

223,880.—*Composition for elastic rollers.* JAMES BURBRIDGE, ROBERT C THORPE and THOMAS OAKLEY.

Consists of "sulphurized oil," fibrous material and gum, resin or pitch.

223,913.—*Extracting metals from ores.* OTTO KAR HOFMANN.

A process of successive treatment with chlorine and washing, for the particulars of which, the specifications must be seen.

## Foreign Patents.

Condensed from R. BIEDERMANN'S Report to the German Chemical Society

by OTTO H. KRAUSE.

F. W. DUPRÉ and C. N. HAKE, Stassfurt: *Manufacture of potassium sulphate from schoenite.* (Germ. P., No. 8021, Jan. 21, 1879).—100 parts of finely ground schoenite ( $K_2SO_4 \cdot MgSO_4 \cdot 6H_2O$ ), are mixed, dry, with 14 parts of slaked or unslaked lime. The water of crystallization of the schoenite suffices for the decomposition of the mixture into calcium sulphate, potassium sulphate and magnesia. The plastic mass is either calcined or allowed to remain at rest for several days, whereupon it is ready for lixiviation.

G. LOEWIG, Dresden, and F. LOEWIG, Goldschmieden: *Process of purifying alumina which has been used for clarifying liquids, &c.* (Germ. P., No. 6713, Oct. 13, 1878).—Spent colloid alumina is mixed, in equivalent proportions, with lime, evaporated, and heated to destroy organic matter. The calcium aluminate is re-dissolved, and the alumina precipitated. Or, the spent alumina is evaporated and heated with hydrochloric acid or magnesium chloride, to destroy organic matter. The aluminum chloride or magnesium aluminate formed, are treated in known manner to obtain aluminum hydrate.

AD. HERRAN, Paris, and A. CHAUDÉ, Terres: *Method of obtaining coloring matters by the action of nitrobenzole or nitrotoluole upon mixtures of aniline or its homologues and metallic double chlorides.* (Germ. P., No. 7991, Dec. 28, 1878).—The inventors employ, among others, the following double chlorides: Aluminium-magnesium chloride, aluminium-zinc chloride, aluminium-ferrous chloride, ferro-magnesium chloride, ferri-zinc chloride.

A red, and a grey, coloring matter may be obtained by heating 2 parts of toluidine with  $1-1\frac{1}{2}$  parts double chloride, and addition of  $1\frac{1}{2}$  parts nitrobenzole, or  $1\frac{1}{2}$  parts nitrotoluole, until the mass becomes viscid. The red is soluble in boiling water, and the grey coloring matter is rendered soluble in water after conversion into the sulpho-acid.

A blue coloring matter is obtained when a mixture of 2 parts aniline and  $1-1\frac{1}{2}$  parts aluminium-zinc chloride, is heated to near the boiling point of aniline,  $1-1\frac{1}{2}$  parts of nitrobenzole added, and the heating continued for several hours. The mass is dissolved in concentrated sulphuric acid, the coloring matter precipitated by water, and dissolved in alkali.

MEISTER, LUCIUS and BRUENING, Hoechst: *Method of preparing coloring matters by the action of chlorinated quinones upon secondary and tertiary aromatic amines.* (Germ. P., No. 8251, June 24, 1879).—I. Violet dyes are obtained by allowing

crude chloranil, prepared by Graebe's method (Ann. d. Chem. u. Pharm., 146, 1), to react upon mono- and di-methylated bases of the benzole series. For instance, 1 part of chloranil is added gradually to 2 parts of dimethylaniline, and the mixture kept at 60–70° C. for some time.

II. Blue coloring matters: 2 parts of methyldiphenylamine and 1 part of chloranil are heated upon the water bath until the mass becomes viscous. It is then further heated at 120–130° C., until a sample of it may be pulverized upon cooling.

III. Green coloring matters are produced by the action of chloranil upon benzylated diphenylamine and its homologues. 3 parts of benzyldiphenylamine are heated to 60° C. upon the water bath, 1 part of chloranil stirred in gradually, and the mass kept at 60–80° C., until it becomes brittle upon cooling.

A. ZELTNER, Nuremberg: *Preparation of ultramarine red from ultramarine violet.* (Germ. P., No. 8327, Aug. 14, 1878.)—Violet ultramarine is exposed in thin layers to the action of hydrochloric acid in a vessel or chamber of brick. Heat is applied to the outside, and the temperature kept at 130° until the violet ultramarine is converted into the red.

A. REIBECK, Halle on Saale: *Manufacture of illuminating gas.* (Germ. P., No. 8455, July 25, 1879.)—Sawdust, saturated with gas oil, is spread between two layers of coal upon a charging tray, and placed in the retort.

C. KURTZ, Cologne: *Improvements in the manufacture of nitro-glycerine.* (Germ. P., No. 8463, May 22, 1879, being an addition to Germ. P., No. 6208; see this JOURNAL, I, 404.)—Glycerine in a sort of emulsion obtained by blowing cold compressed air into it, is put into the acid mixture. By passing a current of cold air into the vessel in which the reaction takes place, the temperature of its contents can be regulated.

The nitro-glycerine is syphoned off, washed with water and alkali, and purified by fractional crystallization, whilst cooled air is being passed through it.

W. LESEMEISTER, Cologne: *Apparatus for the preservation of beer.* (Germ. P., No. 8331, Mar. 25, 1879.)—Beer is heated to 100° C., in a copper kettle, to destroy ferments, and pumped through a cooling arrangement to a reservoir in which suspended matters, particles of yeast, etc., are allowed to subside. The beer is then re-impregnated with the carbonic acid lost during the heating.

O. BOURGAN, Schoeningen: *Purification of feed water for boilers, by means of barium sulphide.* (Germ. P., No. 8492, Mar. 25, 1879.)—Barium sulphide carefully dissolved in hot water, is employed. The sulphuric acid is completely precipitated, the barium sulphate carrying down with it calcium carbonate, and evolving hydrogen sulphide. Any carbonic acid or calcium bicarbonate still present, is removed with milk of lime. By this means, the formation of magnesium or ammonium chloride in waters containing magnesium, sulphate or ammonical salts, is avoided, an advantage over de Haen's chloride of barium process.

J. A. SIEGLITZ & Co., Leipsic: *Method of dyeing furs brown, and leaving the tips of the hairs white.* (Germ. P., No. 6095, Dec. 1, 1878.)—As a reserve for the tips of the hairs, a paste composed of 10 parts gum arabic, 5 parts acetate of lead, 10 parts soft unctuous clay and 10 parts basic acetate of copper, is applied. Oxide of lead dissolved in milk of lime, dyes the hair brown, by forming sulphide of lead with the sulphur contained in the hair, or with ammonium sulphide subsequently added. The reserve is then washed out.

BENRATH and FRANCK, Gelbe Muehle, near Dueren: *Gelatinized tracing paper*. (Germ. P., No. 5881, Nov. 26, 1878.)—Tracing paper is passed between rollers through a weak solution of glue, pressed, and dried without the aid of steam.

W. KELBE, Carlsruhe: *Method of purifying rosin oil*. (Germ. P., No. 7369, Oct. 9, 1878.)—"Rosin oil," obtained by the dry distillation of colophony, containing about 20 per cent. of undecomposed rosin, and possessing a disagreeable smell of wood-tar, besides exhibiting a blue fluorescence, is purified as follows:

The crude oil is heated to 120° C., in a vessel provided with a stirring apparatus and but partially filled by the oil. 8 liters of soda lye, sp. gr., 1.215, are then added per 100 lbs. of oil, and the contents of the vessel kept slowly boiling during half an hour, the evaporating water being continually replaced. After this heating, 50 liters of water per 100 lbs. oil are stirred in, and the whole kept at a temperature of 50–60° C., which must be carefully maintained. Solution of sodium chloride or excess of soda lye, precipitates rosin soap. After the oil and the lye have separated as much as possible, the latter is drawn off, and the oil subjected to two washings, with 25 liters of warm water each time. It is turbid from suspended water, smells strongly, and still fluoresces. To divest it of these properties, it is exposed to the air for several days, in shallow iron vessels, at a temperature of 60–80° C. The water and the more volatile oils evaporate, whilst the substance which causes the fluorescence disappears.

The soap lye and wash waters are collected in tanks, and impregnated with carbonic acid. The rosin which is thereby separated in clots, may again be subjected to dry distillation, the same as fresh rosin.

J. W. KLINGHAMMER, Brunswick: *Preparation of saccharate of lime from syrup, using a minimum of lime*. (Germ. P., No. 8311, Jan. 19, 1879.)—To the syrup, heated to 100° C., only so much caustic lime in powder is added, as is necessary to form calcium saccharate.

Indifferent substances, such as pulverized marl or brick, sawdust, sand, &c., are added to absorb the solutions of the salts contained in the syrup, as well as the potassium saccharate.

FRED. HARRY MOST, Widnes: *Cover for packages or drums, which are to contain caustic soda or similar substances*. (Engl. P., No. 5052, Dec. 10, 1878.)—The under side of the cover is provided with bent projections, or bars, which become imbedded in the caustic soda as it cools.

A. RUEMPLE, Hecklingen: *Preparation of magnesia, free from iron and calcium sulphate, from crude magnesium chloride*. (Germ. P., No. 8777, June 15, 1879.

—The inventor proposes to use the last liquors of the manufacture of potash salts from carnallite, containing besides magnesium chloride, considerable quantities of magnesium sulphate. Iron is first removed from the liquor, by adding one fifth per cent. of its weight of caustic lime. The magnesium sulphate is converted into magnesium chloride and calcium sulphate, by the addition of calcium chloride. From the clarified liquor, magnesia is precipitated by calcium hydrate.

In a similar manner, magnesia may be obtained from kieserite or epsom salts, by previously precipitating with calcium chloride, a solution from which ferric oxide has been removed by a small addition of calcium hydrate.

JEAN PIERRE SERVE, Givors: *Manufacture of phosphorus*. (Engl. P., No. 49, Jan., 1879.)—A blast furnace with closed top, is charged alternately with coke or

coal, and mixtures of coal, quartz or acid silicates, with earthy phosphates (apatite, coprolites, bones). These mixtures are formed into bricks. The products of combustion, carbonic oxide and phosphorus vapor, pass through a lateral opening, into a cooling apparatus composed of a number of pipes surrounded by water. (The method of decomposing calcium phosphate, by heating with silicic acid and coal, was proposed by Woehler. It was worked in the same manner as described in the above patent, by Brisson; see Wagner's *Jahresber.* 1870, 200. It will probably be found difficult to prevent the blast from burning the phosphorus.—Note of R. Biedermann.)

ALFRED HENRY ALLEN, Sheffield: *Treatment of gases containing sulphurous acid.* (Engl. P., No. 189, Jan. 16, 1879.)—Gases obtained in the roasting of ores, &c., are freed from flue dust and moisture, and pass into an absorption apparatus filled with charcoal. The pores of the latter absorb the sulphurous acid, and allow all, or nearly all, the nitrogen to escape. The charcoal is prepared by heating it to redness, and cooling it in an atmosphere of nitrogen. The absorbed sulphurous acid can be withdrawn from the charcoal, by heating it to 300–400° C., or by connecting the apparatus with an air pump, or both.

CARL JULIUS STEUER, Blasewitz: *Artificial stone from quartz-sand and plumbic oxide.* (Germ. P., No. 8011, April 9, 1879.)—Ground quartz-sand is mixed with 2–10 per cent. of finely ground plumbic oxide, the whole slightly moistened with sodium silicate, again well mixed, and then pressed into the desired form. It is dried at a low temperature, and subsequently fired.

FRANC. LAUR, Paris: *Improvements in the manufacture of aluminium sulphate.* (Eng. P., No. 173, Jan. 15, 1879.)—The contents of this patent are chiefly a reproduction of Eng. P., No. 771, Feb. 25, 1878; see this *JOURNAL*, I, 406 and 458. Besides the use of zinc, it is recommended to apply an electric current.

HENRY WASS MERRITT, Somerville, and W. HORNBY IRELAND, Boston, Mass: *Carburation of gas and air.* (Eng. P., No. 152, Jan. 14, 1879.)—The carburetting apparatus, protected from variations of temperature, contains a fibrous material saturated with hydro-carbons, through which the gas is made to pass. The inventors actually propose to pass the carburetted gas through a solution of mercuric nitrate, in order to remove acetylene, to which they ascribe very pernicious qualities.

FRANZ STROEHMER, Kotschenbroda, and THEODORE SCHLOZ, Dresden: *Apparatus for withdrawing gases from coke ovens, combined with an automatic pressure regulator.* (Germ. P., No. 8174, May 29, 1879.)—To prevent the valuable products formed in coking, ammonia, tar oil, carbon bisulphide, &c., from being decomposed by coming in contact with the heated walls of the furnace, iron pipes are run down to near the level of the coal. The products of the distillation are drawn off through lateral pipes. These pipes are provided with an automatic regulator, to avoid damage to the quality of the coke, by exhausting too rapidly.

ADOLF, COUNT BUONACORSI DI PISTOJA, Vienna, LOUISA STEFFEN, Vienna, and JOSEF DRUCKER, Bruenn: *Extraction of sugar from syrup, by the substitution process.* (Germ. P., No. 8346, June 26, 1878.)—Syrup containing about 50 per cent. of sugar, is diluted with 6 times its weight of water, and 28 parts of lime per 100 parts of sugar, added at a temperature of 0–15° C. This solution is heated to 110° C., when tricalcium saccharate ( $C_{12}H_{20}O_{11}, 3CaO$ ) precipitates, and is

filtered off hot. To the cooled filtrate, as much syrup and lime are added as will bring the amount of sugar and lime to the percentage present in the initial solution. This operation is repeated 20 to 25 times, whereupon lime only is added to the filtrates, in order to separate the sugar from the accumulated impurities.

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## MISCELLANEOUS.

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### PRIZE QUESTION

#### CONCERNING THE ACTION OF PHOSPHORIC ACID FERTILIZERS.

*From Biedermann's Centralblatt fuer Agricultur Chemie.*

Translated by BRUNO TERNE, Ph D.

An association of German manufacturers of fertilizers, has resolved to offer a prize of 1500 reichsmarks for the best, and 500 reichsmarks for the second best, solution of the following question, viz.:

To prove by numerous experiments, made under varying conditions, in pots, parcels of field and meadow land, and with due regard to previous experiments, the influence that phosphoric acid manures, with and without additions of potash and nitrogen, exert on the value of fodder plants (clover, grass, lupines, etc.), namely, on the increase of albuminous matter, starch, sugar and fat therein. It is also desirable, for the purpose of comparison, to include the *reverted* phosphoric acid, or the phosphate of lime soluble in citrate of ammonia, in the experiments.

The undersigned has, at the request of the association, consented to act as prize-juror, in conjunction with Prof. Dr. T. NESSLER, of Carlsruhe, and Prof. Dr. G. KUEHN, of Moeckern.

Papers for competition must be sent in before April 1st, 1881, sealed and signed with a motto. There should also be affixed, thereto, a sealed envelope containing the motto in question, and the name of the author.

Prof. Dr. F. NOLTE,

Editor of the "Landw. Versuchsstationen."

THARANDT, *December*, 1879.

The names of the firms belonging to the above-mentioned association, are:

H. & E. ALBERT, Bieberich, a. Rh.	VORSTER, Grueneberg, Kalk.
MICHEL & Co., Ludwigshafen.	J. C. ZIMMER, Mannheim.
MUELLER, PACKARD & Co., Wetzlar.	FERTILIZING Co., Kaiserslauten.