ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

Chlorine Monoxide. K. 'GARZAROLLI-THURNLACKH and G. SCHACHERL.

A new investigation of this compound shows many errors in the accounts of earlier investigators. Careful analyses were made to prove the purity of the gas. It is yellowish-brown and in the liquid form dark-brown. It is not easily decomposed by sunlight, nor does it explode when evaporated at ordinary temperatures if organic matter is excluded. Concentrated aqueous solutions are colored golden-yellow. The gas has an extremely unpleasant odor and attacks the respiratory organs. Two determinations of its vapor density gave 43.69 and 43.42. Under a pressure of 737.9 m. m. it boils at 5.0°–5.1°. It causes a partial decomposition of calcium chloride into calcium hypochlorite, which the authors propose to investigate. (*Annalen der Chemie*, **230**, *273*.) F. P. V.

Solidification. E. REYER.

The phenomena of solidification of lavas and metals are briefly pointed out. The accompanying crystallization, pulverization and contraction are discussed. The interpretation of the observed facts does not support Mallet's theory, as to the contraction of the earth. (*Jour. prakt. Chem.*, **32**, *120*.) F. P. V.

Purification of Sulhpuric Acid. M. KUPFERSCHLAGER.

The author reduces the arsenic acid to arsenious by the means of gaseous sulphur dioxide, which is passed through the acid diluted with its weight of water. He then precipitates arsenic, lead and selenium by H^2S, passed to saturation, and allows the precipitate to settle in a closed vessel.

The acid is decanted into a retort, in communication with a tubulated receiver, the tubulure being directed downwards into the wide mouth of a glass jar. The retort rests upon a cold sand bath and is surrounded by a double, circular grate filled with cold coke on top of which is ignited coal. The top of the retort is covered by a sheet iron dome. The jar does not need artificial cooling. (*Bul. Soc. Chim.*, **44**,*353*.) M. L.

ORGANIC CHEMISTRY.

On Cyanogen Compounds of the Aromatic Orthodiamines. J. A. Bladin.

Cyanogen combines easily with aromatic orthodiamines (1 mol. C N and 1 mol. diamine) to form compounds having the general formula $C_n H_{2n-8}N_4$ (where n=8.9, etc.), which are more stable than the cyanogen compounds of monamines. They are very strong bases, forming with acids two series of salts, containing 1 or 2 mols. of a monobasic acid. On heating these compounds on the water-bath with HCl, an NH group is split off and replaced by an oxygen atom

$$C_nH_{2n-8}N_4+H_2O=C_nH_{2n-9}N_3O+NH_3$$

The oxygen compounds so obtained are likewise bases, but weaker than those from which they are derived. They unite with 1 mol. of a monobasic acid to form salts which are easily decomposed by water. They likewise have the character of weak acids, as they are soluble in KOH, but are precipitated therefrom by CO_2, etc. (*Ber. d. chem. Gesell.*, 1885, 666.) J. H. S., Jr.

On a few Benzoyl Derivatives of Aromatic Amines. O. Hess.

Benzoyl chloride on being heated with dimethylaniline for some time at 190° gave benzoylmonomethylaniline. Large, clear crystals melting at 63°.

Benzoylmonethylaniline was likewise obtained from benzoyl chloride and diethylaniline. Crystals similar to those of the previous compound, melting at 60°.

Benzoylmonomethyl-α-naphthylamine was obtained from dimethyl-α-naphthylamine. Light colored crystals. Melting point 121°. (*Ber. d. chem. Gesell.*, 1885, 685.) J. H. S., Jr.

Benzyl ethers of the brominated nitrophenols, and their behavior by reduction. G. Roll and O. Hölz.

Mono- and dibrom-o-nitrophenol and mono- and dibrom-p-nitrophenol were used in this research. The benzyl ethers were formed by the action of benzyl chloride upon the salts of the brominated nitrophenols. These were subjected to the action of tin and hydrochloric acid, and were not only reduced, but at the same time saponified. Instead of the expected amidobenzyl ether, amidophenols were obtained. Other reducing agents were tried, but no amidobenzyl ethers were obtained, unless an unexamined substance gotten with sodium amalgam should prove to be the ether. (*Jour. prakt. Chem.*, **32**, *56.*) F. P. V.

p- Brom-o-amidophenol. F. Schütt.

p-Brom-o-nitrophenol was reduced with tin and hydrochloric acid. The brominated amidophenol was then gotten in the form of slightly yellow needles, soluble in cold alcohol, ether and benzol and in hot water, chloroform and carbon bisulphide. Melting point 128°. Various salts were examined. The base seems identical with the reduction product from p-brom-o-nitrophenol benzyl-ether described above. (*Jour. prakt. Chem.*, **32**, *61.*) F. P. V.

Bromamidophenols.

These bodies were gotten by the reduction of the bromnitrophenols, or their benzyl ethers. The paper contains an account of the preparation of several of these, together with their compounds, and a description of some of their physical properties. (*Jour. prakt. Chem.*, **32**, *65.*) F. P. V.

Contributions to a Knowledge of the Terpenes and Essential Oils. O. Wallach.

This is a continuation of the research noticed in previous abstracts. Borneol is shown to act as a saturated secondary alcohol, having, however, the power to form unstable compounds with bromine and the halogen hydrides. By means of potassium bisulphate camphene can be isolated from borneol. Borneen is a mixture of the decomposition products of camphene. Camphene, on treatment with bromine, gives a monobromide while dipentine gave a tetrabromide. Russian and Swedish turpentine are identical and consist of pinene, sylvestrene and dipentene. Sylvestrene gives a chloride melting at 72°. Terpinol, $C_{20}H_{24}O$, does not exist. Terpin hydrate is saturated and melts at 116–117°. On boiling with acids terpinol is formed. This is a nonsaturated monatomic alcohol. It gives a dipententetrabromide, also a chloride melting at 70°.

Terpinen is formed by decomposing terpin hydrate by dilute sulphuric acid. The author appends a classification of these terpenes depending upon their boiling points and halogen compounds. (*Annalen der Chem.*, **230,** *225.*) F. P. V.

On Lemon Oil. G. BOUCHARDAT and J. LEFORT.

The authors find that on distillation and treatment of oil of lemon with dry HCl, the solid monochlorhydrates obtained have, in general, the properties of the chlorhydrate of turpentine—boiling point between 205° and 208° and melting between 129° and 133°—but differ in optical properties. They are all laevorotatory, while all of the hydrocarbons were dextrorotatory. Water hardly acts upon these hydrochlorides.

The authors conclude that lemon oil is a very complex body, composed principally of hydrocarbons of the $C^{10}H^{16}$ class and a small quantity of cymole. The most abundant of the hydrocarbons of the $C^{10}H^{16}$ class is citrene, boiling at + 178°, rotating polarized light more than + 105°, and yielding directly a dichlorhydrate without optical properties. There are several hydrocarbons boiling below 162°, whose monochlorhydrates differ in rotatory power. (*Repert. de Pharmacie* **13,***443.*) M. L.

Lupanine from the Seeds of Lupinus Angustifolius. M. HAGEN.

This alkaloid was extracted by exhaustion with alcohol acidified with hydrochloric acid. After freeing from alcohol and concentrating it was made alkaline, shaken with petroleum ether and the base removed with hydrochloric acid. The alkaloid forms a honey-like, uncrystallizable syrup, yellow with green fluorescence, intensely bitter taste and has an unpleasant odor. It attacks the skin and fumes with hydrochloric acid. It is slightly soluble in water, difficultly in alcohol, easily in ether, chloroform, etc. It cannot be distilled, not even with steam. From analyses of its salts, the formula $C_{15}H_{25}N_2O$ is deduced. It is a mon-acid, tertiary amine base. (*Annalen der Chem.*, **230,** *367.*) F. P. V

Cuprein and Homochinin. O. HESSE.

Cuprein loses its two molecules of water at 120–125° and then melts at 198°. In acid solution it polarizes strongly to the left. It is a strong base forming neutral and acid salts, a number of which the author prepared and examined. With ammonia it does not unite, but does so with other inorganic bases. Diacetylcuprein results from the action of acetic anhydride upon cuprein. It melts at 88°. Concentrated hydrochloric acid changes cuprein into apochinin. Methyliodide gives cupreinmethyliodide, and the chloride is gotten by digesting this with silver chloride. Cupreinmethylhydroxyd is gotten by decomposing the methyl sulphate with baryta water. Cuprein combines with chinin to form homochinin. This last is to be stricken from the list of cinchona alkaloids. (*Annalen der Chem.*, **230,** *55.*) F. P. V.

Fulminuric acid. A. EHRENBERG.

By the action of hydrochloric acid (under pressure and heated) on silver fulminurate, hydroxylamine and ammonium chloride were formed. Quantitative tests show that two nitrogen atoms of the acid go to form the ammonium chloride and one hydroxylamine. When the reaction takes place, at ordinary temperatures, hydroxlamine and a new nitrogenous acid substance were obtained. Potassium fulminurate suspended in alcohol, decomposed by hydrochloric acid, yielded an oily liquid which is not fulminuric ether, and which undergoes spontaneous decomposition. By continuing the action of hydrochloric acid a crystalline acid is gotten. (*Jour. prakt. Chem.*, **32,** *97.*) F. P. V.

Chlor- and Bromfulminuric acid. A. EHRENBERG.

The experiments of Kekulé on this subject were made in the presence of water. In these experiments silver fulminurate was suspended in ether and chlorine passed through. Monochlorfulminuric acid is thus formed. The ether is removed by a current of air. The acid is decomposed by distillation, by water, etc. So too with its salts. Similarly, bromine is dropped into ether having silver fulminurate suspended in it and monobromfulminuric acid is gotten. This is soluble in alcohol and ether. It is more stable than the chlorine compound. The compound with iodine was obtained, but has not yet been fully examined. It is easily decomposed. (*Jour. prakt. Chem.*, **32,** *111.*) F. P. V.

On Nitropseudocumene, Pseudocumidine and Pseudocumenol, holding the Position 1, 3, 4, 5. E. Edler.

The mono-derivatives of pseudocumene known up to the present time belong to the symmetrical series 1, 3, 4, 6. In order to obtain isomers holding different positions, pseudocumidine was acetylated, then nitrated, and, after splitting off the acetyl group, the nitropseudocumidine was treated with nitrous acid and the resulting diazo- compound boiled with alcohol, thus obtaining a second nitropseudocumene, from which in turn the corresponding cumidine was obtained. (*Ber. d. chem. Gesell., 1885, 629.*) J. H. S., Jr.

On the Occurrence of Carbo-Acids in Coal Tar. K. E. Schulze.

In the course of an investigation of the high-boiling phenols in coal tar, the author found also a carbo- acid, which, on investigation, turned out to be benzoic acid. (*Ber. d. chem. Gesell., 1885, 615.*)
J. H. S., Jr.

ANALYTICAL CHEMISTRY.

Determination of Tannic Acid. F. Jean.

In the middle of a piece of black cloth put a disk of 2 inches diam. cut from white paper. Place on the disk a beaker of 800 c.c. capacity, and 85 mm. in diameter. The beaker carries a mark indicating 200 c.c.

Put into the beaker 5 c.c. of a solution containing 10 c.c. HCl and 14 grammes of ferric chloride per litre and fill to the 200 c.c. mark with ordinary water. Then run from a burette a solution containing 0.1 grm. of pure tannic acid in 100 c.c. of water until the white spot made by the paper on the black cloth is no longer perceptible through the liquid of the beaker. By a similar operation with the decoction of the bark to be analyzed, the amount of tannic acid is easily determined. The essential condition is that the decoction shall contain about 0.1 % of tannic acid. This is secured by taking

1.5 grm. of European oak bark,
or 1. grm. of African oak bark,
" 0.5 or 0.6 grm. of quebracho,
" 0.4 or 0.5 grm. of bark extracts and sumac,
" 0.250 grm. of cachou.

The process gives, according to the author, an approximation within .5% of the total astringent expressed as tannic acid.

To determine the gallic acid a solution containing about 0.2 % of the astringent acids is taken ; 50 c.c. of this are diluted to 100 c.c. and total acids are determined as above. Then in 50 c.c. of the original solution are put 2 grammes of powdered skin, which are left for 2 hours, then filtered through muslin; the skin is washed, collecting all the liquids in a 100 c.c. graduate, and 10 c.c. of solution of pure tannic acid at 1 % are finally added.

The 100 c.c. contains 0.1 grm. of tannic acid, plus the gallic acid of the sample. The difference between the quantity of solution of tannic acid of 1 % and the quantity of solution to be employed to produce the obscuration of the white disk, is due to the gallic acid, and a calculation gives its amount. (*Repert. de Pharmacie*, **13**,*446*.) M. L.

A Test for Olive Oil. A. AUDOYNAUD.

Take a test tube 15 c.c. in length and 15 m.m. in diameter, divided into cubic centimeters, and measure into it 2 c.c. of the oil to be tested ; then add 0.1 grm. of finely powered potassium dichromate and shake for a few minutes. Pour in nitroso-sulphuric acid until the volume reaches 4 c.c., and shake again ; the liquid becomes brown-red ; after few minutes add enough ether (65°) to bring the volume to 5 c.c. The mixture is then agitated and allowed to stand a few moments when the oil comes to the surface with a peculiar coloration.

For pure olive oil this color is green ; an oil containing at least 5% of sesame oil, peanut oil, cotton seed oil, or poppy oil gives a coloration varying from yellow-green to yellow or even reddish-yellow. On adding water this color is more apparent. (*Repert. de Pharmacie*, **13**,*498*.) M. L.

On a New Separation of Nickel and Cobalt. M. TLINSKI.

The principle of this separation depends upon the formation of metallic nitroso- compounds with nitroso-β-naphthol, which have different degrees of solubility in HCl and $HC_2H_3O_2$, and may be separated from one another by filtration. (*Ber. d. chem. Gesell.*, 1885, 699.) J. H. S., JR.

Volumetric determination of the alkaline earths, and the sulphuric acid combined with them. O. KNÖFLER.

To the solution of the alkaline earths phenolphtalein methyl-orange is added, then hydrochloric acid to acid reaction, and the temperature raised to boiling. A two-tenths normal sodium carbonate solution is then added till a rose color is obtained, and then 1 c. c. in excess. Filter, wash and titrate with two-tenths normal acid. After deducting acid, the amount of sodium carbonate corresponds to the amount of alkaline earth present. Where these earths are mixed they must first be separated. Magnesium compounds must be removed, and the presence of ammonium chloride avoided. To determine the combined sulphuric acid a solution of hydrochloric acid is added to acid reaction, then sodium carbonate to alkaline, then an excess of a solution of barium chloride (alkaline reaction disappears). Then add sodium carbonate until the alkaline reaction is restored. Filter, wash and titrate with hydrochloric acid. Two-tenths normal solutions are used throughout. The number of c. c. of acid and barium chloride used, less the sodium carbonate multiplied by .008, give directly grams of SO_3. Modifications are given for special cases. (*Annalen der Chem.*, **230**, *345.*) F. P. V.

On Fractional Distillation in a Current of Steam. M. J. LAZARUS.

On one occasion the author had to separate two fluids, one of which volatized easily, while the other was decomposed at a rather low temperature. As the process of distilling in vacuo presented some difficulties, he tried to accomplish the separation by distilling with steam. Naumann has shown that fluids not miscible with water are distilled over by means of steam at temperatures lying below the boiling point of water. In fractioning a mixture of this kind, there is not much danger of decomposition. In distilling, care was taken not to use a too strong current of steam, and the distillate was collected in 2 or 3 portions, each of which was dried and fractioned separately. For example, a mixture of 25 c. c. toluene and 25 c. c. nitrobenzene was distilled in a current of steam, and 22.5 c. c. toluene and 23 c. c. nitrobenzene were recovered. (*Ber. d. chem. Gesell., 1885, 577.*) J. H. S., JR.

Abstracts of American Patents relating to Chemistry.

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

October 20, 1885.

328,464.—Mordaunt.—M. Conrad.

Consists of laevulinic acid, oil emulsion, thickening, such as starch and acetic acid, and a solution of tannic acid.

328,465.—Process of printing textile fabrics.—M. Conrad.

The fabric is printed with a color prepared with laevulinic acid, oil emulsion, acetic acid and starch, and a solution of tannic acid in tragacanth water, and then submitted to the action of steam.

328,477.—Manufacture of crystal alum.—H. C. Freist.

A solution of aluminium sulphate, containing iron, is treated with potassium chlorate, or other oxidizing agent, to convert the ferrous oxide into ferric oxide. Either after or before removing the impurities, potassium sulphate, ammonium sulphate or sodium sulphate is added to the solution, and the alum is crystallized out.

328,478.—Manufacture of hydrate of alumina.—H. C. Freist.

Bauxite, or other aluminous material, is pulverized and mixed with sodium sulphate, calcium carbonate, coal dust and fluor spar, and subjected to heat. The resulting mass is leached, and the solution treated with a metallic peroxide to remove the iron. The clear solution is then subjected to the action of carbon dioxide, to form sodium carbonate, and precipitate the aluminium as hydrated oxide.

328,523.—Manufacture of ice and apparatus therefor.—A. Schmitz.

328,532.—Electrical apparatus for separating gold from ores.—W. J. Tanner.

328,534.—Apparatus for preserving and pressing beer.—F. Widmer.

328,589.—Paint solvent.—J. Kotoba.

A mixture to remove paints, oils, or varnishes, consisting of rain water, sodium carbonate, vinegar and slacked lime.

328,611.—Process of remelting soap.—J. C. Ralston.

328,643.—Mixed paint.—L. Brown.

Consists of powdered sand iron ore, combined with whiting or other coloring matter.

328,644.—Powder for roofing and other purposes.—L. Brown.

Consists of pulverized sand iron ore.

328,645.—Calcimine compound.—S. N. Brunck and G. A. Marsh, Jr.

Consists of calcined plaster, cotton seed oil and water, formed into a paste, which is dried and ground.

328,666.—Paint remover.—F. P. Foster.

Consists of a mixture of potash, alum, burnt umber, wheat flour, carbolic acid and water.'

328,685.—Process of and apparatus for dehydrating and refrigerating air for the preservation of meat, etc.—H. C. Johnson.

328,708.—Beer still.—W. J. O'Connor, P. Walsh and E. L. Martin.

328,834.—Apparatus for generating gas.—W. F. Browne.

328,857.—Mixed paint.—C. Miller.

Consists of gloss, gum or resinous oil, sodium silicate, Prince's metallic, Rossie red, Venetian red, potash, copperas, alum, sal soda and solution of white lime.

October 27, 1885.

328,914.—Gas furnace.—J. Ashchroft.

328,925.—Device for extracting and refining crude oil.—J. Davis.

328,947.—Filtering paper.—S. H. Johnson.

Carbon is mixed with paper pulp and formed into sheets.

328,956.—Preserving, strengthening, waterproofing and glossing textile fabrics, including paper.—C. A. Maxfield.

Natural wax is applied to only one side of the fabric.

328,978.—Process of tanning.—G. F. Schweitzer.

The hides are cleansed in pure water, limed, submerged in a solution of salt and alum, exposed to the fumes of sulphur, and tanned in a solution of salt, alum, sulphuric acid and extract of bark.

329,058.—Gas producer for metallurgic operations.—N. Lilienberg and G. S. Dwight.

329,072.—Apparatus for distilling and concentrating liquids.—C. C. Peck.

329,073.—Distilling or concentrating liquids.—C. C. Peck.

329,074.—Process of distilling and concentrating liquids.—C. C. Peck.

329,093.—Utilizing celluloid, etc., in the production of enameled goods or veneering.—J. H. Stevens and W. H. Wood.

Sheets of celluloid, and material suitable to form a backing, are subjected to a high degree of heat and pressure.

329,115.—Apparatus for moistening and purifying air.—C. Wurster.

329,125.—Process of making coloring matter.—A. T. Boehme.

The glucosides derived from quercitrin, horse-chestnut, Brazil wood and the like, are boiled with water containing nitric or hydrochloric acid to precipitate the resin. The brazilin, etc., is then removed and treated with potassium permanganate, and the resulting precipitate is filtered and washed, after which the precipitate is treated with acid, cooled and neutralized.

329,138.—Manufacture of chromates and bichromates.—W. J. Chrystal.

Sodium chromate is decomposed with an alkaline sulphate, and the resulting alkaline chromate is converted into a bichromate by adding a suitable acid.

329,184.—Continuous filter for filtering sugar liquors.—F. O. Matthiessen.

329,185.—Bone black filter for filtering sugar liquors.—F. O. Matthiessen.

329,199.—Apparatus for smelting and calcining lead and other ores.—E. R. Moffet.

329,210.—Apparatus for decolorizing sugar liquor by upward filtration through bone black.—E. E. Quimby.

329,290.—Apparatus for making water gas.—P. E. De Mill, Jr.

Brief.—Products of combustion from a cupola furnace are used to heat a steam superheating chamber, composed of brick arches and iron scrap, supported thereon above the fuel chamber of the furnace, and a fixing chamber, filled with brick, is also heated by waste gaseous products from the fuel chamber when blowing up with air. Steam is superheated and partially decomposed by passage down through the superheater in contact with heated iron and brick, and decomposition is completed in the fuel chamber below. The resulting water gas is carbureted by liquid hydrocarbon in the base of the fixing chamber, and the carbureted gas is fixed by passage up through the heated fixing chamber.

329,305.—Bone black discharger for continuous filters.—T. Gaunt.

329,306.—Bone black filter for filtering saccharine liquids.—T. Gaunt.

329,313.—Manufacture of pyroxyline compounds.—J. G. Jarvis.

Gum damar, gum quaiacum or gum mastic, is mixed with pyroxyline, with or without pigments or other coloring matter, and fixed or volatile oils.

329,329.—Bone black filter.—F. O. Matthiessen.

329,330.—Apparatus for decoloring saccharine and other liquids by filtration through bone black.—F. Matthiessen and E. E. Quimby.

329,331.—Process of removing the impurities of raw sugar.—F. O. Matthiessen.

329,332.—Apparatus for decoloring sugar liquor by upward filtration through bone black.—F. O. Matthiessen.

November 3, 1885.

329,529.—Stove polish.—A. N. Bender.

Consists of damar varnish, turpentine, drier, black lead and gasoline.

329,578.—Preserving compound.—R. A. McDaniel.

Consists of salicylic acid, sulphur, orange peel, cinnamon and potassium nitrate.

329,594.—Insecticide.—R. Rusterholz.

Consists of a solution of salicylic acid, sodium bicarbonate, starch, ferric chloride, ammonium hydrate and a flavoring oil.

329,632.—Coloring matter obtained from tetrazoditolyl.—C. Duisberg.

Is obtained by the action of tetrazoditolyl upon the alpha-naphthylamine sulpho-acids.

329,633.—Coloring matter obtained from tetrazo-ditolyl.—C. Duisberg.

Produced by the action of tetrazo-ditolyl upon the beta-naphthylamine sulpho acids.

329,634.—Red dyestuff or coloring matter.—E. Elsaesser.

Obtained by the reaction of the diazoderivative of the monosulpho acid of beta-naphthylamine, and the mono sulphoacids of alpha-naphthol, derived from naphthionic acid.

329,636.—Production of new violet dyestuffs.—F. Fischer.

Dimethylaniline is treated with perchlormethylmercaptan, and the coloring matter is extracted from the residual mass.

329,637.—Violet coloring matter.—F. Fischer.

329,638.—Yellow coloring matter.—E. Frank.

329,639.—Production of new yellowing coloring matter.—E. Frank.

Benzidine sulphate is azotized with sodium nitrite to form tetrazodiphenyl. and the latter is treated with oxybenzoic acids (especially salicylic acid).

329,701.—Manufacture of starch.—W. F. Birge.

329,740.—Paint for roofing, etc.—F. M. Hibbard.

Consists of coal tar, beeswax, resin, litharge, gypsum and asbestos.

329,774.—Composition for curing meats.—T. H. Riethmueller.

Consists of soda ash, potash, sal-soda, juniper berries, tartaric acid, sodium bicarbonate, potato farina, cream of tartar, pearl ash and caustic soda.

329,842.—Ice machine.—S. Luscher.

329,858.—Process of making lactose or milk sugar.—A. H. Sabin.

The evaporation of the whey is hastened by passing a current of dried or heated air over or through the liquid.

November 10th, 1885.

329,937.—Junction or separator lining for open-hearth furnaces.—O. Murisier and P. G. Gilchrist.

A furnace lining composed of a basic bottom, basic sides, and acid roof, and a belt of a mixture of chrome ore and tar interposed between the roof and sides.

329,960.—Oil compound for leather.—A. Schmitt.

Consists of cotton seed oil and cod fish oil, combined with a solution of rubber, cocoanut, pomegranate rind, and an aromatic.

329,967.—Process of manufacturing gas.—J. L. Stewart.

The process of manufacturing illuminating gas, which consists in heating a body of fuel to incandescence by means of an air blast, and by means of the resulting hot gaseous products heating up a fixing chamber, and at the same time generating a volume of oil vapor and storing it under pressure in a separate still or vaporizer ; then decomposing steam by passing it into the incandescent fuel, carburetting or enriching the resulting water gas by admitting to it, above the fuel, the stored hot oil vapor in regulated quantity to produce a uniform high candle-power gas ; and, finally, fixing the carbureted water gas by passing it through the fixing chamber previously heated by the hot gaseous products.

329,973.—Fire proofing wood.—R. Tanczos.

The dried material is saturated with a warm aqueous solution of borax and magnesium sulphate, and dried. It is then coated with a mixture of clay and water glass, after which it is sheathed with paper or a woven fabric previously impregnated with a solution of borax and magnesium sulphate. Finally, a solution of ammonium sulphate and gypsum in water is applied to the sheathed material.

329,985.—Apparatus for burning hydrocarbons.—L. B. White.

330,000.—Composition fuel.—L. Cline.

Consists of fine charcoal with fine cut cork.

330,019.—Process of rendering billiard and writing chalk unbreakable.—A. Hamann.

The chalk is saturated with fluid oil varnish or boiled linseed or other drying oil.

330,072.—Alloy.—A. C. Tichenor.

Consists of lead, zinc, iron and manganese.

330,075.—Fertilizer.—A. E. Wemple.

A mixture of bone flour, ammonium sulphate, sodium nitrate, potassium chloride, magnesium sulphate, and nitrogenous matter.

330,098.—Manufacture of sugar.—M. de la Vega.

The sugar is made by adding alcohol and sugar to the saccharine solution in the process of manufacture.

330,121.—Limekiln.—J. Hunt.

330,122.—Apparatus for making illuminating gas.—C. W. Isbell.

Brief.—Bituminous coal is distilled in closed retorts, and the products of distillation are conducted to the hydraulic main. The retorts are heated by a water gas generator, in the upper part of which they are placed, the fuel being alternately subjected to blasts of air for maintaining combustion, and to currents of steam for decomposition, and the products of combustion and of decomposed steam are passed around and in contact with the closed retorts for heating them. The water gas is conducted away separately.

330,142.—Process of manufacturing gas.—W. F. C. M. McCarty.

Natural gas is subjected to excessive heat in the presence of free hydrogen, or steam, and carbureted by the introduction of a liquid hydrocarbon in a finely divided state.

330,145.—Filtering apparatus.—W. Oldham.

330,149.—Plating with palladium.—G. Pilet and C. Carry.

The articles to be plated are introduced into a bath containing palladium chloride, ammonium phosphate and an alkaline substance—such as sodium phosphate or ammonium hydrate—and then exposed to the action of an electric current.

330,155.—Process of making ammonium chloride.—T. Schmidtborn.

Ammonium chloride is prepared by the double decomposition of ammonium sulphate and potassium chloride.

330,165.—Gas apparatus.—R. H. Smith.

330,171.—Treating asbestos to form crucibles.—M. S. Thompson.

Asbestos is mixed with water to form a plastic mass, which is placed in molds, and then exposed to a high temperature.

330,184.—Process of brewing beer.—C. Zimmer.

Malt is deprived of its hulls and germs, and subjected, with water, to the saccharification temperature. The mash is then boiled to coagulate the albuminous substance, and conducted to a centrifugal machine to separate the clear wort. The clear wort is finally passed into the hop kettle and boiled.

330,196.—Asphaltic mastic.—A. L. Barber.

Consists of refined Trinidad asphaltum, residium of petroleum, or heavy petroleum oil and pulverized limestone.

330,197.—Asphaltic cement for paving, roofing, etc.—A. L. Barber.

Trinidad or similar hard asphalt, combined with Trinidad, Mexican, Venezuelan or other naturally soft or liquid asphalt, sand and pulverized limestone.

330,274.—Process of obtaining menthol.—A. M. Todd.

330,275.—Composition of matter to be used in dyeing.—M. E. Waldstein and A. Mueller.

Consists of a sulpho-compound of the fatty acids, aniline or its homologues, and a neutralizing alkali.

330,334.—Process of preparing whole grain for fermentation.—J. W. Kittle

W. R.