ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

Preparation of Cyanogen in the Wet Way. G. Jacquemin.

The usual process, by the action of a concentrated solution of cupric sulphate on a saturated solution of potassium cyanide is incomplete, only half the cyanogen being evolved.

In the process of the author all of the cyanogen of the potassium cyanide is obtained and the gas is pure.

Two parts of cupric sulphate dissolved in four parts of water are placed in a retort or in a balloon, on a water-bath, and, by means of a stoppered funnel, a concentrated solution of one part of pure potassium cyanide is gradually introduced. The reaction begins violently at ordinary temperatures and when the evolution slackens the temperature of the water-bath is elevated to quicken it. 10 grms. of c. p. KCN give 850 c. c. of pure cyanogen. Commercial-pure KCN gives the same result, but the gas sometimes contains traces of CO_2.

There are two processes for withdrawing the cyanogen of the copper cyanide. 1. Decant the liquid remaining in the retort or balloon, wash by decantation, and add a slight excess of ferric chloride of 30° B., or higher. The action commences in the cold and a slight elevation of the temperature produces an abundant evolution of cyanogen. The ferric chloride passes to the state of ferrous chloride in transfering the copper cyanide to chloride, which sets free the cyanogen and forms cuprous chloride which turns to cupric chloride at the expense of the excess of persalt of iron. 2. Add to the washed copper cyandide some manganese peroxide and acetic acid. Heat slightly. Acetates of copper and manganese are formed and cyanogen is evolved. When the operation is ended the evolution tube is replaced by a receiver, sulphuric acid is added and the mixture of the two acetates is distilled to collect the acetic acid, which is used again. (*Comptes Rend.*, **100**, *1005.*) C. E. M.

Ultramarine Blue from Silica (without Alumina) by Use of Heat (1). Fr. Knapp.

The author has attempted to form ultramarine blue from silica, soda and sulphur, according to the formula prescribed by Gmelin,

varying the conditions of the experiment, still without success. The method of Rickman he has also examined. From his experiments he concludes that there is not absolute proof of the impossibility of forming this compound, yet its successful formation is dependent upon a number of conditions not given by and probably unknown to the authors mentioned. (*J. f. prakt. Chem*, **31**, *154*.)
F. P. V.

Reagent-bottles. A. Gawalooski.

The new reagent-bottle recommended in this paper is one with a revolving cap having a projecting lip which fits over a spout let into the neck. The reagent is poured altogether from this side-spout. Figures and full explanations will be found in the original article. The advantages are: 1. No volatile reagents can force their way in. 2. No fixing of the stopper by caustic alkalies, &c. 3. Ease of handling and freedom from impurities, as there is no stopper to be removed. (*Zeit. anal. Chem.*, **24**, *216*.) F. P. V.

ORGANIC CHEMISTRY.

Chemical Constitution of Isatin. H. Kolbe.

Isatin oxidized by chromic acid yields isatoic acid. This, heated with water, yields carbon dioxide and orthamidobenzoic acid. With hydrochloric acid the chloride is formed. Sulphuric and nitric acids act similarly. Dissolved in alcohol and acted upon by hydrochloric acid gas, ethyl orthamidobenzoic hydrochloride is formed, which is decomposed by water. Isatoic acid with bases in the cold evolved carbon dioxide, so salts could not be formed. Ammonia solution gives ammonium carbonate and orthamidobenzamide. Anilin acts similarly. Concentrated nitric acid gives nitroisatoic acid, which is more stable than nitric acid. This heated with hydrochloric acid or water gives a strong acid resembling metanitro-orthamidobenzoic. Reduction of the nitro-acid with tin and hydrochloric acid gives the hydrochloride of α diamido-benzoic acid. Sulphuric acid gives the sulphate. Treatment of isatoic acid with nitrous acid gives α nitrosalicylic acid. The author concludes that the formula C_4H_4 NCO—COH gives the best explanation of the above facts. (*Journal f. prakt. Chem.*, **30**, *467*.) F. P. V.

Isatoic Acid. E. V. Meyer.

This acid has the same composition as anthranilcarboxylic acid and shows similarity in properties. Chromic acid or potassium permanganate causes partial decomposition of isatoic acid with formation of a substance identical with anthranilcarboxylic acid. This may be an isomer then. Ethyl and methyl alcohol acting on isatoic acid yield the ethers of anthranilcarboxylic acid. The action of benzoylchloride, phosphorus pentachloride and acetic anhydride has been studied and the examination of the halogen derivatives begun. (*Jour. prakt. Chem.*, **30**, *484.*) F. P. V.

Phenyl Cyanate (preliminary notice). Fr. Gumpert.

Hofmann found that phenyl cyanate united direct to urethanes with primary alcohols. Isopropylalcohol gave crystals of the constitution of the phenylcarbaminicisopropyl ether. So with tertiary alcohols. Isatin unites with this body, molecule for molecule, giving a substance melting at 180° C., with decomposition. The chloroform solution of phenyl cyanate was treated with chlorine and also with bromine. The action of phosphorus pentachloride, acetic anhydride, anthranilic acid, benzaldehyde and benzoyl chloride was examined. (*Jour. prakt. Chem.*, **31**, *119.*) F. P. V.

A new Toluylendiamin. E. Lellman.

The above described nitrotoluidin yields on reduction a new diamidotoluol. This reduction was carried out in the usual way with tin and hydrochloric acid. The base melts at 61°–62° and distills at 225°. Several derivatives, toluylenthiourea and diallyltolulvlenthiourea, were formed and analyzed. (*Annalen d. Chemie.*, **228**, *243.*) F. P. V.

A New Nitrotoluidin. Lellman and Würthner.

Acettoluid is added to a mixture of fuming nitric acid and glacial acetic acid. The resulting nitro- compound is separated by water dissolved in alcohol, boiled with potassium hydroxide and then one-third its volume of water added. Two kinds of crystals are gotten which are separated and purified. One melts at 129°.5, and is metanitroorthotoluidin, the other melts at 158° and is unsaponified nitroacettoluid. The separation of the free nitrotoluidin is effected by concentrated hydrochloric acid. The melting point then is 97°. Experiments were also made to determine the position of the nitro- group. (*Annalen d. Chemie.*, 228, *239.*) F.P.V.

Constitution of the three Dinitroparaxylols. E. LELLMAN.

The melting points of these bodies range from 93° to 124°. The constitution was determined by the above tests. In the dinitroparaxylol melting at 93°, the nitro- group was shown to have the ortho- position; in that melting at 124° it was shown to have the meta- position, leaving only the para- position possible for the third. (*Annalen d. Chemie.*, 228, *250.*) F. P. V.

Methods for Determining the Constitution of Aromatic Diamines. E. LELLMAN.

1. Ammonium sulphocyanate is added to a solution of the salt of the diamine; it is then evaporated to dryness, heated an hour at 120°, washed with water and treated with an alkaline lead solution. To this orthodiamines impart no color, meta- and paradiamines give up their sulphur, turning the solution black. 2. A compound is formed in alcoholic solution with 2 mols. of oil of mustard, allyl thiocarbimide, and then melted. If an orthodiamine was used the larger portion of the melt solidifies to a mass of crystals, if a metadiamine the product remains fluid, if a paradiamine it is entirely decomposed. The test first given is used along with this for confirmation. (*Annalen d. Chemie.*, 228, *249.*) F. P. V.

On a New Base found in the Animal Body. A. KOSSEL.

This base was found in the pancreatic gland, and was obtained by the same process which author used previously for the preparation of guanin and hypoxanthin. The larger part of the base is precipitated by ammonia, along with guanin and separated from the latter by means of its chloride. Crystallizes in crystals two centimetres long. (*Ber. d. chem. Gesell.*, *1885*, 79.) J. H. S., Jr.

On Putrefication Bases (Ptomaines) from Fish. O. BOCKLISCH.

Brieger stated in a previous communication that he had found in certain putrefying fish, the following bases: Neuridin $C_5H_{14}N_2$, ethylendiamine, muscarin, and ganidin, $C_7H_{16}NO_2$, and it was the intention of the author to examine other kinds of fish for the same products. The products of decomposition of fresh-water fish, differ materially from those of salt-water fish. (*Ber. d. chem. Gesell., 1885*, **86.**) J. H. S., Jr.

On Paraamidooctylbenzene, Paraamidocaprylbenzene and an Amidooctyltoluene. A. Beran.

If primary amines of the aromatic series be heated with the alcohols of this series, phenols, and zinc chloride, secondary amines will be formed. If, on the other hand, alcohols of the fatty series be used under the same circumstances, primary amines, and amines of high molecular weight, also bases in which hydrogen has been replaced by alcoholic radicals, are formed. From aniline para-compounds are obtained, while o-toluidine yields ortho-compounds.

Paraamidooctylbenzene.

C_8H_{17}, C_6H_4, NH_2

This was obtained by heating a mixture of 7 grms. normal octyl alcohol, 25 grms. aniline-zinc chloride (2 mols. aniline to 1 mol. zinc chloride) for 8 hours to 270–280° C. Boils at 310–311° C. (corr). Is colorless and odorless when freshly distilled, but darkens slowly when exposed to the air. On cooling it crystallizes in snow white large leaflets, which melt at 19.5° C. Is quite volatile with steam. It was found to be a primary amine. It forms with acids well characterized salts.

Paraamidocaprylbenzene.

C_8H_{17}, C_6H_4, NH_2

Obtained by heating aniline-zinc chloride with capryl alcohol. It is a colorless, odorless oily fluid which boils at 290–292° (corr.); but does not congeal at —20° C. If heated with chloroform and alcoholic potash it gives the caprylamine reaction. It forms salts with acids.

Amidooctyltoluene.

$C_8H_{17}, CH_3, C_6H_3, NH_2$

may be obtained by heating 30 grms. o-toluidine-zinc chloride with 8 g. normal octyl alcohol for 7–8 hours at 280° C. It is, when fresh, colorless and odorless. Boils at 324–326°, but does not congeal at —20°. Yields 45–50% of the weight of the octyl alcohol used. (*Ber. d. chem. Gesell., 1885*, **131.**) J. H. S., Jr.

β-Hydroxybutyric Acid in Diabetic Urine. DEICHMULLER, SZYMANSKI, and TOLLENS.

That this acid occurs in diabetic urine has been observed by several workers of late. The authors have made a more careful and thorough research, however, proving conclusively its existence. Some thirty litres of urine were evaporated to a syrup, neutralized with sodium carbonate and crystallized over sulphuric acid. The crystals were pressed and recrystallized. They are deliquescent. Of the sodium carbonate 8.3 grams were used for neutralization but the crystals were obtained in very small amount. By various reactions and by ultimate analysis they were shown to be β-hydroxybutyrate of sodium. (*Annalen d. Chem*, **228**, *92*.) F. P. V.

A Polymeric Dichloracetoniitril. A. WEDDIGE and M. KÖRNER.

On conducting dry hydrochloric acid through dichloracetonitril, a crystalline, easily decomposable addition-product is gotten. On heating this several hours at 130°–140°, in closed tubes, it breaks up into its components and the dichloracetonitril is polymerized. It crystallizes in large prisms, melting at 69°–70°, is soluble in alcohol, ether and benzol, and, with more difficulty, in water. Trichloracetonitril can be polymerized in the same way. Attempts with the monoacetonitril have not as yet succeeded. (*J. f. prakt. Chem*, **31**, *176*.) F. P. V.

ANALYTICAL CHEMISTRY.

A New Absorbent for Oxygen. VON DER PFORDTEN.

Heated copper does not entirely free gases from traces of oxygen, and, of course, could not be used to purify sulphuretted hydrogen. The same objections obtain with regard to other ordinary absorbents of oxygen. The author recommends the use of chromous chloride which he prepares by heating chromic acid with concentrated hydrochloric acid, reducing with zinc and hydrochloric acid, precipitating, in absence of air, with sodium acetate and dissolving this precipitate, as needed, in hydrochloric acid. The absorption is thorough, the change of color affords a test for the completion of the absorption and sulphuretted hydrogen and similar gases have no effect upon it. Nascent hydrogen combines apparently with all oxygen; hence the stream of hydrogen needs no purification. (*Annalen d. Chem*, **228**, *112*.) F. P. V.

Quantitative Separation of Chlorine and Bromine. EMIL BERGLUND.

The method is based on the two facts: first, that a mixture of potassium bisulphate and permanganate sets free all bromine in a solution of bromide and has no action upon chlorides; second, free bromine can easily be driven out of a solution by means of an air current. This, the author proves by experiments. The presence of bromide lessens the power of chlorides to resist the action of the above mixture, consequently, in the experiments, the duration of air current and strength of solution must both be cared for. Special modifications are necessary where the sample exceeds one gramme. The bromine may be determined by loss or absorbed in a solution of caustic soda and determined. A diagram of absorption apparatus is given. (*Zeit. f. anal. Chem*, **24**, *184*.) F. P. V.

Analysis of Vulcanized Rubber with Especial Regard to the Determination of Sulphur. B. UNGER.

Detailed directions are given for the determination of sulphur. Antimony and calcium in vulcanized rubber—the sulphur by fusion of the finely cut sample with copper oxide and sodium carbonate—antimony by fusion with sodium sulphide, and calcium by incineration of sample, solution in hydrochloric acid, separation of antimony with ammonia and determination of calcium as oxalate. The methods yield satisfactory results. (*Zeit. f. anal. Chem*, **24**, *167*.) F. P. V.

Determination of Phosphoric Acid. C. GLASER.

This method depends upon the fact that phosphoric acid, in the presence of calcium compounds, with use of ammonium citrate, is precipitated direct by magnesia mixture, provided that sulphuric acid enough is present to transform all calcium compounds into sulphate and no more citrate is used than is necessary to retain the calcium salts in solution. The magnesia mixture is made up with magnesium sulphate and the first precipitate is dissolved in dilute sulphuric acid and reprecipitated. (*Zeit. f. anal. Chem*, **24**, *178.*) F. P. V.

Remarks upon Mohr's Article on the Determination of Reverted Phosphoric Acid. H. PETERMAN.

The utility of some of Mohr's suggested improvements in the determination of reverted phosphoric acid (*Zeitschr.* **23**, 487,) is discussed, and it is also pointed out that the same suggestions have been made before. (*Zeit. f. anal. Chem*, **24**, *175.*)

F. P. V.

Determination of Reverted Phosphoric Acid by the Oxalate Method Compared with the Modification of the Standard Citrate Method. C. GLASER.

Where the phosphates have but a slight percentage of iron, the oxalate and citrate methods yield similar results. In the case of guanos (natural) and iron phosphates a further modification is necessary. (*Zeit. f. anal. Chem*, **24**, *181.*) F. P. V.

Remarks upon Mohr's Article on the Determination of Reverted Phosphoric Acid. C. GLASER.

In addition to the remarks of Mohr upon the determination of reverted phosphoric acid, the author points out the needed caution that an abundance of sulphate be present. (*Zeit. f. anal. Chem*, **24**, *180.*) F. P. V.

Soap Analysis. A. GAWALOOSKI.

In analysis of soaps where the fatty acids are to be dissolved in petroleum-ether, they must first be dried (consuming many hours) as the moist acids dissolve and filter very slowly. If, however, a few c. c. of absolute alcohol are added, the solution and filtration proceeds rapidly, avoiding all necesssity for drying. (*Zeit. anal. Chem.*, **24**, *219.*) F. P. V.

Determination of Nitrogen by the Kjeldahl Method. E. BOSSHARD.

A table of analyses is given showing the accurate results obtained by this method. Presence of potassium nitrate in the caustic soda which is distilled over zinc filings must be avoided, however, else ammonia will be formed and carried over in the distillate. Very little zinc and slight excess of caustic soda should be used, as pure caustic soda solution gives, with zinc, a strongly alkaline distillate. (*Zeit. anal. Chem.*, **24**, *199.*) F. P. V.

Detection of Citric Acid. C. Mann.

One grm. of crystallized citric acid and .6–.8 grm. glycerine are melted in a small evaporating dish, heating until a solid porous mass is left. This is made slightly ammoniacal (evaporating off excess of ammónia solution) and, while warm, 1 to 3 drops of fuming nitric acid (5 times diluted) or of an ordinary 8–10 p. c. hydrogen dioxide solution are added. This gives an intense green color. Excess of acid decolorizes. With certain amounts of acid a dark blue is given. Tartaric and malic acids do not give this reaction. (*Zeit. anal. Chem.*, **24**, *201.*) F. P. V.

Analytical Operations and Apparatus. II. R. Wollery.

Apparatus for distilling, for measuring vapor tension, for maintaining uniform temperature by means of water, for drying in an air current or in vacuum, and for generating gases, are described. For diagrams and descriptions reference must be made to the original article. (*Zeit. anal. Chem.*, **24**, *202.*) F. P. V.

Abstracts of American Patents Relating to Chemistry.

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

June 2d, 1885.

318,971.—Absorption ice-machine. C. H. Evans.

318,972.—Process of making ammonium sulphate. E. A. Fales.

The vapor from the distillation of ammoniacal liquor is passed through sulphuric acid, covered with a layer of coal tar.

318,985.—Manufacture of thermometers. J. J. Hicks.

The thermometer tubes, after being filled with mercury, etc., are submitted for a considerable time to a temperature higher than that which they are required to indicate.

319,032.—Chromium mordant. R. Silberberg.

Consists of chromium oxalate, prepared by adding to a solution of potassium bichromate and nitric acid, a solution of oxalic acid in water and glycerine, then boiling the solutions and drawing off the clear liquor.

319,077.—Manufacture of beet sugar. E. F. Dyer.

319,079.—Composition of matter for the preservation of paper or vegetable tubing. Used for the insulation of telegraph wires. J. W. Ellis.

Consists of asphaltum, resin, petroleum, vulcanized rubber and sulphur.

319,082.—Manufacture of saccharine compounds. C. Fahlberg.

The new saccharine compound is toluene-monosulphamid. It is prepared by converting toluene into toluene monosulpho acid, oxidizing this acid or its salts to sulphobenzoic or it salts, then treating the latter with phosphorus pentachloride and ammonium hydrate, or carbonate, and finally separating the pure saccharine from the ammonium salt.

319,084.—Preparation and production of insulating materials. J. A. Fleming.

Consists of vegetable fibre impregnated with a mixture of melted bitumen, the silicates of magnesia, lime, iron and alumina, and amber or other resin.

319,097.—Soap for restoring color to plushes. velvets, etc. A. Kendall.

The soap contains a coloring matter which is imparted to the article to be cleansed when applied.

319,100.—Composition for fireproofing fabrics. F. Konrad.

Consists of a solution of ammonium sulphate, ammonium carbonate, borax. mercuric chloride, peppermint, carbolic acid, sodium bitungstate and chloride of lime, transformed into an emulsion by leading into the solution the products obtained by the distillation of a solution of Peruvian balsam and camphor.

319,108.—Compound liquid for use in the art of refrigeration. J. H. E Mendès.

Consists of sulphurous acid more or less saturated with carbonic acid in solution.

319,111.—Gas meter. W. N. Milsted.

Gas being supplied under constant pressure, quality is indicated by the height of flame.

319,118.—Solution of cuprous chloride, etc., for treating ores. A. Patchen.

Cupric sulphate is heated under pressure with salt, water and metallic copper.

319,125.—Process of working and using asphaltum. J. Rice and A. Steiger.

Pure native asphaltum is softened with hot water or steam and pressed under heated rolls.

319,128.—Lacquer for use in soldering. W. Rosenberg.

Consists of kauri gum, rosin, alcohol and benzine.

319,136.—Process of graining skins. E. Schroeder.

The grain side of the skin is swabbed with a mixture of nitric and muriatic acids.

319,180.—Furnace for preparing artificial fuel. V. Bietrix.

319,239.—Apparatus for making sulphocyanides. U. de Günzberg and J. Pscherniac.

319,270.—Apparatus for cleaning the residuum from zinc retorts. W. Lanyon and R. H. Lanyon.

319,295.—Method of treating vegetable fibre for manufacture of paper pulp. D. Minthorn.

The fibre is treated with a solvent containing bydrofluoric, sulphurous and boracic acid.

319,315.—Manufacture of starch, glucose, etc. P. Radenhausen.

Ammoniacal putrefaction in the starch milk is prevented, and the solid matters precipated by sulphuric acid.

319,328.—Detergent. C. Robinson.

A detergent for cleaning wall paper, composed of rye flour, wheat flour, corn starch, glue and yeast.

319,364.—Means for detecting and carrying off leakage from gas mains. G. Westinghouse, Jr.

319,365.—Pipe line for gas supply. G. Westinghouse, Jr.

319,409.—Apparatus for bleaching liquids. M. Hanford and C. C. Hanford.

319,434.—Apparatus for generating cold artificially. W. C. Wren.

June 9th, 1885.

319,508.—Obtaining a substitute for albumen from fish roe. J. M. Ordway.

The roe are dissolved in ammonia and precipitated by an acid.

319,604.—Apparatus for manufacturing lampblack. P. Meff.

319,646.—Process of obtaining coloring matter from amidoazoabenzol and homologues. L. Vignon.

A solution of amidoazobenzol hydrochloride, hydrocloric acid and water, heated 140° to 170° F., is reduced by sodium sulphide. After the reduction is complete, the solution is filtered off and oxidized.

319,687.—Process of electrodeposition of copper. M. G. Farmer.

The copper is deposited from a bath of ammonium copper nitrate.

319,806.—Waterproof wood pulp board for roofing. J. F. Fogg.

A combination of wood pulp with a mixture of petroleum, rosin, alum and copperas.

319,854.—Composition for soap. E. Schaal.

June 16th, 1885.

319,951.—Paint. C. E. Brown.

Consists of white glue, dark glue, alum, salt, red iron ore, green bay umber, yellow ochre, and coal tar.

319,956.—Apparatus for the recovery of soda. F. A. Cloudman.

319,971.—Apparatus for distilling glycerin. R. Giebermann.

319,984.—Mixed paint. T. N. Le Ross.

Consists of magnesium sulphate, glue, white lead and oil.

320,002.—Ventilator for gas mains. J. J. Ricketts.

320,009.—Composition for crayons. J. J. Sleeper and H. A. Johns.

Consists of water, kaolin, wheat flour, soapstone and paris-white.

320,060.—Apparatus for mixing aeriform fluids. A. B. Griffen.

320,078.—Gas-making apparatus. T. F. Martin.

320,110.—Apparatus for carbonizing bones, &c. A. Zwillinger.

320,144.—Apparatus for cooling and freezing fluids. A. Kux.

320,256.—Process of making sodium carbonate, A. Kayser.

Sodium sulphate is heated to a low red heat, below its melting point, and a current of carbon dioxide and carbon monoxide is caused to pass through the heated sulphate. Sodium carbonate is formed and sulphur dioxide is given off. The sulphur dioxide generated is used for converting common salt into the sulphate.

320,274.—Oil filter. D. S. Neiman.

320,305.—Cooling and separating a lubricating agent from a compressed gas, and liquefaction of gases and production of refrigeration. J. J. Suckert.

320,306.—Process of liquefying gases and producing refrigeration. J. J. Suckert.

320,307.—Method of and apparatus for purifying and liquefying gases and producing refrigeration. J. J. Suckert.

320,308.—Process of separating and cooling a sealing or lubricating liquid in apparatus for producing refrigeration. J. J. Suckert.

320,309.—Separating and cooling a sealing or lubricating liquid in producing refrigeration. J. J. Suckert.

320,310.—Method of and apparatus for separating a liquefiable gas from a condensable vapor. J. J. Suckert.

320,361.—Method of preparing and treating starch. W. T. Jebb.

A wort, suitable for the manufacture of beer or ale, is produced by steeping corn, and then draining and coarsely crushing or grinding it. The crude starch is separated by sifting and mashed with barley malt.

320,377.—Process of electro depositing nickel. J. A. Mathien.

Brief. Uses nickel proportionate.

320,400.—Manufacture of starch. J. C. Schuman.

Indian corn is steeped, drained and ground. and the starch separated by sifting.

320,401.—Method of preparing and treating starch. J. C. Schuman.

320,402.—Manufacture of starch. J. C. Schuman.

320,403.—Manufacture of grape sugar and glucose. J. C. Schuman.

320,417.—Process of extracting arsenic and mercury contained in the residues obtained in the distillation of mercurial ores. A. Van Straater.

June 23d, 1885.

320,460.—Carburetor. F. Copeland.

Brief. Oil is fed to the carburetor through a measuring valve having a pointer arranged over a graduated plate to indicate the quantity of oil passing through the valve. The carburetor is surrounded by a steam coil, and has a steam heating chamber at the bottom for maintaining the proper temperature.

320,461.—Blow pipe. G. D. Cowen.

320,464.—Varnish. W. E. B. Davies.

Consists of rosin, crude turpentine, naphtha, black oxide of manganese, oxide of lead, umber, essence of bergamot and linseed oil.

320,516.—Glass and other furnaces of the regenerative type. E. Walsh, jr.

320,526.—Process of preparing logwood extract. C. E. Avery.

The logwood liquors or extracts are oxidized, before being mingled with mordants, by the addition of various oxidizing agents.

320,535.—Combined beer and spirit still. D. S. Brown and L. Sipf.

320,588.—Explosive compound. R. S. Penniman.

Consists of nitrate of ammonia, protected from contact with the atmosphere by a coating of petroleum or its products, in combination with chlorate of potash.

320,590.—Process of purifying hyposulphite leaching solutions. E. H. Russell.

After the precious metals have been precipitated from the leaching solution the caustic alkalies are removed by the addition of a soluble salt of iron.

320,608.—Process of tanning. E. S. Ward.

320,627.—Method of coking coal. A. M. Chambers and T. Smith.

320,819.—Process of making refined cast steel and of steel coating wrought iron. T. Sheehan.

Wrought iron is packed in an annealing box, in a compound of charcoal, sodium chloride, sodium bicarbonate, sodium bisulphite, zinc sulphate and broken lime stone.

320,820.—Process of dyeing. R. Silberberg.

320,821.—Mordant. R. Silberberg.

Consists of a mixture of solutions of chromium oxalate and sodium hydrate.

(*June 30th, 1885.*)

320,908.—Smelting ores. M. B. Brett.

320,911.—Apparatus for treating the products of rendering tanks. L. J. Cadwell.

320,921.—Compound for insulating electric wires. R. S. Ferguson, W. Schumacher and W. Tubman.

Consists of pine pitch, rubber, and asbestus, mixed with beeswax, tallow or linseed oil.

321,003.—Ore roasting furnace. W. Brückner.

321,025.—Evaporating apparatus for brine, &c. M. P. Hayes.

321,026.—Neutral sizing material for papermakers' use. R. A. Fischer.

321,092.—Neutral sizing material for papermakers' use. R. A. Fischer.

Consists essentially of a mixture of aluminium and zinc sulphate, free from iron, prepared by neutralizing a solution of aluminium sulphate with zinc oxide, evaporating till the mass becomes viscous, then adding sodium bicarbonate, and breaking up the porous mass after cooling.

321,094.—Manufacture of an aluminous sizing material for papermakers' use. R. A. Fischer.

321,095.—**321,098.**—Do.

321,109.—Calcimine. K. A. Hohenstein.

Consists of lime, caseine, borax and a soluble gum.

821,120.—Art of manufacturing Portland cement. R. W. Lesley and D. Griffith.

821,121.—Manufacture of cement. R. W. Lesley and D. Griffith.

The ground cement is subjected to the action of a current of moist air.

821,124.—Apparatus for the manufacture of gas. W. F. C. M. McCarty.

821,125.—Process of making gas. W. F. C. M. McCarty.

Natural gas is subjected to heat, in the presence of steam ; the mixture is then reduced by finely divided iron or other material, after which it is passed through heated carbon, and finally it is superheated.

821,137.—Composition of matter for facing brown stone and for making artificial stone. B. E. Ratcliffe.

Consists of oil, sand and litharge.

821,161.—Chemical fire extinguisher. J. A. Wagner.

821,169.—Art of making whiskey. F. M. Young.

The mash is acidified by the addition of liquid slop, to prevent the subsequent formation of acid, at the expense of the sugar and starch.

821,341.—Process of making sodium sulphite. E. Carey, H. Gaskell, jr., and F. Hurter.

Salts are exposed to the action of sulphurous acid gas.

821,347.—Manufacture of salt. J. M Duncan.

821,368.—Disinfecting compound. F. Jossa.

Consists of calcium sulphate, ferrous sulphate, borax, sodium chloride, sodium bicarbonate and water.

821,410.—Vulcanized soft rubber and process of making same. F. Wilhöft.

Rubber and sulphur are exposed to a minimum heat of 330° F.

W. R.