroxybenzoic acid is obtained, which gives a blue color with ferric chloride, but the color is violet red, with sodium carbonate, and not destroyed by an excess of the reagent. This acid also differs from the former in its crystalline form, by giving a precipitate with lead acetate, and by giving catechol and carbonic acid when heated, while the para-acid gives quinol under the same conditions. It melts at 204°, and is the missing dihydroxybenzoic acid.

$$C_6H_3—O^3H—O^2H—COO^1H.$$

The author gives a table of the six dihydroxybenzoic acids, with their properties, etc.

Crystalline Molecular Compounds of Napthalene and Benzene with Antimony Trichloride. By Watson Smith and G. W. Davis. (Vol. XL., p. 411.)

By melting together three parts of antimony trichloride with two of napthalene, minute clinorhombic tables are formed, which are separated from the fluid mass with a warm platinum spatula. When first obtained they are transparent, but soon become opaque. They gave by analysis 38.68 and 38.56 per cent. of antimony, corresponding to the formula $3Sb\ Cl_3$, $2C_{10}H_8$, which requires 38.94 per cent. of antimony.

By dissolving three parts of crystallized antimony trichloride in four parts of benzene with warming; in a few days large inorhombic plates are formed, which are colorless and transparent, and remain so. Analysis gave 43.46 per cent. of antimony and 37.62 per cent. of chlorine, corresponding to the formula $3Sb\ Cl_3$, $2C_6H_6$, which requires 43.57 per cent. of antimony and 37.90 per cent. of chlorine.

An Additional Evidence, by Analysis of the Quinoline Molecule, that this Base Belongs to the Aromatic Series of Organic Substances. By Watson Smith and G. W. Davis. (Vol. XL., p. 412.)

By heating quinolene with ten times its weight of antimony penta-chloride in a sealed tube, the author obtained the products of exhaustive perchlorination. Among these products they obtained perchlorethane as white needles melting at 210°, but probably containing perchlorbenzene. By resubliming, a product was obtained melting at 182°, pure perchlorethane melting at 183°. They also obtained perchlorbenzene as white needles, melting at the correct temperature, 223°. No perchlormethane was detected, but this might escape in opening the tubes. These results coincide with the work of Dewar (J. C. S., 1881, p. 1044), who obtained quinolinic acid by oxidizing quinoline, and by heating the acid with soda-lime got aniline, the benzene nucleus with an amido-group; while the present authors obtain the benzene nucleus perchlorinated, and half the remaining residue, containing the nitrogen atom, as perchlorethane.

On Orcinol and Some of the Other Dihydroxytoluenes. By R. H. C. Nevile and Dr. A. Winther. (Vol XL., p. 415.)

Believing that Orcinol was a dihydroxytoluene, the authors undertook this investigation. Taking dinitroparatoluene 1:3:5 made from dinitropartoluidine, it was dissolved in alcohol and treated with ammonium sulphide. Water was added and the precipitate dissolved in hydrochloric acid and reprecipitated with ammonia. By further purification thick needles of nitrotoluidine were obtained melting at 98°–98°.4. The yield was 50 per cent. of the dinitrotoluene used. By treating with sulphuric acid the sulphate was obtained; which by further treatment with potassic nitrite gave nitrocresol as a brown oil, which by purification with ether gave yellow needles of nitrocresol. The nitrocresol was treated with tin and hydrochloric acid; after removing the tin, the solution was evaporated, and the crystals obtained washed with ether to remove unreduced nitrocresol. From this chloride dihydroxytoluene is obtained by treating with sulphuric acid and potassic nitrite. The resulting oil purified by distillation and crystallizing from benzene and chloroform, gives from the first needles or prisms and from the latter white leaves. After 14 days over sulphuric acid it melts at 106°–108° ; which by analysis proves to be orcinol $C_6H_3,CH_3, (OH)_2$ 1:3:5.

The authors have also succeeded in making orcinol from metabromo-toluene–metasulphonic acid ; toluene–meta-disulphonic acid ; metabromo–metatoluidine ; metadibromotoluene.

During this research the authors have also obtained the dihydroxytoluene 1:2:4, starting with orthonitro-paratoluidine. This latter was converted in sulphate, treated with potassic nitrite and converted into nitrocresol. This nitrocresol was treated with tin and hydrochloric acid to obtain amido-cresol. The chloride of amido-cresol thus obtained by treatment with sulphuric acid and potassic nitrite and the dihydroxytoluene obtained as an oil, which afterward crystallized, and by sublimation and crystallization gave a melting point of 104°–105°.

The author also prepared dihydroxytoluene 1:2:5 from meta-nitro-orthotoluidine following nearly the same process as in above case. The dihydroxytoluene 1:2:5 obtained is in white leaves melting at 124°–125° and freely soluble in alcohol, ether or water.

An investigation of the dihydroxytoluene 1:3:4 was also made by the authors starting with metanitro-paratoluidine, following the method above used by preparing the diazo compound, but was unsatisfactory. The method of Wagner (Ber. 1874, 537) was used, and by slight modification with success.

The paper is a very lengthy one and filled with most interesting details in manipulation of the methods used.

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

On Hydroxylamin Chloride. V. MEYER. (Vol., XV. p. 2,789.) The author gives a method which can be used on a large scale without the use of platinic chloride. He finds that the presence of ammonium chloride does not impair the durability of the product, but the presence of ferric chloride or free acid cause decomposition of the product, forming ammonium chloride.

On the Behavior of Platinum or Palladium Towards Carbonic Oxide or Hydrogen in the Presence of Oxygen and Water. MORITZ TRAUBE. (Vol.; XV., p. 2,854.) Not only palladium containing hydrogen but also palladium which is free from hydrogen will oxidize carbonic oxide in the presence of water to carbonic acid. Peroxide of hydrogen is also formed. Platinum behaves in the same manner. If platinum in the form of foil or wire is shaken with hydrogen, air and water a large quantity of peroxide of hydrogen is at once formed.

Separation of Asparagin from Solution. E. SCHULZE. (Vol. XV., p. 2,855.) Mercuric nitrate when added to a solution containing asparagin will precipitate it. The precipitate can be decomposed by means of sulphuretted hydrogen, again affording asparagin.

Preparation of Indigo blue from Orthonitrobenzaldehyd. AD. BAEYER and VIGGO DRAWSEN. (Vol. XV., p. 2,856.) If a solution of orthonitrobenzaldehyd in aceton is treated with water until a cloudiness appears, and subsequently with soda lye, baryta water or ammonia, the solution at first becomes yellow, then green, and after a time deposits large quantities of indigo blue.

On Aromatic Antimony Compounds and a New Method of Forming Aromatic Arsenic Compounds. A. MICHAELIS and A. REESE. (Vol. XV., p. 2,876.) When sodium is added to a mixture of cholride of arsenic, brombenzol and ether, chemical action at once ensues. On evaporation of the ethereal filtrate an oily residue remains which soon crystallizes. The product recrystallized once from hot alcohol is pure triphenylarsin. This heated with excess of chloride of arsenic in a closed tube for some time at 250° C. gives mono-phenyl-arsenious chloride :

$$(C_6\,H_5)_3\ As + 2\ As\ Cl_3 = 3C_6\,H_5\ As\ Cl_2.)$$

The antimony compounds are formed in a similar manner. Antimonious chloride and brombenzol are dissolved in the appropriate proportions in benzol, an excess of sodium is added and all is heated for some time at the upright condenser. The filtrate upon evaporation and recrystallisation form a large quantity of alcohol, gives a pure stibin.

On the Dopplerite of Aussee. W. DEMEL. (Vol. XV. p. 2,961.) The author, after a series of quantitative analyses and tests to imitate the organic mineral dopplerite, concludes as the most probable, that the mineral is to be recognized as the calcium salt of one or more of the acids of the series of the humus substances.

On Carbonic Acid Hydrate. M. Ballo. (Vol. XV., p. 3,003. In testing a mineral water sold in commerce under the name Salvator, the author was struck by the action of the carbonic acid contained in the same. The water contains 2.35 grms. of free acid to the litre, and notwithstanding this large amount, the water does not sparkle at 8-10° R. It occurred to the author that in aqueous solution the carbonic acid might be present as hydrate. A proof for the existence of carbonic acid hydrate was given, when a metal was found which would dissolve in the carbonic acid solution accompanied by the evolution of hydrogen. Magnesium was found to answer the purpose.

Methylating and Ethylating of Anilin and Toluidin. H. Reinharat and W. Staedel. (Vol. XVI., p. 29.) When the bromine or iodine hydrates are heated with the calculated amount of methyl alcohol and of ethyl alcohol to 145°–150° and 125° respectively, the secondary and tertiary bases are formed respectively. All the compounds are known except the mono-and diethyl-ortho-toluidin.

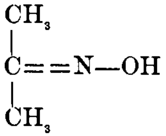
Action of Chlorocyanogen on the Potassium Compound of Pyrrol. G. L. Ciamician and M. Demestedt. (Vol. XV., p. 64.) The authors obtained needle shaped crystals having the melting point 210°. The analyses gave figures corresponding to a formula $C_4 H_4 N—CN$. *i. e.*, cyanogen-pyrrol or tetrol-cyanamid. It is most probable, however, that the product is a polymerid of $C_5 H_4 N_2$ corresponding to the formula $3 (C_5 H_4 N_2)$ and to the name tetrol-cyanuramid or tetrol-melamin. The behavior of this compound is similar to diphenyl-cyanamid, which latter was prepared by Weith (Berichte, Vol. VII., 843) from chlorocyanogen and diphenylamin.

On a New Method of Preparing Carbonic Oxide. E. Noack. (Vol. XVI., p, 75):. The method is in brief as follows: A piece of combustion tubing is filled with zinc dust, leaving a channel for the passage of carbonic acid, which is generated in the ordinary manner. It is good to insert a bottle containing soda solution between the combustion tubing and the receiver. The carbonic oxide should be conducted through the bottle containing caustic soda. The zinc dust is not quite allowed to glow. With 200 grms. of zinc 20 litres of carbonic oxide were obtained; 13 litres of carbonic acid gave 11 litres of carbonic acid.

Burning of Sulphur with White Phosphorescent Flame. K. Heumann. (Vol XVI., p. 139). The author found that when sulphur is placed on a warmed plate in the dark a white phosphorescence is observed, entirely different from the blue flame occurring when sulphur is burned. Another method of observing the phenomenon is to heat a glass rod and then to dip it into powdered sulphur. If the rod has not been too hot the white phosphorescence is easily observed in the dark. A still better method is to heat the sulphur rapidly on a plate inside of a metallic air bath to 180°. In this manner the phosphorescence can be kept up for hours.

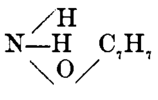
On the Synthesis of Cinnamic Acid according to The Schwartz. E. Erlenmeyer. (Vol. XVI., p.152). The author finds, after various attempts during a period of years, to synthetically prepare cinnamic acid, that phenyl-propianic acid and phenyl-propiolic-acid are the only acids formed. Schwartz probably mistook phenyl-propiolic-acid, which at the time of his publication was not known, for cinnamic acid.

On Isonitroso Compounds. Victor Meyer. (Vol. XVI., p. 167. The acetoxine described previously by V. Meyer and Alois Tanney has the formula



$$(CH_3)_2C{=}N{-}OH$$

Treated with acids it is decomposed into aceton and hydroxylamin. The base must hence have the formula



This can be proven by reducing the Benzyl-hydroxyl-amin with hydriodic acid, forming ammonia and iodobenzyl.

$$NH_2OC_7H_7+H_2=C_7H_7OH+NH_3$$

On Paraxanthin, [a New Component of Human Urine. G. Salomon. (Vol. XVI. p. 195.) The method employed for obtaining the xanthin compounds was that given by Salkoweski and Leube, "Die Lehre vom Harn" (Part I., p. 105). The last product, formerly supposed to be the xanthate only, and consisting of a silver salt, was decomposed by sulphuretted hydrogen. The remaining phosphates and a small quantity of oxalate of lime were then removed, the solution slowly evaporated on a sand bath until the xanthin, which is soluble, with difficulty separated. This was then filtered off and from the filtrate the paraxanthin was obtained by evaporating to crystallization. The formula is most probably $C_{15}H_{17}N_9O_2$.

Action of Chinolin on Chloroform and Iodoform. O. O. Rhoussopaulos. (Vol.XVI., p. 202.) If chinolin is allowed to act on chloroform no reaction takes place even when the substances are heated together in a sealed tube to 250° for several days. At 300° the substances act partially only. If, however, iodoform is used, a reaction takes place easily at common temperature, forming a methan-trichinoil-ido-hydrate, $CH(C_9H_7NI)_3$.

On the Sesquicarbonate of Potassium. C. Rammelsberg (Vol. XVI., p. 273.) While the sesquicarbonate of sodium occurs as Troua (Ural) in the salt lakes of Africa and South America, no reference is found on the potassium salt. According to G. H. Bauer it has been found in a mineral water establishment of Dr. Struve & Holtmann in consequence of evaporation and crystallization of large quantities of bicarbonate solution by Dr. Lichtenstaedt. The crystals are not moist and do not decompose. They are—

$$\left.\begin{array}{r}2K_2CO_3\\ H_2CO_3\end{array}\right\} + 3aq.$$

Bauer's analysis (*a*). Rammelsberg's analysis (*b*).

	(*a*)	(*b*)	Calculated.
Potash	46.54	46.59	47.96
Carbonic acid	21.79	21.80	22.39
Carbonic acid	11.54	12.22	11.20
Water			18.45
			100.00

On Oenanthalanilin, Oenanthalxylidin and Oenanthalnaphtylamin. A. R. Leeds. (Vol. XVI., p. 287.) 70 grms. oenanthal and 57 grms. of anilin were mixed gradually. The temperature greatly rises (from 27° to 89°).

70 grms. of oenanthal and 74 grms. of xylidin were mixed for preparation of oenanthalxylidin.

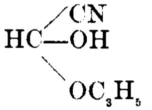
70 grms. of oenanthal were added to 88 grms. of naphthylamin, in consequence of which the latter rapidly melted a liquid having been formed of the temperature 75°. All three compounds were

heated for six hours at the upright condenser. The best method for purification was found to be as follows: Each of the three compounds was dissolved in about 150 grms. of glacial acetic acid and heated for several hours on the water bath. Then water was added in large excess which precipitated, the oenenthal, anilin-xylidin-naphthylamin respectively leaving the acetates in solution. The analyses of all three corresponded to the formulæ : Oenanthalanilin $C_6H_7NC_7H_{14}O$; Oenanthalxylidin $C_8H_{11}NC_{17}H_{14}O$; and Oenanthalnaphthylamin $C_{10}H_9NC_7H_{14}O$.

On Cryptidin. A. R. LEEDS. (Vol. XVI., p. 289.) An oil was obtained by distilling 155 grms. of xylidinacrolein in portions of 20 grms. No note was taken of the temperature of distillation until it had reached 360°,11 grms. or about 7% of the oil were obtained. The oil has a disagreeable odor and a very bitter taste. It forms crystalline salts with sulphuric, hydrochloric and other acids. The best method of purification is to decompose the hydrochloric acid salt with alkali. The purified and dried oil has the boiling point 270°. It has a reddish color. The analysis corresponded to the formula of cryptidin : $C_{11}H_{11}N$.

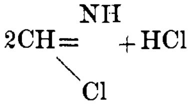
On the Action of Phtalic Acid-Anhydride on Chinolin. M. C. TRAUB. (Vol. XVI., p. 297.) As shown by O. Fischer it is easy to extend the phtaleïn reaction on dimethylanilin as a confirmation of the similar action of phenols and tertiary aromatic amines. The author endeavored to further extend these reactions to tertiary aromatic amines, the nitrogen of which has entirely different combining conditions from that of dimethylanilin, mainly to pyridin and chinolin bases. When phtalic acid anhydride is treated with chinolin 3 to 4 hours at 150° a reaction takes place. After removal of excessive chinolin a sticky mass remains, which is purified by glacial acetic acid and crystallized from benzol. The analysis shows that a reaction similar to the anthrachinon formation has taken place. The formula being $C_{17}H_9NO_2$, the compound is termed chinophtalon by the author.

On the Combinations of Hydrocyanic Acid with Hydrochloric and Hydrobromic Acids. L. CLAISEN and F. MATTHEWS. (Vol. XVI., p. 308.) Some time ago it was observed by Pinner and Klein, that when hydrochloric acid was passed into an alcoholic solution of hydrocyanic acid diethyl-glyoxylic acid was formed besides other products. Claisen and Matthews supposed that the reaction took place as follows: formic ether is at first formed, and this in the same manner as the aldehyds combined with the hydrocyanic acid to a nitrite.



$$HC\begin{cases}CN\\OH\\OC_3H_5\end{cases}$$

and that this was converted into the glyoxylic acid derivative by the action of the alcohol and the hydrochloric acid. The authors could not prepare such a product from formic ether and hydrocyanic acid, but found that hydrochloric acid is greedily absorbed by the mixture, giving rise to a double compound of hydrocyanic and hydrochloric acids. $2CNH+3HCl$ is the resulting compound. The formic ether plays no part, as the reaction takes place in presence of any other ether (benzoic ether, acetic ether.) The reaction takes place at as low a temperature as 15°. The constitution of this compound is probably best expressed thus :



$$2CH\begin{cases}NH\\Cl\end{cases}+HCl$$

The hydrobromic acid compound is similarly obtained.

Hydrocyanic acid and fuming hydrochloric acid were mixed in the proportions, so that for one mol. of hydrocyanic acid, exactly one mol. of water was present. After proper treatment, an oil with boiling point, 190–210°, is obtained, which, according to a nitrogen determination, was found to be formamid. Contrary to previous statements, hydrocyanic acid can be converted into the corresponding amid by careful treatment with hydrochloric acid.

Formation of Arsenides by Pressure. W. SPRING. (Vol XVI., p. 324.)

The author publishes a series of experiments and results obtained by pressing pulverized arsenic separately with various metals.

Zinc arsenide.—A mixture of zinc filings and pulv.-arsenic, in the proportions expressed by the formula Zn_3As_3, was subjected to a pressure of 6,500 atmospheres. The resulting block was again filed and repressed. A homogeneous bright metallic mass was obtained. The elevation of temperature plays no part, being but very slight; hence zinc and arsenic combine by mechanical energy alone.

Lead arsenide.—After two pressures of the mixed filings, the mixture corresponding to the formula Pb_3As_2, a homogeneous block of metallic lustre was obtained. It is hard and brittle.

Tin arsenide.—This is very easily formed, even when mixed in different proportions. When mixed in the proportions corresponding to Sn_3As_4, a white metallic mass is obtained, brittle, and melting with more difficulty than tin.

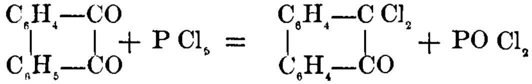
Cadmium arsenide.—After three pressings the combination was complete. From experiments the author finds that by pressure a better alloy can be obtained than by melting the metals together. This is probably because the dissociative tension of the arsenides is so great as to prevent a good combination.

Copper arsenide.—This is not as easily formed as the preceding alloys. After a first pressing of a mixture corresponding to the fomula, $Cu_3\ As_2$ all particles of copper and arsenic can be found separately. After about eight pressings the mass becomes homogeneous of metallic lustre, brittle and fine grained. The mass has a whitish-gray lustre.

Silver arsenide.—This is as difficult to form as the copper arsenide. The mass becomes homogeneous, very brittle, has a metallic lustre, and a gray-bluish color.

Arsenic alone in the amorphous state when subjected to 6500 atmospheres pressure, changes its appearance and becomes metallic on the surface. About one-fourth is converted into crystalline form

On the Action of Phosphorus Chlorides on Phenanthrenchinon. B. LACHOWICZ. (Vol. XVI., p. 330.) Phosphorus pentachloride and phenanthrenchinon react upon each other vigorously when slightly warmed and a crystalline mass is formed. It is purified by crystallization from chloroform and dried over sulphuric acid. The formula to which the analysis corresponds is $C_{14}\ H_8\ O\ Cl_2$. The reaction takes place as follows :



$$\begin{array}{l} C_6H_4-CO \\ |\qquad\quad | \\ C_6H_5-CO \end{array} + P\,Cl_5 = \begin{array}{l} C_6H_4-C\,Cl_2 \\ |\qquad\quad | \\ C_6H_4-CO \end{array} + PO\,Cl_2$$

The author terms this compound phenanthrendichlor-keton. Its melting point is 165°.

On Allyl-succinic Acid and a Carbo-caprolactonic Acid. EDW. HJELT. (Vol. XVI., p. 333.) The allyl-succinic acid was obtained synthetically from malonic-acid-ether. By action of sodium ethylate and chlroro-acetic ether on malonic-acid-ether the ethenyltricarbonic-acid-ether was produced and the allyl group was introduced into this. The allyl-ethenyl-tricarbonic-acid-ether boils between 280° and 290°. From the barium salt the acid was obtained pure. The formula according to analyses is $C_8 H_{10} O_6$. When treated with hydrobromic acid this acid gives a crystallized acid, which melts at 159°, at 160° this loses carbonic acid. The residue allyl-succinic acid solidifies and is obtained pure by crystallization from alcohol . Its formula is $C_7 H_{10} O_4$ and is isomeric with teraconic acid. When heated to 250°, water is at first separated and oil distills over, which in contact with water again forms ally-succinic acid. The acid dissolves in forming hydrobromic acid. By treating with water and extracting with ether, and acid oil, free from bromine is obtained, which crystallizes in vacuo. This acid was found to be the lactonic acid, of the formula $C_7 H_{10} O_4$.