On the Hydrocarbons Obtained by the action of Methyl Chloride, in combination with Aluminium Chloride, E. ADOR and A. RILLIET (12, 329).

Trimethylbenzole.—Obtained by the action of methyl chloride and aluminium chloride on toluole, and separating the liquids by fractional distillation, which boil from 158–163.5° and 163.5–167°.

Tetramethylbenzole.—Obtained from the distillate, which boils between 185–204°

Pentamethyl and Hexamethylbenzole.—Pentamethylbenzole is a liquid boiling at 203°, crystallizing in an ice mixture, and dissolving in concentrated sulphuric acid, thus forming a sulpho-acid. Hexamethylbenzole is a solid white, crystalline body, melting at 150°, and boiling at 260°. It is not soluble in concentrated sulphuric acid.

Comptes Rendus de l'Académie des Sciences.

Vol. LXXXIX, No. I, July 7th, 1879.

Abstractor, A. BOURGOUGNON.

A New Metal, discovered by TELLEF DAHL.—This new metal was found in a mineral containing kupfernickel and nickel glance, at Otero, and called Norwegium.

White ; malleable ; same hardness as copper, melting at a bright red heat ; sp. gr. = 9.44 ; not easily soluble in ClH, but readily in NO_3H, giving a blue solution, turning green by hydration ; also soluble in SO_4H_2. The oxide NgO, reduced by H, gives 9.60 and 10.15 per cent. of O, giving Ng = 145.95.

Reactions.—Solutions are precipitated by KHO — NH_3 — and Na_2Co_3. The precipitate is green, and soluble in an excess of reactif, with a blue coloration.

H_2S, in very acid solutions, produces a brown precipitate, insoluble in NH_4S. Easily reducible on charcoal with CO_3Na_2.

Commercial Trimethylamine, E. DUVILLIER and A. BUISINE.—Commercial trimethylamine is not a pure product, as advanced by M. Vincent. It contains only about 5 to 10 per cent. of trimethylamine, and 50 per cent. of dimethylamine ; also monomethylamine, monopropylamine and monoisobutylamine, in equal parts.

No. II, July 14, 1879.

Direct Combination of Cyanogen with Hydrogen and the Metals, M. BERTHELOT.—Equal volumes of hydrogen and cyanogen,

dry and pure, are heated in closed tubes for several hours, at a temperature of 500 to 550° C. At a lower temperature the combination is not complete, and at a higher temperature decomposition occurs, and nitrogen is liberated.

At 300° C., cyanogen combines with zinc, cadmium, iron, in a closed tube, without production of nitrogen. The reaction with zinc takes place at ordinary temperature, after a contact of some days, but only on the surface of the metal; at 100° C. the reaction takes place after three to four hours.

Copper and lead did not give any reaction at 100 or 300°, but at 500° a small quantity of cyanides was formed, with production of a carbonaceous substance and of nitrogen.

Silver and mercury did not give any reaction at low or high temperatures.

Organometallic Radicles of Tin, A. CAHOURS and DEMARÇAY.—Stanbutyl is produced by the action of iodide of isobutyl upon tin, in a closed flask heated for twenty-five days. Stanamyl is obtained by heating iodide of amyl with tin for twenty-five days, in a closed flask.

No. III, July 21st, 1879.

Researches upon Explosive Substances—Combustion of Gunpowder, NOBLE and ABEL.—In the first part of this memoir, the authors gave the proportion of hyposulphite of potassium produced by the explosion of gunpowder. This proportion varies with the several kinds of gunpowder employed, and is from 3 to 8.5 per cent. The second part of the memoir shows the quantity of heat developed during the explosion.

Experimental Research upon the Decomposition of Gun-cotton in Closed Vessels, SARRAU and VIEILLE.

COMPOSITION OF GUN-COTTON EMPLOYED.

Carbon	24.0
Nitrogen	12.7
Oxygen	55.6
Hydrogen	2.4
Saline residuum	2.4
Moisture	2.6

The gun-cotton was pulverulent, and the deflagration in a close vessel was obtained by means of a wire heated by an electric current.

The following results were obtained :

AVERAGE SP. GR. OF THE PRODUCTS OF DECOMPOSITION.	PRESSURE IN KILOGRAMMES, BY SQUARE CENTIMETERS.
0.10	1190
0.15	2200
0.20	3090
0.25	4676
0.30	5920
0.35	7730
0.45	9760
0.55	11840

COMPOSITION IN VOLUME OF THE GASEOUS PRODUCTS.

Sp. gr.	Pressure.	CO_2.	CO.	H.	N.
0.023	250	23.72	43.24	17.28	15.76
0.200	3090	28.68	37.61	18.95	14.85
0.300	5920	30.42	36.28	18.76	14.54

The decomposition of gun-cotton is represented by

$$C_{24}H_{10}O_{10}(NO_6H)_5 8CO_2 + 16CO + 7H + 5N + 8HO.$$

Transformation of Hydrocellulose into Friable Pyroxyls, A. GIRARD.—Hydrocellulose is a derivative of cellulose, and is transformed by nitrification into pyroxyls. Hydrocellulose, being friable, produces pyroxyls, having the same friability. The degree of nitrification of hydrocellulose is the same as for cellulose, and the pyroxyls of hydrocellulose have a composition similar to the hexanitric cellulose. When these pyroxyls are obtained, they are afterwards pulverized under water.

As long as these pyroxyls have not been powdered, they have the same characters as ordinary pyroxyls ; when powdered, they are similar to dynamite ; they only burn when brought in contact with fire, but explode by percussion.

Being friable, these pyroxyls are readily soluble in alcoholized ether, and used for the preparation of collodion.

Action of Boron Fluoride upon Acetone, F. LANDOLPH.—Acetone absorbs directly one equivalent of boron fluoride, giving a colored syruppous product. By fractional distillation three products have been separated :

1. Fluobor acetone α.—Boiling point, 120 to 123° C.; composition, $C_3H_6O,B_4Fl_3O_4H_3$.

2. Fluobor acetone β.—Easily crystallizes in white, bright needles, melting at 36° C.; boiling point, 90 to 92° C. Same composition as fluobor acetone α.

3. Boracetone.—The last term of the series of fluobor acetones, is liquid and very volatile; boiling point, 50° C.; composition, C_3H_6O, $Bo_2O_2H_2$

These combinations, when exposed to air, produce white fumes, very acid and irritating; they burn with a green flame, and are immediately decomposed when brought in contact with water, with formation of boric acid, and very volatile compounds of an agreeable odor. Sodium has an energetic action upon the fluorbor acetones α and β, producing sodium fluoride and gaseous products. They are also oxidized in a current of dry oxygen.

Iron Reduced by Hydrogen, H. MOISSAN.—Iron reduced by hydrogen is often very impure. Twelve samples were analyzed, and nearly all contained sulphur; in five samples arsenic was detected. These impurities came from the sulphuric acid and zinc employed in the preparation of hydrogen. Some samples also contained small quantities of silica, copper, and salts soluble in water.

In making iron reduced by hydrogen, if the current of gas is not dry and not rapid, and also if the temperature is not uniform, a mixture is finally obtained containing iron, protoxide of iron and magnetic oxide. Nearly all commercial iron reduced by hydrogen, has this composition.

No. 4, July 28, 1879.

On Chloral Hydrate, A. WURTZ.—When vapor of chloral hydrate and vapor of water are brought together in contact, in a space where these vapors cannot be condensed, no change in the temperature is observed.

Observations Relative to the Memoir of MM. Noble and Abel upon Explosive Matters, M. BERTHELOT.

Researches upon Samarium, a New Earth from Samarkite, LECOQ DE BOISBAUDRAN.—The bands given by the spectroscope are different from those furnished by the decipium:

1st. By the absence of the band 478.

2d. By the presence of strong blue bands, 480 and 463.5; the first very large, covering the band of the decipium 478.

3d. By the constant presence of the very strong band, 400.75.

Distillation of a Heterogeneous Liquid, L. TROUST.

Dissociation of Ammonium Sulphide, R. ENGEL and A. MOITESSIER.

Researches of Medicinal and Poisonous Substances in Saliva, A. GABRIEL POUCHET.—The salivation was produced by hypodermic injections of pilocarpine.

In three experiments lead was found, and in one case the patient had not had any contact with any compound of lead.

In the saliva of patients submitted to arsenical treatment, arsenic could not be found.

In diabetes, sugar could not be detected in the saliva.

In Bright's disease, albumen was present in the saliva.

Hypodermic injections of 0.01 gm of chloride of pilocarpine have produced 140 to 150 gms of saliva.

Palm Tree Wine from Laghouat (Algeria), M. BALLAND.—The composition of this wine is the following, sp. gr. 1.029 :

Water	83.80
Alcohol	4.38
Carbonic acid	0.22
Malic acid	0.54
Glycerine	1.64
Mannit	5.60
Grape sugar	0.20
Gum	3.30
Mineral substances	0.32
	100.00

No. 5, Aug. 4, 1879.

Remarks upon the Communication of A. Wurtz on Chloral Hydrate, M. BERTHELOT.—The results obtained by A. Wurtz are here discussed, and the rules to be observed in these kinds of experiments are given; several sources of error must be avoided. When the heat produced is small, it can sometimes not be observed, for a large amount of developed heat is lost by radiation.

Solid Hydride of Cyanogen, H. LESCŒUR and A. RIGAUT.—Hydrocyanic acid is spontaneously transformed into a black substance called azulmine, but the circumstances of the production and the constitution of the azulmic products are far from being perfectly known.

A. Gautier has shown that pure hydrocyanic acid can be kept indefinitely, but is altered in the presence of water and cyanhydrate of ammonia.

A trace of potassium cyanide without water, transforms hydrocyanic acid rapidly into azulmine; after twenty hours this acid becomes dark, and solidifies after six days. The black mass is generally amorphous, but often contains transparent crystals, soluble in ether or benzine, alterable when exposed to air, soluble in alcohol and boiling water, having a bitter taste. The aqueous solution after standing gives a brown deposit, and gives with bichloride of platinum, a green coloration.

The crystals contain :

	Theory		I	II
C_2	12	44.44	43.96	.....
H	1	3.70	3.80	.....
N	14	51.86	.....	51.13
	27	100.00		

corresponding to $(C_2NH)_3$.

On the Non-existence of the Soluble Alcoholic Ferment, D. COCHIN.—A letter to M. Dumas where the experiments are not related.

On the Coloring Matter of the Palmella Cruenta, T. L. PHIPSON.—A new, red coloring matter, called by the author palmelline, extracted from a small alga, growing on the lower portion of damp walls whitewashed with lime, similar in color to the hæmoglobine of blood. Insoluble in alcohol, ether, benzine, carbon disulphide, but soluble in water. Palmelline produces bands of absorption similar to those produced by blood, but these do not exactly occupy the same position. It is formed of a red matter containing iron united to albumen, and easily ferments, giving off a strong ammoniacal odor.

No. 6, Aug. 11, 1879.

Upon the Acids Produced when the Crude Acids formed by the Saponification of Neutral Fatty Matter, are Distilled by Superheated Steam, A. CAHOURS and E. DEMARÇAY.—By this method hydrocarburetted products and acids are obtained, the hydrocarbons belonging to the series of the marsh gas.

The following acids have been separated : Valeric acid, caproic acid, enanthylic acid and caprylic acid.

Answer to M. Berthelot upon the Communication Relative to Chloral Hydrate, A. WURTZ.—In this note the author maintains his results as given in his first communication.

Synthesis of Phenoleglucoside and Orthoformylglucoside or Hellicine, A. Michael.