

FENNER'S COMPLETE FORMULARY

BEING THE

*Sixth Edition of Fenner's Formulary, greatly enlarged,
revised and entirely re-written.*

CONTAINING

WORKING FORMULAS

FOR ALL

OFFICIAL AND UNOFFICIAL PREPARATIONS GENERALLY USED OR
REQUIRED IN THE PRACTICE OF PHARMACY AND THE BUSI-
NESS OF THE CHEMIST, MANUFACTURING PHARMA-
CIST, MANUFACTURER OF PROPRIETARY MED-
ICINE, PHYSICIAN, PERFUMER, ETC.

A COMPLETE FORMULARY AND HAND-BOOK

*Of Valuable Information for Pharmacists, Manufacturers of
Chemical and Pharmaceutical Preparations, Physicians,
and Students of Pharmacy and Medicine.*

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Sixth Edition.

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PART VI.

MISCELLANEOUS FORMULA

The formulae which follow for miscellaneous preparations, often required in the druggist's business, are, as far as possible, arranged in classes according to their uses. Only a limited number of such formulas can be given in the space which is devoted to this subject, and we have endeavored to select such as are best suited for the purpose.

ADHESIVE PREPARATIONS.

Cements.

These are generally to be applied to the edges of the articles to be mended, previously warmed, and they are then to be held or bound together with twine or otherwise until the cement hardens. The cements have to be warmed also.

4366. Diamond Cement.— Gelatin 1 ounce, Water 5 ounces. Gum Mastic 1 $\frac{1}{2}$ drachms, Gum Ammoniac $\frac{1}{2}$ drachm, Alcohol 2 $\frac{1}{2}$ ounces. Dissolve the Gelatin in the Water and continue the heat until the solution has evaporated to about 3 fl.ounces; have the gums previously dissolved in the Alcohol, and to this solution, heated to nearly boiling, add the hot solution of Gelatin, and mix them thoroughly. Put up in small bottles tightly stopped.

This cement may be used for china or glass ware, and for attaching wood, ivory, jewels, metallic substances, etc.

4367. Glutina Cement — *For glass, china, wood, leather, etc.*— Gelatin, Cooper's or Cox's, 3 ounces. Acetic Acid 2 ounces, Carbolic Acid 5 grains, Oil of Cloves 5 minims, Water, enough to make 1 pint. Soak

the Gelatin in half a pint of Water for 4 hours, then heat by water-bath in a glass or porcelain vessel, add the Acids, dissolve, add the Oil of Cloves and sufficient hot Water to make a pint, and strain.

4368. Insoluble or Chrome Cement — *For glass and china.* — This cement, which is impervious to hot Water, should be freshly made when wanted for use. Gelatin, in small pieces, 1 drachm, Hot Water $\frac{1}{2}$ ounce, Bichromate of Potassium 15 grains. Dissolve the Gelatin in the Water contained in a small bottle by means of a water-bath, and while hot add the Bichromate of Potassium and apply as soon as possible, binding the pieces firmly together and setting in the sunlight. The Gelatin and Chrome Salt form an insoluble compound.

4369. Transparent Cement—*For china, glass, etc.*—Mix in a well-stopped bottle 20 parts of Chloroform and 25 parts of native India Rubber, or Caoutchouc, cut in small pieces; when dissolved add 5 parts of Mastic and let the whole macerate for 8 or 10 days, shaking daily, then strain quickly through very thin cotton cloth. This makes a very firm Transparent Cement for china and glass, and may be used for other purposes.

4370. India Rubber Cement or Glue — *For rubber, etc.* — Dissolve Gutta Percha chips or sheet in Bisulphide of Carbon until the solution has the consistence of thick syrup, and strain the mixture with pressure quickly, through a thin cotton cloth. To use this on rubber shave down the edges to be cemented thin, apply the cement freely and warm the parts for, a moment, join together and press, clamp or hammer down to hold them firmly until dry.

4371. Aquarium Cement.—Water Lime or Portland Cement, Marble Dust or White Sand, Litharge, each, 4 ounces. Powdered Resin $\frac{1}{2}$ ounce. Mix the powders and make into a putty with boiled Linseed Oil just before using.

4372. Cement for Lamps.— Plaster of Paris wet up with glue Water is generally used, but a more permanent Cement may be made by dissolving 1 ounce of concentrated Lye in 5 ounces of Water, adding 3 ounces of powdered Resin, and boiling them together 5 to 10 minutes. Then to make the Cement, just before using mix Plaster of Paris up with this solution to the proper consistence and apply.

4373. Amber Cement.— To cement or join amber, paint the edges to be united with boiled Linseed Oil, press firmly together and warm for some time at a degree of heat not high enough to melt the amber.

4374. To join Glass to Metal.—To cement glass, porcelain, earthenware or other hard substances to metal, melt a little shellac and join the substances with it while it is melted.

4375. Metal Cement.— An excellent cement for metallic substances may be made by dissolving shellac to saturation in Water glass, by the aid of heat.

4376. Rubber Tire Cement.— A cement for Rubber Tire bicycles and other similar uses may be made by dissolving India Rubber 1 part in sufficient Naphtha, by the aid of gentle heat of water-bath, and when melted adding 2 parts of Shellac, and melting them together, by water-bath, the naphtha is evaporated. Pour the melted mass on metal plates or run in sticks. When used the parts are to be well warmed and the cement heated and applied like sealing wax.

Glues.

Glues are prepared from glue, gelatin, etc., and are used for joining substances like wood, ivory, leather, etc., together, and for many other purposes. Some are prepared in solid form, requiring to be melted before using, and others are made to remain liquid by the addition of various substances. See also Gelatin, and Liquid Glue, and Tungstic Glue, Part III.

4377. Glue, Ordinary.— This is prepared by melting Glue in Water by the means of a glue pot or water-bath. It is made of different consistence for various purposes, more or less Water being used as required. It must be applied hot and the surfaces to be joined well bound together until dry.

4378. Liquid Glue.— Glue may be first made liquid by melting in Water as above, and then adding Alcohol 1 ounce to about 3 ounces of Glue, used while still liquid, but most Liquid Glue is prepared with Acid, either Acetic or Nitric as directed, Part III. It may be made of any

desired consistence, by using more or less Glue. A little Oil of Sassafras or Cloves is generally used to prevent moulding.

A good Liquid Glue for bottling may be made with good Glue 1 pound, dissolved by means of a water-bath in Water 1 pint in a porcelain vessel, and when dissolved gradually adding 5 ounces Nitric Acid, with constant stirring, or good Glue 5¹/₂ ounces. Acetic Acid 5¹/₂ ounces, Oil Sassafras 15 drops, Water, enough to make a pint, made in the same manner.

4379. Water-Proof Glue — Marine Glue. — This is prepared by dissolving separately in a sufficient quantity of pure Ether, 3 parts of Shellac and 1 part of India Rubber, and, when dissolved, mixing the solutions and keeping in tightly stopped bottles. This is insoluble either in hot or cold Water, Acids, etc.

Another kind of Glue which will resist moisture, etc., may be made by adding a solution of Sandarach, Mastic and Turpentine Gum, each equal parts in Alcohol 16 parts, to Ordinary Glue or Gelatin melted in Water. The quantity to be used depends upon the purpose for which it is required, about 1 ounce to 2 ounces of Glue in a pint being the proportion for ordinary uses.

4380. Elastic or Mouth Glue.—This is prepared by dissolving good Glue in an equal quantity of Water, and adding to it one half as much Glycerin, and one fourth as much sugar as was used of the Glue. This is run into small pieces and may be moistened and applied to paper or other light substances.

4381. Pad Glue.— This is now extensively used for the backs of pads of paper to fasten the leaves together, and for other similar purposes. Glue ¹/₂ pound. Water ¹/₂ pint, Acetic Acid 1 ounce, Glycerin 2 ounces. Aniline red, green, blue, or other color as desired, 1 drachm, or sufficient to color. Make the Glue in the usual manner by melting in the Water in a glue pot or water-bath, and add the Glycerin and coloring matter. This may be made more or less brittle or elastic by varying the quantity of Glycerin.

Mucilages.

Adhesive Mucilages for sticking labels to bottles, tinware, etc., papers together, and for gumming the backs of paper used for stamps, labels, etc., are much used. The following are the various kinds employed for different purposes.

4382. Casein Mucilage.— Heat sour milk with a little Tartaric Acid, which causes the Casein to separate. Collect and press the mass and while still warm add enough of a solution of Borax 1 ounce in 1 pint of Water to nearly dissolve the Casein. This may be used for the back of label paper and other adhesive purposes.

4383. Label Mucilage.— Soak 6 ounces of Glue in 20 ounces of warm Water, and then dissolve by heat; while warm dissolve in it 3 ounces of granulated Gum Arabic and 8 ounces of Rock Candy. This is for gumming the backs of sheets, for labels, etc., and must be applied, while warm, with a brush.

4384. Stamp Mucilage.— The following is said to be the same as is used for gumming U. S. stamps: Dextrine 2 ounces, Gum Arabic 1 ounce, Acetic Acid $\frac{1}{2}$ ounce, Sugar 1 ounce, Oil of Sassafras 10 drops, Water 6 ounces. Mix and dissolve by heat of water-bath, and apply with a brush while warm.

4385. Good Cheap Mucilage.— This may be made by soaking 1 part White Glue or Gelatin and 2 parts of Gum Arabic in 10 parts of Water, adding $\frac{1}{4}$ part of Sugar, dissolving by gentle heat, straining and adding a few drops of Oil of Cloves to keep.

4386. Dextrine Mucilage.— Dextrine 3 parts. Water 5 parts, dissolve by heat of water-bath.

4387. Mucilage for Tin and Metal.— Most mucilages will not stick on tin or bright surfaced metals, and a mucilage must be specially prepared for this purpose. The following is A1: Starch 1 pound, Water $1\frac{1}{2}$ pint, Muriate of Tin Solution 4 fl.ounces, Glycerin 1 ounce, Oil of Sassafras 30 drops. Mix the Muriate of Tin solution with the Water and Glycerin, and add to the Starch, boil them together until a clear mucilage is formed, and while cooling add the Oil of Sassafras.

Mucilage of Acacia and *Mucilage of Tragacanth*, which are much used for adhesive purposes, are noticed in Part III.

Pastes.

Pastes for adhesive purposes are made from flour or starch, and are much cheaper than most mucilages for pasting labels, wrappers, etc. When druggists are once accustomed to their use they prefer them to mucilage for that purpose, as they dry quicker, keep in place better, and do not wet the paper like mucilage. The following formulas will be sufficient:

4388. Good Flour Paste.—Wheat Flour 4 ounces. Alum, in powder, 90 grains, Oil of Cloves 5 minims, Carbolic Acid 10 grains, Water 1 pint. Mix the flour with enough Water to make a thin mixture, heat the remainder of the Water to boiling, add the Alum to it and then add it quickly to the mixture of flour and Water, stirring them well together, and heating if necessary to make a good smooth paste; while cooling add the Oil of Cloves and Acid.

4389. Good Starch Paste.—This maybe made in the same manner as the foregoing, only using starch in place of flour; 1 ounce of Glycerin added is advantageous.

4390. Paste for Tin. —To either of the foregoing formulas, add 1 ounce of Glycerin, $\frac{1}{4}$ ounce of Acetate of Lead, in powder, and $\frac{1}{4}$ ounce solution, Muriate of Tin, to the boiling Water, which is added to the flour or starch.

BAKING POWDER.

In making Baking Powders it is necessary in the first place to choose good and appropriate material, and in the second place to have the articles which enter into the composition dry and very finely powdered. They must then be combined in such proportions that the Acid will exactly unite with the Alkaline base, setting free the Carbonic Acid gas which is united with it, which causes, by its escape through the dough, the lightness of the pastry.

In choosing material to combine in Baking Powders it is necessary to select such substances as will not react upon each other when mixed dry, but which will combine to liberate the Carbonic Acid gas under the influence of moisture and heat. Cream of Tartar, because of its insolubility is the most serviceable of the Acids for this purpose, and Bicarbonate of Sodium, which contains a large quantity of Carbonic Acid gas, readily liberated, when acted upon by an acid, is the best of the Alkaline base.

Owing to the uncertain composition and strength of the material used for making Baking Powders, it is difficult to give definite formulas that will work every time to the entire satisfaction of the operator, for the test of the powder in baking is the only general way by which it may be known if the articles used are balanced so as to be neither alkaline nor acid.

It is also very important that the material used be very finely powdered, thoroughly dry, and perfectly mixed. Baking Powders cannot be thoroughly mixed by hand or in a mortar, because small particles of the bicarbonate of sodium will adhere together, and when used will make small yellow spots or points in the pastry; some kind of a mixer is therefore required that will thoroughly crush these particles and mix all together intimately. Several kinds of mills and mixers are furnished for this purpose. The following formulas will, if properly combined from good material, make excellent Baking Powders, but it should be understood, as previously explained, that the operator should test the powder by baking before sending it out, and if it needs more acid or more alkali, add it until it is properly proportioned to make the best.

4391. Baking Powder, No. 2.—Pure Cream Tartar, 3 pounds. Pure Bicarbonate Soda, 22 $\frac{1}{2}$ ounces, Best Roller Flour, 1 pound. Corn Starch $\frac{1}{2}$ pound. If preferred, $\frac{1}{2}$ pound Corn Starch and $\frac{1}{2}$ pound Flour may be used in place of 1 pound Flour, in which case the Starch must be finely powdered. Use 1 $\frac{1}{2}$. teaspoonfuls to 1 quart Flour. This is the best formula.

4392. Baking Powder, No. 2.— Pure Cream Tartar 1 $\frac{1}{2}$ pounds. Pure Bicarbonate Soda 13 ounces, Tartaric Acid 1 ounce. Best Roller Flour 1

pound. Corn Starch $\frac{1}{2}$ pound. Use 2 teaspoonfuls to 1 quart Flour.

4393. Baking Flour, No. 3.—Pure Cream Tartar 2 pounds, Pure Bicarbonate Soda 1 pound. Roller Flour $1\frac{1}{2}$ pounds, Tartaric Acid 1 ounce, Corn Starch $1\frac{1}{2}$ pounds. Use 2 teaspoonfuls to 1 quart Flour.

4394. Baking Powder, No. 4.—Pure Cream Tartar 1 pound. Pure Bicarbonate Soda 1 pound, Tartaric Acid 3 ounces. Roller Flour 2 pounds, Corn Starch $\frac{1}{2}$ pound. Use 2 teaspoonfuls to 1 quart Flour. This is a good, cheap powder. Keep well covered.

CLOTH CLEANING COMPOUNDS, ETC.

For cleaning cloth, gloves, lace and delicate fabrics that cannot well be washed in the ordinary way many preparations are put up and sold. Most of them are simply, Gasoline or Deodorized Benzine, perfumed with some fragrant oil, but other compounds are also used. Washing compounds are also included under this heading. The following are representative of the various preparations:

4395. Fragrant Benzine or Gasoline.— Gasoline 1 gallon, Oil of Bergamot $\frac{1}{4}$ ounce. Mix them. Any other volatile oil, as Cloves, Cassia, Lavender, Lemon, etc., may be used instead of Bergamot. This may be put up by any fancy name, and recommended to clean cloth, silks, gloves, etc., and remove grease spots.

4396. Cloth and Glove Cleaner.— Gasoline, or Deodorized Benzine 1 quart, Alcohol, Chloroform, Ether, each, $\frac{1}{2}$ fl.ounce. Mix them. This may be put up and sold at a fancy price for cleaning silks, gloves, etc. It may be perfumed with lavender or cologne if desired.

4397. Clothes Cleaning Compound—*For removing paint, grease, dirt, etc.*— Water of Ammonia 1 pint, Alcohol 9 fl.ounces, Soap Liniment 6 fl.ounces, Borax, in powder, 4 ounces av., Castile Soap, cut or shaved, 4 ounces av., Boiling Water 6 quarts. Dissolve the Soap and Borax in the boiling Water, and when cool add the other ingredients. This is to be applied by rubbing into the grease spot, and then washed out with clear warm water.

4398. Cleaning Cream. — Ivory, or other White Soap 8 ounces, Sal Tartar $\frac{1}{2}$ ounce. Borax 2 ounces, Oil of Sassafras 1 drachm. Water $1\frac{1}{2}$ pint. Cut the soap in small pieces and dissolve in the Water by heat of water-bath, add the Borax and Sal Tartar, and while cooling add the Oil of Sassafras, mixing them well together. This removes grease, paint and dirt by rubbing in and washing out with warm water.

4399. Benzin Jelly.—White Soap 12 ounces. Hot Water 18 ounces, Ammonia Water 3 ounces. Dissolve the Soap in the Hot Water, pour in a bottle, and add the Water of Ammonia. Then add to the mixture 2 pints of Gasoline or deodorized Benzin, and shake thoroughly until the mixture is cold and solidified. This is applied by rubbing on the grease spots, and afterwards washing out with warm water.

4400. Erasive Soap.— White Soap 8 ounces, Borax 1 ounce, Sal Tartar 1 drachm, Oil of Sassafras 1 drachm, Water 8 ounces. Cut the soap in shavings and dissolve in the Water by heat of a water-bath, add the Borax and Sal Tartar and boil until reduced to 1 pound, then while cooling add the Oil of Sassafras, and make into cakes of about 2 ounces.

4401. Washing Fluid.—Concentrated Lye, or Caustic Soda, 1 pound, Oil of Turpentine 2 ounces. Borax 2 ounces, Camphor $\frac{1}{2}$ ounce, Soap Bark, ground, $\frac{1}{2}$ pound, Water of Ammonia $\frac{1}{2}$ pint, Water sufficient. Steep the Soap Bark for two hours in $\frac{1}{2}$ gallon of Water, strain and press. Dissolve the Concentrated Lye and Borax in $\frac{1}{2}$ gallon of Water, and add to the decoction of Soap Bark. Dissolve the Camphor in the Oil of Turpentine and add to the solution, then add the Water of Ammonia, and after standing pour off or strain, add a tablespoonful of this to each gallon of Water used for soaking the cloths before washing, and a little in the washing Water.

4402. Washing Fluid.— Sal Soda 4 pounds, Borax 2 ounces, Sal Tartar 1 ounce, Water of Ammonia $\frac{1}{2}$ pint, Spirit of Camphor 2 ounces, Oil of Turpentine 1 ounce, Hot Water 6 pints. Dissolve the Salts in the hot Water and add the liquids. This may be used the same as the foregoing.

4403. Washing Crystal or Powder is prepared by mixing coarsely powdered Borax 8 ounces, with Carbonate of Potash (Sal Tartar) 4 ounces, or Crude Potash 3 ounces. The "1776" and other similar compounds are made by adding excess of Alkali to Soap while making and evaporating to a mass or granular powder. It requires special machinery, and cannot be made except in large factories.

EXTERMINATORS, DESTROYERS AND POISONS.

For exterminating or poisoning rats, mice, bugs, flies and vermin generally, a great many different kinds of preparations are put up and sold. The following represent some of the best for the purpose :

4404. Bed Bug Poison or Exterminator.— Corrosive Sublimate, in powder, 2 ounces av., Alcohol 1 pint. Dissolve the powder in the Alcohol and apply to the bedsteads where the vermin hide.

Another poison for the same purpose may be made with Cyanide of Potassium 2 ounces av., Water 1 pint. Dissolve and apply. These may be used for any kind of bugs, ants or vermin to which it can be applied.

4405. Bug and Ant Poison.—As a poison for cockroaches, other bugs and ants, to eat, the following will give satisfaction. Tartar emetic 1 ounce, powdered Sugar 7 ounces. Mix them intimately together and place the powder where the vermin will find it.

4406. Fly Paper.— Formulas for fly papers, both poison and sticky, will be found in Part III. The following additional formula for *Sticky Fly Paper* is given: Common Resin 1 pound, Castor Oil about 5 ounces. Melt the Resin and add sufficient Castor Oil to make it properly adhesive when applied to the paper. As the resins vary, a little less or more than 5 ounces may be needed. Prepare manilla paper or other firm paper by brushing over each sheet with a size made of glue $\frac{1}{4}$ pound, melted in hot Water, 1 gallon. This is applied hot, with a brush, to the paper, and the sheets dried by hanging on lines. The Resin compound is then applied warm, with a brush, to the sized sheets, which are then folded together.

4407. Anti-moth Paper.—Carbolic Acid Camphor, Oil of Cedar, each, 1 part, Benzin 8 parts. Dissolve and dip sheets of heavy porous paper in

the liquid and hang on lines until the Benzin evaporates. The paper should then be cut up and kept in tin boxes. These sheets are put away in drawers or with firs, etc., to prevent moths.

4408. Rat Poison.— A great variety of poisons for Rats and vermin are put up under various names, and in various forms. They consist mainly of Arsenic, with the addition of some coloring matter or other substances.

Rough on Rats is an example of proprietary Rat Poisons. It consists of Arsenic colored a little with ivory black or some other black substance. It is mixed with lard and sugar and spread upon bread.

4409. Rat Paste Poison.—This maybe made by mixing Arsenic with brown sugar, equal parts, and making into an ointment or paste with lard, the same quantity as is taken of the Arsenic.

Tartar Emetic may be used instead of Arsenic.

4410. Luminous Paste for Rats, Roaches, etc.—This was formerly quite a favorite rat poison, as it shines in the night attracting the attention of the rats, and at the same time acts as a poison. It is best made by melting Phosphorus 1 ounce in Petrolatum or Lard 1 pound, by means of a water-bath, and while melted and well mixed by agitation in a closely stopped wide-mouth bottle, allow to cool and solidify. This may then be mixed with Sugar 1 pound, and Flour 1 pound, or sufficient to make a stiff mass.

A better Luminous paste is made with Arsenic, Luminous paint (made without Turpentine) and Sugar, each, one part, well mixed together.

4411. Mosquito or Black Fly Preventive.—Hunters and fishers who go in the woods during the summer are much annoyed by flies and mosquitoes. The following preparation is for rubbing on the hands and face to keep them off. Petrolatum 3 ounces, Paraffin $\frac{1}{2}$ ounce, Oil Tar 2 ounces, Oil Pennyroyal 1 ounce, Carbolic Acid 2 drachms. Melt the solid ingredients together and when nearly cold enough to begin to solidify incorporate the other ingredients.

4412. To Prevent Flies from lighting on marble or glass.— Put a few drops of Oil of Wintergreen or Pennyroyal on a damp sponge and

rub over the surface ; they will not light where this is done, but it must be repeated every 4 hours or so.

4413. Other Poisons.—For potato bugs *Paris Green* or *London Purple* seem to be the most successful. The same are also used for coddling moths, and curculio on trees and shrubbery. For lice on plants *Insect Powder* is good, but washing with a spray of *Whale Oil Soap* suds seems to be the most effective. For squash and cucumber bugs, *Calomel* is used.

FOODS.

A few preparations are known as foods for various purposes, as Baby Food, Infant Food, Plant Food, Egg Food, etc. The following are some of the principal popular preparations.

4414. Infants and Invalids Food.—These foods are prepared from various grains in various ways; the object being to secure in them the most valuable constituents of the food, and to present them in the form most readily digested. To this end the grains are variously treated, by malting, removing some of the less valuable constituents, concentrating, etc. As these processes require expensive machinery and experience, they are not adapted to the uses of druggists, and are, therefore, not given here.

4415. Plant Food.—For making plants grow and blossom, the following are used:

Sulphate of Ammonium 4 ounces, Sal Nitre 2 ounces. Sugar 1 ounce, Hot Water 1 pint. Mix, dissolve and keep in a well-stopped bottle. A little is added to the Water used for plants. Another formula is Nitrate of Potassium 2 parts, Carbonate of Calcium (Precipitated chalk). Chlorate of Sodium, Phosphate of Calcium, each, 1 part, Silicate of Iron 3 parts, Water 20 parts. Mix.

INKS, BLUINGS AND BLACKINGS.

A great variety of Inks, Bluings and Blackings are found on the market. The following formulae make good preparations of this kind. It must be remembered, however, that there are many qualities of Anilines and

other substances used in making inks, etc., which have the same name, but are of different degrees of excellence. The best should always be chosen.

In the limited space only a few formulas can be given, but they will be sufficient.

Inks.

4416. Fine Black Ink Aniline.—Negrosine (Black Aniline crystals), $\frac{3}{4}$ ounce. Dextrin $\frac{1}{2}$ ounce, Corrosive Sublimate 2 grains. Water 2 pints. Dissolve the Negrosine in a pint of hot Water. Dissolve the Dextrin and Corrosive Sublimate in the remaining pint of Water and mix the solutions. This ink flows freely, is always black and does not mold. By using a less quantity of Aniline a very good ink may be made, but is not so black.

4417. Fine Red Ink Aniline.—Eosine Aniline 180 grains, Water 2 pints. Dissolve the Eosine in the Water. This is a bright, brilliant, fiery Red Ink. It is put up and sold as "Carmin Ink," but is much better and cheaper than it.

4418. Fine Violet Ink.—Aniline—Violet Aniline 120 grains, Alcohol $\frac{1}{2}$ ounce. Dextrin $\frac{1}{2}$ ounce. Hot Water 2 pints. Put the Aniline in a bottle with the Alcohol and add the hot Water in which the Dextrin has been dissolved. Different shades of Violet, ranging from reddish to blue, may be obtained and various shades of ink may be made. The letters B and R signify the proportions of Blue and Red used; the "blue shades" are preferred.

Perfumed Violet Ink was formerly just the thing but has now gone out of fashion. It may be made by adding $\frac{1}{2}$ to 1 drachm of Bulk Perfume to a quart. Other perfumed inks may be made in the same way.

Other Aniline Inks may be prepared in the same manner as the foregoing.

4419. Brown Ink.— $\frac{1}{2}$ ounce Brown Aniline, $\frac{1}{2}$ ounce Dextrin, 1 Quart Hot Water.

4420. Blue Ink.—Water Blue Aniline 1½ drachm, Dextrin ¼ ounce, Hot Water 2 pints.

4421. Green Ink.—Green Aniline 2 drachms, Dextrin ¼ ounce, Hot Water 2 pints.

4422. Maroon Ink.— Mix equal quantities of Red, Blue and Black Inks.

4423. Purple Ink.— This is made like Violet Ink. It is in fact the same as the bluish violet.

4424. Red Aniline Ink.—This may be made from Red Aniline (Fuch-sine) ½ ounce, Alcohol 2 ounces, Dextrin ½ ounce, Hot Water 2 pints. It is not so good as the Eosine Red Ink. Scarlet Aniline Ink may also be made from Scarlet Aniline.

4425. Yellow Ink.—Picric (Carbazotic) Acid 2 drachms, Hot Water 2 pints.

4426. Black Ink, Logwood—School Ink.— Extract of Logwood 3 ounces, Bichromate of Potassium 3 drachms. Hydrochloric Acid 4 fl.drachms, Water 1 gallon. Boil the extract with the Water and Bichromate of Potassium in 1 quart of Water until dissolved, add the Hydrochloric Acid to the balance of the Water, and mix the solutions while warm.

This ink flows nicely and has a good color.

4427. Blue Ink.— Soluble Prussian Blue (Laundry Blue) ½ ounce, Dextrin ¼ ounce. Hot Water 1 pint. Mix and dissolve.

4428. Carmine Ink— True.—No. 40 Carmine ½ ounce, Water of Ammonia 1 ounce. Dextrin ½ ounce, Water 1 pint. Rub the Carmine to a powder, then with the Water of Ammonia, then with the Water gradually added, and dissolve the Dextrin in the solution. Red Ink made from Eosine Aniline is much better.

4429. Japan Ink.— This may be made by boiling Borax 3 drachms, Shellac 1 drachm, Sugar 2 drachms, for one hour, in a pint of Water, then straining the solution and dissolving in it $\frac{1}{2}$ ounce Negrosine or Black Aniline. This does not flow as freely as other inks, but is very black and glossy.

Black Gloss Ink may be made from any good Black Ink by adding to it Gum Arabic and Sugar or a strong solution of Shellac and Borax as above. The very finest Japan Ink may be made by dissolving fine India Ink, by rubbing it with the solution of Shellac as above, made until it is of the proper consistence and color.

Other colored inks may be made gloss inks in the same manner as is here described.

4430. Liquid India Ink.—This is prepared from Stick India Ink by rubbing it down with Water on a plate or other glazed surface until an ink of the proper shade and consistence is obtained. The finest Stick India Ink is prepared from the finest lampblack made into a paste with an infusion of certain native albuminous seeds of China or Japan, and then moulded in sticks. The more common kinds are made up with glue gelatine, etc.

4431. Violet Black Ink— *Violet passing to black.*—Extract of Logwood 3 ounces. Bichromate of Potassium 3 drachms. Alum 2 ounces. Lime Water 1 pint. Water of Ammonia 8 ounces. Commercial Hydrochloric Acid, by weight, 1 pound. Iron filings or old scraps of nails 1 pound. Gum Arabic 3 ounces, Water 1 gallon. Boil the Logwood Extract and the Bichromate of Potassium in one quart of Water until dissolved, add the Alum previously dissolved in 1 quart of hot Water, then add the Lime Water; then the Water of Ammonia; stir thoroughly and gradually add the Hydrochloric Acid with constant stirring, then add the remainder of the Water in which the Gum Arabic is dissolved, and pour the mixture upon the scraps of Iron in an open vessel or crock. Let stand several days and decant.

4432. Writing Fluid.— *Blue-Black.*—Apello Nutgalls, coarsely ground, 1 pound, Sulphate of Iron, copperas, 5 ounces. Gum Arabic 4 ounces. Boric Acid $\frac{1}{2}$ ounce. Extract of Indigo 1 ounce, Picric Acid 1 drachm. Water sufficient to make a gallon. Macerate the Nutgalls in one gallon

of Water for 12 hours, then boil in a kettle for one hour and pour off the decoction, add half a gallon of fresh Water to the drugs, and boil again for half an hour and pour off the liquid, press the residue and mix the product with the previous decoction. This will make about 1 gallon of the liquid; to this, while still warm, add the remaining ingredients and dissolve; add Water if necessary to make 1 gallon, and after standing 12 hours or more strain through a coarse muslin strainer. This is a good writing fluid, similar to those most popular in the market.

Many other similar formulas might be given but this will be sufficient. The color may be varied by using more or less Indigo Extract or Picric Acid.

4433. Copying Ink, Black — *For moist sheets.*— By adding a little Gum Arabic and Sugar to most any of the foregoing inks, fair copying inks may be made, but the best copying ink may be made from the writing fluid last given (4432), by adding to each pint 1 ounce of Sugar and $\frac{1}{2}$ ounce Gum Arabic.

An excellent Copying Ink may also be made from the Violet-Black Ink (4431), by adding to each pint $\frac{3}{4}$ ounce each of Sugar and Gum Arabic. This is similar to the popular *French Copying Ink*.

4434. Colored Copying Inks.— Most of the high-colored Aniline Inks make good copies without the addition of other ingredients. If anything is required, however, $\frac{1}{2}$ ounce of Gum Arabic in a pint is usually sufficient, care must be taken not to make the sheets too wet for copying colored inks, as they are apt to blur.

4435. Copying Inks—*For dry paper.*— Inks are sometimes wanted for "Dry Copying" as it is termed. This depends upon the ink altogether, which may be made by adding to any of the regular black or colored writing Inks, from 3 to 4 fl.ounces of Glycerin in each pint, or by making the same inks and using 3 ounces of Glycerin instead of the same quantity of Water in a pint.

The writing is to be quickly done, without blotting and without shading, and the copy taken at once.

4436. Chromograph or Hektograph Inks.— These inks are designed to be used on the Hektograph or copying pad, by which a hundred or more copies or duplicates may be made from one writing.

Black, Blue, Red and Violet may be made in the same manner, but the Violet is most used, because a much larger number of clear copies may be made from it. The formula is as follows: Violet (or other) Aniline $\frac{1}{2}$ ounce av., Alcohol $\frac{1}{2}$ fl.ounce, White Sugar $\frac{1}{4}$ ounce av., Glycerin 1 ounce av., Water 6 fl.ounces. Mix the Aniline with the Alcohol, add the Glycerin. Dissolve the Sugar in the Water and add. Of Black Aniline or Negrosine, double the quantity is required.

4437. Indelible or Marking Ink—*For marking Linen.*—Nitrate of Silver $3\frac{1}{4}$ ounces, Bicarbonate of Sodium $4\frac{1}{2}$ ounces, Stronger Water of Ammonia $3\frac{1}{2}$ ounces, Tartaric Acid $1\frac{1}{8}$ ounce, Archil 1 ounce. Powdered Acacia $2\frac{1}{2}$ ounces, Soluble Sap Gum (or Dextrin) 1 ounce, Sugar $1\frac{1}{2}$ ounces, Water, sufficient to make 20 fl.ounces. Dissolve the Silver and Soda salts, each separately, in two pints of boiling Water and mix the solutions. Allow the precipitate to settle; decant the fluid, and collect the precipitate on a paper filter, wash it with a pint of Water, and, when drained, transfer it to a mortar, add the Acid and mix. When effervescence has ceased add the Stronger Water of Ammonia, and transfer the whole to a bottle containing the Sugar. Now dissolve the Sap Gum or Dextrin in 4 ounces of Water, and the Archil by the aid of heat. Add the Acacia to the mixture, stir until dissolved, and strain. Add the Ammoniacal solution to this, and make up to 20 ounces with Water.

4438. Indelible Laundry Ink.— Carbonate of Sodium (Sal Soda) 1 ounce av., Nitrate of Silver $\frac{1}{2}$ ounce av., Acacia, powdered, $\frac{3}{4}$ ounce av., Water of Ammonia 1 fl.ounce, Distilled Water 4 fl.ounces. Dissolve the Carbonate of Sodium in the Distilled Water and rub with the powdered Acacia in a mortar. Dissolve the Nitrate of Silver in the Water of Ammonia and mix with the mucilage. Transfer to a flask of double the capacity of the liquid, stop closely, and heat by means of a water-bath to boiling, leaving the stopper loose during the latter part of the operation.

4439. Indelible Ink for Stamp or Stencil.— Negrosine 1 ounce,

Tannin 2 drachms, Glycerin 4 ounces, Vanadinate of Ammonium 10 grains. Mix and dissolve. Other colors may be made from other Anilines.

4440. Another.— Asphaltum 1 ounce, Oil of Turpentine 4 ounces, Black Printing Ink 4 ounces. Chloride of Iron $\frac{1}{2}$ ounce. Mix, dissolve and rub them well together.

4441. Marking Ink for Packages and Boxes.—Extract Logwood 1 pound. Bichromate of Potash $1\frac{1}{4}$ ounce, Hydrochloric Acid $1\frac{1}{2}$ ounce. Dextrin 8 ounces. Water 1 gallon. Boil the extract with the Water, add the Bichromate of Potash and the Acid, and lastly the Dextrin. Allow to stand and decant.

4442. Marking Ink for Cotton Bales, etc.— Logwood Extract 1 pound, Copperas 10 ounces, Bichromate of Potash $1\frac{1}{2}$ ounce, Hydrochloric Acid 2 ounces, Brown Sugar 1 pound, Water 1 gallon. Boil the extract with the Water, add the Bichromate of Potash, then the Iron and Acid, and lastly the Sugar. After standing decant.

4443. Marking Inks in Cakes — *For brush or stencil.* — These are made by rubbing some pigment with Dextrin or Gum Arabic in solution and running the solution into boxes or molds. They are the same as water-color paints, and are to be used by wetting their surface with Water and the brush rubbed over them. Make a thick mucilage of Dextrin or Gum Arabic and stir in the pigment to a stiff paste. For Black, use drop black or ivory black; for Blue, soluble Prussian blue or ultra-marine blue; for Green, chrome green; for Fine Red, rose pink, scarlet lake, or carmine ; for Cheap Red, Venetian red, red lead, etc.

4444. Stamping Inks for Rubber Stamps.— These are prepared from the Anilines by mixing them with Glycerin, $\frac{1}{4}$ ounce of Aniline to 1 ounce of Glycerin. *Black, blue, green, red, and violet* are the anilines usually used for this purpose. The same inks made in this manner may be used for marking pens. Cheaper inks for rubber stamps may be made with drop black, Prussian blue, chrome green, rose pink, etc., but they are not in general favor.

4445. Ink Powders.— These are prepared for quickly making Inks by the addition of hot Water. They are usually put up in packages sufficient to make a pint of ink, which requires from a teaspoonful to a

tablespoonful of the powder. The following are the colors usually desired:

Black, Negrosine in Crystals 1 part, Dextrin 3 parts.

Blue, Water Blue Aniline 1 part, Dextrin 5 parts. This may also be made with soluble Prussian Blue 1 part, Dextrin 2 parts.

Green, Green Aniline 1 part, Dextrin 4 parts.

Red, Eosine Aniline 1 part. Dextrin 1 part.

4446. Ribbon Inks.— Ribbon Inks for type writers, dating stamps, etc., are prepared by saturating thin silk with a solution of some Aniline color in Glycerin or other vehicle. The colors generally used are *Black*, *Dark Green* and *Violet* or *Purple*. The solution may be made by dissolving $\frac{1}{4}$ ounce of the Aniline in a mixture of Alcohol 2 fl.ounces. Water 2 fl.ounces, and Glycerin 4 fl.ounces. The ribbon is saturated with this solution and dried.

4447. Sympathetic Inks.— Sympathetic Inks are those that, when written with, show no writing until something is applied to develop them. They are of no particular use; but the method of making and using is given below.

Black Sympathetic Ink. Write with Tincture of Iron diluted with 10 parts of Water, and develop with a blotter moistened with a solution of Tannin or decoction of Nutgalls, or strong Tea.

This may be reversed by writing with a decoction of Nutgalls and developing with the blotter moistened with Tincture of Iron.

Blue Sympathetic Ink. Write with a solution of Ferrocyanide of Potassium, in 20 parts of hot Water. Develop with a blotter moistened with a solution of Iron.

The operation may also be reversed.

Sympathetic Ink Developed by Heat. Sulphate of Copper and Muriate of Ammonia, equal parts, dissolved in Water.

The writing turns yellow when exposed to heat.

Lemon juice or the mineral acids diluted, solution of Salt, Saltpetre and

many other substances, when the writing is exposed to heat, turn yellow or brown.

A weak solution of Chloride of Nickel, mixed with Chloride of Cobalt, turns a beautiful green when exposed to heat.

A weak solution of Cobalt, in Nitro-muriatic Acid, becomes green when the writing is heated, and when cooled again, entirely disappears.

Copper, dissolved in Muriatic Acid and diluted, becomes yellow when the writing is heated, and disappears when cold.

A solution of Acetate of Cobalt, to which a little Nitrate of Cobalt is added, becomes rose color when the writing is heated, and disappears when cold.

4448. Gold and Silver Inks.— Take equal parts of Gold Leaf (or Silver Leaf) and Honey. Triturate them in a mortar until perfectly fine, then add about 30 parts hot Water, and triturate. Allow to settle and pour off the Water. Triturate again with fresh hot Water. Allow to settle and pour off as before. Repeat the washing several times until the Honey is all washed out, then dry the powdered Gold Leaf and mix it with Water and Gum Arabic. It must be shaken occasionally while writing.

Very fine Bronze may be made into Ink by adding Water and Gum Arabic and shaking occasionally while writing.

4449. White Ink.— For writing on black cards and some other purposes, White Ink is sometimes desired. It may be made by rubbing Flake White 6 drachms with Acacia, Mucilage 3 drachms, and enough Water to make 1 fl.ounce. It must be shaken up before using.

4450. Horticultural Inks—*For writing on Metal.*—This ink is prepared for writing on metal tags for labeling plants, trees, etc. Blue Vitriol 1 ounce, Salamoniac $\frac{1}{2}$ ounce, both in powder, dissolve in $\frac{1}{2}$ pint of strong vinegar. This may be used on Zinc or Iron strips or steel; a quill should be used for writing.

4451. Liquid Slating for Blackboards.—Shellac 8 ounces, Lampblack $1\frac{1}{2}$ ounce. Ultramarine Blue $1\frac{1}{2}$ ounces, powdered

Rottonstone 4 ounces, powdered Pumice Stone 6 ounces, Alcohol 4 pints. Dissolve the Shellac in the Alcohol, add the other ingredients and mix them well together, apply quickly with a flat varnish brush.

Ink Erasing Fluid.

Fluids for Erasing Ink are somewhat in demand and may readily be made by druggists.

4452. Ink Eraser—*One Preparation.*—Solution of Chlorinated Soda (Labarraque's Solution) 2 parts, Water 1 part. Mix them. This is to be applied, and as soon as the ink disappears the moisture absorbed with clean blotting paper.

Ink Eraser. Two Preparations. No. 1. Hydrochloric Acid 1 ounce, Water 1 gallon. Mix them.

No. 2. Solution of Chlorinated Soda 2 parts. Water 1 part. Mix them. To erase the ink apply No. 1 with the end of the penholder, and then directly apply No. 2, and when the ink has disappeared absorb the moisture with clean blotting paper.

Bluings.

These are made both dry and liquid. The dry Bluings aside from indigo, consist of soluble Prussian Blue, and the liquids are solutions of the same in Water. They may be prepared as follows :

4453. Dry Bluing.—Prussian Blue 4 parts, Oxalic Acid 1 part. Powder the Oxalic Acid and mix them well together. If soluble Prussian Blue is used no acid is necessary. This is put up in various ways for the market.

4454. Liquid Bluing.— Soluble Prussian Blue 1 ounce. Oxalic Acid $\frac{1}{4}$ ounce, Boiling Water i quart. Dissolve the salts in the water.

Blackings and Shoe Dressings, etc.

A great variety of Blackings and Shoe Dressings are found in the market good, poor and bad. We have space only to give two or three good formulas.

4455. Shoe Blacking—*French Blacking*.—The paste Shoe Blackings of the market are all made in the same general way, by combining some elastic substances with oils, driers, black pigments, etc. The difference in them consists mainly in the quality of the materials used and the skill with which they are compounded. The following will make a good blacking. Dissolve India Rubber, cut fine, 2 ounces, in Cotton Seed Oil 1 pound, by the aid of heat, and add to the solution Ivory Black, in very fine powder, 7 pounds. Molasses 5 pounds, Gum Arabic, in powder, 2 ounces, Strong Vinegar 22 fl.ounces. Mix them thoroughly and grind the mixture through a paint mill, then add the Sulphuric Acid $1\frac{1}{3}$ pound, and stir daily for a week or more, or heat gently and incorporate the acid while warm. The use of Sulphuric acid in this blacking is not objectionable as it is neutralized by the lime salts contained in the Ivory or bone black used.

4456. Liquid Paste Blacking.—A liquid Blacking may be made by melting the above and mixing it with good vinegar, say three gallons for the above quantity. This is not like the popular Shoe Dressings on the market.

4457. Shoe Dressing.—Shellac, dark colored, $1\frac{1}{2}$ pound av., Sal Soda, crystals, $6\frac{1}{2}$ ounces av., Gum Arabic 4 ounces av., Negrosine (Black Aniline) $\frac{1}{4}$ ounce av., Water sufficient to make 1 gallon. Put the Sal Soda in half a gallon of Water and heat to boiling, add the Shellac to the boiling solution and continue the heat for 10 or 15 minutes until all the Shellac has dissolved that will (there will be a small portion undissolved), then add the Negrosine and a pint of Water in which the Gum Arabic has previously been dissolved. When cool, strain and add enough Water to make i gallon.

This is similar to most of the "patent" Shoe Dressings on the market. It may be made to dry more quickly by adding a little Alcohol.

4458. Bronze Shoe Dressing.— Add to the foregoing $\frac{1}{2}$ to $\frac{3}{4}$ ounce of Red Aniline in a gallon, and dissolve by gentle heat. Some other colored anilines will also make a bronze finish.

4459. Patent Leather Dressing.— This is designed to give a finish like patent leather, and is waterproof. It may also be used as a *Belt*

Polish, and for all similar purposes. India Rubber $\frac{1}{4}$ ounce, Shellac 4 ounces. Camphor $\frac{1}{2}$ ounce, Negrosine $\frac{1}{2}$ ounce, Wood Alcohol 12 fl.ounces. Dissolve the rubber by heat of water-bath in the Wood Alcohol, then add the other ingredients and dissolve.

4460. Bronzing Liquid.— Red Aniline 1 ounce, Violet or Purple Aniline $\frac{1}{2}$ ounce. Alcohol 10 ounces, Benzoic Acid $\frac{1}{2}$ ounce. Dissolve the Anilines in the Alcohol by aid of water-bath, then add the Benzoic Acid and boil 5 or 10 minutes, or until the greenish color of the preparation is changed to a light colored bronze. Apply with a brush or sponge.

This may be added to the shoe dressing.

4461. Government Harness Dressing.—Neatsfoot Oil 1 gallon, Bay berry Tallow 2 pounds, Beeswax 2 pounds, Beef Tallow 2 pounds, Castor Oil $\frac{1}{2}$ gallon, Lampblack 1 ounce. Melt together the Wax and Tallow, and add the Oils and Lampblack. When thoroughly mixed, strain through muslin.

4462. Waterproof Blacking. — For greasing boots, making them Waterproof, etc. Neatsfoot Oil 1 gallon. Beeswax 2 pounds. Shellac $\frac{1}{2}$ pound, Beef Tallow 8 pounds, Castor Oil 1 quart, Lampblack $\frac{1}{4}$ pound. Melt and mix them as the preceding.

4463. Harness Polish.—Glue 4 ounces, Vinegar $1\frac{1}{2}$ pint, Gum Arabic 2 ounces, Black Logwood Ink $\frac{1}{2}$ pint. Dissolve the Glue in the Vinegar by heat of water-bath, dissolve the Gum Arabic in the Ink. Mix the solutions while warm. This makes a jelly which should be dissolved by gentle heat when wanted to use. By adding to this $\frac{1}{2}$ ounce Nitric Acid it makes a liquid which is always ready for use.

The Shoe Dressing (4457) may also be used for Harness Polish.

4464. Hectograph Copying Pad.— Hectograph Copying Pads should be made somewhat softer for winter use than for summer, which can be done by adding a little larger proportion of Glycerin. Good Glue 4 ounces av., Glycerin 16 ounces av., Water 8 fl.ounces. Break up the Glue

and soak in the Water for a few hours, then heat by water-bath until melted, and add the Glycerin and heat together for some time to evaporate part of the Water, then strain into a shallow square tin to make the desired shape, and skim with a card to free from bubbles. This is improved by adding 1 ounce carbonate of barium to the liquid while warm.

The writing to be copied is done with Hectograph Ink (4436) and transferred to the pad, sheets of paper are then put on and copies made.

4465. Carbon Duplicating Paper.— Lard 10 ounces. Beeswax 2 ounces, Canada Balsam 1½ drachm, Lampblack sufficient. Melt the Lard, Wax and Balsam together and add enough Lampblack to make of the desired color. This is applied to firm thin paper with a flannel dauber and wiped off with clean rags.

POLISHING PREPARATIONS.

Among the preparations put up and sold by druggists and others connected with the business are a great variety of Polishes of different kinds, and for various uses. The following are the formulas for the more important ones :

Furniture Polish.

For restoring the color or luster of furniture, preparations are designed to be applied with a cloth, and rubbed until dry.

4466. Furniture Cream.—Common White Soap 150 grains, Sal Tartar 60 grains, White Wax 2½ ounces, Water 5 fl.ounces, Oil of Turpentine 10 fl.ounces. Melt the Soap in the Water by the heat of water-bath, add the Sal Tartar and then the White Wax. When the Wax is melted, remove from the fire and slowly add, with constant stirring, the Oil of Turpentine, mixing them thoroughly while cooling. This is to be applied with a cloth and rubbed down with Canton flannel.

4467. Furniture Polish.— Linseed Oil 6 fl.ounces, Alcohol 3 fl ounces, Shellac 1 ounce av., "Butter" of Antimony 1½ fl.ounces, Hydrochloric Acid ½ ounce, Oil of Turpentine 5 fl.ounces. Dissolve the Shellac in the

Alcohol, and mix with the Linseed Oil and Turpentine, then, having mixed the Hydrochloric Acid and "Butter" of Antimony, add them to the preparation and mix thoroughly. Apply as the preceding.

Glass Polish.

For polishing glass, mirrors and bright ware, as silver-plated ware, etc., the following are recommended :

4468. Glass and Silver Polish.— Prepared Chalk 3 ounces av.. Alcohol, Water of Ammonia and Water, each, 3 fl.ounces. Mix them by rubbing the Chalk to a smooth paste with the liquids.

4469. Glass Polish.—Calcined Magnesia mixed with Gasoline into a liquid of the consistence of cream is excellent for polishing plate glass, mirrors, etc. Calcined Magnesia made up into balls with powdered soap is also a good preparation for this purpose.

Silver Polishes.

The following are recommended for polishing silver and nickel-plated ware, etc. They make fine polishes that will not scratch.

4470. Silver Polishing Liquid.— Prepared Chalk 1 pound, Crocus Martis 4 ounces. Mix well together and to make up, put 1 ounce of the mixture in a 4 ounce bottle, add 1 ounce of Water of Ammonia and Water enough to fill the bottle. Shake before using and apply with a cloth, then rub off when dry with another cloth.

4471. Silver Polish Powder.—Rouge or fine Crocus Martis 1 ounce, Fossil Silica 4 ounces. Prepared Chalk 1 pound. Rub the Fossil Silica to a fine powder and mix intimately with the Chalk. This will not scratch the finest surface. A cheaper powder may be made with whiting and rotten stone, or by using Prepared Chalk alone.

4472. Silvering Solution or Polish.—Cyanide of Potassium 2 ounces, Nitrate of Silver 1 ounce, or a sufficient quantity, Distilled Water 12 ounces, Precipitated Chalk 2 ounces. Dissolve the Cyanide of Potassium in the Water and add to it a concentrated solution of Nitrate of Silver as long as the precipitate first formed is redissolved, then add the chalk, and mix them thoroughly. This serves as a plating and polish for silver.

4473. Gilding Solution.— This is made in the same manner as the foregoing, only Chloride of Gold and Sodium is used instead of Nitrate of Silver.

Polishes for Brass and Metal.

The foregoing polishes may also be used on brass and metals, but do not "take-hold " like the following :

4474. Polishing or Pultz Pomade.—Subcarbonate of Iron 6 ounces, Fossil Silica 2 ounces. Petrolatum 1 pound, Cotton Seed Oil 2 ounces. Oil of Mirbane, or Essential Oil of Almonds 40 minims. Reduce the Fossil Silica to a very fine powder and mix it with the Iron, melt the Petrolatum, add the Cotton Seed Oil and stir in the powders, run through a sieve, and while cooling add the flavoring Oil and stir until ready to set, then run into boxes. Instead of Fossil Silica, Prepared Chalk or Whiting may be used. This is applied with a rag and well rubbed, then wiped off with a clean cloth and the surface polished with a little whiting if necessary.

4475. Polishing Liquid—*For Brass, Copper, etc.*—Oxalic Acid 1 ounce, Crocus Martis 2 ounces, Whiting 4 ounces, Water 1 pint. Mix. Shake before using, apply with rubbing and polish dry with Whiting. The same substances may also be used dry, or applied with a little Oil with rubbing and rubbed dry with whiting.

4476. For Polishing Tin.— Mix Oxide of Tin 1 part with Whiting 3 parts, and polish by rubbing with the powder.

4477. Tripoli.— This is a gritty, polishing substance made by calcining flint and reducing to a powder; ordinary *Water Lime* is used for the same purpose. They are not intended for fine, highly-polished surfaces, but for brightening and scouring.

4478. Stove Blacking or Polish.— Stove Blacking as it is known in the market is simply Blacklead, Amorphus Graphite or Plumbago, variously prepared and moulded, pressed, or cut into shape. It is obtained from mines, and consists of Carbon mixed with Iron, the mixture often being called Carbide or Carburet of Iron. It is finely

ground, made into a stiff paste, moulded into bricks or other convenient form and dried. It is also furnished in the form of paste run into boxes.

Laundry Polish.

For giving a gloss to linen, preparations are put up in the form of liquids, also in cakes of wax. They are mixed with the starch when made, and the polish is secured by ironing with a rounding polishing iron.

4479. Laundry Wax or Polish — *Starch Gloss.*— White Wax, Paraffin, Spermaceti, Stearin, powdered Gum Arabic, of each equal parts, melt the waxes, and while cooling stir in the powdered Gum Arabic and run in molds. Two drachms of this wax boiled with a pint of starch and thoroughly mixed with it is the proper proportion for polishing, half the quantity suffices for ordinary finishing.

Paraffin alone is used for the same purpose.

4480. Liquid Starch Glace.— White Wax 1 ounce, Spermaceti 1 ounce, Gum Arabic 1 ounce, Borax 1 ounce, Water 10 ounces, Oil of Cloves 10 drops. Dissolve the Borax and Gum Arabic in the Water, melt the Wax and Spermaceti and while liquid rub with the solution of Borax, etc., to make an emulsion, mixing them thoroughly. A tablespoonful or two of this liquid in a pint of starch gives a fine polish. It may also be applied after starching by rubbing over the starch with a cloth, and then polishing with the iron.

PRESERVATIVES.

For preserving fruit, fruit juices, foods, etc., several preparations are put up and sold in various forms. The following are representations.

4481. Cider Keeper.—For keeping Cider and other fruit juices. Salicylic Acid has been proven to be the best. It may be put up in packages of $\frac{3}{4}$ ounce each, which is sufficient to keep a barrel (45 gallons) of Cider. It is to be added when the Cider is "just right," and should be mixed with a gallon of Cider before adding to the remainder, and then thoroughly mixed with the whole.

For keeping wines, etc., it should not be added until after fermentation has ceased.

4482. Cider Preservative.—Sulphite of Lime is used for this purpose with good effect. Four ounces in a barrel of Cider is the required quantity, mixed in the same manner as above described.

4483. Fruit Juice Preservative.—To preserve Fruit Juices in their natural condition without the aid of heat, add to each gallon of the freshly pressed juice 20 fl.ounces of Cologne Spirit in which 40 grains of Salicylic Acid have been dissolved, and set away, tightly stopped, in a cool place. Treated in this manner Fruit Juices will not spoil, ferment or mould.

4484. Fruit Preserving Liquids.— A saturated solution of Hyposulphite of Sodium may be used for preserving fruit, in the proportion of a tablespoonful to a quart of fruit. It imparts a bitterish, saline taste.

A solution of Salicylic Acid 1 ounce, in Alcohol 1 pint, may be used for the same purpose, a tablespoonful being used with a quart of fruit and the ordinary quantity of sugar.

4485. Egg Preservatives.—Eggs may be preserved by dipping them in melted paraffin or by rubbing them over with Petrolatum, with which a little Salicylic Acid, say $\frac{1}{2}$ per cent., has been mixed. They should be rubbed over twice with this.

They may also be preserved by soaking in the saturated solution of Hyposulphite of Sodium as above, or in a strong solution of Salicylic Acid in Alcohol.

4486. For Preserving Specimens.—For specimens to be preserved in anatomical jars, Diluted Alcohol is the best preservative. The substance should be suspended from the hook or by a cord, and covered with Diluted Alcohol.

4487. For Preserving Organic Substances.— Wickersheim's Process.

FOR INJECTING. FOR STEEPING.

Arsenious Acid,	16 grammes.	12 grammes.
Sodium Chloride,	80 grammes.	60 grammes.
Potassium Sulphate,	200 grammes.	150 grammes.
Potassium Nitrate,	25 grammes.	18 grammes.
Potassium Carbonate,	20 grammes.	15 grammes.
Water,	10 liters.	10 liters.
Glycerin,	4 liters.	4 liters.
Methylic Alcohol,	$\frac{3}{4}$ liter.	$\frac{1}{2}$ liter.

The solid substances are boiled in the Glycerin and Water, and the Alcohol added when cool. These liquids are used for preserving dead bodies, embalming, etc.

WINES AND SPIRITOUS LIQUORS.

Wines and Spiritous Liquors form quite a large portion of the articles used and sold by druggists. In this article it is impossible to give anything but a brief outline of their manufacture, but our work seems incomplete without such reference. The following processes, formulae, etc., are therefore given. They have also been referred to in the articles: Alcohol, Wines, and Spirits, Part III.

Wines.

Natural and artificial Wines are found in the market in great variety; both kinds will be considered in this article.

4488. Pure Wines are, or should be, made by the fermentation of Grape juice, by which their saccharine matter is converted into Alcohol or Spirit, which, if in sufficient quantity, prevents the Wine from deliterious change; but if insufficient, is still further oxidized, being converted first into an aldehyd and then into acetic acid or vinegar. With light grape juices it is often necessary to add cane-sugar previous to or during fermentation, that a larger proportion of Alcohol may be produced by its decomposition, or to add a small percentage of Cologne Spirit to the Wine after the fermentation is completed, and before the

acetic change has begun, and should be three years old before they are offered for use.

In making Wines the cask or package in which they are made should be kept filled, by adding a little from time to time as the pumice and foam works off through the open bung at the top. When the fermentation is completed, they should be tightly bunged and put aside in a cool place, and after standing a few months "racked off " into another clean cask, rejecting the sediment at the bottom.

4489. White Wines.— These are made from many varieties of grapes by pressing out their juice, fermenting and treating as already described. These Wines are known by various names derived from the variety of grapes from which they are obtained, the locality where they are produced, etc. In medicine, imported Sherry is preferred, as it contains a larger percentage of Alcohol than other varieties. Our own native Wines are also much used, California Wines, Angelica Sherry and Muscatel, being of good body and flavor, and Catawba Wine made in the East, are much esteemed.

4490. Red Wines.— Most of the Red Wines are made by fermenting the juice of red grapes in presence of their skins and pulp. Unlike the White Wines the juice is not pressed out until the fermentation has proceeded for some time. This process secures the red color and the astringent qualities which the Red Wines usually possess. The favorite medicinal Red Wine is the Oporto or Port; but similar Wines made in this country from various varieties of red grapes are much used.

4491. Improvement of Wines.—It has been found by experiment that the quality of Wines may be improved and the quantity much increased in various ways.

Chaptal's process consists in the addition of sugar to the expressed juice before fermentation, which being decomposed increases the Alcoholic strength. Marble dust is then added to neutralize the excess of acid.

Dr. Gall's method is to prepare a normal must or juice mixed with an equal quantity of Water, containing 0.5 to 0.6 per cent. of free acid and 22 to 24 per cent. of sugar, which is treated in the same manner as true grape juice.

Petiot's method for improving and increasing the quantity of Wine, consists of adding to the expressed juice an equal volume of Water containing the same proportion of sugar as is contained in the natural juice. Then to the pulp of the grapes adding a like quantity of Water sweetened in the same proportion and allowing to ferment for three days. Then pouring off and again adding the same quantity of sweetened Water to the same pulp and allowing to ferment as before, and finally mixing the liquids all together, thus making four times as much Wine as there was grape juice to start with, and, it is claimed, equal in all respects to pure grape juice Wine. Wines made in this manner have the true bouquet of pure Wines, are not subject to disease like pure Wines, and mature in a few months instead of two or three years as is required for natural wines.

Glycerin and Salicylic Acid are often added to Wines to preserve them. To preserve light Wines (deficient in Alcohol), they are heated to 124° F. and put up at once in bottles or casks, and closely sealed; this process was introduced by Pasteur.

Artificial Wines.

Besides the process of improving and diluting Wines above described, a great deal of Wine entirely fictitious is found in the market. A few formulas only can be given, and they are given as suggestions rather than formulas, for each kind of Wine requires some special treatment peculiar to itself.

4492. Artificial White Wine.— As a base for any of the Artificial White Wines the following may be used: Grape Sugar 25 pounds, Tartaric Acid $\frac{1}{2}$ pound, Hot Water 6 gallons, Cold Water 19 gallons. Grape pulp, fresh, 50 pounds (or common raisins 30 pounds). Dissolve the Sugar and Acid in the hot Water and add the cold Water, add this to the Grape pulp or to the raisins, chopped fine, stir well together and allow to ferment 4 or 5 days, stirring occasionally, then press and transfer the liquid to a barrel in the cellar and treat in the same manner as other Wine. If necessary after fermentation Cologne Spirit may be added to make up the alcoholic percentage required.

The Grape pulp or raisins used will give the desired flavor to the Wine, according to the kind used, but if a more distinctive flavor is desired, the artificial flavors or oils made for the purpose from Ethers may be used

as directed. In this manner Angelica, Muscatel, Catawba, Rhine Wine, Sherry and other varieties may be made. Champagne is artificially prepared from white wine by charging it with carbonic acid gas, and bottling.

4493. Artificial Red Wines.—As a general base for Artificial Red Wine the foregoing formula may be used with the addition of astringents, coloring substances and flavoring. The substances used for coloring are juices of fruits, as raspberry, cherry, elderberry, pokeberry, whortleberry, etc., or decoctions of Cochineal, Brazil wood, logwood, etc.; the former are greatly to be preferred; Prunes are also frequently added. The flavorings are made from combinations of ethers, etc. The astringent substances added are, Catechu, Kino, Oak-bark, Tincture of Galls, etc., about 1 ounce of Catechu or Kino being used for 10 gallons of Port Wine and two or three times the quantity for Clarets. Much less sugar also is required in the Bordeaux or Claret Wines.

4494. Wine Essences or Extracts.—The true flavor of Wines can only be obtained in a concentrated form by distilling the Wines or the lees from which the juices are pressed, and separating their flavoring or oils by various treatment. These oils or essences or flavors, are ethers, which result from the oxidation of Alcohol radicals, chiefly of the Amyl and Ethyl series, and they may be artificially produced by combining various Ethers, obtained by the oxidation of fousel oil, potato oil, etc. Their production and combination, however, is still experimental and uncertain, and it cannot be said that the true flavor of any particular kind of Wine has been produced artificially, although close imitations have been arrived at, and manufacturers claim to furnish Wine essences or flavors of various kinds. They are at best, however, but poor imitations, and their formulas had better be deferred until they have been more definitely determined than at present.

Spirits or Spiritous Liquors.

Spiritous Liquors are prepared from saccharine or starchy liquids by fermentation and subsequent distillation of the more volatile portions which result from the decomposition of the sugar or its change into alcohol. Fruit and other juices, grains of various kinds, or any substances which contain sugar or starch in abundance, may be used for making spirits. In this country *Brandy*, distilled from Wines or fermented grapes, apples, etc., *Rum*, distilled from fermented molasses,

or sugar cane juice, and *Whisky* and *Gin*, distilled from fermented grains or other substances containing starch, are the chief liquors used; but in other countries other liquors containing alcohol are made from various substances, as rice, the juice of cactus, potatoes, etc.

The general process of making Spiritous Liquors is briefly described under Alcohol, Part III. For the special processes and treatment of various substances for the production of Spirits or Alcohol our readers are referred to standard works upon that subject. The following brief suggestions may be of interest:

4495. Brandy.— Brandy is distilled from fermented grape juice or the fermented pulp and juice of grapes; the best varieties being known as Cognac, obtained from the South of Europe; good brandy is also made in this country. A brandy is also obtained from cider, which is familiarly known as "Apple Jack."

Brandy contains from 40 to 60 per cent. of Alcohol, the varieties generally sold being about 50 per cent. or 100° proof.

4496. Artificial Brandy.— The high price of Brandy makes its artificial production quite desirable, and fictitious brandy is much more frequently found in the market than genuine. The simplest way to make Artificial Brandy is to dilute Cologne Spirit 190° proof, with an equal volume of pure Water, adding to each gallon about 5 grains of Tannic Acid, 3 drops Oil of Cognac, 3 drops of Ceanthiic Ether, and sufficient burnt sugar coloring to give it the desired color. This may be improved by adding 1 fl.drachm Extract of Orris and 5 drops Essence of Almond to a gallon. One ounce of Syrup is sometimes added.

This may also be prepared from the Brandy Essence and proof Spirit, or diluted Cologne Spirit, as directed below.

4497. Brandy Essence.—A flavoring for Brandy may be prepared ready for use as follows: Oil of Cognac, fine, 1 ounce, Ceanthiic Ether, commercial, 1 ounce, Oil of Bitter Almond 2 fl.drachms, Orris Root, in powder, 16 ounces. Tannin 2 ounces, Cologne Spirit, sufficient to make 1 gallon. Macerate the Orris Root in the Spirit for one week and percolate until 1 gallon is obtained; to this add the Tannin, dissolve and filter, and then dissolve the Oils and Ether in the filtrate. Half a pint of this Essence is sufficient for 40 gallons of Brandy (1 ounce for 5

gallons), added to colored proof Spirit. The true Oil of Cognac is very expensive, but upon this depends the fine flavor of the brandy.

4498. Rum.— Rum is distilled from fermented molasses or from the fermented juice of the sugar-cane. New England Rum is distilled from molasses, but *St. Croix* or *Santa Cruz* and *Jamaica Rum*, made in the West Indies, are distilled from the juice and fragments of sugar-cane and the refuse of sugar factories. The juice and slices of pine apples and other tropical fruit are usually added to the distilled rum or mixed with the fermented liquid before distillation. Jamaica Rum is the most esteemed of any,

As found on the market the different kinds of Rum are about 100° proof, but Jamaica Rum as imported contains from 60 to 75 per cent. of Alcohol. Much of the Rum found on the market is artificially prepared after the manner described below.

4499. Artificial N. E. Rum.—Cologne Spirit 190° proof, pure Water, each, 10 gallons, Butyric Ether 2 ounces. Acetic Ether 2 fl.drachms, Extract Orris 2 fl.drachms, Syrup 1 quart. Mix them.

4500. Artificial Jamaica Rum.—To imitate Jamaica Rum best, a portion (from $\frac{1}{2}$ to $\frac{1}{3}$) of imported Jamaica Rum should be used, diluted to proof with Cologne Spirit and Water, and flavored with a little Essence of Jamaica Rum, about 1 ounce to 10 gallons of the finished product. A very good imitation may, however, be made as follows: Cologne Spirit 190° proof 10 gallons, Water 10 gallons. Essence Jamaica Rum 3 ounces, Tincture Catechu 2 ounces, Brown coloring (caramel), sufficient. Mix them.

4501. Artificial Santa Cruz Rum.— This may best be made by mixing 1 gallon of Genuine Santa Cruz Rum with 7 gallons New England Rum, and adding 1 ounce of Jamaica Rum Essence.

4502. Imitation Arrack.—To 12 gallons of New England or Santa Cruz Rum add 1 ounce of Benzoin and 1 ounce of Tolu, and 1 sliced pine apple, macerate for two weeks and filter through a little Magnesium Carb. The Benzoin and Tolu are best dissolved as much as possible in a pint of Cologne Spirit before adding.

4503. Jamaica Rum Essence.—Butyric Ether 15 fl.ounces. Acetic Ether 3 fl.ounces, Tincture of Vanilla, Alcoholic, 2 fl.ounces. Extract of Orris 2 fl.ounces, Cologne Spirit 3 ounces. Mix them.

4504. Whisky.— This is by far the most familiar and most used spiritous liquor of this country. Our distillers are famed for the production of fine brands of Whisky, which, like the wines of certain houses of Europe, have their reputation at home and abroad. The production of fine whiskies is a trade secret with their manufacturers, all being similar in composition and alcoholic strength but differing sufficiently in flavor to make them distinctive and different to experts. Whiskies are made by combining various grains with rye or barley malt, etc., in varying proportions, grinding, fermenting, treating in various ways, distilling, etc.; but the limits of this article does not admit even of a description of the processes employed only in a general way. In the manufacture of fine whiskies from 8 to 10 quarts only are distilled from each bushel of grain used; but in making the cheaper grades of whisky, by improved process, from 13 to 20 quarts are distilled from the mash for each bushel of grain used. Whisky improves by age and is not suitable for use until it is at least 2 years old. Various treatments for "Aging" Whisky by agitation and otherwise are employed.

4505. Artificial Whisky.— Owing to the moderately low price of good Whisky as compared with Spirits but a small proportion of the amount sold is made up from Cologne or Neutral Spirit direct; but by mixing different grades of Whisky, or by mixing good high flavored Whisky with proof Spirit, a great variety of cheap and moderate-priced whiskies are produced. Nor is this alone the reason for mixing whiskies, for by combining some of the best grades with each other "blends" are produced which surpass in flavor those of which they are composed when taken alone. A variety of flavoring essences or oils are also made for flavoring whiskies, but they are little used except by rectifiers.

These oils or essences are combinations of Amyl and Ethyl Ethers as before described and have no standard of composition, different manufacturers furnishing entirely different flavors under the same name.

A general formula for Whisky made from spirits is as follows: Cologne Spirit, 190° proof, 20 gallons, pure Water 20 gallons, good, high flavored Bourbon or Rye Whisky 10 gallons. Mix and color with burnt

sugar (Caramel). For Wheat Whisky leave uncolored. This makes a good cheap Whisky without any objectionable features. If too expensive for the use desired, on account of the addition of the good Whisky, 8 ounces of any of the following essences may be used instead. The proof may also be reduced by adding more Water, and by the addition of 2 ounces of the beading oil it will still "hold its bead."

4506. Bourbon Whisky Essence.—Rectified Fousel Oil 1 ounce, Acetate of Amyl 4 ounces, Pelargonic Ether 2 ounces, Extract of Orris 4 ounces, Oil of Wintergreen 1 ounce. Acetic Ether 1 ounce, Cologne Spirit 12 fl.ounces. Mix them. Use 1 ounce for flavoring 5 gallons.

4507. Rye Whisky Essence.—Butyric Ether 1 ounce, Rectified Fousel Oil 1 ounce, Butyrate of Amyl 1 ounce, Acetic Ether 2 ounces, Extract of Orris 4 ounces. Extract of Vanilla 1 ounce. Extract of Musk Root 4 ounces, Cologne Spirit 12 fl.ounces. Mix them. Use 1 ounce for flavoring 5 gallons.

4508. Scotch and Irish Whisky.—These have a smoky flavor, which may be imitated by adding Soot, or by adding a drachm of Creasote dissolved in an ounce of Acetic Acid to a barrel of ordinary Whisky. Many other varieties of Whisky are known; as *Malt Whisky*, *Monongahela Whisky*, and an infinite number of private brands of manufacturers which have become popular.

4509. Bead or Beading Oil.— For low proof liquors an artificial bead is required. It is made by rubbing 1 ounce of the finest Olive or Almond Oil with 1 ounce of Sulphuric Acid in a mortar, gradually added, and when entirely combined adding sufficient Cologne Spirit to dissolve it, about 20 ounces being necessary. Two or three ounces of this is used in a barrel.

This Beading Oil is used for all kinds of spiritous liquors. The same effect may be secured by filtering through starch or wheat bran.

4510. Rye and Rock.—Good Rye Whisky 6 pints, Water 1 pint. Rock Candy 2 pounds. Dissolve the Rock Candy by heating with the Water; then add the Whisky and filter. The Whisky and Water may also be mixed and the Rock Candy dissolved in the mixture cold, but it is much more expeditious to dissolve the Rock Candy first in the Water by heat.

4511. Tolu, Rock and Rye.—Tincture Tolu 2 ounces, Carbonate of Magnesium $\frac{1}{2}$ ounce. Good Rye Whisky 6 pints, Water 1 pint, Rock Candy 2 pounds. Rub the Magnesium to a fine powder and add the Tincture Tolu; triturate and gradually add 8 ounces of the Whisky, rubbing it thoroughly together. Dissolve the Rock Candy by heating with the Water and add the Whisky, then mix all together, allow it to stand 24 hours, and filter clear. This is a much used and very good stimulating cough preparation.

Dose, tablespoonful or more, as required

4512. Tolu, Rock, Rye and Redroot.—Fluid Extract Bloodroot $\frac{1}{4}$ ounce, Tolu, Rock and Rye 1 gallon. Mix and after standing 48 hours filter. The addition of the Bloodroot to the Tolu, Rock and Rye makes a fine preparation for bronchial difficulties, coughs, colds, etc.

4513. Gin.—Aside from Whisky, Gin is the most used of any of the Alcoholic liquors. The spirit from which genuine Gin is made is distilled from grain and malt the same as Whisky, and after being properly purified by rectification it is redistilled with Juniper berries and some aromatics, or the aromatics are added afterward. Like Whisky, the old distillers of Gin have their trade secrets and make favorite brands which have become well known. Good Gin is made in this country, but Holland has the reputation of producing the best in the world. In distilling Gin, from 5 to 10 pounds of Juniper berries are used for 100 gallons, and the aromatics are proportioned according to the variety desired to be made.

As Gin is a compound liquor, it cannot be classed as artificially made like other liquors, the only difference in the distilled and the prepared Gins being the use of Juniper berries and aromatic substances, instead of the oils or essences of the same.

Instead of the distilled Gin as above described the following may be used, and will give very good results :

4514. Holland Gin.—Cologne Spirit 190° proof 20 gallons, pure Water 20 gallons. Oil Juniper berries $2\frac{1}{4}$ fl.ounces, Oil of Lemon 20 drops. Oil of Coriander 15 drops. Oil Bitter Almonds 5 drops. Oil Cassia 5 drops, Oil Fennel 5 drops. Syrup of Acacia 1 gallon. Dissolve the Oils in a gallon of the Spirits, and having mixed the remainder of the Spirit with the

Water, add the solution to it, then add the Syrup Acacia and mix them well together by agitation. After standing for some time draw off and filter clear through the filtering mixture (see below).

4515. London Cordial Gin.— Cologne Spirit 20 gallons, Pure Water 20 gallons. Oil Juniper Berries 2¹/₄ ounces, Oil Calamus 20 drops, Oil Angelica 10 drops. Oil Coriander 5 drops. Oil Cassia 5 drops. Oil Bitter Almond 5 drops, Syrup Gum Acacia 2 gallons. Dissolve the oils in 1 gallon of the spirits, and having mixed the remainder with the water, add the solution and then the Syrup of Gum Arabic, mix them well together and after standing filter clear.

4516. Schiedam Schnapps.— Make a tincture or extract by percolating Gentian, Bitter Orange peel. Agaric, Galangal, Centaury, each, 4 ounces, all in coarse powder, with diluted Cologne Spirit sufficient to make 1 gallon. Add 1 ounce of this extract to a gallon of the Holland or London Cordial Gin as above.

4517. Old Tom Gin.—Oil Coriander 1 drachm. Oil Cedar 1 drachm, Oil of Fennel 1/2 drachm, Oil Bitter Almonds 15 drops. Oil Angelica 30 drops, Oil Juniper Berries 1/2 ounce, Syrup Acacia 1 gallon, Cologne Spirit, 190° proof, 20 gallons, Water 20 gallons, Orange Flower Water 1 pint. Dissolve the oils in 1 gallon of the spirit and mix with the remainder of the articles as directed for London Cordial Gin. Other varieties may be made in the same general manner.

4518. To Filter Gin and other Liquors.—When Essential Oils are used in compounding liquors they turn milky and must be filtered. For this purpose a mixture of Burnt Alum 4 ounces, White Pipe Clay 6 ounces, Carbonate of Magnesium 4 ounces, Carbonate of Potassium 1/2 ounce, is put in a woolen bag or cloth, and the liquor filtered through the mixture until clear.

By adding a quart of Lime Water to a barrel of Gin the same result may often be accomplished.

4519. To clarify Gin or Cordials—*Spirit Finings* for this purpose are used, and may be made by first adding 2 ounces of powdered Alum dissolved in a quart of warm Water to a barrel, and after thoroughly stirring, adding 1 ounce of Sal Soda dissolved in 1 pint of Water.

By adding a quart of skimmed milk and 2 ounces of Gelatin dissolved in a quart of Water to a barrel of Gin or other liquor and allowing to settle, it is usually made clear, and the blackness which is liable to occur in Gin is removed; 3 or 4 eggs beat to a froth, mixed with a gallon of liquor and added to a barrel, will usually make it clear after standing.

4520. Liquors and Cordials.— A great variety of Cordials, sweetened and flavored Liquors, bitters, ratafias, etc., are made and used but are not much in demand in this country. Almost every aromatic known is introduced in the manufacture of these cordials, etc. A few of them have been mentioned elsewhere (Part III), but the demand for them is so small, and the space so limited, that no more can be here introduced.

VARNISHES.

For coating and finishing the surfaces of wood, metals, glass, labels, pictures, etc., solutions of resins of various kinds in spirits or oils are employed. Most of these varnishes are purchased of manufacturing houses who make them in large quantities, but some of them are readily prepared and considerably used by druggists, among which are the following. Some other varnishes have been mentioned elsewhere :

4521. Label Varnish.— This may be made by dissolving pale Shellac 6 ounces in 12 fl.ounces of Alcohol by the aid of heat and adding to the warm solution 1 pint of Linseed Oil and 2 drachms of Chloride of Zinc, agitating them until the Zinc salt is dissolved. It is applied with a brush, or by dipping the label, or floating it.

A spirit varnish made with Sandarach, Shellac and Alcohol may also be used.

4522. Spirit Varnish.—Sandarach 3 ounces, pale Shellac 2 ounces, Alcohol 20 fl.ounces. Dissolve and add Copal Varnish 2 ounces, mix well. strain through gauze, set aside for a month and decant the clear portion from the sediment. This is used for labels, pictures, Waier colors, lithographs, etc.

4523. Shellac Varnish.— For "killing" knots in wood for polishing and many other purposes, Shellac Varnish is used. It is simply Shellac

dissolved in Alcohol. About 3 pounds of Shellac with sufficient Alcohol to make a gallon. It is used thinner for some purposes.

4524. Transfer Varnish.—Mastic, Sandarach, each, 2 ounces, Alcohol 15 fl.ounces. Dissolve and add pure Canada Balsam 4 ounces. This is used for transferring engravings, lithographs, decalcomania pictures, etc., and for gilding, silvering, bronzing, etc.

4525. Other Varnishes.— Of the other varnishes that are used, *Demar Varnish* is made by dissolving Gum or Resin Demar in Oil of Turpentine, *Copal Varnish*, by dissolving Copal in Oil of Turpentine. This is also known as *Furniture Varnish and Carriage Varnish*, many varieties being made from different qualities of gum or resin, Mastic Varnish may be made by dissolving Mastic either in Alcohol or Oil of Turpentine.

Crystal Varnish is made from Canada Balsam mixed with an equal volume of Oil of Turpentine. It is also known as *Map Varnish*, and is used diluted with Oil of Turpentine for making tracing paper. Wax Varnish is prepared by melting 2 ounces of Wax with 6 ounces of Oil of Turpentine and mixing with a pint of Copal Varnish.

Sealing Wax Varnish is made from Shellac Sealing Wax dissolved in Alcohol. It is used for chemical and electrical apparatus, cork tops, etc. Many other varnishes are known and used.

Glass Varnish — for making a film on glass the Wax Varnish above is good. A transparent varnish for glass is made of Sandarach and Mastic, each 2 ounces dissolved in Alcohol 20 ounces.

UNCLASSIFIED PREPARATIONS.

4526. Purifying Bees' Wax.— Melt 10 pounds of wax with 1 pint of Vinegar and a quart of Water; when melted, strain and wrap the vessel and cover it with several thicknesses of cloth so that it will cool slowly ; all sediment settles to the bottom and may readily be scraped off.

4527. Prepared Corks.— Corks may be prepared for resisting the action of acids, etc., by immersing them in melted Paraffin, and when removed putting them at once into cold Water; this gives them a coating

of paraffin and fills all the cavities, making them imperious to acids, etc.

Burnt Cork may be prepared by placing a quantity of corks, in an iron kettle, covering closely and heating them until they are reduced to charcoal; they may then be powdered,

4528. Bleaching Sponges.— To bleach Sponges first dip them in a solution of Permanganate of Potassium 1 ounce in 1 gallon of Water, squeeze out the Water as much as possible, then pour upon them a solution prepared with Hyposulphite of Sodium 1 pound, Water 7 pints. Hydrochloric Acid 1 pint, until they are white, then to prevent turning yellow when dry dip in a solution of 2 drachms Bicarbonate of Sodium in 1 gallon of Water and drain.

4529. Tooth Cement.—For filling the cavities of teeth Collodion may be used as it quickly sets, forming a plug; Portland Cement may also be used. A solution of Mastic, 1 part, in Alcohol, 3 parts, hardens quickly when put in the cavity of a tooth.

4530. Sulphur Lotion.— Sulphocarbolate of Zinc 20 grains, Oxide of Zinc 120 grains. Lac Sulphur 60 grains, Cologne 1 ounce, Glycerin 1 ounce, Rose Water 5 ounces. Rub the Oxide of Zinc with the Lac Sulphur, and then with the Cologne; add the Glycerin and the Rose Water in which the Carbolate of Zinc has been dissolved.

4531. Boracic Acid Ointment.—Boracic Acid 1 part, Yellow Wax 1 part, Benzoinated Lard or Petrolatum 6 parts. Rub the Acid to a very fine powder with a few drops of Alcohol. Melt the Wax and Benzoinated Lard together and incorporate the powder with the mixture while cooling.

4532. Glycerin Cream.— Glycerin Cream 6 ounces. Soft Soap (Sapo Mollis 2908) 5 ounces, Rose Water, triple, 5 ounces. Tincture of Arnica 1/2 ounce. Boric Acid 1/2 ounce. Dissolve the Acid in the Glycerin by heat, and add the mixture to the other ingredients which have been previously well mixed in a mortar.

4533. Polyform Liniment.— This is said to be like Edson's preparation. Chloral Hydrate 1 ounce av., Alcohol 4 fl.ounces, Chloroform 2 1/4 fl.ounces, Camphor 2 ounces av., Ether 2 fl.ounces, Oil

of Peppermint, Oil of Cloves, each, 5 drops. Salicylic Acid 5 grains. Nitrate of Amyl, Sulphate of Morphine, each, 3 grains. Mix them. This is used for Neuralgia, Tic Doloieux, etc.

4534. Local Anaesthetic.— For applying to the gums before extracting teeth and other similar purposes to numb the parts and prevent pain. It is also excellent for neuralgia, etc. Stronger Ether 1½ ounce, Menthol 60 grains. Fluid Extract Cannabis Indica 20 minims, Cocaine 2 grains, Oil Peppermint 15 minims. Saturate absorbent cotton with a small quantity of the liquid and apply to the gums, allowing it to remain about 5 minutes before the operation.

4535. Curry Powder.— Coriander Seed, Turmeric, Dessicated Coconut, each, 4 ounces. Cassia Buds, Fenugreek Seed, Poppy Seed, each, 2 ounces, Mustard, Ginger, Mace, each, 1 ounce, Capsicum, Allspice and Garlic, each, ½ ounce. Grind them all together to a fine powder. This is a fair imitation of the genuine Indian Curry Powder. It is used for seasoning.

4536. Celery Salt.—Celery Seed, in fine powder, 1 ounce, Fine, dry table Salt 7 ounces. Mix them well together.

4537. Pepper Sauce.— This is conveniently made by adding good vinegar to whole Bird Pepper, or Capsicum contained in a Pepper Sauce bottle.

4538. Worcestershire Sauce.— The composition of this sauce is a trade secret, but a variety of similar sauces are found on the market. A good imitation may be made as follows: Chop the green outer covering of unripe walnuts 5 pounds, bruise them to a pulp in a mortar, pour upon them 6 pints of good strong vinegar, and after standing a day heat to boiling and strain with strong pressure. To the liquid thus obtained add garlic, grated to a pulp, 2 ounces, Capsicum, in fine powder, 2 ounces, Black Pepper 1 ounce, Cinnamon 1½ ounce, Nutmeg ½ ounce. Allspice 1 ounce, Cloves ½ ounce, all in fine powder. Salt 12 ounces. Brown Sugar 8 ounces, and enough good vinegar to make 1 gallon of the finished product. This is to stand for some time, with frequent agitation, and then be put up in bottles.

4539. Sugar of Lemons.—Citric Acid i ounce. Extract of Lemon 1 ounce, Sugar 1 pound. Powder the Acid and mix thoroughly with the Sugar, rub the Extract of Lemon first with a small quantity of the mixture and then with the remainder gradually added. A tablespoonful of this makes a small glass of lemonade.

4540. Butter Color.—Annatto, fresh and of good quality, 2 pounds, Salad Oil of good quality without flavor (purified cotton seed oil is best), sufficient to make 1 gallon. Rub the Annatto with a portion about one third of the Oil and macerate it by the heat of a water-bath for 12 hours, stirring occasionally, pour off the liquid and add to the residue another portion, about one third of the Oil, and macerate as before, adding the product to the portion before reserved, then add the remainder of the Oil to the sediment, macerate as before and add the product to the reserved portions to make i gallon of Butter Color.

4541. Absorbent Cotton.— This is prepared from fine selected cotton by first washing it thoroughly with a weak solution, of Sal Soda, and afterwards with clear water, then carefully drying. Probably most of the "Absorbent Cotton" of the market is nothing but fine selected cotton put up in packages, without treatment.

4542. Aseptol.—This is a sticky faint red liquid of specific gravity, i .450, its oder resembling Carbohic Acid. It is chemically, orthoxyphenyl sulpho acid ($C_6H_4OH(SO_4H)_2$), and its proprieties are like Carbohic Acid, but three times its strength, and like Salicylic Acid, and its solution is used externally as a wash and antiseptic in place of Carbohic Acid, and internally is administered instead of Salicylic Acid, the dose being 2 to 4 grains.

4543. Hypnone. This is made by distilling together a mixture of benzoin and acetate of calcium. It is chemically phenylmethylacetone (C_8H_8O .) It is used as a Hypnotic for Alcoholic insomnia, etc. The dose is 3 to 5 minims.

4544. Ichthyol.—This substance was discovered by Schrotter, and is obtained by distilling bituminous matter found in Tyrol, which contains the fossilized remains of fish and marine animals.

4545. Phenacetine.—This is a new chemical derived from the coal tar products, and recommended to be used in place of Antipyrine, being

similar to it in action, and claiming to be free from any deleterious effects.

4546. Strophanthin.—This is a new toxic remedy similar in characteristics to digitalis, and is said to be obtained from the African arrow poison plant *strophanthus hispidus*.

4547. Vienna Paste or Caustic.—Powder and mix together in a warm mortar equal parts of Potassa and Unslacked Lime, see 2712.