ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

On the Atomic Weight of Glucinum. T. S. Humpidge.

The author has prepared a sample of metallic glucinum having the following composition, viz.: Gl 99.20, Gl O, 0.70, Fe 0.20. He has determined the specific heat of this sample at varying temperature up to 450° C, and has constructed a curve embodying these results. This curve rises rapidly to 400°, is nearly constant from 400° to 500°, and reaches a maximum at 470°, but it is doubtful whether it it can be relied upon above 500°. The specific heat between 400° and 500 is .62, and this multiplied by 9.1 gives 5.64. Glucinum, therefore, like carbon, boron and silicon, conforms to the law of Dulong and Petit only at high temperatures. The atomic weight 9.1 conforms to the periodic law, while 13.6, the weight deduced from the specific heat of the metal between 10° and 100° C does not. The conclusion is confirmed by determinations of vapor density of glucinum chloride and bromide. The author considers that deductions from the periodic law will be important factors in future in fixing the atomic weight of an element. (*Chemical News*, **51**, *121.*) A. A. B.

Note on the Occlusion of Hydrogen by Zinc Dust, etc. G. Williams.

Ordinary zinc dust gave off 39 times its volume of hydrogen at a temperature short of the melting point of glass. Combustion of the zinc dust with cupric oxide yielded closely accordant results, showing that the occluded hydrogen is almost entirely expelled at a low red heat. The author makes suggestions as to the bearing of this result upon the conclusions drawn by Graham from an examination of the Lenarto meteorite. (*Chemical News*, **51**, *147. From Journal of Gas Lighting.*) A. A. B.

Eutexia. T. Turner.

A discussion of the results which have been classed by Guthrie under this head. A eutectic body, is a mixture of substances which remain associated during the process of cooling from a state of fusion and which maintains a constant temperature during solidification.

It possesses a constant fusing point which is lower than that of any mixture of the given constituents. Cryohydrates are eutectic bodies and mixtures of salts cooled from a state of fusion, or metallic alloys may show examples of the same class. The author suggests. upon theoretical grounds, that the force of cohesion in eutectic substances is at its minimum, and the molecular volume at its maximum. (*Chemical News*, 51, *133*.) A. A. B.

On the Solution of Magnesium Carbonate in Carbonic Acid Water. (Second Paper.) R. ENGEL.

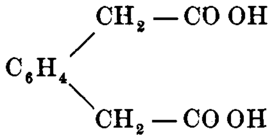
Pressure of CO_2 in Atmospheres.	Per cent. $MgCO_3$ dissolved.
0.5	20.5
1.	26.5
1.5	31.0
2.	34.2
2.5	36.4
3.	39.0
4.	42.8
6.	50.6

(*Comptes Rendus*, **100**, *444*.) C. E. M.

ORGANIC CHEMISTRY.

On Derivatives of Orthoxylol. ADOLF BAEYER and CARL PAPE.

Orthoxylylencyanide may be easily obtained by the action of KCN on orthoxylylenbromide. M. P. 59 — 60° C. Easily soluble in alcohol and ether. It is somewhat volatile when treated with a current of steam. If boiled with dilute NaOH, concentrated HCl, or dilute H_2SO_4 it is converted into orthophenylendiacetic acid—



Orthophenylendiacetic acid crystalizes from water, or ether, in fine colorless needles which melt at 150° C. It is easily soluble in ether, alcohol and hot water. More difficultly soluble in cold water. Silver nitrate, added to a solution of its ammonium salt in water, precipitates the silver salt. (*Ber. d. chem. Ges., 1884, 447.*)

J. H. S., JR.

New Syntheses of Naphthaline Derivatives. ADOLPH BAEYER and W. H. PERKIN, JR.

In a previous communication it was shown that by the action of orthoxylylenbromide upon sodium malonic acid ether a compound is formed which the authors called hydrindonaphtendicarbo-acid, which may be looked upon as a derivative of an analogous naphthalene compound, composed of a ring containing six, and another containing five carbon atoms.

This was proved by producing naphthalene in the same way.

Tetrahydronaphthalinedicarbo-acid (β β).

Obtained from orthoxylylenbromide and sodium acetylentetracarbo-acid ether. The anhydride is insoluble in water. Dissolves better in hot NaOH + aq. The free acid is sparingly soluble in cold water, more so in hot water, and easily soluble in ether, chloroform, alcohol and acetone. Melts at 199° and is at the same time converted into its anhydride. The anhydride melts at 180° C.

Tetrahydronaphthalintetracarbo-acid ether, on being saponified, loses two mols. of CO_2, and is converted into the K salt of tetrahydronaphthalinedicarbo-acid. (*Ber. d. chem. Ges., 1884.*)

J. H. S., Jr.

The Alkaloids of Nux Vomica, III: Some Experiments on Strychnine. W. A. Shenstone.

The author obtains bromstrychnine by adding bromine water to strychnine hydrochloride dissolved in 50 to 100 times its weight of water. From this solution alkalies throw down the substance as a solid insoluble in water, crystallizing well from warm alcohol. Bromstrychnine thus obtained is identical with that obtained by Laurent. The resin obtained by Laurent as a by-product, when bromine was made to act on strychnine hydrochloride is shown to be mono bromstrychnine dibromide. The chloro- compound obtained by Pelletier on completely precipitating a solution of strychnia with chlorine is believed by the author to be the dichloride corresponding to the dibromide above mentioned. When bromstrychnine is heated with excess of strong nitric acid for some hours there is formed a resinous precipitate consisting of nitrated bodies which have been partly examined by Nicholson and others, and *picric acid,* which has not been known hitherto as a product of this reaction. This formation of trinitrophenol appears to the author to indicate that stychnine contains a benzol ring of carbon atoms and, perhaps, one or more hydroxyl groups ; the latter inference is supported by the behavior of strychnine under the action of the oxidizing agents used. (*Jour. Chem. Soc.,* 268, *139*). A. A. B.

On the Physiological Action of Brucine and Bromostrychnine. T. L. Brunton.

The difference between the effects of brucine and strychnine appears to be one of degree rather than of kind, and to be chiefly dependent on the ready elimination of brucine., Brucine, like strychnine, produces death by convulsions and not by paralysis, but like curara, which is also a product of a species of *Strychnos,* it is innocuous when taken into the stomach though fatal when injected under the skin. Comparing his results with brucine and those of Frazer and Crum Brown on methylstrychnine iodide, the author considers the two to have different action, the former causing convulsions, the latter paralysis. This point is worthy of investigation, as it may throw some light upon the constitution of the alkaloids. A somewhat similar case has been observed in the alkaloids of opium. In a class of alcohols known as *codeines* and resulting from the introduction of alcohol radicles into morphine there are certain ones, such as codethyline, $C_{17}H_{18}NO_2OC_2H_5$, in which the narcotic action is diminished, while, according to Von Schroeder, the convulsant action is increased, in proportion to the number of atoms of hydrogen replaced by alcohol radicles. If such be the case it is remarkable that by the addition of alcohol radicles to codeine or thebaine their tetanizing action should be altered into a paralyzing action, methylthebane producing paralysis like methylstrychnine. Bromostrychnine has a physiological action very much like that of strychnine. The convulsions produced depend upon alterations in the function of the spinal cord and not on any action of the drug on the higher centres in the brain or medulla.—(*Jour. Ch. Soc.*, **268**, 143.) A. A. B.

Crystallography of Bromostrychnine. H. A. Miers.

The crystals are rhombic with the axes in the ratio a : b : c = 1.45907 : 1 : 1.19457. The crystals are colorless and transparent, brittle with conchoidal fracture, but without observable cleavage; almost all are rectangular tables with the large faces marked by striations.(—*Jour. Ch. Soc.* **268**, *143*.) A. A. B.

Formation of Pyridine Derivatives from Malic Acid.

H. O. Peckham and W. Welsh.

An attempt to ascertain the nature of the reactions by which the alkaloids are built up within the vegetable organism. Assuming in accordance with the suggestion of Koenigs that the alkaloids are pyridine derivatives, and further, that nitrogen is supplied to the organism in the form of ammonia and amido- compounds then non-nitrogenous carbon compounds must also take part in the reaction. It has already been shown by one of the authors that malic acid under the action of concentrated sulphuric acid splits up into formic acid and the half aldehyde of malonic acid. Two molecules of the latter in the nascent state, then undergo condensation with elimination of two molecules of water and form coumalinic acid, and coumalinic acid reacts with ammonia at common temperatures to form hydroxynicotinic acid which as a derivative of nicotinic acid stands in close relation to many of the alkaloids. Primary amines and amido- acids behave like ammonia with coumalinic acid, reacting with it to form hydroxypyridinecarboxylic acids. Chelidonic and meconic acids which occur in certain Papaveraecae exhibit many analogies with coumalinic acid and react similarly with ammonia. As chelidonic and meconic acids are invariably accompanied in the plant by malic citric and similar simple vegetable acids as well as by alkoloids, it seems probable that they bear a close generic relation to malic acid, coumalinic acid and the pyridine derivatives; the study of the pyridine derivatives of malic acid is therefore of interest as a possible means of throwing light upon the natural formation of the alkaloid.

In following up the subject the authors confine themselves in the present paper to the examination of the products obtained by the action of ammonia and amido- compounds on coumalinic acid or rather upon its methyl salt, which, for reasons given, is more suitable.—(*Jour. Ch. Soc.* **268**, *145.*) A. A. B.

On Propylenchlorhydrine. H. F. Morley and A. Green.

Although propylenchlorhydrine, obtained from different sources, boils at 127–128°C., still it is not certain whether it always has the same constitution or whether, at times, it is a primary body, (CH_3 $CHCl$ CH_2OH), and at other times a secondary compound (CH_3 $CHOH$ CH_2Cl). Occasionally, it might be composed of a mixture of both. It has usually been assumed that chlorhydrine, obtained by the action of water upon $CH_3CH(SO_4H)$ CH_2Cl is a secondary body. Markownikoff also claims that the compound obtained by the action of hypochloric acid, upon propylen gas, is also a secondary chlorhydrine. Henry, however, asserts that this chlorhydrine is a primary compound, as he obtained, on oxidizing it with dilute nitric acid, a chlorpropionic acid. The authors have examined the oxidation product obtained from the chlorhydrine produced by the action of chloride of sulphur upon propylenglycol, and conclude that it is a mixture of a primary and a secondary chlorhydrine, in which the secondary body predominates. (*Ber. d. chem. Ges., 1885, 24.*) J. H. S., Jr.

Contributions to a Knowledge of the Ammonium Bases which may be derived from Chinoline.

A. Bernthsen and W. Hess.

The following compounds are described:

Methylchinaldinium hydroxide.

$C_9H_6(CH_3)_2$ and $N,CH_3.OH$.

Obtained by treating chinaldine methyliodide snspended in ether, with an excess of alkali.

Methylflavolinium hydroxide.

$C_{16}N,CH_3OH$.

Obtained from flavolinemethyliode and KOH.

Benzylchinolinium hydroxide.

C_9H_7N, C_7H_7OH.

From benzylchinoline, and KOH.

Methylchinolinium hydroxide.

Obtained by heating a mixture of chinolinemethyliodide with KOH. (*Ber. d. chem. Ges., 1885, 29.*) J. H. S., Jr.

Researches on Isomerism in the Aromatic Series.—Heat of Neutralization of Polyatomic Phenols.

Berthelot and Werner.

		CALORIES.
Résorcine	($C^{10}H^6O^4$)	16.397
Orcine	($C^{14}H^8O^4$)	15.700
Hydroquinone	($C^{12}H^6O^4$)	15.560
Pyrocatechin	($C^{12}H^6O^4$)	8.267
Quinone	($C^{12}H^4O^4$)	34.160
Phloroglucine	($C^{12}H^6O^6$)	18.269
Pyrogallol	($C^{12}H^6O^6$)	13.803

Neutralized with NaOH.

(*Comptes Rend.* **100**, *586.*) C. E. M.

On the Direct Replacement of the Amido-Group in Aromatic Amines, by the Halogens.

S. M. Losanitsch.

A solution of aniline in hydrochloric acid was heated in a large flask, which was connected with a cooler. To this solution, concentrated HNO_3 was added in small portions. After each addition of HNO_3, a violent reaction takes place and a yellow oil distils over. The addition of HNO_3 was kept up until the aniline used had separated as a tarry mass. This mass was finally distilled in a current of steam. About ½ of the aniline used is converted into a yellow oil, which is found in the distillate. The tar above mentioned, on being boiled with aqua regia, yields chloranil. The yellow oil was found to be a mixture of chlorbenzol and chlorphenol. The chlorphenol was removed with KOH. About 75 per cent. chlorbenzol was obtained. (*Ber. d. chem. Ges.*, *1885*, *39.*)

J. H. S., Jr.

Decomposition of Aqueous Solutions of Hypochlorous Acid and of Chlorine in Sunlight. A. Popper.

Quantitative determinations were made of the decomposition products of hypochlorous acid exposed to sunlight in open vessels and in closed tubes. In the first case some free oxygen is evolved and also probably chlorine; then $HClO_3$, 62.38%; $HClO_4$, 3.33%; HCl, 1.58%. In the second case oxygen 4.55%, $HClO_3$, 51.61; $HClO_4$, 2.86%; HCl, 9.65. To see what influence chlorine, set free in the first part of the decomposition, had upon the remaining products, the decomposition of chlorine water was examined in open vessels and in tubes. In open vessels $HClO_3$ 10.93%, and HCl 40.60% were formed. In decomposition of chlorine water the chloric acid may be formed direct or may be indirectly formed from hypochlorous acid. In solutions of hypochlorous acid there seems to be primarily formed $HClO_3$, oxygen and chlorine. At the expense of the chloric acid and oxygen small amounts of perchloric acid were also formed, and the free chlorine acts upon the water as above. (*Annalen d. Chemie*, **227**, *161.*) F. P. V.

High-boiling Phenols from Coal Tar. K. E. Schulze.

Green oil (500 kg.) was stirred with water and caustic soda, treated with naphtha and then neutralized with sulphuric acid. Fifty-two kilograms of the phenols, thus gotten, were purified by distillation under diminished pressure. The decomposition seemed slight, with separation of water and formation of hydrocarbons. These were removed, the phenols fractionated and one fraction

(150–200°) examined. It was found to contain β– and α naphtol. The author appends a discussion of the modes of formation of phenols in coal tar. (*Annalen d. Chemie,* 227, *143.*) F. P. V.

Compounds of Uranyl Chloride with Ammonia. F. F. REGELSBERGER.

Uranyl chloride was gotten pure by crystallizing from ether, containing then two molecules of the ether. On passing ammonia into the solution in ether, a voluminous yellow precipitate was gotten, which was dried in vacuo over sulphuric acid. Its composition was $UO_2\ (NH_3Cl)_2$. This is capable of taking up more ammonia if left in an atmosphere of the same. This diammon-dichloride yields $UO_2\ NH_3(NH_3Cl)_3$. Uranyl chloride, under the same conditions, yields $UO_2(NH_3\ NH_3Cl)_2$, as well as $UO_2\ NH_3(NH_3Cl)_3$. Uranyl diammon-dichloride, treated with cold water, yields NH_4 Cl, ammon-uranate, uranyl chloride and uranyl hydrate ; with warm water more hydrate and less uranate, and dichloride are formed. Under gentle warming, ammonia and chlorine are lost. On igniting in air U_3O_8 is left; in hydrogen or ammonia, UO_2. (*Annalen d. Chemie,* 227, *119.*) F. P. V.

Constituents of Certain Essential Oils. O. WALLACH.

Oil of cajuput on examination, contains the same principal ingredient as worm seed oil. Other essential oils are examined as to their containing cynen. The ease with which this body forms a crystalline tetrabromide is used as a means of identification. Its melting point is given as 124–125°. From *oleum corticis auruntiorum* a closely allied tetrabromide is gotten, melting at 104–105°. This the author calls hesperiden bromide. (*Annalen d. Chem.,* 225, *314.*) F. P. V.

Contributions to the Chemistry of the Terpenes and Essential Oils. O. WALLACH.

As mentioned in the preceding paper two distinct tetrabromides are formed from the terpenes—hesperiden bromide (M. P. 104–105°) and cynen bromide (M. P. 125–126°). The bromides are formed by allowing .7 vol. bromine to drop in a cooled mixture of the terpene with 4 vols. alcohol and 4 vols. ether. The crystals separate on evaporation. The lower boiling terpenes yield liquid bromides. By heating the terpenes in sealed tubes to 250–270° higher boiling fractions are gotten (180–190°) which yield crystalline bromides. From American turpentine oil the cynen tetrabro mide was gotten after heating to 250–270°, and after treatment with hydrochloric acid or with nitric acid. Many other terpenes and essential oils were also examined. (*Annalen d. Chem.*, **227**, *277*.) F. P. V.

Oleum Cynae---A Contribution to the Knowledge of the Terpenes. WALLACH AND BRASS.

The main portion of the oil distills over at 176–178° C. (Sp. Gr. .92067 at 16°). Analysis confirms the belief that it consists of an oxygenated compound $C_{10}H_8O$, with which is mixed certain amounts of a hydrocarbon of the same boiling point, and small amounts of a high boiling compound richer in oxygen. The separation is affected by treatment with gaseous hydrochloric acid and distillation of the crystals with steam. The boiling point is then 176°–177°C. (Sp. Gr. .92297 at 16°). This compound the authors call cymol. It is optically inactive. On oxidation with nitric acid it yields oxalic acid. The hydrochloric acid compound is decomposed by water. On heating in a tube it yields a terpene and aqueous hydrochloric acid. Hydrobromic acid acts very similarly. Hydriodic acid gives a more stable crystalline compound which yields the same terpene (cynen) when gently heated with aniline. Bromine gives interesting compounds. Experiments disproved the assumption that cymol, as an isomer of borneol, contained hydroxyl. Also it seems unlikely that the oxygen is united to carbon with double bonds. Cynen is changed into cymol by heating with concentrated sulphuric acid. (*Annalen d. Chem.*, **225**, *291*.) F. P. V.

Contributions to the Chemistry of Mercury Fulminate. A. EHRENBERG.

Aqueous hydrochloric acid, acting upon mercury fulminate, causes the formation of hydroxylamine hydrochlorate and formic acid. Since both nitrogen atoms go to form hydroxylamine the assumption that the fulminic acid is nitroacetonitril seems untenable. Aqueous sulphocyanic acid decomposes the fulminate, forming carbonic acid and ammonium sulphocyanide. Probably hydroxylamine sulphocyanide was first formed, but its instability caused the change into the ammonium salt. Fulminic acid does not seem capable of a free existence. The greatest care could not prevent the explosive decomposition of the supposed acid gotten by the action of dry hydrochloric acid. Ammonium sulphocyanide acts very similarly to the alkaline chlorides, only with more energy—fulminuric salts are formed. On adding the ethereal solutions of the product gotten by the action of dry hydrochloric acid, to ammonia, an isomer of common fulminuric acid is formed. (*Jour. f. prakt. Chem.*, **30**, 68.) F. P. V.

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ANALYTICAL CHEMISTRY.

On the Reduction of Arsenic Acid Solutions. L. W. McCoy.

The difficulty attending the reduction of arsenic acid in solution by sulphuretted hydrogen, has led the author to a modification of the method of Wöhler (i. e., treatment with sulphurous acid) in order to effect this reduction. Sulphurous oxide in water solution is added to the solution of arsenic acid, together with a few drops of dilute sulphuric acid, and the mixture is then heated for an hour in a tightly stoppered bottle on the water-bath. The reaction under pressure is much more effective than in Wöhler's method, in which no pressure is applied. (*Chemical News*, **51**, *122.*)

A. A. B.

On the Determination of Graphite in Minerals. J. B. Mackintosh.

By fusion with caustic potash in a silver crucible and subsequent treatment of the melt with water, all matters associated with graphite in a rock are rendered soluble or separated in flocculent masses, the graphite alone remaining unchanged. The insoluble mass is washed in a Gooch filter, first with water, then with HCl, and finally with ammonia to remove traces of silver acquired from the crucible. Graphite remains unaltered and is weighed as such. (*Chemical News*, **51**, *147.*) A. A. B.

On the Separation of Alumina and Ferric Oxide. P. VIGNON.

The process is founded on the fact that trimethylamine precipitates ferric oxide and alumina, but redissolves the latter.

A large excess of concentrated trimethylamine is added at once, and allowed to stand for 24 hours. The precipitate is washed several times with trimethylamine by decantation, and finally thrown on a filter and washed until a drop does not leave on evaporation a sensible residue. The precipitate is well dried, incinerated and weighed.

Trimethylamine also redissolves chromic oxide. (*Comptes Rend.* **100,** *638.*) C. E. M.

INDUSTRIAL CHEMISTRY.

Composition of Gaseous Products in the Combustion of Pyrites, and Influence of Glover's Tower on the Manufacture of Sulphuric Acid. M. SCHEURER-KESTNER.

The effect of Glover's (besides increasing the capacity of production of the system 15 to 18 per cent.), are : the condensation of the anhydride produced in the furnace ; the reaction of the sulphurous acid on the very limited quantity of nitrous acid encountered there, and the known reaction of the gases of the lead chambers which commences in the Glover's tower. The gas from the combustion of pyrites contains sometimes as high as 9 of sulphuric anhydride to 100 of sulphurous. (*Comptes Rend.*, **100** *636.*)

C. E. M.

Abstract of American Patents Relating to Chemistry.

(From the Official Gazette of the U. S. Patent Office.)

March 24th, 1885.

314,256.—Composition for cleansing metals.—O. H. Mellum.

Consists of oxalic acid, tripoli, aniline, and pure water.

314.281.—Filter.—A. N. Wilson.

314.342.—Manufacture of hydrogen.—G. E. Moore.

The process consists in the continuous introduction of gases and vapors containing carbon, simultaneously with steam, into a chamber containing a metallic oxide, and passing the resulting mixture of hydrogen and carbonic acid through carbonate of soda or potassa, or solutions in which these may be formed.

314,368.—Apparatus for distillation of hydrocarbons.—R. Dean.

314,400.—Apparatus for the manufacture of gas.—T. G. Springer and G. W. Jeremy.

Brief. The lower portion of a deep body of fuel is raised to incandescence, and the upper portion thereof is highly heated by an air blast at the bottom, and the resulting gaseous products are burned in a fixing chamber below the fuel chamber. After heating up, steam is superheated by passage down through the cooler portion of the fuel, and then decomposed by the passage down through the incandescent portion. The resulting water gas is carbureted by liquid hydrocarbon sprayed into it in the heated fixing chamber, and thus circulated until an intimate mixture is effected, after which such mixture is converted into a fixed gas by passage down through the heated fixing chamber.

314,412.—Hydrocarbon gas machine.—H. Alexander.

314,447.—Soap.—J. Hoogland.

Soap compound consisting of tallow, sal soda, resin, milk, lemons, soapstone and water of lime.

314,448.—Apparatus for manufacturing oil gas.—B. C. Smith.

Brief. Oil is vaporized in a coil of pipe, and the resulting vapor made into a fixed gas by passage through a heated chamber of large diameter. Air is forced inio the gas on the way to the holder, and the mixed gas and air pass from a perforated pipe into the water in the holder tank, whereby impurities are washed out.

314,488.—Apparatus for freezing paraffin oils.—J. Teagle.

314.490.—Apparatus for refining oils.—J. Thomas.

314,504.—Process of purifying pig iron.—J. P. Witherow.

The process consists in blowing or oxidizing the metal, and removing the silicon, phosphorous and other impurities by successive discharges of slag during the continnance of the blow.

314,505.—Ingot iron and steel.—J. P. Witherow, H. W. Oliver, jr., J. F. Wilcox and G. E. Tener.

Phosphor ingot iron or steel, practically free from silicon, and low in carbon.

314.506.—Process of making ingot iron and steel.—J. P. Witherow, H. W. Oliver, jr., J. F. Wilcox, and G. E. Tener.

314,531.—Insecticide Composition.—F. M. Howard.

Consists of bisulphide of carbon, roll sulphur, carbonic acid, and phosphorus.

314,548.—Purifying sulphuric acid.—G. Thomson and W. Kemp.

The acid is purified by adding ammonium sulphide and filtering.

March 27th, 1885.

313,861.—Apparatus for purifying gas.—A. O. Granger.

313,979.—Apparatus for separating oil vapors.—J. E. Bicknell.

314,003.—Process of purifying water.—T. W. Duffy.

314.004.—Process of purifying metals.—C. Edwards.

Moist hydrogen is pass over the metal, while at a temperature 600-700° C, in an air tight retort.

314,038.—Brine-cooling apparatus.—C. G. Mayer.

314,039.—Gas-cooling apparatus.—C. G. Meyer.

314,096.—Process of making whiskey.—F. M. Young.

314,097.—Artificial fuel.—H. Aigner.

Consists of perforated blocks of a mixture of coal tar pitch and vegetable fibre, which are subsequently coked.

314,113.—Process of preparing iron ores for smelting.—M. R. Conley.

The finely divided ores is mixed with about five per cent of pitch, and formed into bricks, etc.

314,114.—Manufacture and preservation of articles of gypsum, stucco, or the like.—M. Dermstedt.

The articles are treated with a hot saturated solution of strontia or baryta, and dried in the presence of carbonic acid gas.

314,150.—Filter.—H. Roeske.

314,182.—Compound for repairing stoves, fire brick, etc.—E. Ivett and A. George.

Consists of a mixture of burned and ground fire clay, unburned and ground fire clay, sifted wood ashes, sand, salt, black lead, asphaltum and water.

314,199.—Apparatus for tanning.—L. Simpson.

341,200.—Apparatus for tanning.—L. Simpson.

Issued April 7th, 1885.

315,086.—Muffle furnace for assaying and annealing.—J. Haskins.
This is a furnace for burning gaseous or liquid fuel.

315,089.—Process and apparatus for roasting ores.—O. H. Tobey.

315,096.—Puddling furnace.—J. Webb.

315,265.—Apparatus for refining copper by electrolysis.—M. G. Farmer.

315,266.—Apparatus for obtaining aluminium.—M. G. Farmer.

April 14th, 1885.

315,471.—Roof paint composition.—D. Brobst.
Mixture of coal tar, asphalt, salt, alum, gypsum, Roman cement, sulphur, pine resin, slacked lime, tallow, and copperas.

315,487.—Composition mastic for covering roofs, telegraph wires, etc' —A. Derrom.
Consists of crude Trinidad asphaltum, beeswax and oil.

315,549.—Hydrocarbon burner.—J. Reilly.

515,587.—Apparatus for the manufacture of iron and steel.—J. P. Witherow.

315,595.—Coke, oven.—E. J. Bowen.

315,597.—Manufacture of varnish from sludge tar.—R. M. Brenig.
The sludge is treated with a soap compound to separate the acid, and combine with the tar or oily compound. The resulting mass is dried and dissolved in linseed oil or turpentine.

315,610.—Chemical fire extinguisher.—W. Gee.

315,638.—Electrical insulator.—H. Kellogg.
A compound consisting essentially of asphaltum and caoutchouc oil.

315,709.—Apparatus for making gas.—E. Brook.

315,711.—Manufacture of hydraulic cement.—R. Bryce.
Limestone and Leitchfield marl or shale are ground together and pressed into bricks, which are then burned and ground.

315,747.—Gas generator.—A. Detwiler.

315,751.—Furnace for manufacturing illuminating gas.—T. Egner.
Brief. Bituminous coal is distilled in the upper part of the furnace while the coke, from which the gas has been evolved, is burned by the admission of air in the lower part of the furnace, and the gas evolved by distillation and that produced by combustion are passed together through the same eduction pipe connecting with the side of the furnace above the air inlets at a distance about one-third the height of the furnace. Tarry vapors and gas given off from the upper portion of the coal must pass down through heated coal and coke to the eduction pipe and are thus converted into fixed gases.

315,830.—Baking powder.—A. Peter .

Consists essentially of boric anhydride and an alkali carbonate.

315,831.--Phosphate baking powder.—A. Peters.

Consists essentially of a carbonate of an alkaline earth or of an alkali with metaphosphoric and pyrophosphoric acids.

315,832.—Baking powder.—A. Peters.

Consists essentially of boric acid and magnesium carbonate.

315,837.—Revivifying filtering material.—J. W. J. Reford.

The filtering material is revivified or carbonized by a current of superheated steam.

315,846.—Metallurgic gas furnace.—J. S. Seibert.

315,876.—Process of preparing and purifying wort for brewing purposes. – C. Limmer.

The wort is boiled with hops, cooled and filtered through a layer of hops. The wort is then refrigerated to precipitate the albuminous matter and passed through a centrifugal machine.

315,893.—Amalgamating pan and settler apparatus for treating ores.—M. P. Boss.

315,932.—Production of chlorinated derivatives of benzaldehyde.—R. Gnehm.

The benzaldehyde is treated with iodine and antimony pentachloride and heated.

315,953.—Process of purifying water gas.—O. Lugo.

The carbonic oxide is removed from the water gas by first converting it into carbonic acid in contact with heated ferric oxide, aud passing it in contact with caustic alkali. The metallic iron formed is constantly restored to the condition of ferric oxide by passing through it an oxidizing agent alternately with the gas.

315,980.—Manufacture of beer.—J. B. Von Rose.

Uses whole freshly prepared green malt in place of the usual dry crushed malt.

April 21st, 1885.

316,033.—Apparatus for carbureting and odorizing natural gas.—S. J. Hayes.

316,036.—Coloring matter derived from naphthol.—O. Hoffmann.

Green coloring matters produced by the action of nitrosonaphtholsulphonic acids, or their salts upon iron or its salts, or by the reaction of nitrous acid upon naphtholsulphonic acids treated with iron or its salts.

316,058.—Apparatus for extracting paraffine from oils.—C. H. Prentiss.

316,059.—Gas burning apparatus.—A. Randol.

316,067.—Process of brewing beer.—J. Schafhaus.

The wort is drawn from the mash in the tun until it begins to run cloudy.

The grain remaining in the tun is then sparged and stirred with water heated to 70-75° R., after which this latter wort is drawn off until nearly all extract is obtained. The wort is then pumped into a tun, containing a crib filled with hops, juniper berries, elemi-gum, and salt, boiled at a high degree until clear, and pumped into the sparger of the hop kettle for sparging the remaining hops.

316,075.—Water and alkali-proof fabric.—J. H. Stebbins, Jr., and P. Casamajor.

Woven vegetable fabrics are treated with sulphuric acid and alkalies.

316,104.—Extracting glycerine from fatty matters.—B. T. Babbitt.

Steam is passed through fatty matter under pressure and a sufficient temperature to decompose it and take up in suspension the separated glycerine. The steam and glycerine are afterwards condensed together and the water is evaporated off from the steam.

316,145.—Process of and apparatus for producing fodder from residual products of distilleries and breweries.—H. Hencke.

This is a process for producing dry concentrated fodder from the residual products of distilleries, breweries and sugar and starch factories. It consists in the decantation of the waste under admixture of a glutinous solution for precipitation of the albuminous and heavier particles, the deoxidation of the waste freed from water by the addition of calcium carbonate, and the evaporation and drying of the waste mixed with sodium carbonate.

316,195.—Manufacture of chlorine.—E. Solvay.

Uses in the manufacture of chlorine, a composition consisting of calcium chloride, silica, alumina and the residue remaining from a previous treatment of the composition.

316,233.—Blast furnace.—F. Brown.

316,248.—Formation of methoxy- and ethoxychinaldine.—O. Doebuer.

Oxymethyl and ethyl derivatives of chinaldine.

316,249.—Formation of the hydrobase of chinaldine.—O. Doebner.

316,277.—Apparatus for making granulated crystalline sodium carbonate.—J. Mactear.

316,300.—Manufacture of hydrochloric acid.—E. Solvay.

Uses in the manufacture of hydrochloric acid, a composition consisting of calcium chloride, silicious clays, and the residues from the manufacture of hydrochloric acid.

316,367.—Method of manufacturing malt liquors from starch, etc.—W. T. Jebb.

The wort is prepared by mashing starch with barley malt.

316,373.—Colored lead for pencils.—S. Kraus.

A composition consisting of coloring matter, talc and potter's clay boiled in fat or oil.

316,381.—Apparatus for the manufacture of ammonium sulphate.—C. Meyer, Jr.

316,385.—Hydrocarbon vapor burner.—G. Myers and J. B. Wallace.

316,400.—Apparatus for refrigerating paraffine oils and other liquids.—H. H. Rogers and C. Vose.

316,404.—Manufacture of starch.—J. C. Schuman.

316,405.—Manufacture of starch.—J. C. Schuman.

The method of manufacturing starch from Indian corn or maize consists in first steeping the corn whereby the starchy portions and the germs are swelled and the skins are toughened, detaching the skins and germs from the starchy portions by whipping or beating without water, and then separating the skins and germs from the meal by sifting.

316,406.—Method of treating and preparing starch.—J. C. Schuman.

W. R.