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THE DRUGGISTS CIRCULAR

Formula Book

IN WHICH MAY BE FOUND RECIPES FOR HUNDREDS OF UNOFFICIAL PREPARATIONS IN DAILY DEMAND

In the drug store, the laboratory, the boudoir, the household, the workshop, on the farm, and wherever there are men, women and children, domestic animals, poultry, furred and feathered pets, trees and plants; together with a compilation of process outlines, notes, hints and other valuable information and suggestions for retail druggists and dispensing pharmacists culled from the pages of The Druggists Circular and elsewhere

SECOND EDITION

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PREFACE TO THE FIRST EDITION

This book is designed to bring together in easily accessible form for quick reference some of the valuable information for druggists contained in the annual volumes of THE DRUGGISTS CIRCULAR. Of course the limitations imposed by a volume of this kind exclude much which might with propriety be included under the heading which serves as its title. Indeed, so much has appeared in the CIRCULAR that the work of elimination in this compilation has caused a good deal of embarrassment. In view of the fact that a new edition of the Pharmacopœia and a new edition of the National Formulary are due, and the further fact that the appearance of these books will doubtless be followed shortly by new editions of the dispensatories and other text-books for pharmacists, we do not, except in a very few instances, give in the present work suggestions which have appeared in the CIRCULAR for improving official formulas.

In answering queries in the CIRCULAR we draw from a library in which are to be found a large number of books on pharmacy and the cognate arts and sciences, as well as formularies, the leading medical and pharmaceutical journals, reports of association proceedings, United States and State bulletins, etc. In reprinting material found in these books, pamphlets and periodicals, the CIRCULAR is careful to give credit where credit is due, but in condensing its notes for use in this book it has been guided by a desre to eliminate all explanatory matter which seemed not material to a proper understanding of the text. We hereby acknowledge our indebtedness to the various publications alluded to, at the same time claiming originality in the CIRCULAR for a large portion of the matter which appears therein. Some of the most valuable notes were contributed by readers who requested that their names be withheld, while to others the names of the contributors are appended.

PREFACE TO THE SECOND EDITION

That the first edition of THE DRUGGISTS CIRCULAR Formula Book met with the approval of the pharmacists and others for whom it was intended is adequately proven by the fact that, although we printed a generous supply of the book, our stocks were exhausted soon after the volume came fom the press.

Then the World War made paper so scarce and so high in price and increased the cost of production so largely that we thought the time not auspicious for the printing of a second edition. Recently, however, so many of our readers, who have seen the first edition and are familiar with its qualities, have advertised for second-hand copies at prices very much in excess of the original cost, urging us in the meantime to issue a second edition, that we have decided, at length, that we are justified in doing so.

We have, therefore, thoroughly revised the former edition; adding many new formulas which have appeared since 1915 in the columns of the CIRCULAR, deleting some that have not been altogether satisfactory, and improving the text generally. Also, the volume is arranged in chapters, which makes it possible for the reader to study a subject without reference to the index which, by the way, is remarkably complete and should always be consulted when search is being made for any particular formula.

A limited number of copies have been printed from type and the type has since been distributed.

CHAPTER I

PHARMACEUTICAL FORMULAS

Elixirs—Emulsions—Liniments — Lozenges — Mixtures—Ointments —Pastilles—Pills—Spirits—Suppositories—Syrups—Wines—Miscellaneous Preparations

Always Consult the Index When Using This Book

The following formulas are published for the purpose of furnishing pharmacists and others with information concerning unofficial preparations frequently called for by physicians or by the laity.

Elixir Acetanilid Compound

Acetanilid	160 grains.
Acetphenetidin	128 grains.
Phenyl salicylate	64 grains.
Sodium bicarbonate	192 grains.
Citrated caffeine	64 grains.
Tartaric acid	32 grains.
Alcohol	5 ounces.
Glycerin	4 ounces.
Sugar	3 ounces.
Oil of orange	8 minims.
Oil of anise	4 minims.
Oil of cassia	2 minims.
Oil of peppermint	2 minims.
Water, to make	1 pint.

Dissolve the phenyl salicylate, the acetanilid and the acetphenetidin in the alcohol in a stoppered container; and add the oils and the glycerin. Dissolve the sodium bicarbonate in a minimum of very cold water (about 4½ ounces); pour this solution upon the citrated caffeine and the tartaric acid in a mortar and triturate until the effervescence ceases. Dissolve the sugar in this liquid. Pour this syrup slowly into the alcoholic solution, shaking continuously. Heat the mixture to about 75° C. in a loosely stoppered vessel, agitating the while until the precipitate is re-dissolved. Add a little purified talc; shake well and set aside for twenty-four hours at the ordinary temperature, shaking occasionally; then filter rapidly from a covered funnel, and add enough water through the filter to make 1 pint. Keep in a warm place.

Elixir Aromatic

I.

Anethol	12 minims.
Oil of coriander	1½ minims.
Oil of myristica	2 minims.
Tincture of vanilla	1 dram.
Alcohol	6½ ounces.
Simple syrup.	
Distilled water, of each a sufficient quantity to make	32 ounces.
Purified talc	1 ounce.

Prepare according to the directions given for the preparation of the U. S. P. aromatic elixr.—F. M. Apple.

II.

Tincture of fresh orange peel	15.00 mils.
Tincture of fresh lemon peel	3.00 mils.
Oil of coriander	0.25 mils.
Alcohol	230.00 mils.
Wine	125.00 mils.
Sugar	320.00 grammes.
Talc	10.00 grammes.
Water....to make	1,000.00 mils.

Mix the tinctures and oil with the alcohol, add the talc, then the wine, and gradually add 420 mils of water; shake well; allow the mixture to stand overnight; then filter, dissolve the sugar in the filtrate, and add water, if necessary, to bring the measure up to 1,000 mils.

The flavor of this preparation resembles that of the U. S. P. elixir, but is riper and more fruity. The wine used has a considerable influence on the character of the product. Either sherry or a sweet wine, like angelica, catawba or tokay is preferable, and, of course, the better the wine the better will be the result. If a red elixir is desired, port wine will give satisfaction.

III.

Tincture of fresh orange peel	10.00 mils.
Oil of orange	0.10 mil.
Oil of caraway	0.10 mil.
Oil of Ceylon cinnamon	0.10 mil.
Oil of coriander	0.10 mil.
Oil of anise	0.05 mil.
Alcohol	225.00 mils.
Wine	125.00 mils.
Sugar	320.00 grammes.
Talc	10.00 grammes.
Water....to make	1,000.00 mils.

Mix the tincture and oils with the alcohol, add the wine, then slowly add, with shaking, 420 mils of water; and proceed as directed above.

The quantity of wine used is not enough to create a distinctly wine

flavor, but only to brighten and give body to the elixir. The general flavor is not materially modified.

For obtaining a distinctive elixir, I do not know of any better formulas. The products are distinctive in flavor, in color and in aroma, and if one did not know, one would never suspect the presence of wine.—F. M. Apple.

Aromatic Elixir, Red

Tincture of cudbear....	6 drams.
Compound tincture of cudbear	2 drams.
Sweet elixir, to make...	16 ounces.

Mix. Allow to stand for forty-eight hours, if possible, and filter.

Your attention is directed to the rich, ruby-red color of this preparation, which surpasses that of any proprietary product that has come to my notice. The elixir is neutral in reaction—a distinction from compound digestive elixir.

Incidentally, I wish to call attention to the fact that when tincture of cudbear N. F. and compound tincture of cudbear N. F. are mixed in the above proportions, a very beautiful red color results upon dilution thereof—one free from the purplish tint of the dilutions of tincture of cudbear N. F.; also free from the brownish tint of the dilutions of compound tincture of cudbear N. F.

The relatively low cost of these elixirs is another factor in their favor. —F. M. Apple.

Elixir of Aspirin

Aspirin	640 grains.
Sodium bicarbonate...	300 grains.
Glycerin	8 ounces.
Aromatic elixir, enough to make.....	1 pint.

Dissolve the sodium bicarbonate in 6 ounces of aromatic elixir, add the glycerin, then gradually add the aspirin, stirring well and avoidng loss by effervescence. (The reaction may be hastened by warming slightly, but excessive heat should be avoided, since it would result in loss of flavor.) When effervescence has ceased, and the aspirin is all in solution, add enough aromatic elixir to make 1 pint.

Elixir Creosote and Heroin

After ascertaining from the physician the amount of creosote and hercian the amount of creosote and heroin he wishes to have exhibited in each dose of the elixir and the size of the desired dose, proceed with this formula:—

Heroin....the determined amount.	
Creosote..the determined amount.	
Glycerin	8 ounces.
Fluidextract of wild cherry	1 ounce.
Compound spirit of orange	2 ounces.
Alcohol	4 ounces.
Distilled water	1 ounce.

Mix the alcohol and the compound spirit of orange; dissolve the heroin and the creosote in this liquid; add the fluid extract and the glycerin; shake well, and add the water.

Elixir Glycerophosphates, Compound

Sodium glycerophosphate	80 grains.
Calcium glycerophosphate	40 grains.
Manganese glycerophosphate	40 grains.
Syrup	1½ ounces.
Glycerin	1½ ounces.
Concentrated phosphoric acid (66.3%).	1 dram.
Caramel	½ dram.
Sherry wine, to make..	10 ounces.

Dissolve the glycerophosphates in 6 ounces of the wine, add the acid, the syrup, the glycerin and the caramel, then enough wine to make up the desired quantity.—Australian Pharmaceutical Formulary.

Elixir of Lactated Pepsin

The Compound Digestive Elixir of the N. F. IV is quite satisfactory as a basis, but most manufacturers omit the pancreatin. Extract of malt may also be substituted for the diastase, using from one to four drams per pint.

The strength is stated in terms of saccharated pepsin, which is one-tenth pepsin. Therefore, a "40-grain per ounce of saccharated pepsin" will contain 4 grains per ounce of U. S. P. pepsin, or 64-grains per pint; and an "80-grain" will contain 128 grains of pepsin per pint. It is also preferred to make the color deeper than the N. F. calls for.

The following formula is a modification of the N. F. elixir, embodying these suggestions:—

Pepsin, U. S. P.	64 or 128 grains.
Extract of malt.	¼ ounce.
Lactic acid.....	15 minims.
Hydrochloric acid	7½ minims.
Glycerine	3 ounces.
Powdered cudbear	15 grains.
Water	2 ounces.
Aromatic elixir, to make.....	1 pint.

Dissolve the pepsin and extract of malt in the water, and add the acids and glycerin, then the aromatic elixir. Now add the powdered cudbear, and allow to stand three days, with frequent shaking, then filter.

If preferred, a more pronounced orange flavor can be had by substituting for the aromatic elixir 30 minims

of tincture of fresh orange peel and 10 minims of tincture of fresh lemon peel. This is to be dissolved in 3 ounces of alcohol. Then to the pepsin solution add 4 ounces of sugar and enough water to make 13 fluidounces of solution when the sugar is dissolved, and add the cudbear to the alcohol mixture. Allow the latter to stand 24 hours, with frequent shaking, then add to the pepsin solution, shake occasionally during two days, then filter.

Elixir of Orange Flowers, Compound

Oil of cinnamon	6 minims.
Alcohol	6 ounces.
Stronger orange-flower water	6 ounces.
Simple syrup	12 ounces.
Distilled water	8 ounces.
Purified talc	1 ounce.

Mix.—F. M. Apple.

Elixir Pepsin, Bismuth and Strychnine

Moison and Harphorn give in the Chemist and Druggist the following formula for an ofttimes perplexing preparation:—

Bismuth tartrate scales	300 grains.
Stronger glycerin of pepsin, B. P. C.	2½ ounces.
Solution of strychnine hydrochloride	½ ounce.
Alcohol (60%)	1 ounce.
Elixir, to make	20 ounces.

Stronger Glycerin of Pepsin, B. P. C.

Pepsin	15 grammes.
Diluted hydrochloric acid	5 mils.
Glycerin	50 mils.
Simple elixir	5 mils.
Distilled water, to make	100 mils.

Elixir Phenolphthalein

I.

The following formula represents a preparation containing 1 grain of the drug in each fluid dram:—

Phenolphthalein	28 grammes.
Compound spirit of orange	60 mils.
Alcohol	60 mils.
Syrup	200 mils.
Compound tincture of cardamom	30 mils.
Fluidextract of taraxacum	30 mils.
Purified talc	15 grammes.
Rose water, enough to make	1600 mils.

Mix the alcohol and the compound spirit of orange, and in this mixture dissolve the phenolphthalein. Add the fluidextract and the tincture; then add the syrup in divided portions, shaking after each addition. Add the talc to the mixed liquids and shake well; add 200 mils. of rose water, and set the mixture aside for several hours, shaking occasionally. Filter through double paper, returning the first portion of the percolate until the liquid comes through clear. Add enough rose water through the filter to bring the finished product up to the required volume.

II.

Phenolphthalein	3 drams.
Alcohol	1 ounce.
Compound elixir of taraxacum	2 ounces.
Aromatic elixir, to make	8 ounces.

Elixir Saw Palmetto and Santal, Compound

Saw palmetto berries	8 ounces.
Sandalwood	2 ounces.
Corn silk	8 ounces.
Alcohol	12 ounces.
Sugar	6 ounces.
Water, to make	2 pints.

Mix 12 ounces of alcohol with 36 ounces of water: with this menstruum moisten the previously-ground drugs and macerate during twenty-four hours. Then pack the mixture firmly in a percolator, and pour on the remainder of the menstruum, allowing the percolate to drop slowly. In this dissolve the sugar by agitation. Finally, pass sufficient water through the exhausted drugs to make the finished product measure 2 pints.

Caramel may be added, if the color is not deep enough.

Each fluid ounce of this elixir is taken to represent, saw palmetto berries, 120 grains; corn silk, 120 grains; sandalwood, 30 grains.

• The official partly-dried sabal and fresh zea must be used, as therapeutists tell us that these drugs are valueless when dried. The flavor of the preparation might be improved by the addition of tincture of vanilla.

Acamulsia

Powdered acacia	5 parts.
Powdered tragacanth	5 parts.
Sugar	5 parts.
Starch	5 parts.
Boric acid	1 part.

Mix intimately.

Use 1 part of powder to every 32 parts of emulsion to be made. Eight ounces of the oil to be emulsified is put into a dry 32-ounce bottle, and shaken with ½ ounce of acamulsia; when the powder is evenly suspended, 8 ounces of water are added at once, and the mixture is well shaken until a perfect emulsion is formed.

Cacao Emulsion of Castor Oil

Castor oil	2 ounces.
Powdered acacia	6 drams.
Oil of peppermint	3 minims.
Powdered tragacanth	16 grains.
Saccharin	4 grains.
Glycerin	3 drams.
Cacao	2 drams.
Water, to make	4 ounces.

A mixture of the cacao in the glycerin and water is made by boiling for five minutes. A mucilage of the acacia and tragacanth is made with 4 drams of the cacao mixture and the oils are gradually incorporated by trituration until emulsified, then the remainder of the cacao mixture is added.

Compound Turpentine Emulsion

A preparation devised for physicians' use by L. Whorton is a compound emulsion of oil of turpentine, which he prepares fresh at short intervals:—

The preparation being used for an internal antiseptic, it carries 16 grains of salol to each ounce, and 1 minim of oil of cinnamon, the latter acting as a flavor which aids the stomach in tolerating the product. A little sugar is used as a sweetener, and such other flavoring as tincture of lavender. Sodium bicarbonate renders it alkaline and pancreatin is added as a digestant. Twice as much gum as oil is used, and twice as much distilled water as gum, by weight. This emulsion should be prepared in a perfectly dry mortar, by rapid trituration with light pressure. When the emulsification is complete, water, camphor water and other flavoring may be added. The salol is dissolved in the oils in the first place. The result is a "beautifully smooth emulsion, pink in color, palatable to the taste, and in odor very agreeable."

Chocolate Emulsion of Cod Liver Oil

I.

French gelatin	½ ounce.
Powdered acacia	2½ ounces.
Powdered tragacanth	2 ounces.
Powdered starch	2 ounces.
Powdered chocolate	4 ounces.
Glycerin	1 pint.
Cod liver oil	4 pints.
Sugar	8 ounces.
Oil of cinnamon	2 drams.
Oil of eucalyptus	1 dram.
Oil of cloves	1 dram.
Sodium chloride	½ ounce.
Water, to make	1 gallon.

Melt the gelatin in 2 pints of water with the aid of heat; dissolve the sugar and the sodium chloride in this solution. Mix the acacia, the tragacanth, and the starch intimately, add the cod liver oil to the mixed powders in a dry mortar or emulsifier and mix thoroughly. Add slowly to this mixture the aqueous solution and make an emulsion. Heat the glycerin to about 100 degrees C. and mix it with the chocolate to form a smooth paste. Allow this paste to cool; add the emulsion to it in divided portions with constant stirring; and finally add the aromatic oils and enough water to make the required volume.

II.

Cod liver oil	500 mils.
Glycerite of yolk of egg	175 mils.
Syrup of chocolate	125 mils.
Cinnamon water	50 mils.
Distilled water, to make	1,000 mils.

Add the oil in small portions to the glycerite, triturating continuously and incorporating each portion completely. Add the syrup in a similar manner. Mix the waters and incorporate them.

The palatability of the preparation, of course, depends much upon the syrup of chocolate—and a good syrup of chocolate is not easily made. The following is a satisfactory formula:—

Chocolate Syrup

Powdered chocolate	10 drams.
Tincture of vanilla	1½ drams.
Boiling water	2 ounces.
Syrup, to make	1 pint.

Triturate the chocolate with the boiling water until a smooth paste is obtained. Mix this thoroughly with 12 ounces of syrup, previously heated. Place the syrup in a suitable container over a flame and heat gradually with gentle stirring until it begins to boil. Allow the liquid to boil about one minute; remove from the heat; add the required amount of syrup, and, when cool, add the tincture of vanilla.

Emulgen or Emulsite

Emulsion of oils may be prepared by using a mixture made according to the following formula:—

Gum tragacanth	10 grammes.
Gum acacia	5 grammes.
Gluten	5 grammes.
Glycerin	20 mils.
Distilled water	50 mils.
Alcohol	10 mils.

Mix the gums and gluten, add the glycerin and water, then the alcohol and triturate until a homogeneous mixture is obtained. Keep in well-corked bottles. It is employed as an emulsifying agent in the form of a 10 per cent. solution. Mix thoroughly the appropriate quantity of emulsite with the oil and flavoring material and add the water gradually with constant trituration.

Emulsion of Chloroform

Chloroform, 1 ounce; tincture of senega, 2 drams; water enough to make 20 ounces.

Emulsions of Coal Tar and Other Oils

When terpineol is dissolved in coal oil and when to the solution an excess of tri-olein and caustic potash is added, a rather violent reaction takes place and a product is formed which is perfectly soluble in alcohol, according to Doenhardt (Pharm. Zeit.). The alcoholic solution is miscible with water in all proportions. Tri-olein may be replaced by other oils which are rich in glycerin oleic acid esters. A similar but not as violent a reaction takes place with drying oils, such as castor oil, poppy oil, linseed oils, etc. In this process it is essential that the caustic alkali be in excess.

Emulsions of Cod Liver Oil, Improved

Borner (Apoth. Zeit.) recommends the following formula as producing a very white and easily digestible emulsion of cod liver oil with hypophosphites:

Cod liver oil	420 grammes.
Powdered acacia	12 grammes.
Powdered tragacanth	12 grammes.
Decoction of Irish moss (1 to 100)	300 grammes.
Calcium hypophosphite	12 grammes.
Sodium hypophosphite	6 grammes.
Glycerin	100 grammes.
Lime water	150 grammes.
Aromatic spirit (see below)	33 grammes.

Dissolve the salts in the decoction and glycerin, and, while boiling, add a mixture of the oil and the gums. After the mixture has completely cooled, add the lime water and the aromatic spirit, and beat the whole for a short time.

Aromatic Spirit

Oil of bitter almond, without hydrocyanic acid	2.5 grammes.
Oil of gaultheria	2.5 grammes.
Oil of cinnamon	2.5 grammes.
Saccharin	2.0 grammes.
Vanillin	0.4 gramme.
Dried sodium carbonate	0.3 gramme.
Alcohol	330.0 grammes.

Mix the saccharin with the sodium salt; dissolve in the alcohol; add the vanillin and the oils, and make a solution.

Emulsions of Copaiba

Hommell (Merck's Report.) offers the following formulas for palatable and dependable emulsions of copaiba:

Emulsion of Copaiba

Copaiba	45.0 mils.
Powdered extract of glycyrrhiza	10.0 grammes.
Powdered acacia	40.0 grammes.
Saccharin	0.5 gramme.
Oil of anise	0.5 mil.
Cinnamon water, to make	250.0 mils.

Emulsion of Copaiba with Iron.

Copaiba	45.0 mils.
Tincture of iron chloride	22.5 mils.
Glycerin	45.0 mils.
Saccharin	0.5 gramme.
Dextrin	50.0 grammes.
Camphor water, to make	250.0 mils.

Emulsion of Cottonseed Oil

Cottonseed oil	100.0 mils.
Powdered acacia	40.0 grammes.
Oil of gaultheria	15 drops.
Oil of cinnamon	15 drops.
Calcium hypophosphite	3.0 grammes.
Potassium hypophosphite	1.5 grammes.
Sodium hypophosphite	1.5 grammes.
Syrup	30.0 mils.
Glycerin	15.0 mils.
Water, to make	300.0 mils.

Triturate the acacia with the oils; add all at once 40 mils of water, and triturate lightly and rapidly until a thick homogeneous emulsion is produced. Dissolve the hypophosphites in 40 mils of water; mix with the syrup and the glycerin, and add to the emulsion gradually with constant trituration. Lastly add enough water to make the finished product measure 300 mils, and mix thoroughly.

Emulsion of Fat for Use in Diabetes

Rochaix employs the fellowing emulsion of fats in the treatment of diabetes:—

Oil of peppermint	6 drops.
Oil of lemon	6 drops.
Medicinal soap (freshly prepared)	½ dram.
Cherry laurel water	5 drams.
Orange flower water	2½ ounces.
Saccharin	3 grains.
Olive oil (or sesame oil), to make	16 ounces.

Emulsion of Iodoform

Iodoform, 10 parts; sterile water, 20 parts; glycerin, 70 parts; alcohol, enough.

Emulsions of Liquid Petrolatum

I.

Liquid petrolatum	30.00 mils.
Powdered acacia	15.00 grammes.
Powdered tragacanth	1.36 grammes.
Oil of cinnamon	0.20 mil.
Elixir of saccharin	0.33 mils.
Water, to make	100.00 mils.

Mix the first four ingredients in a mortar, add 25 mils of water and triturate until the emulsion is formed, then add the elixir of saccharin and the balance of the water.

The elixir of saccharin—a preparation of the British Pharmaceutical Codex—consists of 5 grammes of saccharin, 3 grammes of sodium bicarbonate, 12.5 mils of alcohol, and water enough to make 100 mils.

II.

Liquid petrolatum.....	5 ounces.
Powdered acacia.....1½	ounces.
Powdered tragacanth...	30 grains.
Calcium hypophosphite.	80 grains.
Sodium hypophosphite..	2 drams.
Glycerin	1 ounce.
Water .....to make	1 pint.

As to the first recipe the use of saccharin as a sweetener might be subject to criticism, although the use of that chemical in medicines is permitted provided the fact of its presence is indicated on the label.

Emulsions of Oil of Cade

Oil of cade.....	50 to 100 grammes.
Soap	25 to 50 grammes.
Water.....to make	300 grammes.

II.

Oil of cade.....	50 to 100 grammes.
Yolk of.....	1 or 2 eggs
Fluid extract of quillaja	10 to 20 grammes.
Water.....to make	500 grammes.

Emulsion of Oil of Eucalyptus

Irish moss.....	10 drams.
Hot water.....to make	20 ounces.

Make a mucilage,

Oil of eucalyptus.....	13 drams.
Olive oil.....	8 drams.

Make an emulsion with the mucilage of Irish moss.

To the emulsion add:

Saccharin	5 grains.
Dissolved in alcohol...	1½ ounces.

Then add:

Honey	8 ounces.
Mucilage of Irish moss.....to make	32 ounces.

In the case of medicines sweetened with sacharin, the fact must be stated on the label.—John Culley.

Emulsion of Paraldehyde

The Medical Standard suggests the following mixture as a satisfactory means of administering paraldehyde:—

Paraldehyde	1 dram.
Syrup	1½ drams.
Tincture of orange....	10 minims.
Infusion of senega....	3 drams.
Water.....to make	1 ounce.

The paraldehyde is placed in a dry bottle with the infusion and shaken until homogeneously mixed; the syrup is added with more shaking; the tincture and enough water are then added; and the whole is well shaken.

Making and Pushing Fresh Emulsions

At the 1912 meeting of the American Pharmaceutical Association, W. H. Glover stated that some years ago he made up his mind to try to build up a prescription trade in fresh made emulsions. He believed that if freshly prepared samples were shown to physicians and the patients were informed that the emulsion was made fresh for them, it would result profitably. At first the returns were slow in coming in, but by persistence his work showed results. The next problem was to find time to make the emulsions as ordered, as to have made them in large quantities ahead would have negatived his claim that they were freshly prepared. He made them by the use of a desk fan, removing the propeller blades and attaching a short rod on a reducing gear and on the lower end of the rod a crossbar, with ends curved up so as to fit an ordinary mortar.

The gum and oil were mixed in the mortar until the "primary" was formed, then the balance of the ingredients were added. By means of the mortar the whole received a good, thorough mixing, while the operator was working at something else.

In former years Mr. Glover rarely had a prescription for an emulsion, but now, even in summer, rarely a day passes that he does not put up one or more. He stated these facts to show what can be done if one really pushes a certain line.

Making Emulsions

By using powdered castile soap in the proportion of 1 gramme to each 30 mils of oil, P. H. Utech has been able to prepare stable emulsions of castor oil and other fixed oils containing as much as 50 per cent. of oil. He thinks that the aperient action of the soap adds to the efficacy of emulsion of castor oil.

Thompson's Emulsion of Linseed Oil

Dr. W. H. Thompson gave in the Medical Record the following formula for the emulsion of linseed oil which has become popular among physicians in association with his name:

Linseed oil.....	9½ ounces.
Oil of cinnamon.....	80 minims.
Oil of gaultheria.....	80 minims.
Diluted hydrocyanic acid	80 minims.
Glycerin	190 minims.

Syrup	6½ ounces.
Mucilage of Irish moss, to make	2 pints.

Dr. Thompson is quoted as having said that this emulsion may be prepared most satisfactorily in a churn.

Tragacanth Emulsion of Fixed Oil

Tragacanth, in fine powder	6 grammes.
Alcohol	10 mils.
Water	240 mils.
The fixed oil	500 mils.
Oil of gaultheria	4 mils.
Syrup	100 mils.
Water, to make	1,000 mils.

Mix well the alcohol and tragacanth; add the water quickly, and stir well then add the fixed oil in portions and the oil of gaultheria and emulsify by shaking. When the mixture has become thoroughly emulsified, add the syrup and enough water to make the finished product measure 1,000 mils.—Bertel Skow.

Malted Emulsion of Cod Liver Oil with Hypophosphite

Cod liver oil	120 grammes.
Malt extract	30 grammes.
Syrup of calcium hypophosphite	30 grammes.
Glycerin	15 grammes.
Powdered acacia	15 grammes.
Cinnamon water, to make	250 grammes.

This emulsion is said to be readily taken by children.

A B C Liniment

Equal parts of the liniments of aconite, bellandonna and chloroform.

Analgesic Balm

The formula below is from Formulaire de preparations pharmaceutiques de la Societe de Pharmacie d'Anvers:

Lanolin	45 grammes.
Yellow wax	10 grammes.
Distilled water	15 grammes.
Menthol	15 grammes.
Methyl salicylate	15 grammes.

Burnett's Hemlock Liniment

According to the Medical Bulletin, Dr. J. A. Burnett recommends the following as a valuable prescription for a stimulating liniment:

Oil of hemlock	1 ounce.
Oil of red cedar	1 ounce.
Oil of sassafras	1 ounce.
Oil of turpentine	1 ounce.
Camphor	1 ounce.
Capsicum	1 ounce.
Alcohol	32 ounces.

Califaciént Liniment

F K. Heldmann proposes the following formula for a warming liniment:

Oleoresin of capsicum	0.25 grammes.
Methyl salicylate	20.00 grammes.
Liniment of soft soap	20.00 grammes.
Wool-fat, to make	100.00 grammes.

"Physicians whom I have induced to use this," he says, "have found it to be a splendid remedy."

Compound Phenol Liniment

Phenol	2 parts.
Menthol	2 parts.
Eugenol	1 part.

Liquefy the phenol, add the menthol and eugenol, and dissolve.

This produces an excellent toothache remedy, far superior to any similar preparation.

Good All-Around Liniment

At the 1912 meeting of the Tennessee Pharmaceutical Association, J. E. Justice presented the following formula for a good all-around liniment:

Oil of sassafras	30 mils.
Oil of origanum	30 mils.
Methyl salicylate	30 mils.
Oil of hemlock	30 mils.
Chloroform	20 mils.
Tincture of capsicum	30 mils.
Alkanet root	15 grammes.
Alcohol, to make	500 mils.

Mix the oils and in these suspend the alkanet root, enclosed in flannel, and macerate for twelve hours; then add the chloroform, the tincture and the alcohol.

Household Liniment

Mix equal measures of spirit of ammonia, oil of sassafras, oil of turpentine and chloroform; dilute one part of the mixture with three parts of alcohol and in it dissolve a little camphor.

Jacob's Oil

Hydrated chloral	2 grammes.
Camphor	2 grammes.
Chloroform	2 mils.
Ether	2 mils.
Oil of sassafras	1 mil.
Tincture of opium	1 mil.
Soap liniment enough to make	120 mils.

Mott's Anodyne Liniment

Chloroform	15 mils.
Tincture of aconite	15 mils.
Tincture of iodine	15 mils.
Ammonia water	15 mils.
Soap liniment enough to make	120 mils.

Pain Balm

Oil of sassafras	1 ounce.
Oil of cloves	¼ ounce.
Oil of hemlock	½ ounce.
Chloroform	⅛ ounce.
Ether	½ ounce.
Capsicum	½ ounce.
Camphor	½ ounce.
Ammonia water	½ ounce.
Alcohol	1 ounce.

Mix them. Macerate for a week or ten days, agitating frequently, and then filter.

Pain Expelling Liniments

I.

Spirit of camphor	1 ounce.
Spirit of ammonia	4 drams.
Oil of sassafras	4 drams.
Oil of cloves	2 drams.
Chloroform	4 drams.
Oil of turpentine	4 drams.
Alcohol to make	5 ounces.

II.

Soap liniment	3 ounces.
Tincture of capsicum	1 ounce.
Ammonia water	1 ounce.
Alcohol	1 ounce.

III.

Camphor	1 ounce.
Chloral hydrate	1 ounce.
Chloroform	1 ounce.
Ether	1 ounce.
Tincture of opium	4 drams.
Oil of origanum	4 drams.
Oil of sassafras	4 drams.
Alcohol to make	5 pints.

A Hot Liniment

Oil of mustard	4 mils.
Chloroform	4 mils.
Ether	16 mils.
Alcohol to make	108 mils.

Polar Bear Liniment

Oil of turpentine	16 ounces.
Vinegar	16 ounces.
Eggs	6 only.
Camphorated oil	4 ounces.

Rub-Down for Athletes

Methyl salicylate	10 ounces.
Tincture of arnica	4 pints.
Hammamelis water	12 pints.
Alcohol	2 gallons.
Water to make	5 gallons.

Solidified Liniment

Oil of origanum	10 grammes.
Oil of sassafras	10 grammes.
Oil of turpentine	10 grammes.
Camphor	10 grammes.
Oleoresin of capsicum	5 grammes.
Fluid extract of aconite	4 grammes.
Petrolatum	30 grammes.
White wax	21 grammes.
Alkanet root	to color.

Suspend the alkanet root, bruised, in the petrolatum, heated, until it imparts a strong red color. Add the wax, and when it is melted, remove the heat. Just before the mixture is ready to solidify, add the fluid extract and the oils in which the camphor has been dissolved, and mix. Then add the oleoresin and mix thoroughly.

The Midland Druggist, which gives this formula, adds that the amount of capsicum may have to be reduced when the liniment is for use on tender skin, or the liniment may be diluted with petrolatum.

Dr. Thompson's Liniment

In the Practitioner, Dr. T. H. Thompson gives the following formula for an anodyne liniment:—

Menthol	½ ounce.
Camphor	½ ounce.
Oil of turpentine	½ ounce.
Oil of eucalyptus	½ ounce.
Chloroform	1 ounce.
Tincture of capsicum	1 ounce.
Methyl salicylate	1 ounce.
Liquid petrolatum	1 ounce.

Laxative Lozenges

Powdered senna	40 grains.
Powdered jalap	40 grains.
Oil of anise	1 drop.
Oil of lemon	1 drop.
Powdered white sugar	40 grains.
Tamarind paste	4 drams.

Make a mass and divide into eight lozenges, which may be coated with chocolate.

Lozenge Bases, B. P. C.

Cut lozenges constitute a class of preparations that is much neglected and deserves to be brought to the attention of physicians.

Lozenges With Fruit Basis

Refined sugar	87.90 grammes.
Gum acacia, in powder	3.90 grammes.
Mucilage of acacia	7.10 mils.
Black currant paste of commerce	11.35 grammes.
Distilled water	enough.

Mix and divide into 100 lozenges.

Lozenges With Tolu Basis

Refined sugar	96.40 grammes.
Gum acacia, in powder	3.90 grammes.
Tincture of tolu	2.10 mils.
Mucilage of acacia	7.10 mils.
Distilled water	enough.

Mix and divide into 100 lozenges.

London Hospital Formulas for Compound Cascara Mixtures

King's

Fluidextract of cascara sagrada	20 minims.
Ammonium carbonate.	2 grains.
Tincture of belladonna	10 minims.
Tincture of nux vomica	5 minims.
Glycerin	10 minims.
Water, to make	1 ounce.

London

Magnesium sulphate	1 dram.
Glycerin	1 dram.
Fluidextract of cascara sagrada	1 dram.
Fluidextract of licorice	1 dram.
Tincture of hyoscyamus	20 minims.
Tincture of nux vomica	5 minims.
Compound decoction of aloes, to	1 ounce.

St. Mary's

Fluidextract of cascara sagrada	1 dram.
Fluidextract of licorice	½ dram.
Sodium sulphate	1 dram.
Ammonia water	5 minims.
Water, to make	1 ounce.

St. Thomas'

Fluidextract of cascara sagrada	20 minims.
Fluidextract of licorice	30 minims.
Tincture of belladonna	5 minims.
Tincture of nux vomica	5 minims.
Aromatic spirit of ammonia	20 minims.
Chloroform water, to make	1 ounce.

Samaritan

Fluidextract of cascara sagrada	20 minims.
Tincture of nux vomica	5 minims.
Tincture of bellodonna	4 minims.
Aromatic spirit of ammonia	10 minims.
Chloroform	1 minim.
Water, to make	1 ounce.

Women's

Fluidextract of cascara sagrada	20 minims.
Aromatic spirit of ammonia	10 minims.
Fluidextract of licorice	15 minims.
Peppermint water, to make	1 ounce.

Beck's Bismuth Paste

The first of these formulas yields a paste used for diagnostic purposes, and for the first few injections, in cases of tuberculosis:—

I.

Bismuth subnitrate	30 grammes.
Vaseline	60 grammes.

Mix while boiling.

II.

For a paste for use in the treatment of cases of long standing, the formula is:—

Bismuth subnitrate	30 grammes.
Wax	5 grammes.
Soft paraffin (120 deg. melting point)	5 grammes.
Vaseline	60 grammes.

Mix while boiling.

In a note contributed to The Druggists Circular Dr. E. T. Beck says:—

The vaseline (usually yellow vaseline is used) is first sterilized by the usual method of boiling and is then allowed to cool off. Thereupon the proper quantities of bismuth subnitrate and vaseline are weighed out and then are mixed well in a mortar until a smooth mass is obtained. It is, of course, understood that the bismuth subnitrate must be free from impurities such as arsenic or dust. Some of the preparations of bismuth subnitrate give off more nitric acid than others. (See an article published by Dr. W. S. Baer, Johns Hopkins Bulletin, October, No. 223.) The preparation is then placed in enamel jars until such time as it may be needed.

When the preparation is to be used the enamel jar containing the same is placed in a water bath, the water being allowed to boil, and thus the preparation in the jar becomes liquefied, and as soon as it is sufficiently so it may be drawn up into a syringe and is then ready for injection.

Care should be exercised to avoid the admixture of water during the course of preparing the paste. Mixing the bismuth subnitrate with the vaseline while the latter is boiled (our former method of preparation) is not satisfactory for the reason that the bismuth frequently oxidizes and causes the mixture to become black. We have never noticed any effervescence taking place when mixing the bismuth with the boiling vaseline, although that might possibly occur when the vaseline is too hot.

There is a warning by Dr. Beck of the danger which may be caused by the formation of nitrate and by the bismuth itself when this paste is employed.

Diagnostic Bismuth Liquid

Bismuth subcarbonate	120 grammes.
Acacia	20 grammes.
Tragacanth	5 grammes.
Syrup	150 grammes.
Orange flower water	25 grammes
Water	350 grammes.

Bismuthated Petrolatum

Bismuthated petrolatum may be prepared according to Vicario (L'union pharm.) from bismuth subnitrate, or bismuth subcarbonate, 20 grammes; liquid paraffin, 70 grammes; petrolatum, 10 grammes. This preparation, which may be sweetened and aromatized, is readily taken by the patients. It is used in hyperacidity and in dressing ulcers of any nature. It also facilitates the intestinal radioscopy.

Dermatologic Formulas

From the dermatologic formulas in the Formulae Magistrales Germanicae are taken the following:—

Boroglycerin Ointment

Boric acid	2.50 grammes.
Glycerin	6.25 grammes.
Paraffin ointment	6.25 grammes.
Wool-fat	8.00 grammes.

Chilblain Balsam

Camphor	0.2 gramme.
Powdered tragacanth	0.5 gramme.
Balsam of Peru	0.5 gramme.
Tincture of opium with saffron	0.5 gramme.
Potassium iodide	0.8 gramme.
Glycerin	45.5 grammes.

Compound Resorcinol Ointment

Salicylic acid	0.4 gramme.
Resorcinol	1.0 gramme.
Ammonium sulphoichthyolate	1.0 gramme.
Petrolatum	17.6 grammes.

Emulsion of Sulphur

Precipitated sulphur	30 grammes.
Distilled water	30 grammes.
Alcohol	30 grammes.
Glycerin	15 grammes.

Hebra's Tincture of Ruscus

Birch tar	35 grammes.
Ether	6 grammes.
Alcohol	6 grammes.
Oil of lavender	1 gramme.
Oil of rue	1 gramme.
Oil of rosemary	1 gramme.

Liquid Tar Soap

Tar	40 grammes.
Potash soap	60 grammes.
Alcohol	60 grammes.
Distilled water enough to make	200 grammes.

Vulnerary Species

Peppermint leaves	20 grammes.
Lemon balm leaves	20 grammes.
Marjoram leaves	20 grammes.
Origanum	20 grammes.
Chamomile	10 grammes.
Lavender flowers	10 grammes.
Elder flowers	10 grammes.

Ideal Ointment Base

Fordyce (N. Y. Med. Journ.) says that he has found an ideal ointment base in a mixture of wool-fat and ointment of rose water. The proportions of the ingredients may be varied to suit individual cases, but a mixture of 1 part of wool-fat to 3 parts of the cold cream was generally satisfactory.

Itch Ointment

Ichtyhol	2 drams.
Resorcinol	1 dram.
Sulphur	1 dram.
Lanolin	4 drams.
Petrolatum	4 drams.

Oxide of Zinc Ointment

To prepare 1,000 grammes of this ointment the Pharmacopoeia directs somewhat as follows:—

Take of—

Zinc oxide	200 grammes.
Benzoinated lard	800 grammes.

Rub the zinc oxide with an equal weight of melted benzoinated lard and with this incorporate the remainder of the benzoinated lard, previously melted. If necessary, strain the ointment while warm and stir thoroughly until it congeals.

From personal experience I know that it is very hard to prepare this simple pharmacopoeial ointment so that a perfectly homogeneous mass, free from unmixed particles of zinc oxide, will result without straining; in fact, I admit my inability to accomplish the feat, and from the examination of a large number of specimens, purchased at different stores, am led to believe that other pharmacists have failed also. I am also of the opinion, from the appearance of nearly all of the specimens, that the compounder satisfied his professional conscience that it was not necessary to strain.

At best, the pharmacopoeial method is rather mussy, and necessitates quite a bit of labor in the way of cleaning up utensils afterward, and I have never noticed a particular fondness for this sort of work on the part of licensed pharmacists.

Select a cylindrical vessel, of suitable capacity, and tie over the open end two thicknesses of cheese cloth in such a way as to leave it slightly depressed in the middle, and upon this place the powdered zinc oxide. Melt the benzoinated lard, bringing the temperature to about 135° F., and pour it gradually upon the strainer, stirring constantly with a spatula to force the operation. It will be found that all of the zinc oxide will pass through the strainer and be thoroughly incorporated with the melted lard. Stir occasionally until it congeals.

Saratoga Ointment

Powdered boric acid	30 grains.
Zinc oxide	60 grains.
Oil of eucalyptus	15 drops.
Petrolatum, to make	480 grains.

Scarlet Red Salve

There are two kinds of scarlet red, one being used exclusively as a dye and the other being known as Biebrich's medicinal. The latter is described as being a dark brownish-red bulky powder, with a melting point of 185° C., insoluble in water, slightly soluble in cold alcohol, acetone, ether and benzol, but soluble on boiling. It is soluble in chloroform (1 in 15) and in fixed oils and fats, but not readily soluble in petrolatum or paraffin.

Some recipes for the ointment follow:—

Bruhn's Formula

Scarlet red.....5 to 10 grammes.
Hydrous wool-fat and paraffin (equal parts). to make...100 grammes.

German Hospital, Philadelphia

Scarlet red..... 8 grammes.
Castor oil..... 10 grammes.
Petrolatum, to make.100 grammes.

Krajca's Formula

Scarlet red..... 8 grammes.
Chloroform oil..... enough.
Yellow petrolatum, to make.....100 grammes.

Triturate the scarlet red with enough chloroform oil until it is very finely divided and suspended and the chloroform is evaporated, then incorporate it with the petrolatum.

By chloroform oil here is meant equal parts of chloroform and peanut oil.

Compound Tamarind Pastilles

Purified tamarind pulp 10 grammes.
Senna, in finest powder 3 grammes.
Powdered white sugar 5 grammes.
Wheat starch..... 1 gramme.

Mix and heat together over a water-bath, stirring until a homogeneous mass is formed. Divide into eight pastilles and cover with chocolate.

Medicated Pastilles, B. P. C.

These are directed to be made with a basis of glycogelatin with which when melted in a water-bath, the active medicinal agent is incorporated, either in solution or suspension. The melted mixture is then directed to be poured into molds or into a suitable tray, allowed to solidify, and then cut into the required number of pastilles. The formula for this basis for pastilles is as follows:

Glycogelatin.

Gelatin ..... 12.00.
Glycerin ..... 40.00.
Distilled water..... 20.00.
Orange-flower water..... 20.00.
Sugar ..... 5.00.
Citric acid..... 2.00.
Oil of lemon..... 0.10.
Solution of caramel.....enough.

As an improvement on the foregoing, the following has been offered:

Gelatin ..... 30.0 grammes.
Glycerin ..... 30.0 grammes.
Distilled water..... 56.0 grammes.
Orange-flower water 7.0 grammes.
Citric acid..... 2.5 grammes.
Alcohol ..... 1.0 gramme.
Oil of lemon..... 0.2 gramme.
Solution of carmine. 1.0 gramme.

Soak the gelatin in the distilled water until quite soft, add the glycerin, and dissolve by heating on a water-bath. Continue the application of heat until the product weighs 90 grammes. Remove from the water-bath, and add the citric acid previously dissolved in the orange-flower water, the oil of lemon previously dissolved in the alcohol, and the solution of carmine. Mix thoroughly, strain through muslin, and allow to solidify.

Mentholated Throat Pastilles

Refined gelatin..... 1 ounce.
Glycerin (by weight)...2½ ounces.
Tolu water.....2½ ounces.
Ammoniacal solution of carmine ..... enough.

Shred the gelatin, soak in the tolu water for two hours, then transfer to a water-bath and heat with the glycerin until the gelatin is dissolved. Color with the carmine solution and pour into an oiled tray to cool.

The tolu water is made by boiling 1¼ ounces of balsam of tolu in 20 ounces of water (in a covered vessel) and straining off 16 ounces. The carmine solution of the National Formulary may be used.

The menthol pastille is made by adding 1-6 grain of menthol to 20 grains of glycogelatin, previously melted on a water-bath. This is the quantity for one pastille, and while still melted, it is poured into a mold. Such pastille molds, which may be obtained in the market, consist of a series of small circular saucers secured to a metallic base.

Phenolphthalein Pastilles

Phenolphthalein .....10 grammes.
Powdered cocoa.....10 grammes.
Sugar ..... 8 grammes.
Sugar of milk..... 8 grammes.
Talc ..... 4 grammes.
Solution of vanillin (3 per cent.)..... 1 mil.
Make 100 pastilles.

"New and Non-Official Remedes" states that phenolphthalein acts as a purgative but appears to possess no further physiological action.

Camphor Pills

Camphor ..... 10 grammes.
Powdered soap..... 10 grammes.
Powdered althea..... 10 grammes.

Simple syrup.....	enough.

Make a mass and divide into 100 pills.

Improved Cathartic Pill

Compound extract of colocynth	½ grain.
Jalapin	1/6 grain.
Podophyllin	⅛ grain.
Leptandrin	⅛ grain.
Extract of hyoscyamus	⅛ grain.
Extract of gentian....	¼ grain.
Capsicum	1/12 grain.
Oil of peppermint.....	enough.

General Excipient Powder for Pills

Powdered licorice root, 40; powdered tragacanth, 20; powdered almond oil soap, 20; wheat groats starch, 12; powdered sugar, 6; hydrated magnesia, 6; mix. Liquids or viscous substances may be massed with the above alone. Powders should first be well mixed with a little of the excipient, then massed with honey or with gum julep. —L. Danzel, through Pharmaceutical Journal.

Pills of Creosote and Balsam of Tolu

Just mix equal parts of distilled water and creosote and add powdered balsam of tolu, and see what a fine pill mass you can obtain without the addition of beeswax or any other substance. It is worth trying.—Jose Schwarz.

Pill Excipients

What the "best paste to use for making pills" is depends largely upon the nature of the components of the pill mass—there is no one excipient which serves equally well in all cases. Another influence in the selection of the "best" is the preference of the manipulator—we have a strong liking for glycerite of tragacanth, N. F. Here are a few formulas:—

Glucanth.

Powdered tragacanth..	½ ounce.
Glycerin	1½ ounces.
Water	½ ounce.
Liquid glucose.....	3½ ounces.

Remington's Excipient.

Powdered acacia.....	90 grains.
Glycerin	1 ounce.
Liquid glucose.....	4 ounces.
Benzoic acid.....	1 grain.

Theriacanth.

Powdered tragacanth..	1 dram.
Alcohol	2 drams.
Molasses	2 ounces.

Rub up the tragacanth with the alcohol; then add quickly the molasses previously warmed.

Mutton Suet.

Hard mutton suet, melting at about 45° C. (113° F.) forms an excellent excipient for those drugs which are intended to be absorbed in the intestines, and which may irritate the stomach, such as arsenical or mercurial preparations; benzoic, carbolic or salicylic acids; creosote, guaiacol and other drugs. For this purpose, mutton suet is preferable to keratin. Each pill should contain not more than 1½ grains of the suet.

Massol.

At a meeting of the London Chemists' Assistants' Association P. B. Phillips offered the following formula for a pill excipient which he said could be used in massing practically any combination:

Gelatin	40 grains.
Glycerin	2 drams.
Sugar	3 drams.
Distilled water..to make	1 ounce.

Place the gelatin in a tared casserole with about ½ ounce of the water and allow it to stand for half an hour. Add the glycerin and heat the mixture until solution is effected. Add the sugar and continue the heating until the mass weighs 1 ounce. Transfer the mixture to a suitable container and beat it with a spatula until it sets, so as to incorporate considerable air in the mass.

For Oils and Balsams.

To overcome the difficulty of incorporating liquids, ethereal oils, balsams, creosote and similar substances into pills, Danzel (Bull. comm.) recommends an excipient prepared according to the following formula:

Extract of licorice.....	4.0.
Powdered tragacanth	2.0.
Powdered soap.....	2.0.
Wheat starch	1.2.
Powdered sugar	0.6.
Magnesium hydroxide	0.6.

Solid substances should first be mixed with mucilage of acacia, honey, etc., before being incorporated with this excipient.

Some Portuguese Ideas.

An article by G. Griggi, which originally appeared in a Portuguese pharmaceutical journal, and later in the Pharmaceutical Journal, gives the following list of excipients:

For antipyrine, sulphonal, trional, terpin hydrate, betol, benzonaphthol, exalgin, citrophen, salophen:· Rub down with milk sugar, add a little mucilage, water, and then a drop or two of glycerin. Manna is an alternative.

For quinine salts: As above, or use honey and manna.

For calomel, mercuric chloride and mercury salts: Manna or gum acacia and water; or wheat flour with a little glycerin.

For chloral hydrate and unstable salts: Canada balsam and beeswax in

equal proportions with kaolin to pill consistence.

For alkali and other iodides: Crumb of bread or wheat flour; (or as for chloral hydrate, above).

For iron chlorides or bromides: Honey or manna, with a little gum acacia.

For gold or silver salts, permanganates: Recently calcined kaolin mixed with equal parts of melted petrolatum and hard paraffin; or white bole and petrolatum.

For aloes, gamboge, ammoniacum: A few drops of alcohol, 60 per cent., or gentle warmth.

For Venice turpentine, tolu balsam, benzoin:—Mix with hot water, knead and roll.

For creosote, guaiacol, and similar substances; for phenol, eucalyptol, cumenol, and orange flower oil:—(a) Warm for about two hours on the water-bath with an equal weight of powdered almond oil soap; mass with soap powder, or powdered licorice, or one-twentieth the weight of magnesia, and one or two drops of water. (b) Mass with powdered benzoin, and roll in magnesia.

For terpin hydrate and terpinol:—Mass with sodium benzoate, powdered sugar, powdered gum acacia, and water, or, better still, Venice turpentine.

For balsam of copaiba, turpentine, or tar:—To each 15 grammes add 1 gramme of magnesia and two drops of water; then warm. If powdered cubebs are to be added, mix this first with wheat flour.

For camphor, castoreum, musk, asafetida:—Mass with powdered benzoin and alcohol; or with white beeswax and Canada balsam melted together.

For croton oil, thiol, ichthyol:—Wheat flour and confection of roses; or soap and wheat flour.

For phosphorus:—Dissolve in oil of sweet almonds and mass with powdered licorice or powdered soap.

For alkaloids, glucosides, phosphides, and cacodylates: Mix with milk sugar and powdered gum acacia; mass with honey.

For iron citrate, oxalate, or tartrate:—Use one drop of glycerin to every 15 grammes, and then licorice extract.

For iodoform, di-iodoform, aristol:—Wheat flour, glycerin, powdered gum acacia, and manna.

For pepsin, peptone, pancreatin, diastase:—Canada balsam and yellow wax, with sufficient kaolin to mass.

For preparations of animal organs:—Milk sugar, with one-tenth of borax massed with mucilage of acacia.

Preventing Hardening of Pills

Pills have a tendency to become so hard as to remain undissolved, and thus to pass through the system. To prevent this hardening, Otto (Munch, med. Woch.) recommends adding 5 grammes of manna to 100 grammes of pill mass and moistening the mass with tincture of gentian. Pills prepared in such a manner are said to retain their soft consistence indefinitely.

Carmelite Spirit

One of the official synonyms of the alcoolat de melisse compose of the French Codex is eau de melisse des Carmes; and the same preparation is popularly known as Carmelite water and Carmelite spirit.

The official process for the manufacture of this preparation is as follows:—

Balm (fresh and in flower)	90 grammes.
Lemon peel (fresh)	15 grammes.
Ceylon cinnamon	8 grammes.
Cloves	8 grammes.
Nutmegs	8 grammes.
Coriander	4 grammes.
Angelica root	4 grammes.
Alcohol (80%)	500 grammes.

Chop up the balm and the lemon peel; crush the other solids, and macerate all in the alcohol for four days. Transfer to a still and distill to 425 grammes.

In the "Pharmaceutical Journal Formulary" the appended formula for Carmelite water is given:—

Oil of balm	30 minims.
Oil of sweet marjoram	3 minims.
Oil of cinnamon	10 minims.
Oil of angelica	3 minims.
Oil of citron	30 minims.
Oil of cloves	15 minims.
Oil of coriander	5 minims.
Alcohol (90%)	10 ounces.
Oil of nutmeg	5 minims.

Spiritus Ophthalmicus Mittendorf

Spirit of lavender	1 ounce.
Spirit of rosemary	1 ounce.
Brandy	1 ounce.
Spirit of camphor	1 dram.

After mixing, the preparation should be set aside for a few days before being dispensed.

Glycerin and Cacao Butter Suppositories

Glycerin	20 grammes.
Cacao butter	20 grammes.
Anhydrous wool-fat	0.5 gramme.

Melt together and shake until the mass can just be poured out; then pour into aluminum or tin molds to form suppositories measuring 4 centimeters in length and 1 centimeter in diameter. Each such suppository should weigh 3 grammes.

Glycerin and Gelatin Suppositories

Gelatin ..... 14 parts.
Glycerin ..... 70 parts.
Distilled water..... enough.

Soak the gelatin in distilled water until it is thoroughly softened; add the glycerin; make a solution on a water bath and evaporate until the mass weighs 100 parts.

Hydrated Chloral Suppositories

I.

Hydrated chloral... 45.00 grammes.
White wax..... 3.15 grammes.

Melt the wax in a wide-mouthed bottle; cork; add the chloral, mix thoroughly and run into suitable molds.

II.

Melt together as in I, equal parts of hydrated chloral and stearic acid and run into molds.

Ichthyol in Suppositories

In the British Pharmaceutical Codex glycerin suppository mass B. P. is directed as the base for ichthyol suppositories. This mass is made as follows:—

Gelatin (cut small). 14.2 grammes.
Glycerin ..... 71.0 grammes.
Distilled water..... enough.

Place the gelatin in a weighed evaporating dish with enough distilled water to cover it; let it stand for two minutes; pour off the excess of distilled water; set aside until the gelatin is quite soft; add the glycerin; dissolve on a water-bath; evaporate until the mixture weighs 102 grammes.

In making ichthyol suppositories, a sufficient quantity of this mass is melted on a water-bath; the desired quantity of ichthyol is incorporated and the mixture is poured into wet molds.

Making Suppositories

In making suppositories with a cacao butter vehicle by the cold process, P. H. Utech has found that wool-fat or petrolatum is better than an expressed oil to make the mass plastic. Suppositories made by the hot process he considers to have the advantage of melting at a lower temperature than those made by the cold process. On the other hand, the repeated heating of cacao butter tends to hasten rancidity.

Suppository Base

V. de Wielen and v. Riehl (Pharm. Weekbl.) have found that cacao butter containing 2.5 per cent. of yellow wax will take up 25 per cent. of its weight of liquids (aqueous solutions, glycerin, ichthyol, etc.) no separation of the latter taking place even after prolonged keeping. If 0.3 grammes of iodoform are dissolved in 3 grammes of the mixture of cacao butter and wax, on cooling, the iodoform partly remains dissolved and partly crystallizes out in the form of minute crystals, while when the plain butter is used, it separates within a short time in the form of large crystals. The mixture of cacao butter and wax melts at 31.4 degrees Centigrade.

Dunning has found that a mixture of 10 parts of castor oil and 15 parts of wax with 90 parts of cocao butter improves the latter as a suppository base, especially in warm weather. The proportions may be varied to suit the needs of the operator.

Compound Syrup of Sarsaparilla, Clover and Burdock

Fluidextract of sarsaparilla	4 ounces.
Fluidextract of stillingia	2 ounces.
Fluidextract of red clover	2 ounces.
Fluidextract of senna..	1½ ounces.
Fluidextract of glycyrrhiza	1 ounce.
Fluidextract of burdock	1 ounce.
Oil of anise.....	½ dram.
Oil of sassafras.....	½ dram.
Oil of gaultheria.....	½ dram.
Alcohol (80 per cent.)..	4 ounces.
Simple syrup, to make..	4 pints.

Making and Keeping Syrups

P. H. Utech believes the whole secret of making a permanent syrup is to use a high-grade sugar, such as "crystal A," free from moisture, distilled—not sterilized—water, and a sterile container, and to observe the proper caution in keeping the product He says that syrup of wild cherry exposed to the ordinary light of the store loses its characteristic odor and taste in a few months He has found that the addition of a small quantity of diluted hypophosphorous acid to syrup of hypophosphites inhibited precipitation.

Phenolphthalein Laxative Syrup

The following formula is offered by a correspondent of the Journal of the American Medical Association:

Phenolphthalein .....128 grains.
Salicylic acid..... 10 grains.
Bitter cake chocolate... 1 ounce.
Syrup of acacia, to make 1 pint.

Melt the chocolate and mix with the syrup then add the acid and the phenolphthalein.

This mixture requires a "shake" label.

Soluble Syrup of Indian Cannabis

Indian cannabis	256 grains.
Alcohol	enough.
Dried sodium carbonate	1 dram.
Sugar	18 ounces.
Glycerin	8 ounces.
Hot water to make	2 pints.

Percolate the Indian cannabis with enough alcohol to produce 2 ounces of concentrated tincture. Dissolve the sodium salt in a few drams of hot water, and add this solution to the tincture. Add the glycerin, and mix well. Dissolve the sugar in enough hot water to make 20 ounces of syrup add this, while hot, to the mixture already prepared, and mix them thoroughly. Filter the syrup through felt, returning the filtrate until it comes through clear. Add through the filter enough hot water to make 2 pints of finished product.

Fig Syrup

From an article in The Druggists Circular for October, 1913, page 628, in which a formula for the lenitive electuary of the London Pharmacopoeia of the middle of the eighteenth century is shown to be practically the same as that of the modern "fig" syrups, the following formula for a type of the latter is given:—

Senna	14 ounces.
Coriander	6 ounces.
Figs	24 ounces.
Tamarinds	18 ounces.
Cassia pulp	18 ounces.
Prunes	12 ounces.
Extract of licorice	1½ ounces.
Spirit of peppermint	1½ ounces.
Water	1 gallon.
Brown sugar	10 pounds.

Crush the first six ingredients small, boil gently for half an hour in the water, then cool and add the other ingredients, stirring until the sugar is dissolved.

Syrup of Ferrous Iodide

Having had trouble in controlling the reaction of the iodine and the iron in making syrup of iodide of iron, I immerse the flask in a vessel of warm water. This hastens the reaction at the start, and retards the reaction later on, because the volume of warm water in the vessel, being so much larger, keeps the contents of the flask automatically at its temperature. It needs but little watching while making, and less time is required to make it.—E. C. Schaefer.

Syrup of Figs, B. P. C.

Figs, cut small	40.00
Refined sugar	50.00
Distilled water	to make 100.00

The figs are digested with boiling water and the resulting liquor strained and evaporated to produce the required volume of syrup on the addition of the sugar.

The resulting syrup is rather viscid and promises to be an excellent vehicle for acrid or bitter substances.

An excellent illustration of its varied uses is:—

Compound Syrup of Figs, B. P. C.

Compound tincture of rhubarb	5.00
Fluid extract of senna	10.00
Spirit of cinnamon	1.25
Spirit of nutmeg (1 to 10)	1.25
Fluid extract of cascara sagrada, aromatic	5.00
Syrup of figs	to make 100.00

Syrup of Figs

From the Vienna Formulary:

Senna pods	6 parts.
Figs	12 parts.
Water	58 parts.
Sugar	enough.
Orange flower water	10 parts.
Alcohol (90 per cent.)	20 parts.

Macerate the figs and the senna pods in the water for twelve hours, and strain. In 33 parts of the strained liquid dissolve 45 parts of sugar; boil and clarify. When cold add the orange flower water and the alcohol.

Syrup of Hoarhound

Hoarhound (No. 20 powder)	200 grammes.
Sugar	750 grammes.
Glycerin	125 mils.
Water	enough.

Mix the glycerin with 375 mils of water and moisten the drug thoroughly with enough of the mixture, then pack lightly in a percolator and add enough menstruum to saturate and leave a layer above the drug and macerate for twenty-four hours. Then percolate slowly, using the balance of the menstruum and then warm water until extracted. Reserve the first 500 mils of percolate and evaporate the remainder to 100 mils, then add the reserve and dissolve the sugar in the liquid, using a slight heat if necessary. When cold add enough water to make the preparation measure 1000 mils and strain.

Syrup of hoarhound so made, says George M. Beringer, is clear, brown in color and possesses the characteristic bitter and aromatic taste of the drug and after keeping for more than six months has shown not the least tendency to change.

Wine of Cod Liver Extract

Many therapeutics are agreed that the various extracts of cod livers or of cod liver oil do not represent the

remedial virtues of the oil; they are also agreed that such extracts are of little use as curative agents. To call a combination of these extracts a cod liver oil preparation would constitute misbranding. Two typical formulas follow:

I.

Gaduol	256 grains.
Guaiacol	64 minims.
Creosote	128 minims.
Eucalyptol	30 minims.
Extract of malt	6 ounces.
Alcohol	4 ounces.
Syrup	8 ounces.
Diluted hydrocyanic acid	1 dram.
Compound syrup of hypophosphites	6 ounces.
Fuller's earth	2 ounces.
Wine ..... to make	4 pints.

Mix the gaduol with 2 ounces of alcohol and triturate with the fuller's earth, add the syrup and 2 pints of wine. Set aside for several days, shaking occasionally, then filter. Add the extract of malt and the syrup of hypophosphites, let stand for twenty-four hours and again filter. Add the guaiacol, the creosote and the eucalyptol dissolved in 2 ounces of alcohol; add the diluted hydrocyanic acid and enough wine to make 4 pints.

II.

Gaduol	2½ pints.
Oil of orange peel	9 ounces.
Fuller's earth	10 pounds.
Port wine	17 gallons.
Compound tincture of gentian	5 gallons.
Fluid extract of wild cherry	2½ gallons.
Glycerin	5 gallons.
Extract of malt	4 gallons.
Compound syrup of hypophosphites	6¾ gallons.
Fluid extract of licorice	1¼ gallons.
Caramel	2½ pints.
Alcohol	2½ gallons.

This recipe is for a 40-gallon batch.

Creosote or guaiacol may be added in the desired proportions, dissolved in an appropriate amount of alcohol.

MISCELLANEOUS FORMULAS

Acetone Collodion.

Pyroxylin	5 grammes.
Oil of cloves	2 grammes.
Amyl acetate	20 grammes.
Benzol	20 grammes.
Acetone, to make	100 grammes.

Shake the pyroxylin with the acetone; add the other ingredients and shade until dissolved.

Antiseptic Flexible Collodion

The following modification of Hopkins' formula for an antiseptic collodion has replaced the official formula for flexible collodion at the Pennsylvania **Hospital:**

Gun cotton	4.0 grammes.
Alcohol	18.0 mils.
Tincture of benzoin	9.0 mils.
Ether	75.0 mils.
Corrosive mercuric chloride	0.5 gramme.

Shake the gun cotton with the ether until a pulpy mass results; add the tincture and again shake; to the mixture add the alcohol, in which is dissolved the mercury bichloride.

Antiseptic Solutions.

I.

Benzoic acid	1 ounce.
Powdered borax	1 ounce.
Boric acid	2 ounces.
Thymol	80 grains.
Eucalyptol	80 grains.
Glycerin	4 drams.
Alcohol	2 pints.
Hot water	enough.
Water ..... to make	1 gallon.
Essence of gaultheria	to color.

Dissolve the first three ingredients in hot water, and filter. Dissolve the thymol and eucalyptol in the alcohol, and when the first solution is cool, mix the two solutions, and add the glycerin and the essence of gaultheria, and enough water to make 1 gallon. Agitate several times a day for two days and filter.

II.

Boric acid	4 ounces.
Benzoic acid	3 ounces.
Powdered borax	2 ounces.
Menthol	1 dram.
Thymol	2 drams.
Oil of eucalyptus	40 drops.
Oil of thyme	40 drops.
Oil of gaultheria	2 drams.
Glycerin	4 ounces.
Alcohol	8 ounces.
Water ..... to make	1 gallon.

Proceed essentially as in formula 1.

III.

Benzoic acid	64 grains.
Boric acid	128 grains.
Thymol	30 grains.
Menthol	35 grains.
Borax	64 grains.
Oil of wintergreen	4 drops.
Oil of eucalyptus	4 drops.
Oil of horsemint	5 drops.
Alcohol	4 ounces.
Water ..... to make	1 pint.

While a preparation made according to one of the above formulas is quite similar to, it is not identical with, the antiseptic solution of the Pharmacopoeia, and the preparation should not be sold under the pharmacopoeial name.

Boro-Thymol Solution.

One of the most satisfactory formulas for the preparation of a solution frequently sold as boro-thymol, rubithymol, and under similar names, is as follows:

Sodium bicarbonate....	34 drams.
Sodium borate	34 drams.
Sodium benzoate.....	21 grains.
Sodium salicylate.....	21 grains.
Eucalyptol	21 minims.
Oil of cubebs.....	10 minims.
Thymol	42 grains.
Menthol	30 grains.
Oil of pine needles.....	18 minims.
Oil of peppermint.....	30 minims.
Alcohol	24 ounces.
Glycerin	36 ounces.
Powdered cudbear.....	4½ drams.
Solution of carmine....	3½ drams.
Talc	4 ounces.
Distilled water to make	3 gallons.

Dissolve the sodium salts in about 1 gallon of water, add the glycerin, dissolve the oils and thymol in the alcohol, and mix the two solutions. Add 4 ounces of talc, the coloring matter, and sufficient water to make 3 gallons. Set aside for several days and filter.

Calamine Lotion.

As given in the British Pharmaceutical Codex, the formula for this lotion is:

Prepared calamine	10.
Zinc oxide	5.
Glycerin	5.
Rose water, diluted.....to	100.

Triturate the calamine and the zinc oxide with the glycerin, and add the rose water.

The same authority describes prepared calamine as being a native zinc carbonate, containing more or less zinc silicate, calcined at a moderate temperature, and freed from gritty particles by elutriation.

Calamine Lotion

Linimentum Calamina, described by John K. Thum at the 1919 meeting of the Pennsylvania Pharmaceutical Association, has a number of advantages over the old-time calamine lotion.

"It will be remembered that the ordinary calamine lotion has the great disadvantage of drying when applied to skin affections where such an effect is not desired," explains Mr. Thum. "In order to prevent this, more or less experimentation was carried out with varying formulas, and the following was finally adopted as answering every requirement:

Powdered tragacanth	4. grammes.
Phenol	1.5 grammes.
Glycerin	1.5 grammes.
Calamine	25. grammes.
Zinc oxide.....	25. grammes.
Cottonseed oil....	150 grammes.
Distilled water, to make	500 grammes.

"It will be noticed that this makes an emulsion and the pharmacist will, of course, proceed to manipulate it in the usual way for making this class of pharmaceuticals.

Mr. Thum claims no originality for the formula, and says that it or a somewhat similar formula was copied from a medical journal some four years ago.

Canthardin Collodion

Canthardin	0.2 gramme.
Castor oil.....	5.0 grammes.
Acetone	7.0 grammes.
Venice turpentine..	8.0 grammes.
Collodion	80.0 grammes.

Dissolve the cantharidin in the castor oil and acetone by gentle and careful warming, then add the venice turpentine and the collodion.

Celery, Iron and Kola Compound

Iron and quinine citrate (soluble).....	40 grains.
Fluidextract of celery seed.....	90 minims.
Fluidextract of kola nut	2 drams.
Angelica wine.....	1 pint.
Aromatic elixir, to make.....	2 pints.

Cod Liver Oil in Jelly Form

Pure gelatin	½ ounce.
Water	4 ounces.
Syrup	4 ounces.
Cod liver oil.....	8 ounces.
Oil of cinnamon (or coriander, etc.).....	to flavor.

The gelatin should first be dissolved in the water, the latter having been previously heated to boiling. The syrup, cod liver oil and flavor are then to be added, the receptable placed in cold water, and the mixture beaten for five minutes and then allowed to solidify.

Coffee Electuary of Castor Oil

Finely powdered roasted coffee.....	10 grammes.
Powdered sugar.....	20 grammes.
Castor oil.....	20 grammes.

Compound Eucalyptol Spray

Eucalyptol	80.0 mils.
Camphor	20.0 grammes.
Menthol	20.0 grammes.
Thymol	1.1 grammes.

Liquid petrolatum
to make.....1,000 mils.

Dissolve the other ingredients in the liquid petrolatum.

Simple Inhalant

Oil of eucalyptus.....	10 mils.
Oil of pine.....	5 mils.
Oil of cassia.....	5 mils.
Menthol	5 grammes.
Thymol	1 gramme.
Camphor	2 grammes.
Tincture of benzoin, to make.....	100 mils.

Mix and make a solution.

Compound Elixir of Choavia

Powdered chocolate.....	2 ounces.
Spirit of lemon.....	½ ounce.
Tincture of vanilla.....	½ ounce.
Simple elixir...to make	1 pint.

Compound Syrup of Choavia

Powdered chocolate....	2 ounces.
Sugar 1½	pounds.
Tincture of vanilla.....	1 ounce.
Aromatic fluidextract of yerba santa.....	1 ounce.
Glycerin	4 ounces.
Boiling water.....	enough.

Mix the chocolate and sugar with enough boiling water to make two pints. Allow the syrup to cool and then add the other ingredients.

Solution of Acetanilide, Compound

Acetphenetidin	256 grains.
Acetanilide	160 grains.
Caffeine, citrated.....	64 grains.
Phenyl salicylate.....	64 grains.
Saccharin	2 grains.
Oil of orange.....	5 minims.
Alcohol	8 ounces.
Glycerin	5 ounces.
Water	1 ounce.
Diluted alcohol.....	enough.

Mix the alcohol, the glycerin and the water. Add to this liquid the acetphenetidin, the acetanilide, the citrated caffeine, the phenyl salicylate and the saccharin, and effect solution by heating the mixture gently in a loosely stoppered flask. Add the oil. Pass through an extra-porous paper filter and add enough diluted alcohol to make 1 pint.

Lemon Flavored Compound Solution of Sodium Phosphate

As a starter we suggest that the quantity of citric acid in the official formula be increased to 180 grammes and that the following mixture be added in place of an equal portion of distilled water:

Terpeneless oil of lemon	20 minims.
Alcohol .....to make	4 drams.

The solution should be shaken with a little paper pulp before it is filtered.

For the color we suggest a few drops of liquid caramel and a drop or two of a weak solution of indigo sulphate.

Here is another working formula:

Sodium phosphate, anhydrous 6½	ounces.
Tincture of fresh lemon peel	1 dram.
Phosphoric acid (85 per cent.) 960	grains.
Glycerin	1 ounce.
Distilled water..to make	1 pint.

Dissolve the salt in a mixture of the water and the acid; add the glycerin and the tincture and filter.

Under the federal food and drugs act and the statutes of many of the States neither of these preparations could legally be sold under the official name.

Cremules

An anonymous writer in the Chemist and Druggist says that Sir James Sawyer's brilliant proposal to utilize "chocolate cream" as a vehicle for the exhibition of medicaments suggests an interesting series of new preparations. The cream or center portion is made first and the chocolate coating then applied. Very presentable cremules may be turned out by any neat dispenser without the aid of special apparatus.

He outlines his process somewhat as given below:

The first step is the preparation of a quantity of "cream," which is made of:

Sugar (cane).....	1 pound.
Glucose (syrupy).....	¼ pound.
Water.....to make a solution.	

Boil this solution until the temperature reaches 240 deg. F. Pour out on a clean and damp ointment slab and leave until nearly cold. Then work it with a spatula as if it were an ointment until the transparent syrup has changed to a smooth white cream. It is advisable to knead it with the hands to insure smoothness and freedom from lumps.

This is the basis of the cremules, and what is not required for immediate use may be stored in a covered pot. If a damp cloth be placed on top of the cream it will keep almost indefinitely.

The medicaments are incorporated either by trituration in a mortar exactly as if it were pill mass, or the cream may be melted at a low temperature and the other ingredients stirred in. When made on a commercial scale the creams are formed by being run into plaster of paris molds in trays filled with powdered starch.

Unless the pharmacist means to make a specialty of some particular cremule it is unnecessary to have them molded, as the soft plastic medicated cream may be quite easily divided into pieces of the required weight—30 to 90 grains—according to the amount and character of medication. These pieces may be roughly formed by hand into any of the usual shapes. Mathematical uniformity of shape is not at all necessary. If the creams have been molded in starch they require a few hours to cool and set, are brushed with a soft brush to remove adhering starch, and are then ready for coating.

The coating mixture has the following composition:

Pure chocolate	5 parts.
Powdered sugar	3 parts.

The chocolate is pounded in a warm mortar until reduced to a smooth paste and the sugar gradually incorporated with constant trituration until a smooth mixture results. This mixture requires plenty of hard rubbing, and should be tested for smoothness in the mouth.

The chocolate should melt away gradually and evenly, and when this condition is reached it is ready for use. It may be flavored, if desired, with a trace of vanilla. A sufficient quantity of this sweetened chocolate is melted over a water bath; an ointment pot in pan of warm water is more suitable than a shallow vessel. Into this the medicated creams are dropped three or four at a time. After a moment they are removed singly with a fork or long handled spoon and dropped on waxed paper; then put in a cool place to harden. They require careful handling and should be dispensed in shallow capsule or cachet boxes, preferably each in a small case.

If carefully manipulated the finished chocolates will be similar in appearance to those sold in the candy shops.

Before attempting the preparation of cremules it is advisable to examine critically an assorted lot of the confectioner's chocolates. These will suggest many possible variations in the consistence of cream, which varies with the temperature to which it is boiled, color and flavoring. A consideration of these points will enable the pharmacist to construct formulas which will be satisfying to the physician and pleasant to the patient.

Although not strictly pertaining to the subject the following may be usefully mentioned here:

Laxative Fruit Cremules.

Tamarind pulp	10 parts.
Powdered senna	3 parts.
Sugar	5 parts.
Wheat starch	1 part.

Mix in a water bath and divide into pieces of about 40 grains each and coat with chocolate. This forms the "Hindu dates" of the Austrian Pharmacopoeia and is improved by the addition of a little oil of coriander.

A similar preparation may be made by preparing confection of senna, B.F., stiff enough to be divided into pieces and chocolate coating each dose. The author of the article in the British paper did this once at the request of a physician, who wished a gentle laxative for a fastidious patient. When asked later if they suited the doctor smiled and said they were so nice he had eaten the lot himself.

With these as models the practical pharmacist may compound many other preparations to meet the requirements of local doctors.

To Disguise Cod Liver Oil

Use 2 or 3 drops of oil of eucalyptus to each ounce of cod liver oil.

Tincture of Ferric Acetate, Ethereal

Solution of ferric acetate (N. F. IV.)	75.0 mils.
Acetic ether	12.5 mils.
Alcohol	12.5 mils.
To make	100 mils.

Mix the acetic ether and alcohol, and gradually add to the solution of ferric acetate.

Keep the product in well-stoppered bottles in a cool place, protected from light.

Ferruginous Cod Liver Oil.

The use of iron soaps in combination with cod liver oil has been widely suggested in Europe as a means of exhibiting iron and an easily digested fat in one preparation. Feist and Auerhammer have offered the following formula for such a preparation:

Solution of ferric chloride	100 grammes.
Alcohol	30 grammes.
Ether	250 grammes.
Linseed oil	140 grammes.
Solution of potassium hydroxide (25 per cent)	107 grammes.
Cod liver oil, enough to make	1000 grammes.
Distilled water	enough.
Dried sodium sulphate	enough.

Prepare a potash soap of the linseed oil, using the alcohol and a sufficient quantity of distilled water (similarly to the U. S. P. method for making soft soap). Dissolve this soap in 1500 grammes of distilled water; to this add the solution of ferric chloride diluted with 500 grammes of distilled water. Set this mixture aside for an hour, collect the precipitate, and dissolve it in

the ether. Shake this solution with some dried sodium sulphate, decant, distill off the ether, and dissolve the iron soap in the cod liver oil.

As an improvement of the process of the Dutch Pharmacopoeia for a mixture of cod liver oil and iron benzoate, the following has been suggested:

Sodium benzoate	12.0 grammes.
Iron perchloride (sublimed)	12.0 grammes.
Carbon tetrachloride	12.5 grammes.
Water	60.0 grammes.
Alcohol (90 pc.)	50.0 grammes.
Cod liver oil	1,000.0 grammes.

Dissolve the sodium benzoate in the water and the iron perchloride in the alcohol; mix the two solutions in a flask and add the carbon tetrachloride. Close the flask with parchment paper and warm until the mixture separates into two clear liquids. Let the flask cool; draw off the supernatant liquid; mix it with the oil and heat the mixture at 100 deg. C. until a clear solution is obtained.

Glyceride of Red Bone Marrow.

Red bone marrow	25 grammes.
Chloroform water	50 grammes.
Glycerin	50 grammes.

Mix the marrow with the glycerin by vigorous trituration, add the chloroform water, and beat the whole together frequently during one hour; then strain, and make up to 100 grammes, with equal parts of chloroform water and glycerin.

Glycerite of Iron Chloride.

Solution of ferric chloride	4 fl. drs.
Citric acid	80 grains.
Glycerin	13 fl. ozs.
Ammonia	enough.
Distilled water to make	16 fl. ozs.

Mix the solution with the glycerin, dissolve the acid in 1 fluid ounce of water, mix the two liquids, and then add ammonia water, gradually, with constant stirring, until the liquid is but feebly acid. This latter will require about 1 fluid ounce. Then dilute with water to 16 fluid ounces.

If twice as much acid be employed, the liquor will be greenish instead of brown.

Each fluid ounce of glycerite (or glycerole) is equivalent to 1 fluid dram of tincture of ferric chloride.

Gray Oil.

Adams, writing in the Journal of the Royal Army Medical Corps, suggests the following formula for a mercurial injection, to be prepared according to art:

Mercury	20 grammes.
Anhydrous wool-fat	30 grammes.
Butyl-chloral hydrate	3 grammes.
Liquid petrolatum, to make	100 mils.

Liquid Court Plaster.

If soluble gun cotton is dissolved in acetone in the proportion of about 1 dram by weight of the former to 35 or 40 drams by volume of the latter, and ½ dram each of castor oil and glycerin be added, a colorless, elastic and flexible film will form on the skin when the liquid is applied. Unlike ordinary collodion, this preparation does not readily peel off. If tinted very slightly with alkanet and saffron, it can be made to assume the color of the skin, so that when applied it is almost invisible.

It is said that a mixture of warm solution of sodium silicate and casein, about 9 parts of the former to 1 part of the latter, gelatinizes and forms a sort of liquid court plaster.

The proportions of alcohol and ether for a pyroxylin solvent may be varied within wide limits, and the relative quantity of pyroxylin used is to be determined by the viscosity required. Suitable proportions are 100 volumes of ether to 40 volumes of alcohol (preferably absolute). Other solvents of pyroxylin are acetone (and homologues), various simple ethers, esters, camphor in absolute alcohol, etc. For epidermis application the ether-alcohol collodion is the best liquid; it evaporates so quickly that a few minutes suffice to apply several successive coatings to strengthen the film, which is most adherent. Pyroxylin in various simple or compound solvents, alone or associated with oily, resinous or pigmental bodies, or incorporated with a suitable modifying agent, as, for example, camphor, may be used as a thin laquer, a thick varnish, or a plastic solid.

As a working formula the following may be found useful:

Pyroxylin	1 ounce.
Amyl acetate	5 ounces.
Acetone	15 ounces.
Balsam of fir	2 drams.
Castor oil	2 drams.
Oil of cloves	15 minims.

Dissolve the pyroxylin in the amyl acetate, and the acetone and add the other ingredients, taking care to keep the mixture away from a flame.

Intramuscular Injection of Mercury

Finnemore (Guy's Hospital Gazette) gives the following for a mercury

cream suitable for intramuscular injection:

Corrosive mercuric chloride	13.6 grammes.
Hypophosphorous acid	100.0 mils.
Distilled water	enough.
Chlorbutanol	2.0 grammes.
Wool-fat	15.0 grammes.
Liquid petrolatum, to make	100.0 mils.

The mercuric chloride is dissolved in 200 mils of distilled water at 50 deg. C.; the solution is filtered, and to it is added slowly the hypophosphorous acid diluted with 200 mils of distilled water. The mixture is then heated on a water bath at 50 deg. C. for one hour. The precipitate is washed by decantation with distilled water and triturated with the wool-fat in a sterile mortar. The chlorbutanol is dissolved in about 50 mils of liquid petrolatum; this solution is mixed intimately with the wool-fat mixture and enough liquid petrolatum added to make 100 mils.

Jacobi's Gargle

Tincture of ferric chloride	12 mils.
Glycerin	24 mils.
Saturated solution of potassium chlorate enough to make	100 mils.

Owing to the alcoholic content of the tincture some of the potassium chlorate crystallizes out. For this reason the equivalent, about 4 grammes of sodium chlorate, can be used, which on account of its greater solubility remains in solution.

Lubricating Jelly

The following formula for lubricating jelly, which has been used at the Lankenau Hospital in Philadelphia, was published in a recent issue of the Journal of the American Medical Association:

Tragacanth, whole	3 grammes.
Glycerin	25 mils.
Phenol, in proper position	1.5 grammes.
Distilled water, a sufficient quantity to make	300 mils.

The tragacanth is broken in small pieces and put into a wide mouthed bottle; the other ingredients are added and the bottle is frequently shaken.

Mandl's Solution

Iodine	1.25 grammes.
Potassium iodide	5.50 grammes.
Oil of peppermint	0.75 mil.
Glycerin enough to make	100 mils.

Used as an antiseptic and stimulant application for the throat.

Menthol Pencils

Menthol	100 grammes.
Benzoic acid	10 grammes.
Eucalyptol	3 grammes.

Melt the ingredients together at the lowest temperature possible, mold the mass into cones, and allow these to cool in a covered vessel.

Modified Compound Tincture of Benzoin

Dr. P. E. Hommell contributes to Merck's Report what he designates an improved formula for compound tincture of benzoin. It is:

Benzoin (40 powder)	100 grammes.
Myrrh (moderately coarse powder)	20 grammes.
Storax	80 grammes.
Balsam of tolu	40 grammes.
Alcohol, to make	1,000 mils.

Swedish Bitters

This is a name sometimes applied to the compound tincture of aloes of the German Pharmacopoeia, the formula for which is:

Aloes	6 grammes.
Rhubarb	1 gramme.
Gentian	1 gramme.
Zedoary	1 gramme.
Saffron	1 gramme.
Diluted alcohol	200 grammes.

Normal Salt Solution

Normal physiological salt solution varies in strength according to the ideas of those who make it—or for whom it is made—from about 6/10 of 1 per cent. to 9/10 of 1 per cent.

In a note on this subject in The Druggists' Circular the percentage of salt in the solution is stated to be from 0.60 to 0.75, and in a British paper it is set down as being from 0.6 to 0.7.

In a very informative article on "Making and Marketing Sterile Salt Solution for Surgical Use," by St. Claire Ransford-Gay, published in The Druggists Circular, "normal physiological salt solution" is said to be an 0.8 per cent. sterile solution of sodium chloride in water.

Dorlan's Medical Dictionary says: "Normal or physiologic salt solution is one that contains from 0.6 to 0.75 per cent. of salt. It resembles in action and density most of the animal fluids and is used for intravenous injection after profuse hemorrhage or severe diarrhea."

In the United States Dispensatory under the heading "Sodium Chloride" we read: "A 0.9 per cent. solution is largely used under the name of physiological or normal salt solution in shock or hemorrhage."

This normal physiological salt solution should not be confused with the normal volumetric solutions used in chemistry.

Trojanka

Trojanka is regarded as a cure-all by the Swedes and Poles who use it. The composition is uncertain, as every dispenser offers something different, except that all agree that the "bitters" must contain chamomile and senna. A working formula is:

Orange peel	1 ounce.
Cut gentian	1 ounce.
Cardamom	½ ounce.
Galangal	½ ounce.
Star anise	½ ounce.
Caraway seed	½ ounce.
Centaury	1 ounce.
Red clover blossoms	½ ounce.
Blood root	½ ounce.
Cinchona	1 ounce.
Cinnamon	1 ounce.
Cloves	½ ounce.
Senna pods	½ ounce.
Orange flowers	½ ounce.
Nutmeg	1 only.

Somewhat less complex is the following:

Gentian	50 grammes.
Galangal	50 grammes.
Sarsaparilla	50 grammes.
Red clover blossoms	50 grammes.
Centaury	50 grammes.
Orange peel	15 grammes.
Star anise	8 grammes.
Cinnamon	8 grammes.
Nutmeg	4 grammes.
Nux vomica	2 grammes.

Red Mercuric Iodide Hypodermically

Dr. H. A. B. Dunning states that the physicians of his city are satisfied with the solutions of red mercuric iodide for subcutaneous injection made according to the following formulas:

Mild.

Red mercuric iodide	0.2 gramme.
Oil of sesame	50.0 grammes.

Triturate the finely powdered iodide with a small portion of oil of sesame to a smooth paste, then add the remainder of oil and mix thoroughly, introduce into a suitable container, and heat in water, shaking frequently until solution has been effected, filter while hot, and sterilize by immersing the container in water and heating to boiling for one hour.

Strong.

Red mercuric Iodide	0.5 gramme.
Castor oil	18.0 mils.
Olive oil	32.0 mils.

Triturate the iodide to a fine powder and rub to a smooth paste with a portion of the mixed oils, and then add the remainder of the oils, introduce into a suitable container, and heat in water with frequent agitation until solution has been effected; filter while hot, and sterilize by immersing the container in water and heating to boiling for one hour.

Dr. Dunning finds that castor oil is the best solvent.

Nutritive Enema

Liquid peptone	30.0 mils.
Glucose (20 P. C.)	100.0 grammes.
Pepsin	1.0 gramme.
Sodium chloride	0.5 gramme.
Bouillon, to make	250.0 mils.
Eggs, well beaten	2 only.

Permanganate Pencils

For preparing permanganate pencils, potassium permanganate and sodium sulphate are intimately mixed and heated until fused. The molten mass is then transferred to tin-lined or enameled molds of convenient shape.

Stypic Collodion

I.

Benzoin	44 grains.
Pyroxylin	44 grains.
Tannic acid	1 ounce.
Absolute alcohol	1 ounce.
Purified ether	4 ounces.

Dissolve the benzoin in the absolute alcohol and filter. In the filtrate dissolve the tannic acid, and add the other ingredients. Set aside for three days, and decant.

CHAPTER II.

THE PRESCRIPTION DEPARTMENT

Price Schedules—How to Calculate Alcohol Percentages—Tables of Solubilities—Bottle Capping Formulas—Disguising the Taste of Drugs—Colors for Show Bottles—Varnishes for Labels and Other Information of Interest to the Prescriptionist.

Always Consult the Index When Using This Book

N. A. R. D. Prescription Pricing Schedule.

(All figures are compounding fees only.)

How to Fix Price.—The price of the prescription is the compounding fee, + the cost of the container + twice the cost of the material. (Exception: When the cost of material is over $1.00, multiply cost by 1½ instead of 2; and further, if the cost is over 50c. and under $1.00, adopt the following sliding scale: Cost 60c., add $1.10; cost 70c., add $1.20; cost 80c., add $1.30; cost 90c., add $1.40. These prices are based on a $1.50 per hour scale.

Example.—If the ingredients of a four-ounce mixture cost 12c., compute price as follows: Compounding fee, 35c., + container, 5c., + twice cost of material, 25c. (12 × 2)=total, 65c.

1. Liquid Prescriptions.—Minimum total charge, 25c. All simple or compound mixtures, internal or external, dry or liquids and veterinary preparations are included in this table. Eye remedies should be charged for as in the column, "Dose 1-5 m."

Quan.	Dose. 1-5 m.	Dose. 10-25 M.	Dose. ʒss-ʒi.	Dose. ʒii-ʒi	Gargle & External only.
½ oz...	.25	.20	.15	.10	.10
1 oz...	.35	.30	.20	.15	.10
2 oz...	.45	.35	25	.20	.15
3 oz...	..	.40	.30	.25	.20
4 oz...	..	..	.35	.30	.25
6 oz...	..	..	.40	.35	.30
8 oz...	..	..	.45	.40	.35
12 oz...	..	..	.55	.45	.40
16 oz...	..	..	.60	.55	.50
32 oz...	..	..	.75	.70	.65

2. Proprietaries.—Original package, regular retail price; when costing over $2, $4 or $8 per dozen, add 65 per cent. to cost; when transferred to new container, add 15 per cent. to regular retail price. When part of package is dispensed, double cost of amount used, add charge for container and one-half of the compounding fee (see below).

3. Dry Mixtures.—Minimum total charge, 15c. These figures are compounding fees only.

Pills, Powders, Capsules, Wafers, Etc.

Number—	4	6	8	10	12	15	20	24	30	40	50
Fee—	15c	20c	25c	30c	35c	40c	45c	50c	60c	75c	90c

Then every additional 25 up to one hundred, 25c. After that 20c. for every additional 25.

Where powders are prescribed by the ounce, charge as follows for compounding fee: 1 oz., 25c.; 2 oz., 35c.; 3 oz., 40c.; 4 oz., 45c.; 6 oz., 50c.; 8 oz., 55c.; 12 oz., 65c.; 16 oz., 75c., etc.

Proprietaries costing 20c. per hundred or less, 10c for labeling and package, and 15c. for 1 doz., 25c. for 2 doz., 35c. for 3 doz., 40c. for 4 doz., then 5c. for each additional dozen. Costing over 20c. and under 50c. per hundred, 10c for labeling and package, and 20c. for 1 doz., 35c. for 2 doz., 50c. for 3 doz., 60c. for 4 doz., then 10c. for each additional dozen. When the wholesale price is over 50c. per hundred, special rates may be made.

4. Fatty Mixtures, Etc.

Ointments and Cerates.

½ oz.....	.20	4 oz.....	.55
1 oz.....	.25	6 oz.....	.65
2 oz.....	.35	8 oz.....	.75
3 oz.....	.45	16 oz.....	1.00

Suppositories, Bougies, Etc.

1	.20	12	.75
2	.30	15	.90
3	.35	18	1.05
4	.40	21	1.20
5	.45	24	1.35
6	.50	30	1.60
8	.60	36	1.80
10	.65		

5. Veterinary.—Allow a discount of 25 per cent. from the regular schedule on compounding fee only, except that for bulk powders the minimum charge be 25c. for compounding.

6. Household Remedies, Mixtures, Etc.: Add regular retail price of ingredients (none less than 5c.) and

charge for container. If any compounding is necessary, charge at rate of $1.50 per hour.

7. Containers: Pill and Powder Boxes, 5c. Ointment Jars, 1 oz., 5c.; 2-4 oz., 10c.; 8 oz., 15c. Bottles, 8 oz., or less, 5c.; 10-16 oz., 10c.; 32 oz., 15c.; ½ gal., 20c.; 1 gal., 25c. Glass Stoppered Bottles, three times the price of plain bottles.

8. Marking Price on Prescriptions: If a prescription or copy leaves your store, mark it with N. A. R. D. price, as follows:

P H A R M O C I S T
1 2 3 4 5 6 7 8 9 0

9. Admissible Changes: If customer is poor, add a star (*) to price mark, showing you have gone below schedule price. If your present prices are lower than above, raise them gradually to sechedule prices.

Pricing Prescriptions.

David H. Gordon contributes the schedule of prescription prices in vogue in the store of Coursey & Munn, Atlanta, Ga. He says: "This system is not without a flaw or exception, but we have followed the policy of marking a prescription 'special price' when not priced according to this chart. In looking over the file of about 20,000 prescriptions we find less than 150 marked 'special.'"

The rules for pricing and the schedule of prices follow:

Price no prescription at a profit of less than 100 per cent, unless it be for an original bottle of some specialty or "patent" medicine. Use your best judgment in applying the following rules to the prescription and remember that the party may want to get a copy and compare your price with that of other druggists.

1. When handed a copied prescription from a cutter, allow no rule to influence you in making a price.

2. The moral effect is what we are after.

3. Always impress the customer with the fact that we save them money on prescriptions, because we sell "patents" at reasonable figures.

Liquids.

(Where dose is a teaspoonful.)

For 2 ounces or less	$0.25
From ½ oz. to 1 oz	.35
From 1 oz. to 2 ozs	.40
From 2 ozs. to 3 ozs	.50
From 3 ozs. to 4 ozs	.65
From 6 ozs. to 8 ozs	.85
From 8 ozs. to 12 ozs	1.00

Liquids.

(Where dose is two teaspoonfuls.)

For 1 ounce or less	$0.25
From 1 oz. to 2 ozs	.35
From 2 ozs. to 3 ozs	.40
From 3 ozs. to 4 ozs	.50
From 4 ozs. to 6 ozs	.65
From 8 ozs. to 12 ozs	.90
From 12 ozs. to 16 ozs	1.25

Liquids for External Use.

For 1 oz. or less	$0.25
From 1 to 2 ozs	.35
From 2 to 3 ozs	.40
From 3 to 4 ozs	.50
From 4 to 6 ozs	.65
From 6 to 8 ozs	.75

Shop Pills.

For 12 or less	$0.25
From 12 to 18	.35
From 18 to 24	.40
From 24 to 36	.50
From 36 to 48	.65

Hypodermic Tablets.

(100 per cent. on net invoice price.)

For 3 or less	$0.25
For 4	.35
From 4 to 6	.50
From 6 to 8	.65
From 9 to 12	.75
From 12 to 16	1.00

Powders.

For 6 or less	$0.25
From 6 to 8	.35
From 8 to 12	.40
From 12 to 15	.50
From 15 to 24	.65
From 24 to 30	.75
From 30 to 36	.85
From 36 to 48	1.00
From 48 to 60	1.25

Konseals.

For 4 or less	$0.25
From 4 to 6	.35
From 6 to 8	.40
From 8 to 12	.50
From 12 to 24	.75
From 24 to 36	1.00

Ointments.

For ½ oz. or less	$0.25
From ½ to 1 oz	.35
From 1 to 2 ozs	.50
From 2 to 4 ozs	.75
From 4 to 8 ozs	1.00

Hand-Made Pills.

For 6 or less	$0.25
From 6 to 8	.35
From 8 to 12	.40
From 12 to 24	.65
From 24 to 36	.85

Bulk Powders.

For 1 oz. or less	$0.25
From 1 to 2 ozs	.35
From 2 to 4 ozs	.40
From 4 to 6 ozs	.50
From 6 to 8 ozs	.65
From 8 to 16 oz	.75

Capsules.

For 8 or less	$0.25
From 8 to 12	.35
From 12 to 15	.40
From 15 to 24	.65
From 24 to 36	.75
From 36 to 48	.90

From 48 to 60..... 1.00
From 60 to 75..... 1.25
From 75 to 100..... 1.50

A California Schedule

At the 1919 meeting of the California Pharmaceutical Association the accompanying prescription price schedule was submitted for consideration with the statement that many of the druggists in San Francisco were adhering to it:

Capsules, pills, powders and tablets:

Number.	Price per dose.	Price of prescription
12	5 cents	.60
15-20	4 cents	.80
24-30	3½ cents	1.05
35-50	3 cents	1.50
60-100	2½ cents	2.50

Liquids in teaspoonful doses up to two ounces, nothing less than 50 cents.

Quantity.	Doses.	Per Dose.	Total.
3 ounces	24 doses	3 cents	$ .75
4 ounces	32 doses	3 cents	1.00
6 ounces	48 doses	2½ cents	1.20
8 ounces	64 doses	2½ cents	1.50
12 ounces	96 doses	1¾ cents	1.65
16 ounces	128 doses	1¾ cents	2.25

Dessertspoon doses:

3 ounces	12 doses	5 cents	$ .60
4 ounces	16 doses	5 cents	.80
6 ounces	24 doses	4 cents	.96-1.00
8 ounces	32 doses	4 cents	1.42-1.50
12 ounces	48 doses	3½ cents	1.65
16 ounces	64 doses	3 cents	1.90

Tablespoon doses:

3 ounces	6 doses	10 cents	$ .60
4 ounces	8 doses	10 cents	.80
6 ounces	12 doses	8 cents	1.00
8 ounces	16 doses	8 cents	1.25
12 ounces	24 doses	6 cents	1.50
16 ounces	32 doses	5½ cents	1.75

Ointments.

1 ounce	$ .50
2 ounces	.75
3 ounces	1.00
4 ounces	1.25
6 ounces	1.50
8 ounces	1.75

That applies to everything except eye ointment. Eye ointment and eye water, even if they are just plain boric acid, should never be put up for less than 50 cents in the case of ordinary drugs, and expensive drugs; which are very frequent in eye waters, at a greater price. It is presumed that in an eye preparation we use excessive care.

Liniments.

1 and 2 ounces	$ .50
3 ounces	.65
4 ounces	.75
6 ounces	1.00
8 ounces	1.25
16 ounces	2.00

Suppositories, 75 cents per dozen (in single dozen lots.)

Cachets, 10 cents each, with a charge of 7½ cents in large lots.

Ruddiman's Scale

Ruddiman in his work on "Incompatibilities in Prescriptions" (1908) gives the following table showing the average of prices charged in the various sections of the United States for prescriptions not requiring extraordinary skill or calling for any very expensive ingredients:

Liquids.

1 ounce	20 to 25 cents.
2 ounces	30 to 35 cents.
3 ounces	35 to 40 cents.
4 ounces	40 to 50 cents.
6 ounces	60 to 65 cents.
8 ounces	75 cents.

Ointments.

½ ounce	25 cents.
1 ounce	30 to 35 cents.
2 ounce	40 to 50 cents.

Powders, Capsules or Pills.

1 to 4	15 to 25 cents.
5 to 6	25 to 30 cents.
8	30 to 35 cents.
10	35 to 40 cents.
12	40 cents.
24	50 to 75 cents.

Suppositories.

½ dozen	40 to 50 cents.
1 dozen	75 to 100 cents.

Canadian Association and Prescription Pricing

At its 1910 meeting the Canadian Pharmaceutical Association voted to recommend to the druggists of the Dominion the following scale of prices for ordinary prescriptions:

Mixtures, 8 ounce	$1.00
Mixtures, 6 ounce	.75
Mixtures, 4 ounce	.65
Mixtures, 3 ounce	.50
Mixtures, 2 ounce	.40
Mixtures, 1 ounce	.25
Mixtures, 4 dram	.25
Pills, ready-made, 1 dozen	.25
Pills, hand-made, 1 dozen	.50
Capsules, 1 dozen	.50
Konseals, 1 dozen	.50
Suppositories, 1 dozen	1.00
Ointments, ½ ounce	.50
Ointments, 2 ounce	.75

Dispensing Fees in Austria

According to an official pharmaceutical price list adopted in Austria a few years ago the fees which the pharmacists are allowed to charge for dispensing manipulations are as follows:

For each act of dispensing a charge

of 4 cents must be made; for each mixing of liquids or ointments, double that amount; for dividing a substance into ten powders, at least 10 cents, and as much for each infusion; for all other manipulations, including the boiling of substances and the making of any number of pills up to 100, 16 cents. For the weighing of amounts above 1 centigram a slight additional tax i charged, and for smaller quantities than that the additional tax is doubled.

Prescription Percentages

A pharmacist dispensing more than 7,000 prescriptions each month in one of the Western States has made a careful inventory of his files and has learned some interesting things concerning them.

For instance, he has found that more than 68 per cent. of the prescriptions he receives call for liquids; almost 10 per cent. for capsules, 9 per cent. for powders, and 6 per cent. for ointments. Only 1 out of every 7,350 prescriptions calls for a plaster, and only 6 of them for cachets.

His tabulation shows also the percentage of simple and mixed liquids, simple and mixed powders, manufactured and fresh made pills, etc. The figures follow:

Mixed liquids.....	3,199 =	43.52+ p. c.
Single liquids.....	1,803 =	24.53+ p. c.
Mixed capsules.....	473 =	6.43+ p. c.
Mixed powders.....	427 =	5.00+ p. c.
Mixed ointments...	290 =	3.94+ p. c.
Simple powders....	250 =	3.40+ p. c.
Simple capsules....	224 =	3.05+ p. c.
Manufactured pills.	221 =	3.00+ p. c.
Simple ointments...	169 =	2.29+ p. c.
Prop. suppositories.	87 =	1.18+ p. c.
Fresh made pills...	82 =	1.11+ p. c.
Fr. made s'positories	20 =	.27+ p. c.
Cachets	6 =	.08+ p. c.
Plasters	1 =	.001+ p. c.
Not classified.....	98 =	1.33+ p. c.
Total.....	7,350	

This indicates that the several preparations are in demand in the following order: Liquids, capsules, powders, ointments, pills, suppositories, cachets and plasters. The figures showing the relative percentages are as follows:

Liquids	5,002 =	68.05+ p. c.
Capsules	697 =	9.48+ p. c.
Powders	677 =	9.21+ p. c.
Ointments	459 =	6.24+ p. c.
Pills	303 =	4.12+ p. c.
Suppositories	107 =	1.45+ p. c.
Cachets	6 =	.08+ p. c.
Plaster	1 =	.001+ p. c.
Not classified.....	98 =	1.33+ p. c.
Total.....	7,350	

During 1919 The Druggists' Circular published a summary of the answers received from a questionnaire in regard to the prescription department in which it was shown that capsules are being more generally used than ever before, and the figures above indicate that nearly 10 per cent. of all the prescriptions written are for this class of galenicals. Plasters, other than proprietary, are rarely employed, and pills are not so popular as they were a few years ago.

These figures may not apply to all stores, but a comparison of them with the answers received in reply to the questionnaire described above indicates that they are about right for the average one.

Calculating Alcoholic Percentage

1. What is the percentage of absolute alcohol in the following mixture?

Aromatic fluidextract of cascara sagrada.....	125 mils.
Fluidextract of senna.....	75 mils.
Fluidextract of juglans....	65 mils.
Aromatic elixir.....	735 mils.
Syrup	25 mils.
Alcohol	125 mils.
Water	200 mils.

By reference to the official tables we find the alcoholic percentages of the various preparations, and proceed as follows:

	Percentage of alcohol.	No. of units.
Aromatic fluidextract of cascara sagrada.....	38 × 125 =	4750
Fluidextract of senna..	43 × 75 =	3225
Fluidextract of juglans.	48 × 65 =	3120
Aromatic elixir.....	25 × 735 =	18375
Syrup	0 × 25 =	0
Alcohol	95 × 125 =	11875
Water	0 × 200 =	0
	1350	41345

Dividing 41345 by 1350 we get 30.6, which is the alcoholic percentage of the mixture.

2. What is the percentage of alcohol in a mixture of—

Wine of opium.....	1 ounce.
Tincture of valerian....	1½ ounces.
Ether	4 drams.
Oil of peppermint.....	1 dram.
Fluidextract of ipecac..	15 minims.
Alcohol, enough to make	4 ounces.

As the units are different, the first step is to make them uniform, and this may be done by expressing them all in drams or minims. In this case it is easier to express them in drams, so we have—

	Percentage of alcohol.	No. of units.
Wine of opium.....	25 × 8 =	200
Tincture of valerian..	72 × 12 =	864

Ether	4 × 4	=	16
Oil of peppermint	0 × 1	=	0
Fluidextract of ipecac.	72 × 0.25	=	18
Alcohol (estimated quantity)	95 × 6.75	=	641.25
	32		1739.25

Thirty-two into 1739.25 goes 54.35+ times—the percentage of alcohol in the preparation.

Percentage Solutions

The following information is taken from the Hospital Formulary of the Department of Public Charities and the Department of Bellevue and Allied Hospitals of the City of New York, which was formerly issued under the editorship of Dr. Charles Rice, and seems simple and sane, which two words cannot with justice be applied to all such information that has appeared in print:—

Table for Preparing Percentage Solutions.

One fluid ounce of water, or 480 minims, weighs 456.4 grains. One pint of water, or 7680 minims, weighs 7302, or practically 7300 grains. Hence a 10 per cent. solution, for instance, is one which contains 730 grains of some substance in 1 pint.

The following table will show at a glance the quantity of any substance, by weight, required to prepare 1 pint of a solution of the required percentage. When great accuracy is not required, the rounded-off figures, in parentheses, may be used and the fractions omitted.

I. To Prepare One Pint of a Solution.

Required to contain of a certain substance per cent.	or	Take of the substance the below stated amount in grains with enough water to make 1 pint.		
1-100	1 in 10,000	Grains	0.73	(¾)
1-50	1 in 5,000	"	1.46	(1½)
1-40	1 in 4,000	"	1.83	(1¾)
1-30	1 in 3,000	"	2.44	(2½)
1-25	1 in 2,500	"	2.92	(3)
1-20	1 in 2,000	"	3.65	(3¾)
1-15	1 in 1,500	"	4.87	(4¾)
1-10	1 in 1,000	"	7.30	(7¼)
1-5	1 in 500	"	14.60	(14½)
¼	1 in 400	"	18.25	(18¼)
1-3	1 in 300	"	24.33	(24¼)
½	1 in 200	"	36.50	(36½)
1	1 in 100	"	73.00	(73)
1½	1 in 75	"	97.33	(97)
2	1 in 50	"	146.00	(146)
2½	1 in 40	"	182.50	(180)
3	1 in 33⅓	"	219.22	(220)
4	1 in 25	"	292.00	(290)
5	1 in 20	"	365.00	(365)
10	1 in 10	"	730.00	(730)
20	1 in 5	"	1460.00	(1460)
25	1 in 4	"	1825.00	(1825)
50	1 in 2	"	3650.00	(3650)

Prices Per Pound and Ounce

The Southern Pharmaceutical Journal gives the following as a convenient table when invoicing:—

Price per pound.	Cents per ounce.	Price per pound.	Cents per ounce.
At $1.00	6¼	At $8.25	51 9/16
1.25	7 13/16	8.50	53⅛
1.50	9⅜	8.75	54 11/16
1.75	10 15/16	9.00	56¼
2.00	12½	9.25	57 13/16
2.25	14 1/16	9.50	59⅜
2.50	15⅝	9.75	60 15/16
2.75	17 3/16	10.00	62½
3.00	18¾	10.25	64 1/16
3.25	20 5/16	10.50	65⅝
3.50	21⅞	10.75	67 3/16
3.75	23 7/16	11.00	68¾
4.00	25	11.25	70 3/16
4.25	26 9/16	11.50	71⅞
4.50	28⅛	11.75	73 7/16
4.75	29 11/16	12.00	75
5.00	31¼	12.25	76 9/16
5.25	32 13/16	12.50	78⅛
5.50	34⅜	12.75	79 11/16
5.75	35 15/16	13.00	81¼
6.00	37½	13.25	82 13/16
6.25	39 1/16	13.50	84⅜
6.50	40⅝	13.75	85 15/16
6.75	42 3/16	14.00	87½
7.00	43¾	14.25	89 1/16
7.25	45 5/16	14.50	90⅝
7.50	46⅞	14.75	92 3/16
7.75	48 7/16	15.00	93¾
8.00	50		

Metric Weighing and Old-Style Pricing

If	1 pound (av.) costs..	100.00%
	1 kilogramme costs..	220.46%
	100 grammes cost.....	22.046%
	10 grammes cost.....	2.205%
	9 grammes cost.....	1.984%
	8 grammes cost.....	1.764%
	7 grammes cost.....	1.544%
	6 grammes cost.....	1.323%
	5 grammes cost.....	1.103%
	4 grammes cost.....	.882%
	3 grammes cost.....	.662%
	2 grammes cost.....	.441%
	1 gramme costs.....	.221%
If	1 pint costs.....	100.00%
	1,000 mils cost.....	211.3%
	100 mils cost.....	21.13%
	10 mils cost.....	2.113%
	9 mils cost.....	1.902%
	8 mils cost.....	1.690%
	7 mils cost.....	1.479%
	6 mils cost.....	1.268%
	5 mils cost.....	1.056%
	4 mils cost.....	.845%
	3 mils cost.....	.634%
	2 mils cost.....	.423%
	1 mil costs.....	.211%

The application of these tables is obvious. If we desire to estimate the value of the opium in 1,000 mils of laudanum, at $4.85 per pound, multiply the constant for 100 grammes by the cost per pound and we have 4.85 × 22.046

=106.92310. Pointing off two more figures for per cent., we have 1.06, the cost in dollars of the opium.

Solubilities in Glycerin.

Ossendowski has worked out the following table of solubilities in glycerin; the figures represent the quantity of each substance soluble in 100 parts of glycerin at 15° to 16° C.:

Ammonium carbonate	20.00
Ammonium chloride	20.06
Barium chloride	9.73
Benzoic acid	10.21
Boric acid	11.00
Calcium sulphate	5.17
Copper acetate	10.00
Copper sulphate	36.30
Iodine	2.00
Mercurous chloride	8.00
Oxalic acid	15.10
Phosphorus	0.25
Potassium arsenate	50.13
Potassium chlorate	3.54
Potassium chloride	3.72
Potassium cyanide	31.84
Potassium iodide	39.72
Quinine	0.47
Sodium bicarbonate	8.06
Sodium arsenate	50.00
Sodium borate	60.00
Sodium carbonate	98.30
Sulphur	0.14
Tannic acid	48.83
Zinc chloride	49.87
Zinc iodide	39.78
Zinc sulphate	35.18

Temperature Changes When Certain Salts Dissolve.

When hydrated salts are dissolved in water they absorb an amount of heat equivalent to that given off in their crystallization. This accounts for the lowering of the temperature when salts generally are dissolved. Potassium iodide is a striking example.

Anhydrous salts, on the other hand, unite chemically with water when dissolved therein and give off heat. Sodium iodide is an anhydrous salt. The marked rise in temperature when sulphuric acid or quick lime is mixed with water is due to the same cause.

Solubility of Salicylic Acid in Fatty Oils.

Engfelt states the solubility of salicylic acid in fatty oils as follows:

Seal	1.7 pc.	Rapeseed.	2.17 pc.
Cod liver.	1.86 pc	Sesame ..	2.61 pc.
Peanut ...	1.88 pc.	Linseed ..	3.04 pc.
Almond ..	2.08 pc.	Cottonseed	3.23 pc.
Olive	2.14 pc.	Castor ...	12.98 pc.

Salicylic acid is insoluble in paraffin. On account of the relatively high solubility of salicylic acid in castor oil, mixtures of that with other oils will, of course, dissolve more than the latter.

Table of Solubilities.

The solubilities of the more important medicinal chemicals are given in the Pharmacopoeia and other works which druggists are supposed to possess. Knowing the solubility of the given salt (or other drug) in the medium which it is desired to saturate with it, a simple mathematical calculation will enable the operator to determine how much of the salt and how much of the medium to use in making a saturated solution.

J. Leon Lascoff has given the following figures to aid those who desire to make saturated solutions of some of the more common medicinal salts in water:

	Grammes to make 100 c. c.	Grains to make 1 fl. oz.
Potassium iodide	99.6	456
Sodium iodide	127.5	584.3
Strontium iodide	114.9	526
Potassium bromide	50.40	230
Sodium bromide	72.09	329
Potassium chlorate	5.69	26
Magnesium sulphate	56.32	260

To Convert Thermometer Readings.

A correspondent of the Lancet (London) offers a new alternative method of converting degrees Centigrade into degrees Fahrenheit. It consists of multiplying the centigrade figures by 2, deducting one-tenth of the product, and adding 32. Example (a), 30° C.= 86° F. Method: 30×2=60. 60—6=54. 54+32=86. Example (b), 37° C.=98.6° F. Method: 37×2=74. 74—7.4=66.6 66.6+32=98.6. Example (c), 40° C.=104° F. Method: 40×2=80. 80—8=72. 72+32=104.

C. H. Stocking has found the following rule easy to apply: F—32 is to 180 as C. is to 100. For example, 92° F.= how many degrees C.? 92—32=60, and 60 : 180 : : 33 1-3 : 100; therefore 92° F.=33 1-3° C.

Neither rule, it seems to us, is as easy as those we use, which are: To convert degrees Fahrenheit into degrees centigrade, subtract 32, divide by 9, multiply by 5. For example, take 212° F., subtract 32, and we have 180; into this 9 goes 20 times; and 5 times 20 is 100. To convert degrees centigrade into degrees Fahrenheit, divide by 5 multiply by 9, and add 32. It is easy to remember these rules, because we know that the boiling point is 212° on one scale and 100° on the other, and those two figures suggest the application of the rules to themselves, and

that enables us to remember the factors to apply to any other given figures.

Degrees Baume

A subscriber requests that we explain what is meant by 26 deg. B. at 15 deg. C. found on the labels of 28 per cent. ammonia water.

B stands for Baumé and C for centigrade. The temperature at which specific gravity is taken is, with chemists, 15 deg. C., the official temperature in most countries. In this country the official temperature for taking specific gravity is 25 deg. C. An easy and much-used method of taking the specific gravity of liquids is by using Baumé's hydrometer. By dropping this instrument into a liquid it sinks to a depth which varies with the weight of the liquid. A scale indicates the depth the instruments sinks, and by a simple computation the figure, or degree, on the scale may be made to show the specific gravity. The following is the rule when the hydrometer for liquids lighter than water is used: Divide 140 by 130 + the degree B. Apply this rule to the present case we have $\frac{140}{130 + 26}$, the answer being 0.897, which is the specific gravity of stronger ammonia water.

To Find the Capacity of a Barrel

To find the capacity of a barrel, square the largest diameter, then multiply by 2, then add the square of the head diameter; multiply this sum by the length of the barrel and that product by 0.2618.

Take, for example, a barrel whose largest diameter is 21 inches, head 18 inches and height 33 inches: $21 \times 21 \times 2 = 882$; $18 \times 18 = 324 + 882 = 1206$; $1206 \times 33 = 39{,}798$; $39{,}798 \times 0.2618 = 10.419.11$ cubic inches. Dividing by 231, the number of cubic inches in a gallon gives 45.10, the capacity, in gallons, of the barrel.

How to Use an Alcoholometer

A full explanation of the appliance would take much space and should be accompanied by an illustration. (See Caspari's Treatise on Pharmacy). Here we will say that the alcohol is put into an appropriate cylinder, the hydrometer is floated upon the fluid and the percentage of alcohol read off at the point where the scale touches the surface of the liquid. The scale usually has two sections: The Richter scale indicating percentage of alcohol by weight and the Tralles scale giving percentage by volume.

As to temperature correction, if the thermometer sealed within the bulb is in Fahrenheit degrees—as is usually the case—the factor of correction is 0.15 of 1 per cent. for each degree above or below 60 degrees F.; that is, of course, if the hydrometer is standardized (as is customary) to that degree of temperature.

Thus, if your reading is 93 per cent. of alcohol by volume, when the thermometer shows the temperature of 70 degrees F., then the percentage by volume at standard (60 degrees F.) temperature would be 93 per cent. less 0.15×10, or 93—1.5, or 91.5 per cent. of alcohol by volume. On the other hand, if the reading is 93 per cent. and the thermometer reading is 50 degrees F., then the correction ($0.15 \times 10 = 1.5$) is made by adding 1.5 to 93 so the alcohol under observation would show 94.5 per cent. by volume at 60 degrees F.

Formula Calculation Helps

Secretary Lowry (Baltimore branch of the American Pharmaceutical Association) gives these figures:—

A gallon is equivalent to 58.418 grains, or 61,440 minims. If a formula for a gallon of a preparation calculated for 1,000 mils is wanted, all that is necessary in the calculation is to multiply the quantities in grammes by 58.418, and the product will be in grains, which may be reduced to avoirdupois pounds, ounces and grains. Or multiply the quantities in mils by 61.44, and the product will be in minims, which may be reduced to pints, fluid ounces, drams and minims.

If tables be kept of the number of grains or minims in each ounce from 1 to 16 as well as tables by 500s, from 500 to 7,000, showing the equivalents in ounces and grains and in fluid ounces, drams and minims, the conversion becomes easy.

For pints divide either of these factors by 8, for quarts by 4, for a multiple number of gallons multiply by the number of gallons wanted.

As an example, the U. S. P. formula for syrup of orange peel was cited, the quantity required being one gallon.

Tincture sweet orange peel, 50 mils $\times$ 61.44 = 3,072 minims = 6 ounces, 192 minims.

Citric acid, 5 grammes $\times$ 58.418 = 292 grains = 292 grains.

Magnesium carbonate, 10 grammes $\times$ 58.418 = 584 grains = 1 ounce 147 grains.

Sugar, 820 grammes $\times$ 58.418 = 47903 grains = 6 pounds 13 ounces 215 grains.

Water, a sufficient quantity to make 1000 mils $\times$ 61.44 = 61440 minims = 1 gallon.

Hydrometers

It is not necessary to use a particular kind of hydrometer for urine, and another kind for milk, alkali solutions, or acid solutions, but it is more convenient. The lactometer, the acidometer, or any other special kind of hydrometer, is scaled in such manner that it is practically unnecessary to perform any mathematical calculation in determining the fat-content or percentage of total solids in the milk, or the percentage strength of the acid solution from the reading. Of course, any of these characteristics may be determined from an ordinary hydrome-

ter reading, but the calculation involved is time-consuming and often difficult. With the special kind of hydrometer, on the other hand, it is necessary only to consult a table of equivalents.

The Hot Plate

The hot plate is simply a flat sheet of iron which is supported either by a metal tripod, or, if purchased, the best form is that with removable legs, says Joseph L. Mayer in a paper read before the New York State Pharmaceutical Association. He added:

To avoid rusting of glassware, it is well to place a sheet of very thin asbestos paper on top of the iron. Of course, the heat is an ordinary bunsen burner or any other convenient means.

Among other advantages are the fact that by moving the material being heated, either nearer or further away from that portion of the plate where the flame is, varying temperatures are obtained.

The hot plate is an invaluable aid in drying glassware. It has many advantages over wire gauze.

Sterilization of Prescription Vials

In Heinemann's Laboratory Guide in Bacteriology is a section on methods of sterilization, and from this we quote a paragraph:

Sterilization by dry heat is applicable to the sterilization of most glassware. This method of sterilization is carried out by means of hot-air sterilizers. These hot-air sterilizers are boxes with double walls of sheet iron. The bottom shelf should always be covered with a piece of asbestos, to prevent heating the apparatus too rapidly. The temperature is maintained at 160 deg. (C.) for one hour. The flame enters a hole provided at the bottom of the box. Care should be taken to avoid the possibility of the flame becoming luminous, otherwise the glassware will be covered with soot.

Such sterilizers are on the market.

The "Explosion" of Solution of Hydrogen Dioxide

Manufacturers of solution of hydrogen dioxide generally make use of some preservative to assure increased permanency of their products. The most popular preservative seems to be acetanilide; phosphoric acid is quite efficacious and so are other "mineral" acids. As the expulsion of the cork of the container is caused by the pressure of the oxygen given off by the solution and confined by the stopper, and as it is at best possible only to reduce the rate of decomposition and the consequent evolution of oxygen, the only practicable and safe method of stoppering bottles containing solution of hydrogen dioxide is to use a sound cork and fit it loosely in the neck of the container so as to prevent the accumulation of oxygen under pressure. As heat favors the decomposition of the solution it follows that the containers should be kept in a cool place.

A "Carron Oil" Suggestion

Carron oil with the addition of about 1 per cent. of compound solution of cresol is a nice, white, smooth preparation that is far better and quicker in action than the regular mixture, the cresol solution having an antiseptic action which is desirable.—Louis J. Stiehl.

Dispensing Liquids in Capsules

A reader writes: The soft capsule for liquids is superior in every way to the hard. Not the least advantage of the soft capsule is freedom from leakage if the work is carefully done.

A supply of different sizes of soft capsules and racks to hold them while being filled need not cost $2. Doctors prefer the soft variety because of the ease with which they may be swallowed.

Some time ago I filled a prescription calling for a liquid in capsules, and, as usual, dispensed the soft variety. The prescription had been filled in another store, where hard capsules were used. The customer refused to take mine because they were not like the first lot. I called the doctor and had him tell his patient that my work was correct.

This introduced be to a physicain whom I had never known, who lives in a part of the city far from my store. If he has a call anywhere near me now I get the prescription.

Labeling Prescription Boxes

Unless the paper is of unusual character any ordinary adhesive ought to answer. If the paper is very thin, ordinary flour paste, made by boiling flour with water until the mixture thickens, might prove better than others, as if it strikes through no stain will result. This paste dries slowly. A strong solution of dextrin is a good adhesive for use on paper. Its odor is slightly objectionable, however, but this is not perceptible when dry.

A moderately thick solution of gum arabic is a very good paste for joining paper to paper, and is practically odorless when fresh.

Manipulation has much to do with the matter of wrinkling. If the label

is evenly coated and carefully pressed down, it will not be apt to wrinkle.

Large labels may be made to remain wrinkleless by wetting them well with water on both sides before affixing.

Use of the Red Cross for Commercial Purposes

The act of Congress under which the National Red Cross was reincorporated in 1905 provides that no person not then legally entitled to the use of the sign of the red cross shall be permitted to use it in any commercial manner.

Severing Test Tubes

Glass is dissolved by hydrofluoric acid, which doubtless could be used in removing the lower end of a test tube without breaking. To etch a line around the outside of the tube, cover it with melted wax or paraffin, scrape the protective covering from the tube where you desire to sever it, and apply the acid. Repeated applications would, of course, in course of time, cut the tube in two.

Hydrofluoric acid should be used with caution, and only by those who know how to handle dangerous chemicals.

To Prevent the Walking of Bottles

R. A. Murdaugh, Michigan, writes: "To prevent toilet-water bottles or other glassware from 'walking' off the glass shelves in show cases, put a strip of crepe paper under them. This takes up the jar and provides the necessary friction."

Removing a Cork from a Bottle

A cork that has been pushed into a bottle may be removed thus: Tie several knots in one end of a string to form a large cluster and drop it into the bottle, holding on to the other end of the string. Turn the bottle over so that the cork will fall into the opening in the neck; then pull on the string, and as the latter comes out of the bottle the cluster of knots will force out the cork.

Quinine With Acetyl-Salicylic Acid

Quinine is incompatible with several organic acids, a poison, quinotoxin, being formed under certain conditions when they remain together. Prof. Wilbur L. Scoville has studied this subject and reported some of his findings in a paper read before the Detroit branch of the American Pharmaceutical Association and printed in the Journal of the association. In this paper mention is made of the decomposition of a mixture of quinine sulphate and aspirin.

In Detroit a death is reported as having been caused, supposedly, by the taking of quinine and aspirin. In commenting on this case the Bulletin of Pharmacy well says: "If the quinine and aspirin combination was the cause of death in this instance, and it appears quite likely that it was, druggists should be on their guard against dispensing such mixtures. As both quinine and aspirin are popular home remedies they should also advise customers not to take the two in conjunction."

Even when death is not caused by the mixture, rash and other distressing symptoms have frequently followed the taking of the two common drugs at the same time.

Keeping Track of Small Bottlees

Hague (Meyer Bros., Druggist) says that keeping track of small bottles, such as one-eighth ounce vials of alkaloids and poisonous chemicals, is a rather difficult task, as they get shoved behind each other and often fall from the shelf. To overcome this he advises that the druggist procure a small wooden box about 4 by 6 inches, and 1 inch deep. All poisons of one class may be placed in this box and the front of it plainly marked to show what it contains, thus: "This box contains silver cyanide, silver nitrate, fused silver nitrate, silver oxide." The next box may contain strychnine salts, etc. When in need of one of these bottles the druggist may lift the box from the shelf and his entire assortment of one class of chemicals is together and before him.

Bottle Capping With Paraffin or Gelatin

If a paraffin capping is desired, the simplest method is to stir into melted paraffin a suitable amount of pigment, and keep the mixture well stirred to hold the pigment in suspension while dipping.

If, for instance, a white capping is desired, 10 to 20 per cent. of zinc oxide, or of lead carbonate, or (less opaque) of talc, white clay, or chalk, can be sifted into the paraffin and well stirred. If a red color is desired, use jewelers' rouge, or red lead, for brown, use iron oxide or burnt sienna, for blue use prussian blue or Turnbull's blue, and for yellow, lead iodide.

The proportions of each of these will vary with the depth of color and opacity desired, and some—as the red or yellow, might be employed more economically in mixture, as chalk or clay with the lead color.

Another method is to dye the paraffin

itself by means of an oil-soluble color, any shade of which may be obtained from the dye dealers. Then if opacity is also desired, a pigment may be used in addition.

Many of these opaque and colored cappings are made from gelatin. The method is similar, but the gelatin being more viscous, the pigments remain in suspension better. A good mixture for use as a base is gelatin 20 parts, glycerin 15 parts, water 65 parts. Soak the gelatin in the water for an hour, then add the glycerin and heat until the gelatin is dissolved. This can be colored with water-soluble dyes or rendered opaque with one or a combination of the pigments enumerated. The brittleness of the gelatin mass can be regulated by the glycerin, using a larger proportion to soften the caps and less to harden them.

Glucose can be used in place of glycerin, and is economically to be preferred, but an antiseptic must be incorporated or the caps are liable to mold. Dipping them into formaldehyde solution would prevent this, but it also hardens the caps. A little phenol or salicylic acid in the mass would prevent molding.

Bottle Capping Mixture

I.

Take 1 pound of gelatin, melt it in as little water as necessary, add 1½ ounces of glycerin and enough "liquid cochineal" to give it color.

II.

Gelatin	1 ounce.
Acacia	1 ounce.
Starch	1 ounce.
Boric acid	20 grains.
Water	16 ounces.

Mix the acacia, gelatin and acid with 14 ounces of cold water, and stir occasionally until the gum is dissolved; then heat the mixture to boiling in a sand-bath; remove the scum and strain. Mix the starch intimately with the remainder of the water and stir this mixture with the hot gelatin solution until a uniform product results. This preparation should be softened for use by the application of heat.

Determining Melting Points

Havas (Chem. Zeit.) gives the following method for determining melting points of substances melting at high temperatures: A small porcelain or nickel crucible is filled with molten soft solder (two parts of tin and one part of lead), a thermometer placed in the metal, and the substance under examination put on the surface of the metal. The crucible is then slowly heated until the substance has melted. Melting points up to 450 degrees C. can thus be determined easily.

Preparing Benzoinated Lard

To make a good benzoinated lard at least three things are necessary, good lard, good benzoin and some skill. Lard which is good from a pharmaceutical standpoint is not to be obtained in the grocery store. To be sure of his lard, the pharmacist should make it himself. To do this, he should procure from a butcher the leaf or flare obtained from the abdomen of the hog, wash the fatty tissue free from blood and dirt, dry it with a clean towel, cut it into small pieces and heat it in an earthen or clean iron vessel over a water-bath until the fat has completely separated from the tissue, which will require a temperature of 55 degrees C. (131 degrees F.), and strain it. Beal, in giving this process, adds that if the proper amount of crushed benzoin be added at once, and the heating and stirring be continued for about twenty minutes before straining, "the injury due to a second heating is avoided."

Scoville gives practically the same process, and also says that "the addition of a small piece of elm bark while melting aids in clarifying."

He also says that in following the official process for benzoinating lard it is more satisfactory first to mix the benzoin with an equal bulk of clean sand, which will prevent its lumping together in the lard. He recommends the use of Siam benzoin.

More heat than the Pharmacopoeia directs is to be avoided, as both the benzoic acid and a portion of the lard are volatile.

In summer, says Caspari, about 5 per cent. of white wax should be substituted for a like quantity of the lard, to render the preparation firmer. He also says that a perfectly smooth preparation can be obtained only if the strained lard be constantly stirred until a thick, creamy consistence is reached, after which it may be set aside until cold.

W. A. Hall says: "Save your ether cans, and in the fall obtain from your butcher some unrendered leaf lard from large hogs. Render this at home in the old-fashioned style, unless, of course, you have facilities in the shop, and fill and cork the cans reserved. When the lard is wanted for use, you can melt it on a water-bath. I have kept lard in this way for over two years, perfectly sweet, and with no sign of granulation. The ointments made from this will likewise keep much better."

In preparing benzoinated lard, P. H. Utech mixes the coarsely comminuted benzoin with an equal quantity of an-

hydrous sodium sulphate, finding that this prevents the agglutination of the benzoin.

Renovating Lard

While it is possible to remove to a certain extent the rancidity of old benzoinated lard, it is not possible to do so without removing also the benzoin. It follows, therefore, that to restore the lard it would be necessary to retreat it with benzoin.

If the quantity of rancid lard is not large it is more economical to throw it away than to attempt to renovate it. If the quantity is sufficient to make an attempt at renovation desirable, we suggest the following process:—

Melt the lard on a water-bath and beat it with about one-fourth its volume of 5 per cent. solution of common salt for ten minutes. Set aside to cool and separate the fat from the watery liquid. Repeat this operation. Wash the lard twice with hot water, melting the lard in water, stirring thoroughly and separating the congealed fat from the liquid when cold. Then mix the lard thoroughly several times with an equal volume of 10 per cent. solution of sodium carbonate. Wash again with hot water. Melt the lard and filter it through paper in a warm place or with a heated funnel.

If the filtered lard is neutral to litmus and responds to the official tests for the absence of chlorides, alkalies and excess of fatty acids, it may be benzoinated in the manner prescribed in the Pharmacopoeia. If chlorides or alkalies be present they may be removed by washing with hot water. If the fat be acid it should be washed again with a solution of sodium carbonate and with hot water.

Of course, the process is also applicable to lard that has not been benzoinated.

Keeping of Solid Extracts.

Such solid extracts as are not used frequently might be filled into collapsible tubes, to prevent drying out and to facilitate dispensing. The inside of the tube is preferably lined with waxed paper to prevent the extracts from coming into contact with the metal.

Keeping of Alkaloidal Solutions.

In cases in which the presence of alcohol is not undesirable alkaloidal stock solutions may be preserved by the use of a menstruum composed of 10 parts by volume of alcohol and 90 parts of water.

Preservation of Galenicals.

Prof. Charles Caspari, Jr., spoke extemporaneously on this subject before the American Pharmaceutical Association. The gist of his remarks, as reported in The Druggists Circular at this time follow:

AROMATIC WATERS were so simple that many druggists did not think them worthy of much attention. He advised against exposing them to low temperature, as cold makes the oils in them separate, but when they are brought into a warm room the oil goes back into solution.

TINCTURES, too, should not be subjected to extremes in temperature. The heat of a high shelf caused hydro-alcoholic liquids to deteriorate. Light in many cases was as detrimental as heat and cold, but the precipitate from such liquids was usually inert and so left the medicinal value of the preparation undisturbed. This, said the speaker jocularly, was a provision of nature to protect the careless or incompetent pharmacist against himself.

Sometimes an open space in a partly-filled bottle caused deterioration. Especially was this true of SYRUPS, as water evaporated and condensed in this space and when it ran back to the surface of the preparation it began to spoil for lack of the preservative, and the deterioration continued through the entire contents of the bottle. For the same reason, syrups should not be kept in the heat of the store, but in the cellar. The speaker had kept his syrups on a dumb waiter in the cellar, raising them as needed and retiring them to the low temperature after use. The fungus growth in syrup bottles was best removed by washing with lye or paper pulp. A syrup bottle should be well dried before the syrup was introduced, as water on the surface of syrups, as just pointed out, was a cause of decomposition.

OINTMENTS should be kept in a cool place. When a fat melted the heavy medicinal ingredient usually sank to the bottom of the jar and it did not become reincorporated when the normal temperature was restored, as was the case with aromatic waters. The ordinary jar did not make a desirable container for ointments, as the fat would penetrate the glazed surface and remain on the porous material of the jar, become rancid and remain to do its work in spite of all washing. French porcelain ointment jars would not absorb the fat. The speaker had used them for twenty-five years without a loss from that cause. Ointment jars should be cleaned with hot lye and well dried. Heat and moisture were disturbing factors in the case of ointments; dryness and coolness the things to be sought.

PILLS are little made by the retail druggists these days, but when they are they should not be put away until well seasoned. Compound cathartic pills should be dried in licorice and lycopodium for three or four weeks, and then sieved to clean them before being bottled.

POWDERS, fortunately, are not much subject to change on account of the action of heat and light, although heat will drive off their volatile constituents.

Elm Bark to Preserve Lard.

R. M. Altmann had heard that to preserve their winter's store of bear's grease the red men melted the fat with shredded elm bark. As the physical difference between the fat of the bear and that of the pig is not great, he experimented with the preservative properties of the bark as applied to lard. He prepared some purified leaf lard and melted it on a water-bath with pieces of elm bark in the proportion of 2 drams to the pound of fat. When the bubbles had ceased to rise, indicating that all the moisture had been expelled, the lard was strained and stirred until cool. The product

was divided into a number of portions and exposed to the atmosphere at different temperatures for three weeks. At the end of that time none of the samples gave any indication of rancidity when tested with Schiff's reagent. An ointment of potassium iodide made with a sample of this lard without the addition of any potassium carbonate remained uncolered after a week's exposure to the atmosphere.

Mr. Altman believes that the preservative influence of elm bark is due to the clarifying action of the albuminoids it contains and the dehydrating action of the gum.

Making Aromatic Waters.

Take the proper proportions of oil and talc or other absorbent powder and put them into a large mortar, add the water, triturate, and then pour the mixture into a stock bottle without filtering. From time to time pour off a small quantity of the liquid, filtering it into the shelf bottle. An aromatic water made in this way possesses a finer flavor than a product which is filtered immediately after making. Moreover, the full strength is retained for a long time.

Receivers for Liquid Galenicals

The ordinary 5-pint stock bottles in which elixirs and fluidextracts are marketed, make splendid receivers where 1000 or 2000 mils of a liquid galenical are to be made. To prepare, scratch a straight line on the bottle its full length; on this, scratch marks and figures indicating pints, quartz and mils.

For half and one-pint receivers, the wide-mouth bottles in which quinine capsules are marketed, are excellent. Incidentally, when one gets these bottles, he should save the fine, large corks that usually come with them.—William Mittelbach.

Making Tablet Triturates

J. C. Dills contributes to The Druggists Circular an article in which he says that inaccuracy is one of the drawbacks encountered by amateur manufacturers. He adds that no amount of tables regarding the weight of each substance is of use alone. No table can make up for variations in pressure used in filling the molds or in the amount of diluent used. Every time one gets in a new sample of milk sugar he is apt to be confronted by a variation in specific gravity on account of the difference in the fineness of the different powders. Sometimes, too, we waste more than at others. Any diligent pharmacist can make about $1 to $5 an hour making tablets with a machine that costs about $3.

Our machine holds an average of 60 grains of milk sugar. To make 500 tablet triturates of morphine sulphate, we use 125 grains of morphine sulphate and 450 grains of milk sugar and moisten with 75 per cent. alcohol to make a suitable dampish paste. We weigh this, take one-tenth of it (for 50 tablets), and fill molds as far as it will reach, adding milk sugar and moistening the mass until after two or three trials the sample just fills the molds. We then add to the remaining nine-tenths a proportionate amount of milk sugar. We have found it admirable to measure the moistening agent with a pipette. Using this method, I have been able to make 1,000 tablets with a variation of not over 1/800 grain of morphine sulphate per tablet, which I am sure is a result that is not exceeded in accuracy of measurement by any of the ready-made tablets.

Coating Compressed Tablets

In large manufacturing establishments revolving pans, air blasts, hot-air currents and other things not usually available in a retail pharmacy are used in the process of coating tablets. Perhaps an ingenious operator may overcome the handicap which the lack of proper apparatus places upon him.

Some of the success of the coating operation depends upon the shape of the tablet, still more depends upon its hardness and dryness, and even more depends upon its freedom from a hygroscopic constituent which would absorb moisture from the covering material and cause it to swell. In a general way it may be stated that when the tablets have come from the compressing machine they are placed in a sieve and the adhering particles of dust blown off. If the tablets are mottled or variegated in color they are treated with moist lampblack, to make them uniform in appearance. They should be dried at a temperature of 70 degrees F. for twenty-four hours before receiving their coats.

When ready for the coating the tablets are placed in the revolving pan with enough syrup to moisten their surface but slightly. Here the air current is needed to dry the syrup quickly, so that another coat may be applied. In another revolving pan the tablets are treated in a similar manner with a prepared syrup which is to give them their characteristic flavor and color. They are next revolved in a felt-lined pan to give them a polish.

A formula for chocolate coating is given by L. H. Turner in a paper published in the Pharmaceutical Era, from which some of the foregoing facts are taken. It is as follows:—

To flavor chocolate-coated tablets,

place 10 pounds of cacao hulls in a cotton bag and boil for five minutes in 4 gallons of water. Strain through two layers of cheese cloth and add 25 pounds of lump sugar. To this mixture add 2 pounds of powdered "cocoa" and mix well.

Chocolate-coated tablets are sometimes given a more glossy appearance by being thinly coated with an alcoholic solution of tolu or benzoin.

Some colors allowable, when unadulterated, for use in foodstuffs are mentioned in food inspection decision 76, issued by the Department of Agriculture at Washington. Among those colors are:—

Red:—107. Amaranth:—56. Ponceau 3 R.-517. Eryth rosin.

Orange:—85. Orange I.

Yellow 4. Naphthol yellow S.

Green:—435. Light green S. F. Yellowish.

Blue:—692. Indigo disulfo-acid.

Informative articles on tablet-making appear in various issues of The Druggists Circular, among them being those for July, 1905, page 229; and April and December, 1902, pages 73 and 257, respectively.

One of the obections to the use of tablets in medicine is the fact that many of them do not dissolve readily enough in the alimentary canal, while now and then one goes all the way through without disintegrating at all; and coating them certainly does not make them more soluble, but rather the reverse.

To Clean Wedgwood Mortars

Take 3 or 4 ounces of potassium dichromate, powder it fine, and add enough sulphuric acid to make a paste. Smear this over the mortar, inside and out, as well as on the pestle head, being careful not to get any of it on the wooden handle, and let it remain for fifteen minutes. After the mortar has stood a suitable time and been rinsed with cold water and then washed with soap and water, it will be as clean and white as when new. The same batch of paste may be used on many mortars.—Mason G. Beebe.

Castor Oil Jelly.

Castor oil	90.0 grammes.
Stearic acid	4.2 grammes.
Sodium hydroxide..	0.6 grammes.
Saccharin	0.1 gramme.
Oil of peppermint...	0.2 mil.
Alcohol	5.0 mils.

Dissolve the sodium hydroxide in the alcohol and add the stearic acid and the castor oil. Heat until combined and add the other ingredients.

The presence of saccharin in the finished preparation should be stated on the label.

Tablet Triturates and Hypodermic Tablets.

From an article by J. Leon Lascoff, that appeared in The Druggists Circular, some quotations follow:

Tablet triturates are made by triturating the active ingredients with sugar of milk or fine sugar, massing after thorough trituration by the addition of alcohol or diluted alcohol, and subsequently rubbing the mass into a rubber mold, enough excipient having been added so that each tablet weighs about 1 or 1½ grains. The weight of those of larger size either should be prescribed or is determined by the amounts given in the prescription. These may be compressed, in order to reduce their size, by the process to be described later. Of course, I need not add that in cases where potassium permanganate, silver nitrate or other strongly exidizing agents are prescribed the excipient should be finely powdered kaolin.

Hypodermic tablets are usually made in a smaller rubber mold of ½ grain size in the same manner as the tablet triturates. Great care must be taken to have them readily soluble. Pure alcohol is the proper excipient for them. One-half grain tablets of saccharin can be made in the "hypodermic" mold; the diluent is sodium bicarbonate and the mass is moistened with absolute alcohol.

It has been said that sugar from goats' milk makes a more soluble tablet than does the sugar from cows' milk.

A Maceration and Decantation Device.

In separating the fluid from the drug after maceration I have used a device which does the work more thoroughly than is done by simple decantation. I make a long narrow sack of straining material, large enough at the open end to be turned over the lip of the bottle and tied. The sack is very easily kept expanded and in place by two double wires joined at the top. The wires are inserted into the bottle, the rings resting on the hip, with the sack over the wires, and, of course, therefore, in the bottle. The bottle is then inverted in a funnel over another bottle and its contents allowed to drain. I have thought that if I made another such outfit I would use a spiral wire to hold the sides of the strainer apart.—C. W. Sackett.

Dispensing in Ampuls.

The ampul question may be summarized as follows:

Ampuls represent a device for furnishing fluid medicaments to the physician or the patient in sterile condition and usually in single hypodermic doses. This is done by furnishing the fluid in a sealed glass tube.

The Ampul.—These glass tubes are made from a special type of glass, which is less alkaline than the average glass. F. W. Nitardy shows that satisfactory ampuls may be made from ordinary test tubes, but such ampuls are almost certain to contain enough free alkali to precipitate alkaloidal solutions. Ampuls are sometimes made with the open end flaring like a funnel, in order to facilitate filling.

Filling Ampuls.—Many filling devices, some very complicated and some quite simple, have been devised, the aim being to run the fluid down through the narrow neck as expeditiously

as possible, a trick that is really not easy, since some provision should be made for exit of air as the fluid flows in. Some fill from a burette to the top of which is attached a hypodermic needle; some use the modern type of large-sized graduated all-glass hypodermic syringe which can be easily sterilized; while the best appliance is one in which by a system of valves and air-tight containers the ampuls can be exhausted of air before the fluid is introduced into the container. Because of the partial vacuum in this container and in the ampuls found therein the fluid immediately fills the ampuls.

Sealing the Ampul.—This is accomplished by bringing the tip of the filled and cleaned ampul into a small but hot flame of a blast lamp. This operation is not as simple as first appears, but practice will bring the knack. In large factories such sealing is done by young girls.

Sterilization.—This is sometimes accomplished by having the ampuls, the fluid and the filler all in sterile condition at the moment of filling, but the usual procedure is to sterilize the sealed ampul by heating in an appropriate oven. The oven must of course be provided with a thermometer and care taken that the temperature be not allowed to rise above that which the content of the ampul will bear without decomposition. It is manifestly very important that the oven be kept closed from the beginning of the operation until after the sterilization is complete and the oven again cool, to guard against the risk of injury from ampuls which may explode while being heated.

Ordinary Capsules for Liquids.

The required amount of medicament to be used for each dose is put into the larger portion of the empty capsule after the removal of the cap, then the edge at the opening of that portion containing the medicament is moistened with water, and before it has time to dry the cap is put on and the capsule is pressed between the thumb and index finger in such a way that the edge of the larger portion of the capsule at the line of contact with the curved part of the cap forms a scalloped edge which indicates a welding or cementing. To make sure that the capsule is tightly sealed the operator should lay each finished capsule on a filter paper and watch for any leakage. It is advisable to fill more than the required number of capsules, as there may be among them some failures.

Should the operator not feel sure that the capsules are thoroughly sealed and fears that a future leakage may appear, it is quite practical for him to put the finished capsule in an empty capsule of a larger size and seal the outer one just as the inner one had been sealed.

Druggists should be sure that the liquid dispensed will not dissolve the capsule.—George H. Waltz.

Dispensing Oils in Soft Capsules.

When filling a prescription calling for soft capsules containing oils, it is annoying to find one of the capsules imperfectly sealed, due generally to a small portion of the oil coming in contact with the sealing lip of the capsule. F. M. Apple has adopted the practice of wiping off carefully the tops of capsules with pellets of cotton moistened with chloroform, using care not to have too much chloroform upon the pellets. Since following this custom he has no trouble of the kind mentioned.

Deblooming Petroleum Oils.

Removing the fluorescence of petroleum oils is more a matter of process than of formula. The simplest method is to expose the oil, after it has been filtered through animal charcoal, to the action of sunlight and air. This, however, is a slow process and many others calling for the use of a chemical oxidizer are in use; most of these are the subject of letters patent. Some of the debloomers in use are nitronaphthalene, dinitrobenzol, nitric acid, granular magnetism dioxide, and ferric oxide. Usually about 1 per cent. of the deblooming agent is employed.

Bottger's deblooming process consists in adding to the oil about one-eighth its volume of sulphuric acid; setting the mixture aside in a closed container for about a week, with occasional agitation; siphoning off the clear oil; shaking it with several portions of water; and dehydrating with quicklime.

Hellmann employs sulphuric acid diluted with five times its volume of water, adding one volume of the diluted acid to three of oil. To the mixture of oil and acid he adds 2 per cent. of magnesium dioxide, and boils the mixture for about half an hour. This gives a yellowish oil which can be made lighter by filtering through animal charcoal. But who cares to try to boil these highly inflammable liquids?

Rendering Kerosene Uninflammable.

We do not know how to render kerosene uninflammable without so changing its nature that it might almost as well not have been kerosene to start with.

"Non-Explosive Gasoline."

Gasoline or benzin intended for use as a cleanser, solvent or insecticide may be rendered non-explosive by mixing with it a large proportion of carbon tetrachloride — a proportion so large, in fact, that the resulting mixture is more carbon tetrachloride than gasoline or benzin. Although some investigators have stated that a mixture of four volumes of benzin and six volumes of carbon tetrachloride is non-inflammable at ordinary temperatures, others have found that a mixture of seven volumes of the tetrachloride and three volumes of benzin was inflammable upon the approach of

a lighted match. Only when the proportion reached that of nine parts of tetrachloride to one of benzin did the liquid require heating before becoming inflammable, but in this case the flame soon became extinguished by itself. The fumes of carbon tetrachloride, which are heavier than air, have an anesthetic effect like those of chloroform.

We know of nothing which may be added in small proportions to gasoline to render it non-inflammable.

Various Uses for Kerosene.

William R. White (A. Ph. A.) said of the place of kerosene in pharmacy that its synonyms are coal oil, rock oil, solar oil, paraffin oil, mineral oil, carbon oil, petre, earth oil, photogene, eupione and refined petroleum. Specific gravity, from 0.744 to 0.829, boils above 77 degrees C., flashing point from 62 degrees to 68 degrees; mixes with such liquids as chloroform, ether, volatile oils and most of the fixed oils, not well with castor oil, glycerin or alcohol; will dissolve 4 or 5 per cent. of iodine if warmed and agitated, the solution resembling very much a certain commercial preparation; it will take up a much larger percentage of iodine if mixed with chloroform.

Its Taste and Odor.

Saccharin modifies its taste, oils of massia, cajeput, cloves, peppermint, wintergreen, camphor and bitter almond disguise its odor. Shaking it with an acid solution of potassium permanganate, potassium dichromate or potassium chlorate, decanting and filtering through freshly slaked lime does not entirely deodorize it, although each improves it a great deal, the chlorate giving the best results. Kerosene in an alcoholic solution of potassium hydrate turns the alcoholic solution red and the kerosene is almost completely deodorized. By the liberation of nascent hydrogen in kerosene an odor resembling that of onions is evolved.

Taken Internally.

A pint taken internally gave no very serious result. It is largely used as a rectal injection for amebic dysentery in quantities of half a gallon or more, with excellent effect, as also in cases of croup in children in from ½ to 1 teaspoonful doses. For coughs and colds it is usually mixed with sugar.

Kerosene Liniment.

Camphor	1.0 gramme.
Oil of peppermine	0.5 mil.
Oil of wintergreen	0.5 mil.
Oil of cloves	0.2 mil.
Oil of cassia	4.0 mils.
Oil of cottonseed	8.0 mils.
Oil of cajeput	8.0 mils.
Oil of turpentine	4.0 mils.
Kerosene	72.0 mils.

For Toothache.

Oil of cloves, oil of cassia and phenol dissolved in kerosene make a splendid toothache remedy.

As an Insecticide.

An ounce sprayed over fifteen square feet kills not only larvae and pupae, but catches the adults, and is therefore, by virtue of its simplicity, cheapness and efficiency, the best larvacide for many purposes where its odor is not offensive. Kerosene does not harm fish or aquatic insects that breathe on the surface, and acts well in salt water. An emulsion of kerosene may be made of—

Green soap	2 grammes.
Boiling water	32 mils.
Kerosene	64 mils.

Dissolve the soap in the boiling water and add to the kerosene and agitate vigorously. This makes a snow-white emulsion which shows little tendency to separate. It may be used to spray trees, etc., when diluted with water.

As an Embrocation.

By adding oil of camphor, oil of cajeput, etc., to the emulsion, a splendid liniment may be made.

For Limber-Neck.

Kerosene also enjoys some reputation as a remedy for the disease known as limber-neck in chickens.

To Remove the Odor of Iodoform.

Minton (Bull. Pharm.) says that the odor of iodoform may be removed from the hands by wetting them with water and then applying a small quantity of potassium carbonate and two or three drops of ammonia water. The odor, he says, will entirely disappear.

To Prevent Recrystallization of Liquefied Phenol

In the official description of liquefied phenol it is stated that it "begins to crystallize when the temperature of the liquid is lowered to about 13.5 degrees C. (56.3 degrees F.). The use of glycerin to replace a portion of the added water does not seem to have proved satisfactory in practice, as the crystallizing point is not thereby sufficiently lowered. Alcohol is preferable. As little as 25 per cent. of alcohol in the diluent will lower the crystallizing point to 40 degrees F.

There is a legal phase to improvements of this sort, which should be borne in mind.

To Decolorize Reddened Phenol

Shake each liter of the liquefied phenol with about 3 grammes of white woolen threads. Zinc dust has been recommended for the same purpose. Another plan is to add alcohol to the phenol and reduce the temperature until the latter crystallizes out, colorless.

It has been stated that the red color which develops in phenol is caused by phenoquinone, which, in turn, is formed by oxidation and condensation when quinone or catechol is present. The addition of ¼ of 1 per cent. of sulphurous anhydride to liquefied phenol is said to prevent the coloration of the latter.

To Liquefy Phenol

Place the required quantity of water on top of the crystals in the bottle, then invert the bottle. In a short time the water permeates the mass and solution is effected.

Sweetening and Flavoring Mineral Oil

Mineral oil may be sweetened with saccharin. To insure good results, the sweetener should be dissolved in absolute alcohol in the proportion of about 16 grains to the ounce, and a little oleic acid added, say from 15 to 30 grains. This combination will mix with the mineral oil. Only an extra high-grade oleic acid should be used for this purpose. As to flavoring, the usual aromatic oils—peppermint, wintergreen, cinnamon, clove, nutmeg, anise, lemon, etc.—mix readily with mineral oil. Of course, some of these oils will darken a "white" mineral oil, and if this result is objectionable, care should be exercised in the selection of a "white" flavor.

Disguising the Taste of Quinine

I.

Quinine sulphate	4 grammes.
Citric acid	10 grammes.
Syrup	1 mil.
Syrup of orange peel	1 mil.
Distilled water, to make	20 mils.

The quantity directed for a dose of the mixture is given in water containing a little sodium bicarbonate.

II.

Quinine bisulphate	60.0 grammes.
Saccharin (soluble)	30.0 grammes.
Glycerin	100.0 mils.
Vanillin	0.5 gramme.
Coumarin	0.1 gramme.
Compound spirit of orange	5.0 mils.
Water, to make	720.0 mils.

Dissolve the quinine salt in 540 mils of water, and dissolve the saccharin in this solution. Dissolve the vanillin and the coumarin in the spirit; mix with the glycerin, and add to the quinine solution, adding as much water as may be required.

The dose of saccharin in this mixture prohibits its undirected and promiscuous use, and the attention of physicians to whom it may be introduced should be called to this matter.

Disguising the Odor and Taste of Castor Oil

In the first place, use fresh castor oil; in other words, oil that has not become rancid, for rancid butter, rancid lard or rancid any other kind of grease is not palatable.

Again, some people contend that it is the odor and not the taste of castor oil that disgusts. Whether or not this is true we have not experimented to prove, but offer the statement for what it is worth.

Appended are some formulas gathered from medical and pharmaceutical literature:—

P. H. Utech's Formula

Benzosulphinide	0.5 gramme.
Oil of anise	2.0 mils.
Oil of sweet orange	1.0 mil.
Oil color	enough.
Castor oil to make	1,000.0 mils.

Dissolve the benzosulphinide in the castor oil by the aid of a gentle heat (alcohol is not necessary). When cold, add the essential oils and oil color sufficient to make the desired shade.

The color referred to is made by exhausting alkanet root in No. 30 powder with acetone, evaporating the percolate to dryness on a water-bath at a heat of not over 55 C., and dissolving the resulting anchusin in any convenient amount of castor oil, to be set aside and kept as stock. The stock color may be used as required.

A. Weinstein's Formula.

Castor oil	12 ounces.
Fluid extract of licorice	½ ounce.
Fluid extract of sarsaparilla	3 drams.
Oil of peppermint	2 drops.
Oil of anise	8 drops.
Oil of lemon	8 drops.
Glycerine, to make	16 ounces.

"The mucilaginous character of the licorice and the glycerin helps to keep the castor oil in suspension. If I may judge from the sale of this preparation, it is very much liked. I dispense I ounce with a little carbonated water for 10 cents. I also put it up in 2-ounce bottles and charge 25 cents, under a plain label, 'Prepared Castor Oil.'"

J. B. Moore's Formula.

Compound tincture of cardamom	2 drams.
Cinnamon water	6 drams.

Castor oil..... 1 ounce.
Brandy ..... 5 drops.

Mix the first two in a glass, add the oil carefully, and squirt the brandy on the surface.

An oil mixture so prepared is, of course, for immediate use.

For our own part, we believe that we should use peppermint water, putting it into the glass first, then pour a layer of castor oil over it, and, instead of the compound tincture of cardamom, use compound tincture of lavender, which is lighter and more odoriferous. We should direct this to be taken all at one swallow.

Disguising the Taste of Epsom Salt.

It is said that 15 grains of citric acid to each ounce of the salt in solution renders the taste of the latter less objectionable to those who object to it, especially if the draught be taken when it is at a temperature of about 40 degrees F.

Here is a formula for a so-called palatable draft of epsom salt:

Magnesium sulphate.... 1 ounce.
Solution of saccharin.... 1 dram.
Oil of peppermint..... 2 drops.
Oil of anise..... 2 drops.
Water.....to make 2 ounces.

It seems that the amount of solution of saccharin might be decreased with advantage. Its presence should be stated on the label.

Dr. W. T. Swindle (Med. World) says he makes an elixir thus:

Epsom salt..... ½ pound.
Saccharin ..... 12 grains.
Extract of vanilla..... 1 ounce.
Glycerin ..... 2 ounces.
Water, to make..... 1 pint.

Use carmine to color, and filter it. The dose is 1 tablespoonful. Each fluid ounce contains ½ ounce of magnesium sulphate. It has a fine taste and is a splendid remedy.

Kieselguhr as a Filtering Medium.

LaWall recommends kieselguhr as a filtering medium. The properties most desirable in such a medium are, first, insolubility and neutrality; second, freedom from impurities; third, porosity or absorbing power for liquids. As to absorbing power he gives these figures: Talcum, 15; precipitated calcium phosphate, 18; powdered pumice, 20; kieselguhr, 40; magnesium carbonate, 50. Magnesium carbonate is ruled out from most filtering operations on account of its alkalinity. Kieselguhr is always found to be neutral in reaction and free from soluble matter. Comparative experiments on the aromatic waters have shown that it has the advantage over talc of being more absorbent and of not passing through the filter to give the first portion of the filtrate a cloudy appearance.

Labeling a Proprietary Remedy.

The Bureau of Chemistry, at Washington, D. C., publishes from time to time, in its service and regulatory announcements, general information regarding the labeling of food and drugs, and assists manufacturers and others who submit labels by directing attention to applicable provisions of the food and drugs act and of the regulations and to applicable published opinions. Therefore, it is advisable to submit labels to the bureau with the request that the officials there pass judgment upon them. Also, it may be well to submit them to the State health board, as there may be laws within the State that will require special labeling.

Manufacturer of Pharmaceuticals Need Not Be a Registered Pharmacist.

A person need not be a registered pharmacist to engage in the wholesale manufacture and sale of pharmaceutical preparations in New York State.

To Open a Tin Ointment Box.

Place the thumbs and forefingers of the two hands on the circumference of the box in the same relative positions that would be assumed by two men and two women sitting at a whist table. Squeeze the box between the thumb and forefinger of each hand, alternately pressing the lid upward the while.

There is no need to use a spatula on the refractory lid, or to break the finger nails in a vain effort to pry off the innocent top-piece.

Green Vegetable Color for Oils.

The simplest method of imparting a green color to an oil is to dissolve in a given amount of the liquid sufficient oil-soluble chlorophyl to produce the desired shade. This method is probably more expensive than others which consume more time. If time is not an object, a satisfactory method is to digest in the oil, for a greater or less number of days, in a warm place, some crushed hempseed, pistachio nut meats, or almost any green leaf. The brightness of the color is, in a large measure, proportionate to the freshness of the coloring agent; and care must be taken not to use too high a temperature during the process, as heat tends to produce a brownish shade. By carrying on the digestion in a brass or copper container a better shade of green can be obtained.

LaWall, after examining a number of

lots of compound oil of hyoscyamus made in copper vessels, reported that he was unable to detect any trace of copper in the preparation.

Coloring Petrolatum.

Colorless petrolatum may be colored by the admixture of oil-soluble anilins. A red color may also be imparted to it by the use of alkanet root. The addition of dye may unfit the petrolatum for certain uses.

Discolored Spirit of Nitrous Ether.

The general opinion is that the discoloration is caused by tannin taken up by the alcohol from the barrel in which it had been stored. Redistillation of the alcohol is recommended.

To Decolor Whisky, Bay Rum, Oils and Other Liquids.

A process of almost universal application is maceration of the colored liquid with kaolin, or, better, animal charcoal and filtration through that substance.

To remove iron-rust color from bay rum, W. D. Carson adds a small proportion of tartaric acid and filters.

The best agent found by W. H. Trainer for clearing up alcoholic liquids is milk. He adds about 4 ounces to a gallon, the casein is precipitated, and filtration through paper completes the job.

Fluidglycerates.

Beringer has worked out a process for making glycerin fluidextracts, which he names fluidglycerates. His type formula, from which he deviates when the nature of the drug demands, is:—

The drug (in course powder)	100 grammes.
Glycerin	50 mils.
Distilled water	150 mils.
Chloroform water, to make	100 mils.

Mix glycerin and distilled water and moisten the drug thoroughly with a sufficient quantity of the mixture and then pack in very lightly in a cylindrical percolator and saturate thoroughly with menstruum; cork up and cover the percolator, and allow the drug to macerate for two days, then percolate until the drug is exhausted, using first the remainder of the menstruum and then chloroform water. Reserve the first 50 mils of percolate and set this aside. Evaporate the remaining percolate on a water-bath, the weaker portion first, then the stronger until reduced to 60 mils, and then add the reserve and continue the evaporation until the product measures 100 mils. If evaporation has been carried too far, make up to 100 mils with distilled water. Set the product aside for several days to settle; decant the clear supernatant layer, and strain the remainder through muslin.

The process for each drug and other information on the subject may be seen in The Druggists Circular for November, 1908, pages 549 to 558, and in the Proceedings of the American Pharmaceutical Association for 1908.

Pink Coloration of Emulsion of Carbonated Creosote.

The Heyden Chemical Works say that the pinkish coloration which occurs in emulsions of creosotal is due to an oxidizing ferment (oxydase) which is always present in gum arabic, and which, by oxidizing certain constituents of creosote whose chemical composition is not yet established, produces a class of bodies whose presence in the emulsion is shown by the pinkish coloration. If the freshly prepared emulsion is exposed to sunlight, the oxidizing ferment will be destroyed and no coloration will occur. Furthermore, if an emulsion is just beginning to color, exposure to sunlight will cause bleaching.

The phenomenon of the redding of phenols and phenolic bodies through oxidation is a well-known but little understood one. It is noteworthy as an indication of the complexity of the problem that light is an important factor in the oxidation of phenol.

Cudbear Coloring.

Vegetable red, made from cudbear and sold by confectionery houses, is useful as a color in pharmacy.

Gardiner and Raubenheimer collaborated in extracting the coloring principle from cudbear by percolation with acetone, the yield being about 8½ per cent. When mixed with some dry absorbent powder, as kieselguhr, it would remain in a pulverulent condition. Cudbear, they said, contains about 4 per cent. of sodium chloride, which interacts with some of the substances present in certain mixtures with which it is used, with the result that the color is destroyed.

Gardiner gives this formula for a red show-globe color:—

Persionin (the extract above mentioned)	10 grains.
Wood alcohol	8 ounces.
Ammonia water	6 drams.
Water	to make 1 gallon.

This was only one of the many uses to which the coloring principle could be put.

Darkening of Resorcinol Preparations.

My experiments have proven that the coloring of resorcinal is due to the presence of very minute impurities that cannot economically be removed, and when they are mixed with preparations containing alkali or salts of an alkaline nature, the preparation colors very rapidly, but in the presence of a small quantity of acetic acid, or alcohol slightly oxidized, and in that manner containing some acetic acid, the preparation will not color.

I have put up preparations for many years, using the above little fact, and have found that the goods stood up under the light and heat for a considerable time without coloring.

It must be remembered, however, that if the tonic or preparation contains vanillin or any of the aldehydes of the same group, they will darken in the presence of alkali just the same as resorcinol.—A. Alexander.

Colors for Show Bottles

This subject is fairly well covered by the following formulas and suggestions:

Red

I.

Cochineal color N. F. diluted with water to the required shade.

II.

Iodine	2 parts.
Potassium iodide	2 parts.
Hydrochloric acid	36 parts.
Water	960 parts.

III.

Cobalt carbonate	30 grains.
Hydrochloric acid	enough.
Water	1 gallon.

Dissolve the carbonate in just enough of the acid to effect solution and add to the water.

IV.

Cochineal	4 parts.
Potassium bitartrate	2 parts.
Sulphuric acid	5 parts.
Alum	4 parts.
Water	1000 parts.

V.

Cobalt nitrate	1 ounce.
Ammonium carbonate	enough.
Water	1 gallon.

Dissolve the nitrate in 2 pints of the water, add a strong solution of ammonium carbonate until a precipitate formed is redissolved, then add the remainder of the water.

VI.

Cudbear	2 parts.
Nitric acid	2 parts.
Water	92 parts.

VII.

Ammonia water	27 parts.
Solution ferric chloride	40 parts.
Acetic acid	59 parts.
Alcohol	186 parts.
Water	6946 parts.

Add the iron solution to the water, then the alcohol, acid and ammonia water in the order mentioned.

VIII.

A good red may be made by extracting the coloring principle of cudbear by the use of acetone, mixing 10 grains of this principle (which has been called persionin) with 8 ounces of alcohol, 6 drams of ammonia water and enough water to make 1 gallon. Persionin is somewhat similar to orchil—the vegetable red of the confectionery supply houses.

Yellow

I.

Potassium dichromate	1 part.
Nitrate acid	2 parts.
Water	27 parts.

Dissolve the potassium salt in the water, add the nitric acid, and filter.

II.

A solution of potassium dichromate is permanent in tint, and a reddish-yellow may be made by diluting compound solution of iodine, U. S. P. Neither is really very expensive, since a little of the chemicals goes a long way, and when the solutions are once made they will last for years.

III.

Potassium dichromate	3 parts.
Sodium carbonate	2 parts.
Water	95 parts.

Dissolve the potassium dichromate in the water, add the sodium carbonate, and when solution is complete filter.

Green

I.

Verdigris	1 part.
Distilled water	9 parts.
Sulphuric acid	enough.

Mix the verdigris with the acid, set aside for a few minutes, add to the distilled water and filter.

II.

Copper sulphate	1 part.
Ammonia water	9 parts.
Water	240 parts.
Solution of potassium dichromate	enough.

Dissolve the copper sulphate in the distilled water, add the ammonia water and enough of a solution of potassium dichromate to give the desired tint, and filter.

III.

Copper sulphate	7 parts.
Ammonium chloride	7 parts.
Water	186 parts.

IV.

Nickel ..... 85 parts.
Hydrochloric acid..... 132 parts.
Nitric acid..... 55 parts.
Water .....4000 parts.

Dissolve the nickel in the hydrochloric acid, add the water, then the nitric acid, and filter.

Olive Green

Copper sulphate..... 35 parts.
Hydrochloric acid..... 16 parts.
Iron subcarbonate..... 4 parts.
Water .....450 parts.

Dissolve the copper sulphate in the water and the iron in the acid; mix the two solutions, and filter.

Pea Green

Nickel ..... 1 part.
Nitric acid..... 4 parts.
Water .....495 parts.
Solution of potassium dichromate .....enough.

Dissolve the nickel in the nitric acid, add the water and enough of solution of potassium dichromate to give the desired color.

Any Shade of Permanent Green

Copper sulphate..... 9 parts.
Hydrochloric acid..... 8 parts.
Water .....84 parts.

Dissolve the salt in the water and add the acid.

Any possible shade of green (and that permanent) may be produced by adding to the above mixture the official solution of ferric chloride in quantities to suit.

Yellowish Green.

Iron sulphate..... 10 parts.
Sulphuric acid..... 10 parts.
Copper nitrate..... enough.
Water .....280 parts.

Dissolve the iron salt and the acid separately in 140 parts of water; mix the solutions, and add little by little the copper nitrate until the desired shade is reached.

Pretty and Permanent Green.

Put three or four 1-cent coins in the bottom of a graduate, pour on a little nitric acid to cover well and set in the open air to allow the fumes to escape. When solution is effected dilute it with enough water to fill the bottle.

Orange.

Potassium dichromate... 4 parts.
Nitric acid..... 1 part.
Water .....120 parts.

Amber.

Powdered dragon's blood..1 part.
Sulphuric acid..... 4 parts.
Water .....enough.

Macerate the dragon's blood in the acid for about half an hour, or until solution is complete, and dilute the mixture with water until the desired tint is obtained.

Magenta.

Chromic acid.....1 dram.
Hydrochloric acid.....2 ounces.
Nitric acid.....2 ounces.
Water, to make.....3 gallons.

Blue.

I.

Copper sulphate..... 14 parts.
Alum ..... 14 parts.
Sulphuric acid..... 13 parts.
Water .....473 parts.

Dissolve the alum and the copper salt in the water, add the sulphuric acid in small portions and filter.

II.

Copper sulphate..... 10 parts.
Ammonia water..... 40 parts.
Water .....950 parts.

Purple.

I.

Cudbear ..... 10 parts.
Water of ammonia..... 40 parts.
Water .....120 parts.
Macerate and filter.

II.

Salicylic acid..... 1 part.
Alcohol ..... 93 parts.
Tinct. of chloride of iron 4 parts.
Water ..... enough.

Dissolve the acid in the alcohol, add the tincture and dilute until the desired color is produced.

Anilin Colors.

The anilin colors are convenient for use in liquids for show globes, and although more or less fugitive are still desirable. By a little attention in the way of adding more color from time to time the liquids may be kept in good condition.

Multicolored Liquid for Show Globes.

First ascertain the capacity of the bottle and divide by seven, to find the volume of each solution or liquid to be employed. The fluids should, in the order named, be carefully poured down the side of the bottle, held in a slightly inclined position, or through a glass tube inserted into it.

1st, one volume of sulphuric acid C. P., tinted blue with indigo sulphate; 2nd, one volume of C. P. chloroform; 3rd, one volume of glycerin, slightly tinted with caramel; 4th, one volume of castor oil, colored with alkanet root or alkanin; 5th, one volume of 40 per cent. alcohol, slightly tinted with anilin green; 6th, one volume of cod liver oil, containing 1 per cent. of oil turpentine; 7th one volume of 94 per cent. alcohol, slightly tinted with anilin violet.

The liquids are held in place by force of gravity, and alternate with fluids which are not miscible, so that the layers are clearly defined and do not mingle by diffusion, as is the case when miscible liquids are brought in direct contact with each other. Perhaps it is necessary to add that the colors suggested should be employed in quantities only

sufficient to impart a pronounced tint to the fluids; too deep colors look dead, and detract from the brilliancy of the combination.

It will be noticed that the chloroform is to be uncolored. This colorless layer will produce a striking contrast between the blue sulphuric acid layer and the yellowish glycerin layer. Of course, if desired, the chloroform could be tinted. A trace of iodine will give it an attractive violet shade.

Dry Colors for Show Globes.

These directions are by T. Maltby Clague, in the Pharmaceutical Journal:

Anilin dye	15 to 25 grains.
Gelatin (not opaque)	1 ounce.
Water	6 ounces.
Carbolic acid	1 dram.

Soak the gelatin in water, dissolve the dye in warm water, and next add the softened gelatin and warm till melted, then add the carbolic acid. When the solution has cooled to about 150 degrees F., pour it into the carboy. Place the carboy in a warm position until it has acquired a temperature of from 90 to 100 degrees F. and then remove; now keep turning it upside down and round about until the gelatin shows signs of setting, then put it on its stand and allow the jelly not adhering to the sides to settle at the bottom. Leave the stopper out for a few hours. If the first attempt is not a success it is only necessary to put the carboy into a warm place and try again. The process is an easy one.

Mr. Clague said that 15 grains of methyl violet gave a rich bluish-red color varying according to the shade of the dye used, which is designated by R., RR., or RRR. for the red shades (the blue ones being similarly indicated by B.). Flamingo in the same proportion gave the nicest red of those he had used. Brownish-yellow had been obtained by the use of small proportions of Bismarck brown. Methyl orange was wanting in brightness and transparency.

If the window is exposed to the sun, the film must be allowed to harden well before the bottle is placed in its position. The carbolic acid or some other preservative is required to prevent bacteria from liquefying the gelatin.

Malachite green and methylene blue are good dyes with which to work for producing the two colors respectively. For heating the globe, a towel dipped in hot water and carefully applied has been recommended. Globes colored with films lack the lens-like appearance which adds to the attractiveness of those filled with colored water. This is not altogether a disadvantage, as the water-filled globes, acting as lenses, have been known to start a conflagration.

Varnish for Labels.

I.

Sandarac	100.0 grammes.
Camphor	15.0 grammes.
Venice turpentine	2.5 grammes.
Alcohol	240.0 mils.

II.

Celluloid	10 parts.
Camphor	4 parts.
Ether	30 parts.
Acetone	30 parts.
Amyl acetate	30 parts.

III.

A quick-drying varnish may be made of the following ingredients:—

White shellac	1 ounce.
Lead carbonate	½ ounce.
Ether	8 ounces.

Dissolve the shellac in the ether; add the lead carbonate; shake thoroughly for several minutes, and decant the clear liquid. The shellac must not have been exposed to the atmosphere any more than is necessary in weighing out the required amount.

A more flexible resin varnish can be produced in the following manner:—

African copal	8 ounces.
Powdered glass	8 ounces.
Camphor	2 ounces.
Ether	40 ounces.
Absolute alcohol	10 ounces.

Powder the copal and mix it with the powdered glass; dissolve the camphor in the ether; add the first two ingredients to this solution and set aside for a month in a suitable container, shaking it frequently during the period of maceration. At the end of the month add the alcohol and macerate again for two weeks. Decant the clear liquid.

All these mixtures are highly inflammable and caution should be used in both making and using them.

If the ink used for the labels is affected by the varnish, the printed surface should be sized with collodion before the varnish is applied.

V.

S. M. Wojciechowski writes:—

After pasting the label on I wait until it is perfectly dry. After this I carefully apply a coating consisting of a mixture of equal parts of ether and collodion. After this is perfectly dry I brush over with the purest obtainable colorless varnish, made very thin.

Labels treated in this way remain white and nice, even when washed once in a while with water.

VI.

Seeing the foregoing, John J. Stephenson offered the following modification, which, he said, had been in use by him with satisfaction for a long time:—

The label after having been pasted on the bottle and allowed to become perfectly dry is coated with a mixture of equal parts of collodion and ether, applied with a small brush. Then a coat of gelatin is applied and imme-

diately afterward a coat of 40 per cent. formaldehyde solution.

The gelatin should be the same consistence as that used for sealing soft elastic capsules and should be heated on a water-bath and applied hot. Bottles so labeled may be washed in either water or alcohol without injury to the lettering. My objection to varnish is that it is apt to turn yellow.

L. Vink, in a paper read before an annual meeting of the Pennsylvania Pharmaceutical Association, described an economical method of varnishing labels as follows:—

Having tried a number of different formulas for a label varnish that would be satisfactory in every way, i. e., mode of preparing and of applying, inexpensive and lasting, the following formula seems to be more nearly the ideal. It is easy to apply, quick drying, gives a transparent, glassy appearance and has the added advantge of being waterproof. Labels made of different stock material were used and the result, after applying varnish, was in every instance the same; they presented an appearance as of irregular wet blotches, emphasizing the need of a filler or sizing material. Because of its comparative cheapness the writer is of the opinion that nothing answers this purpose better than collodion. After the label is attached, allow it to stand long enough for the adhesive to dry thoroughly before the collodion is applied. One coating of collodion, applied by means of a hair pencil, should be evenly distributed over entire surface of label. Some inks are soluble in this medium and will present a streaked appearance. As the collodion dries instantly the first coating of varnish may be applied immediately after. Two coats of the varnish will suffice to give the label all protection necessary to make it wear well, and, in a great many cases, to last as long as does the bottle to which it is attached. Labels treated in this manner show, after ten years' service and exposure to dust, air and light, but a slight yellowish change in color over that when first applied. Gum mastic and gum sandarac in ethyl alcohol furnish the medium whereby the pharmacist may, with but little loss of valuable time, transform the common paper label into a semi-permanent label which enhances the beauty of his bottles on their shelves.

Waterproofing Labels.

a.	Gelatin	100 parts.
	Acetic acid (36%)	300 parts.
	Glycerin	10 parts.
b.	Potassium dichromate	20 parts.
	Water	200 parts.

For use, equal parts of a and b are mixed just prior to being applied. The coated label is then exposed to the light until dry. If the yellow color of this coating is undesirable, solution of formaldehyde may be used instead of b.

CHAPTER III

TOILET PREPARATIONS

Cold Creams—Rolling, Massage, Vanishing, Theatrical and Freckle Creams—Almond Lotions—Witchhazel Jelly—Sunburn Lotions—Shaving Lotions—Face Powder—Rouge—Perspiration Deodorants—Depilatories—Preparations for the Hands and Nails—Corn and Wart Removers—Bath Salts.

Always Consult the Index When Using This Book

Making and Selling Toilet Creams.

The notes and formulas which follow are abstracted from a series of articles by H. C. Bradford, published in The Druggists' Circular during the earlier part of 1915.

Relative Merits of Different Types.

It seems to the writer that the demand for casein creams is slowly lessening, and that they are being supplanted by the stearin creams. The latter have many advantages which the public is beginning to recognize, especially now that their use and functions are beginning to be understood and that they are no longer confused with the fatty creams.

The casein creams serve only as a cleansing agent; rubbed into the skin they "roll" out, bringing the impurities with them.

Just here it should be remembered that a well-made fatty cream will perform all the service of a casein or a stearin cream. It will cleanse the skin even better than the casein product, and for healing and soothing all the troublesome little roughnesses, chaps and similar discomforts, it is even superior to a stearin cream. The trace of grease that it leaves behind, especially when milady is preparing to go out, is its chief objection. Another point that is worthy of consideration is, that very many people are not at all informed of these various points of merit of these various products. It is very highly probable that three-fourths of the people who might be called customers for these goods are totally unable to discriminate between them in the manner outlined. Many have learned by experience that a particular product will give good results under certain conditions, and for certain purposes but they do not know the reason for it. In such circumstances a quiet campaign of education by the pharmacist would be productive of a vast amount of benefit to the public and to his own trade. The merits and limitations of the three products should be set forth, somewhat after the outline just given, but in more detail, and with more "reason-why" matter. If the subject is approached with an open mind, and the copy prepared accordingly, it can have but one result, and that is to stimulate the sale of the standard fatty creams, and to a somewhat less extent, the stearin products, while the casein products will drop to third place, where they properly belong.

Making and Buying Casein.

Casein is obtained by precipitation from milk, so:

Skimmed fresh sweet milk	500 parts.
Magnesium sulphate	50 parts.
Alum	5 parts.

Dissolve the magnesium sulphate in just the amount of warm water that will serve; mix the solution with the milk and set the mixture aside for an hour or so. Heat it then to about 130 degrees F. (and in no case allow the temperature to exceed 145 degrees F.), and add the alum, dissolved also in just sufficient hot water. Continue the heat until it is clear that the casein is entirely precipitated, then transfer to a cheesecloth strainer, and wash with water until the washings are almost tasteless.

The lack of smoothness is the chief defect of most massage creams. The casein always tends to form granules. This is almost entirely overcome by a small amount of cacao butter. The only disadvantage of this added fat is that the product is no longer, in the strict sense of the term, a greaseless cream, but this fact seems to be ignored by the manufacturers of many of the products on the market.

Dry commercial casein is now an article of commerce, and its use not only obviates the "fussing" with milk, but may be relied upon to make a smoother product.

In getting the casein for massage

cream, be sure that the use to which it is to be put is specified, as the makers of dry casein make many different grades.

Purification of Cacao Butter, Stearin and Fats Generally.

Prepare some strong lime water by shaking caustic lime with soft water. Let this settle until perfectly clear, and decant.

Slice into wafers the rancid cacao butter, stearin or other articles to be purified, or, what is better, by means of a grater or chopper, reduce it to a coarse granular powder. The smaller the pieces, the quicker and better the lime will act. Immerse these chips in the lime water, and let them remain in the fluid about twenty-four hours, stirring occasionally, and taking care that they are at all times submerged. Then drain off the water, and if any trace of the volatile acids remain, repeat the process. This done, wash thoroughly in clear water to remove all traces of lime, drain well, melt on a water-bath, and continue the heat until the water adhering to the fat has been driven off. Then cast into cakes in the usual manner.

It is quite easy by this process to purify and make sweet and wholesome a rancid fat, but while this insures good material to begin with, it is no help towards keeping it sweet. The tendency of this and other fats to develop odorous volatile acids is the greatest obstacle to their employment. With a local trade, with the quality of material under control, and with care as to preservation, and more especially manufacturing in small lots and frequently, it is quite possible to attain the very best results with these fats, and the users and consumers will be correspondingly pleased. It must be stated, however, that for a preparation of nation-wide sale, or even for one of very much less magnitude, these materials will not serve. It is impossible to say with certainty, but from a very cursory examination, coupled with what is known of the physical characteristics of the various materials, it is the opinion of the writer that all the products of this class that have anything resembling a general sale, are made with mineral oil and wax, and similar ingredients, exclusively. Indeed, no other would stand the hard conditions to which they are subjected. This point is important and should be steadily borne in mind.

Mutton Suet.

Mutton suet is often required by the maker of toilet creams, and as it is next to impossible to buy it of proper quality, it is best to render it for one's self as wanted. The kidney and leaf fat of the sheep can be obtained from any good packing house or butcher; this should be washed in cold water, dried with cloths, cut into small pieces, and rendered on a water-bath. No more heat should be used than is required to melt it thoroughly. It should then be strained through cheese cloth into fruit jars, or other receptacles that may be made air tight. It is best to cover the top with melted paraffin, then stop tightly and store in a cool place. So prepared, mutton suet keeps reasonably well, but it is not intended to be a permanent product, hence should be prepared in small quantities. A dram of benzoic acid dissolved in a minimum amount of alcohol and added to each pound will help to preserve it. It is a better plan not to try to preserve such a product indefinitely, and the same is true of the average toilet cream, of which it is a constituent. These animal and (to a slightly less extent) vegetable fats are not permanent, nor can they be made so except by the addition of large amounts of preservatives, and this is usually unadvisable.

The Ice Cream Freezer.

This utensil is the best thing ever devised for making a reasonably large lot of a cream and is good for many other laboratory purposes. The outer compartment may be filled with water of any desired temperature, to either hasten or retard the final setting of the cream or other product. In addition to this, the beating it will do is far better than can be obtained in any other way, even the egg beater being inferior. This last implement is well enough for amounts not exceeding a pound, though even there it requires both hands to work it.

This use of the ice cream freezer is so important, and the freezer is applicable to such a wide range of uses for many other products, that it is queer it has never been recommended. So far as the writer knows, he was the first to point out its value for these purposes. It is equally valuable in making fatty creams for ointments, tooth paste, cataplasm or kaolin, and any similar product, and will not only save half to two-thirds of the time and labor demanded by the ordinary methods and appliances, but it will give a product in every way superior to that made by the older methods.

The freezer used for this purpose should be selected with the greatest care. It need not be large, but it should be of the best material and construction and care should be exercised to see that every portion of the metal that comes into contact with the product is thoroughly tinned. It should be used for no other purpose, and should have frequent examination to see that it is in good condition. A small spot of naked iron will quickly ruin a batch of cream, and is likely to have an equally disastrous effect on other products.

In the following formulas the mat-

ter of color and perfume is left optional with the operator. Directions for incorporating them in the product are given, but the kind and quantity are not specified.

"EveryDay" Cold Cream.

Mineral oil	6 pints.
White wax	30 ounces.
Water	2 pints.
Sodium borate	1 ounce.

Dissolve the sodium borate in the water; melt the wax, add the oil and bring to a temperature of about 200 deg. F., or even a little more; heat the sodium borate solution to the same temperature and pour it into the hot oil solution with vigorous stirring.

If the oil and the aqueous solution are both heated almost to boiling, as directed, and then mixed, a slight amount of vigorous stirring—not beating—serves to make a beautiful snow-white cream that has an enameled appearance, and is light and fluffy. It need hardly be said that the vessel in which this mixing is done should not be more than half filled by the product, else it is liable to overflow, and may even do so in any case, especially if heated too much.

This cream may be cheapened in cost, without in any way reducing the quality, by replacing about half the mineral oil with an equal volume of the culinary cottonseed oil, and by using about six ounces of paraffin instead of an equal weight of the white wax. This cream should cost not more than 15 cents per pound, exclusive of the perfume.

Theatrical Cold Cream.

Oil (see previous formula)	1 gallon.
Paraffin	1 pound.
White wax	3 pounds.
Sodium borate	3 ounces.
Water	1 gallon.

Mix as directed in the preceding recipe.

Members of the theatrical profession make large use of a cream of a totally different sort, though sold under the same name, which they employ to remove the grease paint and other "make-up" from their faces. (See next formula.)

Make-Up Cold Cream.

Fresh sweet lard	10 ounces.
Castor oil	4 ounces.
Spermaceti	2 ounces.
Sodium borate	20 grains.
Water	1½ ounces.

Melt the spermaceti, add the lard, and then the castor oil. Dissolve the sodium borate in the water; heat both solutions to about 150 degrees F. and pour the aqueous solution into the mixture of fats, beating briskly until the product is nearly cold.

This product at times, especially in cold weather, is a little stiff. This may be remedied by substituting a portion of oil of theobroma for an equal amount of the spermaceti.

Oxygenated Cold Cream.

Paraffin	250 grammes.
White wax	250 grammes.
Sweet almond oil	1000 grammes.
Sodium perborate	10 grammes.
Water	380 grammes.

Mix in the usual manner, except that here the heat should be no more than enough to keep the mixture of wax and oil fully liquefied, while the aqueous solution of the perborate should be warmed to the same temperature. Pour the latter into the former, slowly, beating briskly, and continue until the product is cold.

Beating makes the cream light and fluffy, but does not give it the glossy finish common to creams mixed at high temperature with little beating. If packed in jars, the top can be made to take this glossy finish by holding near a source of heat for a moment.

This is a real oxygen cream. It is a gentle but certain whitener for cheeks that have been tanned by the sun. The perborate could be very largely increased if desired, but here the object aimed at is not to supply a strong bleach, but merely to give a first-class oxygen cream. If real bleaching is wanted, the article made especially for that purpose should be employed.

Cocoa Butter Cold Cream.

White wax	6 ounces.
Paraffin	4 ounces.
Spermaceti	10 ounces.
Oil	80 ounces.
Oil of theobroma	16 ounces.
Sodium borate	4 ounces.
Water	60 ounces.

Mix in the usual manner and beat with an egg beater; or, better, in an ice cream freezer to make light and fluffy.

This cream is a most excellent one, while reasonable in cost. If vegetable oil will be employed it will serve as well for "skin food" as many of the products on the market. Oil of theobroma is very largely used by many of the "beauty specialists," largely in the pure state, and is probably absorbed with greater ease and celerity than any oil outside the animal kingdom. This formula has been subjected to the most exacting demands, and has always given satisfaction. It furnishes an article that can be offered to the most fastidious trade with full assurance that it will please.

Satin Cream.

Pure sweet unsalted lard	220 gm.
Potassium hydroxide	31 gm.
Alcohol, 60%	10 gm.
Water	90 gm.

Dissolve the potassium hydroxide in the water, and if there is any sediment let the fluid stand until it settles, and pour off the clear solution. Put this with the lard into a warm pan and mix thoroughly, working in the alcohol in portions.

There is some skill required in this mixing. The product is a beautiful one, having the appearance of satin. As the proportions are stated, they will give a product stiff enough for a jar, but by increasing the alcohol it can be made into a thick liquid. This is an unusual and valuable formula, and will be a money maker if pushed. Applied freely and wiped off with a piece of cloth removes soot, dirt, dust, travel stains and all else similar from the face and hands much easier, quicker and more gently than will the most vigorous scrubbing with soap, and the trace of fat left behind will be an added protection to the skin.

Cucumber Cream.

White wax ..... 9 ounces.
Oil .....24 ounces.
Benzoic acid .....15 grains.
Cucumber juice .....10 ounces.

Mix in the usual manner, the juice taking the place of the water in the ordinary formula.

The benzoic acid is superfluous and can be omitted if the juice be made properly, as directed below. This cream is a real advance over the ordinary types, in that it does contain cucumber juice, which is a cooling, healing and bleaching agent for the skin.

Cucumber Juice.

Take nice large green cucumbers; do not wash, but wipe off all dust with a damp cloth. Then cut fine in an ordinary meat chopper. Collect the pulp in an enameled pan and heat almost to boiling, then drain it in a bag until dry. Express the bag thoroughly, but do not mix the expressed juice with that which came through by dropping. To each gallon of this latter add 1 pint of alcohol in which has been dissolved 2 ounces of benzoic acid. Mix thoroughly, let stand 24 hours and filter. Collect the filtrate and preserve it in well-corked bottles. The juice expressed from the pulp is subjected to the same treatment, except that it should first be boiled about one minute, then passed through a muslin strainer. Then it may be treated exactly as the other.

"Skin Foods."

It has long been recognized that the animal fats are more easily absorbed than either vegetable or mineral oils, hence it is the custom to make so-called tissue building creams largely, if not entirely, from animal fats. It should be remembered that the food and drug officials are inclined to look askance at any product labelled "skin food," it being claimed that there is no such thing as "tissue building" by inunction.

Theobroma Skin Food.

Oil of theobroma.....8 ounces.
Hydrous wool fat.....8 ounces.
Culinary cottonseed oil..2 ounces.
Boric acid.....4 drams.
Tincture of benzoin.....4 drams.

Melt the solid fats on a water-bath, and with a small portion of the melted mixture rub the boric acid to a smooth paste. Put this in with the melted fats, and add the oil slowly and with constant stirring. Add the tincture in the same manner, remove from the heat and beat briskly until the product is cold, and has been made light and fluffy. Transfer at once to jars and let them stand open, but protected from dust for twenty-four hours. Then "gloss" the top by holding near a source of heat for a moment, put on the cap and the cream is ready for sale. The standing open seems to improve the appearance.

This product is excellent, but in extremely hot weather is a little soft. It is a good plan to make all such products as this a little stiffer in summer than in winter, and in this case about half the wool fat may be replaced with an equal amount of good mutton suet.

Witchhazel Skin Food.

Hydrous wool fat.....24 ounces.
Oil ..... 6 ounces.
Distilled extract of witch hazel ..... 6 ounces.

Mix in the usual manner.

This cream is very easily mixed. It is also rather more expensive than the general run, but it is an excellent preparation.

Lotus Skin Food.

Spermaceti .....10 ounces.
White wax ..... 8 ounces.
Hydrous wool fat..... 8 ounces.
Coconut oil..... 8 ounces.
Oil of theobroma..... 4 ounces.
Culinary cottonseed oil..24 ounces.
Water .....14 ounces.
Sodium borate ..... 2 drams.
Tincture of benzoin..... 4 drams.

Mix in the usual manner, using an ice cream freezer, and beating vigorously, to make it as light and fluffy as possible.

This is a valuable formula. It was originated by a woman who had some reputation as a "beauty specialist," and reduced to workable proportions by the writer. The latest reports are that the preparation is pleasing all users.

Venus Skin and Flesh Food.

Hydrous wool fat.....16 ounces.
Oil ..... 8 ounces.
White wax..... 2 ounces.

Mix in the usual manner.

This particular formula is of English origin, and yields a product that has been sold in London under the above title.

Brick Toilet Creams.

It has often been suggested that it would be an advantage to elminate the water in toilet creams and increase the proportion of wax and other hard materials, thus producing an article not only more concentrated, and hence more economical to the user, but also one that could be sent into trade without the container, which is such a large part of the total cost of these goods. A true cold cream can not be made in this way, but must contain water. Also for the ordinary uses of these products, such as the protection of the skin, and the soothing and healing action generally, the true cold cream is much superior. On the other hand, in the realm of the "skin foods," the water is unnecessary, and the solid or brick variety made with the more solid fats will serve perfectly. With this distinction kept in mind, good use can be made of this brick product. These are really cerates, or at least very closely allied to them, but for best results should be a trifle harder.

Methods of Molding.

The casting of these compounds into blocks of the proper size is a matter of vexation in most instances. In but few cases are proper molds at hand, and these are a source of expense when purchased. Plaster of paris molds, boiled in oil, are not very satisfactory. The best molds are made of brass, in two parts, so arranged that the mass may be pressured. This solidifies the blocks, levels inequalities in the surface, rounds the corners, and may emboss a name or design. Good molds may be made of paper if desired. Paraffined paper is best; the molds should be carefully made over a good model, and the joints made impervious to the compound. The latter should not be poured into the molds until on the point of solidification, and if possible the molds should be chilled to hasten solidification. The writer believes the best plan is to form the mixture into a slab and cut it to the proper size. A rectangular receptacle with perpendicular sides, and perfect right angles at the corners is best. The compound should be poured into this carefully, when it is perfectly level, until it is of the proper depth. It should cool slowly, and as quickly as it is hard enough to stand cutting with a thin knife it should be cut into strips of the proper width. These are cut into the proper sized pieces. This last task will be much facilitated by the use of a simple implement, much like that used for cutting soap into cakes. This is merely two boards fastened together, like a carpenter's "mitre box," and provided with a fine wire fastened at the end, which, drawn across the strip, severs it quickly and easily.

Wrapping and Finishing.

Three wrappers are necessary in finishing these blocks for the market. The first should be of waxed paper; the second, tin foil, and the last the label and wrapper combined. Wrapped in this manner, these goods will be almost as permanent as if packed in jars or boxes, especially if a little care be taken to keep them in a cool place. It is hardly necessary to say that the combination label and wrapper should be a showy one, preferably lithographed in colors.

Madame De Compierre's Beauty Cream.

Spermaceti	1 ounce.
Mutton tallow	8 ounces.
Hydrous wool fat	9 ounces.
Coconut oil	8 ounces.
Expressed oil of almonds	8 ounces.

Melt on a water-bath, mix well and pour into jars.

This formula, as its name indicates, is of French origin, and the original formula cost a considerable sum. It might be advisable in the warm season to replace a portion of the almond oil with oil of theobroma. This would increase the hardness and would also be a slight addition to the merit of the compound.

Ivorine Cerate.

White wax	4 ounces.
Spermaceti	2 ounces.
Oil of theobroma	2 ounces.
Culinary cotton seed oil,	4 to 8 ounces.

Mix, melt and mold. The amount of the oil is varied to suit the temperature and conditions.

This recipe yields a cream that sells well, and that has a fair reputation, but the writer considers it inferior to that made by the previous formula.

Camphor Ice.

Paraffin	2 ounces.
White wax	2 ounces.
White petrolatum	12 ounces.
Camphor	3 ounces...

Melt the first three ingredients on a water-bath; add the camphor in powder, and continue to heat, with stirring, until it is dissolved. Then pour into molds.

This is a pure camphor ice of the very highest quality. It has become fashionable of late to combine glycerin in this product. If this is desired, a weight of it equal to the camphor may be added, after the latter has dissolved, but the product will then require stirring until it can just barely be poured, in order to incorporate the glycerin.

Cocoa Butter Brick Massage Cream.

Oil of theobroma.....16 parts.
White wax..... 1 part.
Coconut oil..... 1 part.
Mix, melt and mold.

As can be seen, this calls for little else than oil of theobroma, which fat stands very high in the estimation of beauty experts, and is often relied on almost exclusively for massaging. Its chief disadvantage is its great tendency to turn rancid. The least trace of rancidity debars it from use.

Phenol Camphor Ice.

Paraffin ..... 2 ounces.
White wax..... 2 ounces.
White petrolatum.....12 ounces
Camphor ..... 3 ounces.
Phenol (crystals)..... 1 ounce.

Melt the phenol, stir in the camphor until it is dissolved, and add the solution to the oils, previously melted.

Phenol and camphor combine to form a water-white, oily liquid, which dissolves perfectly in such mixtures as the above. The camphor lessens the caustic and corrosive properties of the phenol, reducing the combination to a powerful antiseptic. This product will soften, soothe and heal even the roughened, gnarled, cracked and bleeding hands of laborers.

Perspiration Cream.

White wax..... 8 ounces.
Liquid petrolatum..... 24 ounces.
Sodium borate.....100 grains.
Benzoic acid..... 20 grains.
Salicylic acid.....400 grains.
Hot water..... 16 ounces.

Melt the wax and oil and heat to about 160° F. Dissolve the other materials in the water, heat to the same temperature as the wax solution, and pour it into the latter, heating briskly until the cream is formed.

Here a comparatively high temperature of the solutions, plus a small amount of stirring, results in a glossy cream. This cream is really more of an odor dispeller, or deodorizer, than a remedy for perspiration, though the two are usually interdependent. Many persons are troubled with an excessive perspiration on the feet, in the armpits, and in other portions of the body, and a slight application of this cream to such places will destroy the odor. It is also valuable for many humors and eruptions, especially those aggravated by exercise and the resulting perspiration.

La Rouche Bath Cream.

Tannic acid..... 4 grammes.
Expressed oil of almonds .....160 grammes.
Hydrous wool fat...240 grammes.
Melt, mix and beat until smooth.

As may be judged from the title, this is a French recipe, and the finished preparation is much used to close the pores, constrict the skin and make the flesh firm, after the hot or Turkish bath. It is also used as a wrinkle cream, though not equal to the one given further along.

Queen Draga's Complexion and Pimple Cream.

Artificial musk ..... 1 gramme.
Coumarin ..... 5 grammes.
Ichthyol ..... 150 grammes.
White petrolatum...2500 grammes.
Mix well, adding the ichthyol last.

The preparation made by this recipe is really more of an ointment than a cream, and it is said that it was used by the murdered Queen Draga of Serbia. This cream is merely an ointment of ichthyol, perfumed with musk and coumarin, the perfumes probably having some connection with the usefulness of the compound other than as perfumes.

Pacific Wrinkle Cream.

Tincture of benzoin..... 1 dram.
Spirit of camphor..... 1 dram.
Orange flower water.... 1 dram.
Gelatin ..... 4 drams.
Powdered alum .....15 grains.
Glycerin ..... 2 ounces.
Mutton suet ..... 8 ounces.

Dissolve the alum in the orange flower water, add the gelatin, and soak until the latter is thoroughly softened. Now add the glycerin and heat on a water-bath until the gelatin is dissolved. Melt the suet and add it to the gelatin solution, very slowly and with constant stirring; follow with the remaining ingredients in the same manner, then remove from heat, and with an egg beater beat briskly until the cream is cold, and light and fluffy.

The product obtained from the recipe just given is a little unusual, but it has been the fortune of the writer to know that it gives satisfactory results. It is to be applied to the wrinkles at night and well massaged into the skin for ten to fifteen minutes. The formula was half way put together by a woman on the Pacific slope, but it failed to please, and the writer's assistance was invoked. After some trouble it was modified to a form somewhat different from the above, and in that shape turned over to the owner. She continued to make innovations, and finally informed me that in the above form it was a great success and brought "repeat" orders.

Casein Massage Creams.

It is probable that no single article has attracted more attention in pharmacy during the last five years than massage cream, and it is equally probable that no article ever created so much interest and sold in such quantities, and yet had so little real merit behind it.

At first the novelty was largely re-

sponsible for the popularity which these creams enjoyed. Now, that this has very largely disappeared, the articles are beginning to find their true place, and to be appraised at something like their real value.

Greaseless creams, broadly considered, are of two general classes. The first has usually a base of casein; the second is usually a stearin soap.

That these creams fill a place has been amply demonstrated by the fact that they have sold steadily. A peculiar thing is that the public put these products in their proper place before the manufacturers did. At first, they were advertised and pushed very much in the same manner as the fatty creams. Now there is a very great difference, most of the manufacturers wisely making a distinction between them. In one booklet it was frankly stated that the massage cream would not perform the service of the fatty product.

Just who introduced the casein creams it is impossible to say. Milk has long ranked high as a cosmetic. By baths of milk the women of Rome sought to retain their youth and beauty.

Creams are made from the casein freshly precipitated from milk, and it is here that many failures occur. There is little difficulty in the process. The list of precipitants is a long one, alum, borax, ammonia, magnesium sulphate, rennet, heat and many others being employed. There seems to be a wide divergence of methods. As an example, some lay stress upon the thorough washing of the freshly precipitated product as essential; others say nothing about it, and the inference is that they pay no attention to that part of the process. Washing is essential, especially if chemicals have been employed as precipitants, if only to be rid of them. It also removes the albumin, the whey and other liquids, and leaves the casein cleaner and more manageable. Only fresh, skimmed milk should be used.

The fat of whole milk interferes with all the processes. If fat is to be added, it should be at the last.

Under manipulation, casein will take up a considerable quantity of water, but on being left standing for a time it will contract and expel this water, and if this should happen after the cream has been sold dissatisfaction results. No one wants a jar of cream with a layer of water on the top of it.

The grainy feel in a casein cream may be avoided by the use of a trace of alkali. In the manufacture of casein creams the good judgment and skill of the operator, as well as experience, are of the utmost importance; worth more even than the formula, for the reason that the raw material with which he works is a most variable substance. Even milk secured from the same source and meeting all the tests will still be variable. From the birth of the calf, until lactation stops, the bovine does not supply the same product two days in succession. A process may be worked out to the very finest points as to one sample of milk and give unqualified success, while with the next lot of milk it will go wrong.

Casein Cream—Formula No. 1.

Skimmed fresh sweet milk	1¾ gallons.
Solution of formaldehyde	2 drams.
Borax	3¾ ounces.
Alum	7¾ ounces.
Boiling water	4 pints.
Cold water	2 gallons.

Mix the formaldehye solution thoroughly with the milk and heat the solution to 122° F. Any desired color should be added to the milk at this time, for it is thus carried down with the curd and distributed in a thorough manner. Solution of carmine, N. F., 125 minims, has been found to give a satisfactory tint to the above quantity. Now dissolve the borax in 2 pints of boiling water and stir briskly into the milk; as soon as the mixing is complete strain the liquid through muslin or cheese cloth. Dissolve the alum in the remainder of the boiling water and add the solution slowly and with constant stirring to the milk mixture. It is this that really precipitates the casein. Let the curd settle to the bottom of the vessel, and if the supernatant liquid is not perfectly clear, add more alum solution until it is. This done, drain off the liquid and wash the curd until the washings are tasteless or nearly so. This is best done by having it in a pail with a faucet at the bottom, so the wash water may be drawn off. Now get the curd into a bag of cheese cloth and press it with the hands, and let it drain until it weighs 3 pounds and 2 ounces. This will give about the proper amount of water. Next work in the perfume, and it is ready for packing.

If the job has been done properly the cream will be found satisfactory. However, if the air has made it "grainy," the damaged portion may be rejected; or if the graininess be general the product should be treated. The remedy is a trace of caustic alkali, either potassium or sodium hydroxide or a mixture of the two. Ten grains to the ounce of product is about the maximum, and probably less will serve. Dissolve the alkali in a minimum of water and rub it evenly into the curd. It will dispel those granular spots almost like magic.

As to Packaging.

As soon as this is done get the product into the tubes with the least possible delay. Tubes are the best packages in some respects, and in some others they are almost the very worst. The chief product of the market is packed into a small, wide-mouthed bottle, with a ground stopper. That is an ideal package, but expensive. A jar, with a small, thin "washer" or "gasket" of paraffined board or rubber, so that its lid would screw down practically air-tight, would be ideal. It is easy enough to keep the jar in perfect condition until sold by running paraffin on top of the cream, but after its use is begun comes the trouble. If used slowly it is almost sure to dry and spoil, and that kills the sale of a second package.

Casein Cream—Formula No. 2.

Glycerin	1 ounce.
Ammonia water	1 ounce.
Borax	2 drams.
Boric acid	1 dram.
Skimmed fresh sweet milk	1 gallon.

Mix the milk and the ammonia, then put on the fire and heat until the milk curdles. Let it stand over night or about twelve hours, and strain through cheese cloth. If it was heated sufficiently, and not too much, this will give a nice, smooth curd. Let it stand another twelve hours, then mix in the other ingredients, add the color and perfume, and it is ready to package.

This is a good example of the use of heat to curdle the casein, assisted here by the ammonia. It will also be noted that no washing is required. If properly done, all the casein will be precipitated and the whey and other liquids will flow from the strainer almost clear. This has the advantage of making a smooth, soft, even curd, in which the other ingredients can be incorporated with little labor. It is further fortified by the glycerin.

Casein Cream—Formula No. 3.

Freshly precipitated casein	100 parts.
Boric acid	20 parts.
Oil of theobroma	10 parts.

Melt the oil of theobroma and rub to a paste with the boric acid, and triturate to a smooth, even cream with the casein, and working in the perfume and color at the same time.

Casein Cream—Formula No. 4.

Dry casein	9 ounces.
Potassium hydroxide	100 grains.
Sodium hydroxide	20 grains.
Glycerin	4 ounces.
Phenol	140 grains.
Water	32 ounces.

Dissolve the potassium and sodium hydroxides in the water; add the casein, taking care that it is as free from lumps as possible. Heat on a water-bath until it is dissolved to a smooth, heavy cream mass. Work in the glycerin, color, perfume and phenol, and when the whole is thoroughly incorporated, transfer to the packages.

As the recipe stands, it will make a product that is just about right for jars or tubes, but it can be made harder or softer, as desired, by merely increasing or decreasing the amount of water. This is an advantage in another way, which is that in the making this can be determined and more water may be added, or evaporation may be carried a little further. This is a marked contrast to watching a bag of freshly precipitated moist casein as it loses its surplus moisture by the slow dropping of the fluid from it, the operator in the meanwhile wondering whether the proper percentage of water has been reached.

Casein Cream—Formula No. 5.

Skimmed fresh sweet milk	1 gallon.
Borax	3 ounces.
Boric acid	3 ounces.
Powdered alum	6 ounces.
Glycerin	1½ ounces.
Sodium benzoate	4 drams.

Put the borax and the boric acid into the milk, stir until dissolved, then heat to boiling. The mixture must not boil, but should come to the boiling point. Remove from the fire, add the alum dissolved in the smallest possible quantity of hot water, stir thoroughly, and let it stand for twenty-four hours. Strain, wash the curd a few times by decantation, drain for an hour or so, then mix in the glycerin, the benzoate, the perfume, and the color, and it is ready to package.

Making Cottage Cheese.

Briefly stated, the method of making "cottage cheese" is as follows:

Skimmed fresh sweet milk is allowed to stand in a warm place until it forms a rather firm curd, or "clabber." This is now placed over heat and stirred constantly until the whey separates from the curd. This heating is the delicate and important part of the process. The "clabber" must not stand long enough to get too acid, but just long enough to make a firm curd. The clabber must not be boiled, but be well heated to insure a thorough separation; anything beyond that point is to be avoided. Let the mixture cool, and turn it into a sieve to drain. When well drained, the curd is beautifully white, soft and smooth, and is a delicious food product. After draining, it is at once formed into balls, and by this manipulation more moisture is expelled. The product is then ready to be eaten, being usually mixed with cream and salted and seasoned to taste. The curd is not washed at all.

Cotton Cheese Massage Cream.

Curd, as above..... 8 ounces.
Phenol .....10 minims.

Put into a mortar and rub into a smooth paste. The phenol is added as a preservative, but any other antiseptic would do as well. Appropriate color and perfume should be added.

It seemed, from the preliminary test, that a curd made in this manner produced a cream that was smoother and softer than the product of any other process. It also "rolled out" well, and was apparently the equal if not superior of the other types.

Stearin Creams.

The combination of stearic acid with alkali results in a sort of soap, and it is this soap, plus the water, and the various other materials that make the finished stearin cream. These creams contain a great amount of water, but despite this they can be made reasonably permanent, though they will hardly stand marketing in a wholesale way.

Another form of these creams that is fairly satisfactory is an emulsion in which the stearin* is combined with some oil and emulsified by the addition of borax or other alkali, or both. Borax has a remarkable action on stearin, as it is quite possible to make a pound of stearin, after emulsification with half to three-quarters of a pound of borax, hold in the form of a cream a gallon of water.

By common consent, monohydrated sodium carbonate has been selected as the alkali possessing the greatest merits and the smallest demerits in the making of stearin creams. The various formulas propose amounts that vary roughly all the way from 3 to 15 per cent. of the stearin employed. It is impossible to make a good cream without an excess of alkali, but a large excess should be avoided, since it exerts an untoward action on the skin, and may result in roughness, or even slight burns.

An excess of alkali is not likely to manifest itself until after use of the cream, and then it is too late to prevent trouble.

An important point is the quality of the raw materials. The pharmacopœial tests and requirements should be rigidly adhered to, and any item that fails to meet them should be rejected. Care should also be taken that the stearin is not rancid.

Stearin-Borax Emulsion.

Borax .....5 ounces.
Stearin (granulated).....8 ounces.
Distilled water.....4 pints.

Dissolve the borax in the water, and heat the solution on a water-bath to about 212° F. Add the stearin and stir vigorously until it is melted, and thoroughly incorporated with the solution. Then remove from the water-bath and continue the stirring until the product is thoroughly set and cold. The perfume and color should be added when the product has cooled down to about 140° to 150° F., and thoroughly beaten in. As soon as the product is cold, transfer to containers which should be as nearly air-tight as possible. If ordinary jars or boxes are to be used, run a thin layer of melted paraffin on top of the cream. This will preserve it until the jar is opened.

The above formula represents the simplest of the emulsion processes, and the product is highly satisfactory, as well as cheap. So far as usefulness goes, it is just about as good as any stearin cream. The great drawback to this is its lack of keeping qualities. Packaged in tubes, it does very well, and jars handled as above will keep it for a reasonable time, but it is not permanent.

Stearin-Petrolatum Emulsion.

Stearin ..... 9 ounces.
Liquid petrolatum..... 4 ounces.
Powdered borax..... 2 drams.
Potassium hydroxide...137 grains.
Distilled water..... 43 ounces.

Melt the stearin on a water-bath, add the liquid petrolatum, and stir until thoroughly combined. Dissolve the potassium hydroxide in half the water, heat the solution to about 212 degrees F., and pour it slowly, in a thin stream, into the latter, stirring vigorously all the while. Dissolve the borax in the remainder of the water, heat the solution and add to the other mixture exactly as the potassium hydroxide solution was added. Remove from heat and continue the stirring, or beating, until the product is cold. The perfume and color should be added in the manner previously directed.

This makes a better product than the first one given, and the oil tends to prevent the water from evaporating quickly, so that it is more permanent. The oil is also a good addition in other respects, adding greatly to the emollient properties of the product. Of course, this is not a true greaseless cream, but it does all the work of these, and the additional oil makes hardly a discoverable difference in the after-effects of the application.

Stearin Soap Creams.

Next will be considered a class of creams made with stearin soap as a base. These probably are the only products that have anything resembling a general sale. They are the most permanent of the stearin creams, and it is quite possible to market them nationally if due precautions are observed.

* Throughout this article the word "stearin" is employed in its technical sense; as a synonym for stearic acid.

They are beautiful products, and their physical characteristics make a powerful appeal to the prospective purchaser.

Stearin Soap Cream—No. 1.

Stearin	16 ounces.
Powdered borax	8 ounces.
Glycerin	8 ounces.
Monohydrated sodium carbonate	765 grains.
Distilled water	6 pounds.

All these materials are to be carefully weighed, including the water. Put the water, glycerin, borax and sodium carbonate into a kettle on a water-bath and raise the water in the bath to the boiling point, stirring until solution is complete. The stearin should be granulated, then slowly added, with constant stirring, to the hot solution. Continue the heat and stirring until the whole thing becomes an oily-looking, smooth semi-transparent liquid. Remove from the heat, and keep the beater or stirrer going until the product is cold, adding the color and perfume when the product has cooled to about 140 to 150 degrees F.

If carefully selected materials are used and due care given to their manipulation, the above formula gives a product that is just about as good as, if not better, than any cream that has been placed before the trade.

Stearin Soap Cream—No. 2.

"Peroxide"

Stearin	6 ounces.
Anhydrous wool-fat	1 ounce.
Glycerin	6 ounces.
Solution of hydrogen dioxide	1 ounce.
Water	32 ounces.
Monohydrated sodium carbonate	5 drams.
Borax	2 drams.

Mix the water and glycerin, and heat to about 195 degrees F. on a water-bath. Add the borax and sodium carbonate and stir until they are dissolved. Melt the stearin and wool-fat together, and raise the temperature to about 195 degrees F. Then pour the borax-soda solution slowly, in a thin stream, into the mixture of melted fats, keeping the stirrer going vigorously all the while. Continue the heat and stirring until effervescence has ceased, and the saponification is complete; then let the mixture cool down to about 105 to 120 degrees F.; add the hydrogen dioxide solution, the perfume and the coloring, and continue to beat until cold.

This is a good example of a "peroxide cream." Of course, the amount of the latter ingredient could be increased if desired, but it is best to use caution in doing so. Hydrogen dioxide solution does not seem to work as well in practice for such purposes as this, as a theoretical study of the matter would lead one to think. The acid—which it is apt to contain—seems prone to redden and roughen the skin when applied at all freely, so that it has never been popular when used for any of the purposes of a skin bleach. In the amount here specified, it will tend to whiten the skin, and the amount used is too small to produce any untoward results.

Smoothing Effect of Wool-Fat.

The small proportion of wool-fat is a very useful addition. It greatly assists the blending or emulsifying of the materials, and also tends to impart smoothness to the product. It is highly probable that this addition, in about this proportion to every formula given in this paper, would produce good results, and would add to the value and appearance of the cream in question.

Stearin Soap Cream—No. 3.

Stearin	8 ounces.
Glycerin	8 ounces.
Boric acid	8 grains.
Potassium carbonate	360 grains.
Distilled water	40 ounces.

The manipulation of the above ingredients is as in the previous formula. Mix all the materials except the stearin, the perfume and the color; heat to the boiling point of the water-bath, add the stearin previously granulated, or at least cut and broken into small pieces, continue the heat and stirring until saponification is complete (indicated by the oily appearance and semi-transparent look of the product), then remove from heat, and stir until cold, beating in the perfume and color in the manner already directed.

This formula has given good results in several hands, and was originated by an expert in this line. The chief difference between it and the preceding formula is the proportion of glycerin; the absence of borax is also unusual, and the writer thinks it would be better to add some. The boric acid, in the quantity specified, can have nothing but an imaginary effect. The use of potassium carbonate, rather than the sodium salt, is also a step in the wrong direction, in the writer's opinion. The monohydrated sodium carbonate has been used so much, and by so many different operators, that its superiority for the purpose must be conceded, to say nothing of the fact that it costs 12 to 15 cents a pound less than the potassium carbonate. Yet the formula has given good results, and the product made by it has been sold with satisfaction and profit, and that is the "acid" test after all.

Stearin Soap Cream—No. 4.

Stearin	30 grammes.
Oil of theobroma	5 grammes.
Sodium carbonate	20 grammes.
Powdered borax	5 grammes.
Glycerin	25 mils.

Mucilage of acacia....100 mils.
Water .....400 mils.

Mix the water, mucilage, glycerin, borax and sodium carbonate, and heat on a water-bath until dissolved. Melt the stearin and the oil of theobroma together, and pour into it very slowly, and with constant stirring, the borax-soda solution. Continue the heating and stirring until effervescence has ceased and the saponification is complete, then remove from heat and stir until cold, adding the perfume and color during the cooling.

This product not only contains cacao butter, but also mucilage. In the opinion of the writer, this last is a poor addition, and the product would be much better without it, especially if the amount of glycerin was slightly increased. The preparation somewhat resembles the stearin emulsions, because of the large amount of water and other diluents present, but it is inferior to them. If well made, it is a light, fluffy product, and is rather popular in some sections.

Stearin Soap Cream—No. 5.
"Witchhazel Foam."

Stearin (granulated)..100 grammes.
Sodium carbonate.... 5 grammes.
Glycerin ..... 15 grammes.
Distilled extract of witchhazel .....500 grammes.
Distilled water to make .....1000 grammes.

Mix the sodium carbonate and glycerin with 500 grammes of water, and heat on a water-bath until the salt is dissolved. Add the stearin and continue heating and stirring until saponification is complete. Remove from heat and when the mixture has cooled to about 160 to 175 degrees F., add the extract of witchhazel slowly, with constant stirring, and continue to stir vigorously until cold.

This recipe yields, when properly handled, an excellent, light, fluffy product that gives general satisfaction.

General Directions for Making Stearin Creams.

Stearin should be practically snow-white, since dark color is a sure sign of inferior quality. It should be free from dust, dirt and any other foreign matters, and lastly, it should conform to the tests of the United States Pharmacopoeia as to saponification values and melting point. The other materials should also answer to pharmacopoeial requirements, and the sodium salt, the borax and similar ingredients should be preserved in air-tight containers.

The best vessels are aluminum; a second choice would be granite, agate or enameled ware. Well-tinned vessels may be used. The beating and stirring is best done with a wooden paddle, made of some odorless hardwood, such as ash or hickory, or from white pine. Yellow pine and other woods of a resinous or odorous nature would contaminate the product, and the touch of iron would ruin it.

Be sure to make allowance for effervescence and swelling of volume. The kettle should be not more than half filled by the materials for batch, and even less than that would be better. When the granulated stearin is added to the borax-soda solution it first thickens up into a somewhat gelatinous-looking mass. Further beating and stirring begins to make this fluff up, due to the air bubbles rising and breaking at the surface. The volume also increases greatly at this stage. Then, as the process continues, the mass melts and dissolves, and comes down rather suddenly to the oily-looking, semi-transparent liquid, and effervescence practically ceases. This marks the end of the reaction, and shows that the saponification is practically complete, but it is best to continue heating and stirring a few minutes longer.

No water but distilled should be used, although good, clean, rain water that has been boiled, cooled and filtered is almost as good, and may be used if the other is not at hand. The consistency of the finished cream is very largely controlled and governed by the amount of water left in it. Most formulas call for what seems to be excessive amounts of water, but much of this is evaporated during the heating process. This may or may not be replaced, depending on the desired consistency of the finished cream. The important point is this: add only boiling hot water to the cream during the process, and keep the stirrer going all the time. Cold water at any stage of the process will spoil the product. Have a kettle full, hot at all times, for use.

The process should be continuous. Have everything ready before you begin, and when the materials have been placed in the bath, stop for nothing until the job is done. Keep the heat and the paddle going constantly until the saponification is complete, then remove the kettle from the bath, and keep the paddle going again until the product is cold, or at least set. More failures have been due to neglect of these points than all other causes combined. The appearance of the product would indicate that it could safely be packaged up as soon as it had cooled down enough to handle, but this is a great mistake. Separation is prone to occur, and the beating should be continuous until it is too stiff to allow separation.

Putting Fluffiness Into Creams.

All know what fluffiness means, but

not all know how to attain it in their products, and yet it is one of the most important points of the whole process. The light, soft, fluffy product is invariably preferred. This fluffiness is caused by beating bubbles of air into the product, and the beating, as already prescribed, will give a certain amount of it, but hardly enough to bring desired results. Let the cream stand over night after it is finished in the manner directed under the formulas. Next morning get an ice cream freezer that will not be more than half filled by the batch, or at least do not try to handle more than half a canful at a time. Examine this freezer carefully to see that the tin coating of the can and the paddles is perfect. If not, take it to a tinsmith and have the bare spots covered with pure tin if possible, or with the best solder. This is to preserve the cream from contact with iron, which spoils it. Even tin is not to be recommended for a container in which to make the cream, but it is already made, and the reactions which might possibly attack the metal are all over, so that there is no danger in the use of tin in the present process. Fill the can about half full of the cream and put it into the tub, but do not fit in the paddles as yet. Now fill the tub with boiling water up well to the top of the can. Stir the cream gently with the paddle until it is seen to be just about melted, then fit in the paddles and gearing and begin to turn. This process is very similar to the first step of making ice cream; the materials are first put in, and the paddles turned vigorously to "beat up" the materials to about double their original volume, and the same thing happens in this case. The rapid turning of the paddles beats air into the melted cream, and this fluffs it up and increases its bulk. The longer it is continued, the greater will be the effect, so that it is comparatively easy to start with the can half full and finish with it touching the lid, and it must be said here that this will give the lightest, fluffiest, softest, smoothest and best cream it is possible to make. No other process can compare with it, for the reason that no other appliance has the power of incorporating air so well or in such quantities.

In doing this it is well to examine the product from time to time and see what it is doing. The tub should have a plug at the bottom so that the water can be run off as desired. It is also a good plan to have a supply of cold water at hand for use if needed. The hot water melts the cream and the beating puts in the air and gives the other physical characteristics sought; as soon as these are attained it saves time and work to run off the hot water and fill the tub with cold. The crank must be kept going until the cream is perfectly cold. The directions given under the formulas will impart more or less fluff to the product, and, of course, the more it is fluffed in the making, the less can be imparted to it in this secondary process. The matter is not quite as simple as it reads because the temperature of the air and of the water, the conditions of the cream, the speed of turning, the time and dozens of other conditions, all have their effect on the product, but a little experience and a few trials will teach any intelligent operator how to secure good results.

Perfumes and Toilet Creams.

The perfume is the very soul of a cream, and nothing goes further toward selling such a product than an attractive odor.

Alkalies of all sorts are almost certain to destroy the odor of natural oils, and the result is that if they are employed the alkali soon decomposes the oils, producing a marked change in odor. A small amount of the natural oil judiciously employed in admixture with synthetic perfumes will serve well if the selection is made with discrimination.

Manufacturers of synthetic odors frequently furnish blends put together for use in toilet creams. These are usually good, but their cost is high, and the dealer can just as well buy the raw materials and mix his own perfume bases.

It is a great advantage to have an entire line of toilet goods bearing the same odor. This not only has an advertising value, but also reduces the amount necessary to invest in stock.

Perfume for Cream—No. 1.

Heliotropin	80 grains.
Oil of rose	80 minims.
Oil of ylang-ylang	320 minims.
Alcohol	enough.

Mix the oils, powder the heliotropin and then add it to the oil mixture and warm very gently on a water-bath with constant shaking or stirring until it is dissolved. If this does not occur quickly, add 3 or 4 ounces of alcohol, continuing to heat and to stir until solution is effected.

The above amount should perfume about 10 pounds of cream. It is a good idea to use enough alcohol to bring the volume to a definite amount so that any desired proportion can be quickly measured. Thus, if the finished volume be 5 ounces, then ½ fluidounce will be sufficient for 1 pound of cream. It is best, however, not to skimp in the amount of perfume used, since few persons object to an excess of a pleasant odor in a product, while all complain when too little is used.

The compound prepared by the recipe just given, as well as all others in similar nature, should be prepared

in reasonable quantities, and kept ready for use. They improve with age. Preserve them in glass-stoppered amber bottles. The ripening will be quickened by storing the perfume in a warm place.

Heliotropin, a synthetic chemical of powerful odor, is of variable quality. Good results can be obtained only with good materials, and with these perfumes the best is indeed the cheapest. The oils mentioned in the recipe should be synthetic products, obtainable from all dealers in perfumers' supplies. They are not only much cheaper than the natural oils, but are more uniform, are stronger, and for toilet creams are more permanent.

Perfume for Cream—No. 2.

Oil of bitter almonds... 24 minims.
Oil of rose.....180 minims.
Terpineol .....540 minims.
Alcohol, to make..... 10 ounces.
Mix and dissolve.

This recipe yields a perfume of powerful odor, and one that is more largely used in stearin creams than all others combined. Terpineol is called synthetic oil of lilac. The above amount has been found adequate for 40 pounds of cream, so that 2 fluid drams of it would serve for 1 pound.

Perfume for Cream—No. 3.

Heliotropin .....5 drams.
Oil of cloves.....3 drops.
Coumarin .....1 dram.
Oil of jasmine.....1 ounce.
Alcohol, to make.....8 ounces.
Mix and dissolve.

This recipe yields a powerful concentrated heliotrope otto. One ounce, mixed with 15 ounces of alcohol, makes a good "quadruple extract," while 1 ounce will scent 20 pounds of cream. The "quadruple extract" produced should retail at 35 to 50 cents an ounce. It can be made into a toilet water, by mixing 3 ounces of the "quadruple extract" with about 10 ounces of alcohol, and then adding enough water to make a pint. Color to suit.

Perfume for Cream—No. 4.

Oil of rose (genuine)....20 minims.
Oil of patchouly..... 4 minims.
Oil of violet.....15 minims.
Oil of rose.....15 minims.
Oil of jasmine.....15 minims.
Artificial musk..... 2 grains.
Alcohol to make..... 1 ounce.
Mix and dissolve.

This recipe gives a concentrated otto of the white rose type, and the amount given above should be ample for 20 pounds of cream. When the otto is diluted with alcohol to 1 pint it yields a "quadruple extract" worth at retail at least 50 cents an ounce.

Perfume for Cream—No. 5.

Heliotropin ..... 20 grammes.
Oil of neroli..... 40 grammes.
Oil of rose geranium.. 60 grammes.
Oil of violet.....250 grammes.
Oil of bergamot.....250 grammes.
Mix and dissolve.

This recipe furnishes a cheap, rather strong, violet odor, and is really intended for soaps, but since stearin creams contain more or less free alkali, and since the perfume blend just given is devised to resist the action of alkali and stand up well, it is well adapted as a cream perfume. The quantity given in the recipe is enough for 200 pounds of either soap or cream, and if low-priced synthetic violet costing $3 a pound is used, the cost will be moderate. In the recipe ionone itself may be used. This chemical is popularly supposed to be the synthetic violet odor, but this is hardly true, since it alone does not give the true violet odor. With stearin creams, where a very fine effect is not expected, ionone will do, and a grade of it costing about $6 a pound will, along with the other materials directed in the formula, give a pleasing odor. The best way to get an odor, especially if it is a new one, or a special, or anything unusual, is to write the makers of perfumers' goods and ask for information. But you must watch out for the prices, as they vary widely with different makers for goods of the same name.

Perfume for Cream—No. 6.

Artificial musk ..... 1 gramme.
Oil of rose..... 1 gramme.
Oil of jasmine..... 1 gramme.
Oil of rose geranium.. 1 gramme.
Oil of cloves..... 1 gramme.
Oil of syringa.....10 grammes.
Terpineol .....15 grammes.
Alcohol, to make.....40 grammes.
Mix and dissolve.

This recipe produces a strong, lasting musk odor that will please a majority of people. The musk and the lilac (terpineol) dominate the mixture, which is not at all costly. The amount directed above is ample to perfume 2 pounds of cream.

Rose Perfume for Cream.

Oil of kanaga root.... 5 grammes.
Oil of jasmine..... 5 grammes.
Oil of petit grain..... 25 grammes
Tincture of Siam benzoin ..... 50 grammes.
Oil of rose..... 55 grammes.
Tincture of ambrettol.100 grammes
Oil of rose geranium (African) .....150 grammes.
Mix and dissolve.

The geranium largely predominates in this formula—almost too much for some tastes, but the exact odor can be regulated to suit by decreasing the geranium, and correspondingly increasing the rose. Using the best materials in the list of the manufacturer who de-

vised this formula, the cost is about 35 cents an ounce, or $7.15 for the quantity given above. This price is based on the use of artificial rose, costing $2.50 an ounce, a price which can be greatly reduced. While the writer has not tried it, he believes that both the rose and geranium in the formula can be replaced by equivalent amounts of one of the cheaper artfficial oils. The manufacturer noted above quoted to the writer a price of $1.50 per ounce for the compound in single ounce lots.

Violet Perfume for Cream.

Bouvardione (12 per cent. solution)	1 dram.
Oil of rose geranium	4 drams.
Benzyl acetate	1 ounce.
Oil of orris, concrete	1 ounce.
Aubepine—S	4 ounces.
Alcohol, to make	16 ounces.

Mix and dissolve, heating gently on a water-bath if necessary.

The above formula makes a violet of the orris type. Oil of orris is the base; aubepine possesses the odor of hawthorn; bouvardione (or borvordial) is of very great value in "pointing" and "toning" up all sorts of mixtures. It combines the odors of honeysuckle, rose and violet. The benzyl acetate gives pungency to the product, and the geranium rounds it off. This compound is well adapted to the purpose for which it was devised, but is not suited for sale as a finished perfume, since the violet does not stand out quite prominently enough. It costs $5.60 to put it up as it is written above, or 35 cents per ounce, and the originator of the formula claims that 1 ounce is sufficient for 20 pounds of cream. The writer prefers to use more than that, but even when double the amount is used, it is still the most inexpensive perfume within his knowledge, when quality is considered. Its cost would be slightly reduced by using synthetic liquid concrete oil of orris in place of the natural product as specified.

Lilac Perfume for Cream.

Otto of rose	2 drams.
Otto of jasmine	4 drams.
Artificial musk (100 per cent.)	2 drams.
Oil of ylang-ylang	1 dram.
Synthetic muguet-blanc	8 ounces.
Benzol benzoate	6 ounces.

Warm the benzol benzoate on a water bath, add the musk and stir until dissolved. Add the other materials and mix well.

The perfume prepared as written above will cost about $7.50, or 47 cents an ounce, and an ounce will serve for 20 pounds of cream. This cost could be reduced to a figure not above that of the violet perfume just described by using synthetic oils instead of the natural rose, jasmine and ylang-ylang. These only serve to "point" and "finish" the odor, as the muguet is the base of it. It is the write's experience that in all such combinations the best results and lowest costs are obtained by using the best quality for the base of the odor (muguet in this case), and then letting the cheap grades be employed for "pointing" and modifying the blend. To substitute artificial or synthetic oils for the naturals here will not appreciably affect the quality, and will materially reduce the cost.

How to Make Toilet Creams.

This is an abstract of a paper by Dr. Justin S. Brewer, printed in The Druggists Circular:—

Druggists should point out to customers that before applying cream, powder, paint or ointment, or anything else, the skin should be thoroughly cleansed with soft, warm water and neutral soap. That brings us to the subject of what kind of soaps to recommend and how to use them. There are on the market many worthless soaps full of free alkali which roughen the skin and bring about a deplorable condition. Of course, we can go back to the old castile soap, which is as neutral and pure as any soap can be, but the public wants something that is perfumed and that will lather freely.

Any one who has a dry, harsh skin, would require a greasy skin cream to remedy that disorder. A person who has an oily, greasy skin, should employ some of the almond creams, or perhaps the non-greasy creams, although if you get right down to actual facts, these non-greasy creams are not good for the skin.

These non-greasy creams and disappearing creams contain stearic acid as a base. Many brands of stearic acid are worthless for this purpose, because they contain a large percentage of oleic acid. The manufacturers producing the best grades of greaseless creams are those who are using imported triple-pressed stearic acid, absolutely white and pure.

Now, if you want to make a cream of this kind, get an imported stearic acid because I do not know of an acid made in this country that will give you satisfaction. Starting with this, it is a very simple matter to make a greaseless cream provided you have the proper proportions. They are inexpensive to make, for they will take up a large percentage of water and are harmless. If you are putting out a line of your own, make sure that you are producing something that is harmless, even if it is not beneficial. There are many of these things on the market today which are money makers for the producer, but worthless. Potassium carbonate is probably employed more generally as a saponifying agent than anything else. The matter of its proportion is the great problem. You should be very careful not to have an excess. This matter of proportion can be regulated somewhat by using litmus paper. The cream can be made much more quickly with stronger ammonia than with the potassium or sodium carbonate—the reaction is almost immediate. With very little trouble you can make samples of cream, perhaps five to six ounces, in less than fifteen minutes, but while ammonia makes a beautiful smooth cream, it is not the best saponifying agent for this purpose. Sodium hydroxide and potassium hydroxide are also sometimes used. These creams will take up as much as 60 per cent. of water, but if you put in too much water the cream simply swells up and is full of air bubbles, which will come out after it is packed in jars and the cream will dry up. If they are not hermetically sealed they all will in time dry up.

It is a very hard matter to seal jars—stock

jars—for they have loose fitting covers. Many manufacturers have adopted the method of sealing their jars with paraffin wax, which is a very good thing—others have patent clamp covers and other means which are fairly satisfactory. It is a rather difficult matter to preserve these creams, because they will in time become rancid, without some kind of preservative. Borax is not ideal because you have to employ it in comparatively large quantities. Sodium benzoate works better than anything else. If you want to make a really good cream, put in, besides stearic acid and the saponifying agent, at least 5 per cent. of glycerin. If no glycerin be added the creams are practically worthless—you would have just a hard, dry granular substance as soon as the water dries out of it, which clogs the pores. Glycerin has a peculiar faculty of getting right into the pores of the skin, so put in all you can afford and you will have something that you can recommend.

Now, last but not least, is the perfuming of the cream. The best materials are the lilac bases, which are the cheapest that can be used for this purpose, or the rose base, and perhaps the oil of violet, although the latter oil is expensive and very apt to go to pieces and not retain its original ordor for any length of time. If you want a cream which is cheap I would recommend lilacene as a perfume. It is used largely by soap makers, with the addition of a little heliotrope, or perhaps with a little artificial oil of rose and a trace of hyacinth, which latter is an artificial compound of great strength and which seems to push the other odor out and intensify it. This makes a very agreeable combination and is reasonable in price.

Use and Price.

Women make it a practice to use a non-greasy cream in the daytime, because they want something that will readily disappear and which can be put on and permit the user to go right out doors and about her duties without any interference. If a customer has an oily skin do not recommend a greasy cream. This covers the non-greasy creams pretty well except as to the size of the package. The best sizes range from 1 ounce to 4 ounces, which sell all the way from 25 cents to $1. A little quality talk often will get you a better price for a jar of cream than anything else, especially if the customer has confidence in you; and confidence is the thing to put behind this article. Do not be afraid to charge a good price for it.

Greasy Cold Creams.

Greasy cold creams are the most valuable agents that can be applied to the skin. Especially are they beneficial for the face and hands, which are more frequently bathed than any other parts of the body. Soap takes the natural oils from the skin, and the skin becomes chapped, rough and hard. The most beneficial type of these greasy cold creams is the rose water ointment. Almond oil and pure beeswax are the right combination to give the softening effect. This combination seems to be more readily absorbed by the skin than anything else. Ask any one who knows and he or she will tell you that it is the best of any. But it doesn't keep. That has opened up the way to a very important industry in greasy cold cream. Good greasy creams will keep anywhere from six months to two years, according to the combination and skill used in their manufacture. A good cream of this type should be composed of best white mineral oil, pure beeswax (ceresin wax intensifies the whiteness, but is not recommended), borax and distilled water, or rose water. This will give an ideal cream and one which will stand anywhere from six months to a year, or two years, depending upon the exactness of the proportions and the method of sealing the jar, and upon other less important elements which enter into the question. These creams are beneficial to the skin, although they are not as good as rose water ointment. They are practically neutral. They contain nothing injurious. You will be asked whether this class of creams is injurious. They are not. These creams are not going to intensify the growth of hair. As a perfume for this, use synthetic oil of rose, or true or artificial rose geranium, with a little pinch of something else to sweeten it.

There is one very important thing to avoid in perfuming these creams, and that is discoloration. You must be very careful to test your combination before you put it on the market, because sometimes after exposure to light or air a discoloration which is very marked sets in. A cream to be attractive should be pure white.

The matter of price is something dependent upon the quality, but manufacturers have created a standard for prices: 2-ounce jars should not sell for more than 25 cents, and 4-ounce jars not more than 50 cents. Theatrical cream is usually put up in ¼ and 1-pound cans. Theatrical cold cream contains a little more water and oil, to make it soft, because it was formerly used to remove make-up.

Rolling Massage Creams.

Rolling massage cream is the most troublesome and unsatisfactory cream that any one can attempt to make. In the market today are two types of this kind of casein massage cream made from milk or dry casein extracted from sweet skimmed milk. The butter fat in pure sweet milk is just sufficient to keep this cream from hardening and drying up. A cream made from casein from skimmed milk dries up much more quickly. To the milk add borax, which, of course, is a solvent for casein, and warm to about 50 degrees, then pour in a solution of alum. Other precipitants are used, such as acetic acid, but alum seems to work the best. The whole should be stirred occasionally for ten to fifteen minutes, and the casein allowed to settle and the liquid drained from the top, then the whole mass is thrown on fine silkoline or cheese cloth and allowed to drain, and then for every gallon of milk used, employ about 5 gallons of pure water for washing, because you must take out the excess of alum used to precipitate the casein. After you are sure that all traces of alum have been removed, thrown the casein into a press and squeeze out all the moisture you can get out. Each gallon of milk should yield 2 pounds of rolling massage cream. After the excess moisture is out, the residue should be placed into some kind of mixing machine. There is a machine on the market used for paints that works about as well as anything. This may be run either by hand or electric power. Add a certain percentage of boric acid. Some have tried to make this cream using borax, but they got nothing but a rubber-like mass. Boric acid keeps the cream in the proper condition and will preserve it indefinitely. Some manufacturers also add a small quantity of sodium bicarbonate first and then afterwards boric acid and a little sodium benzoate. The combination of sodium benzoate and boric acid works better than boric acid alone. These creams are not good for the skin. They have an excess of boric acid. Advise your customers not to use them often.

Another type of cream is a rolling massage cream made with starch. Of the two creams the starch one is less injurious. It is also easier and cheaper to make. This cream, to give it the proper consistency, contains a little soft soap which is made with a pomade base. Usually these starch creams are made by manufacturers of perfumery who use the pomades from which they have extracted the flower odor. Seventy per cent. of that pomade is mixed with the cooked starch. Of course, a preservative like sodium benzoate is added to enhance the keeping qualities, and then a very strong perfume is necessary because starch has the tendency to become sour. The method of application involves a rubbing into the skin until the cream rolls out and brings the dirt with it. That is the story told on the label. The cream is supposed to remove impurities from the pores of the skin and cleanse the skin, but you can wash your hands ten times and roll on this cream and it will become just

as black with clean hands as with dirty hands, because the casein or starch has the tendency to darken upon being pressed or rolled.

Almond Creams.

Old-time almond cream was made from blanched almonds—this was not satisfactory, it could not be made so it would not separate. Manufacturers who wanted a good product got down to a point where they employed only beeswax, a little spermaceti and soap. If you heat beeswax and spermaceti with soap and water the wax will turn white, just as it does with cold cream, and that is exactly what happens in these liquid creams; the wax is partially saponified and emulsified. Different kinds of mucilage are employed to perfect this emulsion, and to yield a cream that will not separate. Quince seed gives best results, and most manufacturers are using this kind of a mucilage. This cream to be perfect in appearance and without separation must contain a large percentage of soap, and if one is particular one should not leave the cream on over night, because the soapy material on the surface of the skin does not do any good. The glycerin or mucilage has a softening effect on the skin, and this article has certain benefits for relieving chapped or irritated skin. It is used after bathing and is not without value because it has about 5 per cent. of alcohol and has some antiseptic value.

There are other creams on the markets—all kinds of creams; but they all get right back to this base of wax, spermaceti and water.

Beauty specialists recommend at night a pair of cotton gloves and the smearing of the hands with cold cream. Rub it in and put the cotton gloves on. If you follow these directions, when you get up in the morning your skin will be just as soft as when in a normal condition.

I saw a very peculiar formula for a cream. It consisted of turpentine, camphor, castile soap and water. I made up some and I got a soapy gelatinous mass, with a considerable percentage of turpentine, readily recognized by smelling. That cream is healing and antiseptic, and will relieve a roughened or irritated skin. In England and Canada it is used largely for the removal of body lice—one or two applications will do the work.

Two of Dr. Brewer's formulas follow:

Casein or Rolling Cream.

Sweet milk (skimmed or normal)	15 gallons.
Solution of formaldehyde	1 oz. 7 drs.
Boiling water	4 gallons.
Borax	1 lb. 14 ozs.
Alum	3 lbs. 12 ozs.
Boric acid	7 pounds.
Cacao butter	1 lb. 10 ozs.
Hydrous wool-fat	1 lb. 10 ozs.
Solution of carmine.	2 ozs. 2 drs.
Oil of rose geranium.	135 minims.
Oil of bitter almond.	45 minims.
Water (for washing)	15 gallons.

Add the solution of formaldehyde to the milk; mix well; add the solution of carmine; stir; and heat to 122° F. Dissolve the borax in 2 gallons of boiling water; add this to the milk mixture; stir quickly; heat to 122° F.; and strain through muslin. Dissolve the alum in the rest of the boiling water; add slowly to the other liquid, stirring constantly. Allow the curd to settle; drain off the liquid; wash the curd with the water; squeeze off the moisture until the curd weighs 25 pounds. Melt the cacao butter and mix it with the wool-fat; add to this the boric acid and mix thoroughly. Incorporate the fatty mass with the curd; add the perfume; mix thoroughly; and fill into jars with air-tight covers.

Vanishing Cream.

Stearic acid (white, triple-pressed)	4 lbs. 12 ozs.
Glycerin	8 lbs. 8 ozs.
Distilled water	14 pints.
Stronger ammonia water	4 ozs. 6 drs.
Cologne spirit	1 pint.
Oil of hyacinth	6 drops.
Oil of jasmine (artificial)	4 drams.
Artificial musk (crystal)	20 grains.
Terpineol	2 ounces.

Melt the stearic acid on a water-bath at 160° to 175° F. Heat 2 pounds of glycerin with 12 pints of water to the same temperature; add the ammonia water; and pour slowly into the melted stearic acid, with constant stirring. Mix the rest of the glycerin and water and heat to 175° F.; pour this into the first mixture, with constant stirring; maintain the temperature and the stirring for about fifteen minutes. Remove from the heat and beat until cold. Mix the perfuming materials with the spirit and add this slowly, while beating, to the cream.

Manufacturing by the Retail Druggist

Below are a few points made by F. W. Nitardy in a paper read before the Nebraska Pharmaceutical Association:—

We usually have our own ideas as to what this or that preparation should be, and different classes of products are demanded in different localities. For that reason a little experimental work is usually necessary to perfect the preparations. Before such work is attempted, however, all reference books at your command should be consulted, and every formula for preparations of the nature or class you are trying to produce should be studied. The various hints and formulas that you will find will be of great help to you and offer many suggestions which with your practical knowledge of pharmacy will make the work of producing a satisfactory preparation comparatively easy.

Whenever possible try to be original in your preparations. That is, your product should not suggest itself as an imitation of something already known. It should at least be an improvement over what is on the market. Individuality is always an asset.

As in the manufacture of your pharmaceutical products, it is quite essential to use the best of materials in the production of toilet articles. It is time enough to consider the cost when you have your formula established; you can then adjust your package and retail price so as to give you the proper margin.

With toilet preparations especially, the package is a very important factor, and considerable care, thought and judgment should be used in designing it. Here, too, it is desirable to give your package individuality.

Anyone doing or expecting to do a prescription business and desiring to keep on good terms with the medical profession should not attempt to market cure-alls for

every imaginable ailment. No sensible physician will object to household remedies such as are called for by the public for minor ailments for which physicians would not be consulted anyway. But I believe that it is not within the province of the pharmacist to market dyspepsia or rheumatic cures or any preparation for the treatment of diseases or conditions properly requiring the attention of a physician, nor to imitate the frequently fraudulent proprietaries on the market.

A certain amount of advertising will be necessary to place your products before the public. Of printed advertising, I believe circulars or small pamphlets are the most effective. If these are gotten up in original style, are truthful and well distributed, you may be quite certain of results. Window and counter displays are of great value. A great deal, in fact, can be said on the merchandising end of these lines, but that is not within the scope of this paper.

Almond Bleaching Cream

Glycerin	1,500 parts.
Expressed oil of almond	1,250 parts.
Wool-fat	2,500 parts.
Borax	100 parts.
Solution of hydrogen dioxide (30%)	65 parts.
Rose water	1,180 parts.
Rose extract	10 parts.
Geraniol	15 parts.
Terpineol	35 parts.

F. T. Gordon, in a note to The Druggists Circular, says:—

Personally, I don't believe that a really effective or stable peroxide cream can be made. I have made lots of experiments and failed. By its very nature, hydrogen peroxide is too unstable to retain much activity when mixed with a cream, and other oxygen-liberating salts are generally too stable or possess undesirable qualities. I have tested so-called peroxide creams and always found most of the peroxide on the labels.

Other "peroxide" formulas follow:—

Hydrogen dioxide solution	4 ounces.
Glycerin	3½ ounces.
Powdered borax	2 drams.
Expressed oil of almond	2½ ounces.
Hydrous wool-fat	8 ounces.

Triturate the hydrous wool-fat and the almond oil until well mixed. Incorporate with this the borax dissolved in the glycerin and the hydrogen dioxide solution. Any perfume desired may be added, say 40 minims of oil of rose geranium to the pound.

Quince Seed Peroxide Cream

First make a mucilage of quince seed, ½ ounce, and boiling water, 12 ounces. Strain this when cold. Then heat the strained fluid on a water-bath and melt in it stearic acid, 16 ounces. In a separate container dissolve borax, 90 grains, and sodium carbonate, 4 drams, in water, 20 ounces. Then add this solution to the mucilage and stearic acid mixture very slowly, and with constant stirring. When the reaction is complete take out of the water-bath and when cool add water, 2 pints, hydrogen dioxide solution, 4 ounces, alcohol, 1 ounce, and perfume, stirring thoroughly until well mixed.

Some Toilet Cream Don'ts

Don't attempt to make a cream to compete with known brands unless it is made of equally high-grade material.

Don't be led into the delusion that twenty lines of printed directions are all that lie between rolling pills and making massage creams.

Don't believe it possible to mill a fine-grained cream in a cracked mortar with a pestle that does not fit.

Or, in other words, get the full benefit of the fact that the know-how is to the formula in making toilet creams as forty is to one.

Glycerin Balm for the Skin

Powdered starch	½ ounce.
Water	1 ounce.
Glycerin	1 ounce.
Bay rum	2 drams.
Oil of bergamot	8 drops.
Oil of rose geranium	2 drops.
Extract of jockey club	2 drams.

The starch, water and glycerin must be mixed over a gentle heat, with constant stirring, and the other ingredients added. A touch of color may be given to the cosmetic by the addition of a little carmine.

Pushing a Line of Home-made Toilet Preparations.

Every pharmacist ought to run a series of his own toilet preparations, says the Chemist and Druggist. It is on the individual note that the pharmacist scores. The frequently recurring question, "Is this your own make, Mr.——?" shows the value the public attaches to the pharmacist's personality. It is his strong point; it should mark all his dealings; it should be suggested by everything in his pharmacy, and by everything that goes out of it. Nowhere is there greater scope for it than in the field of the toilet specialty. Yet how infrequently does one find this utilized.

A toilet series may consist of perhaps four lines, or it may run to a dozen. A good title is essential. Sometimes the name of the pharmacy may be used with advantage. When one can be sure that one is the first in the field, the name of the town or district often does more for the sales than reams of advertisement copy. The pharmacist's own name is in many cases the most useful title to adopt. The fancy name, though, when carefully chosen often very distinctive and attractive, needs

warily seeking for. "Madame A——'s ——" and "Professor B——'s" are played out, and a truly original name is difficult to meet with. I suggest, for convenience, that we make "Le Beau" our man, and that we choose as many perparations as will be most suitable to our own business from the following: Liquid dentrifice, dental cream, modern dental powder, skin cream, cold cream, benzoin cream, shampoo powder, liquid shampoo, hair wash, toilet paraffin and brilliantine.

To deal with the dentrifice first. A liquid dentrifice offers a scope for much discrimination in the flavoring and can be easily put up in a neat and classy style. Moreover, it shows good profit. Here is my formula:

Liquid Dentifrice.

Salol	℥ss.
Spt. vini rect	℥xxviij.
Ol. menth. pip	♏iss.
Methyl. salicyl	*mx.*
Ol. caryoph	*mxx.*
Ol. cassiæ	*mxxv.*
Saccharin (soluble)	℈ss.
Aquæ dest	℥xij.

A salol prepartion needs careful adjustment. The proportion of saccharin is a delicate item; this dentifrice should not suffer from over-sweetness. A sweet dentifrice is sickly; 15 grammes to the pint of 60 per cent. spirit makes a preparation sweet enough for the general taste. It should be colored with magenta solution. Le Beau's dentifrice becomes its own advertiser; a delicate red tint and a neat little label—the plainer the neater—on a heavy paneled bottle. At present prices this will cost about 7 shillings ($1.75) per quart. Using 2½-ounce bottles at 12 shillings ($3) a gross, and 5-ounce at 15 shillings ($3.75), and selling at 1 shilling (25 cents) and 1 shilling 9 pence, (43 cents), the profit works out at 92 per cent. and 95 per cent., respectively, on the outlay.

Dental Cream.

Mellis	℥xxviij.
Aquæ	℥xl.
Liq. cocci cact	♏iv.

Melt the honey, mixed with the water and the liq. cocci. at a gentle heat, then strain through a fine sieve. Raise the mixture nearly to the boiling point, and add the following ingredients, previously intimately mixed:—

Pulv. benzoin	℥j.
Pulv. rad. iridis	℥iv.
Calc. carb. præcip	lb. j.

This should be heated on a water bath for one hour. When cooling, but before it has become too stiff, add:—

Menthol	gr. xx.
Ol. gaultheriæ	♏ij.

Dental cream requires care in the filling of the tubes. A leaky tube is the worst of advertisements and a danger to all stock in its immediate vicinity. With care it can be made a good thing. Here again the secret of success lies in the flavor. The above is good. The following is my

Modern Dental Powder.

Thymol	gr.x.
Spt. vini rect	q.s.
Cretæ præcip	lb. j.
Pulv. os. sepiæ	℥iss.
Pulv. sapo dur	℥j.
Mag. carb. pond	℥iij.
Magnes peroxid	♏vj.
Ol. rosæ geran	♏ss.

To insure thorough admixture the thymol should be rubbed down with a few drops of spirit and a little chalk, and then well incorporated with the rest of the powders. If the peroxide is rubbed up with the os sepiæ its complete diffusion through the whole will be facilitated. Every care must be taken to keep the ingredients perfectly dry; a very slight trace of moisture will cause loss of strength in the active principle.

The tall, American-pattern, nickeled-metal boxes, which are indispensable where the bulk of the powder has to be kept perfectly dry till it is taken for use, can be obtained at about 3 shillings 9 pence (93 cents) per dozen; they hold about 3 ounces. I find that, using 1 pound of chalk, the cost works at 1 shilling 6 pence (37 cents) per lot, making seven boxes. Selling these at 1 shilling (25 cents) gives a profit of 100 per cent. on the outlay.

A Good Skin Cream

and especially a rub-in-smooth cream, is a sure seller and a handsome profit carrier. There are several preparations on the market at present which are offered as a base for this class of cream. Such as I have tried are very good and make useful creams. The original stearin formulas are excellent, but need much care in prepartion. My formula is:—

Dissolve 180 grains of sodii carb. in 10 ounces of water and add, melted, 2 ounces stearin. Boil the mixture for ten minutes and add liq. hamamelidis. 10 ounces. Raise this to boiling, stirring constantly, and when well frothed pour into a large jar and whip well with an egg-whisk till cold.

The whole success of the preparation lies in whipping plenty of air into the liquid at first. It is better to leave the cream at least twelve hours before adding perfume, as there is often a slight settling down of the mass. Half a dram of ess. rosæ gives a distinctive odor. If a good perfume is employed the scent is better than can be obtained by the use of the pure otto. It is a good plan to prepare this cream in several varieties; a lavender scent is something new, which I have found appeals to some ladies; an eau-de-

cologne cream is also a satisfactory article. What I have found almost more successful than any other scent is a delicate blend of coumarin and heliotropin. This skin cream can be put up either in white celluloid covered pots, or more effectively in fancy glass jars. A special name seems to help the sale of this line considerably. I suggest that for this series we dub it Le Beau's dermic snow. That has settled it as a sure seller! The addition of 3 drams of liquid paraffin, the reduction of the hamamelis to 2 ounces, and the substitution of a couple of drams of tinct. benz. simp. give a splendid benzoin cream. With this quantity of tinct. benz. other perfume is unnecessary.

Shampoo-Powder.

Formulas are much alike. The quantity of alkali should not be more than 25 per cent. I have known shampoos, with a considerable sale, which consisted of at least 50 per cent. sodæ carb., but in use they proved very harsh. It is better to give an excess of borax. One pound each of borax and soap powder with about 4 ounces of sodæ carb. give the best results; 15 grammes of coumarin with half the quantity of heliotropin gives a perfume which is much admired. Put up in plain neat envelopes and boxed in sevens to sell at 1 shilling (25 cents), this line scores by its distinctive scent.

Le Beau's antiseptic liquid soap is simply a 75 per cent. solution of soft soap in alcohol, scented with ol. lavandulæ, and made antiseptic. The word "antiseptic" takes the public fancy. A large sale cannot be expected for a liquid soap, but a good deal can be made out of it by pushing it for shampoo use, etc. It pays to sell it where possible.

Toilet Paraffin.

It has some devotees, and may be thought worthy of inclusion in the series. It is simply liquid paraffin scented either with violet or the coumarin-and-heliotropin combination. The same note applies to brilliantine.

Advertising.

Now as to advertising. It is unnecessary to do much. Give a prominent place on your counter or show stand to Le Beau and his goods, and recommend him to the hesitating customer. Let his goods be sold more on your recommendation than for any other reason. Keep him well to the front and let him wear always the air of being Le Beau—something superior, something classy. Let him be the aristocrat of your stock of toilet preparations. His goods are sure to sell. Get out a neat little folded card, if you like, and tell off the points of his things therein. And remember the law about a label bearing a false statement as to the name and address of the manufacturer.

Theatrical Cold Cream

I.

Paul Caldwell, who has much experience in manufacturing theatrical cold cream, contributed this formula to The Druggists Circular.

Spermaceti	1 pound.
White wax	3 pounds.
Liquid petrolatum	2 gallons.
Borax	4 ounces.
Water	1 gallon.
Perfume	enough.

This, he said, is for a **soft cream designed** especially to spread easily and quickly, and seemed to meet the demand of "the profession."

II.

White wax	1 pound.
White paraffin oil	4 pints.
Rose water	3 pints.
Borax	1 ounce..

Melt the wax, add the paraffin oil, and continue the heat with constant stirring until they are mixed well. Use a water-bath to avoid over-heating. Dissolve the borax in the rose water by the aid of heat, and while the solution is still warm, gradually add the melted wax and oil, stirring constantly until cold. If preferred, distilled water may be used in place of rose water, and any desired perfume added.

Theatrical Cold Cream

Spermaceti	125 grammes.
White wax	120 grammes.
Liquid petrolatum.	560 grammes.
Sodium borate	5 grammes.
Distilled water	90 grammes.
To make	1,000 grammes.

Melt the spermaceti and wax, add the liquid petrolatum and continue the heat until the mixture is uniform. Dissolve the sodium borate in the water and apply sufficient heat to bring this solution to the temperature of the oily solution. Add the aqueous solution all at once to the oily solution and stir until congealed.

It will be noticed that this is a modification of the formula for Unguentum Aquae Rosae of the United States Pharmacopoeia, which has been found highly satisfactory by the writer (the chairman of the committee). During cold weather the quantity of liquid petrolatum may be slightly increased. This cold cream can be perfumed according to taste by using the very expensive oil of rose or the cheaper oil of geranium or any other suitable perfume, such as terpineol, neroli, ionone, muguet, etc.

How to Make a Rolling Cream

Warm skim-milk	1 gallon.
Tartaric acid	5 ounces.
Zinc oxide	1 ounce.
Glycerin	2 ounces.
Sodium benzoate	½ ounce.
Water	enough.
Solution of carmine	enough.
Perfume	enough.

Dissolve the acid in a pint of water and add to the milk. Strain and wash the coagulum. Rub the zinc oxide with the glycerin until a perfectly smooth paste is obtained; mix this with the casein; and add lastly the perfume, the color and the benzoate.

The process of making a casein cream resolves itself into two fundamentals. First, the procuring of the casein. This is accomplished by precipitating it from skim-milk with an acid, or alum, or magnesium sulphate. Second, the milling of the casein until it is perfectly smooth. This necessitates the addition of a little glycerin, cacao butter or wool-fat, or any two or all of them, to facilitate the milling and to prevent cracking when the moisture of the casein evaporates. In the hands of the expert cream maker the best binder is a mixture of approximately 1 part of anhydrous wool-fat and 4 parts of glycerin; some add a little tragacanth, but this generally hastens the drying out of the cream; and others work in a little soap.

A small ointment mill is the most satisfactory apparatus for making small quantities of cream. A shallow mortar having a weighted pestle answers pretty well.

Rose-Almond Cream

I.

Blanched sweet almonds	50 grammes.
Castile soap	3 grammes.
White wax	3 grammes.
Oil of sweet almonds	3 grammes.
Spermaceti	3 grammes.
Oil of bergamot	3 grammes.
Oil of lavender flowers	1 gramme.
Oil of rose geranium	1 gramme.
Alcohol (90%)	75 grammes.
Rose water	300 grammes.

Pound the almonds to a smooth paste and emulsify with the rose water. Melt the soap, the wax and the spermaceti in the almond oil at a gentle heat; transfer this mixture to a warm mortar and add little by little the emulsion of almonds with constant trituration. Dissolve the aromatic oils in the alcohol and add in divided portions to the other ingredients.

II.

Spermaceti	1 ounce.
White wax	4 drams.
Castile soap	4 drams.
Blanched sweet almonds	8 ounces.
Alcohol	12 ounces.
Rose water	2 pints.
Oil of rose	12 drops.

Beat the almonds with the rose water. Melt the spermaceti, wax and soap on a water-bath and stir into the almond mixture. Dissolve the oil of rose in the alcohol and pour gradually into the mixture, stirring constantly. Strain through cheese-cloth.

Alcohol in an emulsion is usually a disturbing element.

Honey and Almond Vanishing Cream

We have done a little experimenting, which we report herewith:—Starting with a recipe for honey and almond lotion (a formula for which is given elsewhere in this book), we prepared a base by triturating in a cold mortar 25 grammes of ointment of rose water, U. S. P., with 25 mils of expressed oil of almonds and 60 mils of solution of sodium hydroxide, U. S. P., until a smooth emulsion was obtained.

This base we then triturated to the desired consistency with a greaseless cream base. Our experiments showed that a mixture of 1 part of the almond base with 2 parts of the greaseless cream base was somewhat thin, but that 1 part of the almond base with 4 parts of the greaseless cream base was quite satisfactory.

This is merely a suggestion.

Incidentally, if the preparation is true to its label, honey must be added to the mixture.

Pearly Cold Cream

Almond oil	1,000 grammes.
White wax	60 grammes.
Spermaceti	100 grammes.
Castor oil	10 grammes.
Rose water	300 grammes.
Oil of bergamot	10 grammes.
Oil of rose	2 grammes.
Oil of geranium	2 grammes.

Melt the wax and the spermaceti over a water-bath; add the almond oil at once; when the mixture is clear, remove the container from the heat. Add the castor oil, then the rose water, beating thoroughly the while. When cool incorporate the perfume. If desired, a trace of methyl violet may be added to improve the tint of the finished product.

Stearin and Glycerin Cream

Stearic Acid (triple-pressed white)	3 ounces.
Monohydrated sodium carbonate	48 grains.
Boric acid	1 ounce.
Glycerin	2 ounces.
Distilled water	1 pint.

Mix the borax, the carbonate, the glycerin and 10 ounces of water and heat to boiling. Melt the stearic acid at a gentle heat and add it to the aqeous solution with constant and rapid stirring. Then add, continuing the stirring, the boric acid dissolved in 6 ounces of distilled water with the aid of heat. If the resulting cream is too soft, less water should be used.

To perfume the cream, beat in when the mass has set a sufficient quantity of the following mixture:—

Artificial musk (crystal).	2 grains.
Oil of neroli	10 minims.
Oil of jasmine (artificial)	2 minims.
Oil of patchouly	2 minims.
Cologne spirit	1 ounce.

A Good-Selling Toilet Cream

Bailey relates in the Chemist and Druggist his experience in building up a thriving trade in a toilet cream made after the following formula:—

Lard	2½ ounces.
White wax	2 ounces.
Powdered white soap.	2 ounces.
Alcohol	2 ounces.
Distilled water	16 ounces
Oil of rose	10 minims.
Essential oil of almond	5 minims.
Oil of clove	5 minims.
Oil of rose geranium.	5 minims.

Melt the lard, wax and soap together on a water-bath. Heat the water to boiling and add it gradually, with constant stirring, to the melted mixture. Beat the mass until cool; then incorporate the essential oils, dissolved in the alcohol.

Filling Tubes With Cream

The cream was put up in collapsible tubes, which were filled in an ingenious manner described as follows by the author:—

I took a 2-pint enameled-iron round douche can, attached 3 inches of douche tubing to the nozzle and closed the tubing with a burette clip. I next cut a round piece of wood to fit nicely into the top of the can, and to this I attached a handle, so that the whole thing worked up and down like the piston of a syringe. To fill the tubes, the can was slightly warmed and the cream put into it. Then, when the tubes were brought into position under the spout, pressure on the piston and the burette clip enabled me to fill them with the requisite amount of cream without mess or much trouble. After filling, the tubes were closed with a special pair of pincers having very broad, flat jaws, and after getting a coat of compound tincture of benzoin they were ready for labeling.

Stearin Cream

Stearic acid	50.0 grammes.
Monohydrated sodium carbonate	7.5 grammes.
Oil of theobroma	5.0 grammes.
Glycerin	7.5 grammes.
Perfume	enough.
Water to make	300 grammes.

Dissolve the sodium carbonate in 100 mils of water and add to this the glycerin. Melt the stearic acid and the grated oil of theobroma, add the sodium carbonate solution, previously warmed, and finally enough water to make the required weight. Stir constantly until congealed.

Much of the success in making toilet preparations of this character depends on the skill of the manipulator, and slight variations from set formulae are often found to make better products. Of course, the variations are determined by the experiments which are usually necessary before each individual manipulator hits the right combination.

Glycerin Cream

Almond oil	500 grammes.
Glycerin	75 grammes.
White wax	30 grammes.
Marseilles soap	15 grammes.
Oil of thyme (perfumer's)	5 grammes.
Oil of bergamot	5 grammes.
Oil of neroli	2 grammes.

Dissolve the soap in the glycerin; melt the wax in the almond oil; add the glycerin-soap solution and beat the mixture until a homogeneous cream is produced; then incorporate the perfuming oils.

Lanolin Cream

Lanolin	500 grammes.
Almond oil	500 grammes.
White wax	100 grammes.
Rose water	500 grammes.
Vanillin	15 grammes.
Terpineol	10 grammes.

Combine these in a manner similar to that directed for either of the preceding formulas.

Pushing an Own-Make Cold Cream

A well-made cream, pure white, delicately scented, put into a 4-ounce flint-glass or opaque ointment pot with nickel-plated screw cap, will keep fresh until the last bit is used. Adorned with a simple strip label, such a package costs about 10 cents. The druggist can sell it from 25 to 50 cents. My advice to him is to push it. Here is the formula for a perfect cream:—

White wax	140 grammes.
Spermaceti	160 grammes.
White petrolatum	300 grammes.
Stearic acid	40 grammes.
Dried sodium carbonate	10 grammes.
Water, warm	250 mils.
Perfume	enough.

Melt the first four ingredients at low heat, then add the warm water, in

which the sodium carbonate has been dissolved, and stir until the mass is cold and creamy, adding the perfume (say oil of rose) last.—F. W. Scott, Jr.

Eucerin As a Cream Base

The following is abstracted from a paper by Eugene Unna, printed in The Druggists Circular for July, 1912:—

Adeps lanæ does not take up water readily. Its cooling effect is thereby minimized. In eucerin the result is just the reverse, owing to its great affinity for water and its lack of tenacity. Here we have the full benefit of evaporation of the water contained in the ointment, and the long-ventilated question as to a suitable basis for cold cream has found its happy solution in the discovery of this substance.

But in this combination of wax alcohols with mineral fats we will find another very important property. That is, the facility with which the ointments prepared with it can be rubbed into the skin.

Now we have to ask, "What have modern therapeutics and cosmetics to demand of a perfect cold cream?"

First—it must have a great absorbing power for water; secondly, its fat basis must be unchangeable; and, finally, its consistence has to be soft, but not greasy or even sticky. All these properties we find separated in the ointment bases known hitherto, but nowhere combined. Adeps lanæ has a rather great absorbing power for water, is of great tenacity and stickiness, and its fat basis cannot be kept long. Petrolatum and paraffin, although they may be kept long, are lacking in an absorbing power for water, and therefore cannot be used for the preparation of cold creams. Lard has the advantage of great softness and blandness, but it does not have the important keeping qualities and the capacity for water.

A mixture of white wax, spermaceti and oil of almonds makes an ointment base of great softness and blandness, but lacks the ability to take up water. The addition of oil of almonds overcomes this, but diminishes its keeping qualities.

This has been the situation. It is clear that the problem was solved at once when we became able to incorporate with any stable and harmless ointment base a body which gave to it the properties of softness and absorbing power for water. This body is eucerin wax, discovered by Lifschuetz. Only 5 grammes of this wax melted together with 95 grammes of petrolatum or paraffin ointment form an ointment base of extraordinary softness, which can be kept indefinitely and which may be combined with water up to 500 per cent.

Odor for a Toilet Cream

We have been informed by a man with an expert nose that the odor of one of the popular proprietary creams is imparted to it by muguet, an artificial lilac; another says that it is lily of the valley—also known as muguet—and may be simulated by combining linalol, heliotrope and oil of ylang-ylang. Another formula for this odor is as follows:—

Muguet.

Oil of jasmine (synthetic)	1 dram.
Oil of ylang-ylang (synthetic)	3 drams.
Solution of heliotropin (1 per cent. in 60 per cent. alcohol)	8 ounces.
Solution of terpineol (1 per cent. in 60 per cent. alcohol	20 ounces.

Another odor suitable for a toilet cream is composed of:—

Extract of rose	45 mils.
Terpineol	1 mil.
Linalol	3 mils.
Spirit of bitter almond	51 mils.

Cold Cream

The following cold cream formula differs a little from the average run of such formulas and has been found entirely satisfactory in the experience of a retail pharmacist who has sold "carloads" of the finished preparation:—

White mineral oil	96 ounces.
Rose water	53 ounces.
Spermaceti	12 ounces.
White wax	32 ounces.
Borax	1 ounce.

Melt the spermaceti and wax together and add the mineral oil. Heat the rose water in a separate vessel and dissolve the borax in it. Raise the temperature of the rose water-borax solution to approximately the same temperature as that of the melted waxes and oil and mix them. Whip with an egg beater or other similar implement while cooling and when nearly cool add the required perfume.

A mixture of oil of neroli, 25 drops; and oil of rose, 5 drops, is quite satisfactory as a perfume.

Permanent Cold Cream

White wax	17.0 grammes.
Liquid petrolatum	62.0 grammes.
Borax	0.5 gramme.
Glycerin	1.0 gramme.
Alcohol	2.0 grammes.
Rose water	18.0 grammes.
Perfume	as desired.

Dissolve the borax, glycerin, and alcohol in the rose water; warm the solution and add to it the melted wax and liquid petrolatum, stirring constantly. Add the perfume when the cream begins to set.

Wool-Fat Cold Cream

Hydrous wool-fat	12 ounces.
White wax	4 ounces.
Spermaceti	4 ounces.
Expressed oil of almonds	28 ounces.
Borax	144 grains.
Distilled water	19 ounces.
Oil of pimento	5 minims.
Oil of rose	20 minims.

Melt together the wax, spermaceti, and almond oil on a water-bath; incorporate this mixture with the wool-fat in a warm mortar and stir until almost cool. Gradually beat in the

water in which the borax has been dissolved; beat well with an egg-whip, adding the perfume.

Summer Toilet Creams

For sunburn, prickly heat and other ills, the Medical Sentinel recommends creams, ointments or salves made according to the formulas appended:—

I.

Precipitated sulphur.....	1 ounce.
Zinc oxide.....	½ ounce.
Expressed oil of almond.	1 ounce.
Hydrous wool-fat.....	1 ounce.
Extract of violet.....	to perfume.

II.

Ichthyol	2 drams.
Expressed oil of almond..	2 drams.
Ointment of rose water..	6 drams.
Hydrous wool-fat.....	6 drams.
Oil of rose.....	to perfume.

III.

Olive oil.....	4 drams.
Menthol	15 grains.
Ointment of rose water..	6 drams.
Hydrous wool-fat.....	6 drams.

Honey and Glycerin Jelly

Soft soap.....	1 ounce.
Honey	3 ounces.
Glycerin	4 ounces.
Olive oil.....	20 ounces.
Almond oil.....	20 ounces.
Oil of rose.....	40 minims.
Distilled water.....	4 drams.

Mix the water, the glycerin and the honey, and dissolve the soap in this mixture. Mix the oils and add them gradually in an uninterrupted stream to the first mixture, triturating vigorously the while.

Molded Face Cream for a Warm Climate

Agar-agar jelly (stiff)	150.0 grammes.
Glycerin	300.0 grammes.
White wax.....	55.0 grammes.
Spermaceti	55.0 grammes.
White mineral oil...	300.0 grammes.
Borax	3.0 grammes.
Sodium carbonate, monohydrated	7.5 grammes.
Stearic acid.....	30.0 grammes.
Distilled water.....	200.0 mils.
Perfume	enough.

Dissolve the borax in 120 mils. of distilled water with the aid of gentle heat; melt together the wax, the spermaceti and the oil; allow this mixture to cool to about 65 degrees C., and, having the borax solution at about the same temperature, pour it all at once into the mixed fats and stir briskly until creamy. Beat into this cream the agar-agar jelly, and continue the beating until the mixture is cool. Dissolve the sodium carbonate in the rest of the water and mix with the glycerin. Place on a water-bath, and, having added the stearic acid, heat gently and stir carefully until carbon dioxide is no longer evolved. Remove from the heat, whip to a foam with an egg-beater and beat in the previously prepared cream, beating the whole until it cools. Finally, incorporate the desired perfume.

Separation of Water From Ointment of Rose Water

I have often been annoyed to find drops of water had separated from my U. S. P. cold cream and it had lost that nice, homogeneous appearance it had when first made. This was particularly noticeable in warm weather. By using an equal weight of powdered castile soap in place of the sodium borate I have overcome this annoyance.

Of course, any preparation "sold under or by a name recognized in the United States Pharmacopoeia or National Formulary" should not differ from the "standard of strength, quality or purity as determined by the test laid down in those books."—F. W. Scott, Jr.

Witchhazel Cream Jelly

Glycerin	6 ounces.
Quince seed.....	60 grains.
Hot water.....	10 ounces.
Hamamelis water.....	10 ounces.
Deodorized alcohol.....	4 ounces.
Perfume	enough.

Place the quince seed in a bottle, pour the hot water on them and agitate occasionally until a mucilage is formed; then add the hamamelis water, slightly warmed, and after mixing thoroughly strain through muslin. To the strained fluid add the glycerin and shake thoroughly. Dissolve the desired perfume in the alcohol and add the solution to the mucilage, agitating briskly until of a uniform consistence.

If a thicker jelly is desired, the amount of quince seed may be increased.

Coloring Massage Creams

Most of the pink massage creams are colored with that old standby, solution of carmine of the National Formulary.

Fluffy, Pearly Appearance of Greaseless Cream

We have heard it stated that egg-white beaten into greaseless cream (after it has become cold, of course) will give it that pearly, fluffy appearance which is so much admired. Perhaps the addition of about 1 per cent. of fresh castor oil would help to produce the desired effect.

Face Cream in Brick Form

Oil of theobroma..... 8 ounces.
Coconut oil.....½ ounce.
White wax.....½ ounce.
Alkanet ..... enough.
Oil of bitter almonds... 5 minims.

Melt the oil of theobroma on a water-bath, and in it digest the alkanet root, enclosed in cloth bag, until the proper shade is obtained. Add the other ingredients and when all are melted pour into molds to cool, adding the oil of bitter almonds just before so doing.

By varying the amounts of the oil and wax the exact consistence desired can be obtained.

Malt Extract as a Healing Cream

Zernik examined a "universal frost-bite cream" and reports (Apoth. Zeit.) that it consisted entirely of malt extract. It was marketed in collapsible tubes.

Queen Victoria's Hand Cerate

Scrape into an earthen vessel 1½ ounces of spermaceti and ½ ounce of white wax; add 6 drams of pounded camphor and 4 tablespoonfuls of olive oil. The oil must be pure. Let the mixture stand near the fire until it liquifies, then stir well.

Before washing the hands rub them well with a little of this cerate—then wash them as usual. This compound should be kept in a covered vessel.

Sunburn Lotions

In severe cases the services of a physician should be called into requisition. Mild washes containing zinc oxide or tincture of benzoin might be sold over the counter.

I.

Zinc oxide..... 1 ounce.
Sodium borate..... 4 drams.
Glycerin ..... 2 ounces.
Extract of jasmine..... 1 ounce.
Bay rum..... 3 ounces.
Water, to make.....20 ounces.

II.

Salicylic acid..... 3 drams.
Sodium borate..... 1 ounce.
Rose water.....13 ounces.
Orange flower water....13 ounces.
Cologne water..... 2 ounces.
Tincture of benzoin..... 1 ounce.

Dissolve the first two in a mixture of the second two, filter, and add the last two.

III.

Citric acid..... 2 drams.
Glycerin ..... 6 ounces.
Oil of orris.....½ dram.
Oil of bergamot.....15 minims.
Vanillin ..... 5 grains.
Alcohol ..... 1 dram.
Orange flower water, to make ..... 1 pint.
Magnesium carbonate... 1 dram.
Chlorophyl ..... to color.

Dissolve the vanillin in the alcohol, mix with the oils and triturate with the magnesium carbonate, gradually adding the orange flower water; filter, dissolve the acid in the filtrate and add the glycerin.

Glycerinated Camphor Ice

I.

Powdered camphor...20 grammes.
Liquid petrolatum....20 grammes.
Paraffin .....50 grammes.
Petrolatum .....80 grammes.
Glycerin .....20 grammes.
Alkanet ..... 5 grammes.

Mix the two petrolatums and the paraffin with the aid of a gentle heat; digest the alkanet in the mixture on a sand-bath for several hours. Dissolve the camphor in the heated mixture; add the glycerin; strain; and stir until cold.

II.

Camphor, coarse powder..2 ounces.
Hard paraffin.....2 ounces.
Glycerin .....2 ounces.
White wax.....5 ounces.
White petrolatum.....8 ounces.

Melt the wax, hard paraffin, and petrolatum together over a water-bath, dissolve the camphor in the melted mixture, incorporate the glycerin, and finally pour into moulds.

No-Chap

Mutton suet.....3 ounces.
Spermaceti .....2 ounces.
Yellow wax.....2 ounces.

Alpine Jelly

Glycerin .....12 drams.
White petrolatum..... 9 drams.
Hydrous wool-fat..... 5 drams.
Oil of rose.....to perfume.

Freckle Remover and Skin Whitener

Mercuric chloride, "peroxide creams," horseradish, buttermilk, bismuth and zinc salts, various acids, and other things have found their way into household and pharmaceutical formularies, but in the efficacy of any of them we have little faith, and the "stronger" of them, as those which contain mercury salts, for instance, are positively dangerous.

I.

Lemons, chopped...135.0 grammes.
Oil of lavender..... 22.5 grammes.
Oil of rose..... 0.5 gramme.
Oil of cedar (perfumers') ..... 6.0 grammes.

Wine vinegar.....650.0 grammes.
Alcohol (85 P. C.).. 85.0 grammes.
Water ..... 85.0 grammes.

Macerate in a warm place for three days and filter.

II.

Copper oleate..... 1 gramme.
Ointment of zinc oxide 22 grammes.

III.

Buttermilk ..... 2 ounces.
Grated horseradish..... 2 drams.
Corn meal..... 2 drams.

Spread this mixture between sheets of thin muslin and allow it to remain on the affected parts as long as possible, preferably at night.

Anti-Freckle Preparations

Macon (Zeit. f. Riech, u. Geschmackstoffe) gives formulas for applications for freckles which, with slight modification, are as follows:

Freckle Cream.

This is prepared like cold cream from the following ingredients:

White wax.....	110 parts.
Oil of sweet almond....	580 parts.
Wool-fat .....1,500 parts.	
Borax	150 parts.
Solution of hydrogen dioxide (30 P. C.)....	150 parts.
Rose water.....	700 parts.
Ionone (10 P. C.).....	5 parts.
Violet extract.....	4 parts.
Oil of bergamot.....	40 parts.
Oil of orris.....	10 parts.

Freckle Water.

Solution of hydrogen dioxide (30 P. C.)....	100 parts.
Rose water.....	800 parts.
Glycerin	100 parts.

Freckle Cream

We know of no cream or other preparation which we care to recommend for use in an attempt to remove freckles. Pharmaceutical literature, including the files of The Druggists' Circular, abounds with formulas printed under such heads as "Freckle Remover" and the like, but we have no knowledge of good results having followed the use of such creams, lotions, or bleaches. On the contrary, we have recorded the death of one young woman who used a mixture recommended in a newspaper for the purpose now under discussion; and this after one druggist had refused to make the mixture for her.

Even the so-called authorities differ as to the best eradicator for freckles, some favoring diluted solutions (3 per cent.) of lactic or other organic acid, while others, including Joseph, say that alkalies are particularly useful in this connection, and suggest dilute solutions of potassium carbonate. Creams containing cucumber juice or 30 per cent. solution of hydrogen dioxide are extolled by some dermatologists; and mixtures of sulphur and liniment of soft soap are in favor.

Druggists might well leave to the "beauty doctor" the questionable practice of changing faces in an attempt to improve upon nature. As an altruist they might advise the use of grandmother's remedy, buttermilk and horseradish, or lemon juice.

Sunburn Cream

Sublimated sulphur.....½ dram.
Zinc carbonate..... 1 dram.
Ointment of zinc oxide... 1 ounce.

Dangerous Freckle Ointment

While we are always ready to serve the best interests of our readers, we must decline to give a recipe for an ammoniated mercury ointment for freckles. This class of preparations is distinctly dangerous. "Notice of judgment No. 3540" of the United States Department of Agriculture concerns a freckle cream containing ammoniated mercury, which was declared misbranded, since it was labeled: "As harmless as it is sure"; whereas it contained the mercury compound, which the government officials declared was a "harmful, poisonous and deleterious substance." The manufacturer of the product pleaded guilty and was fined.

Sunburn "Baume"

Tincture of tolu..... 3 drams.
Glycerin ..... 1 ounce.
Distilled water...to make 1 pint.

Mix the glycerin with 4 ounces of water and add it gradually to the tincture, shaking after each addition. Then add the remainder of the water in 4-ounce portions.

Freckle Lotions

I.

Powdered alum..... 1 ounce.
Lemon juice..... 1 ounce.
Elderflower water.....20 ounces.
Make a solution.

This is to be applied to the skin twice daily.

II.

Sodium borate..... 1 dram.
Potassium chlorate..... 4 drams.
Alcohol ..... 1 dram.
Glycerin ..... 2 drams.
Rose water..... 3 ounces.
Mix and filter.

This one is to be applied with a soft sponge several times daily.

After-Shave Menthol Lotion.

I.

Menthol	1 dram.
Boric acid	4 drams.
Glycerin	4 ounces.
Alcohol	1 pint.
Water or witchhazel water...to make	1 gallon.

Mix. Let it stand for a while, and filter.

We have perfumed it at times with a little oil of bay leaves. We have had occasion to manufacture this for a barbers' supply house, and it seems to be a very popular combination.—A. Alexander.

II.

Menthol	10 grains.
Alcohol	2 ounces.
Glycerin	4 ounces.
Mucilage of Irish moss	2 ounces.
Boric acid	2 ounces.
Oil of rose	5 drops.
Camphor water to make	1 pint.

Dissolve the boric acid in the camphor water mixed with the glycerin, using a gentle heat; add the mucilage and the alcohol in which have been dissolved the menthol and the oil.

III.

Tragacanth	10 drams.
Glycerin	4 ounces.
Menthol	6 drams.
Alcohol	8 ounces.
Water...to make	1 gallon.
Solution of carmine...	to color.

Mix the tragacanth and glycerin, using a little water; dissolve the menthol in the alcohol; mix the two; finally add the balance of the water, and color.

British Acid Cosmetic Lotion.

Acetic acid (30%)	4 ounces.
Tincture of benzoin	4 ounces.
Spirit of camphor	4 ounces.
Tincture of red sandalwood	6 ounces.
Alcohol	1 gallon.

Softening Tanned Skin.

According to Koller, nothing is better for softening tanned skin than a mixture of equal parts of glycerin and orange flower water. Of course, rose water could be substituted for the orange flower water, and, if desired, the finished product could be appropriately colored.

Quinto Cream.

Quince seed	90 grains.
Boric acid	30 grains.
Salicylic acid	20 grains.
Glycerin	1½ ounces.
Cologne water	4 ounces.
Boiling water	4 ounces.
Spirit of lemon...enough to flavor.	

Triturate the quince seed with the boiling water, add the acids, and strain through muslin.

Lotion for Barbers.

A very good lotion for the face after it has been shaved is the hamamelis water of the Pharmacopœia. Another popular after-shave lotion, formerly pharmacopœial, is spirit of myrcia, better known in tonsorial circles as bay rum.

A Stearate Lotion.

First make a base so—

Stearic acid	3 ounces.
Dried sodium carbonate	80 grains.
Sodium borate	64 grains.
Glycerin	3 ounces.
Expressed oil of almonds	6 drams.
Water	13 ounces.

Dissolve the sodium salts in a mixture of the glycerin and the water, heating gently. Melt together the stearic acid and the oil on a water-bath. Having the two liquids at the same temperature, about 90 deg. C., pour the solution of the sodium salts into the mixture of oil and acid, gradually, stirring the while. Heat the mixture on a water-bath, stirring at frequent intervals, until effervescence ceases—about half an hour. Remove from the bath and beat until cool.

The Lotion.

Stearate base	10 ounces.
Glycerin	10 ounces.
Mucilage and quince seed (1 to 50)	25 ounces.
Bitter almond water	20 ounces.
Rose water	6 ounces.
Water...to make	100 ounces.

Triturate the base in a cold mortar with the mucilage, gradually added; continuing the trituration, add the glycerin and the aromatic waters; transfer the mixture to a bottle, and add in divided portions, agitating after each addition, enough water to make 100 ounces.

A Quince Seed Toilet Lotion.

This formula, it will be noted, does not call for borax or boric acid, which are sometimes regarded as irritants.

Glycerin	6 ounces.
Quince seed	½ dram.
Hot water	21 ounces.
Deodorized alcohol	5 ounces.
Oil of rose	16 drops.

Upon the quince seed in a bottle, pour 8 ounces of the hot water, agitate well occasionally, until a mucilage is formed, then strain through muslin.

To the remainder of the hot water, in a bottle, add the oil of rose and shake well. Then add the mucilage of quince seed and the glycerin, and again shake well. Lastly, add the deodorized alcohol.

When using quince seed in making toilet preparations care should be taken to have them scrupulously clean, as specks of dust or husks are difficult to separate from the mucilage.

Benzoin Lotions

Tincture of benzoin	1 ounce.
Extract of rose	1½ ounces.
Jockey club extract	1½ ounces.
Glycerin	24 ounces.
Distilled water	24 ounces.

Warm the glycerin and water together, and add the other things.

Hazel Bay Cream

Quince seed	100 grains.
Boric acid	1 dram.
Glycerin	3 ounces.
Bay rum	6 ounces.
Tincture of benzoin	1½ drams.
Glycerite of starch	5 ounces.
Hamamelis water to make	34 ounces.

Witchhazel Toilet Lotion

White soap (animal)	2 ounces.
Glycerite of borax	2 ounces.
Rose water	6 ounces.
Hamamelis water	10 ounces.
Alcohol	2 ounces.

Mix the glycerite of borax, the rose water and the hamamelis water and in this mixture dissolve the soap, previously reduced to thin shavings. Strain through muslin, add the alcohol and set aside, stirring daily for two weeks; then bottle.

Cologne Vinegar

Oil of Ceylon cinnamon	½ dram.
Oil of cloves	80 minims.
Oil of lavender (old)	1 dram.
Oil of citron	1 dram.
Acetic acid	2 ounces.
Alcohol	3 pints.

Violet Alcohol

In our drug store days we sold diluted alcohol as bathing alcohol, and possibly the addition of violet water and color to this will produce the article called for by this name.

Magoffin's Cream Balm

Quince seed, bruised	2 ounces.
Bay rum	12 ounces.
Hamamelis water	12 ounces.
Boric acid	2 drams.
Boiling water	1 pint.
Perfume	enough.
Water, to make	5 pints.

Place the quince seed in the hot water, agitate frequently; after twenty-four hours, strain and add the other ingredients.

Eau de Beaute

Oil of bitter almond	1 mil.
Oil of raspberries	60 mils.
Vanillin	4 grammes.
Artificial jasmine	4 mils.
Glycerin	100 grammes.
Borax	100 grammes.
Rose water	1,000 mils.
Distilled water	1,000 mils.
Solution of carmine	enough.

Witchhazel Lotion

Quince seed	45 grains.
Boric acid	5 grains.
Benzoic acid	5 grains.
Glycerin	2 ounces.
Alcohol	3 ounces.
Oil of rose geranium	1 dram.
Oil of bitter almond	30 minims.
Glycerite of starch	2 ounces.
Hamamelis water, to make	1 pint.

Dissolve the two acids in 8 ounces of hamamelis water; macerate the quince seed in this solution for three hours and strain. Beat up the glycerite with the glycerin and gradually incorporate with constant beating the quince seed solution. Finally beat in the oils dissolved in the alcohol, adding the solution slowly, and add enough hamamelis water to make the required volume.

Witchhazel Snow

Stearic acid	60 grammes.
Sodium carbonate	9 grammes.
Glycerin	7 grammes.
Hamamelis water	300 grammes.
Water	enough.

Melt the stearic acid in a tared vessel of about 2,000 mils' capacity over a water-bath, and add the sodium carbonate dissolved in a minimum amount of hot water; then add the glycerin. Keep the mixture on the water-bath for one hour, stirring constantly but not vigorously. Add sufficient water to bring the preparation up to 300 grammes and then the hamamelis water. Return the container to the water-bath for a minute or two, stirring the mixture until perfectly smooth. Pour into a warm mortar and beat to a foam. Let it stand twelve hours, stir with spatula, and fill into wide-mouthed bottles.

Stearin and Petrolatum Witchhazel Cream

Stearic acid.....	100 grammes.
Sodium carbonate..	15 grammes.
Liquid petrolatum..	15 grammes.
Hamamelis water...	500 mils.
Distilled water, to make	1000 grammes.

Perfume as desired.

Melt the stearic acid with the liquid petrolatum at a gentle heat on a water-bath, and mix thoroughly. Dissolve the sodium carbonate (the monohydrated sort is best) in 350 mils of distilled water; warm the solution and add it gradually, with constant stirring, to the fatty liquid. Warm 50 mils of distilled water, and beat it into the mixture first made; continue the beating until effervescence ceases. Warm the hamamelis water and incorporate it in the mass with vigorous beating. Add the desired perfume—a very little is best—after the cream has cooled, and distilled water enough to make 1000 grammes.

Milk of Almonds.

Powdered castile soap	3.0 grammes.
Spermaceti	3.0 grammes.
White wax.....	3.0 grammes.
Almond oil.....	56.0 grammes.
Alcohol .....100.0 mils.	
Distilled water.....100.0 mils.	
Glycerin .....100.0 mils.	
Oil of bitter almond	1.2 mils.
Ammonium fluoride.	1.2 mils.

Melt together the first four ingredients, and into this liquid, while warm, pour all at once the mixture of the other ingredients. Beat until cool.

Hand and Toilet Lotion.

This, says John T. Harbold, is non-sticky, non-greasy and non-irritating. It is bland and smooth, and of perfect consistency, requiring no shaking before use, and has antiseptic properties as well.

Tragacanth	2 drams.
Quince seed.....	15 drams.
Borax	6 drams.
Boric acid.....	8 drams.
Glycerin	10 ounces.
Alcohol	10 ounces.
Perfume	enough.
Color	enough.
Sodium benzoate.....	3 drams.
Boiling water.....	5 pints.
Water, to make.....	8 pints.

Soften the tragacanth in 2 pints of water, stirring until a homogeneous mixture is formed. Steep the quince seed in the boiling water for four hours, stirring frequently; then strain carefully. Dissolve the borax, sodium benzoate and boric acid in the remainder of the hot water. Add the perfume and glycerin dissolved in the alcohol, and finally the tragacanth and quince-seed mucilage, which have previously been mixed, portion by portion, shaking after each addition, in order to get a thoroughly homogeneous mixture. The consistency may be varied by changing the proportion of water.

Rose Water, Glycerin and Tincture of Benzoin.

I.

We used the following proportions:	
Tincture of benzoin....	½ ounce.
Glycerin	8 ounces.
Rose water.....7½	ounces.

Then we, having mixed the glycerin and the rose water thoroughly, added the tincture a little at a time, inverting the container gently after each addition. Even so, a small amount of a curdy precipitate would usually be formed, but the lotion was freed from this when dispensed.

II.

At the 1907 meeting of the American Pharmaceutical Association, F. M. Apple described a method of combining the three ingredients under consideration into a smooth, creamy mixture. His method, which is given in the Proceedings of that year, page 132, consists essentially in mixing the tincture with one-half of the glycerin—the proportions are practically the same as those given in the above formula—diluting this with about half the rose water, and adding the mixture of the remaining glycerin and rose water. The mixture is immediately strained through a fine-meshed straining cloth three or four times, the curd being rubbed through with a glass rod, transferred to a suitable container and thoroughly shaken.

Referring to the foregoing, M. I. Wilbert writes:

To secure a satisfactory and permanent mixture of tincture of benzoin with rose water and glycerin, it is necessary to have the benzoin precipitated evenly and in a fine state of subdivision. This can readily be accomplished by mixing the glycerin and rose water in a suitable bottle, then removing approximately one-third of it and carefully floating the tincture of benzoin on the remaining portion of glycerin and rose water in the bottle. Then by very carefully turning the bottle on its side and slowly, very slowly, rotating the bottle so as to bring a fresh portion of the tincture of benzoin in contact with the mixed glycerin and rose water, the benzoin can be precipitated very gradually and in a fine state of subdivision. This gradual precipitation of the benzoin obviates the lumpy or curdy precipitate that ordinarily occurs and produces a permanent milky mixture that can subsequently be further diluted with either water, glycerin or the mixture of water and glycerin referred to above.

With Peroxide.

From a practical point of view, a much more efficient lotion for chapped hands may be made by using equal parts of glycerin, rose

water and solution of hydrogen peroxide, with a small amount of tincture of benzoin to give a milky appearance or as an additional odor. This mixture, while efficient as a lotion, will not keep and should be dispensed only in small quantities, made extemporaneously.

Another reader sent the following method of mixing these substances, the principle of which is about the same as that explained by Mr. Wilbert:

I place the tincture of benzoin in the bottle or graduate first, taking care not to let it touch the sides any more than possible. I then add the rose water and the glycerin (previously mixed) in a slow, steady stream. No shaking is required or at the most a slow inverting of the bottle. The amount of tincture or benzoin used can be regulated according to the degree of color required. Of course, if an excess is used some is bound to be thrown out. In the same way the amount of glycerin depends on how thick you want the mixture to be.

Anti-Chap Lotion

The following formula has proved satisfactory in practice:

Tragacanth	3 to 5 drams.
Benzoic acid	1 dram.
Sodium borate	1 dram.
Water	4 ounces.
Glycerin	8 ounces.
Rosewater	4 ounces.
Oil of bitter almond	5 drops.
Extract of jasmine	4 drams.

Put the tragacanth (the amount depends upon the desired consistency of the finished product) into a wide-mouthed bottle, add the water in which the benzoic acid and the sodium borate have been dissolved, and set aside for several days. Mix the glycerin and the rosewater, add these to the tragacanth mixture, shake frequently during three or four days and squeeze through flannel. Finally incorporate the oil of bitter almond dissolved in the perfume extract. If a pearly appearance is desired, add about 4 drams of tincture of Siam benzoin to the finished jelly.

Pomade for Chaps

As an application for chapped lips the "pommades" of Gallic extraction are deservedly popular. These are simply perfumed fatty bases of the proper consistency, of which the following is typical:

White wax	100.0 grammes.
Spermaceti	100.0 grammes.
Expressed oil of almond	150.0 grammes.
Oil of geranium	1.0 gramme.
Oil of wintergreen	0.5 gramme.
Oil of bergamot	0.5 gramme.
Heliotropin	0.2 gramme.

The first three ingredients are melted together at a gentle heat; the mixture is removed from the heat and stirred gently until it begins to congeal at the edges; the perfumes are added and thoroughly incorporated, and the mass is poured into tubular molds.

Glycerin and Tragacanth Skin Cream

Powdered tragacanth	28 grammes.
Glycerin	192 mils.
Almond oil	48 mils.
Alcohol	120 mils.
Tincture of benzoin	24 mils.
Oil of neroli	1 mil.
Oil of bergamot	1 mil.
Oil of geranium	2 mils.
Water	1,152 mils.

Put the tragacanth in a large mortar; wet it thoroughly with a portion of the alcohol; add all at once 500 mils of water, and triturate until a uniform mucilage is formed. Incorporate the almond oil, the tincture and the essential oils; add gradually with constant trituration the rest of the water, the rest of the alcohol and the glycerin.

Amandine Lotion

Amandine	3 ounces.
Glycerin	4 ounces.
Tincture of bezoin	4 drams.
Bitter almond water, to make	1 pint.

Warm the glycerin and add the tincture, then stir in the bitter almond water previously warmed. Keep this mixture at about 100 deg. F. and add it in small portions to the amandine, beating thoroughly after each addition.

Amandine.

Almond cream	3 ounces.
Mucilage of acacia	4 ounces.
Syrup	6 ounces.
Yolks of	5 eggs.
Expressed oil of almond	2¼ pounds.
Milk of almond	4 ounces.
Oil of bitter almond	2 drams.
Oil of neroli	½ dram.

Triturate the almond cream with the syrup and the mucilage until the mixture is perfectly homogeneous. Beat the yolks of the eggs and strain through a gauze. Add to the mixture and mix thoroughly. Transfer the resulting mixture to a deep wide evaporating dish, and add very gradually the expressed oil of almonds mixed with the essentional oils, beating the mass constantly. The amandine gets stiffer with the incorporation of the oil, and the incorporation is less easily effected, so that considerable exertion and great care are necessary to secure a perfect emulsion. If the oil is added faster than it is beaten into the mass the amandine will be spoiled and useless. After all the oil has been incorporated, add the milk of almond and triturate well.

This is but one of many formulas for amandine, and is given as the one affording a product best adapted to the preparation of a lotion.

Another Amandine

Honey	16.0 mils.
Soft soap	8.0 grammes.
Balsam of peru	1.0 mils.
Oil of bergamot	1.5 mils.
Oil of bitter almond	1.5 mils.
Oil of cloves	1.0 mils.
Oil of sweet almond	56.0 mils.

Chap Cerate

Salol	1 ounce.
Peach kernel oil	8 ounces.
White wax	4 ounces.
Suet	to make 1 pound.
Solution of heliotropin	enough.

Melt the wax and suet in the oil; add the salol, and stir gently until cool; then add the perfume.

Rose Benzoin Chap Lotion

Compound tincture of benzoin	10 minims.
Alcohol	2 drams.
Rosewater	30 minims.
Glycerin	to make 1 ounce.

Almond Cream.

An almond cream that is really worthy of the name seems to be a problem to the average pharmacist who makes his own preparations. The writer has tried innumerable suggested formulas for an almond cream, but none of them gave a permanent finished product of the desired appearance or produced effective results when applied to the skin.

After a great deal of experimenting the writer evolved the following formula:

White wax	60.0 grammes.
Potassium hydroxide	10.0 grammes.
Powdered borax	1.5 grammes.
Starch	30.0 grammes.
Glycerin	60.0 mils.
Alcohol	70.0 mils.
Oil of bitter almonds	4.0 mils.
Distilled water, enough to make	1000.0 mils.

All of the above must naturally be of U. S. P. quality.

Place the starch, which must be finely powdered, in a suitable vessel and add 150 mils of boiling water, and continue boiling until a jelly is obtained.

Place the potassium hydroxide in a porcelain vessel and dissolve in 300 mils of boiling water. An enamelware vessel will answer as well as a porcelain one if the metal is not exposed. This latter must be avoided, as it will discolor the product. Add the white wax, previously grated, or in very small pieces, and continue the heat until the wax is completely melted and saponification has taken place. This can readily be determined by the appearance of the mixture. Then add the powdered borax and heat a moment longer.

Now beat with an egg beater or similar apparatus until the temperature has lowered somewhat and add the mixture to the starch jelly, which must be as near the same temperature as possible, as in the manufacture of cold cream, and continue beating for some time until a uniform white mixture results. Then strain through a double thickness of gauze and add the glycerin, shaking well until it is thoroughly incorporated. Then add the alcohol, to which the oil of bitter almonds has previously been added. Lastly, add sufficient distilled water to bring the finished product up to 1000 mils. Shake well and bottle.

The finished product will be found to be a smooth, cooling cream of pleasing odor and appearance, and one that can be rubbed into the skin without leaving any feeling of stickiness or dryness. Samples of this preparation kept two months have not separated. The writer fully believes this preparation to be the equal of any one on the market, the heavily advertised brand included, but makes no claim that the formula is identical or even similar.

One other precaution. In bottling this preparation it is advisable to paraffin the corks used, as ordinary corks will in time produce a brown discoloration. This, while in no way impairing the value of the cream, renders it unsightly.—James A. Arkin.

Almond Cream.

Purified lard	1 pound.
Alcohol	½ ounce.
Solution of potassium hydroxide (25%)	½ pound.
Oil of bitter almond	45 minims.

Melt the lard in a porcelain-lined vessel and when heated above the melting point, continue the heat and add gradually the potash lye, stirring thoroughly with a broad wooden paddle. When saponification is complete stir in the alcohol in which the essential oil has been dissolved.

This preparation is variously known as Naples soap, almond shaving cream, creme d'amandes, etc.

Face Massage Liquid.

The following formula is said to be a favorite application among professional German masseurs:

White potash soap, shaved	20 parts.
Glycerin	30 parts.
Water	30 parts.
Alcohol (90%)	10 parts.

Oleo-balsam mixture (Ph. G.) ..... enough.

Dissolve the soap by heating it with the glycerin and water, mixed. Add the alcohol, and for every 3 ounces of the solution add 5 or 6 drops of the mistura oleoso-balsamica of the German Pharmacopœia, the recipe for which can be found in the dispensatories. Filter while hot.

Almond Lotion.

I.

Blanched almonds...	15 grammes.
White wax.....	1 gramme.
Spermaceti	1 gramme.
Powdered soap.....	1 gramme.
Powdered borax.....	1 gramme.
Alcohol	15 mils.
Bitter almond water to make.....	60 mils.

Rub the almonds to a smooth paste with 20 mils of bitter almond water. Melt the wax and spermaceti and mix with the soap and borax in a warm mortar and gradually stir in 20 mils of warm bitter almond water. Mix the two liquids and finally add the alcohol and enough bitter almond water to bring the finished product up to 60 mils.

II.

The following formula was contributed to The Druggists Circular by Paul Caldwell:

White wax,.....	8 ounces.
Spermaceti	8 ounces.
Expressed oil of almond	8 ounces.
Borax	2 ounces.
Soap	16 ounces.
Flake tragacanth.....	2 ounces.
Oil of bitter almond....	6 drams.
Oil of bergamot.....	1 dram.
Water, to make.....	2 gallons.

Melt the wax and spermaceti and add the expressed oil of almond. Dissolve the borax in 4 pints of water and after warming to the same temperature as the melted wax and spermaceti, mix the two fluids, stirring just enough to insure thorough admixture, and no more. Dissolve the soap in 1 gallon of water, made hot, and add to the mixture, being careful not to stir enough to make an undesirable foam. The tragacanth and 4 pints of water must previously have been made into a smooth mucilage. Add this, brought to the same temperature as the saponified mixture, to that mixture, stirring briskly. Finally add the aromatic oils, and strain.

Milk of Roses.

I.

Blanched almonds.....	2 drams.
Curd soap.....	4 drams.
Spermaceti	2 drams.
Expressed oil of almond	4 drams.
Alcohol	4 drams.
Tincture of benzoin....	2 drams.
Oil of rose.....	5 minims.
Oil of rose geranium..	5 minims.
Glycerin 2½	ounces.
Rose water, to make.. 20	ounces.

Melt the spermaceti and oil together, add the curd soap, and continue the heat until a uniform mixture results. Then transfer to a warm mortar and add gradually about an ounce of rose water, which has been brought to the boiling point. Beat up the almonds well in another mortar and add the spermaceti mixture to this paste. Mix thoroughly and stir in the remainder of the hot rose water to form an emulsion. To this add the oils dissolved in the alcohol, the tincture, and the glycerin, then strain through fine calico, and make up to 20 ounces with rose water passed through the strainer. An alternative process is to pound the soap and almonds in a warm mortar, add the spermaceti and almond oil heated together, rub thoroughly, emulsify with the hot rose water and finish as above.

II.

Curd soap.....	½ ounce.
Cold cream.....	1 ounce.
Distilled water.....	32 ounces.
Oil of rose.....	½ dram.
Alcohol	1 ounce.

Shave the soap into shreds and dissolve in 2 ounces of the water by the heat of a water-bath. Incorporate it with the cold cream in a warm mortar, and gradually add the rest of the water, which has been heated until tepid, to form an emulsion. Transfer to a bottle and add the oil of rose dissolved in the alcohol. Shake well. Benzoic acid dissolved in the spirit improves the preparation.

Honey and Almond Lotion.

Ointment of rose water (U. S. P. 1900)	25 grammes.
Glycerin	25 mils.
Expressed oil of almonds	25 mils.
Solution of sodium hydroxide (U. S. P.)	60 mils.
Mucilage of quince seed (1 to 64).....125	mils.
Oil of bitter almonds, essential, and oil of rose, enough to....	perfume.
Water, to make.....1000	mils.

Triturate in a cold mortar the ointment of rose water, the expressed oil of almonds and the solution of sodium hydroxide until a smooth emulsion is obtained. Add the mucilage in divided portions, with constant trituration; likewise add the glycerin, and, continuing the trituration, 500 mils of water. Transfer the mixture to a bottle, add the perfume and enough water to

make 1000 mils, and shake thoroughly.

In order to make the preparation true to label, honey may be used in place of some of or all the glycerin.

Perhaps by replacing a small part of the almond oil with castor oil a somewhat pearly appearance may be obtained.

Cucumber Toilet Preparations

Cucumber Essence.

I.

Press the juice from cucumbers, mix with an equal volume of alcohol and distill. If the distillate is not sufficiently perfumed, more juice may be added and the mixture distilled. It is said that the essence thus prepared will not spoil, even when mixed with fats in the preparation of cosmetics.

II.

Peel the cucumbers before expressing their juice; take as much alcohol as there is cucumber juice, add half of it to the juice and in the other half macerate the peelings for three days. Mix the two liquids and filter.

Cucumber Cream.

I.

White wax, 3 ounces; spermaceti, 3 ounces; benzoinated lard, 8 ounces; cucumbers, 3 ounces. Melt together the wax, spermaceti and lard, and infuse in the liquid the cucumbers previously grated. Allow the mixture to cool, stirring well; let it stand a day, remelt, strain and again stir the "cream" until cold. Whether the benzoin will prevent the cucumber juice from spoiling or not we are unable to say. Perhaps the substitution of the "essence" would be advisable. Some prefer the addition of about 150 grains of borax.

II.

Small cucumbers, 2 only; olive oil, 4 ounces; hydrous wool-fat, 2 ounces; white wax, 1 dram; spermaceti, 1 dram. Slice the entire cucumbers and steel them in the oil, which should first be boiled. Set the mixture aside for twenty-four hours, and then strain it. Incorporate the wool-fat and wax by the aid of heat, and beat the whole into a light cream.

III.

Cucumber juice, 10 ounces; white wax, 9 ounces; liquid petrolatum (white), 24 ounces; benzoic acid, 15 grains; distilled water, 8 ounces; borax, 90 grains; oil of rose, 15 drops. Grate fresh cucumbers and express from them 10 ounces of juice. Allow this to stand for a while and then strain it through fine muslin. Add the water and borax. Dissolve the wax in the oil by the aid of heat and add the benzoic acid. When partially cool, add the warmed juice solution and the oil of rose, and pour into jars.

IV.

Expressed oil of almond, 4 drams; powdered acacia, 100 grains; water, 4 drams; rose water, 8 ounces; cologne water, 1 dram; spirit of camphor, 1 dram; cucumber juice, 4 drams; tincture of benzoin, 30 drops. Emulsify the oil with the water and acacia, and add the other ingredients.

Milk of Cucumbers.

I.

This formula is said to have been used by the late A. E. Ebert: Cucumber juice, 8 ounces; expressed oil of almond, 2 ounces; spirit of soap (N. F.), 2 ounces; tincture of benzoin, 1 dram; oil of bitter almond, 1 drop; oil of lavender 15 drops; oil of bergamot, 10 drops. To make the cucumber juice pour boiling water over sliced, but not peeled, green cucumbers. When the slices have become soft and pulpy, remove them from the water and extract the juice by squeezing them in a muslin bag. To each 7 ounces of juice add 1 ounce of alcohol.

II.

Sweet almonds, 80 parts; fresh cucumber juice, previously boiled, 200 parts; castile soap, 5 parts; cucumber essence, 60 parts; tincture of benzoin, 1 part.

Lait Virginal

Rose water.....900 mils.
Tincture of myrrh..... 10 mils.
Essence of opoponax.. 10 mils.
Tincture of benzoin.... 10 mils.
Tincture of quillaja....to emulsify.

Lait d'Iris

Spermaceti	3.0 grammes.
White wax.....	3.0 grammes.
Marseilles soap.....	3.0 grammes.
Sweet almonds.....	40.0 grammes.
Distilled water.....	100.0 mils.
Alcohol (90 P. C.)..	50.0 mils.
Salicylic. acid.....	0.1 gramme.
Oil of vervaine.....	0.5 gramme.
Rose water.....	100.0 mils.

Glycerin of Cucumbers.

Yolk of 1 egg; glycerin, 2 ounces; tincture of quillaja, 2 drams; expressed oil of almond, 1 ounce; essence of cucumber, 1 ounce; rose water, enough to make eight ounces. Mix the yolk of the egg with the glycerin, and add the tincture of quillaja. Gradually beat in the essence of cucumber diluted with 2 ounces of the rose water. When all has been added make up the volume to 8 ounces with rose water.

Cucumber Toilet Vinegar.

Cucumbers	45 grammes.
Strong wine vinegar	1 000 grammes.

Slice the cucumbers and macerate in

the vinegar for three weeks; then filter.

Cucumber Lotion.

Greases are contraindicated in the treatment of certain summer complexion ailments, which call for a cooling lotion. In such cases a lotion made according to the following formula may be found just the thing:

Cucumber juice, fresh	1 pint.
Benzoic acid (from benzoin)	30 grains.
Boric acid	60 grains.
Glycerin	2 ounces.
Perfume	enough.

Mix the acids and triturate them with the glycerin; finally stir in the juice. The lotion is better without any added perfume.

Toilet Lanolin

Castile soap	100 grammes.
Rose water	800 mils.
Hydrous wool-fat	800 grammes.
Glycerin	800 grammes.
Oil of neroli	enough.
Solution of heliotropin (10%)	enough.
Oil of lavender	enough.

Shred the soap and dissolve it in the rose water. Triturate this solution with the lanolin in a warmed mortar; beat in the glycerin and perfume as desired. A mixture of 1 part of oil of lavender, 5 parts of oil of neroli, and 15 parts of solution of heliotropin gives a good scent; it may be added in any proportion desired.

Petroleum Oil Creams

I.

Liquid petrolatum, white	1 gallon.
Soft petrolatum	7 ounces.
Hard paraffin	7 ounces.
White wax	2 pounds.
Borax	2 ounces.
Glycerin	2 ounces.
Water	5 pints.
Perfume	enough.

II.

White wax	1 pound.
Water	2 pints.
Liquid petrolatum, white	5 pints.
Borax	240 grains.
Oil of rose	30 drops.

III.

Spermaceti	1 pound.
White wax	3 pounds.
Liquid petrolatum, white	2 gallons.
Borax	4 ounces.
Water	1 gallon.
Perfume	enough.

IV.

White soft paraffin	26 grammes.
Paraffin ointment	14 grammes.
Hydrous wool-fat	10 grammes.
Distilled water	20 mils.
Glycerin	30 grammes.
Oil of geranium	2 drops.

Mix the first three ingredients, gradually incorporate the water, and finally add the glycerin and perfume.

The paraffin ointment consists of 1 part of hard paraffin. Instead of the geranium oil, a mixture of 8 drops each of the oils of neroli and bergamot, and 4 drops of oil of lemon may be used, or any of the popular synthetic floral odors.

V.

White petrolatum	500.0 grammes.
White wax	500.0 grammes.
Spermaceti	50.0 grammes.
Borax	7.5 grammes.
Water	150.0 mils.
Oil of bergamot	10.0 mils.
Oil of orris	1.0 mil.

Liquid Petrolatum Toilet Cream

Paraffin	1 ounce.
White wax	1 ounce.
Liquid petrolatum	4 ounces.
Borax	20 grains.
Distilled water, warm	13 drams.
Oil of rose	enough.

Melt the paraffin and the wax at a low temperature and add the liquid petrolatum. Dissolve the borax in the warm distilled water and add it to the oils in a continuous stream with constant stirring. Beat with an egg beater until the product congeals, adding the oil of rose in the meantime.

Cream of Camphor

I.

Castile soap	120 grains.
Ammonium carbonate in clear pieces	120 grains.
Powdered camphor	120 grains.
Oil of thyme	1 fl. dr.
Oil of turpentine	2 fl. ozs.
Water, to make	1 pint.

Dissolve the soap and the ammonium carbonate in 10 fluid ounces of water, and introduce the solution into a pint bottle. Dissolve the camphor in the mixed oil, and add to the soap solution, shaking the bottle vigorously until an emulsion is formed. Finally add enough water to make 1 pint and mix well by shaking.

II.

Curd soap	1½ ounces.
Camphor	6 drams.
Ammonium chloride	1½ ounces.
Ammonia water	1½ ounces.
Oil of turpentine	6 drams.
Water	12 ounces.

Dissolve the soap in half the water mixed with the ammonia water, and dissolve the ammonium chloride in the other half. Mix the two fluids, all the

camphor dissolved in the oil of turpentine, and emulsify by shaking.

The curd soap mentioned in the recipe is official in the British Pharmacopœia. It is made by the action of sodium hydroxide on purified animal fat and contains 30 per cent. of water.

III.

Soft soap	75 grammes.
Camphor	50 grammes.
Oil of turpentine	650 mils.
Distilled water, to make	1000 mils.

Triturate the soap with 100 mils of the water until the mixture is homogeneous; add gradually with constant trituration the camphor dissolved in the oil. When the mixture becomes creamy triturate in enough distilled water to make the required volume. This is the British Pharmaceutical Codex formula for liniment of turpentine.

IV.

White wax	2¼ ounces.
Spermaceti	2¼ ounces.
Expressed oil of almonds	2 pounds.
Camphor	4½ ounces.
Oil of rosemary	90 minims.
Oil of peppermint	45 minims.
Rosewater	2 pints.

Melt the waxes in the oil of almonds on a water-bath; remove from the heat; add the camphor, previously broken up, and stir until it is dissolved; add the rosewater all at once, and beat the cream with an egg-beater while it cools. Add the aromatic oils a little while before the cream has cooled.

Rice Toilet Powder

The basis of the finer grades of poudre de riz is a mixture of rice flour, 2 parts; potato starch, 2 parts; magnesium carbonate, 1 part. Each of these ingredients must of course be in the finest possible state of division.

The perfume to be added to the base is a matter of individual taste. The powder known as poudre de riz fleur des Indes is perfumed with frangipanni fortified with musk. This is typical of the so-called Oriental odors.

Dunvelle in Noveau Guide du Parfumeur gives the following formulas for suitable odors:

Rose.

Oil of rose	0.8 gramme.
Oil of rose geranium	0.8 gramme.
Oil of clove	0.4 gramme.
Oil of sandalwood	0.4 gramme.
Oil of cedrat	0.6 gramme.

Bouquet.

Oil of thyme (white)	0.6 gramme.
Oil of bergamot	0.6 gramme.
Oil of clove	0.6 gramme.
Oil of petit-grain	0.4 gramme.
Oil of geranium	2.4 grammes.
Tincture of musk	0.6 gramme.

The quantities given are sufficient for 1 kilogramme of powder.

Invisible Face Powder

The so-called invisible powders do not seem to differ materially from those which are not so designated, that is, if we are to judge by the published information on the subject. Here are two formulas for "invisible" powders:

I.

Zinc oxide	2 ounces.
Precipitated chalk	9 ounces.
Talc	2 ounces.
Starch	3 ounces.
Extract of white rose	1 dram.
Extract of jasmine	1 dram.
Extract of orange blossoms	1 dram.
Extract of cassie	1 dram.
Essence of musk	½ dram.

II.

Magnesium carbonate	4 ounces.
Talc	8 ounces.
Oil of rose	4 drops.
Oil of neroli	10 drops.
Extract of jasmine	2 drams.
Extract of musk	5 drops.

Lotion for Laborers' Hands

Glycerin	20 grammes.
Ammonia water	5 grammes.
Bay rum	20 grammes.
Rosewater	55 grammes.

This is to be applied to the hands after washing and dried by friction.

Witchhazel Toilet Salve

White petrolatum	100 grammes.
White wax	15 grammes.
Spermaceti	15 grammes.
Hamamelis water	30 mils.
Perfume	enough.
Green color	enough.

Melt the first three ingredients together over a gentle heat; before the mixture cools stir in the other three.

Coloring for Toilet Lotion

Make two solutions: (1) 10 grains of methylene blue in 1 ounce of water; (2) 10 grains of ruby S anilin color in 1 ounce of water (this is the grade that may be used in soda water and foods; alkalies destroy the color). For use a few drops of each solution are added to the liquid to be colored in the proportions that will produce the desired shade. These may be determined by

adding the coloring solutions to water.

Methylene blue and a yellow dye will produce beautiful shades of green.

In using anilin colors it must be borne in mind that their solutions are as a rule permanent dyes for fabrics.

Face Bleach for Colored People

We understand that in most sections where there is a demand for a face bleach for colored people a 1½ per cent. solution of hydrogen dioxide is dispensed.

All-the-Year Face Powder

Saalfield gives the following formula for a simple white cosmetic powder, and this will give equal satisfaction in winter and summer:

Zinc oxide	215 parts.
Finest talc	345 parts.
Heavy magnesium carbonate	35 parts.

Zinc stearate, or oleo-stearate, is said to be superior to zinc oxide as a dermatological application. Many dermatologists advise against the use of the zinc salts. In the foregoing formula the zinc oxide may well be replaced with a high grade of white kaolin.

Liquid Face Powder

Cosmetic "whitewashes" are, generally speaking of two kinds: (1) Poisonous; and (2) mechanically injurious. The former contain metallic salts which through absorption give rise to systemic poisoning. The second class, if applied for any length of time, clog the pores and cause comedones and other dermal blemishes.

For occasional application as a protection against meteorologic conditions or to conceal an anomaly of pigmentation or other blemish the following may be found useful:

I.

Zinc oxide	100 grammes.
Venetian talc	20 grammes.
Eau de cologne	150 mils.
Rose water	150 mils.

II.

Zinc carbonate	100 grammes.
Glycerin	100 mils.
Rosewater	50 mils.
Orangeflower water	50 mils.

III.

Venetian talc	90 grammes.
Zinc oxide	10 grammes.
Spermaceti	100 grammes.
Expressed oil of almond	200 grammes.

If a "flat" white for brunettes is desired a little finely powdered indigo may be added; a "cream" white for blondes is produced by the addition of a little carmine.

IV.

Zinc oxide	1 ounce.
Rose water	4 ounces.
Glycerin	1 dram.
Perfume	enough.

V.

Zinc oxide	1 ounce.
Glycerin	1 ounce.
Water	4 ounces.
Carmine	½ grain.
Oil of bergamot	2 drops.
Oil of lemon	2 drops.

A New Mobile Powder

Pinkus and Unna say (Monat. fur Prak. Dermat.) that the mobile properties of lycopodium may be imitated to some extent by adding to potato starch 1 to 1½ per cent. of magnesium carbonate. The particles of the carbonate, becoming attached to the starch granules, isolate them and prevent agglutination. Such a powder furnishes a uniform and firmly adhering coating to the skin, and is said to be less noticeable than ordinary cosmetic powders.

The authors give the following formula for a powder for beautifying the skin and concealing defects:—

Cosmetic Powder.

Red bole	5 parts.
White bole	25 parts.
Magnesium carbonate	40 parts.
Zinc oxide	50 parts.
Rice starch	80 parts.

Mix thoroughly.

Invisible Powders

The following formulas are for a so-called "invisible" face powder:

I.

Zinc oxide	2 ounces.
Precipitated chalk	9 ounces.
Talc	2 ounces.
Starch	3 ounces.
Extract of white rose	1 dram.
Extract of jasmine	1 dram.
Extract of orange blossoms	1 dram.
Extract of cassie	1 dram.
Essence of musk	½ dram.

II.

Magnesium carbonate	4 ounces.
Talc	8 ounces.
Oil of rose	4 drops.
Oil of neroli	10 drops.
Extract of jasmine	2 drams.
Extract of musk	5 drops.

Grecian Princess Face Powder

English precipitated chalk	6 pounds.
Powdered talcum	3 pounds.
Extract of cassie	1 ounce.
Extract of rose	1 ounce.
Extract of musk	¼ ounce.

Toilet Powders

Violet Powders: Non-Clinging Types.—(a) Starch powder, 890; orris root powder, 100; oil or neroli, 5; oil of bergamot, 3; otto of rose, 2. (b) Starch powder, 500; kaolin, 480; synthetic musk, 5; oil of bergamot, 12; oil of clove, 3. This is a cheaper form.

Clinging Types.—(a) Kaolin, talc, zinc oxide, wheat starch, of each, equal parts. (b) Prepared white diatomite, 50; zinc oxide, 25; talc, 25. (3) Talc, 2; kaolin, 1; bismuth oxychloride, 1. (d) Zinc oxide, magnesium carbonate (light), kaolin, wheat starch, of each, equal parts. (e) Bismuth oxychloride, 1; zinc oxide, 6; prepared white diatomite, 5; talc, 8; (f) Zinc stearate, prepared white diatomite, bismuth exychloride, talc, of each 5. (g) Soft white paraffin, 1; elutriated diatomite, 10; talc, 9. Dissolve the paraffin in a little hot chloroform or petroleum ether, and spray it upon the mixed powders stirring rapidly meanwhile. When the whole of the paraffin has been added, spread the powder in a thin layer for the solvent to evaporate. Some recommend lanolin in place of the paraffin, but the odor is unpleasant, and is quite difficult to cover.

Prepared White Diatomite.—For this good white kieselguhr or diatomite is dried, thoroughly ground, and sifted through bolting cloth. If the material is ground in a disintegrator, the lighter particles that collect in the "balloon" make an excellent basis.

Colors for Face Powder.—These must be added in the wet state. When carmine is used it must be of the best quality, and it should be ground in with a little dilute ammonia solution. It any case sufficient water must be used to make the mixture quite wet. For flesh tints plenty of yellow must be used. Some makers use cadmium sulphide, but it is rather too bright, and yellow ochre is generally preferable. For flesh tint—(a) Yellow ochre, 90; bole, 6; carmine, 4. (b) Yellow ocher, 90; bole, 3; hydrated ferric oxide, 2; carmine, 5. For pink tint—Yellow ochre, 75; carmine, 25. For cream or rachel—Yellow ochre, 94; bole, 4; burnt sienna, 2. Of the foregoing concentrated tinting powders from 60 to 120 grains are required for each pound of white face powder.

Perfuming the Powder.—If the concentrated floral extracts are employed, from 10 to 15 drops per pound are sufficient. The perfume must be well stirred in, and the powder kept for a little time to allow it to become thoroughly permeated. Should it not be desirable to employ floral perfumes, the following volatile oils may be blended, care being taken that none predominates: otto of rose, bergamot, geranium, ylang ylang, neroli, patchouly (the merest trace). Of these not more than 12 drops in all per pound will be required. Synthetic perfumes are sometimes used where cost is an important consideration; for example, artificial musk or musk ambrette, ionone, vanillin, coumarin, aubepine, heliotropin, etc. These are very permanent, and only a grain or two of each per pound of basis will be required.

Cake Powders.—These consist of toilet powders made damp with tragacanth mucilage 2 per cent. and afterwards pressed into molds. The cakes must be allowed to dry very gradually. Some makers add a trace of plaster of paris, about 2 per cent., before moistening. This makes a firmer cake, but is not so pleasant to use.

Nursery Powders.—The best types contain boric acid, zinc oxide and starch. The ideal nursery powder should not contain any natural earthy matter as fuller's earth, talc or kaolin, unless previously sterilized. A tetanizing bacillus is frequently present in the soil, and not a few cases of tetanus have been traced to the use of unpurified fuller's earth on excoriated surfaces. If talc, kaolin and fuller's earth are used, the powders should be boiled for 20 minutes with water, allowed to deposit, the deposit collected and dried. No admixture of germicides that could be borne on the skin has the slightest effect on bacilli or their spores contained in natural earths.

In the following formulas each article must be in very fine powder and quite dry, and the finished mixture sifted by shaking through bolting cloth: (a) Zinc oxide, boric acid, starch, of each, equal parts. (b) Boric acid, 1; zinc oxide, 1; sterilized talc, 2. (c) Pure carbolic acid, 5; soft white paraffin, 50; boric acid, 290; zinc oxide, 200; starch, 455. Dissolve the carbolic acid and paraffin in a little hot petroleum ether and distribute it on the starch. Mix in the other powders, and expose to the air for the solvent to evaporate. Perfuming nursery powders should be carried out with discretion. The odor produced should be faint and delicate. One or two drops of rose oil or of concentrated floral extract per pound is quite sufficient.

Antiseptic Foot Powder.—Boric acid, 75; zinc oxide, 5; sterilized talc, 20. Oil of eucalyptus or thyme oil may be added as perfumes.

Great caution should be observed in heating the petroleum ether; of course, it should not be brought near fire.—Adapted from a paper by E. W. Lucas in the Perfumery and Essential Oil Record.

Face Powder in Cake Form.

French chalk..... 6 ounces.
Prepared chalk..... 4 ounces.

Essence of lily of the valley ..... 3 drams.
Starch mucilage..... enough.

Make into a stiff paste, mold into tablets and dry carefully.

Any face powder may be made into cakes or blocks by adding to the powder from 6 to 8 per cent. of acacia, triturating the whole thoroughly and making it into a stiff doughy mass by incorporating water in small portions. This mass is cut or molded into the desired form and dried at ordinary temperature.

Coloring for Face Powders.

Brunette or Rachel shade is obtained by the use of burnt umber, burnt sienna, bole, or carmine and yellow ocher. Experiments with one or more of these pigments should result in giving you the tint you desire for your powder.

The cream shade can be obtained by using a trace of the pigments suggested above.

Carmine is used to produce the pink or flesh tint.

Baby Powders.

On account of the use to which baby powders are put, being often applied to abraded surfaces, they should contain nothing that might cause injury through being absorbed. As high-grade materials are usually high-priced, it obviously becomes necessary to proportion the size and style of the package to the retail price, and to educate one's customers to the vast difference between a low-priced preparation and a safe, efficacious one—less expensive in the end.

A sine qua non in the making of a high-grade powder or a high-grade anything else, is the use of high-grade materials.

Sweet-Scented Face Powder.

Precipitate chalk..... 9 ounces.
Talc ..... 2 ounces.
Starch ..... 3 ounces.
Extract of white rose... 1 dram.
Extract of jasmine..... 1 dram.
Extract of orange blossoms ..... 1 dram.
Extract of cassie..... 1 dram.
Essence of musk.....½ dram.

Talcum Powder.

Below are given a few formulas for talcum powders found in The Druggists Circular:

Magoffin's Violet Talcum.

Powdered talc..... 5 pounds.
Corn starch..... 5 pounds.
Boric acid.....10 ounces.
Powdered orris root.... 8 ounces.

Mix, and pass the mixture through a number 60 sieve at least five times.

Those who do not wish to mix their boric acid and "violet" powders may find the next two formulas preferable to the one above:

Borated Talcum.

Powdered talc..... 2 pounds.
Magnesium carbonate.. 4 ounces.
Boric acid.....1½ ounces.

Violet Talcum.

Powdered talc..... 14 ounces.
Powdered orris root... 2 ounces.
Extract of cassie..... ½ ounce.
Extract of jasmine..... ¼ ounce.

Tea Rose Talcum.

Powdered talc..... 5 pounds.
Oil of rose..... 50 drops.
Oil of wintergreen..... 4 drops.
Extract of jasmine.... 2 ounces.

Purified talc, in a very fine state of division, and delicately perfumed, is preferred by many to the mixtures.

Antiseptic Talcum.

I.

Powdered talc..... 1 pound.
Boric acid..... 2 ounces.
Salicylic acid.....2½ drams.
Oil of eucalyptus..... ½ dram.
Oil of thyme (white)... 20 drops.

II.

Boric acid.....10 grammes.
Talc .....20 grammes.
Rice starch.....70 grammes.

All the ingredients should be reduced to the finest powder separately and mixed on a paper with a spatula.

III.

Salicylic acid..... 1 gramme.
Orris root, in finest powder ..... 5 grammes.
Zinc oxide.....10 grammes.
Wheat starch.....14 grammes.
Talc .....20 grammes.

Orange-Flower Talcum.

Powdered talc..... 1 pound.
Powdered china clay... 3 pounds.
Powdered boric acid... 4 ounces.
Oil of orange flower... 45 minims.
Oil of sandalwood..... 20 minims.
Oil of geranium.....30 minims.
Oil of clove..... 15 minims.

British Borated Talc.

Boric acid.....100 grammes.
Starch .....100 grammes.
Powdered talc.....800 grammes.
Oil of geranium..... 2 mils.

Phenolated Talcum.

Boric acid..... 2 ounces.
Phenol crystals..... 1 dram.
Powdered talc..... 14 ounces.

Perfume for Talc Powder.

Oil of neroli..... 2 mils.
Oil of cloves..... 1 mil.
Oil of bergamot..... 2 mils.
Oil of sandalwood..... 1 mil.
Oil of rose geranium..... 2 mils.
Oil of lavender (old)..... 1 mil.

Red Color for Cosmetics

Carmine, carthamin or carthamic acid, alkanet and rhatany are recommended as red coloring agents for use in cosmetics.

Carmine is especially recommended, but its cost prohibits its use in some instances. Carthamin or carthamic acid is obtained from safflower (carthamus tinctorius), and is especially useful for coloring rouges. The red coloring matter found in alkanet root is soluble in fats and oils and is employed largely in coloring pomades, hair oils, cold creams, emulsions, etc., as it stains them readily and is permanent and inexpensive.

Rhatany root furnishes a reddish-brown coloring matter which is soluble in alcohol and is used extensively in the manufacture of tooth washes. Red santal wood and Pernambuco wood also supply red coloring matter which may be found useful.

Rouge in Cake Form

One of our readers, A. Alexander, chemist, of this city, has kindly volunteered the following information relative to the manufacture of this product:—

In practice * * * the rouge is colored with lake colors and bound together with an aqueous solution of gum arabic or tragacanth. The powder must be made up of talcum, chalk, kaolin, oxide of zinc, or stearate of zinc in combinations to suit the trade catered to. Some combinations will contain only talcum and chalk, while the finer qualities may contain some other combination or all of them, with the addition of magnesium carbonate.

The method of procedure is to mix the powders and color together, sift through fine bolting cloth, and then mix with the binder (gum solution), and mold into forms. Machine-made rouge is made slightly different. Small machines for making this cost from $75 to $125, and are suitable for commercial production. The tablets, 1½ inch in diameter, cost about 65 cents per gross to produce that way.

Solid Rouges

Carmine	1 ounce.
Talc	21 ounces.
Acacia	1¾ ounces.

The ingredients, in the finest powder, are triturated thoroughly, then water is incorporated in small portions to form a doughy mass. This is filled into suitable containers or molded into cakes and dried.

If tragacanth is used, the mass should be made with diluted alcohol.

A somewhat more complicated process for making rouge follows:

Base.

Corn starch	4 drams.
Powdered white talc	6 drams.

I.

Carminolin	10 grains.
Base (above)	6 drams.
Water	4 drams.

Dissolve the carminolin in the water, mix with the base, and dry.

II.

Geranium red	10 grains.
Base (above)	6 drams.
Water	4 drams.

Mix as above, and dry.

No. 18 Rouge de Theatre

Carminolin rouge (above)	1 ounce.
Geranium rouge (above)	3 ounces.
Water	enough.

Mix in a mortar to a paste, and mold or stamp out. Set aside to dry.

Carminolin is known also in the trade as phloxin.

Other coloring materials which might be used—especially in combination with carmine—are fuchsin and tincture of cudbear. The exact proportions which will prove most satisfactory in any given case may best be determined by experiments conducted by the man who has before him the ingredients he is to use and knows what he wants to produce.

Liquid Rouges

I.

Ammonia water	2 ounces.
Carmine	1¼ ounces.
Triple essence of rose	2½ ounces.
Rose water	4 pints.

"No. 40" carmine is the kind to use. This is to be powdered and added to the ammonia water in a large bottle and left for several days, when the other ingredients are to be added. This mixture is to be kept for a week, with oft-repeated agitation. Then the bottle is left undisturbed until the liquid becomes quite clear, when the latter is to be decanted and put into small bottles.

II.

Carmine	½ ounce.
Solution of patassium hydroxide	6 drams.
Essence of white rose	3 ounces.
Water, to make	20 ounces.

Mix in the order named, set aside for a few days, agitate occasionally, and filter.

III.

Eosin	16 grains.
Water	1½ drams.
Glycerin	½ dram.

Alcohol ..... 3 ounces.
Cologne water.....2½ ounces.

Mix and dissolve.

Eosin is deceptive in that in solution it appears to be less pink than it will turn out to be when applied to the skin. The manufacturer should test each lot of this liquid, and use judgment in adjusting the amount of coloring matter employed.

IV.

Carmine ..... 3 grammes.
Ammonia water..... 3 mils.
Alcohol ..... 50 mils.
Oil of geranium..... 1 mil.
Rose water .....300 mils.

Triturate the carmine with the ammonia water; add the rose water and then the oil dissolved in the alcohol.

V.

Saturated aqueous solution of eosin..... 3 mils.
Acacia, powdered..... 3 grammes.
Rose water..... 50 mils.
Orange flower water.. 50 mils.
Glycerin .....100 mils.

Eye-Brow Pencils

A good basis for eye-brow pencils, as well as for stick cosmetics, may be made according to the following formula:

White wax.....12 parts.
Ceresin ..... 3 parts.
Petrolatum ..... 4 parts.
Wool-fat ..... 4 parts.
Olive oil..... 6 parts.
Pigment ..... enough.
Talc ..... enough.

Melt the white wax and ceresin together, add the petrolatum and wool-fat and when all are melted, incorporate the oil. The coloring substance should be triturated uniformly to the desired color with powdered talc, after which it is to be incorporated with the fatty mixture. The whole should then be cast into suitable molds.

The pigment to be used depends on the color desired. Zinc oxide, sienna, umber, carmine, animal charcoal, lampblack and many of the anilins, as eosin, rhodamin, etc., are employed for coloring this class of preparations—that is, if the blacks may be spoken of as colors.

Theatrical Face Paints

Grease paints have as their base, mutton tallow, or a moderately soft paraffin, which should be properly scented. The coloring material is triturated with zinc oxide and precipitated chalk, in the proportion of 2 parts of color to 1 part of each of the other two. If a paler tint is required, more of the mixture of equal parts of zinc oxide and chalk may be added. For yellows, ocher may be used; for browns, burnt umber; for blues, ultramarine. Reds and pinks are made with carmine and eosin, and as these pigments are very "strong" they should be treated somewhat differently. Two formulas for reds follow:

Bright Reds.

Zinc oxide..... 4 ounces.
Bismuth subnitrate..... 4 ounces.
Aluminum oxychloride.. 4 ounces.
Eosin ..... 7 grains.
Oil of peppermint.....36 minims.
Camphor .....36 grains.
Extract of rose..... 3 drams.
Almond oil..... enough.

Rub the first three ingredients together. Dissolve the eosin in the extract of rose (or any suitable extract). Make a paste of the whole, using enough almond oil to serve for that purpose.

Deep Red.

Zinc oxide..... 4 ounces.
Bismuth subnitrate..... 4 ounces.
Aluminum hydroxide.... 4 ounces.
Carmine ..... 1 dram.
Ammonia water..... 3 drams.
Camphor .....24 grains.
Oil of peppermint.....20 minims.
Extract of rose..... 3 drams.
Almond oil..... enough.

Make into a paste, first dissolving the carmine in the ammonia water.

only the white salts. Black may be made by employing lampblack and omitting the white materials. Different shades of the various colors, and new tints as a result of blending, will suggest themselves to operators.

Perfuming Starch

Although the same perfumes will answer, the form of the starch, whether in lumps or powder, makes different methods of applying the odorous substance necessary. Any handkerchief extract may be used to scent either form of starch. It is best applied by spraying with an atomizer. The powder should be spread out on a flat surface and stirred with a large spatula or paddle as the perfume is sprayed over it. For large quantities, some sort of a mechanical agitator is desirable. To perfume lump starch, simply spread out a single layer of the lumps and spray the perfume over them.

Better results will follow the use of a concentrated perfume, which may be any desired essential oil or combination of several oils, or some blend of the following sort:

Wood Violet.

Solution of ionone (1 in 30, in 60% alcohol)... 2 ounces.

Solution of concrete oil of orris (1 in 60, in 60% alcohol)..... 2 ounces.
Solution of artificial musk (1%, in 60% alcohol) ..... 1 dram.
Oil of bergamot..... 5 minims.

Carnation.

Oil of rose.....½ dram.
Oil of neroli.....½ dram.
Oil of clove..... 2 drops.
Essence of cassie..... 4 ounces.
Tincture of vanillin..... 2 ounces.

Muguet.

Oil of jasmine (synthetic) 1 dram.
Oil of ylang-ylang (synthetic) ..... 3 drams.
Solution of heliotropin (1%, in 60% alcohol).. 8 ounces.
Solution of terpineol (1%, in 60% alcohol).....20 ounces.

Heliotrope.

Tincture of vanilla..... 5 ounces.
Extract of rose..... 5 ounces.
Essential oil of almond.. 5 minims.

Modern Bouquet.

Liquid aubepine..... 4 ounces.
Concrete oil of orris..... 1 ounce.
Bouvardia, 10%..... 1 dram.
Oil of rose geranium.... 4 drams.
Benzyl acetate..... 1 ounce.

Perspiration Powders and Pastes

Generally speaking, preparations for preventing the disagreeable odor of perspiration act by doing one of three things, or a combination of two or more of them—they (1) clog the pores of the skin, and so retard the flow or perspiration, or (2) act as an antiseptic and so prevent the souring of the perspiration, or (3) saponify the grease of the perspiration—the souring of which causes the bad odor. To the first class belong many of the greases and salves; to the second, boric acid; and to the third, sodium bicarbonate. Of course, it injures one to stop one's perspiration and so salves and pastes for this purpose should be used sparingly if at all.

A formula for a preparation which, while a grease, also acts as an antiseptic, is here given:

Thymol ..... 2 grammes.
Zinc oleate.....200 grammes.
Boric acid.....150 grammes.
Petrolatum cold cream .....650 grammes.

A few recipes for antiseptic perspiration powders follow:

I.

Dried alum..... 12 parts.
Salicylic acid..... 3 parts.
Starch ..... 18 parts.
Violet talcum powder..120 parts.

II.

Bismuth subnitrate.... 1 ounce.
Potassium permanganate .....1½ ounces.
Rice flour..... 2 ounces.

III.

Zinc perborate..... 20 parts.
Talc powder..... 80 parts.

A perspiration paste may be made according to the next formula:

Boric acid..... 1 ounce.
Salicylic acid..... 20 grains.
Powdered soap..... ½ ounce.
Elderflower water..... 1 ounce.
Powdered arrowroot.... 1 ounce.
Glycerin, to make a soft paste.

Beat the soap into a paste with the elderflower water; add the powders, previously mixed, and incorporate enough glycerin to give the proper consistency.

It is said that one of the popular perspiration pastes is quite similar in composition to the ointment of zinc stearate of the Pharmacopoeia; maybe an ointment of zinc oleo-stearate, perfumed.

Here is another suggestion:

Powdered starch..... 1 pound.
Salicylic acid.....150 grains.
Mucilage of tragacanth ..... enough.

This, of course, will harden on exposure to the air, and for that reason it should be dispensed in a tightly stopped container; or a little glycerin might be added to it.

Foregger suggests the use of a deodorizing salve consisting of zinc peroxide and petrolatum. We understand, however, that the firm having patent rights on zinc peroxide also controls the right to prepare toilet preparations made from it.

Preventing Perspiration

While there are a number of drugs which when taken internally have a tendency to diminish perspiration, we think it best for pharmacists to leave the prescribing of them to physicians. Local applications of tanning substances, as tannic acid, formaldehyde, etc., also retard perspiration, but we feel that when it comes to a matter of interrupting a natural function of a human organ, those who are not familiar with the importance of that function and the seriousness of the consequences of its partial cessation, should keep hands off.

It may be considered within the provinces of a pharmacist to supply something to overcome the disagreeable odor of perspiration, and for this purpose he may sell a powder consisting principally of sodium bicarbonate, with a little starch or talc, boric acid and perfume added.

Liquid Perspiration Deodorants

I.

Boric acid..... 4 drams.
Salicylic acid..... 1 dram.
Glycerin ..... 2 drams.
Rose water..... 3 ounces.
Cologne water..... 8 ounces.

II.

Burnt alum..... 1 part.
Boracic acid..... 1 part.
Elderflower water.....30 parts.

For Malodorous Perspiration

I.

Bismuth subnitrate.....1 ounce.
Potassium permanganate .....1½ ounces.
Rice flour.....2 ounces.

II.

Zinc oleate.....4 drams.
Boracic acid.....3 drams.
Keep the surface constantly covered with the **powder.**

For Excessive Perspiration

I.

Zinc oleate.....½ ounce.
Powdered starch..... 1 ounce.
Salicylic acid.....20 grains.

II.

Hydrastine hydrochloride.5 grains.
Cologne water.....4 ounces.
Apply frequently to the surface.

Deodorant Powder for Warm Weather.

I.

Starch ..... 2 ounces.
Talc ..... 1 ounce.
Burnt alum..... 1 dram.
Oil of lemon.....20 drops.
Phenol .....10 drops.
Salicylic acid.....10 grains.

II.

Alum .....10 grammes.
Boric acid.....20 grammes.
Talc .....40 grammes.
Starch .....60 grammes.
Oil of eucalyptus..... 6 drops.
Oil of wintergreen.... 3 drops.

Suggestion for a Stearate Paste Perspiration Deodorant.

Stearic acid..... 2 ounces.
Dried sodium carbonate ..... 6 drams.
Sodium borate.....60 grains.
Glycerin ..... 4 ounces.
Water ..... 4 ounces.
Oil of cassia.....30 drops.
Thymol .....60 grains.
Alcohol ..... enough.

Dissolve the sodium salts in the water, add the glycerin; place the mixture in a water-bath and add the stearic acid, heating with constant stirring until effervescence ceases. Remove from the heat and beat vigorously until cold. Dissolve the thymol in a mixture of the oil of cassia and sufficient alcohol and incorporate the solution in the cold paste.

Magoffin's Perspirine.

Powdered talc..... 5 pounds.
Corn starch..... 5 pounds.
Boric acid.....10 ounces.
Oil of rose..... 1 dram.

Mix the first three ingredients. Triturate the oil with 2 ounces of the mixture and then mix all together. Run through a No. 60 sieve at least five times.

French Anti-Perspiration Prescription

For the excessive perspiration of the feet and axillae, the Journal de Sante recommends a mixture of:—

Thymol ..... 0.20 gramme.
Tannin ..... 3.00 grammes.
Talc .....50.00 grammes.
Starch .....50.00 grammes.

Depilatories.

We reprint below information concerning depilatories that was furnished us by a dermatologist:

There has been so much inquiry about good depilatories that I hope a word from me will not be without fruit. The druggist would fare much better were he to leave the removal of hair to a physician who fully understands that practice. All depilatory pastes and powders depend for their action on either barium or calcium sulphide; both are caustic in action on the skin, and the persistent use of them, which is essential to good results, will, in most cases, produce a severe dermatitis that is difficult to get rid of.

In my fourteen years of practice, in which I have had my share of dermatology, I have yet to find a reliable way of hair removing. Electricity, while fairly successful, is so painful and removes so few hairs at a sitting, that patients submit but few times to it.

Could I but cite the many cases of ruined skins with scar and eczematous tissue due to the indiscriminate use of the "patent" depilatories with which the market is flooded, there would be less of these used.

We cannot blame the women for wishing to appear beautiful, and no one is more desirous of helping them than I am. Depilatory pastes, when used discreetly and not too often do little harm, but they never should be put into the hands of women for use every time one sees a darkening of the shadows.

Preparations made according to this

formula, used as directed, act nicely. The sulphides directed must be made fresh for each application. The good results last as long as six or even more weeks.

I.

Barium sulphide	20 parts.
Powdered soap	5 parts.
Powdered talc	32 parts.
Wheat flour	32 parts.
Benzaldehyde	enough.

To apply take about a teaspoonful of this powder and three teaspoonfuls of water, make a smooth paste, and apply evenly with a spatula or brush for five minutes; then apply a little more water over the paste for five more minutes; moisten thoroughly with a sponge, gently rub off, and apply some cold cream. These directions should be followed in cases of a fairly heavy growth, but should be moderated in cases of lanugo growths.

II.

Barium sulphide	1 part.
Flour or starch	1 part.

Apply this as the other.

The first is my favorite and is very efficient if freshly made.

"Jerseyite" sends the following formula for a depilatory which he says he has found very successful:

Barium sulphide	17 parts.
Zinc oxide	45 parts.
Starch	27 parts.
Talc	10 parts.
Oil of eucalyptus	1 part.

In a mixture made according to this formula, the barium salt is the active ingredient, the others being merely fillers and diluents, the oil, of course, being added as a perfume. Similar formulas have appeared from time to time in The Druggists Circular, and reports of dissatisfaction arising from their use are not lacking.

Liquid Depilatory.

Our Jersey friend wants to know if we can supply a formula for a good liquid depilatory. We fear we must disappoint him. Sulphides do not keep well in solution. A solution of sodium sulphide crystals in lime water, 300 grains to the ounce, has been suggested as a depilatory, but this has to be of recent make to be of service. It is said to keep better in amber-colored bottles.

A German formula for a liquid depilatory is:

Tincture of iodine	0.5 gramme.
Oil of turpentine	1.0 gramme.
Castor oil	1.5 grammes.
Alcohol	10.0 grammes.
Collodion	40.0 grammes.

It was stated in the German journal from which this formula was taken, that two applications of the preparation would bring away the hair as it peeled off. Oil of turpentine and iodine when mixed may cause trouble by the violence of the reaction; they may even cause an explosion.

The use of any kind of depilatory is attended by such dangers that it should be carried on only under the advice and direction of a physician.

Thallium Acetate as a Depilatory.

Sabourand (Trib. med.) says that thallium acetate, administered internally, causes the hair to fall out, and, applied locally, acts as a depilatory and is useful in removing superfluous hair from any part of the body. The hair grows again, of course, but is said to remain short and colorless. The author recommends a depilating paste containing thallium acetate, 3 grammes; zinc oxide, 25 grammes; petrolatum, 200 grammes; hydrated wool-fat, 50 grammes, and rose water, 50 grammes.

The action of the preparation is not, strictly speaking, a depilating action, but is similar to that of solution of hydrogen dioxide when used for the same purpose—that is, through continued application the heavy, colored hair is gradually changed into the relatively colorless lanugo variety. The correct manner of using the thallium acetate creams is to rub a small quantity upon the offending hirsute growth each evening until the desired result is obtained.

Thallium acetate is not an innocuous substance, and its application is best left to the physician. Not more than a few grains of the cream should be applied to the body at one time. Large patches of superfluous hair should be treated in sections on alternate days, and not more than one patch should be treated at a time.

Liquid Nail Enamel.

I.

Oil of mastic	15.0 grammes.
Sea salt	2.0 grammes.
Rosin	1.5 grammes.
Alum	1.5 grammes.
Yellow wax	1.5 grammes.

II.

Stannic acid	20.0 grammes.
Sandarac resin	1.0 gramme.
Kaolin	4.0 grammes.
Carmine	0.2 gramme.
Extract of violet	5 drops.
Extract of ylang-ylang	10 drops.

III.

White wax	1 ounce.
Cottonseed oil	2 ounces.
Carmine	5 grains.
Oil of rose	5 drops.

Melt the wax, add the oil, triturate the carmine to fine powder, mix inti-

mately with the melted fats and then incorporate the oil of rose.

IV.

Eosin .....10 grains.
White wax.....½ dram.
Spermaceti .....½ dram.
Soft paraffin..... 1 ounce.
Alcohol ..... enough.

Dissolve the eosin in as little alcohol as will suffice, melt the other ingredients together, add the solution and stir until cool.

Nail-Polishing Stick.

Putty powder..... 4 ounces.
Carmine .....10 grains.
Perfume ..... to suit.
Mucilage of tragacanth. enough.

The powders and perfume are well mixed, then massed with the mucilage and rolled into sticks.

Ointments for Treating Brittle Nails.

I.

Extract of nux vomica.. 8 grains.
Pilocarpine nitrate..... 2 grains.
Calcium glycerophosphate .....15 grains.
Tincture of cochineal.... sufficient.
Hydrous wool fat.....½ ounce.

II.

Powdered mastic.....240 grains.
Bay salt..... 30 grains.
Resin ..... 30 grains.
Alum ..... 30 grains.
White wax..... 30 grains.

One of these ointments is spread over the nails at bed-time.

Nail-Polishing Paste.

Tin oxide.....500 grammes.
Powdered tragacanth 2 grammes.
Glycerin ..... 0.5 gramme.
Rose water.....200 grammes.
Alcohol ..... enough.

Place the powdered tragacanth in a mortar or other suitable mixing apparatus, moisten with alcohol, then add the rose water and glycerin and triturate until the jelly is formed. Then add the tin oxide and work it in thoroughly. If the paste is too stiff for satisfactory mixing, a little water may be added and the amount of glycerin increased.

Nail Varnish.

I.

Chloroform .....150 grammes.
Paraffin ..... 15 grammes.

Dissolve the paraffin in the chloroform. The solution may be perfumed with oil of rose or oil of rose geranium.

II.

Paraffin ..... 2 grammes.
Amyl acetate..... 2 mils.
Chloroform .....30 mils.

Nail-Polishing Powder.

I.

Precipitated silica..... 1 ounce.
Heavy magnesia.....½ ounce.
Oil of ylang-ylang..... 1 drop.
Tint with carmine solution.

II.

Precipitated silica..... 1 ounce.
Prepared chalk.....½ ounce.
Putty powder.....½ ounce.
Oil of rose..... 1 drop.
Tint with carmine solution.

Finger Nail Bleach and Polish.

For bleaching and polishing the nails, solution of hydrogen dioxide with fine powdered pumice stone is said to be used by professional manicurists. Diluted lactic, acetic, citric, tartaric or phosphoric acid, together with talcum, calcium phosphate or even cuttlefish bone are also used.

As we have pointed out a number of times, the continual use of such preparations as these will injure the nails, and druggists offering them to the publis should affix a label bearing a warning to that effect.

Here is a formula from across the water for a bleach:

Diluted sulphuric acid....2 drams.
Tincture of myrrh.....1 dram.
Rosewater, to make.....4 ounces.

Dip the nails in this solution, wipe and polish with chamois skin.

A second formula is as follows:

Tartaric acid.....1 dram.
Tincture of myrrh.....1 dram.
Cologne water.....2 drams.
Water .....3 ounces.

Dissolve the acid in the water; mix the tincture of myrrh and cologne and add the mixture to the acid solution.

For Moisture of the Hands.

Zinc oleate..... 1 dram.
Bismuth subnitrate..... 2 drams.
Betanaphthol .....10 grains.
Dust frequently over the surface.

Cuticle Ice

Menthol is the cooling constituent of the preparations of this class. The appended formulas represent typical although quite different preparations:

I.

Menthol ..... 3 parts.
Paraffin .....40 parts.
White petrolatum.....57 parts.

Melt the paraffin with the petrolatum at a gentle heat; add the menthol previously powdered and stir until it is dissolved.

II.

Irish moss..... 1 ounce.
Menthol ..... 1 dram.

Glycerin	2 ounces.
Alcohol	2 ounces.
Hot water	enough.

Place the moss in 2 pints of hot water and heat on a water-bath for twenty minutes; add 2 more pints of hot water and squeeze the mucilage through muslin. Dilute this with 4 pints of boiling water; filter through felt, and evaporate the filtrate to 2 pints. Dissolve the menthol in the alcohol, add the glycerin and then the mucilage in divided portions with constant trituration.

Almond Meal

I.

Bitter almond meal	270 grammes.
Powdered orris root	180 grammes.
Rice flour	180 grammes.
Powdered castile soap (dry)	45 grammes.
Powdered borax	45 grammes.
Oil of bergamot	12 mils.
Extract of musk	6 mils.
Oil of bitter almonds	1 mil.

Run through a sieve several times, and keep in well closed containers.

II.

Almond meal	1,000 grammes.
Oatmeal	300 grammes.
Powdered castile soap	100 grammes.
Oil of bergamot	7 grammes.
Oil of neroli	1 gramme.
Oil of cedar (perfumer's)	2 grammes.
Oil of cloves	2 grammes.

Toilet Hand Oatmeal

Oatmeal	6 ounces.
Orris root, powdered	4 drams.
Ionone	5 minims.

The oatmeal should be of medium fineness and free from adhering flour. The orris and perfume should be rubbed together thoroughly for several minutes before all are mixed together.

Almond Paste for the Hands

Bitter almond meal	125 grammes.
Sweet almond meal	125 grammes.
Lemon juice	60 grammes.
Milk	30 grammes.
Expressed almond oil	90 grammes.
Alcohol (20%)	180 grammes.

The Treatment of Warts

A wart, we find described in Webster's dictionary, as "a small, usually hard, tumor of the skin, formed by enlargement of its vascular papillae, and thickening of the epidermis that covers them." Much has been written concerning warts, and a great many remedies for them have been recommended by physicians and others. An interesting item concerning warts and their treatment appeared in a recent issue of the Journal of the American Medical Association, as follows:

Warts need little description. For the most part they are simple affairs, occurring most frequently on the hands. Although they may develop in certain diseased conditions and at times seem to develop in conjunction with disturbances of the internal secretions, it is coming to be believed that they are caused by micro-organisms and are probably auto-inoculable. A crop of warts may seem to resist every treatment, and suddenly without any known causative influence entirely disappear within a few days. For this reason, all sorts of absurd treatments have been suggested, and some of them have numerous adherents among the laity. At the same time numerous treatments have been described in medical literature, and many of these have achieved a following. Lately the long administration of lime in some form to increase the lime content of the blood and tissues is being revived as a method of treatment.

Local treatments directed to the warts are usually successful in removing these unsightly protuberances. Among the escharotics that have been suggested are painting with glacial acetic acid. Stronger caustics, such as nitric acid, potash, formaldehyde solutions of the strength of the official preparation, etc., should be used with great caution. The surrounding skin should always be protected.

A time-worn prescription is salicylic acid in collodion:

Salicylic acid	2 grammes.
Collodion	30 grammes.

The wart should be touched with this solution two or three times a day, each time the film of collodion being removed.

A more sedative and as efficient a preparation is:

Chloral hydrate	10 grammes.
Salicylic acid	2 grammes.
Collodion	30 grammes.

A more active solution is:

Chrysarobin	2 grammes.
Collodion	30 grammes.

Sweating Feet

Brocq gives a number of methods for the treatment of excessive perspiration of the feet, which follow:

Boot socks may be used, made of filter paper, linen or cork soaked in one of the following liquids and then dried:

A mixture of potassium permanganate, 15 grains; thymol, 8 grains, and water, 3¼ ounces.

A lotion of naphthol, 5 parts; glycerin, 10 parts; alcohol, 100 parts. This

to be followed with a powder of naphthol, 1 part; starch, 9 parts.

Iron perchloride (solution), 30 parts; glycerin, 10 parts.

A lotion of quinine sulphate, 5 parts; tannic acid, 2 parts; alcohol, 100 parts, and water 250 parts. This to be followed with a powder of salicylic acid, 3 parts; alum, 45 parts; starch, 10 parts; talc, 87 parts.

Tincture of belladonna, 25 parts; eau de cologne, 120 parts.

The socks may be powdered with a mixture of talc, 40 parts; bismuth subnitrate, 45 parts; potassium permanganate, 3 parts; sodium salicylate, 2 parts; rice flour, 60 parts.

Foot Powder

The ordinary old-time foot powder is composed principally of some such base as talc and starch, together with a little boric or salicylic acid. A modification of this old formula is as follows:—

Salicylic acid	6 drams.
Boric acid	3 ounces.
Powdered elm bark	1 ounce.
Powdered orris	1 ounce.
Talc	36 ounces.

Oxygen-liberating liquids and powders seem to be in favor for cleansing wounds and feet. A typical formula for such a powder is:—

Sodium perborate	3 ounces.
Zinc peroxide	2 ounces.
Talc	15 ounces.

Foot Cream

The following formula has proved satisfactory for a stiff tragacanth jelly:

Tragacanth	5 drams.
Benzoic acid	1 dram.
Sodium borate	1 dram.
Water	4 ounces.
Glycerin	8 ounces.
Rose water	4 ounces.
Oil of bitter almond	5 drops.
Extract of jasmine	4 drams.

Put the tragacanth into a wide-mouthed bottle, add the water in which the benzoic acid and the sodium borate have been dissolved; and set aside for several days. Mix the glycerin and the rose water, add these to the tragacanth mixture, shake frequently during two or three days, and squeeze through flannel. Finally incorporate the oil of bitter almond dissolved in the perfume extract. If a pearly appearance is desired, add about 4 drams of tincture of Siam benzoin to the finished jelly.

Application for Perspiring Feet

I.

Dried alum	50 grammes.
Salicylic acid	5 grammes.
Tannin	15 grammes.
Powdered talc	430 grammes.

II.

Potassium permanganate	13 grammes.
Alum	1 gramme.
Talc	50 grammes.
Zinc oxide	18 grammes.
Calcium hydrate	18 grammes.

III.

Salicylic acid	2 parts.
Zinc stearate	1 part.
Talc	40 parts.

Examination of samples of foot powder on the market showed that they were made up, respectively, as indicated below:—

Talc, 75 per cent.; boric acid, 25 per cent.

Talc, 12.5 per cent.; starch, 50 per cent.; borax, 37.5 per cent.

Talc, 25 per cent.; boric acid, 75 per cent.

Talc, 65 per cent.; alum, 20 per cent.; magnesia, 15 per cent.

Talc, 90 per cent.; borax, 10 per cent.

Talc, 95 per cent.; alum, 4 per cent.; boric acid, 1 per cent.

Starch, 65 per cent.; zinc oxide, 35 per cent.

Talc, 60 per cent.; boric acid, 40 per cent.

Talc, 75 per cent.; starch, 15 per cent.; salicylic acid, 7.5 per cent.; alum, 2.5 per cent.

Zinc oxide, 25 per cent.; borax, 75 per cent.

Starch, 75 per cent.; salicylic acid, 25 per cent.

All the most prominent brands showed talc in the proportion of 75 to 90 per cent. The starch was mostly in the form of corn, wheat or potato starch. Only one sample contained orris root. Salicylic acid was used in the proportion of 3 to 7.5 per cent., as a rule, and boric acid varied from 1 to 75 per cent.

Another authority directs:—(1) Zinc perborate, 20; with talcum, 80. (2) Sodium perborate, 20; with talcum, 80. (3) Both together and singly, with zinc peroxide and talcum. Feet and stockings were dusted several times a day.

Coumarin, tincture of orris and compound tincture of vanilla are recommended as perfumes for foot powders.

Glycerin as a Foot Application

Dr. Benians has recently recommended (Lancet) glycerin in cases of perspiring feet (bromidrosis). He points out that the substances which give rise to the clinical symptoms of bromidrosis, such as indol and, perhaps, skatol, are the products of bacterial action, as also is ammonia,

which, on account of its solvent action on keratin, is possibly the most harmful body. The addition of glycerin to the medium in which the indol-producing bacteria are growing prevents the formation of this substance and in place of an alkaline medium, the fermentation of the glycerin leads to the production of a marked acidity, and so substitutes an acid for **an alkaline medium** in contact with the skin of the foot. Dr. Benians cites two severe cases which were completely cured in three days by the application of glycerin well spread over the soles and toes before the socks were put on, this being repeated each morning as long as necessary. He suggests that the use of glycerin, by preventing the formation of noxious products, and thus keeping the skin of the feet in a healthy condition, would be of considerable value to an army on long marches.

Any pharmacist ought to be able to make up a glycerine preparation suitable for a foot cream; to label it attractively, and to push it successfully.

Astringent and Antiseptic Foot Powder.

Alum, powdered.....60 grammes.
Tannic acid..... 5 grammes.
Salicylic acid..... 2 grammes.
Orris root, powdered.33 grammes.

Mix them and divide into packages of about 2 grammes each; or make into suitable-sized tablets.

Ammonia Chloride Corn Salve

Salicylic acid.....2 ounces.
Ammonium chloride.....2 ounces.
Acetic acid.....4 drams.
Wool-fat .....2 ounces.
White wax.....2 ounces.
Lard .....8 ounces.

What Corns Are and How to Treat Them

Corns form a never-ending subject for discussion and probably will so long as people insist upon wearing tight shoes. Cures and near-cures—mostly the latter—have been offered in great number and for a long time, but the annual crop of corns seems not to diminish.

Writing to Clinical Medicine, on this subject, Dr. John C. Warbrick says:—

Corns are an abnormal localized thickening of the epidermis, occurring more often on the feet; but they may also be found on the hands, especially of individuals who do considerable manual labor implying much-repeated pressure. These corns on the feet are produced by anything causing continual pressure or friction, as tight or ill-fitting shoes. A predisposing cause is softness and tenderness of the skin, due to lack of exercise and circulation of the blood, so that the toes are easily compressed.

Two varieties of corns (clavus) are recognized:—(1) Hard corns, which occur on the exposed surfaces, particularly the upper parts of the toes or on the inner and outer sides of them; (2) soft corns, which occur between the toes.

Hard corns are more or less conical in shape, and it is the pressure of the apex of this cone upon the papillary layer of the corium that causes the pain, which so often is intense. They may be quite small, or they may broaden out considerably, and then may occur singly or in groups. When neglected suppuration may occur, and the pus be prevented from escaping by the hardened cuticle, this often causing a good deal of pain and inflammation of the skin and tissues around, which may lead to ulceration.

In order to prevent corns from forming, tight shoes must be shunned. The feet should be bathed in cold water now and again and rubbed well with a dry bath towel. Walking should be freely practiced. Some of the substances employed for destroying corns are glacial acetic acid, monochloracetic acid, trichloracetic acid, salicylic acid, sodium hydrate and sodium ethylate.

In my opinoin, however, there is nothing better for removing warts or corns than salicylic acid and collodion; for salicylic acid has the property of attacking abnormal or diseased tissue while leaving all healthy tissue untouched. Hence its value in removing corns, warts and the like, and painlessly at that. The other substances mentioned above may be of some use, but none of them are half so good as salicylic acid. To remove a corn (or a wart) with glacial acetic acid requires patience and time. Following are two approved formulas for salicylated collodion:—

I.

Salicylic acid .....15 grains.
Extract of cannabis indica.. 8 grains.
Alcohol .....15 minims.
Ether .....40 minims.
Flexible collodion.....75 minims.

Paint on three times a day for a week, then soak the foot in hot water and pick the corn off with the finger nail.

II.

Salicylic acid ..... 1 dram.
Extract of cannabis indica....10 grains.
Ether ..... 2 drams.
Flexible collodion ..... 6 drams.

Over the corn apply a plaster with a hole in the center to relieve pressure.

Rohe, in his "Diseases of the Skin," says that "a corn is a circumscribed hyperplasia of epithelial tissue, which projects downward, by a conical prolongation, into the deeper epidermal layers of the skin," which will no doubt be a relief to many people who have always thought that a corn was just a corn, and a rather commonplace attachment at that.

According to the Medical World, corns and warts may be removed by the daily application of Fowler's solution. If the growth is very hard, it may be first softened by the application of liquor potassa before using the arsenical solution. We wish to add that much "corn comfort" may easily be obtained (in case of hard corns and callosites) by rubbing with sandpaper (not too fine) every few days, or sufficiently often to keep them down. The sand-paper works better when the part is perfectly dry and hard. This is simple, but many can thereby get much foot comfort who suffer needlessly.

A collection of formulas for corn remedies from other sources follow:—

Salicylic acid.....2 ounces.
Ammonium chloride.....2 ounces.
Acetic acid.....4 drams.
Wool-fat .....2 ounces.
White wax.....2 ounces.
Lard .....8 ounces.

II.

Salicylic acid.....10 grammes.
Lactic acid.....10 grammes.
Chloral hydrate.....10 grammes.
Castor oil..... 1 gramme.
Venice turpentine..... 1 gramme.
Extract of cannabis indica ..... 2 grammes.
Collodion .....100 grammes.

III.

Salicylic acid.....1½ ounces.
Pyroxylin ..... 1 ounce.
Amyl acetate..... 5 ounces.
Acetone ..... 15 ounces.
Balsam of fir..... 2 drams.
Castor oil..... 2 drams.
Oil of cloves..... 15 minims.
Make a solution.

This should not be made or used near an open flame.

IV.

Salicylic acid..... 2 drams.
Extract of belladonna... 1 dram.
Powdered French rosin..½ dram.
Castor oil..... 1 dram.
Flexible collodion, to make ..... 2 ounces.

V.

Iodine ..... 3 grammes.
Salicylic acid..... 12 grammes.
Pyroxylin ..... 3 grammes.
Acetone, to make...100 mils.

In a stoppered bottle dissolve in the acetone first the iodine, then the acid, and finally the pyroxylin.

VI.

Resorcinol ..... 1 gramme.
Salicylic acid..... 1 gramme.
Lactic acid..... 1 gramme.
Flexible collodion.....10 mils.

Apply every day, putting one layer on another for five or six days, then bathe the feet in hot water and the corn may be removed.

VII.

For soft corns:—
Salicylic acid.....1 dram.
Menthol .....1 dram.
Cacao butter.....4 ounces.

VIII.

Salicylic acid.....12 grammes.
Extract of Indian hemp ..... 2 grammes.
Acetone .....30 grammes.
Collodion, to make....100 grammes.

Dissolve the acid and the extracts in the liquids by agitation.

Wart and Corn Removers

I.

Resorcin ..... 1 gramme.
Salicylic acid..... 1 gramme.
Wool fat.....20 grammes.

II.

Glacial acetic acid...10 grammes.
Precipitated sulphur..20 grammes.
Glycerin .....32 grammes.

III.

Alcohol ..... 1 ounce.
Salicylic acid.....to saturate.
Castor oil.....50 drops.

Apply by dampening (warts or corns) twice a day.

Wart Remover

I.

Salicylic acid..... 2 grammes.
Chrysarobin ..... 4 grammes.
Ichthyol ..... 4 grammes.
Wool-fat .....35 grammes.
Petrolatum .....55 grammes.

II.

Phenol .....1 gramme.
Glacial acetic acid.....3 grammes.

III.

Chloral ..... 90 grains.
Acetic acid..... 90 grains.
Salicylic acid..... 60 grains.
Ether ..... 60 grains.
Collodion .....225 grains.

Violet Ammonia.

The following formula is contributed by a pharmacist who says the product is sold extensively:

Ammonia water.....12 pints.
Distilled water.....28 pints.
Perfume (see below)... 1 ounce.
Color ..... enough.

Perfume for the Foregoing.

Anisic aldehyde.....½ dram.
Benzyl acetate.....½ dram.
Ionone ..... 1 dram.
Coumarin ..... 1 grain.
Oil of bergamot.....15 minims.
Oil of neroli.....10 minims.
Ticture of musk..... 4 ounces.
Other formulas follow:—

I.

Ammonia water.....8 ounces.
Rose water.....8 ounces.
Powdered orris.....1 ounce.
Color ..... enough.

Macerate the orris in a mixture of the two waters for a week and then so filter the solution as to prevent evaporation of the ammonia. Finally add the color.

II.

Ammonia water..... 8 ounces.
Green soap..... 4 ounces.
Oleic acid..... 3 drams.
Oil of bay.....15 minims.
Oil of rosemary.....15 minims.
Oil of verbena.....15 minims.
Water, to make..... 2 pints.

Dissolve the soap in 1 pint of water by the aid of heat. When the solution has cooled add the other things,

the oleic acid next to last, the balance of the water being last, of course.

III.

Stronger ammonia water	6 pints.
Alcohol	1 pint.
Oil of orris (soapmaker's)	2 drams.
Oil of bergamot	2 drams.
Color	enough.
Distilled water, to make	5 gallons.

Mix the ammonia water with an equal amount of the water; dissolve the oils in the alcohol; mix the two solutions and add the required amount of water.

IV.

Violet water	2 ounces.
Stronger ammonia water	5 pints.
Lavender water	4 drams.
Violet toilet water	4 ounces.
Distilled water, to make	4 gallons.

Heat 2 pints of the water and in it dissolve the soap; add the ammonia and the perfume, and make up to the desired quantity with water.

Coloring Material.

Violet ammonia may be colored a light purple by digesting in it for several days a small quantity of litmus. Water-soluble chlorophyl paste may be used to impart a green tint. Both these colors will fade on exposure to light, and the coloring material will separate in time. A stable green color, which, however, should be used with caution, if at all, because of its poisonous character, may be made of—

Copper sulphate	1 ounce.
Potassium dichromate	1 ounce.
Ammonia water	8 ounces.
Water	16 ounces.

Dissolve the salts separately in portions of the water; mix, and add the ammonia.

Cloudy Toilet Ammonia.

Ammonia water	6 ounces.
Yellow soap	10 grains.
Borax	60 grains.
Lavender water	20 minims.
Water, to make	20 ounces.

Dissolve the soap and borax in 5 ounces of boiling water; when cold, add the lavender water, the ammonia water and the rest of the water.

The following formula for a cloudy ammonia water suitable for bath or shampoo was contributed to the Canadian Pharmaceutical Journal by Henry Watters:—

Powdered borax	2 drams.
Water	6 ounces.
Ammonia water (30%)	5 ounces.
Oleic acid	2 drams.
Cologne water	4 drams.

Dissolve the borax in the water; add the ammonia water, and then the oleic acid previously mixed with the cologne water.

Instead of the oleic acid, 4 drams of soft soap may be used.

The cologne water used by Mr. Watters has the following formula:—

Cologne Water.

Oil of bergamot	10 mils.
Oil of orange, sweet	10 mils.
Oil of neroli	2 mils.
Oil of lemon	2 mils.
Cologne spirit	1000 mils.
Stronger orange flower water	enough.

The oils are dissolved in the spirit and enough orange flower water is added to cause a slight opalescence. The liquid is allowed to age as much as possible before filtration.

Sea Salt de Luxe.

Luxury-loving people may prefer their sea salt perfumed. Druggists may profit by encouraging this kind of taste. Coumarin, many of the essential oils and other perfumers' materials may be used to convert ordinary sea salt into the de luxe variety. They are best applied by dissolving first in a minimum of alcohol. One way of preparing artificial sea salt is by combining 1 pound of sodium chloride, 4 ounces of magnesium chloride and 1 ounce each of potassium chloride and calcium sulphate.

Borated Ammonia, Clear

Stronger ammonia water	4 ounces.
Borax	1 ounce.
Lavender water	1 dram.
Distilled water, to make	1 pint.

Dissolve the borax in the water with the aid of heat. When the solution has cooled, mix with the ammonia water and add the perfume.

Borated Ammonia, Cloudy

Stronger ammonia water	4 ounces.
White animal-oil soap	10 grains.
Borax	320 grains.
Lavender water	1 dram.
Distilled water, to make	1 pint.

Mix as directed in the foregoing.

To adapt these formulas to general household use, increase the proportion of the ammonia, use plain water and omit the perfume.

Liquid Ammonia for the Bath and Household

I.

Oleic acid	1 ounce.
Alcohol	1 ounce.
Ammonia water	7 ounces.
Water, to make	1 pint.

II.

Soap (in shavings).....2 ounces.
Potash lye.....1 ounce.
Ammonia water.....2 pints.

A little alcohol is sometimes added to make the mixture clear.

III.

Sodium carbonate.....20 ounces.
Ammonia water.....48 ounces.
Water .....32 ounces.

IV.

Yellow soap.....10 grains.
Borax ..... 1 dram.
Stronger ammonia water 6 ounces.
Water, to make.....20 ounces.

V.

Soft soap..... 2 ounces.
Borax ..... 4 drams.
Stronger ammonia water 7 ounces.
Water, to make.....24 ounces.

Bath Powder

I.

Borax .....4 ounces.
Potassium carbonate.....2 ounces.
Almond meal.....8 ounces.
Benzoic acid.....4 drams.
Oil of cinnamon.....1 dram.
Oil of eucalyptus.....1 dram.

II.

Boric acid.....16 ounces.
Benzoic acid..... 4 ounces.
Oil of pinus pumilio... enough.

III.

Powdered castile soap (dry).....200.0 grammes.
Sodium carbonate (dry) ..... 16.0 grammes.
Powdered orris root 65.0 grammes.
Almond meal.....100.0 grammes.
Oil of bergamot.... 1.5 mils.
Oil of lemon..... 0.5 mil.
Oil of cloves..... 0.2 mil.

Violet Witchhazel

Oil of orris (liquid).....1 dram.
Essence of jasmine.....4 ounces.
Hamamelis water.....4 pints.

Mix and filter through talcum until clear.

The preparation may be colored green with tincture of chlorophyl.

Effervescent Bath Powder

Tartaric acid.....10 ounces.
Sodium bicarbonate..... 9 ounces.
Rice flour..... 6 ounces.

Effervescing Bath Tablets

Sodium bicarbonate... 3 ounces.
Tartaric acid.....2½ ounces.
Starch ..... 4 ounces.
Oil of lemon..... ½ dram.
Oil of orris..... 5 minims.
Oil of ylang-ylang.... 5 minims.
Tincture of benzoin... enough.

Mix the oils with the starch, add the other ingredients and enough of the tinctures to make a mass. Divide into pastilles or compress.

Aromatic Solution of Ammonia

Ammonium carbonate 4 ounces.
Stronger solution of ammonia ..... 8 fl. ozs.
Terpeneless oil of lemon ..... 13 minims.
Terpeneless oil of nutmeg ..... 54 minims.
Alcohol (90%) ..... 6 fl. ozs.
Distilled water.....149 fl. ozs.

The oils to be dissolved in the spirit before adding.

Verbena Water

I.

Oil of lemon grass..... 4 drams.
Oil of bergamot..... ½ dram.
Oil of orange..... ½ dram.
Water ..... 8 ounces.
Alcohol to make..... 2 pints.

Mix the oils in the alcohol, add water gradually, agitate and filter with talc after permitting the mixture to stand for several days.

II.

Oil of lemon (best)..... ½ ounce.
Oil of rose..... 5 drops.
Oil of lavender..... 10 drops.
Tincture of musk..... 1 dram.
Water..... 1 pint.
Spirits of cologne..... 3 pints.

Mix oils and aqueous ingredients with aid of precipitated calcium phosphate, age and filter.

Florida Water

I.

Oil of bergamot..... 2 ounces.
Oil of lavender..... 1 ounce.
Oil of cloves..... ¼ ounce.
Extract of civet..... 1 ounce.
Oil of pimento..... ¼ ounce.
Alcohol ..... 2 gallons.
Water ..... 4 pints.

II.

Oil of bergamot..... 3 ounces.
Oil of lavender..... 1 ounce.
Oil of cloves..... 1¼ drams.
Oil of cinnamon..... 2½ drams.
Oil of neroli..... ½ dram.
Oil of lemon..... 1 ounce.
Extract of jasmine.... 6 ounces.
Extract of musk..... 2 ounces.
Rose water ..... 1 pint.
Deodorized alcohol.... 8 pints.

Mix and, if cloudy, filter through magnesium carbonate.

Toilet Ammonia

Stronger ammonia water	6 ounces.
Lavender water	1 dram.
Powd. castile soap	½ dram.
Distilled water to make	16 ounces.

Pine Woods Bath Powder

The refreshing odor of pine oil may be imparted to a bath powder by spraying crystals of sodium carbonate, in two pound lots, with the following mixture:

Pine oil	2 drams.
Terebene	10 minims.
Metanil	5 minims.
Lavender water	1 ounce.

Perfumed Water Softener

The following preparation may be found useful for softening the water:

Soduim borate	1 ounce.
Sodium bicarbonate	½ ounce.
Oil of lavender	1 ounce.
Oil of bergamot	1 ounce.
Oil of lemon	1 ounce.
Oil of cloves	1 dram.
Oil of cinnamon	1 dram.
Alcohol	2 quarts.
Water to make	6 quarts.

Dissolve the oils in the alcohol and the salts in the water, and mix the two solutions. Let stand 24 hours and filter.

Lavender Water

Lavender flowers, fresh	10 pounds.
Alcohol	1 gallon.
Water	½ gallon.

Digest a week, throw it into a clean still, add 1½ pounds of common salt, dissolved in ½ gallon of water, and, after stirring the whole together, draw over, rapidly, 1 gallon, by the heat of steam or of a salt water bath. To the distillate add oil of bergamot, 5 drams; essence of ambergris, 2 drams, and mix well.

Aromatic English Vinegar

Oil of cinnamon	15 drops.
Oil of cloves	40 drops.
Oil of lavender	30 drops.
Oil of lemon	30 drops.
Acetic acid, glacial	1 ounce.
Alcohol	34 drops.

Add a tablespoonful of this vinegar to a bowl of water and rinse the face with it.

Acid Bath Salt

Tartaric acid	1 ounce.
Potassium bitartrate	2 ounces.
Potassium bicarbonate	1 ounce.
Sodium chloride	12 ounces.

Have all the salts in a coarse, granular condition and mix.

Alkaline Bath Salt

Sodium bicarbonate	6 ounces.
Sodium sulphate	2 ounces.
Sodium chloride	8 ounces.

Have all the salts in a coarse, granular condition and mix.

Sea Bath Salt

Potassium iodide	10 grains.
Potassium bromide	20 grains.
Magnesium sulphate	2 ounces.
Sodium bicarbonate	1 ounce.
Sodium chloride to make	16 ounces.

Have all the salts in a coarse, granular condition and mix.

Bath Tablet

Sodium carbonate	4 ounces.
Tartaric acid	1½ ounces.
Orris root	½ ounce.
Oil of lemon	½ dram.
Oil of orris	5 minims.
Oil of ylang ylang	5 minims.

Mix the oils with the orris root, add the other ingredients, and make into a stiff paste with alcohol. Divide into tablets and dry.

CHAPTER IV.

DENTAL PREPARATIONS

Tooth powders and pastes—Liquid dentifrices—Mouth washes—Breath tablets—Toothache remedies—Dental cement, etc.

Always consult the index when using this book.

Peroxide Tooth Powder.

The right to the use of calcium peroxide and the perborates and percarbonates of all the alkaline earth metals in the manufacture of tooth powders is claimed by one manufacturer, under a patent issued by the United States government.

I.

An oxygen-yielding tooth powder which does not contain calcium peroxide or any perborate or percarbonate may be made of:

Magnesium peroxide.... 1 dram.
Precipitated chalk..... 6 drams.
Powdered soap.....20 grains.
Oil of wintergreen.....12 minims.

Other formulas for this class of preparations are appended:

II.

Precipitated chalk..... 6 drams.
Sodium perborate ..... 1 dram.
Powdered soap.....20 grains.
Oil of wintergreen.....15 minims.

III.

Magnesium peroxide.....60 parts.
Sodium perborate.....30 parts.
Powdered soap.....10 parts.
Flavoring ..... enough.

This dentifrice, says the United States Naval Medical Bulletin, theoretically contains enough free oxygen to make in an acid mouth 120 to 130 minims of fresh hydrogen peroxide, and while this amount of antiseptic may not be developed, there is certainly enough produced to give excellent results.

The word "peroxide" as here used is said to have been trade-marked.

French Tooth Powder

Ground boric acid.....10 grammes.
Potassium chlorate.... 5 grammes.
Powdered guaiac..... 5 grammes.
Precipitated chalk.....20 grammes.
Magnesium carbonate.20 grammes.
Essence of mint.....to flavor.

An Alkaline Peroxide Powder and Solution.

A subscriber asks for a recipe for a soluble powder from which can be made an aqueous solution of alkaline reaction containing sodium perborate and flavoring antiseptics like menthol and thymol. Preliminary experiments show the feasibility of a powder something like this:

Alkaline Antiseptic Powder.

Sodium perborate.....20 grammes.
Sodium benzoate.....32 grammes.
Thymol .....0.1 gramme.
Oil of peppermint.....0.1 mil.
Oil of gaultheria.....0.2 mil.

Triturate the powdered thymol with the benzoate, then add the oils, and after further trituration mix gently with the perborate. This amount of powder is to be dissolved in a liter of water for use.

This is but a suggestion requiring further experimentation to insure success. The product thus made gives a turbid solution in water, of pleasant taste suitable for a mouth wash. The possibility that the perborate will react with the aromatics (thus preventing formation of hydrogen dioxide, when dissolved in water), is not remote.

If the mixture is not sufficiently alkaline, 20 grammes of potassium bicarbonate might be added to the quantity made according to the recipe given above.

Old-Fashioned Tooth Powder.

I.

Precipitated chalk..... 8 ounces.
Powdered orris root..... 4 ounces.
Carmine No. 40..... 2 drams.
Oil of red cedar wood... 1 dram.
Oil of peppermint.....30 minims.
Oil of spearmint.....15 minims.
Oil of cloves..... 5 minims.

Rub the carmine with a small portion of the chalk, then gradually add the balance of the chalk, the orris root and

II.

To make an old-style tooth powder, experiments might be made by using the following formula as a basis:

Precipitated chalk.....1 ounce.
Powdered soap .....1 dram.
Thymol .....5 grains.
Oil of gaultheria.....2 drops.

In the course of the experimentation a little orris, starch or other basic ingredient, or oil of peppermint, cinnamon, or other flavoring material, might be introduced.

Carbolated Tooth Powder.

I.

Precipitated chalk .....1 pound.
Castile soap .....1 ounce.
Orris .....2 ounces.
Sugar .....1 ounce.
(Or, saccharin 2 grains).
Phenol .....1 dram.

Phenol has a tendency to darken, and this probably is not arrested by combining it with the chalk and such things. It is said that this coloration may be prevented by the addition of ¼ of 1 per cent. of sulphurous anhydride, but this process does not seem to be practicable in the manufacture of a tooth powder on a small scale. It does not seem to us that phenol is especially desirable as a therapeutic ingredient of tooth powder, and since it proves physically objectionable, why not omit it?

II.

A formula which calls for no chalk to be converted into a phenol salt follows:

Terra alba..... 8 ounces.
Orris .....1½ ounces.
Castile soap..... ½ ounce.
Phenol (crystals)..... 30 grains.
Camphor ..... 30 grains.
Oil of rose..... 10 minims.

Triturate the phenol with the camphor until liquefaction is complete, and gradually add, with thorough trituration, 2 ounces of the terra alba. Triturate the oil of rose with the rest of the terra alba and mix all the powder well and pass through a bolting cloth. Color with carmine, if desired.

Typical Formula for Tooth Powder, Paste and Perfume

Calcium carbonate..... 5 ounces.
Magnesium carbonate... 1 ounce.
Orris root flour..... 1 ounce.
Powdered soap..... 1 ounce.
Milk sugar.....½ ounce.

A pleasing flavor is produced by the following mixture:

Oil of peppermint..... 2 drams.
Oil of spearmint.....20 minims.
Oil of wintergreen.....30 minims.
Oil of cinnamon.....40 minims.

The foregoing formula for a powder may be used for a paste, first dissolving the powdered soap in a minimum of hot water, adding to this a few drops of ammonia water and mixing the whole thoroughly with the powders; then incorporating slowly and at a constant gentle heat enough of the following excipient to make a moderately stiff mass:

Gelatin ..... 10 parts.
Glycerin .....150 parts.
Water .....100 parts.

Let this mass stand for a few days in a warm place, kneading it occasionally. Cool for an hour and soften to the proper consistence with a mixture of equal parts of glycerin and water. The sugar of milk may be omitted in making a paste.

Foam for Tooth Powder

Powdered soap in tooth powder will cause it to foam, and has the advantage over soap bark of being non-poisonous. Animal-oil soaps are more frothy than vegetable-oil soaps, and if made a little alkaline they foam still more. One might make a soap from lard, to be sure of getting a pure and unscented one for powder.

Alkaline Tooth Powder

Lithium carbonate... 20 grammes.
Calcium carbonate...200 grammes.
Magnesium carbonate.200 grammes.
Oil of wintergreen.....enough.

Potassium Chlorate Tooth Paste

I.

Magnesium carbonate.100 grammes.
Calcium carbonate...100 grammes.
Potassium chlorate...500 grammes.
Sugar .....45 grammes.
Water .....155 grammes.
Glycerin ..... 65 grammes.
Powdered soap..... 18 grammes.
Flavor ..... 17 grammes.

The flavor spoken of consists of thymol, vanillin and oil of peppermint, in alcohol.

II.

Precipitated chalk...350 grammes.
Powdered orris.....100 grammes.
Potassium chlorate..250 grammes.
Mucilage of acacia (1 to 2).....150 grammes.
Glycerin .....150 grammes.
Oil of peppermint.... 10 grammes.
Oil of cloves..... 1 gramme.
Oil of sandalwood.... 1 gramme.
Oil of wintergreen... 1 gramme.
Oil of geranium..... 1 gramme.

Unna's Potassium Chlorate Tooth Paste.

Potassium chlorate... 5 grammes.
Calcium carbonate....25 grammes.
Orris root.....25 grammes.
Medicinal soap.....25 grammes.
Glycerin .....25 grammes.
Oil of peppermint.....20 drops.

This formula has the advantage of being an officially recognized formula by a pharmaceutical association (the Luxemburg Apotheker Verein).

The medicinal soap of the German Pharmacopoeia is made as follows:

Heat, by means of a steam bath,
Solution of soda.....120
Add gradually a previously melted mixture of
Lard 50
and
Olive oil..... 50
Stir and heat the mixture for half an hour; then add
Alcohol 12
and as soon as the mass has assumed a uniform consistence, add gradually
Water 200

Then continue the heat, adding, if necessary, small portions of solution of soda, until a transparent, viscid soap is formed, which dissolves in hot water without the separation of oil.

Finally add a filtered solution of
Sodium chloride..... 25
Crude sodium carbonate..... 3
Water 80

and continue the heat, stirring constantly, until the soap has wholly separated from the liquid.

After some time separate the soap from the mother-lye, wash it several times with a little water; then express it in a cloth slowly, but forcibly, and having cut it into cakes, dry them in a warm place.

Cherry Tooth Paste

Precipitated chalk.....13 ounces.
Powdered orris..... 4 ounces.
Powdered tragacanth....30 grains.
Oil of clove..... 2 drams.
Cherry juice..... 5 ounces.
Glycerin ..... 4 ounces.
Glucose ..... 1 ounce.
Solution of cochineal....1 ounce.

Mix the first three ingredients intimately and incorporate the oil of clove. Mix the other ingredients and use this second mixture as an excipient to make a pasty mass.

Katapyrine

The following formula is given in Pharmazeutische Praxis for katapyrine, a dentifrice:

Sodium bicarbonate..11.0 grammes.
Borax..... 4.0 grammes.
Powdered soap.....14.0 grammes.
Precipitated chalk... 4.0 grammes.
Magnesium carbonate.10.0 grammes.
Powdered cuttlefish bone .....10.0 grammes.
Glycerin .....50.0 grammes.
Menthol ..... 0.4 gramme.
Oil of anise..... 2.0 grammes.
Oil of peppermint.... 3.0 grammes.
Oil of cinnamon..... 2.0 grammes.
Carmine ..... 0.4 gramme.

In this connection, it might be mentioned that some practical experimenters say that the medicinal soap of the German Pharmacopœia is the most satisfactory for use in dentifrices; and also that cuttlefish bone is too gritty for use on the teeth.

Kolynos

Dr. N. S. Jenkins, of Paris, gives the following formula for his dental cream which he calls kolynos:

Soap 33.00
Precipitated chalk.....25.00
Absolute alcohol.....20.00
Glycerin 15.00
Benzoic acid..... 3.00
Oil of eucalyptus..... 2.00
Oil of peppermint..... 2.00
Saccharin 0.50
Thymol 0.25

The name, kolynos, is a Greek word meaning disease preventer.

Peroxide Tooth Paste.

Just to what extent and how long solution of hydrogen dioxide will remain active when combined with other ingredients necessary to form a tooth paste, we are unable to say, but herewith is a formula for a dental cream which calls for that rather unstable ingredient:

Precipitated chalk.....5 parts.
Powdered castile soap...1 part.
Solution of hydrogen dioxide ..... enough.
Glycerin ..... enough.

Form a paste and flavor to suit.

Non-Hardening Tooth Paste..

Perhaps one of the greatest faults of tooth pastes made by inexperienced manufacturers is their proneness to become too hard in the tubes. To overcome this, the mass should be made very soft at first—semifluid in fact—because it will stiffen on standing. This is a matter for experiment in all cases, for the proportion of soap and the bulkiness of the chalk used will make a difference, and one never knows what proportions are best until the paste has stood three months or so. The use of solution of sodium hydroxide, about 1 ounce to each 8 or 10 ounces of other materials, will materially retard the hardening of soap-and-chalk tooth pastes. A formula in which this ingredient is specified follows:

Precipitated chalk.....14½ ounces.
Powdered soap..... 2½ ounces.
Glycerin ..... 18 drams.
Water ..... 20 drams.
Powdered sugar..... 4 drams.
Solution of sodium hydroxide ..... 3 drams.
Saccharin ..... 3 grains.
Thymol ..... 7 grains.
Oil of peppermint..... 15 minims.
Oil of cinnamon..... 15 minims.

Referring to the foregoing formula, a druggist wrote.

If the ordinary precipitated chalk and powdered soap are used the amounts of glycerin and water may be all right, but if the very light and fluffy precipitated English chalk and best grade of powdered castile soap are used the amount is wholly inadequate. Instead of taking only 18 drams of glycerin and 20 drams of water the writer uses 9 ounces of glycerin and 10 ounces of water. Even then after the paste is forced into the tubes through our machine it is regarded as too stiff by our customers. We have our own tube filling and closing machines and we believe the formula with the above changes is the best ever.

W. C. Kirchgessner gives his formulas for tooth preparations for tubes, as follows:

Mass Solution.

Gelatin, in small pieces	30 grammes.
Castile soap (moist)	60 grammes.
Saccharin	8 grammes.
Menthol	8 grammes.
Oil of eucalyptus	8 mils.
Oil of wintergreen	22 mils.
Glycerin	1,000 mils.
Water	500 mils.
Hot water	500 mils.

Soak the gelatin in the water over night; dissolve the soap and saccharin in the hot water; mix the menthol, oils and glycerin. Pour all together in the order named, and let the mixture stand a day or two before using.

Tooth Paste for Tubes.

Mass solution	200 mils.
Precipitated chalk	500 grammes.

Mix, and put into collapsible tubes at once.

The tubes should stand a day or two before use.

Mr. Kirchgessner says:

This is very soft and will come off the spatula very easily. Take a little at a time and give the tube a jar on the counter, which forces it to the other end. It is not necessary to have a machine to fill tubes with, although a machine will do it quicker. After filling the tube, pinch the end tightly, overlapping at least twice. Let stand in tube a few days before selling so as to give the gelatin and chalk time to harden, a change that takes place between the two and makes a nice paste. The cost will not be more than 5 cents.

Tooth Paste, for Boxes.

Mass solution	360 mils.
Precipitated chalk	500 mils.

Tooth Powder.

Precipitated chalk	500.0 grammes.
Powdered castile soap	4.0 grammes.
Saccharin	1.0 gramme.
Menthol	0.5 gramme.
Oil of wintergreen	4.0 mils.
Oil of eucalyptus	0.5 mil.

Mix the oils and menthol before adding the other ingredients.

If a pink color is desired, mix 2 grammes of carmine with the chalk.

Put up in ordinary tooth-powder bottles, this costs from 5 to 10 cents a bottle.

Tooth Lotion.

Menthol	0.5 gramme.
Borax	8.0 grammes.
Oil of eucalyptus	0.5 mil.
Oil of wintergreen	1.0 mil.
Saccharin	1.0 mil.
Solution of potassa	16.0 mils.
Alcohol	120.0 mils.
Water, enough to make	500.0 mils.

Dissolve the menthol and oils in the alcohol and the borax in the water, adding the solution of potassa and saccharin. Mix; color with compound tincture of cudbear, if desirable, and filter.

An ordinary 25-cent size bottle of this costs about 5 cents.

In each formula where oil of wintergreen is directed, oil of cassia is mentioned as an alternate.

A Real Tooth Paste and Some Dental Hints.

In an article under this heading, contributed to The Druggists Circular (September, 1913, issue, page 506), Floyd M. Stage says:

The tooth pastes of today, in most cases, are calcium carbonate, alkaline in reaction, but the tooth paste of the future, when the people become more educated and take better care of their teeth, will undoubtedly be acid in reaction, and so will require the use of an alkaline mouth wash to neutralize the acidity immediately after the application of the paste. This tooth paste will necessarily be made with some base which is not affected by the addition of a small quantity of some such acid as acetic, tartaric or citric. It will more easily remove the tartar and it will keep the teeth cleaner.

A tooth paste made according to the formula I herewith give is not only theoretically correct, but practically also, the quantities being those absolutely required in actual manufacture. This tooth paste will postively please the customer, who therefore will return for further purchases.

A Real Tooth Paste.

Precipitated chalk	7 pounds.
Myrrh	3½ ounces.
Cuttlefish bone	3½ ounces.
Soap	14 ounces.
Saccharin	105 grains.
Sodium bicarbonate	70 grains.
Carmine	11 grains.
Ammonia water	enough.
Tragacanth	1 ounce.
Glycerin	40 ounces.
Boiling water	72 ounces.
Water	enough.
Benzoic acid	140 grains.
Alcohol	1 ounce.
Oil of wintergreen	560 minims.
Oil of sassafras	490 minims.
Oil of orange	490 minims.
Oil of anise	140 minims.
Oil of peppermint	90 minims.
Menthol	210 grains.

First mix the chalk, myrrh, cuttlefish bone and soap, all of which should be in fine powder; the cuttlefish bone, especially, should be bolted. [Many authorities condemn its use at all.—Editor.] Then mix the saccharin and sodium bicarbonate and combine the two mixtures. Use just enough ammonia water on the carmine to bring out its color, and then add it to the mixture. Wash the tragacanth briskly in cold water to clean it, then pour the boiling water over it and allow it to stand twenty-four hours, occasionally stirring

it well to secure a uniform paste, and add the glycerin. Transfer both the paste and the mass previously made to a mixer, and thoroughly grind them together, adding the boric acid previously dissolved in the alcohol, and finally, just before the mixing is complete, the oils and menthol, previously mixed.

As soon as the mass is ready it should be put into tubes or boxes, as by standing it loses its volatile oil and hardens.

After the druggist has made and sold this preparation to his customer, he should impress upon him the necessity of using an alkaline mouth wash several times during the day. Such a wash is a modern necessity, the greatest preventer of disease, the best life insurance. Herewith is given the formula for a very satisfactory alkaline mouth wash which should be in use in every household of this broad land:

Alkaline Mouth Wash.

Sodium bicarbonate	360 grains.
Sodium borate	360 grains.
Sodium benzoate	15 grains.
Sodium salicylate	15 grains.
Eucalyptol	7½ grains.
Thymol	7½ grains.
Menthol	4 grains.
Oil of gaultheria	4 minims.
Phenol (95% solution)	320 minims.
Alcohol	24 ounces.
Glycerin	8 ounces.
Water	96 ounces.

Mix, allow to stand for at least a week, and filter.

The two great reasons that mouth washes are not more universally used are (1) the cost and (2) lack of education as to their necessity. If customers cannot afford to use ready-made mouth washes and pay the fancy prices, alkaline and antiseptic tablets should be sold to them at a low price. Twelve of these dissolved in a pint of water to which 40 drops of solution of phenol has been added is a simple and inexpensive enough preparation, but of marvelous efficiency. Druggists should offer such a preparation not for the monetary consideration, but for the sake of humanity. It brings the use of mouth washes within the reach of all, the cost of a pint being less than 5 cents.

Flavor for a Tooth Paste

It is rather a difficult problem to select a "good perfume" for a tooth paste —for somebody else. A little oil of wintergreen, or peppermint, or spearmint, or rose, or a combination of any two or more of these, with perhaps a little powdered orris in the paste, ought to please almost any taste; but tastes differ. We have known considerable popularity to be attained by a tooth powder flavored with a mixture of 2 parts of oil of wintergreen and 1 part of oil of peppermint. The same flavor will answer for a paste.

For variety's sake here are a half-dozen others to select from:

I.

Oil of spearmint	50 grammes.
Oil of star anise	30 grammes.
Oil of Ceylon cinnamon	2 grammes.
Oil of clove	5 grammes.
Oil of bergamot	2 grammes.

II.

Oil of clove	55 grammes.
Oil of star anise	47 grammes.
Oil of spearmint	40 grammes.
Oil of citronella	8 grammes.

III.

Oil of spearmint	4 grammes.
Oil of clove	1 gramme.
Oil of Russian anise	1 gramme.
Oil of Ceylon cinnamon	1 gramme.
Oil of rose	20 grammes.
Oil of orange	2 grammes.

IV.

Oil of rose	1 gramme.
Oil of angelica	1 gramme.
Oil of orris	3 grammes.
Tincture of vanilla	10 grammes.

V.

Oil of rose	6 grammes.
Oil of neroli	4 grammes.
Oil of citron	2 grammes.
Oil of cinnamon	2 grammes.
Oil of clove	2 grammes.
Oil of lavender	1 gramme.
Oil of pimento	1 gramme.

VI.

Oil of rose	1 gramme.
Oil of cinnamon	2 grammes.
Oil of clove	9 grammes.
Oil of lemon	8 grammes.
Tincture of vanilla	24 grammes.

Antiseptic Mouth Washes.

Notwithstanding the fact that some observers have deprecated the general and indiscriminate use of antiseptic mouth washes on the ground that they destroy the benign and malign bacteria alike such preparations are still called for.

Benzoic.

I.

Benzoic acid	5 grains.
Thymol	1 grain.
Oil of peppermint	5 minims.
Tincture of eucalyptus	1 dram.
Alcohol	1 ounce.

A teaspoonful to a tumbler of warm water.

II.

Benzoic acid	45 grains.
Thymol	3 grains.
Tincture of eucalyptus	4 drams.
Oil of wintergreen	25 minims.
Alcohol	4 ounces.

III.

Thymol	1 part.
Benzoic acid	12 parts.
Tincture of eucalyptus (French Codex)	48 parts.
Water	3,200 parts.

Salicylic.

I.

Salicylic acid	10 grains.
Oil of peppermint	5 minims.
Compound tincture of lavender	20 minims.
Alcohol	4 drams.
Water, to make	1 ounce.

A teaspoonful to a tumbler of warm water.

II.

Salicylic acid	30 grains.
Saccharin	15 grains.

Sodium bicarbonate	15 grains.
Alcohol	3½ ounces.

A few drops in a glass of water, to be used as a gargle for the relief of a fetid mouth.

Saponaceous.

Powdered white castile soap	1 dram.
Alcohol (95 per cent.)	6 ounces.
Water	6 ounces.
Glycerin	2 ounces.
Oil of wintergreen (natural)	30 minims.
Oil of cloves	10 minims.
Oil of cinnamon	20 minims.
Oil of peppermina	20 minims.
Tincture of vanilla	½ ounce.
Carmine (No. 40)	enough.

Dissolve the soap in the water by the aid of heat (if necessary), add the glycerin and tincture of vanilla; dissolve the oils in the alcohol and add this solution to the one first formed, color with the carmine and filter.

Dentifrices for Pyorrhea.

We suggest to the druggist the blending of fluidextract of ipecac with the tooth paste or mouth wash that he prepares already. He should bear in mind, however, that alkaloids are precipitated by alkalies, and that the paste or wash should therefore be either neutral or faintly acid.

Mild Acid Mouth Wash.

Thymol	2 grains.
Menthol	2 grains.
Solution of formaldehyde	8 minims.
Glycerite of borogylcerin	1 ounce.
Oil of pinus sylvestris	15 minims.
Alcohol	1 ounce.
Purified talc	enough.
Distilled water, to make	8 ounces.

Use one part to three or four parts of water. (This formula is by a dentist, but we do not approve of the use of formaldehyde in tooth preparations, even in small proportions; it seems that it might be omitted from the above without detriment.)

Alkaline Mouth Wash.

Sodium boro-benzoate (N. F.)	12 drams.
Resorcinol	80 grains.
Glycerin	4 drams.
Oil of peppermint	2 minims.
Alcohol	2 ounces.
Oil of cinnamon	8 minims.
Eucalyptol	8 minims.
Purified talc	enough.
Distilled water, to make	1 pint.

Use one part to three or four parts of water.

Eau de Botot.

French Formula.

Anise	10 ounces.
Cochineal	¾ ounce.
Mace	150 grains.
Cloves	150 grains.
Cinnamon	2¾ ounces.
Alcohol	6 pints.
Oil of peppermint	¾ ounce.

English Formula.

Tincture of red cedar wood	8 pints.
Tincture of myrrh	2 pints.
Tincture of rhatany	2 pints.
Oil of lavender	¾ ounce.
Oil of peppermint	1 ounce.
Oil of rose	150 grains.

Astringent Mouth Wash.

Tincture of myrrh	5 ounces.
Compound tincture of cardamom	2 ounces.
Compound tincture of cinchona	5 ounces.
Spirit of cloves	1 ounce.
Cologne water	1 ounce.

One teaspoonful is mixed with a tumbler of water and the mixture used as a mouth wash.

Astringent Alkaline Mouth Wash.

Sodium borate	2 drams.
Sodium salicylate	1 dram.
Glycerin	3 drams.
Fluidextract of eucalyptus rostrata	3 drams.
Solution of formaldehyde	6 minims.
Oil of sassafras	1 minim.
Oil of wintergreen	12 minims.
Purified talc	enough.
Distilled water, to make	4 ounces.

Use one part to three or four parts of water. (See note appended to the formula for Mild Acid Mouth Wash in adjoining column.)

Phenol Mouth Wash.

Phenol	3.125 grammes.
Sodium hydroxide.	0.340 gramme.
Triple orange flower water	25.000 grammes.
Triple rose water.	12.500 grammes.
Solution of cudbear	12.500 grammes.
Water, to make	100.000 grammes.

This solution is used as an antiseptic mouth wash after tooth extraction, and in dental caries, a teaspoonful being added to a wineglass full of water for that purpose.

Iodoglycerole.

Talbot (Journ. Am. Med. Asso.) recommends iodine as the best oral antiseptic. To overcome the objection to the tincture, due to the fact that in frequent applications it injures the mucous membrane of the mouth, he sug-

gests the use of a mixture which has the following formula:

Water	2 parts.
Zinc iodide	3 parts.
Iodine (crystals)	5 parts.
Glycerin	10 parts.

Eau Dentifrice

I.

Star anise	7.5 grammes.
Oil of peppermint	1.0 mil.
Anethol	1.0 mil.
Red saunders	1.0 gramme.
Alcohol	100.0 mils.

Macerate for two weeks, then filter and add enough alcohol to make 100 mils.

For use as a mouth wash, take about 10 drops to a tumbler of water.

II.

Oil of spearmint	10.0 grammes.
Oil of anise	2.0 grammes.
Oil of star anise	2.0 grammes.
Oil of cloves	2.0 grammes.
Oil of cinnamon	1.0 gramme.
Oil of rose	0.1 gramme.
Tincture of benzoin	10.0 grammes.
Tincture of cochineal	8.0 grammes.
Alcohol (90%), to make	1,000.0 mils.

Green Soap Tooth Wash

Green soap	50 grammes.
Glycerin	100 mils.
Alcohol	500 mils.
Distilled water, to make	1,000 mils.
Flour	enough.
Solution of carmine	to color.

Caldwell's Tooth Wash

Tincture of green soap	2 ounces.
Glycerin	2 ounces.
Water	6 ounces.
Alcohol	6 ounces.
Oil of peppermint	15 minims.
Oil of wintergreen (synthetic)	15 minims.
Oil of cloves	3 minims.
Oil of cassia	3 minims.
Compound tincture of cochineal	to color.

Mix the alcohol and the water; add the glycerin and the tincture of green soap; then add the oils, previously mixed; and lastly color with the compound tincture of cochineal. Let the mixture stand twenty-four hours, and then filter.

Caldwell emphasizes two points (1) that the green soap used must be soft, almost neutral, made from cottonseed oil, and entirely free from odor, such a soap being on the market; and (2) that the compound tincture of cochineal must be made according to the following formula, and added last:—

Compound Tincture of Cochineal.

Cochineal, bruised	125 grammes.
Potassium carbonate	20 grammes.
Diluted alcohol, to make	500 mils.

Macerate until exhausted, and filter.

Liquid Dentifrice Containing Salol

Salol	½ ounce.
Alcohol	28 ounces.
Oil of peppermint	1½ drams.
Oil of wintergreen	10 minims.
Oil of cloves	20 minims.
Oil of cinnamon	25 minims.
Saccharin (soluble)	½ dram.
Distilled water	12 ounces.

A salol preparation needs careful adjustment. The proportion of saccharin is a delicate item; this dentifrice should not suffer from oversweetness. A sweet dentifrice is sickly; 15 grammes to the pint of 60 per cent. spirit makes a preparation sweet enough for the general taste. It should be colored with magenta solution.

Hydrogen Dioxide Mouth Wash

Solution of hydrogen dioxide is so unstable a preparation that we doubt the feasibility—or the advisability, at any rate—of combining it with the organic materials usually found in tooth washes, for bottling as a stock preparation. Liberation of gas would eventually be apt to end in an explosion. Two formulas for such preparations follow:—

I.

Alcohol	75 mils.
Menthol	1 gramme.
Thymol	1 gramme.
Solution of hydrogen dioxide	180 mils.
Tincture of krameria	5 mils.

II.

Prinz (Interstate Med. Journ.) says that it is impossible completely to sterilize the buccal cavity, and also inadvisable. To produce a mild antiseptic effect safely and pleasantly he suggests the use of the following:—

Resorcinol	1 dram.
Zinc chloride	10 grains.
Menthol	20 grains.
Thymol	15 grains.
Oil of wintergreen	15 minims.
Alcohol	2 ounces.
Solution of hydrogen dioxide	3 ounces.
Water, to make	8 ounces.

One teaspoonful of this liquid is diluted with half a tumblerful of water and used in the customary manner.

Eucalymol Mouth Wash

Thymol	1 gramme.
Benzoic acid	12 grammes.
Oil of peppermint	2 mils.
Oil of gaultheria	1 mil.
Tincture of eucalyptus	60 mils.
Alcohol	400 mils.
Distilled water, to make	500 mils.

Ox-Para

An appeal for information concerning the above named dental preparation brought a response from Harry B. Palmer, of New York, who states that he furnishes the dentists of his neighborhood with the preparation made by the following recipe:—

Beechwood creosote	½ ounce.
Solution of formaldehyde	½ ounce.
Alcohol	enough.

Mix the creosote and solution of formaldehyde, shake and add just enough alcohol—one drop at a time until a clear solution results. Usually five drops are sufficient.

B. D. Cooley gives us the following information on the subject:

You ask for help on oxpara. The following is supposed to be a preparation of similar character:

Oxpara Powder

Tannic acid	5 grains.
Thymol	3 grains.
Alum	5 grains.
Zinc oxide	2 drams.

Mix well by trituration.

Oxpara Liquid

Cresol.

Formaldehyde solution (40 per cent.) of each, equal parts.

Mix and add five drops of glycerin to the ounce.

Various Mouth Washes

Linckersdorff gives in the Pharmaceutische Zeitung a number of formulas for mouth washes which he has found in various publications, among them being the following.

Amykos.

According to the Parfumeur this well-known Swedish mouth wash consists of:

Boric acid	50 parts.
Tincture of cloves	25 parts.
Borax	5 parts.
Water	4,000 parts.

Quinosol Mouth Wash.

Quinosol	30 parts.
Glycerin	100 parts.
Rose water	900 parts.
Carmine	enough.

Thymol Mouth Wash.

Thymol	0.3 gramme.
Alcohol	160.0 grammes.
Rose geranium oil	15 drops.
Calamus oil	10 drops.
Glycerin	120.0 grammes.
Venetian soap	16.0 grammes.
Sassafras oil	15 drops.
Eucalyptus oil	6 drops.
Pine needle oil	40 drops.
Distilled water	700 grammes.

Pleasantly Flavored Mouth Wash.

Powdered angelica root	25 parts.
Powdered anise seed	30 parts.
Powdered cinnamon	6 parts.
Powdered nutmeg	3 parts.
Powdered cloves	10 parts.
Alcohol (90%)	1,000 parts.
Vanillin	1 part.
Peppermint oil	8 parts.
Tincture of cochineal	enough.

Salol Mouth Wash.

Salol	4 to 10 parts.
Spearmint oil	2 parts.
Oil of cloves	1 part.
Oil of cinnamon	1 part.
Oil of star anise	1 part.
Alcohol, to make	400 parts.

Lactic Acid Mouth Wash.

Lactic acid	40 parts.
Cochineal	1 part.
Oil of peppermint	30 parts.
Oil of cloves	3 parts.
Oil of cinnamon	6 parts.
Distilled water	400 parts.
Alcohol	1,600 parts.

Peroxide Mouth Wash.

Solution of hydrogen dioxide	2.50 grammes.
Peppermint oil	1 drop.
Ponceau R. R	0.01 gramme.

Odol

In the supplement to the Dutch Pharmacopœia the following is given as the formula of an equivalent of odol:

Salol	5.000 grammes.
Oil of peppermint.	1.000 gramme.
Oil of clove	0.040 gramme.
Oil of fennel	0.040 gramme.
Saccharin	0.004 gramme.
Alcohol	190.000 grammes.

It is said that odol contains no salol introduced as such, but that the aromatic constituents are partly in the form of salicylic esters. A little experimentation with salicylates of the aromatic hydrocarbons might well repay any prospective manufacturer of a dentifrice who could appreciate the value of an individualized preparation.

Zinc Chloride Mouth Washes

We do not know the composition of vernas lotion. We are informed, however, by a pharmacist who is also a dentist that it contains 1 per cent. of

zinc chloride and 10 per cent. of alcohol. He adds that lavoris is a mouth wash each liter of which contains approximately—

Zinc chloride	2.08 grammes.
Resorcinol	1.04 grammes.
Menthol	0.80 gramme.
Saccharin	0.40 gramme.
Solution of formaldehyde	0.40 gramme.
Oil of cinnamon (Ceylon)	1.60 grammes.
Oil of cloves	0.40 gramme.

For our own part we seriously object to the formaldehyde item, and should omit it if we were making this preparation.

Our pharmaceutico-dental friend further states that if he were going to use zinc chloride as a mouth wash he would prescribe some such mixture as the following:

Zinc chloride	1.000 gramme.
Alcohol	10.000 grammes.
Eucalyptol	1.125 gramme.
Oil of cinnamon	0.120 gramme.
Oil of peppermint	0.150 gramme.
Distilled water, to make	100.000 grammes.

One part to be used with three or four parts of water.

Mint-Leaf Mouth Wash

Fresh spearmint twigs	20 grammes.
Fresh vervain leaves	25 grammes.
Linden flowering twigs	20 grammes.
Star anise	15 grammes.
Glycyrrhizin	10 grammes.
Soluble saccharin	1 gramme.
Glycerin	20 grammes.
Citric acid	3 grammes.
Distilled spearmint water, to make	1000 mils.
Water-soluble chlorophyl	enough.

Mix all the ingredients but the coloring in a suitable covered vessel; heat gently and slowly bring to a boil; continue the boiling for half an hour; cool; filter; and add the coloring.

Peppermint Mouth Wash

Thymol	0.5 gramme.
Phenol	2.0 grammes.
Sodium borate	5.0 grammes.
Spirit of peppermint	15.0 mils.
Rose water	200.0 mils.
Distilled water	300.0 mils.

Rubifoam Type of Dentrifrice

Castile soap	270 grains.
Glycerin	4½ drams.
Simple syrup	2 ounces.
Water	14 ounces.
Alcohol	13 ounces.
Tincture of cardamom	2 drams.
Tincture of Canada snake root (1 in 16)	2 drams.
Oil of peppermint	25 minims.
Oil of wintergreen	25 minims.
Oil of cloves	6 drops.
Oil of cassia	6 drops.
Solution of carmine	to color.

Mix the soap, glycerin, syrup and water, stir well, add the alcohol, then the remainder of the ingredients, let the mixture stand a few days, and filter at a low temperature (to avoid a subsequent separation of the soap).

Myrrh Mouth Washes

Mouth washes containing myrrh are very popular in England.

Those that contain enough myrrh to be effective precipitate when mixed with water. Some suggestive formulas are given:

I.

Sodium bicarbonate	1½ drams.
Ammonium carbonate	6 grains.
Tincture of myrrh	1 dram.
Cologne water	3 drams.
Lavender water	1 dram.
Distilled water, to make	6 ounces.

We doubt whether the food and drug officials would permit such a preparation to be labeled "myrrh" mouth wash.

II.

A contributor who has had experience in English pharmacies in Paris, Rome and Cairo, furnishes the following recipe as the most satisfactory that he has tried:

Powdered myrrh	6 ounces.
Borax	2 ounces.
Alcohol	120 ounces.
Syrup	24 ounces.
Rose water	24 ounces.
Tincture of krameria	4 drams.

Macerate for 10 days and filter. Then add to the filtrate

Oil of neroli	30 minims.
Oil of lemon	30 minims.
Oil of rosemary	30 minims.

Sozodont Type of Tooth Wash

I.

White castile soap	½ ounce.
Oil of peppermint	5 drops.
Oil of wintergreen	12 drops.
Glycerin	½ ounce.
Water	1 ounce.
Alcohol	2 ounces.
Cochineal color N. F.	to color.

II.

Alcohol	1 ounce.
Soap	2 drams.
Oil of wintergreen	2 minims.
Red saunders	to color.
Water, to make	3 ounces.

III.

White soap	5 drams.
Glycerin	5 drams.
Water	2½ ounces.
Oil of peppermint	12 minims.
Oil of cinnamon	5 minims.
Oil of cloves	5 minims.
Oil of anise	10 minims.
Alcohol	5 ounces.

For Inflammation of the Gums

Boric acid	8 grammes.
Glycerin	10 mils.
Tincture of krameria.	15 mils.
Peppermint water	60 mils.
Distilled water	200 mils.

Use as a mouth wash three or four times a day.

Dental Soap

I.

Mix 500 grammes of glycerin, and 500 grammes of neutral olive-oil soap; beat in 10 mils of oil of spearmint, 2 mils of oil of star anise, 8 mils of methyl salicylate, and enough solution of carmine to produce a desirable tint.

II.

Cochin cocoanut oil	1,000 parts.
Soda lye, 28 B	500 parts.
Calcium carbonate	1,000 parts.
Light red, soluble	3 parts.
Peppermint oil	35 parts.
Anisol	3 parts.
Clove oil	4 parts.
Bergamot oil	5 parts.
Tincture of myrrh	15 parts.

Mix and make a soap.

III.

Precipitated chalk	160 grammes.
Carmine (dissolved in ammonia water)	4 grammes.
Powdered soap	100 grammes.
Peppermint oil	10 grammes.
Syrup	enough.
Glycerin	enough.
Alcohol	enough.

It is said that a soap made of oil of theobroma (100 parts and 50 per cent. solution of sodium hydroxide, 40 parts) has a bland taste and lathers profusely.

Proper Proportion of Soap in a Tooth Wash

Relative to the cause and prevention of precipitation in saponaceous tooth washes Paul Caldwell, writing in The Druggists Circular, said:

Personal experience has taught me that by placing the saponaceous tooth wash on ice and afterward filtering, any excess of soap is removed and no further precipitate occurs. It might be well to add that the formula upon which this statement is based directs 55 per cent. of alcohol, and in a 48-gallon lot it was found that 4 pounds of soap was all that was retained in solution.

The solubility of soap in diluted alcohol is diminished by the presence of an animal fat, pure olive oil soap being much more soluble than the so-called "white" soaps.

Breath Cachous.

I.

Powdered sugar	1 ounce.
Powdered vanilla chocolate	1 ounce.
Powdered willow charcoal	2 drams.
Tincture of cinnamon	24 minims.
Mucilage of acacia	enough.

II.

Oil of peppermint	4 drams.
Oil of cloves	75 minims.
Mastic	6 drams.
Cascarilla	6 drams.
Orris root	6 drams.
Acacia	1½ ounces.
Catechu	2¾ ounces.
Extract of licorice	20 ounces.
Water	enough.

Boil the solid drugs, which should be in powdered form, with the water, until a pasty mass is obtained, then add the liquids, and, when cooled to a proper consistency, cut or roll into the desired size or shape.

III.

Licorice extract	3 ounces.
Catechu	1 ounce.
Sugar	1 ounce.
Tragacanth	½ ounce.
Oil of cloves	1 dram.
Oil of cassia	30 minims.
Oil of nutmeg	10 drops.
Water	enough.

Sen-Sen Flavor.

I.

Calamus	2 or 3 ounces.
Saigon cinnamon	2 ounces.
Cardamom	⅛ or ¼ ounce.
Cloves	½ ounce.
Extract of licorice.	2 ounces.
Tincture of musk	15 minims.
Sugar	2 ounces.

II.

Extract of licorice	2 ounces.
Oil of cloves	1 dram.
Oil of cinnamon	10 drops.

Odontalgic Balsams.

These preparations are generally concentrated alcoholic or ethereal solutions of one or more resins. The following are typical formulas:

I.

Sandarac	12 parts.
Mastic	5 parts.
Amber	1 part.
Ether	15 parts.

II.

Mastic .....23 parts.
Absolute alcohol.....33 parts.
Tolu balsam..... 9 parts.

Dissolve the mastic in the alcohol; add the tolu and promote solution with the aid of a gentle heat, shaking occasionally.

For Breath Fetor.

I.

Potassium permanganate ..... 1.5 grammes.
Distilled water.....250.0 mils.

To be used as a rinse for the mouth two or three times a day.

II.

Potassium chlorate.. 2 grammes.
Sodium borate..... 1 gramme.
Glycerin ..... 8 mils.
Bitter almond water. 25 mils.
Wintergreen water, to make .....100 mils.

Use as directed above.

Wadsworth's Oral Antiseptic.

Sodium chloride.... 2.0 grammes.
Sodium bicarbonate 0.5 gramme.
Glycerin ..... 15 0 mils.
Oil of gaultheria... 0.1 mil.
Alcohol .....100.0 mils.
Distilled water, to make .....200.0 mils.

For use, dilute with an equal part of warm water.

Toothache Drops and Anti-Pain Liniment.

Spirit of camphor..... 4 drams.
Spirit of ammonia..... 2 drams.
Oil of sassafras..... 2 drams.
Oil of cloves..... 1 dram.
Chloroform ..... 2 drams.
Oil of turpentine..... 2 drams.
Alcohol, to make.....2½ ounces.

This may be applied either in the hollow of the tooth or, if the tooth has no hollow, then on the gums. Indeed, it is a good all-round liniment and counter-irritant and may be rubbed on the outside of the jaw with good effect.

Neverfail Toothache Oil.

Creosote ..... 5 drams.
Chloroform ..... 5 drams.
Oil of cloves..... 5 drams.
Oil of peppermint..... 5 drams.
Oil of camphor..... 6 drams.
Phenol ..... 6 drams.

Odontalgine.

Phenol ..... 4 drams.
Camphor ..... 1 ounce.
Chloroform ..... 2 ounces.
Oil of cajeput, to make.. 4 ounces.

Triturate the phenol with the camphor; add the chloroform, and then the oil of cajeput.

Camphor and Phenol Toothache Drops.

Camphor ..... 8 grammes.
Chloroform .....15 mils.
Oil of cloves.....15 mils.
Liquefied phenol..... 4 mils.
Compound tincture of benzoin .....30 mils.

Toothache Gum

I.

Menthol ..... 2 grammes.
Pyrethrum root, in finest powder..... 2 grammes.
Guaiac ..... 2 grammes.
Yellow wax (melted).. 4 grammes.
Oil of cloves.....10 drops.
Oil of cajeput.....10 drops.

Mix into pellets and dust with powdered cloves.

II.

Hard paraffin..... 1 dram.
Burgundy pitch..... 1 dram.
Oil of cloves.....20 minims.
Creosote .....20 minims.

Melt the first two ingredients together, and when they are nearly cold add the other two.

III.

Phenol ..... 4 ounces.
Menthol .....30 grains.
Thymol .....30 grains.
Collodion ..... enough.

Use a 1-dram vial; fill it about half full with the phenol, in which the menthol and the thymol have been dissolved; then add about ½ dram of collodion and shake. A nice jelly is the result.

Directions: Put a small quantity of the jelly in the cavity of the tooth and cover it with cotton; repeat in five minutes if not relieved. Be careful not to get it on the lips.

Toothache Wax

I.

Wax .....200.0 grammes.
Venice turpentine... 85.0 grammes.
Powdered mastic.... 32.5 grammes.
Powdered opium.... 1.2 grammes.
Hydrated chloral.... 1.0 gramme.

Melt the three together, then add the other ingredients and stir frequently while cooling.

II.

Oil of clove.....2 drams.
Phenol .....6 ounces.
Wax .....1 ounce.

Mix and liquefy by the aid of gentle heat and then introduce thin layers of

absorbent cotton. When sufficiently cool roll the cotton into the shape of rods and cut into appropriate sizes for introduction into the hollow of an aching tooth.

British Toothache Essence

Oil of cloves	2 drams.
Chloroform	3 drams.
Camphor	4 drams.
Phenol	4 drams.
Oil of turpentine	8 drams.
Alcohol	8 drams.

London Toothache Drops

Oil of cloves	½ ounce.
Phenol	3 ounces.
Cochineal color	½ ounce.
Glycerin	6 ounces.

Toothache Tincture

Phenol	1½ drams.
Capsicum	2 drams.
Pulverized opium	2 drams.
Oil of cloves	4 drams.
Choloroform	5 ounces.

Tooth Application

A remedy which it was said would "relieve any toothache which will succumb to medicines," given by a county physician is composed of: Creosote, chloroform, oil of cloves of each 10 parts; camphor, 7 parts; phenol, 3 parts.

Chloroform Toothache Drops

Chloroform	3 ounces.
Camphor	1 ounce.
Oil of cloves	3 drams.
Tincture of myrrh	4 drams.

Three Ols Toothache Drops

Phenol	2 grammes.
Menthol	2 grammes.
Eugenol	1 mil.

Three C's Toothache Drops

Chloral hydrate	5 grammes.
Camphor	5 grammes.
Oil of cloves	10 mils.

Toothache Paste

Mix phenol and sodium bicarbonate in the proper proportion to make a paste of the desired consistency.

Dental Mummifying Paste

I.

Zinc oxide	140 grains.
Thymol	30 grains.
Alum	10 grains.

Mix thoroughly.

II.

Creosote.
Glycerin.
Formadlehyde ..... equal parts.
Mix thoroughly.

For use make a paste by kneading together the required amount of the two mixtures.

H. H. Brinkman says that he has used this paste and knows it to be good; that only the best materials should be employed in making it, and that some skill is required to place the paste properly in the root canals. Presumably by "formaldehyde" he means the official solution.

Dental Enamel

Zinc oxide, 120 grains; nitric acid, enough. Moisten the oxide with the acid; evaporate to dryness; calcine, cool and powder. When required for use make into a stiff paste with phosphoric acid.

A transparent tooth-filling which has been patented in Germany is made as follows: An aluminum silicate having the composition $Al_2O_3SiO_2$ is prepared by adding a solution of water-glass and sodium hydroxide to a solution of an aluminum salt. On drying over sulphuric acid or on gently igniting the silicate is obtained nearly free from water. Mix 4 to 6 parts of the aluminum silicate thus obtained with 8 parts of a melted mixture of calcium oxide, 1; silica (SiO_2), 2; aluminum oxide, 1. When required for use the product is mixed with phosphoric acid (sp. gr. 1.50), containing about 150 grammes of aluminum oxide to the liter.

CHAPTER V.

FOR THE HAIR AND SCALP

Hair Tonics—Pomades—Brilliantines—Shampoos—Dyes.

Always consult the index when using this book.

As to Baldness and Concerning Hair Preparations

Those who have made a scientific study of the hair are very backward about recommending "tonics" or "invigorators" for the same, although fakers and quacks will guarantee their hair nostrums to work almost any wonder short of making a porcelain doorknob resemble the head of the Circassian beauty in the side show.

Lassar's Method.

Lassar, who is one of the men who had studied the subject of falling hair, has recommended a treatment for the scalp which is described in The Druggists Circular as follows:

Treatment and Prevention of Baldness.

At first the scalp is shampooed once daily; later, as the falling of the hair decreases, less frequently with soap and hot water, then irrigated with tepid and finally with cold water. Any good soap may be employed, but the author has found tar soap and liquid tar soap particularly serviceable. For blond women's hair he uses the following:

Potassium carbonate.....	15 grammes.
Sodium carbonate.....	15 grammes.
Powdered soap.....	70 grammes.
Rose water.....	100 grammes.

After drying the part with warm cloths or by fanning or electrical means, the roots of the hair are moistened with a 3 to 5 in 3,000 solution of corrosive sublimate colored red with cosin. The corrosive sublimate tablets on the market are convenient for preparing this solution, and a little glycerin and rose water may be added. To relieve any itching present, the addition of 0.2 per cent. of phenol is recommended. After the sublimate solution has evaporated, the hair is rubbed until again dry with the following:

Thymol	0.5 gramme.
Alcohol	200.0 grammes.

Or

Beta-naphthol	0.5 gramme.
Absolute alcohol.....	200.0 grammes.

Finally, the hair is slightly annointed with the following:

Salicylic acid.....	1 gramme.
Tincture of benzoin.....	2 grammes.
Olive oil (or petrolatum)...	50 grammes.
Oil of bergamot.....	15 drops.

In obstinate cases tar liniment may be applied with benefit as the first step of the procedure, and removed in ten minutes by the shampoo with soap. For the treatment of alopecia areata this is even recommended.

Finally, inunction at bedtime with a 10 per cent. ointment of turpentine oil in wool fat (having regard for any possible irritation of the scalp) or with a phenol and sulphur ointment of the following composition is also recommended.

Phenol	1 gramme.
Sublimed sulphur.....	10 grammes.
Balsam of Peru.....	2 grammes.
Oil of bergamot.....	15 drops.
Wool fat, to make.....	50 grammes.

In some cases there may be efficacy in this mode of procedure. As one of the fakers said to us some time ago when in conversation with him we expressed an opinion of the hair nostrums: "Well, anyhow, probably the rubbing and the cleaning and the general attention given to the hair, made necessary by the following of directions on the 'restorer' bottle, does good."

In a little book on the care of the skin and hair by Dr. Pusey, recently published, we read:

Of course, the hairs are as much a part of the skin as the nails or the horny layer itself. In their arrangement in the skin and in their form there is a resemblance to plants growing out of the ground, but the resemblance goes no further. The hairs are not independent living structures growing out of the skin like grass or wheat stalks out of the ground. They are rather like the leaves of a tree—a part of its structure, with no independent existence and dependent upon the trunk for sustenance. As a matter of fact, hairs are hardly living structures at all; above the papilla for a very short distance up the hair follicle the hair is a succulent, living structure—like the deeper layer of the surface epidermis—but for the rest of its length it is a dense bristle of insensitive horn. For all of its length above the surface of the skin and for seven-eighths of it in the follicle the hair is without life. There is no circulation of vital fluid through it, like sap in a plant; it does not "breathe" like a plant. It is, in short, a finished structure made by the underlying tissues for a mechanical purpose and not further participating in vital activity. This would seem to be self-evident upon a moment's consideration, and yet most of the popular conception of the hair and all of the nostrum vendor's hair remedies are based upon the theory that the hairs are living structures growing out of the scalp like plants out of a bed, to be sprinkled and fertilized and fed like plants. The hairs are not nourished that way. They get their sustenance, like every structure of the body, from the blood. They are very sensitive to alterations in this supply, so that we see the condition of the hair influenced by many disorders of the general health. Of course the hair is also influenced greatly by local disorders, just as the skin in general is. * * *

Shampooing often enough to keep the scalp clean is the best measure the individual himself can carry out to prevent or overcome dandruff. If there is a tendency to dandruff, shampooing once a week, or even at shorter intervals, is not too often, provided care is taken to dry the hair thoroughly. This shampoo is best taken with tar or sulphur soap.

Corrosive sublimate soap is also useful in these cases, and it is not dangerous to use on the unbroken scalp. As a further measure of cleanliness and as an antiseptic, the frequent application of alcohol to the scalp is very useful in combating dandruff. It dissolves some of the oil from the hair and scalp, and if it causes the hair to become too dry, this can be overcome by adding from one to five or six teaspoonfuls of castor oil, according to the indications of the case, to each pint of alcohol. For men, simply wetting the scalp with alcohol is sufficient; in the case of the long hair of women, it is better applied by parting the hair in various places and rubbing on the alhocol with a small sponge. Another useful application is sixty grains of sulphur to an ounce of petrolatum, to be rubbed into the scalp at intervals of a few days.

Aside from avoiding sources of infection, these are the most efficient measures that the individual can use for himself. For aid beyond such measures as these, the attention of a physician is needed, for the cases require individual attention, and even with this the successful treatment is difficult. * * *

Mistreatment of the hair is also an important factor in the production of baldness. Daily wetting of the hair, especially if no attention is given to drying it, keeping it poor in oil by excessive use of soap and water without supplying any fat in place of that removed, failure to keep it clean, excessive exposure to sunlight, the indiscriminate use of drugs, particularly "hair tonics," and overzealous treatment by barbers and hair dressers—all of these causes are influential in the production of baldness and are to be guarded against, particularly in the care of the hair of those who have already a predisposition to the condition. . . .

The promiscous application of "hair tonics" and other nostrums is regarded by some authorities as an important cause of baldness. In my experience I have not been particularly impressed by that fact, although I believe that these haphazard applications, without any regard to the indications of the individual case, are at least valueless. The same is true of the numerous activities of the barbers and hairdressers, when their efforts go beyond the use of measures directed merely to cleansing the hair and scalp. Their singeing the hairs, their various methods of massage, "hair tonics" and "hair restorers" and "scalp treatments" applied indiscriminately without intelligent appreciation of the indications to be met, may be harmful; they are at best useless forms of diversion. There is no objection, however, to a good shampoo by a careful and clean barber or hairdresser. Having it done for one is a form of luxury.

Treatment of Baldness

Dr. Leon-James, Methven, New Zealand, after trying almost every remedy for baldness in print, says the Lancet-Clinic, was successful in three cases by using an ointment rubbed well into the patches night and morning. The ointment had the formula which follows:

Chrysarobin	1 part.
Hazeline cream	4 parts.

Mix and heat to 300 degrees until dissolved, and stir until cold.

Weaker ointments were not successful.

Hazeline cream is a rather indefinite name. We imagine any suitable ointment base would be equally efficacious in this connection.

It is suggested in the New York Medical Journal that crayons of chrysarobin may be applied advantageously in pencil form. The directions are to rub the bald spots with pencils made of—

Chrysarobin	16 parts.
Rosin	3 parts.
Beeswax	16 parts.
Olive oil	16 parts.

Lactic Acid for Baldness.

Lactic acid is said by the Prescriber to have a specific action in alopecia areata. The following mixture has been used, according to the authority cited, in a number of cases with complete success:

Lactic acid	2 drams.
Castor oil	2 drams.
Alcohol, to make	4 ounces.

To be painted on the patches night and morning.

Value of a Hair Tonic

The only satisfactory way to ascertain the efficacy of any therapeutic agent is by repeated experiments. These are usually conducted first on the lower animals and then on man. In the case of a "hair tonic" we think experiments on the lower animals would be of little use. Sometimes, when the effects of the several ingredients of a preparation for the hair are known, the results of the application of the preparation as a whole may be deduced. Maybe the writer is prejudiced against hair tonics. He has an idea that most of them are fakes, which pharmacists would do well to leave to street venders and barbers. Those which may seem to be the most efficacious at first may in the long run prove to be worse than useless, for there is always danger that over-stimulation of the hair follicles may result in the ultimate defeat of the very purpose for which the stimulating treatment was instituted.

We have a rather well defined idea that the most powerful ingredient in all so-called hair growers is printers' ink publicity. Our reason for so thinking is the fact that when this ingredient is withdrawn, the sales fall off at once and in time cease altogether, whereas, if the preparations actually did what is claimed for them, they would sell on the recommendations of those who use them if never advertised at all. Think it over.

Crude Oil Hair Tonic

Crude oil is generally applied as a hair tonic in its natural form, although the characteristic odor of the oil is sometimes more or less effectually masked with aromatics. A bonafide crude oil hair "tonic" would be a "shake" mixture and a far from "elegant" one. To offset the untoward psychological effect of the appearance of the mixture it should be marketed

in opal-glass containers or in bottles completely covered with a paper wrapper. A working formula follows:

Crude petroleum	150 mils.
Alcohol	450 mils.
Oil of bay leaves	5 mils.
Oil of pimento	5 mils.
Oil of lavender	5 mils.
Oil of cloves	2 mils.
Water, to make	1,000 mils.

Shake the crude oil with the aromatic oils and 300 mils of alcohol. Add the rest of the alcohol mixed with 300 mils of water; shake well for ten minutes and add enough water to make 1,000 mils.

For making hair oils, crude oil from the Texas fields is preferable because of its greater sulphur content.

Quinine Hair Tonics

I.

Quinine hydrochloride	1 dram.
Tannic acid	2½ drams.
Tincture of cantharides	1½ ounces.
Glycerin	1½ ounces.
Eau de cologne	10 drams.
Vanillin	1½ grains.
Ground red saunders	7½ grains.
Alcohol, to make	2 pints.

Mix the several ingredients, and filter after they have stood for five days.

II.

Quinine hydrochloride	0.100 gramme.
Diluted sulphuric acid	0.625 mil.
Chloroform	0.500 mil.
Alcohol	20.000 mils.
Glycerin	1.500 mils.
Cologne water	1.500 mils.
Spirit of pimenta	25.000 mils.
Tincture of cudbear	3.000 mils.
Rose water, to make	100.000 mils.

Dissolve the alkaloidal salt in 40 mils of rose water; add the acid and then the other ingredients.

III.

Quinine	40 grains.
Diluted hydrochloric acid	40 drops.
Antiseptic solution	2 ounces.
Water, to make	3 ounces.

The term "hair tonic" is viewed with suspicion by those in charge of enforcement of the food and drug laws. It will be much better to label the so-called tonics as "hair dressings."

IV.

Quinine sulphate	2 parts.
Tincture of krameria	4 parts.
Tincture of cantharides	2 parts.
Spirit of lavender	10 parts.
Glycerin	15 parts.
Alcohol	100 parts.

Sulphur and Sage Hair Wash

Both sulphur and sage enjoy a wide popularity as hair tonics; just to what extent this popularity is due to actual achievement is problematical. Sulphur is not applied directly to the hair—except in some cases in the shape of a pomade—but is shaken up with water and allowed to stand and settle, when the water is used as a hair wash. Sage is applied in the form of a hydro-alcoholic tincture. There seems to be no reason why the two remedies should not be combined into one. Possibly they tend to keep the hair dark when it is dark, or to restore its natural color when it has turned white, but we have doubts as to this.

Sage Hair Tonic

Fluidextract of sage	8 ounces.
Tincture of green soap	7 ounces.
Tincture of cantharides	1½ ounces.
Glycerin	4 ounces.
Menthol	2 ounces.
Bay rum	16 ounces.
Oil of bergamot	4 drams.
Oil of sweet orange	4 drams.
Alcohol	2 pints.
Water, to make	1 gallon.

Hair Dressing, Herpicide Style

Boric acid	4 ounces.
Resorcinol	320 grains.
Salicylic acid	2 ounces.
Glycerin	2 fl. ozs.
Alcohol	4 pints.
Tincture of saffron (20 per cent.)	192 minims.
Oil of bergamot	192 minims.
Oil of lemon	4 drams.
Water, to make	1 gallon.

Hair Restorer

It is claimed that a preparation made according to the formula below will "do the work":

Purified beef marrow	44.00 grammes.
Expressed oil of almonds	12.00 grammes.
Expressed oil of nutmegs	5.00 grammes.
Extract of cantharides	0.25 gramme.
Powdered camphor	0.15 gramme.
Balsam of tolu	0.30 gramme.
Balsam of peru	12.00 grammes.
Oil of rosemary	0.30 gramme.
Oil of cloves	0.15 gramme.
Alcohol	2.00 grammes.

Melt together on a water-bath the first three ingredients and strain the mixture into a mortar; triturate constantly, adding the extract of cantharides, the camphor and the balsam of

tolu all previously mixed with the alcohol; add then the balsam of peru and the volatile oils, and mix thoroughly by trituration.

Foaming Hair Tonic

It is easy to make the foam; the hard part is to find the hair tonic. We do not know of one which we can confidently and conscientiously recommend as harmless and effective, although water which has stood in contact with washed sulphur, we believe to be the former, and we have heard on what we regard as credible authority, that it is the latter—at least in some cases. Whether such a water would be rendered less effective by the addition of some saponaceous material to make a foam we are unable to say.

Tincture of green soap, diluted with (say an equal volume of) water makes a good foaming hair wash, and the same may be said of some of many shampoos.

A Low-Priced Hair Tonic

Raby (Barb. Sup. Trade Journ.) says that by the following formula a cleansing, stimulating, germicidal, preparation at a moderate cost may be made:

Salicylic acid	2 ounces.
Tincture of cantharides	2 ounces.
Potassium carbonate	4 ounces.
Boric acid	2 ounces.
Glycerin	2 ounces.
Alcohol	4 pints.
Perfume	enough.
Water, to make	1 gallon.

Dissolve the salicylic acid in the alcohol; add the perfume and the tincture. Dissolve the boric acid and the carbonate in 2 pints of water; add the glycerin; mix with the alcoholic liquid; and add enough water to make the specified quantity. The preparation may be colored if desired.

Resorcinol and Chloral in a Hair Dressing

A druggist has a customer whose white hair became streaked with yellow after using the following mixture prescribed as a hair tonic:

Corrosive mercuric chloride	3 grains.
Resorcinol	4 drams.
Quinine sulphate	15 grains.
Chloral	2 drams.
Tincture of capsicum	2 drams.
Tincture of cantharides	4 drams.
Alcohol, to make	8 ounces.

We take it that the trouble is caused by the resorcinol. This substance is prone to oxidation with the formation of phenolic compounds having tinctorial properties; in fact, resorcinol is sometimes used as a hair dye. We were once told by the user of a quite similar preparation that when any other than a particular recrystallized resorcinol of the highest purity was used in compounding the "tonic" the hair and scalp of the user were stained a red-brown color by its application.

Coloring of Resorcinol Hair Dressing

A subscriber, having read in The Druggists Circular that another druggist wanted to know how to color a certain preparation containing resorcinol which he makes up and offers as a hair tonic, is kind enough to write:

I think that if he makes his hair tonic after formula given and does not add coloring matter, that, after standing a short time, it will turn to a dark-amber color on account of the resorcinol. We have noticed the above change and the color may be satisfactory.

Resorcinol Scalp Lotion Problem

A reader submits to us the following prescription for a hair dressing:

Resorcinol	1½ drams.
Salicylic acid	2 drams.
Alcohol (60%), to make	6 ounces.

He states that when the product made by the recipe is rubbed into the scalp, it leaves the hair stiff and "singy," and wishes to know how this undesirable effect can be avoided.

We know of several dermatologists who in writing similar prescriptions direct the use of 95 per cent. alcohol as the solvent and then order the addition of a small amount of castor oil, say from 2 drams to ½ ounce in a pint of finished preparation.

Bear Grease Pomade.

If the bear fat has been carefully rendered and is entirely free from extraneous animal matter, the making it into a pomade becomes a mere matter of so perfuming it as to mask the natural odor of the grease, and adding some substance to preserve it. The selection of a suitable perfume depends greatly upon the tastes of the future purchasers of the pomade. The oils of bergamot and lavender, which are very extensively used in perfuming hair oils and pomades, are good masks for the bear odor. Coumarin is another efficient contra-odorizer, as is also musk, which is quite popular with a certain class of pomade users. Here is a formula:

Bear's fat	1 pound.
Benzoic acid	20 grains.
Tincture of benzoin	2 ounces.
Oil of bergamot	enough.
Oil of rosemary	enough.

Dissolve the acid in the tincture and incorporate the solution and the per-

fumes with the fat by trituration.

A more delicate perfume might be imparted to the pomade by the use of a mixture of handkerchief extracts and 50 per cent. more benzoic acid. The following will give an odor resembling that of the pomade a graisse d'ours of the Paris shops:

Extract of jasmine	½ ounce.
Extract of rose	½ ounce.
Extract of tuberose	½ ounce.
Oil of orange flowers	15 minims.
Oil of cassia	15 minims.
Oil of bergamot	60 minims.
Oil of nutmeg	15 minims.
Oil of cloves	30 minims.

Mix keep for ten days at a temperature of about 32 deg. F. and filter while still very cool.

Resorcinol Hair Dressings

In "How to Care for the Hair at All Times," the author, Juliet M. Lee, gives the following formula as one that "may be safely used by persons having light or dark hair, any condition of scalp," and "may be freely used without injurious effect":

Resorcinol	1 dram.
Chlorate hydrate	3 drams.
Chloroform	6 drams.
Eau de cologne	6 ounces.
Rectified spirit	5 ounces.

The following, which has appeared frequently in a number of medical journals, is credited to a "prominent dermatologist" of this city:

Resorcinol	4 grammes.
Betanaphthol	2 grammes.
Chloral	8 grammes.
Tincture of cantharides	6 mils.
Tincture of capsicum	4 mils.
Castor oil	2 to 8 mils.
Cologne water	120 mils.
Bay rum, to make	500 mils.

Coloring Hair Oil Red

Alkannin, the coloring matter of alkanet root, is soluble in oils, and it is customary in preparing a red tinted hair oil to macerate in the perfumed oil, enough of the ground root to give the tint desired—say about 1 ounce to the gallon. The root may also be made into an alcoholic tincture and then added.

Some manufacturers qualify the red of the alkanet with a small amount of yellow, adding either tincture of curcuma or a trace of the certified color "85 orange I."

Brilliantine.

I.

Suet	100.0 grammes.
Spermaceti	50.0 grammes.
Castor oil	50.0 mils.
Oil of bitter almond.	1.5 mils.
Oil of clove	3.0 mils.
Oil of bergamot	6.0 mils.

II.

Olive oil	100.0 mils.
Spermaceti	30.0 grammes.
Oil of bergamot	2.5 mils.
Oil of cloves	3.0 mils.
Oil of rose geranium	1.0 mil.

III.

Castor oil, best	1000 grammes.
Alcohol	1000 mils.
Oil of ylang-ylang	5 grammes.
Linalol	10 grammes.
Terpineol	5 grammes.
Tincture of benzoin	35 grammes.

IV.

Castor oil	20 grammes.
Medicinal soap	2 grammes.
Sumatra benzoin	10 grammes.
Alcohol	180 grammes.
Oil of rose	1 drop.
Oil of bergamot	5 drops.

Mix, let stand and filter.

Perfumed Hair Oil

Castor oil	12 ounces.
Alcohol	52 ounces.
Oil of lemon	½ ounce.
Oil of lavender	1 dram.
Oil of bergamot	2 drams.
Oil of cinnamon	10 drops.
Oil of cloves	10 drops.
Oil of citronella	10 drops.
Tincture of turmeric	1 dram.

Bandoline

The following formula is said to represent the mustache fixative used by one of the most famous Parisian hair dressers:

Extract of malt	25 grammes.
Alcohol	45 mils.
Rose water	400 mils.

Crystal Brilliantine

Palmitin	500 grammes.
Russian paraffin oil	3000 grammes.
Saturated alcoholic solution of sodium hydroxide	enough.
Vanillin	7 grammes.
Coumarin	7 grammes.
Artificial musk	3 grammes.
Oil of sweet orange.	25 mils.
Oil of neroli	1 mil.
Benzyl acetate	3 mils.
Benzylic alcohol	3 mils.
Fat-soluble chlorophyl	enough.

Dissolve 400 grammes of the palmitin in 1,000 grammes of the oil with the aid of heat; saponify with the solution of sodium hydroxide until the batch is alkaline to phenolphthalein. Dissolve this soap in a solution of the

rest of the palmitin in the remaining 2,000 grammes of oil, using a temperature of 110 deg. C. As the mass begins to cool stir in the color and the perfumes previously mixed, and pour into suitable containers.

Ordinary Pomade

Castor oil	16 ounces.
Petrolatum	4 ounces.
Yellow wax	4 ounces.
Rosin	1 ounce.
Benzoic acid	20 grains.
Oil of lemon	2 drams.
Oil of bergamot	1 dram.

Melt the rosin and yellow wax, add the petrolatum and strain into a vessel containing the castor oil, benzoic acid and perfume. Stir until it is cold.

Anti-Kink Hair Pomade

Castor oil	16 ounces.
Petrolatum	4 ounces.
Yellow wax	4 ounces.
Rosin	1 ounce.
Benzoic acid	20 grains.
Oil of lemon	2 drams.
Oil of bergamot	1 dram.

Melt the rosin and yellow wax together, add the petrolatum and strain into a vessel containing the castor oil, benzoic acid and perfume. Stir until it is cold.

We offer this formula for what it is worth without any endorsement of it. We believe that before the mislabeling law went into effect such preparations as this were called some kind of fancy ox marrow.

In the issue of The Druggists' Circular succeeding the one in which the foregoing note was given, appears the following letter from a reader:

It took me back to the days of my childhood, when ox marrow hair dressing was dutifully applied every Saturday, and I imagine even now I scent the lingering "stink" of bergamot. I can't bear bergamot. I ran over to mother and asked her how it was made, and here you are:

Take any quantity of marrow (fresh) and wash it thoroughly in cold water. Then place it in clean water and boil, thus rendering the marrow. Then let it stand to cool, and when cool, skim off the supernatant marrow and mix it with an equal quantity of pure, fresh lard. Scent to suit.

Thus you see "ox marrow hair dressing" would not be a misnomer, even under our pure food and drugs law, or mislabeling laws.

Pomades for Stiffening Hair.

I.

White wax	1½ ounces.
Beef tallow	3 ounces.
Oil of bergamot	1 dram.
Oil of cassia	10 minims.
Oil of thyme	5 minims.

II.

Powdered tragacanth	1 ounce.
Alcohol	2 ounces.
Oil of neroli	10 minims.
Oil of rose	10 minims.
Warm water	24 ounces.

Put the tragacanth into a bottle of suitable size and mix with the alcohol in which the oils have been dissolved. Then add the warm water and agitate until a homogeneous mucilage is formed.

III.

Lard	1,000 parts.
White wax	500 parts.
Oil of bergamot	65 parts.
Oil of cassia	3 parts.

IV.

Castor oil	15 ounces.
Spermaceti	5 ounces.
Oil of bergamot	2 drams.
Oil of palmarosa	1 dram.
Oil of rose geranium	½ dram.

V.

Powdered acacia	250 grammes.
White beeswax	250 grammes.
Yellow beeswax	250 grammes.
White castile soap	250 grammes.
Glycerin	125 mils.
Oil of bergamot	50 mils.
Oil of lavender	10 mils.
Oil of rose geranium	20 mils.
Water	1000 mils.

Petrolatum Pomade.

Petrolatum	700 grammes.
Paraffin	300 grammes.
Oil of bergamot	6 grammes.
Oil of linaloe	1 gramme.
Oil of neroli	4 grammes.

Transparent Shampoo Jelly.

To produce a transparent soft soap that will be suitable for use as a shampoo is more a matter of experiment and experience than one of formula. The best basis is a mixture of lard, mutton tallow, and cocoanut oil; potassium hydroxide is the proper saponifying agent. The fats may be mixed in almost any proportion, or any one or two of them may be used. Perhaps the most satisfactory results will follow the use of a mixture of lard, 3 parts; cocoanut oil, 3 parts; and tallow, 1 part. The proportion of potassium hydroxide necessary to saponify this mixture will vary with different lots of fats because of variations in the acidity of the latter. The amount of potassium hydroxide will, therefore, have to be determined experimentally for each batch of soap. It will average about 260 grammes of 85 per cent. KOH for 1,000 grammes of the mixed fats.

Here is a basal formula:

Lard	1500 grammes.
Cocoanut oil	1500 grammes.
Mutton tallow	500 grammes.

Potassium hydroxide, 85 per cent	900	grammes.
Alcohol	300	mils.
Oil of lavender	30	mils.
Oil of clove	20	mils.
Oil of orris (soap makers')	5	mils.
Water		enough.

Melt the fats in a suitable vessel on a sand-bath, or in a steam-jacketed kettle. Dissolve the hydroxide in 5,000 mils of water, and pour the solution into the melted fats. Let the mixture boil gently, scraping down the sides of the vessel occasionally, until it begins to "splutter"; keeping the vessel warm, stir the mixture with a paddle for fifteen minutes. Then stir in about 1,500 mils of water and let the mixture boil as before, scraping down the sides of the vessel and stirring the mixture occasionally. When it has again reached the "spluttering" point, stir it for about ten minutes. Drop a small piece of the mass in warm water. If it dissolves clear, saponification is complete; if not, test the mass with phenolphthalein, and continue the cooking, adding more water and alkali if necessary. Remove the vessel from the fire, or cut off the steam if a jacketed vessel is used; add the alcohol, in which the perfuming oils had been dissolved, and stir rapidly until a homogeneous mixture is secured.

Shampoo Jelly.

Soft soap	1	pound.
Potassium carbonate	¼	pound.
Glycerin	½	pound.
Water		enough.

Dissolve the soap in a minimal quantity of water with the aid of a gentle heat. Add the potassium carbonate, and, when the mass is almost cold, incorporate the glycerin and such perfume as may be desired. More water may be added if the jelly is too stiff.

Shampoo Powder.

Salt of tartar	1	ounce.
Powdered borax	1	ounce.
Powdered castile soap	¼	ounce.
Oil of rose geranium	10	drops.

Put up in wide-mouth bottle, cap, and label with directions: Dissolve the contents of the bottle in 1 quart of soft water, and use as a shampoo.

Tar Shampoo

An efficient liquid tar shampoo may be made by dissolving a desired proportion of tar in tincture of green soap.

Two somewhat more complicated formulas follow:

I.

Tar	4	grammes.
Linseed oil	40	grammes.
Potassium hydroxide	10	grammes.
Alcohol	5	grammes.
Oil of rosemary	2	grammes.
Water		enough.

Mix the tar with the linseed oil, and heat on a water bath to 140 degrees F. Dissolve the potassium hydroxide in the alcohol and 45 grammes of water; add the solution to the heated oil with constant stirring. Continue the heat until saponification is complete, and make up to 128 grammes with water. Stir gently until cool and add the oil of rosemary.

II.

Cocoanut oil	20	grammes.
Tar	3	grammes.
Potash lye (40 deg. B.)	25	grammes.

Melt together the oil and the tar and saponify at a gentle heat with the potash lye.

Egg Shampoos

The egg in so-called egg shampoos is usually present in the name only, although there are formulas for shampoos in which the use of real eggs is directed. Two follow:

Ammonia water	4	drams.
Cologne water	5	drams.
Alcohol	8	ounces.
Water	8	ounces.
Whites of	2	eggs.

Beat the egg whites well and add them to the water and ammonia water previously mixed; then add the other ingredients.

II.

Egg yolk	2	ounces.
Strong infusion of quillaja	1	ounce.
Salicylic acid	5	grains.
Camphor	10	grains.
Borax	30	grains.
Cologne water	3	ounces.
Water, to make	20	ounces.

Make a smooth mixture of the egg yolk and 2 ounces of chloroform water; add the infusion of quillija and then the cologne water in which the salicylic acid and the camphor have been dissolved. Add the borax and the required amount of water; mix well; and strain through muslin.

Dry Shampoos

As there are different types of so-called dry shampoos, we give below several formulas for shampoos which may be spoken of as "dry":

I.

Orris root	6	ounces.
Fuller's earth	7	ounces.
Arrowroot starch	½	ounce.
Oil of lavender	1	dram.
Alcohol	1	ounce.

Reduce the solids to a fine powder; mix this well and spread it out to a thickness of about two inches. On this, spray the oil dissolved in the alcohol, and, after several hours, pass the powder through a moderately fine sieve.

II.

Mix equal parts of ammonium carbonate, borax, and soap, in fine dry powder, and perfume with oil of orris.

III.

One pound each of borax and powdered soap with about 4 ounces of sodium carbonate, perfumed with a mixture of 2 parts of coumarin and 1 part of heliotropin, makes a dry shampoo which is highly recommended.

IV.

Eau de cologne	500 mils.
Spirit of soap	2,500 mils.
Acetic ether	25 mils.
Terpineol	5 mils.
Oil of bergamot	10 mils.
Glycerin	500 mils.
Ammonia water	10 mils.
Alcohol	1,000 mils.
Distilled water, to make	10 liters.

V.

Borax	20 grammes.
Potassium carbonate	10 grammes.
Ammonia water	10 mils.
Water	500 mils.
Oil of bergamot	2 mils.
Oil of geranium	1 mil.
Alcohol, to make	1,000 mils.

Liquid Shampoos.

I.

Ammonium sulphoricinate	200.0 grammes.
Oil of orange, terpeneless	0.5 gramme.
Orange flower water, to make	1000.0 mils.

II.

Cottonseed oil	1000 mils.
Sodium hydroxide	80 grammes.
Potassium hydroxide	80 grammes.
Alcohol	500 mils.
Potassium carbonate	30 grammes.
Terpineol	20 mils.
Water	2500 mils.

Dissolve the hydroxides in a mixture of the alcohol and 500 mils of water. Add the cottonseed oil little by little with vigorous shaking, and set the mixture aside until saponification is complete. Add the rest of the water containing the carbonate, and finally the terpineol.

III.

Powdered castile soap	1 ounce.
Potassium carbonate	½ ounce.
Water	8 ounces.
Oil of bay	5 minims.
Alcohol, to make	1 pint.

Elsewhere in this book are several formulas for liquid soaps, which may be used as liquid shampoos.

Perfume for a Dry Shampoo.

One can best judge of a suitable perfume for a dry shampoo by observing the tastes of his customers as indicated in their selection of handkerchief extracts, soaps, talcum powders, etc. Similarly he may arrive at the degree of odorousness that will appeal to prospective purchasers.

Despite the influx of the thousand and one "bouquets" and "blends," rose and violet continue as favorites among the scents, and their use for perfuming any toilet preparation is never ill-advised. For a rose odor, the oil alone is necessary. Some prefer the odor of a blend of oil of rose 25 parts and oil of wintergreen 1 part.

A pleasing violet may be made as follows:

Extract of cassie	1 ounce.
Extract of jasmine	½ ounce.
Solution of ionone (10 per cent.)	¼ ounce.
Oil of orris	1 dram.

Among a certain portion of the human family a perfume something like the following will find favor:

Oil of lavender (aged)	1 ounce.
Oil of cloves	6 drams.
Tincture of musk	2 drams.

Lotion Vegetale au Seringa.

Tincture of vanilla	200 grammes.
Tincture of cantharides	20 grammes.
Terpineol	10 grammes.
Oil of rose geranium	1 gramme.
Oil of ylang-ylang	1 gramme.
Heliotropin	2 grammes.
Alcohol	2000 mils.
Water	80 mils.

Bay Rum.

Here is my formula for bay rum. It is particularly refreshing and approaches nearer to the imported varieties than do most of the domestic products:

Oil of bay	10.0 mils.
Oil of cloves	2.0 mils.
Oil of lemon	1.0 mil.
Menthol	1.5 grammes.
Tincture of capsicum	8.0 mils.
Acetic acid	20.0 mils.
Alcohol	800.0 mils.
Water	1200.0 mils.
Purified talc	50.0 grammes.
Tincture of curcuma	enough.
Caramel color	enough.

Dissolve the oils and menthol in the alcohol, add the tincture of capsicum and acetic acid and incorporate the purified talc; then add the water in five or six portions, shaking after each addition. Filter. Add enough tincture of curcuma to make the filtrate a pale yellow, and then add a few drops of caramel color to give a brownish-yellow.—F. W. Scott, Jr.

Coloring Bay Rum.

In The Druggists Circular, F. O. Collins said that filtering bay rum through magnesium carbonate gave it a satisfactory color. In a later issues, John J. Davies took issue with Mr. Collins, averring that bay rum so filtered would throw down a flocculent precipitate, and if again filtered would repeat this behavior, and so on ad infinitum. Said he: "Of all things, magnesium carbonate is the least desirable for this purpose. I find talcum the most satisfactory filtering medium there is."

Next came George S. R. Wright who added this note to the discussion:

If Mr. John J. Davies will add powdered magnesium carbonate to his bay rum in the proportion of 1 ounce to 1 gallon, and allow it to stand ten days or two weeks before filtering, he will obtain a beautiful clear and slightly green bay rum, which will never need refiltering. I have made it so for over thirty years, and write, therefore, from ample experience.

And in his final reply Mr. Collins said:

I have much pleasure in sending you a sample of bay rum which has been once filtered through magnesium carbonate and has stood some weeks. You will thus see that I have not experienced the inconveniences referred to by Mr. John J. Davies, as connected with the use of that salt as a filtering medium.

The sample sent by Mr. Collins was as pretty and clear a specimen of bay rum as anyone would wish to see.

Lathering Bay Rum

Myrcia acris oil, 16; lemon oil, concrete oil of nutmeg; clove oil, sweet orange oil, of each, 1; essence of rum, 75; alcohol, 90 per cent., 2,650. Dissolve. Meanwhile, dissolve ammonium carbonate, 45 or 90, in cold water, 4,500. Mix the solutions, set aside for a week, then filter through asbestos.

Perfume for a Hair Dressing

Oil of bergamot	4 mils.
Oil of lemon	3 mils.
Oil of cedrat	7 drops.
Oil of clove	2 drops.
Oil of lavender	1 mil.
Oil of petit grain	2 drops.
Oil of rosemary	1 mil.
Oil of red thyme	1 mil.
Saturated solution of artificial musk	5mils.
Saturated solution of rhodinol	10 drops.
Cologne spirit	400 mils.
Orange flower water	30 mils.
Rose water	120 mils.
Distilled water, to make	1000 mils.

Hair-Curling Cream

White castile soap	70 grammes.
Acacia	70 grammes.
Japan wax	50 grammes.
Glycerin	30 grammes.
Tallow	150 grammes.
Oil of geranium	5 grammes.
Oil of bitter orange	7 grammes.
Oil of cloves	1 gramme.
Distilled water	300 grammes.

Heat one-half the water and in it dissolve the soap; dissolve the gum in the other half of the water; mix the two solutions, and place on a water-bath. Add the fats and the glycerin. When the fats have melted, remove the mixture from the heat and beat it until it acquires a homogeneous, creamy consistency. Then beat in the oils, and add a little salicylic acid if a preservative is desired.

One-Solution Black Hair Dye

Iron sulphate	2 drams.
Glycerin	1 ounce.
Cologne water	1 ounce.
Rose water	14 ounces.

A solution composed of these ingredients, will, according to the Standard Formulary, if applied to the hair twice daily, gradually darken it.

Dangerous Hair Dyes

There are formulas for hair dyes containing synthetic colors, including paraphenylenediamine; any of them may prove injurious to the scalp; the dye named is notably dangerous as it frequently produces serious eruption.

Silver Nitrate Hair Dye

Most recipes for silver nitrate hair dyes call for the admixture with the silver salts of some alkali, usually ammonia water alone or in combination with sodium hydroxide. The same may be said of many of the formulas for indelible ink. As has often been pointed out in The Druggists Circular, such mixture sometimes forms the highly-explosive silver nitride, with results which have been disastrous.

After all, the silver nitrate solution is the thing that dyes the hair, and this may be made by dissolving the salt in distilled water in the proportion of 1 dram to the ounce. The hair, of course, should be washed free of grease before the application of the dye.

Walnut Hair Dye

For a real hair dye, one containing neither lead nor silver salts, here is a formula:

Walnut hulls..... 8 parts.
Alum ..... 1 part.
Olive oil.....40 parts.

Digest these in a water-bath until all moisture has been expelled, then express and perfume.

Walnut Hair Dyes

Hair dyes which are said to be harmless may be prepared from walnut hulls, and the following processes described by Askinson in Perfumes and Cosmetics should furnish you with a means of extracting and using the dye.

Walnut Hair Dye

One of the oldest forms of hair dye or stain is the juice of green walnut shells, which, as everyone knows who has gathered walnuts, produces a rich dark-brown stain upon the skin. This stain is very difficult to remove from the skin, but is not so easily applied to the hair, as it is necessary to remove the oil from the hair by shampooing, and also to use alum or some similar ingredient with the walnut juice in order to fix the color. When these precautions are observed the stain is said to produce very satisfactory results.

Hair Dye from Walnut Shells

Green walnut shells..450 grammes.
Powdered alum..... 30 grammes.
Rose water .....120 grammes.

The ingredients are triturated together in a mortar, pressed, and treated with 90 per cent. alcohol in the proportion of 30 parts of alcohol to 100 of liquid. The mixture is then left for four days in a close vessel and finally filtered, and the liquid perfumed to suit.

Walnut Extract

If it is desired to make an extract from walnut shells for subsequent use, they are pounded with a pestle and then covered with water containing 1 per cent. of salt. After three days the whole is poured into a large pan, on which a mark is then made to show the height of the liquid, it being necessary to replace the water lost by evaporation. Heat to near boiling-point for four to six hours, allow it to cool, and press out the liquid. In the absence of a press this may be done with aid of a linen cloth, or preferably a sack of canvas, about 40 inches long and 20 inches wide, which is half filled with the mass from the pan held over an open vessel, tied up at the mouth, and twisted by means of a couple of sticks, two persons being required for the operation. The liquid thus obtained is returned to the pan, and is concentrated to one-fourth its initial volume, which is measured for that purpose, the best plan being to place a quantity of water equal to one-quarter of the liquid in the pan, marking the level, pouring out the water again, and then allowing the nut liquor to evaporate until the level of the mark is reached. The finished extract then receives an addition of 16 per cent. of 95 per cent. alcohol, and is either stored in tightly closed vessels for stock, or finished off, ready for use, by the addition of perfume as desired.

CHAPTER VI.

PERFUMES AND TOILET WATERS

Perfumes — Handkerchief Extracts — Fixatives — Cologne—Cologne Water—Florida Water—Sachets—Smelling Salts

Always Consult the Index When Using This Book

The Manufacture of Perfumery

Much more than a mere formula should be in the possession of one who essays to work at the manufacture of perfumery. A man who undertakes to go into the business of putting a line of perfumes on the market should study well one of the many books on the subject, preferably under an experienced teacher actually engaged in the work.

Perfume-Compounding

An anonymous article under the above heading in the Chemist and Druggist was reprinted in The Druggists Circular. The principal parts of it follow:

The sine qua non in manufacturing perfumes is to use a good spirit (U. S. P. alcohol). It should be borne in mind that the British pint is 20 British fluid ounces and that the British fluid ounce is about 96 per cent. of the American. To hasten the maturing of perfumes add 5 minims of solution of ammonia to 2 pints. The extracts required in the formulas are as follows:

Musk.—Pour on 2 drams of grain musk 18 drams of boiling water, and when cold add 34 ounces of spirit.

Civet.—Civet 1 dram, orris-root 1 dram and spirit 20 ounces.

Orris.—One dram of root to 1 ounce of spirit.

Storax.—Strained storax 9 drams spirit 20 ounces.

Tonquin.—Crushed tonquin beans 4 ounces, hot water 5 ounces; when cold add spirit 10 ounces.

Patchouli.—Oil of patchouli 1 dram, spirit 5 ounces.

Rose (Triple).—Otto of rose 3 drams, spirit 20 ounces.

Benzoin.—Powdered benzoin 1 ounce, spirit 10 ounces.

Vanilla. — Vanilla (cut small) 2 ounces, spirit 2 pints.

The following are my formulas for compounded perfumes:

Violette de Parme.

Essence of cassie.....15 ounces.
Essence of rose.....10 ounces.
Essence of tuberose.....10 ounces.
Essence of violet.....19 ounces.
Tincture of orris.....10 ounces.
Oil of bitter almonds.... 3 minims.

Wood Violet.

Oil of almonds.....20 minims.
Oil of English lavender.. 1 dram.
Oil of verbena.....30 minims.
Oil of coriander.....40 minims.
Oil of bergamot..... 3 drams.
Essence of musk..... 4 ounces.
Essence of jasmine..... 4 ounces.
Tincture of orange.....20 ounces.
Benzoic acid ..... 2 drams.
Spirit, to make..... 4 pints.

Carnation.

Essence of rose.....10 ounces.
Essense of orange-flower 5 ounces.
Essence of cassie..... 5 ounces.
Essence of vanilla..... 5 ounces.
Oil of cloves.....10 minims.

Jockey Club Bouquet.

Essence of jasmine.....2½ ounces.
Essence of musk..... 4 ounces.
Otto of rose..... 20 minims.
Oil of sandalwood..... 1 dram.
Essence of bergamot... ½ ounce.
Oil of neroli..... 20 minims.
Benzoic acid..... 1 dram.
Tincture of orris..... 10 ounces.
Spirit, to make..... 2 pints.

White Rose.

Essence of tuberose..... 2 ounces.
Oil of orange.....½ dram.
Essence of jasmine..... 1 ounce.
Otto of rose..... 1 dram.
Oil of patchouli..... 3 minims.
Tincture of orris..... 2 ounces.
Benzoic acid.....½ dram.
Rectified spirit, to make. 2 pints.

White Heliotrope.

Essence of vanilla.....5 ounces.
Essence of rose.....5 ounces.
Oil of bitter almonds.....5 minims.

Ylang-Ylang.

Oil of orange..... 1 dram.
Oil of neroli.....½ dram.
Essence of tonquin bean. 3 ounces.
Tincture of orris..... 8 ounces.
Essence of musk..... 2 ounces.
Essence of tuberose..... 2 ounces.
Essence of cassie..... 2 ounces.
Spirit, to make..... 2 pints.

White Lilac.

Essence of tuberose.....11 ounces.
Essence of orange-flower 6 ounces.
Essence of civet..... 4 drams.
Oil of bitter almonds.... 3 minims.

Essence Bouquet.

Otto of rose..... 1 dram.
Oil of neroli.....½ dram.
Oil of pimento.....20 minims.
Oil of red cedar wood..30 minims.
Oil of lavender..... 1 dram.
Oil of patchouli..... 5 minims.
Oil of bergamot.....½ ounce.
Essence of musk..... 4 ounces.
Spirit, to make..... 4 pints.

In the above formulas the essence of cassie, jasmine, violet, etc., means those obtained from pomades.

The next set of formulas provides for artificial and synthetic substances, and are not of so permanent a character as those just given, but they come at popular prices. Where better prices can be obtained I would recommend blending those made from floral bases with those from synthetic sources. I have thus made some delightful perfumes, and I consider the addition of natural scent essential.

A useful base for synthetic perfumes is the first.

Perfume Base.

Spirit .....20 ounces.
Rose water..... 5 ounces.
Solution of ammonia (0.880) ..... 5 minims.
Simple tincture of benzoin ..... 4 drams.
Tincture of orris (1 in 1) 2 ounces.

Lilac.

Synthetic lilac..... 5 drams.
Base .....22 ounces.
Essence of civet..... 4 drams.
Essence of vanilla.....½ dram.
Oil of bitter almonds... 2 minims.
Tint of pale mauve.

Carnation.

Synthetic dianthin..... 1 dram.
Base .....30 ounces.
Tint pale pink.

Syringa.

Synthetic syringa..... 4 drams.
Base .....25 ounces.

Jasmine.

Synthetic jasmine..... 1 dram.
Base .....30 ounces.
Tint pale green.

Heliotrope.

Heliotropin ..... 1 ounce.
Base .....30 ounces.
Essence of vanilla..... 2 drams.
Oil of bitter almonds... 8 minims.
Essence of musk..... 1 dram.
Tint a pale mauve.

White Rose.

For a cheaper perfume than that already given use equal parts of this and jasmine.

Violet de Parme.

I.

Violetton ..... 1 dram.
Synthetic jasmine.....20 minims.
Coumarin .....½ dram.
Base ..... 1 pint.
Ylang-ylang (as above) 5 ounces.
Color pale green.

II.

Violetton ..... 2 drams.
Oil of neroli.....10 minims.
Oil of bitter almonds...10 minims.
Synthetic jasmine.....20 minims.
Base ..... 1 pint.

III.

Violetton ..... 3 drams.
Essence of musk..... 2 drams.
Rose triple..... 3 drams.
Base .....30 ounces.

Handkerchief Extracts from Various Synthetic Oils.

Wood Violet.

Solution of ionone (1 in 30, in 60% alcohol).... 2 pints.
Solution of oil of orris (concrete) (1 in 60, in 60% alcohol)..... 2 pints.
Oil of bergamot..... 1 dram.
Solution of artificial musk (1%, in 60% alcohol).. 2 ounces.

Lily of the Valley.

I.

Oil of linaloe (synthetic) ..... 6 grammes.
Oil of neroli..... 2 grammes.
Oil of jasmine (synthetic) ..... 1 gramme.
Amyl butyrate.....20 drops.
Tincture of musk....30 drops.
Alcohol (90%), to make 1 liter.

II.

Oil of jasmine..... 80 mils.
Oil of linaloe..... 150 mils.
Oil of orris..... 10 mils.
Oil of ylang-ylang..... 15 mils.
Extract of cassie..... 500 mils.
Extract of violet..... 700 mils.
Extract of rose.....3,600 mils.
Alcohol, to make..... 10 liters.

Heliotrope.

Oil of ylang-ylang... 20 drops.
Geraniol ..... 10 drops.
Benzaldehyde ..... 2 drops.
Heliotropin .....2.30 grammes.
Vanillin .....0.40 gramme.
Coumarin .....0.25 gramme.
Tincture of musk...2.50 grammes.
Alcohol (90%), to make ..... 1 liter.

Lilac.

Geraniol ..... 10 drops.
Oil of palma-rosa.. 10 drops.
Oil of bergamot.... 20 drops.
Oil of jasmine (synthetic) ..... 20 drops.
Terpineol .....25.70 grammes.
Vanillin ..... 0.75 gramme.
Alcohol (90%), to make 1 liter.

Mignonette.

Geraniol ..... 2 grammes.
Oil of neroli..... 2 grammes.
Oil of jasmine (synthetic) ..... 2 grammes.
Balsam of tolu..... 2 grammes.
Oil of bitter orange...15 drops.
Alcohol (90%), to make 1 liter.

Muguet.

Oil of jasmine (synthetic) 1 dram.
Oil of ylang-ylang (synthetic) ..... 3 drams.
Solution of heliotropin (1% in 60% alcohol).. 8 ounces.
Solution of terpineol (1% in 60% alcohol).....20 ounces.

Ylang-Ylang.

Oil of ylang-ylang.. 10 grammes.
Oil of rose..... 2 drops.
Oil of neroli..... 8 drops.
Triple extract of jasmine .....600 grammes.
Tincture of tolu.....150 grammes.
Tincture of musk... 30 grammes.
Alcohol (90%).....350 grammes.

Eastern Bouquet.

Oil of cedar-wood..... 1 dram.
Oil of patchouli..... 1 dram.
Oil of sandalwood..... 1 dram.
Oil of verbena.....½ dram.
Oil of vetivert..... 1 dram.
Oil of rose.....½ dram.
Musk .....½ dram.
Civet .....½ dram.
Alcohol (60%)..... 3 pints.

Parisienne.

Oil of rose..... 6 mils.
Vanillin ..... 12 mils.
Oil of bergamot..... 24 mils.
Oil of lavender..... 24 mils.
Oil of cinnamon..... 4 mils.
Eugenol ..... 4 mils.
Solution of artificial musk (5%)..... 6,000 mils.
Alcohol, to make.....12,000 mils.

Wallflower.

Oil of rose geranium.. 8 minims.
Oil of linaloe..... 8 minims.
Oil of ylang-ylang.... 8 minims.
Oil of cloves..... 8 minims.
Oil of bitter almond... 8 minims.
Oil of neroli..... 8 minims.
Coumarin ..... 8 grains.
Tincture of musk..... 10 drams.
Tincture of orris..... 10 drams.
Jasmine extract.....5½ ounces.
Tuberose extract..... 4 ounces.
Tincture of vanilla....1½ ounces.
Alcohol (80%), to make 2 pints.

Cologne Water.

Linalol ..... 60 grammes.
Phenylacetic aldehyde 6 grammes.
Nonylic aldehyde... 3 grammes.
Indol ..... 1 gramme.
Phenylethyl alcohol 20 grammes.
Methylionone ..... 10 grammes.
Alcohol .....3,000 grammes.

Trefle Incarnat.

Oil of bergamot.. 200.0 mils.
Oil of rose, Turkish ..... 25.0 mils.
Oil of hyacinth... 10.0 mils.
Oil of neroli..... 2.5 mils.
Oil of ylang-ylang.. 5.0 mils.
Oil of white thyme. 2.5 mils.
Oil of vetivert.... 5.0 mils.
Amyl salicylate... 80.0 mils.
Artificial musk... 40.0 grammes.
Vanillin ..... 30.0 grammes.
Tincture of civet. 500.0 mils.
Rose water.....2,000.0 mils.
Alcohol ..... 17.0 liters.

New Mown Hay.

Coumarin ..... 3.0 grammes.
Vanillin ..... 2.0 grammes.
Heliotropin ..... 1.0 gramme.
Solution of ionone 1.0 mil.
Oil of rose..... 0.5 mil.
Oil of neroli..... 0.5 mil.
Oil of patchouli... 0.1 mil.
Terpineol ..... 0.5 mil.
Tincture of benzoin ..... 24.0 mils.
Essence of tuberose ..... 96.0 mils.
Essence of jasmine ..... 200.0 mils.
Alcohol (80%), to make .....1,000.0 mils.

Verbena.

Oil of neroli..... 20 mils.
Oil of lemongrass..... 120 mils.
Oil of citron..... 150 mils.
Oil of rose..... 20 mils.
Oil of geranium..... 40 mils.
Alcohol, to make.....6,500 mils.

Magnolia.

Extract of tuberose.....400.0 mils.
Extract of jonquil..... 50.0 mils.
Extract of orange flowers 50.0 mils.
Oil of rose (synthetic)... 1.0 mil.
Oil of neroli (synthetic). 0.5 mil.
Oil of jasmine (synthetic) 0.5 mil.
Methyl anthranilate..... 0.2 mil.

Corylopsis.

Oil of rose (synthetic).. 30 mils.
Oil of ylang-ylang..... 45 mils.
Oil of patchouli..... 5 mils.
Tincture of benzoin..... 75 mils.
Gerfaniol ..... 5 mils.
Oil of muguet (synthetic) 5 mils.
Cinnamic alcohol..... 5 mils.
Extract of jasmine.....1,000 mils.
Alcohol .....4,000 mils.

Sweet Hawthorn.

Anisic aldehyde..... 1 dram.
Oil of linaloe (synthetic) 3 drams.
Oil of jasmine (synthetic) ..... 1 dram.
Oil of neroli..... 1 dram.
Solution of artificial musk (1 per cent. in 60 per cent. alcohol)..... 20 ounces.
Alcohol (60 per cent.), to make .....160 ounces.

Of course, the ingredients and quantities named are only suggestions, and as for the diluent, greater or less quantities may be used, according as a strong and expensive or weak and low-priced article is wanted. Then, too, the ingredients themselves may vary in

quality when bought at different times or from different dealers. The operator is supposed to have some experience with and judgment concerning such matters, and not to depend entirely upon the recipe.

Some Synthetic Scents

The appended formulas are taken from "La Parfumerie Moderene." The odorous compounds are adapted to the perfuming of soaps or creams, or by dilution with cologne spirit or benzyl benzoate may be used as handkerchief extracts or toilet waters:—

Bouvardia.

Oil of orange flowers	6.00 grammes.
Synthetic jasmine	1.25 grammes.
Muguet	2.50 grammes.

Heliotrope.

Vanillin	3.75 grammes.
Terpeneless oil of bergamot	1.00 gramme.
Oil of bitter almond	0.10 gramme.
Rhodinol	0.15 gramme.

Fraise.

Tolu-ethyl acetate	3.0 grammes.
Oil of bergamot	1.0 gramme.
Synthetic ylang-ylang	0.2 gramme.
Artificial musk	0.2 gramme.

Iris.

Artificial violet	3.75 grammes.
Synthetic aubepine	1.00 gramme.
Rhodinol	0.25 gramme.

Reseda.

Linalol	60.0 grammes.
Benzyl acetate	10.0 grammes.
Phenyl-ethylic alcohol	20.0 grammes.
Duodecylic alcohol	0.5 gramme.
Artificial tuberose	1.0 gramme.
Artificial cassie	8.0 grammes.
Natural jasmine	0.5 gramme.
Tolu-ethyl alcohol	65.0 grammes.

Lily of the Valley Perfume

Extract of jasmine	7 ounces.
Extract of neroli	7 ounces.
Extract of cassie	14 ounces.
Extract of tuberose	28 ounces.
Alcohol	28 ounces.
Oil of bitter almond	150 minims.

Trailing Arbutus Perfume

In its origin the extract of trailing arbutus is French, its long-existing Gallic name being fleurs de Mai.

I.

Also of French origin is the following formula for it:

Extract of rose	1 ounce.
Extract of jasmine	1 ounce.
Extract of cassie	1 ounce.
Extract of orange flower	1 ounce.
Tincture of vanilla	2 ounces.
Spirit of almond, 1 per cent.	2 drams.

II.

Christiani some thirty-five or forty years ago gave the following formula:

Extract of cassie	1 pint.
Extract of rose	2 ounces.
Extract of jasmine	8 ounces.
Extract of orange flower	8 ounces.
Tincture of vanilla	4 ounces.
Tincture of ambrette	4 ounces.
Oil of geranium	2 drams.
Oil of neroli	1 dram.
Oil of bitter almond	½ dram.
Stronger rose water	8 ounces.

III.

Of recent formulas, not strictly of the synthetic variety, the following from the Standard Formulary is typical:

Extract of tuberose	2½ ounces.
Extract of orange flower	2½ ounces.
Extract of cassie	1½ ounces.
Extract of rose	2 ounces.
Extract of ylang-ylang	1 ounce.
Spirit of almond	1½ drams.
Tincture of vanilla	2½ ounces.
Tincture of musk	4 drams.
Tincture of benzoin	2 drams.
Solution of ionone, 10 per cent.	30 minims.
Heliotropin	10 grains.
Vanillin	6 grains.
Alcohol	3 ounces.

The nearest approach to the odor of arbutus that is possible with a "mixture of vegetable oils" is a blend of the oils of clove, lavender, rose, bitter almond and neroli. This is improved by the addition of a little heliotropin. The proper proportions are best arrived at by experimentation.

Sweet Pea Perfume

Extract of tuberose	1 pint.
Extract of orange flower	1 pint.
Rose spirit	1 pint.
Tincture of civet	6 pints.
Tincture of musk	8 ounces.
Tincture of vanilla	2 ounces.
Oil of orange flower	80 minims.

Jockey Club Perfume

Rose spirit	3 pints.
Extract of orange flower	2 pints.
Extract of jasmine	1 pint.
Tincture of musk	2 ounces.
Tincture of vanilla	2 ounces.
Oil of clove	30 minims.

Rose Spirit

The rose spirit called for in some of these formulas is a solution of 80 minims each of oil of rose and oil of rose geranium in 1 pint of alcohol.

New Mown Hay Perfume

Coumarin	3.0 grammes.
Vanillin	2.0 grammes.

Heliotropin	1.0 gramme.
Solution of ionone.	1.0 mil.
Oil of rose.....	0.5 mil.
Oil of neroli.....	0.5 mil.
Oil of patchouli....	0.1 mil.
Terpineol	0.5 mil.
Tincture of benzoin	24.0 mils.
Essence of tuberose	96.0 mils.
Essence of jasmine	200.0 mils.
Alcohol, 80 p. ct., to make.....	1,000.0 mils.

Acqui di Lubin

Alcohol (90 p. ct.)..	2,000 mils.
Tincture of orange peel	350 grammes.
Tincture of abelmoschus	300 grammes.
Tincture of tonka bean	100 grammes.
Tincture of tuberose	50 grammes.
Tincture of styrax..	50 grammes.
Tincture of benzoin.	50 grammes.
Tincture of vanilla..	30 grammes.
Oil of lemon.....	40 grammes.
Oil of bergamot.....	4 grammes.
Oil of neroli.....	1 gramme.
Tincture of musk...	4 grammes.
Tincture of civet....	3 grammes.
Orange flower water.	250 grammes.

Wood Violet Perfume

Oil of bitter almonds...	20 minims.
Oil of lavender (old)....	1 dram.
Oil of verbena.....	½ dram.
Oil of coriander.....	40 minims.
Oil of bergamot.....	3 drams.
Tincture of musk.....	4 ounces.
Extract of jasmine.....	4 ounces.
Spirit of orange.....	20 ounces.
Benzoic acid.....	2 drams.
Alcohol, to make.....	5 pints.

Sandalwood Extract.

Oil of santal.....	90 minims.
Oil of rose.....	10 minims.
Cologne spirit.....	4 ounces.

"Frozen Perfumes"

Melt paraffin over a gentle heat; and just before it solidifies again, stir into it any suitable strong perfume, in the proportion of about 1 part of the perfume to 9 parts of the paraffin. Color to suit, with anilin dye. Preparations so made are sometimes spoken of as "frozen perfumes."

Irish Flowers

Extract of white rose.....	10 parts.
Tincture of vanilla.....	1 part.

Lilac Perfume and Toilet Water

Terpineol, C. P.....	10 parts.
Jacinth (phenyl-acetic-aldehyde)	5 parts.
Oil of bitter almond, true	½ part.
Œillet floressence.....	7 parts.
Jasmine floressence.....	75 parts.
Tincture of civet (1:40)..	125 parts.
Oil of bergamot.....	3 parts.
Tincture of musk, Tonquin (1:32).....	10 parts.
Oil of ylang-ylang.....	15 parts.
Rose floressence.....	25 parts.
Tuberose floressence.....	25 parts.
Artificial musk (crystals)	10 parts.
Cassie floressence.....	3 parts.
Lily of the valley, De-Laire	15 parts.
Oil of orris, liquid (tenfold)	2 parts.
Phixia	20 parts.
Heliotropin	2 parts.
Oil of rose.....	15 parts.
Coumarin	½ part.
Vanillin	¼ part.

Mix in the order stated, and then use about 4 ounces of the mixture to each gallon of alcohol. In making a toilet water reduce with alcohol. It should be remembered that the addition of a little water aids the sweetening and blending process.

Dr. Abraham Alexander states that this recipe yields a thoroughly practical high-grade commercial product and that the synthetic perfumes enumerated may be purchased from New York jobbers.

Bouquet Extract and Toilet Water

Oil of rose.....	75 parts.
Oil of patchouli.....	30 parts.
Oil of rose geranium....	150 parts.
Oil of sandalwood, E. I..	40 parts.
Oil of lavender.....	30 parts.
Oil of cloves.....	30 parts.
Oil of neroli.....	100 parts.
Oil of bergamot.....	150 parts.
Vanillin	50 parts.
Coumarin	100 parts.
Musk ambrette crystals.	3 parts.

Mix by dissolving the solids in the oils. For use as a handkerchief extract use 4 ounces of the mixture to 1 gallon of alcohol. In making a toilet water use 2 ounces to 7½ pints of alcohol and then add ½ pint of warm distilled water. Let the mixture stand until it has aged, and then filter.

Fixatives in Perfumes

Fixatives are added to perfumes for the purpose of making the odor less volatile. In plants, the perfume is being continuously produced and the odor is given off into the surrounding atmosphere as long as the flower exists, but when we isolate the odorous principles of these plants and expose them to the air they evaporate quickly and leave no trace behind them. This evaporation frequently takes place so rapidly that the odor is objectionable, and in order to over-

come this it has been found advisable to mix with the product some substance that will prevent rapid volatilization. The odor is delicate and "flowery" only so long as it is present in the air in minute proportions, and the effort to duplicate the conditions existing in the plant has resulted in the utilization of a number of so-called fixatives.

Formerly, ambergris, musk and various resins were used exclusively for this purpose, but because of the cost, the powerful odor, the color or the sticky qualities of these materials, they could not be used in large enough proportions to be entirely satisfactory, and so other substances have largely replaced them. Organic chemistry has produced a number of chemicals which, possessing almost no odor themselves, serve as fixative and tend to impart added sweetness to the perfume with which they are mixed. Among these materials the ones most used are methyl anisate, benzyl benzoate, benzyl cinnamate and benzyl-iso-eugenol. Synthetic ambergris and civet have also been produced, cost little, and are used as fixatives.

Oil of Cologne

Oil of bergamot	15 mils.
Oil of lemon	8 mils.
Oil of rosemary	7 mils.
Oil of lavender	4 mils.
Oil of orange flower	4 mils.
Acetic ether	2 mils.
Absolute alcohol	60 mils.

German Cologne

I.

Oil of patchouli	1 dram.
Oil of neroli	1 dram.
Oil of rose geranium	2 drams.
Oil of lavender	4 drams.
Oil of bergamot	1 ounce.
Tincture of orris	8 ounces.
Tincture of musk	2 ounces.
Tincture of civet	4 ounces.
Tincture of tonka	1 pint.
Alcohol	8 pints.

II.

Oil of Canada snakeroot	9 parts.
Oil of rose geranium	3 parts.
Oil of lavender	3 parts.
Oil of sandal	2 parts.
Oil of patchouly	2 parts.
Oil of neroli	1 part.
Extract of tuberose	20 parts
Tincture of musk	40 parts.
Water	120 parts.
Alcohol	900 parts.

Mix according to art.

III.

Tincture of benzoin	25 mils.
Tincture of musk	5 mils.
Oil of sweet orange	5 mils.
Oil of lavender	10 mils.
Oil of rosemary	5 mils.
Oil of citron	25 mils.
Oil of petit-grain	10 mils.
Oil of bergamot	25 mils.
Alcohol	3500 mils.
Distilled water	500 mils.

Mix the oils and the tinctures with the alcohol and add the water gradually.

Floral Cologne

Extract of mignonette	40 mils.
Extract of jasmine	40 mils.
Oil of orange flower	20 drops.
Oil of rosemary	20 drops
Oil of rose	10 drops.
Acetic ether	3 mils.
Alcohol, to make	1000 mils.

Headache Cologne

We believe this is only a good cologne water in which a little menthol has been dissolved. A formula follows:

Menthol	1 ounce.
Oil of bergamot	10 drops.
Oil of lavender	20 drops.
Oil of lemon	8 drops.
Oil of cassia	2 drops.
Spirit of camphor, to make	4 ounces.

Cologne Water.

The perfumer's art has undergone as many changes in the past decade or two, perhaps, as that of any other class of artists or artisans, maybe more. An old-time perfumer, grown pessimistic, might easily believe that synthetic chemistry has rendered the growing of flowers and the refining of essential oils for perfumers' use almost a forgotten industry, but he would be wrong, as there are still noses which revolt at laboratory "smells," whose owners refuse to be appeased by anything short of a bottle in which the concentrated odors of the flower garden or citrus groves have been imprisoned.

An "up-to-date" formula for a cologne water calls for various synthetics, but we believe better results—at least if they are to be judged by customers who prefer delicacy to "strength"—are obtained when one of the old-time formulas is used. As a type of these the following may serve:

Oil of orange flower	6 drams.
Oil of rosemary	3 drams.
Oil of bergamot	3 drams.
Oil of citron	7 drams.
Oil of orange peel	7 drams.
Alcohol, to make	1 gallon.

Mix and allow the mixture to stand at least a week before offering any portion of it for sale.

A somewhat cheaper mixture contains—

Oil of lavender	4 drams.
Oil of rosemary	4 drams.
Oil of bergamot	1 ounce.

Oil of lemon..... 2 ounces.
Oil of clove.....½ dram.
Alcohol, to make..... 1 gallon.

By the use of only the highest grade of materials a superfine perfume results from a mixture of the following:

Oil of neroli..... 6 drams.
Oil of rosemary..... 3 drams.
Oil of bergamot..... 3 drams.
Oil of cedrat..... 7 drams.
Oil of orange peel..... 7 drams.
Cologne spirit, to make.. 1 gallon.
Mix and allow to stand for a week.

A Special Eau de Cologne.

Oil of lemon..... 54 ounces.
Oil of bergamot..... 27 ounces.
Oil of lavender flowers..14 ounces.
Oil of cinnamon (true)..1½ ounces.
Oil of cloves..... 2 ounces.
Oil of neroli..... 5 ounces.
Tincture of vanilla..... 36 ounces.
Vanillin ..... 2 ounces.
Deodorized alcohol..... 30 gallons.
Distilled water..... 7 gallons.
Mix.

Verbena Water.

Oil of lemon grass..... 6 drams.
Oil of bergamot.....½ dram.
Oil of orange.....½ dram.
Water ..... 8 ounces.
Deodorized alcohol, to make ..... 1 quart.

Florida Water.

I.

Oil of cassia..... 0.50 mil.
Oil of bergamot.. 2.50 mils.
Oil of lavender... 2.50 mils.
Oil of lemon..... 2.00 mils.
Menthol ..... 1.25 grammes.
Talc ..... enough.
Alcohol ..... 550.00 mils.
Water, to make..1000.00 mils.

Dissolve the oils and menthol in the alcohol; add the water in several portions, stirring well after each addition. Stir in a small quantity of talc, and filter. The water improves with age, and the best results follow the use of an oil of lavender that is at least a year old.

II.

Oil of lavender..... 2 drams.
Oil of bergamot..... 2 drams.
Oil of lemon..... 2 drams.
Tincture of curcuma.... 1 dram.
Oil of neroli..... 1 dram.
Oil of melissa.....30 drops.
Oil of rose.....10 drops.
Deodorized alcohol..... 2 pints.

Some Toilet Water Odors..

As a basis for floral-odor toilet water (N. Erf. und Erf.), the following is given:

Oil of bergamot.. 30.0 grammes.
Oil of lemon..... 75.0 grammes.
Oil of rosemary.. 5.0 grammes.
Oil of lavender... 12.5 grammes.
Alcohol ..... 5,000.0 grammes.
Water .....10,000.0 grammes.
Kaolin ..... enough.

Mix the liquids, let the mixture stand for eight days, then add the kaolin, shake well, and filter.

To make a floral-odor water one of the following mixtures is added to the base in the proportions given:

Lilac.

Terpineol ..... 125 grammes.
Jasmine (artificial). 40 grammes.
Base .....5,000 grammes.

Lily of the Valley.

Oil of linaloe..... 20 grammes.
Jasmine (artificial). 8 grammes.
Oil of ylang-ylang.. 1 gramme.
Base .....1,000 grammes.

Reseda.

Oil of reseda..... 4 grammes.
Base .....1,000 grammes.

Oriental Toilet Water.

Spirit of pimento..... 36 mils.
Tincture of benzoin..... 36 mils.
Tincture of tolu..... 36 mils.
Tincture of ambrette..... 54 mils.
Tincture of orris..... 48 mils.
Tincture of tonka..... 16 mils.
Oil of cloves..... 2 mils.
Oil of geranium..... 2 mils.
Lavender water.....200 mils.
Cologne water.....200 mils.
Acetic ether..... 15 mils.
Rose water..... 25 mils.
Alcohol .....300 mils.

Violet Water.

I.

Alcohol .....900.0 mils.
Violet extract.....200.0 mils.
Cassie extract.....350.0 mils.
Jasmine extract....200.0 mils.
Tincture of benzoin (1 part of selected white benzoin in 7 parts of alcohol, aged for several months) .....100.0 mils.
Tincture of orris (chopped orris 3 parts, alcohol 4 parts, macerated for 3 months).....700.0 mils.
Oil of rose..... 0.3 gramme.
Oil of rose geranium 1.1 grammes.
Oil of bergamot..... 2.8 grammes.
Oil of orris..... 0.6 gramme.
Oil of vervain..... 0.1 gramme.
Extract of musk.... 2.8 grammes.
Rose water..... enough.

The extracts used in this water should be of the first quality prepared from pomades. Enough rose water should be added to reduce the alcoholic strength of the water to 80 per cent. (specific gravity about 0.850). A violet

color can be produced with a small quantity of a spirit-soluble anilin violet.

II.

Violet extract	250 mils.
Jasmine extract	75 mils.
Cassie extract	75 mils.
Tincture of orris	100 mils.
Extract of musk	3 grammes.
Ionone	2 grammes.
Alcohol	300 mils.
Rose water	200 mils.

III.

Powdered orris	1½ ounces.
Extract of violet	3 ounces.
Tincture of benzoin	½ ounce.
Orange flower water	4 ounces.
Rose geranium leaves	2 ounces.
Cologne spirit, to make	4 pints.

Mix, macerate for several weeks in a warm place and filter. This is a green-colored preparation; to produce a violet-colored one the geranium leaves should be replaced with a suitable anilin color.

Lavender Water.

Oil of lavender	1 ounce.
Oil of bergamot	1 dram.
Essence of ambergris	12 drops.
Camphor	1 grain.
Musk	1 grain.
Alcohol	1 pint.

Bouquet Toilet Water

Oil of bergamot	7 grammes.
Oil of citron peel	4 grammes.
Oil of sweet orange	3 grammes.
Oil of lavender flowers	5 grammes.
Oil of saigon flowers	15 drops.
Oil of neroli	15 drops.
Alcohol (90%)	900 grammes.
Distilled water	225 grammes.

Lilac Water

I.

Oil of bitter almond	15 minims.
Extract of orange flower	4 pints.
Extract of tuberose	6 pints.
Tincture of civet	3 ounces.

II.

Terpineol	10 mils.
Extract of white rose	25 mils.
Extract of orange flowers	15 mils.
Water	100 mils.
Cologne spirit	500 mils.
Lilac color	enough.

Sachet Powders

Carnation Sachet Powder.

Oil of clove	2 fl. drs.
Granulated orris root	1 lb. av.
Oil of sandalwood	10 minims.
Solution of carmine, or tincture of cudbear	enough.
Alcohol	½ fl. oz.

Put half the orris root in a mortar and pour on enough of the solution of carmine or tincture of cudbear to give a dark-pink or light-red color, then mix the remaining orris root with it. Dissolve the oils in the alcohol and add to the colored orris root, a little at a time, mixing well after each addition. Set aside in well-stoppered bottles for two or three days. Then spread out on glass to dry spontaneously.

Heliotrope Sachet Powder.

I.

Granulated orris root	1 lb. av.
Coumarin	1 dram.
Oil of sandalwood	15 minims.
Solution of carmine, or tincture of cudbear	enough.
Solution of anilin blue	enough.
Alcohol	½ fl. oz.

Color half the orris root a light-pink with the solution of carmine or tincture of cudbear. Color the other half a light-blue. Scent with the coumarin and oil of sandalwood dissolved in the alcohol, and finish as directed above.

Other formulas will suggest themselves to those who study these. For instance, to make a violet powder color one-half the orris root dark-red and the other half dark-blue and use a good violet odor; to make a rose powder color as for heliotrope and add one-third to one-half of carnation.

II.

Orris root	250 grammes.
Powdered rose leaves	250 grammes.
Powdered East Indian sandalwood	30 grammes.
Powdered orange peel	470 grammes.
Heliotropin	50 grammes.

Spicy Sachet Powders.

If a spicy powder is wanted, it would be an easy matter to add a few spicy ingredients to powders made according to these formulas; perhaps a little crushed star anise, grains of paradise, cinnamon, olibanum, melilotis, or other such aromatics would have the desired effect.

Sachet for Linen Chests.

Orris root	750 grammes.
Rosewood	160 grammes.
Calamus	250 grammes.
Sandalwood	160 grammes.
Benzoin	125 grammes.
Tolu	4 grammes.
Cloves	15 grammes.
Ceylon cinnamon	50 grammes.

Use ingredients ground to the desired fineness and mix them intimately.

Rose Sachet Tablets

Starch	5 ounces.
Magnesium carbonate	2½ ounces.
Powdered orris root	½ ounce.
Dextrin	½ ounce.
Artificial oil of rose	15 drops.
Oil of rosewood	20 drops.
Oil of rose geranium	1 dram.
Tincture of artificial musk	40 minims.
Tincture of benzoin	½ ounce.
Boric acid	15 grains.

Water	enough.
Syrup	enough.
Rose color	enough.

Mix all well together, using enough water and syrup to form a mass, and cut with a lozenge cutter.

Pot-Pourri

I.

Rose leaves	16 ounces.
Lavender flowers	16 ounces.
Orris root (in coarse powder)	8 ounces.
Cloves (in coarse powder)	2 ounces.
Cinnamon (in coarse powder)	2 ounces.
Allspice (in coarse powder)	2 ounces.
Table salt	16 ounces.

Mix thoroughly.

The salt not only increases the bulk, but serves to keep the powder moist.

II.

Sandal wood	16 ounces.
Gum benzoin	2 ounces.
Orris root	12 ounces.
Cloves	2 ounces.
Mace	1 ounce.
Tonka beans	2 grains.
Musk	40 grains.
Oil of rose	40 drops.
Oil of lavender	1 dram.
Oil of bergamot	2 drams.
Oil of lemon	2 drams.

III.

Powdered cloves	2 ounces.
Powdered pimento	2 ounces.
Powdered benzoin	2 ounces.
Essence of musk	1 ounce.
Essence of bergamot	4 drams.
Oil of lavender	4 drams.
Oil of cloves	2½ drams.
Oil of cassia	2½ drams.
Oil of rose	80 drops.
Rose leaves	4 ounces.
Powdered Jamaica pepper, to make	48 ounces.

Aromatic Perles

These pearls or pastilles are to be used in linen closets, chiffoniers, etc., in lieu of sachet powders.

Amber	2 grammes.
Benzoin	10 grammes.
Orris	6 grammes.
Vanilla	1 gramme.
Cloves	1 gramme.
Cinnamon	1 gramme.
Oil of neroli	6 grammes.
Oil of citron	1 gramme.
Oil of rose	1 gramme.
Mucilage of tragacanth	enough.
Glycerin	enough.

The solids are to be reduced to a moderately fine powder, mixed intimately, and made into boluses with the mucilage and a little glycerin. The pearls are then to be wrapped in parchment paper and gilt foil.

Smelling Salts

Some salt of ammonia being the base of most smelling salts the perfumes for such preparations should be such as harmonize with the ammoniacal odor; these, according to Askinson, are oils of the rose, nutmeg or cinnamon class. The formula here given is an adaptation of one by that authority:

Ammonium carbonate	2 pounds.
Strong ammonia water	1 pound.
Oil of bergamot	15 grains.
Oil of lavender	15 grains.
Oil of nutmeg	8 grains.
Oil of clove	8 grains.
Oil of rose	8 grains.
Oil of cinnamon	75 grains.

In a large porcelain jar mix the two ammonia derivatives; cover, and set aside. After some days the mixture will have changed into a firm mass of ammonium monocarbonate, which should be reduced to a coarse powder; after which the oils, mixed, are to be rubbed in a mortar with about a tenth of the salt. The perfumed portion is then triturated with the other nine-tenths until the odor is equally distributed.

Colors for Smelling Salts

Red—Solution of carmine.
Yellow—Solution of methyl-orange.
Green—

Copper sulphate	1 dram.
Potassium dichromate	1 dram.
Water	2 ounces.
Ammonia water	1 ounce.

Dissolve the salts separately, each in 1 ounce of water, mix the solutions, and add the ammonia water.

Red, yellow and green anilin dyes that are "fast" to alkalies can be obtained from the regular dealers in such substances.

Preston Salt

Mix finely powdered ammonium chloride with freshly slaked lime, and perfume as desired. The mixture continually develops small amounts of ammonia for a period extending over several years.

Snively, in his "Manufacture of Perfumes," gives the following recipe:

Ammonium chloride	3½ troy ozs.
Potassium carbonate	4½ troy ozs.
Oil of lavender	½ fl. oz.
Oil of lemon	3 fl. drams.
Oil of bergamot	1 fl. dram.
Oil of clove	15 minims.
Ammonia water	enough.

Triturate the salts together, add the oils, and moisten slightly with ammonia water.

CHAPTER VII.

SOAPS AND LAUNDRY REQUISITES

Soap Making—Varieties of Toilet Soaps—Soft and Liquid Soaps—Castile Soap—Shaving Soaps—Technical Soaps—Household and Laundry Soaps—Laundry Requisites.

Always consult the index when using this book.

Making Soap.

Soap-making is theoretically quite a simple affair, but in endeavoring to carry out the theory difficulties are likely to be met which can be only overcome by one experienced in the art. These difficulties consist largely of producing a fine quality and economizing in cost; for soap being so staple an article, competition in its sale is very strong.

When potash is used as the saponification agent, the soap will be soft; soaps made with soda are harder.

A simple lye process is as follows: Dissolve soda in water in the proportion of about 2 pounds to the gallon. Any convenient quantity of the grease is melted at a low heat and about one-fourth its weight of lye added in small portions with constant stirring. When incorporation has been thoroughly effected a similar portion of lye is added in the same way, and the process is continued until the saponifying process appears to be complete. By the addition of still more lye, after the fat has all been taken up, the soap is separated, the latter being insoluble in a strong alkaline solution.

If the soap is made too alkaline from admixture of lye in the process of making it may be improved by melting with water and separating by a strong solution of common salt. The soap is finally re-melted in a water-bath, kept heated until as much water is expelled as possible, and then poured into molds to set.

Amateurs should not expect to take a formula from a book or paper and turn out a high-grade soap.

We suggest that druggists who desire to market their own make of soaps consult an experienced and well-equipped manufacturer, who not only can turn out a better appearing soap than it is possible for an amateur to make, but can do it at a saving of expense.

Varieties of Toilet Soaps.

Circular of the Bureau of Standards No. 62, Specifications for the Methods of Testing Soaps, contains the following paragraphs relating to varieties of toilet soaps:

Toilet soaps should be entirely neutral, since excess alkali is injurious to the skin. Fillers such as sodium carbonate and sodium silicate, having a similar effect, should also be absent. Free lathering soap is generally desirable; and since a tallow soap lathers slowly and cocoanut-oil soap lathers very freely, some cocoanut oil is frequently added. This oil has a tendency to injure the skin, and its odor is also objectionable; hence it is not generally used in large amounts. Some potash is frequently used in toilet soaps to produce freer lathering.

(a) Milled toilet soaps are prepared by grinding any good soap and compressing into cakes. More delicate perfumes can be used with this class of soaps, since the perfume is mixed in the process of milling, than with ordinary soaps, in which the perfume is added before the soap is dried.

(b) Floating soaps contain entangled air in very fine bubbles, incorporated while the soap is still hot. These air bubbles are so small as to be almost invisible, and so numerous that they not only make the soap lighter than water, but also largely increase the surface of the soap exposed to water when used, and therefore render it more quickly soluble than the same soap would be without the bubbles.

(c) Castile soap, otherwise known as Marseilles or Venetian soap, is prepared from low-grade olive oils.

(d) Transparent soaps were originally made by dissolving soap in alcohol, filtering and evaporating the alcohol. The transparency formerly was considered an indication of freedom from impurities, but the same effect can be produced in other ways, and the transparency is actually no indication whatever of purity or quality.

(e) Liquid soaps are water solutions generally of a neutral cocoanut-oil potash soap, containing glycerol, sugar, or alcohol added to prevent cloudiness and foaming in the container. The glycerole is probably an unobjectionable addition, since it has emollient properties, but sugar can have no beneficial action on the soap itself and may be objected to on account of its tendency to leave the hands sticky. Alcohol is seldom used.

(f) Shaving soaps must possess not only the properties of first-class toilet soaps, but must furnish a very rich lather, which will remain on the face for some time without drying. This lather should soften the beard without injuring the skin. These soaps should have no unpleasant odor and little or no perfume. The fat used in shaving soaps generally contains some cocoanut oil, and the alkali is generally a mixture of soda and potash. Glycerol is also generally present.

Soft Soap

Beringer has proposed the following formula:

Linseed oil .....40 grammes.
Malaga olive oil.....40 grammes.

Potassium hydroxide..19 grammes.
Alcohol .....10 mils.
Water .....60 mils.

Warm the mixed oils on a water-bath to 70 deg. C., dissolve the potassium hydroxide in the water and bring this to the same temperature, then add to the oils and stir thoroughly. Add the alcohol, with stirring but as soon as it is thoroughly incorporated cease the stirring. Continue the heat at the same degree for a short time until saponification is complete, which is evidenced by the mass becoming clear and a portion dissolving in boiling water or alcohol without the separation of oil globules.

Beringer says that the finished mass will weigh about 140 grammes, and that the soap is an almost transparent, smooth, greenish-yellow mass. If stirring is continued too long after the addition of the alcohol, the soap will be opaque on account of included air.

The German Pharmacapoeia formula is as follows:

Sapo Kalinus.

Linseed oil .....20 grammes.
Solution of potassium hydroxide (15%) ....27 grammes.
Alcohol ..... 2 grammes.

Place the oil in a suitable vessel upon a water bath, and when it is warm stir in the potassium hydroxide solution and alcohol, previously mixed.

Pharmaceutical Formulas gives the following as:

Lothian's Process.

Olive oil .....100 parts.
Potassium hydroxide..... 21 parts.
Water .....100 parts.
Alcohol (90%) ..... 20 parts.

Heat on a steam bath until the oil is saponified, adding a little more alcohol, if necessary, to assist in the saponification.

Neutral Soft Soap

As the saponification value of olive oil varies in different samples it is impossible to fix definitely the proportions of the oil and potassium hydroxide that will form a neutral soap. The simplest practicable working formula for a neutral soap is as follows:

Potassium hydroxide.. 21 grammes.
Olive oil .....100 grammes.
Water ..... enough.

Dissolve the hydroxide in 100 mils of water; mix with the oil, and heat together moderately without stirring for several hours or until no alkalinity is detectable, replacing from time to time the water lost through evaporation. Add 300 mils of water and continue the heating until the soap is dissolved. Remove the oily layer and drive off the water by evaporation.

A more scientific method would be to determine the saponification value of the particular sample of oil according to test in the appendix of the Pharmacopoeia; multiply the saponification number so obtained by the percentage of absolute KOH in the potassium hydroxide to be used. The quotient represents the number of grammes of the hydroxide required to saponify 1000 grammes of the oil.

Soft Soap for Toilet Uses

In a paper read before the Alabama Pharmaceutical Association, C. Wharton offered the following formula for a soft soap that could be used as a basis for liquid toilet soap or shampoo:

Coconut oil .....100 grammes.
Solution of potassium hydroxide (15%) .. 40 grammes.
Glycerin ..... 30 grammes.

Mix the hydroxide solution with the oil and allow the mixture to stand for forty-eight hours with frequent stirring. Incorporate the glycerin and heat the mixture carefully on a water-bath until a homogeneous mass is obtained.

He also offered the following formula for a liquid soap:

Coconut oil soap.....22.5 grammes.
Alcohol ..... 9.5 mils.
Water, to make.....64.0 mils.
Perfume and color as desired.

Tincture of cudbear and tincture of chlorophyl were suggested as colors. The author favored synthetic perfuming materials.

White Soft Soap

Coconut oil ..... 43 grammes.
Potassium hydroxide.. 7 grammes.
Alcohol .....100 mils.
Distilled water..... 50 mils.

Dissolve the hydroxide in the alcohol. Add the oil, little by little, with constant stirring. Recover the alcohol by distillation at a minimum temperature. Add the water to the residue.

Liquid Soap

By John K. Thum

It is rather curious that neither the Pharmacopoeial Revision Committee nor the National Formulary Revision Committee permitted a formula to be inserted in either of these two noted books for the manufacture of this popular preparation. The use of liquid soaps is very near universal, both among the laity and hospitals and other institutions. And the technic for making them is so simple that the veriest tyro should experience no trouble in their preparation.

While it is perfectly feasible to make a liquid soap solely with the aid of

sodium hydroxide, yet considerable alcohol is required to keep the soap in solution; and as this solvent has always been an exceedingly expensive one on account of the high tax on it, its indiscriminate use has always been a mighty factor in adding to cost of production. At the present time when the taxation is double, its use is almost prohibitive. It was discovered, however, that if the amount of sodium hydroxide was cut in half and the same amount of potassium was used in its place, a rather better liquid was the result and the quantity of alcohol could be reduced to as low as six per cent. As it requires at least twenty-five per cent. of alcohol in the preparation of liquid soap made solely with sodium hydroxide, one can readily realize the great economy of using both hydroxides.

For many years we were in the habit of using equal parts of each of the hydroxides, but since the beginning of the war the cost of potassium has advanced so much that we began to experiment with lesser quantities. We have now got to that point where we can safely say that an elegant soap is possible by using only two parts of the potassium hydroxide and seven parts of the sodium.

It is of the utmost importance that the hydroxides used in making liquid soap be free from chlorides, the merest traces of these being sufficient to throw the soap out of solution. It will be remembered that the manufacturers of solid soaps all use sodium chloride to precipitate the soap after the fats and alkalies have been sufficiently boiled for saponification to have taken place. Now the Pharmacopoeia fails to mention anything about the presence of chlorides in these two hydroxides, and when a chemical manufacturer sells these with the statement on the label that they answer all the pharmacopoeial requirements, he is stating the truth, and yet they cannot truthfully be called pure. Let us hope that the next revision will take cognizance of this matter and demand freedom from chlorides.

It has been our experience that a very good liquid soap can be made in a very short time, without the use of artificial heat, by utilizing the heat generated by dissolving the hydroxides in a minimum amount of distilled water. It should be here emphasized that the use of distilled water is absolutely necessary to make liquid soap, the very slight traces of chlorides in tap water easily rendering it cloudy, which is due to precipitated soap.

The following formula is suggested. It has served every use to which such a preparation could be put. Last year we manufactured over 6,000 gallons of it:

Potassium hydroxid....	200 grams.
Sodium hydroxid.....	700 grams.
Cottonseed oil.....	8,000 grams.
Alcohol	3,000 mils.
Distilled water, to make	50,000 mils.

Dissolve the hydroxide in 1,200 mils of distilled water, add all of the oil and 2,000 mils of alcohol; stir constantly until saponification has taken place, then add the remainder of the alcohol and sufficient of distilled water to make up to the required volume.

The crucial point in this manipulation is to add the oil and part of the alcohol immediately after the hydroxids have gone into solution, for it is at this point that the heat generated is at its greatest intensity. It is simply a question of conservation of energy. Having safely passed this stage, the remainder of the procedure is very easy indeed. As a matter of fact, the whole operation presents no difficulties whatever. The operator has merely to be watchful and conduct things so as to utilize every bit of heat evolved.

Liquid Toilet Soap.

Official liniment of soft soap (the old tincture of green soap) is a good toilet preparation. Of course, it may be perfumed to suit the fancy of the maker or of his trade.

Koller gives a number of formulas for liquid soaps, one of which is quoted below:

White castile soap.....	20 parts.
Alcohol (80%).....	100 parts.
Potassium carbonate, 1 to.....	2 parts.
Color	enough.
Perfume	enough.

The soap is cut into small strips and placed in a suitable vessel on a water-bath; the potassium carbonate and alcohol are then added, and the water-bath is slowly heated, the soap being stirred to facilitate solution. When this is accomplished—forty to sixty minutes being required—the vessel is removed from the water-bath, the scent and coloring matter—saffron or rosanilin—are added, and the soap is left for some hours to clarify, after which it is poured off, or, better, filtered.

In consequence of its large alcohol content, the product remains liquid at the ordinary temperature, and suffers little alteration, even by cold. The scent may be of different kinds: orange oil, lemon oil or compound scents, like (a) oil of bitter almond, 8, and oil of bergamot, 2; or (b) oil of bitter almond, 5, and oil of cinnamon, 1.

Liquid Soap with Cottonseed Oil Base.

The following note from Clinical Medicine gives information that may be valuable:

Many surgeons prefer "antiseptic" soap to the ordinary toilet variety, though it must be said that the antiseptic virtues reside wholly within the degree of assiduity in the use of brush, hot water and any kind of soap rather than "antiseptics" in the saponic mixture.

Potassium hydroxide.....	40 grammes.
Sodium hydroxide.....	40 grammes.
Cottonseed oil.....	500 mils.
Alcohol	250 mils.
Distilled water, to make...	2,500 mils.

Dissolve the alkalies in 250 mils of water, add the alcohol, then the oil in three or four portions, shaking vigorously after each addition. Shake occasionally until saponified, then add the remaining portion of water.

Phenol may be added, if desired, dissolved in the water, or thymol, if preferred, dissolved in the alcohol. Perfume may be put in for the ultra-aesthetic.

Official Liquid Antiseptic Soap.

In the National Formulary we find directions for making compound solution of cresol, which is really a liquid antiseptic soap. Saponated tincture of cresol, N. F., also comes under this head. Here is a formula for a—

Cresol Soap Solution.

Cresol	50.00 grammes.
Linseed oil.....	18.00 grammes.
Potassium hydroxide	4.25 grammes.
Alcohol	2.00 grammes.
Glycerin	6.00 grammes.
Distilled water, to make	100.00 grammes.

Dissolve the potassium hydroxide in 20 grammes of distilled water, and raise the temperature of the solution to 70 degrees C. Bring the temperature of the oil to the same degree, over a water-bath, and add to it the solution, stirring vigorously. Take care that the temperature does not rise above 70 degrees C., and thoroughly incorporate the alcohol with the previously made mixture. Remove the stirrer and continue the gentle application of heat until the oil is completely saponified. This may be determined by dropping portions of the mixture into water by means of a glass rod, when the absence of oil globules on the water will indicate complete saponification. Stir in the glycerin, add the cresol, and warm gently until all the soap is dissolved. Bring the weight of the product to 100 grammes by either the addition or expulsion of water.

Other Liquid Antiseptic Soaps.

I.

Castile soap shavings	10.0 grammes.
Alcohol	12.5 grammes.
Ether	30.0 grammes.
Water	47.5 grammes.

Dissolve the soap in the water by the aid of a gentle heat. Cool, and add the alcohol. After twenty-four hours filter and add the ether.

II.

Cottonseed oil 300	grammes.
Alcohol 300	mils.
Water 325	mils.
Sodium hydroxide.... 45	grammes.
Potassium carbonate. 10	grammes.
Liquefied phenol..... 25	mils.
Ether 15	mils.

Mix as directed in Utech's formula given below.

III.

White soap.....	1,000 parts.
Soft soap.....	1,000 parts.
Poppyseed oil.....	500 parts.
Glycerin	50 parts.
Betanaphthol	50 parts.
Alcohol	500 parts.
Oil of lemon.....	50 parts.
Water, to make.....15,000	parts.

The two soaps and the poppy seed oil are mixed with 3.000 parts of water and gently heated until of a pasty consistency, when the other ingredients are added.

Richaud, in Repertoire de Pharmacie, says that this soap is very frothy and penetrating.

Surgeon's Liquid Soap

White soap.....	20 parts.
Alcohol	20 parts.
Glycerin	20 parts.
Solution of sodium carbonate (2%).....	50 parts.

Mikuliez's Formula

Olive oil	6 parts.
Solution of potassium hydroxide	7 parts.
Alcohol	10 parts.
Water	17 parts.

Demlin's Formula

White soap.....	38 parts.
Glycerin	50 parts.
Water 500	parts.

Liquid Aromatic Shampoo Soap

Utech's modification of Wilbert's formula is:

Sodium hydroxide..	80 grammes.
Potassium hydroxide	80 grammes.
Cottonseed oil.....1,000	mils.
Alcohol	500 mils.
Water, to make.....2,500	mils.

Dissolve the hydroxides in 500 mils of water. After solution has been effected, add the alcohol, and, finally, the cottonseed oil, in several portions, and shake thoroughly. Allow to stand for several hours, shaking the mixture occasionally, until thoroughly saponified. Finally add water to make 2,500 mils.

To the soap liquid thus prepared add:

Potassium carbonate.	30 grammes.
Terpineol	12 mils.

Liquid Antiseptic Soap

A new and very extensive field for the use of liquid soaps in germicidal combination has been developed recently, and no doubt your attention has already been called to their use in some of our larger public institutions, such as hospitals, hotels, etc. This idea was inspired, as you well know, by the widespread interest people have taken in matters of public hygiene and sanitation of late years. Soaps for such purposes could be easily made from the formula herewith, simply by incorporating a small quantity of phenol, mercury bichloride, formaldehyde, or any of the other ordinary germicides.

Liquid Glycerin Soap

White animal oil soap	2 pounds.
Glycerin	1 pound.
Cocoanut oil	8 ounces.
Solution of potassium hydroxide	8 ounces.
Alcohol	4 pints.
Distilled water	8 pints.

Dissolve the soap in the alcohol, warming gently. Melt the oil on a water-bath, and stir in the solution of potash and the glycerin. When the reaction ceases remove from the heat and mix with the soap solution previously diluted with the water.

Liquid Soap

At the 1913 meeting of the American Pharmaceutical Association E. E. Jones presented a paper on liquid soap which had the novelty of suggesting varying proportions of ingredients to suit different types of water. The recipes are given below:

Liquid Soaps and Shampoos.

	For soft water.	For ordinary water.	For hard water.
Coconut oil	100 grammes.	200 grammes.	300 grammes.
Cottonseed oil	400 grammes.	300 grammes.	200 grammes.
Stearic acid	100 grammes.	100 grammes.	100 grammes.
Potassium hydroxide	120 grammes.	126 grammes.	132 grammes.
Sodium hydroxide	12 grammes.	12 grammes.	12 grammes
Alcohol	125 mils.	125 mils.	125 mils.
Potassium carbonate	20 grammes.	30 grammes.	40 grammes.
Talc	15 grammes.	15 grammes.	15 grammes.

Water, a sufficient quantity to make 2,500 mils.

Melt the acid with the oils at a gentle heat; dissolve the hydroxides in 1,000 mils. of water; add to the fatty mixture. Boil the mixture, adding water as may be necessary until no alkalinity is appreciable to the taste. Dissolve the potassium carbonate in 250 mils of water; add to the saponified mixture, and boil the whole for two hours. Allow the mixture to cool; add the alcohol; perfume as desired, and add enough water to make 2,500 mils. Add the talc; set aside; filter.

Perfume for Liquid Soap.

As a perfume, Mr. Jones suggested any desired aromatic oil, or the following mixture (the quantity is sufficient for 2,500 mils).

Syringeol	5.0 mils.
Artificial oil of rose	0.5 mil.
Artificial oil of jasmine	0.5 mil.
Oil of rose geranium	0.5 mil.
Oil of clove	0.5 mil.
Terpineol	7.5 mils.
Artificial musk	0.5 gramme.
Alcohol, to make	20 mils.

Home-Made Castile Soap.

Charles H. Bowersox read a paper at a meeting of the National Association of Pharmacologists in which he said that in making soap liniment the castile soap of the market (except in certain instances) did not give good results, so he made his own castile soap. His formula follows:

Sodium hydroxide	75 grammes.
Olive oil	425 grammes.
Sodium chloride	125 grammes.
Distilled water	2500 grammes.

Dissolve the sodium hydroxide in 400 grammes of distilled water (using a vessel of silver, iron or hard glass) and set the solution aside until it has become perfectly cold. Now introduce the oil into a cylindrical vessel made of hard glass (a candy jar will do) and pour the solution of sodium hydroxide gradually into it, and at the same time stir gently with an iron or glass rod. Continue stirring slowly and without intermission until the lye and oil are thoroughly combined, which will require about ten minutes; then construct a cover of several thicknesses of paper and fasten it securely over the top of the jar to prevent atmospheric action, and to hasten the reaction between the alkali and the oil. Set the jar and its contents aside in a warm place until saponification is complete (which will require about eighty hours). Now transfer the contents to a silver or bright iron kettle of the capacity of about 3800 mils and add 1600 grammes of distilled water. Heat until the magma is dissolved or becomes transparent and rather tenacious, then remove from the fire. Next introduce 500 grammes of distilled water into a suitable vessel and place over fire; quickly raise the temperature, and at the moment of ebullition, remove from the fire. Dissolve the sodium chloride in the hot water at once, and immediately incorporate the hot saline solution with the hot soap solution, stirring until the glycerin is liberated and the excess of water has separated from the curd, which would require but a few seconds. If soap formation is not manifest almost immediately after the solution of sodium chloride has been added (which may be known by the milk-like appearance of the mixture), place the vessel over a fire and heat moderately until the formation does begin to take place, then set it aside for about twenty hours to permit all the soap to rise to the surface and form a solid mass.

The soap having formed, make a small incision through it near the edge and drain off the liquid in the bottom of the vessel. The solid can then easily be removed by gently tapping on the side and bottom of container. Cut the soap (which now contains from 35 per

cent. to 70 per cent. of water, depending upon the shape and size of the vessel in which it was made) into desired size, wash off with clear water and allow it to dry spontaneously until it has lost all but a trace of water.

The author, in some notes on his soap, went on to say:

Only the best quality of materials should be used and the directions carefully followed. The sodium chloride should be pure and perfectly dry, and the water should be either recently distilled, or rain water recently collected and free from foreign matter.

It is highly important that the lye should be allowed to become perfectly cold before proceeding further, and it should be poured into the oil and not the oil into the lye. In consequence of the chemical action of sodium hydroxide on "soft" glass, earthen or porcelain ware, utensils of such composition should be avoided in soap making.

All vessels, measures, stirring rods, etc., should be clean and free from oxidation.

If permitted to dry in the open air at ordinary temperature, the soap will be found to contain about 20 per cent. of water after thirty days, and at the expiration of three months it ceases to lose weight perceptibly and retains only sufficient moisture to hold it in form.

The soap is white in appearance, and possesses a faint peculiar fat-like odor, free from rancidity; it has a disagreeable, slightly alkaline taste, is mildly alkaline in reaction, and exhibits no saline efflorescence. It is very hard and brittle and it may readily be reduced to powder, in which form it is so soluble that the use of "boiling water" and the "water-bath" directed in the Pharmacopoeia will be found unnecessary. It may be used for making liniment while still containing a considerable amount of moisture, providing allowance be made for the moisture present, which can readily be calculated.

The formula here presented produces a soap that not only is all that could be desired for the manufacture of soap liniment, but it furnishes an excellent article for all other pharmaceutical purposes where castile soap is indicated.

By abbreviating the formula and observing only that portion preceding "now transfer to a silver or bright iron kettle," etc., a soap containing a large proportion of moisture and well suited for cleaning purposes will be the result.

Tincture of White Soap

A physician's formula for a cheap substitute for liniment of soft soap for hospital and general use:

White castile soap	1,200 grammes.
Stronger ammonia water	100 mils.
Alcohol	1,400 mils.
Distilled water	1,300 mils.

The liquids are mixed in a jar of suitable size; the soap, cut into shreds, added, and the mixture set aside for twelve hours. The mixture is stirred several times during the next few hours and then allowed to stand for twelve hours, after which time the clear solution is drawn off.

Some Precautions To Be Observed in Making Shaving Creams

As raw materials in the production of this class of toilet articles are used lard, olive or sesame oil, and Cochin cocoanut oil. Before proceeding with the manufacture one must be sure that the fats and oils are perfectly fresh and clean. If this is not the case they must undergo a process of refining. This consists in carefully boiling the substance in clean kettles, together with water, to which some cooking salt has been added. The fats thus purified are strained and are ready for immediate use. A good formula is as follows:

Stir together at a temperature of 35 degrees C. (95 degrees F.), 20 parts of lard, 16 parts of olive (or sesame) oil, and 14 parts of Cochin cocoanut oil. Add, in a thin stream, 25 parts of caustic potash lye of 40 degrees B. and 3 parts of a potash solution of 150 degrees B., with constant stirring. Maintain the agitation until the mixture saponifies and becomes thick and tenacious.

Lanolinated Shaving Cream

Lanolin	½ ounce.
Almond cream	10 ounces.
Rose water	4 ounces.
Coumarin	2 grains.
Oil of ylang-ylang	10 minims.

Put the lanolin in a warm mortar and mix the almond cream with it, occasionally adding some rose water. When thoroughly mixed, add the perfumes, and triturate off and on for several hours, so as to get a nice appearance.

By almond cream is meant a preparation to be found on the market, sometimes spoken of as Naples soap.

Stearin Shaving Cream

Stearin	30 grammes.
Ammonia water (sp. gr. 0.96)	15 grammes.
Glycerin	20 grammes.
Oil of geranium	5 mils.
Oil of bergamot	3 mils.
Water	235 mils.

A Collection of Shaving Soap Recipes

I.

Curd soap	8 ounces.
Expressed oil of almond	2 ounces.
Glycerin	1 ounce.
Spermaceti	½ ounce.
Potassium carbonate	¼ ounce.
Water	1 pint.

Cut the soap into shreds, and dissolve it by the aid of a water-bath in 14 ounces of water. Dissolve the spermaceti in the almond oil, and while warm mix it with the glycerin, potassium carbonate, and remainder of the water. Transfer to a warm mortar, gradually incorporate the warm soap solution, and continue the stirring until a smooth paste is obtained. With this incorporate any suitable perfume.

II.

Lard	14 ounces.
Potassium hydroxide	2 ounces.

Water	6 ounces.
Perfume	to suit.

Melt the lard in a porcelain vessel over a salt-water-bath; dissolve the potassium hydroxide in the water, and run the lye, thus formed, very slowly into the melted grease, stirring thoroughly all the time until saponification is complete.

A pearly appearance can be given to the "cream," which is simply a soft soap, by long trituration in a mortar with a little alcohol, say 2 drams to each pound of the soap.

Bitter almond oil may be used as a perfume for the "cream." Only a very minute proportion is required. A few drops dissolved in the alcohol used as above will suffice.

III.

Castile soap	1 ounce.
Water	4 ounces.
Oil of almonds	½ ounce.
Cacao butter	½ ounce.
Tincture of benzoin	1 dram.
Oil of bitter almond	5 drops.
Oil of rose geranium	5 drops.
Glycerin, to form a paste.	

Digest the soap and water in a water-bath, add to them the oil of almonds and the cacao butter, previously melted, and while the mixture is still warm, incorporate with it the other ingredients.

Shaving Stick

Mutton suet	10 av. ozs.
Cocoanut oil	5 av. ozs.
Sodium hydroxide	2 av. ozs.
Potassium hydroxide	170 grains.
Water	7½ fl. ozs.
Oil of caraway	25 drops.
Oil of bergamot	30 drops.
Oil of lavender	20 drops.
Oil of thyme (white)	12 drops.
Oil of mirbane	1 drop.

Melt together the tallow and cocoanut oil; allow the mixture to cool at 50 degrees C., then add the two caustics dissolved in the water, and warm the whole gently for about a half hour, stirring occasionally until a uniform soapy mass is produced. Finally add the volatile oils.

Sodium hydroxide is the lye used for making hard soap, while potassium hydroxide is used in making soft soap. The proportion of the two present in a mixed lye determines the consistency of the finished article.

It is not to be expected that an amateur will get as good results in making soap as one who has had long training in the art.

Shaving Cream Recipes

Our own experience in compounding preparations of this character for commercial purposes is that each person has a different idea as to the exact character of the article he wishes to market, and the "personal element" is introduced into the commodity by starting with a typical recipe and experimenting with it, making slight modifications until it is what one desires.

Some suggestive formulas are herewith given.

Lathering Shaving Creams.

I.

Purified lard	10 ounces.
Coconut oil	1 ounce.
Potassium hydroxide	13 drams.
Water	4½ ounces.
Alcohol	4 drams.
Hydrous wool-fat	1 ounce.
Oil of petit grain	10 minims.
Oil of bitter almond	10 minims.

Melt the lard with the coconut oil; dissolve the caustic potash in the water and add to the fats. Heat to a temperature of not more than 95 deg. C. for half an hour, then raise the temperature to 110 deg. C. and continue until saponification is complete. Let the soap cool, and then incorporate the oils dissolved in the alcohol, and the wool-fat.

II.

Lard	2 pounds.
Coconut oil	4 ounces.
Solution of potassium hydroxide (sp. gr. 1.33)	18 ounces.
Oil of peppermint	10 minims.
Oil of bergamot	40 minims.
Oil of lavender	15 minims.
Oil of neroli	5 minims.

Heat the fats with the lye for several hours at 100 deg. C. Beat the mixture as it cools, adding the oils before it sets.

Non-Lathering Shaving Creams.

I.

Almond oil	½ ounce.
Cacao butter	½ ounce.
Glycerin	1 ounce.
Primrose soap	½ ounce.
Otto of rose	4 minims.
Oil of neroli	4 minims.
Oil of bitter almonds	5 minims.
Water	enough.

Melt the cacao butter and almond oil and pour into a warm mortar containing the soap previously rubbed down with 3 ounces of boiling water; stir briskly to make a uniform cream, slowly adding 4 ounces of warm water previously mixed with the glycerin; finally add the perfumes.

With 4 ounces of rose-water and no glycerin this gives a cream suitable for potting.

II.

Powdered tragacanth	½ ounce.
Naples soap	1 ounce.
Oil of almond	2 ounces.
Glycerin	5 ounces.
Water	45 ounces.
Oil of rose geranium	1 dram.

Oil of bergamot..... 2 drams.
Oil of neroli.....½ dram.
Oil of citronella.....20 minims.
Alcohol ..... 5 ounces.

Put the tragacanth and 4 ounces of alcohol in a dry half-gallon bottle and shake thoroughly. Add the soap, the almond oil, the glycerin and the water in the order named. When the mixture is homogeneous add the essential oils dissolved in 1 ounce of alcohol.

Perfume for Shaving Soap

As a perfume use for every 25 kilograms of fats the following:

Lavender oil .....100 grammes.
Lemon oil ..... 50 grammes.
Spike oil ..... 50 grammes.
Thyme oil ..... 50 grammes.

These oils are stirred in at the last. For containers use little porcelain jars. Keep the preparation in a cool place.

Shaving Soap Powder

Powdered soap .....600.0 grammes.
Oil of lavender..... 6.4 grammes.
Oil of caraway..... 3.2 grammes.
Oil of thyme..... 1.0 gramme.
Oil of mandarin orange ..... 0.8 gramme.
Oil of bergamot..... 0.8 gramme.

The pharmacist who desires to put up a soap powder will fare better if he purchases the basal powdered soap from a soapmaker. He might, of course, purchase the soap in bars and powder it himself, but this cannot be done satisfactorily without proper mechanical equipment. It is well to tell the soapmaker that soap suitable for shaving is wanted.

Technical Soap Recipes.

While soap-making has passed beyond the activities of the average druggist, the following recipes translated by the Oil and Color Trade Journal from a German source are interesting, if for no other reason than the fact they show what a variety of fats and perfumes are used by the modern soap manufacturer.

The quantities are all parts by weight, and the abbreviation "o" means, of course, that the alkali solution is to have the specific gravity in "degrees Baume"; that is, its strength is to be tested with a hydrometer graduated according to the Baume scale. Poley oil means European oil of pennyroyal.

American floating soap.—Lard 90; tallow 90; Ceylon cocoanut oil 60; caustic soda lye (38°) 123; water 200; brine (16°) 15. The fats and lye are boiled to a clear paste, water and brine being added and the whole beaten up to a froth.

Scents for floating soap.—(1) Thymene 1.2 parts; citronella oil 1.25; light camphor oil 2; poley oil 0.5; coumarin 0.05. (2) Carvene 1; citronella oil 2; thymene 1; fennel oil 0.45; poley oil 0.5; coumarin tincture (1:9) 0.05; (3) Japan peppermint oil 1; citronella oil 2; light camphor oil 1; thymene 1. (4) Thymene 1.1; citronella oil 2.2; light camphor oil 0.2; nerolin 0.1; poley oil 0.6. (5) Thymene 2; citronella oil 1; light camphor oil 2. (6) Poley oil 1 part; citronella oil 2; light camphor oil 1; thymene 1 part.

Viennese floating soap.—Ceylon cocoanut oil 1,900; castor oil 200; glycerin 300; caustic soda lye (38°) 1,000; brine (17°) 1,500; water 1,000; citronella oil 12; poley oil 5 parts. The soap is prepared by the warm process, the warm clear paste being beaten to froth, framed in that condition, and beaten up for a short time after framing.

Economical curd soap.—Ceylon cocoanut oil 290; rosin 5; crude palm oil 2.5; caustic soda (35°) 185; filling solution (see below) 150; safrol 1.

Venus soap.—(1) Palm kernel oil 300; caustic soda lye (35°) 185; filling solution 155; citronella oil 1. (2) Palm kernel oil 300; caustic soda lye (35°) 190; talc 50; filling solution 200; safrol 0.7.

Filling solution for above soaps.—Sugar 34; potassa 32; salt 30; water 225 parts.

Cream soap for lace curtains, etc.—Ceylon cocoanut oil 3.600; caustic soda lye (34°) 2,300; oil of white thyme 7; lavender oil 13; crystalized chrysoidin 12.

Palm soap.—Ceylon cocoanut oil 620; caustic soda lye (39°) 325; potassa 90; soda crystals 90; salt 125; water 1,250; mirbane oil 1.

Borax soap.—Cochin cocoanut oil 750; caustic soda lye (39°) 375; powdered borax 45; water 45; lavender oil 1; spike oil 1.

Floating Household Soap.

Unless one has the necessary mechanical equipment, the manufacture of a floating soap had best be left to the soapmakers. The floating properties of a soap depend upon the formation of minute empty spaces throughout the mass, which reduce its specific gravity. This is accomplished by the addition of an alkaline carbonate to the batch of materials just before pouring out, carbon dioxide being set free and permeating the mass; or by rapid agitation of the mass with paddles of a suitable sort.

We append a formula for a white floating soap made by the stirring process, as with the other process free alkali may be present in the finished product:

Cocoanut oil.....440 pounds.
Soda lye, 38° B.....231 pounds.
Potash lye, 25° B..... 11 pounds.

Solution of calcium chloride, 20° B.....110 pounds.
Hot water.....440 pounds.
Perfume ..... enough.

The cocoanut oil and the lyes are mixed and saponification completed in the usual manner. Then the batch is stirred until it has the appearance of fine wooly grains. The solution of calcium chloride is warmed, and together with the hot water is added gradually with constant stirring.

The batch is then allowed to cool to 77 degrees F. and transferred to a stirring kettle, where it is beaten vigorously until it becomes a stiff foam. It is then placed in the drying frames and dried slowly in a light, airy place.

The color of this soap depends upon the quality of the materials used.

Surgeons' Grit Soap.

For use by surgeons in washing their hands preparatory to sterilizing them for an operation, J. K. Thum (Am. Jour. Pharm.) recommends a soap made according to the formula below. He says it is free of that excess of alkali which renders the commercial grit soap unsuitable for the purpose:

Cottonseed oil .....500 mils.
Stearic acid .....500 grammes.
Sodium hydroxide....150 grammes.
Alcohol .....150 mils.
Aqueous solution of sodium chloride (20%) ..... enough.
Distilled water..... enough.
Powdered pumice.....300 grammes.

Heat together the cottonseed oil and stearic acid until the latter is completely dissolved. Then add the sodium hydroxide, dissolved in a liter of distilled water, and heat for fifteen minutes with constant stirring. Next add the alcohol and stir until saponification is effected. This is shown by the mixture becoming homogeneous in a few minutes. Then add one liter of a 20 per cent. aqueous solution of sodium chloride, and stir vigorously. Allow this to stand until the soap is hardened. The alkaline liquid, which remains at the bottom of the container is then drained out through a hole punched in the soap mass on one side. The mass is then washed two or three times with distilled water, melted, and while still on the fire the powdered pumice is thoroughly incorporated. While still hot it is poured into suitable molds. In twenty-four hours the soap is hard enough for use.

Mechanics' Hand Soap

Hand-cleaning pastes should contain an excess of alkali. The abrasives generally used are powdered pumice and fine sand. For some purposes a moderately hard soap containing about 2 per cent. of incorporated kerosene in addition to the abrasive is particularly well adapted. Aside from its expensiveness, the soft soap of the Pharmacopoeia is an excellent base for the popular hand-cleaning abrasive pastes. Linseed oil soap is somewhat more detergent than the products of other vegetable oils, but linseed oil is far from cheap. A mixture of 10 parts of cottonseed oil and 2 parts of lard, saponified with a sufficient quantity of a mixture of equal parts of sodium hydroxide and potassium hydroxide, makes a soap having good cleansing and lathering properties.

A collection of working formulas is appended:

I.

Powdered castile soap... 7 ounces.
Borax ..... 2 ounces.
Pumice, in very fine powder ..... 1 ounce.
China clay, light.....10 ounces.

Instead of the borax, about 5 ounces of sodium perborate may be used.

Another formula, very highly recommended, calls for 2 ounces of a solution of sodium silicate instead of the borax.

II.

Soft soap ..... 1 pound.
Ammonia water ..... 1 ounce.
Pumice stone, levigated. 6 ounces.
Oil of turpentine, to make a paste.

III.

W. R. White's formula:
Powdered pumice stone. 4½ pounds.
Green soap .....1¼ pounds.
Potassium carbonate..280 grains.
Glycerin ..... 2 fluid ozs.
Water ..... 26 fluid ozs.

Dissolve the soap and potassium carbonate in the water by the aid of heat; add the glycerin, and rub this solution up well in a mortar with the pumice stone until it is of a paste-like consistence.

IV.

F. A. Bengartz's formula:
Make a soap with oleic acid and alkali, with a good addition of coarse salt.

V.

Otto Raubenheimer says: "Make a mixture of ordinary soap, sand, coarsely powdered pumice stone and solution of sodium silicate."

VI.

Soft soap .....80 grammes.
Water of ammonia..... 5 grammes.
Oil of turpentine..... enough.
Finely levigated pumice stone .....30 grammes.

This may be made by first mixing the soap and water of ammonia, incorporating the solvent, and then adding the pumice stone.

Such a soap would do for putting up in collapsible tubes.

VII.

Curd soap ..... 1 ounce.
Hot water ..... 1 dram.
Borax .....30 grains.
Anhydrous wool-fat .... 2 drams.
Powdered camphor .....30 grains.
Oil of rose geranium..... 4 minims.
Alcohol .....30 minims.

The water is to soften the soap; after that is done, add the other ingredients and mold into cakes.

VIII.

White soap .....2½ pounds.
Fine sand ..... 1 pound.
Water .....5½ pints.

This makes a paste which is firm, yet easily applied.

If an extra detergent quality is desired, 4 ounces of sodium carbonate may be added, and the quantity of soap may be reduced to 2 pounds. Paste containing this addition will attack grease, etc., more readily, but it is harder on the skin.

IX.

Fluidextract of quillaja. 2 ounces.
Borax ..... 1 ounce.
Fuller's earth ..... 1 ounce.
Soft soap .....12 ounces.
Water ..... enough.

Rub the borax with the fluidextract and add the fuller's earth. When these have been thoroughly mixed, incorporate with the soft soap, adding a little water, if necessary, and perfume, if desired.

Laundry Blue

Liquid Bluing.

The "soluble blue" of commerce is much used for laundry work. This blue, when properly made, dissolves freely in water, and solutions so made are put up as liquid laundry blue. The water employed in making the solution should be free from mineral substances, especially lime. If rain water or distilled water and a good article of blue be used, a stable preparation ought to result. As it is essential that the solution be a perfect one, it is best to filter it through several thicknesses of fine cotton cloth before bottling; or if made in large quantities this method may be modified by allowing it to stand some days to settle, when the top portion may be siphoned off for use, the bottom only requiring filtration.

The soluble blue is said to be potassium ferri-ferrocyanide. If the pharmacist wishes to prepare it himself, instead of buying it ready made, he may do so by gradually adding to a boiling solution of potassium ferricyanide ("red prussiate of potash") an equivalent quantity of hot solution of ferrous sulphate, boiling for two hours and washing the precipitate on a filter until the washings assume a dark-blue color; the moist precipitate can then at once be dissolved by the further addition of a sufficient quantity of water.

About 64 parts of the iron salt to 100 parts of the potassium salt is the proper proportion.

Anilin blues are also used in laundry work. We suggest experimentation with a water-soluble anilin blue (say 6B). These blues are usually marketed in the form of 1 to 1½ per cent. solutions. Doubtless some dealer in anilin dyes would be willing to supply a little valuable information on the side.

Solid Bluing

Ultramarine .....30 parts.
Sodium bicarbonate.....20 parts.
Glucose ..... 6 parts.

Mix the color and the sodium salt, and knead in the glucose.

This mass is to be pressed into balls and tied up in small squares of linen.

Bag Blue

The following notes from the London Laundry Record were reprinted in The Druggist Circular:

Ultramarine is now very generally used as a laundry blue where the insoluble or "bag blue" is desired. It is mixed with glucose and dextrin, and pressed into balls or cakes. When glucose alone is used the product may become soft. Bicarbonate of sodium is added as a "filler."

The coal-tar or anilin blues are not offered to the general public as laundry blues, but laundry proprietors have them frequently brought under their notice, chiefly in the form of solutions, usually 1 to 1½ per cent. strong. These dyes are strong bluing materials, and being in the form of solution, are not liable to speck the clothes. Some are fast to acids and alkalies, others are fast to one but not to another; some will not stand ironing, while others again are not affected by the operation; generally they are not fast to light, but this is only of minor importance. The soluble, or cotton, blues are the ones most favored. Blackley blue is very largely used for this purpose. It may be mentioned that a 1 per cent. solution of this dye is usually strong enough. Unless care is taken in dissolving these dyes they are apt to produce specks.

Powdered Bluing

Soluble blue, non-soluble prussian blue, synthetic indigo, or ultramarine blue may be bought in the market and put up in packages to suit, either plain or diluted with some such substance as starch, sodium bicarbonate or talc.

Laundry Blue Paper

We believe this article is prepared by saturating porous paper with a concentrated aqueous solution of water-soluble anilin blue. Perhaps a moiety of gum arabic may be dissolved in the

solution. Some of the wholesale dye houses or importers may help with information as to the best dye to use.

Bubbling Blue

Chinese blue	50 grammes.
Sodium bicarbonate	105 grammes.
Tartaric acid	30 grammes.
Powdered talc	15 grammes.
Stearin	1 gramme.
Alcohol	80 mils.

Reduce all the solids to a fine state of division; triturate them together and work in the spirit. Pass the mass through a granulating sieve; spray the granules with a thin liquid petrolatum and let them dry.

Paraffin Washing Compound

Several years ago a firm in this city put on the market a washing compound composed of paraffin, colored blue by the addition of ultramarine blue, and cut into one-inch blocks, which sold for ten cents.—W. F. Kaemmerer.

A pink color may be imparted to the paraffin by the use of alkanet.

Washing Fluid

I.

Shredded yellow soap	1 pound.
Oil of turpentine	1 pint.
Stronger ammonia water	2½ pints
Water	2 gallons.

Dissolve the soap in 1 gallon of water with the aid of heat. Make an emulsion of 2 pints of this solution and the oil of turpentine. Add the rest of the soap solution, with thorough shaking, and then the ammonia water and water.

II.

If desired, the oil of turpentine of the foregoing may be omitted, and its place filled by a strong aqueous solution of borax.

III.

Potassium carbonate	1 dram.
Soft soap	2 drams.
Stronger ammonia water	5 ounces.
Distilled water	15 ounces.

IV.

Caustic soda or potash	8 grammes.
Alcohol	20 grammes.
Olein	24 grammes.
Glycerin	2 grammes.
Oil of turpentine	4 grammes.
Ultramarine blue	2 grammes.

This is for 100 liters of water.

V.

Ammonia solution	64 grammes.
Olein or glycerin	5 grammes.
Oil of turpentine	25 grammes.

For years there has been sold in this community a combination consisting of 1 ounce of ammonium chloride, 1 ounce of potassium carbonate, and 1 can of lye. This is dissolved by the housewife in 2 gallons of water, and 1 or 2 cupfuls is used in each boiler of water.—Louis A. Ribar.

The following combination we have put up for years:

Ammonium carbonate	2 ounces.
Potassium carbonate	2 ounces.
Sodium borate	2 ounces.

This combination is known as "washing compound."

Another combination which we sell quite a lot of is composed of the following ingredients:

Ammonia water	2 ounces.
Ether	1 ounce.
Sodium borate	2 ounces.

Mix with 1 gallon of water.—George D. Campbell.

Lastly, we might add that a paste made by mixing melted paraffin with a hot thick "solution" of common laundry soap enjoys great vogue in certain sections of this country.

Washing Powders

We have no knowledge of the composition of the various washing powders sold under fancy names, but are under the impression that they consist largely of powdered soap fortified by strong alkalies. A few recipes are here given:

Borax Soap Powder

Soap	5 pounds.
Sodium hydroxide	3 pounds.
Sodium silicate	2 pounds.
Sodium borate	1 pound.

London Soap Powder

Soap	6 pounds.
Sodium hydroxide	2 pounds.
Pearlash	1 pound.
Sodium sulphate	1 pound.

Chemical Soap Powder

Equal parts of soap, sodium hydroxide and sodium borate, perfumed with oil of eucalyptus.

Dry Soap Powder

Dessicated hard soap	28 parts.
Sodium carbonate (crystals)	68 parts.
Anhydrous boric acid	1 part.
Boron nitride	1 part.
Ammonium chloride	1 part.

Perfumed Washing Powder

Mix equal parts of soap, sodium hydroxide and sodium borate, and perfume, if desired, with oil of eucalyptus.

Cheap Soap Powder

Hard soap	5 parts.
Soda ash	3 parts.
Sodium silicate	2 parts.
Borax	1 part.

Gold Dust Type

Water	8 parts.
Anhydrous sodium carbonate	50 parts.
Soap	42 parts.

CHAPTER VIII.

CLEANING AND RENOVATING PROCESSES

Removing Grease Spots from Clothing and Other Fabrics—Other Stains—Carpet Cleaner—Ink Removers—Renovating Straw Hats—Various Cleansing and Renovating Agents.

Always consult the index when using this book.

AS TO THE USE OF BENZIN

Benzin is useful as a cleaner and an insecticide, but it is very dangerous on account not only of its inflammability but of the explosiveness of its fumes when they are mixed with air.

In compounding any benzin mixture the operator should be sure that no fire of any kind is in the room. When the directions call for heat, the heat should be supplied by coils of pipe containing steam or hot water.

What is said of benzin applies with equal force to preparations of which it forms a part, for these are generally for use in the household by inexperienced people, which fact, of course, increases their danger. Such preparations should bear distinct and emphatic warning as to the probable results should they be used near fire.

This caution applies also to naphtha, gasoline, ether, carbon disulphide and some other liquids.

Wood Alcohol a Dangerous Fluid.

Many cases of blindness have been caused by the fumes of wood alcohol, so that this fluid is dangerous even when used in the arts. It should never enter into medicine, not even into liniments and other applications for external use only.

Removing Grease Spots from Clothing.

The advise of the pharmacist is frequently sought by persons in search of some means of removing grease spots from clothing, and the following paragraphs quoted from Farmers' Bulletin 861, issued by the United States Department of Agriculture, contains some worth while suggestions.

Fresh grease spots may consist of the pure fat or oil. Old grease spots or stains from automobile wheels, or machine greases, etc., usually contain more or less dust, dirt, or fine particles of metal. Sometimes it is possible to scrape or wipe much of the adhering grease from a stained material. After this has been done there is a choice of three general methods of treating the stain itself: First, wash it with soap and warm water, which removes the grease, it is thought, by emulsifying it; second, absorb the grease by means of dry substances; and, third, dissolve the grease in an organic liquid.

Use one of the following agents in removing grease spots:

1. Warm water and soap.—As in ordinary laundering. Grease spots usually can be removed from washable materials in this way, provided care is taken to rub the particular spot thoroughly.

2. Absorbent substances. — Blotting paper, fuller's earth, brown paper, French chalk, powdered magnesia, or white talcum powder, for fine materials; corn meal or salt, for carpets, rugs, and other coarse materials. The use of absorbents generally is effective only on spots of grease or oil unmixed with particles of dirt or metal. The advantages of using them are that the fabric is not wet and there is no danger of leaving a ring, as in the case of grease solvents. In using an absorbent, such as a clean blotter or a piece of unglazed brown paper, lay it on each side of the stain and apply a warm iron. The grease is melted and is absorbed by the paper. To use the absorbent powders, lay the stained fabric upon a flat surface and spread a layer of the absorbent over the stain and work it around gently so as not to pull the fibers. As soon as it becomes gummy, shake or brush it off and repeat the process until the bulk of the stain is removed. Then apply another layer of the absorbent and allow it to remain overnight, or longer if necessary. This removes all traces of the stain, and in the case of slight stains the preliminary treatment is unnecessary. Then dust or brush off the absorbent thoroughly. If it is not convenient to let the stain stand overnight, place a layer of cloth or brown paper over the absorbent and apply a warm (not hot) iron for several minutes. In the case of stains made by solid fats, which must be melted before they can be absorbed, the use of the warm iron is necessary.

3. Organic solvents. — Chloroform, carbon tetrachloride, ether, gasoline, or naphtha, and benzol. The first two are the safest to use, since they are not inflammable. * * * Take the greatest care in using inflammable solvents. It is best to use them in a shady place out of doors, and if in the house, by an open window and away from all flames.

Place a pad of clean cloth or a white blotter beneath the stain and change it as soon as it becomes soiled. Sponge the stain with a clean cloth, preferably a piece like the stained material, moistened with the solvent. To prevent the spreading of the grease and solvent it is best to use small amounts of the solvent at a time and to work from the outside of the spot toward the center. It is well also to surround the stain with a ring of French chalk or any of the absorbents mentioned in No. 2, above, and to rub the stain with a clean cloth until it is thoroughly dry.

In removing grease spots which contain dirt or fine particles of metal, more rubbing and a freer use of the solvent are necessary. It is best to apply the solvent from the wrong side of the material, so that the particles will be washed mechanically from the fibers onto the pad of cloth placed underneath. If the spot does not yield to this treatment immerse it in a small bowl of the solvent and brush it gently with a small, soft brush. The brushing serves to loosen the insoluble particles, which then fall to the bottom of the bowl.

In general, where the stained place must be dipped in the solvent it is more satisfactory to immerse the whole article finally in clean solvent, which prevents the formation of rings. If sufficient solvent is not at hand for this, the ring usually can be removed by careful and patient sponging with small quantities of fresh solvent, taking clean cloths, pads, or blotters, as suggested above, and working from the wrong side of the material.

4. An absorbent—(see No. 2, above) mixed with a solvent (see No. 3, above) in the form of a thick paste. The white absorbents (French chalk or magnesia) are most satisfactory. Spread the paste over the spot, leave it until thoroughly dry, and brush it off. Repeat this treatment if necessary. The spreading of the solvent and the formation of a ring will be avoided to a considerable extent in this way. The method is especially useful for cleaning light-colored unwashable materials, laces, etc.

The Removal of Stains From Garments

This article, with as many errors corrected as we were able to correct and several others left in because we did not care to venture a guess as to what was intended, was reprinted in The Druggists Circular from Dye and Cleaning:—

Before a garment or other textile fabric can be cleaned or dyed it is desirable, in fact, necessary, to examine it for and remove any stains which may be present.

Very often the nature of the stains is quite obvious, and then their removal may be proceeded with and is readily effected, sometimes completely, but occasionally it may happen that they cannot be completely removed. The following hints will be found of service by garment dyers and cleaners:—

Stains of Unknown Origin.

White Goods and Colored Cotton Goods.—A small quantity of soap is dissolved in lukewarm water, and to each pint there is added a teaspoonful of ammonia water. The stain is wiped with a sponge steeped in this fluid, and the material is finally washed out in water.

Colored Woolen Stuffs.—Dissolve ¾ ounce of gall, 1½ ounces of borax, 18 ounces of alcohol, 9 ounces of ammonia water, 1 ounce of glycerin, and the yellow of two eggs. The stuff is washed in this solution at the boil. It is subsequently rinsed in clean water and dried in the air but not in the sun.

Silk, Satin and Similar Materials.—Dissolve 1½ ounces of borax and ½ ounce of soap in ½ pint of spirit and ½ pint of water, adding ½ ounce of magnesium carbonate and the yellow of two eggs. This mixture is applied to the stain and the stuff is washed in lukewarm water, rinsed in cold water and dried at a moderate warmth, being subsequently ironed with a moderately hot iron.

Dust Stains.

White Goods and Colored Cotton Goods.—To be beaten and well brushed.

Colored Wool, Silk, Satin and Similar Materials.—For old stains which have become more or less dried in, it is best to apply some spirit mixed with the yolk of an egg. Let this dry, and then scrape it away. The remains of the egg yolk is wiped out by means of a linen rag dipped in warm water.

Wine, Beer, Rum, Spirit and Similar Stains.

Wash out with soap and clean warm water.

Perspiration Stains.

White Goods.—The stain is thoroughly removed by a solution of sodium hyposulphite, followed by washing with water.

Colored Cotton and Woolen Materials.—Wash thoroughly in a solution of sodium hyposulphite and then wash with clean water.

Silk, Satin and Similar Materials.—Wash in a much diluted solution of sodium hyposulphite followed with clean water.

Milk, Soup and Similar Grease Stains.

White Goods.—Wash thoroughly in soap or in water containing a little soda.

Colored Cotton and Woolen Materials.—The stain is thoroughly removed with soap or in water containing a little soda.

Colored Cotton and Woolen Materials.—The stain is wiped with a sponge dipped in pure oil of turpentine or benzin. The excess is removed with blotting paper, and the stuff is washed out in warm soap and water.

Silk, Satin and Similar Materials.—As above, with ether or the purest benzin.

Stearin or Wax Stains.

Remove as much as possible carefully with a knife. Place a piece of wet linen under the material, cover the stain with several layers of blotting paper and pass a hot iron over it. If this does not reach the stain the same is undertaken with a piece of heated metal, for instance, a knife. If a small grease spot still remains it can be removed in the same way as butter.

Butter, Lard, Oil, Oil Colors and Varnish Stains.

White Goods, Colored Cotton and Woolen Materials.—The cloth is wetted and a sponge dipped in oil of turpentine or benzin passed several times over the stain; a piece of blotting paper is then placed over the stain and a hot iron is passed over the stained place. The entire material is then washed out in warm soap and water.

Silk, Satin and Similar Materials.—A thin paste is formed of magnesium carbonate and ether, which is spread over the stain. When the ether has been volatilized the magnesium stain is brushed away or removed with a piece of soft bread. Old stains of the nature indicated above are first dampened with chloroform, and then the processes as above described are carried out. In any case, to entirely remove the stain will necessitate several repetitions of the process.

Urine Stains.

Wash out in alcohol or in a very dilute solution of citric acid.

Rosin Tar, Carriage Grease, Etc., Stains.

White Goods.—The goods are made damp and the stain is wiped with a sponge dipped in oil of turpentine, and is covered with blotting paper, a hot smoothing iron being passed several times over it. Finally the whole material is washed out in warm soap water.

Colored Cotton and Woolen Materials.—The stuff is dampened, and a little olive oil applied to the stain on which soap is afterwards well rubbed. The soap is allowed to act for a few minutes and is washed out alternately with oil of turpentine and hot water. If this has not succeeded, the yellow of egg mixed with some oil of turpentine is applied, and when this has dried it is scraped away and a thorough washing out in hot water ensues. The last operation is the washing of the stuff in water mixed with a little hydrochloric acid and thorough rinsing out in pure water.

Silk, Satin and Similar Materials.—The stuff is wetted, and a sponge dipped in a mixture of ether and chloroform is rubbed over the stain. If the stain is no longer noticeable, white clay is strewn over it, over which filtering paper is placed and the stain is extracted by passing a hot smoothing iron over the place. If this process has not been successful the yellow of egg mixed with chloroform is used in the same manner.

Lime, Lye, Alkali and Similar Stains.

White Goods.—Wash out in clean water.

Colored Cotton and Woolen Stuffs, Silk, Satin and Similar Materials.—The stuff is wetted and a diluted solution of citric acid is spread drop by drop over the stain. After the stain has disappeared a thorough washing in water follows.

Vinegar, Acid Wine, Acid Fruit and Similar Stains.

White Goods.—Wash out in clean water, to which ammonia water has been added.

Colored Cotton and Woolen Materials, Silk, Satin and Similar Materials.—Diluted ammonia water is spread over the stain, and when it has disappeared a thorough washing in water ensues.

Acid Stains.

Fresh acid stains can be easily neutralized with ammonia water; old acid stains cannot be removed.

Plant, Fruit, Dyestuff, Red Wine, Cherry, Strawberry and Similar Stains.

White Goods.—The stain is removed either by rinsing in dilute water [sic] or being held over burning sulphur. When it has finally disappeared the stuff must be thoroughly washed out in water.

Grease Eradicators

I.

Tincture of soap bark... 3 ounces.
Benzin, to make.....1 pint.
Mix and shake vigorously.

II.

The following is said to be the composition of a preparation that will solidify benzin:

Coconut oil soap.....	2 ounces.
Solution of potassium hydroxide	1½ ounces.
Ammonia water.....	3 ounces.
Water to make.....	12 ounces.

Dissolve the soap in about 4 ounces of hot water; add the alkalies and the remainder of the water.

If the benzin be added in small portions with thorough agitation, 2½ ounces of this mixture will solidify 32 ounces of benzin.

III.

Here is a formula for a mixture that does not contain benzin:

Castile soap.....	4 pounds.
Potassium carbonate....	1 pound.
Camphor	1 ounce.
Alcohol	1 ounce.
Ammonia water.....	1 ounce.
Hot water.....	enough.

Dissolve the potassium carbonate in about 1 pint of hot water, add the soap, previously reduced to thin shavings; keep warm over a water-bath, stirring occasionally until dissolved, adding more water if necessary, and finally, when of a consistency to become semi-solid on cooling, remove from the fire and, when nearly ready to set, stir in the camphor, previously dissolved in the alcohol, and the ammonia.

IV.

If a paste is desired, a potash soap should be used instead of the castile in the foregoing formula, and a portion of or all the water be omitted. Soaps made from potash remain soft, while soda soaps harden on the evaporation of the water which they contain when first made.

V.

Oxgall is highly reputed as a non-inflammable solvent of all fatty stains, and does not injure colors or fabrics if properly purified. It should be as fresh as possible when used. Diffused in water it is quite efficacious, or it may be used in combination with a weak alkali or the yolks of eggs. Numbers VI and VII are two typical formulas:

VI.

Powdered borax.....	15 grammes.
Extract of soap bark.	15 grammes.
Oxgall (fresh).....	60 grammes.
Castile soap.....	225 grammes.

First make the extract of soap bark by boiling about 80 grammes of the

crushed bark in water until it has assumed a dark color; then strain the liquid into an evaporating dish and by the aid of heat evaporate it to a solid extract; then powder and mix it with the borax and the oxgall. Melt the castile soap by adding a small quantity of water and warming, then add the other ingredients and mix well.

VII.

Fuller's earth	½ pound.
Sodium hydroxide	½ pound.
Common soap	½ pound.
Yolks of	8 eggs.
Purified oxgall	½ pound.

Triturate the soap with the sodium hydroxide until a smooth paste is obtained; stir in gradually the yolks of the eggs and the oxgall, previously beaten together; slowly incorporate the fuller's earth; shape the mass into balls or cakes and set aside to dry.

For use, a little of the compound is scraped off, made into a paste with water and rubbed on the stain.

VIII.

A soft oxgall soap may be prepared as follows:

Oxgall (fresh)	10 grammes.
Alcohol	100 grammes.
Hard soap	10 grammes.
Soft soap	10 grammes.

Boil the oxgall in the alcohol and strain the mixture. Dissolve the soaps in this spirit and evaporate to the proper consistency on a water bath.

IX.

A grease eradicator which we have found to be good is made of:

Castile soap	4 drams.
Chloroform	4 drams.
Ammonia water	1 ounce.
Alcohol	4 drams.
Water, to make	8 ounces.

This mixture blows the stopper out of the bottle.

The value of carbon tetrachloride as a grease eradicator should not be overlooked. It is said to be equal to benzin for this purpose and is non-inflammable. Perhaps it could be made into a "jelly" as easily as benzin, but we have not experimented along this line. Its vapors, which are heavier than air, act as an anaesthetic, however, and, consequently, it must be handled with care.

Removing Paint from Silk

To remove paint from any kind of fabric, oil of turpentine is about as good as anything. Here are two processes, from different sources, for removing paints, grease, etc., from silk:

I.

Rub the stain with a white cloth moistened with a mixture of equal parts of oil of turpentine and ether until no impure matter adheres to it. Cover the stain about the thickness of a knife blade with pulverized white bole, upon which place a blotting paper and press a hot iron. Repeat until the stain has disappeared.

II.

Make a thin dough with talc and the following solution:

Spirit of ammonia	6 drams.
Ether	14 drams.
Benzin	5 drams.
Oil of lavender	1 dram.
Tincture of quillaja	7 ounces.
Alcohol	15 ounces.

Spread this paste over the spot. When it has thoroughly dried, brush off and wipe with dry bread crumbs. If the spots are old, first moisten them with chloroform, and then proceed as above directed.

We suggest that in experimenting either a scrap of the silk be taken or, if that is not to be obtained, then that a portion of the garment that does not show be used. Silk is very easily spoiled, especially when dyed with more or less fugitive colors, so the safer way is to ascertain in advance what will remove the stain and not damage the goods.

Carbon Tetrachloride Soap for Cleaning Clothes

Rosin soap	1 pound.
Common white soap	1 pound
Potassium hydroxide	3 ounces.
Alcohol	8 ounces.
Carbon tetrachloride	5 pints.
Water	enough.

Melt the soaps together on a water-bath, adding to them a little water from time to time, as required. Dissolve the potassium hydroxide in the alcohol; add to this solution 1½ pints of carbon tetrachloride and incorporate the liquid in the soap mass, beating the whole with an egg beater. Transfer the pasty mass to a suitable bottle, add the rest of the carbon tetrachloride and mix the whole by agitation. The compound should at once be transferred to wide-mouthed bottles of the size desired for the market, and these immediately corked tightly.

Sometimes a portion of the carbon tetrachloride separates from the "cream" on standing, but it can be incorporated quite easily by shaking before using.

Removing Stains from Silk

Castile soap	4 drams.
Chloroform	4 drams.
Ammonia water	1 ounce.
Alcohol	4 drams.
Water, to make	3 ounces.

Spot Eradicator

Alcohol	50 parts.
Ammonia water	15 parts.
Benzin	5 parts.
Glycerin	5 parts.
Ether	3 parts.
Spirit of lavender	1 part.

This mixture should be kept in a tightly closed glass container and a little water may be added. It is applied to the spots with a small sponge. It will not remove alkali spots, and should be used with great caution in cleaning colored goods, since it may dissolve or decompose their dyes.

Methylene Blue Stain on Fabric

Alcohol is efficient as a methylene blue destainer, but may have a strong affinity for the dye of the fabric, if colored. One might try it first on an inside seam margin. Solution of hydrogen dioxide is also a fairly good remover of methylene blue stain, but perhaps not so good as solution of chlorinated soda.

Dry Cleaning Soap

Stronger ammonia water	21 parts.
Alcohol	9 parts.
Water	23 parts.
Oleic acid	47 parts.

Mix the alcohol and the acid, add the water, and finally add the ammonia water, with constant agitation.

Clothes Cleaner's Soap

For renovating clothes, removing grease spots, etc., where ordinary washing is not permissible, use a soap made of—

Castile soap, shredded	64 parts.
Potassium carbonate	8 parts.
Water	20 parts.
Alcohol	1 part.
Camphor	1 part.
Ammonia	1 part.
Bone black	1 part.

Dissolve the potassium carbonate in the water and in the lye so made dissolve the soap. Heat. Dissolve the camphor in the alcohol, add the ammonia and make into a paste with the bone black. Work altogether into a mass and press into molds.

Ammonia Water for Cleaning

We have been told by the manufacturers of ammonia that a solution containing about 16 to 18 per cent. of NH_3 is most satisfactory for cleaning fabrics.

To Remove Paint and Grease From Fabrics

An interesting story is told in The Druggists Circular for October, 1910, by Billie Barrie of how he made, put up, advertised and sold barrels of a grease and paint remover, the formula for which is:—

a. Green soap	1 pound.
Alcohol	½ pint.
Water	1 pint.
b. Carbon tetrachloride.	

Equal parts of a and b are put into a 4-ounce bottle and sold for 25 cents.

Paste for Removing Grease Spots

Alkaline soap	12 parts.
Boiling water	20 parts.
Stronger ammonia water	3 parts.
Benzin, to make	100 parts.
Oil of wintergreen to	perfume.

Dissolve the soap in the water, and when it has cooled somewhat add the stronger ammonia water. Then add, with constant stirring, enough benzin (preferably deodorized) to make 100 parts. A little oil of wintergreen, or sassafras, or bergamot, or mirbane is a suitable perfume for this paste.

Benzin Cream Clothes Cleaner

Cocoanut oil soap	2 drams.
Potassium hydroxide	1½ drams.
Ammonia water	3 drams.
Water	1 ounce.
Benzin	1 pint.

Dissolve the soap in a portion of the water by the aid of a gentle heat, then add the balance of the water and alkalies. To this add the benzin and agitate until the liquid solidifies

Electric Benzin

White castile soap	1 dram.
Alcohol	½ fl. oz.
Glycerin	1 fl. oz.
Ammonia water	1 fl. oz.
Ether	1 fl. oz.
Water, to make	16 fl. ozs.
Benzin	enough

Dissolve the soap in the water, then add the remaining ingredients, except the benzin. Into a 4-ounce wide-mouthed bottle put 3 drams of the solution, and then add benzin, little by little, shaking well after each addition, until the bottle is full.

Cleansing and Polishing Soap

We doubt the possibility of making a soap that will be "a polish for every kind of metal and remove all stains from all articles." However, here is a formula that on the face of it appears to promise a soap having polishing and cleaning properties.

Tallow	4 pounds.
Coconut oil	6 pounds.
Soda lye (38° B.)	5 pounds.
Infusorial earth, finely powdered	4 pounds.
Oil of turpentine	5 ounces.

Benzin Jelly

A reader heard that a mixture of the substances named below, if added to benzin or gasoline in the proportion of 12 drams to the quart, would produce a jelly about the consistency of butter or petrolatum. The formula, however, did not "work" in his hands and he has asked for assistance.

Glycerin	2½ ounces.
Acacia, granular	3 drams.
Ammonia water	1½ ounces.
Ether	2 ounces.
Castile soap	2½ ounces.
Distilled water	16 ounces.

Mix the first 4 ingredients and add the mixture to the water in which the soap has been dissolved.

Our success with the "jellifier" has not been marked. By leaving out the glycerin and the acacia we got an emulsifier that formed a thick cream with benzin in the proportion given, but not a jelly.

A gelatinous mass results from the admixture of 1 part of a soap made by neutralizing oleic acid with potassium hydroxide; 2 parts of stronger ammonia water; and 8 parts of benzin.

It is said that by shaking together for half an hour, 1 part of tincture of quillaja with 4 parts of benzin and setting the mixture aside over night, the benzin will be gelatinized.

Various methods are extant for incorporating benzin in a soap. Here are a few of them:—

To make a soft benzin soap or "cream" take—

Liniment of soft soap	2 drams.
Stronger ammonia water	2 drams.
Benzin	1 ounce.

Shake all together vigorously until the mixture gelatinizes.

To make a hard benzin soap take—

Laundry soap	265 parts.
Ammonia water	45 parts.
Benzin	200 parts.
Water	enough.

Cut the soap into shreds and melt it with a minimum amount of water with the aid of a gentle heat. Remove the source of heat—and from the building if possible—and beat in the ammonia water and then the benzin in divided portions. The heavier the benzin, the better.

Palami Jelly

A correspondent says that this article, used for removing grease spots, consists of a white jelly made from borax chips, olive chips and water, and is perfumed with oil of citronella. We presume he means borax soap chips and olive oil soap chips.

Removing Blood Stains from Clothing

The color of blood stains is due to the hemoglobin, a red coloring matter of a protein nature which contains iron, and since all proteids are coagulated by heat it is obvious that hot water should not be employed in removing blood stains until all the proteid has been removed. Farmers Bulletin 861, issued by the United States Department of Agriculture, suggests the use of the following agents:

1. Cold or lukewarm water. Either soak the blood stains or rub them in the water until they turn light brown in color; that is, until most of the coloring matter is dissolved. Then wash the material in hot water, as in the ordinary process of laundering. For stains on silk or wool, sponge in cold or lukewarm water.

2. Soap (for washable materials). Rub the stained portions with soap and place in cold water, either allowing them to stand in it until the stains are loosened or bringing the water very slowly to the boiling point.

3. Ammonia (for washable materials). Use about 1 ounce (2 tablespoonfuls) of household ammonia to 1 gallon of water. Soak the stains in this until they are loosened and then wash in the usual manner. For old stains ammonia is somewhat more satisfactory than soap.

4. Hydrogen dioxide. Sponging with a little hydrogen dioxide often will remove the last traces of blood stains after the main part has been removed, as described in No. 1 above. This agent can be used on wool and silk, provided it does not injure the color of the material.

5. Javelle water. Use this only as a last resort.

6. Raw starch mixed with cold water to a paste is efficient for stains on thick materials, such as flannel and blankets, which can not conveniently be soaked in water. Apply the paste thickly to the stain and brush it away when it becomes dry. Repeat the application until the stain is removed.

Removing Mildew Spots

Mildew spots on white goods may in most cases be removed by a bleaching process, the method depending, to some extent, upon the nature and texture of the fabric. The latter should be thoroughly washed, and, while still damp, may be immersed, or touched over, with dilute Javelle water or solution of chlorinated soda or with hydrogen peroxide solution. Dilute bromine water may also be used. Sometimes a treatment similar to that used for removing ink stains is successful, treating the stains with a very concentrated solution of oxalic or citric acids, or both. In most cases it is of advantage

to expose the fabric, in a damp state, to the rays of the sun.

Perspiration Stain Remover

Ammonium oleate	2 ounces.
Ammonia water	2 ounces.
Ether	1 ounce.
Benzin	5 ounces.
Chloroform	1 ounce.

Mix the first two ingredients and shake them well together. Add the benzin, with more shaking, and then the chloroform, continuing the agitation. Let the mixture stand for a while and then shake it at intervals until a smooth, creamy liquid results.

Cheap Cleansing Powder

A reader sends a sample of cleansing powder which is on the market in the West at from 2 to 3 cents a pound, according to quantity taken. It is said to contain no grease, lime or caustic.

This powder is a sodium sesquicarbonate, known also as "snow flake crystals." It may be regarded as a mixture of sodium carbonate and sodium bicarbonate and has the composition $Na_2CO_3HCO_3+2H_2O$. It contains 41.95 per cent. of actual alkali (calculated as Na_2O), whereas sal soda contains 21.68 per cent. and sodium bicarbonate 36.90 per cent. of actual alkali. The sesquicarbonate is, therefore, an economical form of non-caustic alkali, 1 pound dissolved in 2 gallons of water giving a solution of about the same cleansing power as 1 pound of sal soda dissolved in 1 gallon of water. It is worth, therefore, about twice as much as sal soda for cleansing purposes.

Bijou Cleaning Fluid

Ether	1 dram.
Chloroform	1 dram.
Alcohol	2 drams.
Oil of wintergreen	1 dram.
Benzin	2 pints.

To Remove Spots from White Goods

Carbon tetrachloride is a good clothes cleaner, possessing the advantage over benzin of being non-inflammable.

Javelle water is a popular bleaching agent.

Here is a formula which some have found useful:

Borax	1 ounce.
Castile soap	1 ounce.
Sodium carbonate	3 drams.
Ammonia water	5 ounces.
Alcohol	4 ounces.
Acetone	4 ounces.
Rose water	2 ounces.
Hot water ....to make	4 pints.

Dissolve the borax, sodium carbonate and soap in hot water, mix the alcohol and acetone, unite the two liquids and add the ammonia water and rose water.

Alcoholic tincture of soap bark is a well-known cleaner for delicate fabrics.

Household Ammonia.

This preparation was formerly made under a patent which has since expired. The patent was on a solution of ammonium oleate in ammonia water, made by adding oleic acid to ammonia water in a quantity not exceeding 6 per cent. Here is a formula for a similar preparation:

Oleic acid	1 ounce.
Alcohol	1 ounce.
Ammonia water	7 ounces.
Water ....to make	1 pint.

Instead of oleic acid, soft soap (in a proportion to be determined by experiment) is sometimes used to produce the cloudy effect in ammonia water.

To this we might add that some cheap types of household ammonia consist of a solution of washing soda containing more or less ammonia water.

Glove Cleaner

I.

Five grammes of stearic acid are dissolved in 75 mils of carbon tetrachloride and the solution, after being made slightly alkaline with spirit of ammonia, is diluted with alcohol to 100 mils. This product is a milky liquid which possesses the cleansing properties of carbon tetrachloride, but does not extract the fat from the leather as plain cleansers do.

II.

Shredded curd soap	1 ounce.
Water	4 ounces.
Oil of lemon	½ dram.
Saponin	1 dram.
Talc	enough.

Dissolve the shredded soap in the water, add the saponin and perfume, and then enough talc to make a stiff paste. Powdered orris is a useful addition.

The directions for use are: Put the glove upon the hand, and apply the paste with a piece of flannel, rubbing the kid from the wrist to the tips of the fingers.

Carpet Cleaner

Solution of soap	120 mils.
Ammonia water (10%)	60 mils.
Gasoline	120 mils.
Chloroform	20 mils.
Potassium nitrate	10 grammes.
Oil of wintergreen	10 mils.
Soft, distilled or rain water to	1000 mils.

Dissolve the potassium salt in the water. add the ammonia to the soap solution, then the chloroform, oil, and gasoline; shake well and add the water.

This makes a white, milky compound, which separates slightly on standing but readily unites on shaking. The oil of wintergreen is added only for its odor. The fumes arising from the gasoline are very inflammable, so that the cleaner should not be used in a room with fire.

The solution of soap is made up as follows:—

Olive oil	60 mils.
Caustic potash	12 grammes.
Alcohol	500 mils.
Water to make....	1000 mils.

Place the oil in a suitable dish, add 30 mils of alcohol, mix well, then add the potash dissolved in 30 mils of water. Apply heat by means of a water-bath until the oil is completely saponified, which is shown by a portion being removed and dropped into boiling water, when it should dissolve completely without the separation of oily drops. Allow it to cool, add 500 mils of alcohol, and water enough to make 1000 mils. Filter the solution through paper.

Removing Indelible and Other Ink Spots from Clothing.

Farmers' Bulletin 861, issued by the United States Department of Agriculture, entitled "Removal of Stains from Clothing and Other Textiles," contains a great mass of information and should be in the hands of every pharmacist. It is distributed free of charge by the Division of Publications of the Agricultural Department at Washington, D. C.

Indelible (Copying) Pencil Marks.

These marks contain graphite, as do ordinary pencil marks and an organic dye which usually is not apparent until the marks are moistened. The dye and the reagents used to remove such stains may vary with different makes of pencils, but for those used in these experiments the following reagents are satisfactory.—

1. Alcohol.—Soak the stains for a few minutes or until they are dissolved. The graphite marks then remain, but can be removed by washing with soap and water. The alcohol is effective also after these stains have been washed and ironed.

2. Javelle Water.—This destroys the dye. Remove the graphite either before or after applying this agent by washing with soap and water.

3. Potassium Permanganate.—Remove the graphite as in No. 2, above.

Ink (India).

This is an ink in which finely divided carbon is held in suspension in water, probably by means of gum. The treatment for removing it from textiles is the same as for "Ink (printing)" (see below).

Ink (Marking).

So-called "indelible" or "marking" inks are of two common types, namely, that containing silver nitrate or other silver compound and that with an organic dye, usually "anilin black," as its basis.

Silver nitrate inks. Ink of this type may be known generally from the directions for its use, which state that articles marked with it must be laid in the sun or pressed with a warm iron before they are washed. This is to bring about the precipitation of metallic silver, which gives the black or brown color to the marks.

Use one of the following agents in removing stains from silver nitrate inks:—

1. Sodium Thiosulphate ("hyposulphite of soda" or "hypo".).—Several crystals, dissolved in one-half cup of water. Soak the stains for several days if necessary.

2. Javelle Water.—Apply this repeatedly until the color of the spot disappears. Then soak the stained place in ammonia to remove the silver chloride formed.

Anilin black ink. Ink of this type may be known also from the directions for its use, which generally state that the articles marked with it must not be ironed until after they have been washed. Anilin black inks are remarkably fast, and it is practically impossible to remove them after they have once become dry.

None of the methods given above for the removal of silver nitrate ink stains is effective in removing anilin black ink stains; neither are satisfactory results obtained by trying most of the methods used printing-ink stains:—

Ink, Black (Printing).

The coloring matter of black printing ink consists of finely divided carbon, usually in the form of lampblack. This is suspended in linseed oil with resin, turpentine, etc. Stains from ink of this type are very similar to paint stains.

Use one of the following agents for removing printing-ink stains:—

1. Soap and Water (ordinary laundering).—Remove fresh stains by applying an abundance of soap and rubbing thoroughly.

2. Lard.—Followed by soap and water, as in No. 1, above. Rub the stained place with lard and work it well into the fibers to loosen the stain.

Ink (Writing).

The coloring matters commonly used in writing inks include the following: Combinations of logwood or nutgalls with ferrous or ferric salts or with salts of other metals, such as chromium and aluminum; anilin dyes, which are used either alone or with coloring matters of the type mentioned above; finely divided carbon in the form of lampblack. Colored inks usually consist of an anilin dye. Gums, sugar or glycerin often are added to thicken an ink and hold the coloring matter in suspension, and phenol often is added to keep it from molding.

Owing to the differences in the composition of writing inks it is impossible to find agents which are equally effective in removing all ink spots. Each of the agents mentioned below is satisfactory with some type or types of ink. For an ink spot of unknown composition it is necessary to try various agents, beginning always with the simplest and that least likely to injure the fabric. Use one of the following agents:—

1. Absorbents.—Corn meal, salt, French chalk, fuller's earth, magnesia, talcum powder, etc. The application of such substances serves to remove any ink not absorbed by the fibers and keeps the ink from spreading. For a large ink spot, apply one of these substances before trying other agents. Work the absorbent around with some blunt instrument and renew it when it becomes soiled. When dry absorbent fails to take up more ink, make it into a paste with water and continue the application.

2. Soap and Water as in Ordinary Laundering.—This is satisfactory for some types of school inks, which can be washed from fabrics; for carbon inks, which are unaffected by chemicals and can be removed only mechanically; and sometimes for the fresh stains of other inks.

3. Milk.—Soak the stains for a day or two, if necessary, in milk, changing the milk as often as it becomes discolored. This is effective for some stains.

The foregoing methods may be used safely on all washable fabrics. If they fail to remove the spot, apply one of the chemicals mentioned below:—

4. Oxalic Acid, Saturated Solution.—Soak the stain for a few seconds, then rinse in clear water, and finally in water to which a few drops of ammonia have been added.

5. Potassium Acid Oxalate ("salts of lemon" or "salts of sorrel").—Soak the stains in a solution of 2½ teaspoonfuls dissolved in ½ pint of water for several hours, if necessary.

6. Potassium Permanganate.—This is satisfactory for stains upon many delicate fabrics as well as on ordinary materials.

7. Javelle water.

8. Commercial Ink Removers.—Generally are satisfactory if the directions furnished with them are followed and the excess of the substance is removed by thorough rinsing in clean water.

9. Hydrogen Dioxide.—This occasionally is satisfactory.

10. Acids—Citric or Tartaric, Lemon Juice and Dilute Hydrochloric Acid.—These occasionally are of some assistance. Apply the first two as in No. 4 above. In the case of lemon juice, keep the stain moistened and exposed to the sun. In the case of hydrochloric acid moisten the stain with it and then rinse thoroughly.

11. Titanium Trichloride.—About 10 drops of the 15 per cent. solution of titanium trichloride and 20 drops of strong hydrochloric acid in ¼ cup of water. Boil the stain in this solution for three or four minutes. This is effective in removing stains of some red inks.

12. Sodium Perborate.—Use cold in saturated solution. Soak the stain in it for one or two days, if necessary. This is effective in removing some red ink stains.

Ink on carpets. First apply absorbents, as in No. 1, above; follow by repeated applications of oxalic acid, as in No. 2, above, or potassium permanganate, as in No. 6, above, or by rubbing with the cut surface of a lemon, squeezing on the juice and rinsing between applications with a clean, wet cloth until no more ink can be removed. Rub the spot then with a clean dry cloth. After the carpet is dry brush up the nap with a stiff brush or a cloth.

Removing Ink Stains

In preparing to eradicate ink marks it is necessary that the eradicator be adapted to the particular ink with which one has to deal, and also that the nature of the marked object be taken into consideration. What is a satisfactory solvent for an anilin ink may have no effect upon an iron tannate ink; the best eradicator for stains on textile fabrics may be useless to remove ink marks from paper; and the satisfactory eraser of marks on white paper or fabric may be entirely contraindicated if the marking be on tinted stuff.

Solution of chlorinated lime or chlorine fumes will eradicate most coal-tar-color ink stains.

A 20 per cent. solution of tin chloride is effective with regard to most ink stains, but it is injurious to textiles and their color.

Sodium pyrophosphate in solution has a vogue in France.

Solution of hydrogen dioxide made alkaline with ammonia water is recommended. It will, however, cause the stains of some anilin dyes to turn black.

Oxalic acid in solution is an excellent bleach for iron-salt inks.

Equal parts of cream of tartar and oxalic acid mixed and powdered and rubbed on the spot which has been moistened with warm water will sometimes remove the stains of an iron-salt ink.

The stains of most red aniline inks on fabrics or paper succumb to treatment with alcohol acidulated with nitric acid.

An excellent formula, and one that few inks can resist, is as follows:—a. Mix in equal parts, potassium chloride, pottassium hypochlorite and oil of peppermint. b. Sodium chloride, hydrochloric acid and water in equal parts. To use:—Wet the spot with a, let it dry, then pencil it over lightly with b, and rinse in clear water.

A good single mixture, which will answer for most inks, is made by mixing citric acid and alum in equal parts. (If desired in liquid form add an equal quantity of water.) In use the powder is spread well over the spot and (if on cloth or woven fabrics) well rubbed in. A few drops of water are then added, and also rubbed in. A final rinsing in water completes the process

In the usual two-solution eraser for ink marks on paper the first solution contains:—

Saturated aqueous solution of borax	4 ounces.
Citric acid	2 ounces.
Water	1 pint.

While the second solution is composed of:—

Chlorinated lime	6 ounces.
Water	1 pint.
Saturated aqueous solution of borax	4 ounces.

The lime is mixed with the water, placed in a well-stoppered bottle, and the bottle shaken thoroughly and set aside for a week. At the end of that time the clear solution is decanted and mixed with the solution of borax.

Printer's Ink.

Stains made by printer's ink should be soaked in benzin, washed with hard soap before dry and treated with one of the foregoing eradicators if the color persists after the body of the ink has been removed.

Softening with oil of turpentine and washing in weak lye will remove slight stains of printer's ink.

Koontz's Ink Eradicator.

I was called upon to remove from a counterpane a black ink spot about 12 inches in diameter that had been in the cloth for two days.

I first tried a mixture consisting of ½ ounce of acetic acid and 6 ounces of

alcohol. After immersing and rinsing in this mixture I tried to bleach with solution of chlorinated soda. This turned the spot a dull brown. So I decided to do some experimenting. I madé a mixture of:—

Chlorinated lime.....1½ ounces.
Water ..... 8 ounces.

By immersion I saturated the cloth in this solution. In the meantime I prepared a solution consisting of—

Citric acid..... 1 ounce.
Water ..... 8 ounces.

and changed the cloth from the first solution to the second. The spot disappeared instantly and the cloth changed to a beautiful white. I then rinsed it in clear cold water to prevent the acid or the lime from injuring the fabric.—John F. Koontz.

Removing Marking Ink Stains

In ordinary cases, that is where the composition of the ink is unknown, the following steps should be taken, in order:—(1) First soak in a solution of common salt, and then wash with ammonia. (2) Treat with a solution of potassium cyanide, 10 grains; iodine, 5 grains; in water, 1 fluid ounce. (3) Moisten with a solution of iodine in potassium iodide, and then wash it with water. (4) Treat with strong solution of zinc sulphate, and then touch with a piece of metallic zinc, or sprinkle with powdered zinc, afterwards washing. (5) Treat with solution of chlorinated lime, freshly prepared and then with a solution of acetic or citric acid in water. (6) If the stain should happen to be one made by alizarin ink, it may be removed by treating with a solution of tartaric acid; the older the stain the more concentrated should be the solution.

Generally the stain is made by silver nitrate. Theoretically this may be removed by the application first above mentioned.

Or, the stain may be treated with a solution of iodine and then washed in a solution of potassium iodide.

Or, it may be treated with a strong solution of potassium cyanide, which, of course, is very poisonous.

Or, with a solution of iodine and afterward with sodium thiosulphate.

Or, with a solution of corrosive mercuric chloride and afterward with ammonium chloride.

We doubt very much whether any of these methods of treatment will result in removing the indelible ink from old paper without destroying the paper.

Removing Acidproof Ink from Paper

If the acidproof ink is of the ferric ferrocyanide type, the job of removing the spot will be a difficult one, since that chemical is chosen because of the scarcity of agents which will destroy it without destroying the fabric. We suggest a trial of bleaching agents, either of the oxidizing type, like chlorine water, or Labarraque's solution, or hydrogen dioxide, or of reducing character, such as sulphurous acid; although, in truth, we doubt whether these will do the work, for reasons mentioned above.

Renovating Straw Hats

Of many notes on this subject which have appeared in The Druggists Circular a summary is here presented:—

Straw Hat Bleaches.

I.

Straw hats that are not very yellow may be cleaned by rubbing with flowers of sulphur on a cloth moistened with diluted alcohol. This is allowed to dry, and the hat is then brushed. A coating of gum water may be applied if desired.

Very yellow hats are first washed with a lather of castile soap and then treated as above.

II.

Wash the hat with a weak solution of caustic soda, then suspend it in the fumes of burning sulphur.

III.

The official solution of hydrogen dioxide makes an excellent straw hat bleach. The hat is sponged with the solution, dried and pressed.

IV.

Sodium dioxide is partially decomposed by warm water, yielding oxygen and sodium hydroxide. On adding an acid, such as oxalic acid, it is entirely decomposed, yielding hydrogen dioxide and an oxalate of sodium. Hydrogen dioxide is very unstable in the presence of alkalies, but is fairly stable in the presence of acids. Therefore, in bleaching with sodium dioxide, if the bleaching agent first be treated with warm water, the dioxide is partially decomposed, and we have both the cleansing action of the alkali and the bleaching action of the oxygen. If now a little acid (oxalic preferably, for straw hats) be added, the alkali will be neutralized, more dioxide will be decomposed, and both alkali and hydrogen dioxide will be liberated. The alkali will decompose the hydrogen dioxide, liberating more oxygen, and a further cleansing and bleaching action is obtained. Hence, for bleaching hats the best method will be to treat the hat first with a solution of sodium dioxide in warm water, then to add a very little oxalic acid, again to apply to the straw, and continue until finally a decidedly acid solution is obtained. The alkali of the first solutions will turn the straw yellow, but a final washing in oxalic acid will remove this color. Lastly, a thorough rinsing is of course necessary.

V.

Sodium bisulphite..... 10 parts.
Tartaric acid..... 2 parts.
Sodium borate..... 1 part.

The ingredients are reduced to a state of fine division and mixed. For use, as a bleach, the powder is mixed with water and applied to the straw.

Many of the cheap hat cleaners on the market are nothing but oxalic acid or its potassium compound, "salt of sorrel."

Straw Hat Paint and Varnish.

For dark varnishes prepare a basis consisting of orange shellac, 900 parts; sandrac, 225 parts; Manila copal, 225 parts; castor oil, 55 parts, and alcohol, 9,000 parts. To color, add alcohol soluble coal-tar dyes as follows:—Black, 55 parts of soluble ivory-black (modified by blue or green). Olive-brown, 15 parts of brilliant green, 55 parts of Bismarck brown R, 8

parts of spirit blue. Olive-green, 28 parts of brilliant green, 28 parts of Bismarck brown R. Walnut, 55 parts of Bismarck brown R, 15 parts of nigrosin. Mahogany, 28 parts of Bismarck brown R, which may be deepened by a little nigrosin.

For light colors prepare a varnish as follows:—Sandrac, 1,350 parts; elemi, 450 parts; rosin, 450 parts; castor oil, 110 parts; alcohol, 9,000 parts. For this varnish use dyes as follows:—Gold, 55 parts of chrysoidin, 55 parts of anilin yellow. Light green, 55 parts of brilliant green, 7 parts of anilin yellow. Blue, 55 parts of spirit blue. Deep blue, 55 parts of spirit blue, 55 parts of indulin. Violet, 28 parts of methyl violet 3B. Crimson, 55 parts of safranin. Chestnut, 55 parts of safranin, 15 parts of indulin.

A British formula is—

Shellac	4 ounces.
Sandrac	1 ounce.
Gum thus	1 ounce.
Alcohol	1 pint.

In this dissolve spirit soluble anilin dyes of the requisite color, and apply. For white straw, white shellac must be used.

Another straw hat varnish is made of—

White shellac	11.00 grammes.
Sodium borate	6.00 grammes.
Glycerin	5.00 grammes.
Coumarin	0.05 gramme.
Water	80.00 grammes.

Dissolve the sodium borate in the water; add the shellac in small pieces; heat to about 75 degrees C., and stir until dissolved. Then add the other ingredients.

Here is a varnish that is said not to have the tell-tale gloss:—

Sandrac	1 ounce.
Mastic	100 grains.
Ether	10 ounces.
Benzole	4 to 6 ounces.

Dissolve the resins in the ether and add the benzole, little by little, until the varnish dries with the desired matt finish.

Cleaning Panama Hats.

To clean a Panama hat, scrub with castile soap and water, a nail brush being used as an aid to get the dirt away. The hat is then placed in the hot sun to dry and in the course of two or three hours it is ready to use. It will not only be as clean as when new, but it will retain its shape admirably. The cleaned hat will be a trifle stiff at first, but will soon grow supple under wear. A little glycerin added to the rinsing water entirely prevents the stiffness and brittleness acquired by some hats in drying, while a little ammonia in the washing water materially assists in the scrubbing process

Bleaching Ostrich Feathers

Soak the feathers from three to four hours in a tepid dilute solution of potassium dichromate to which a small quantity of nitric acid has been added. (Use caution in mixing to avoid possible damage from a violent reaction).

The feathers removed from the solution will have a greenish tint, but when they are placed in a dilute solution of sulphuric acid in water (use care in mixing), and then washed, the feathers will be bleached.

We advise experimentation with some feather fragments before trying the process on a feather of commercial value.

The use of a solution of aluminum hypochlorite made by macerating bleaching powder (chlorinated lime) in water and treating the clear fluid obtained by filtration with a saturated solution of alum until no more precipitation occurs, is also recommended.

Cleaner Cloth on Billiard Tables

The cloth should be brushed thoroughly to remove all particles of dust, after which grease and other spots may be removed in the following manner:

Beat well together in a mortar equal parts of soft soap and fuller's earth; form the mass in handy cakes and dry.

To use on the cloth, first moisten the spot with water, rub with the cake, then go over it and rub well with a sponge saturated with warm water, then rinse the spot with clear lukewarm water, using a soft sponge.

Cleaner for Window Shades

Slice 1 pound of good brown soap and put in hot but not boiling, water, along with 1 ounce of pulverized borax. Put on a water-bath in a tin or agateware kettle, and let it simmer, with frequent stirring, until the mixture has formed a uniform fluid.

In using, apply the solution with a piece of soft flannel, but do not rub hard, nor let it remain on the shade long, but rinse as soon as clean with clear water, using a large sponge.

Turpentine Stains on Ground Glass

Much of the difficulty of removing oil of turpentine from a rough glass surface depends upon the length of time the oil and the glass have been in contact. If the stain is a fresh one it will succumb quite readily to an application of a creamy mixture of precipitated chalk and ammonia water, or even of hot water and soap. If, however, the oil has become oxidized, forming a resinous film upon the glass, it is necessary to use a thin paste made of kaolin and a strong solution of caustic soda. This is to be smeared over the spot and allowed to remain for some time, whereupon the film can be loosened and peeled off. The glass should then be washed with hot water and soap. If the film has been exposed to the action of the atmosphere for some time, it may be necessary to soften it first with oil of spike lavender or a mixture of oil of turpentine and ammonia water.

Cleaning and Polishing Marble

Marble that has become dirty by ordinary use, or exposure, may be cleaned by a simple bath of soap and water.

If this does not remove the stains which may have been made, a weak solution of oxalic acid should next be applied with a sponge or rag, and the

marble washed quickly and thoroughly with water to minimize injury to the surface.

Rubbing well after this with chalk moistened with water will in a measure restore the luster. Another method of finishing is to apply a solution of white wax in oil of turpentine (about 1 to 10), rubbing thoroughly with a piece of flannel or soft leather.

If the marble has been more than commonly exposed, so that its luster has been seriously impaired, it may be necessary to re-polish it in a more thorough manner. This may be accomplished by rubbing it first with sand, beginning with a moderately coarse-grained article and changing this twice for finer kinds, after which tripoli or pumice is used. The final polish is given by the so-called putty powder. A plate of iron is generally used in applying the coarse sand; with the fine sand a leaden plate is taken; and the pumice is employed in the form of a smooth-surfaced piece of convenient size. For the final polishing, coarse linen or bagging is used, wedged tightly into an iron planing tool. During all these applications, water is allowed to trickle over the face of the stone.

The putty powder referred to is binoxide of tin, obtained by treating metallic tin with nitric acid, when the metal is converted into hydrated metastannic acid, which when it is heated becomes anhydrous. It is in this condition that it is known as putty powder. In practice putty powder is mixed with alum, sulphur and other substances, the mixture used being dependent upon the nature of the stone to be polished.

Another authority writing on this subject says:—

To polish marble one needs some powdered pumice, some fine emery flour, some precipitated chalk, some water, a few hardwood blocks, and abundant patience. First the surface to be polished is rubbed with the pumice and plenty of water, using one of the hardwood blocks as the rubber; then it is rubbed some more, the pumice being replaced with the emery flour. The next rubbing is done with the precipitated chalk, first with water and then dry, another block being used—the first one will probably be worn out by this time anyway. Then all traces of the polishing powder are rubbed away with a soft woolen cloth, and the surface of the marble is rubbed dry with a fresh block of wood until the desired polish is secured or one's stock of patience is exhausted.

Acid Spots on Marble.

The white spots on colored marble resulting from the contact of "acid phosphate" are not stains. They are changes in the nature of the stone due to the action of the acid upon the calcium carbonate—the marble. These marks cannot be eradicated. A person skilled in the work can stain the spot to match the original color, but the best that can be done ordinarily is to polish the phosphated place. This will at least do away with the break in the reflecting surface.

A few formulas for marble cleaning follow:—

I.

Cream of tartar..... 10 grammes.
Oxalic acid ..... 10 grammes.
Kieselguhr ..... 20 grammes.
Water.....to make a paste.

Smear over the stain, and after a few hours wash off with warm water.

II.

As olive oil is recommended by some writers, and ammonia by others, modified ammonia liniment might do the work. Colored marbles, however, should not be treated with alkalies.

III.

Ox gall ..... 1 part.
Saturated solution of sodium carbonate ..... 4 parts.
Oil of turpentine..... 1 part.

If desired, this can be made into a paste by the addition of pipe clay.

IV.

A solution of white wax, 1 part, in oil of turpentine, 10 parts.

V.

Whiting ..... 4 ounces.
Powdered soap ..... 4 ounces.
Oil of turpentine..... enough.

Mix the whiting and the soap and make into a paste with oil of turpentine gradually added.

VI

Soft soap ..... 4 ounces.
Whiting ..... 4 ounces.
Sodium carbonate ..... 1 ounce.
Water ..... enough.

Make a thin paste, apply it on the soiled surface, and wash it off after twenty-four hours.

VII.

White wax ..... 10 parts.
Japan gold size ..... 2 parts.
Oil of turpentine ..... 88 parts.

Apply with a piece of flannel.

To Bleach, Clean and Repolish Ivory.

I.

Wash the ivory well with ammonia water, then with water, and finally apply solution of hydrogen dioxide.

II.

Expose the ivory for three or four days to the action of sunlight, in a bath of turpentine oil.

III.

Treat the ivory alternately with a solution of potassium permanganate (1 in 250) and oxalic acid (1 in 100) letting the ivory remain in each solution for a half hour; then rinse well with

water, and repeat the process a number of times.

To Repolish Bleached Ivory.

It seems not unlikely that the ivory after treatment by any bleaching process will require repolishing. If so, and it is not deeply scratched, rub with a woolen cloth charged with a paste made from armenian bole and oleic acid. Wash with castile soap, and, after drying, rub with chamois. A few wipes with an old silk handkerchief completes the gloss. If scratched, but not very deeply, smooth with rouge cloth and proceed as above. If very deeply scratched, it will be necessary to scrape with a very fine steel scraper (a sharp knife blade will answer, or broken glass), rub with rouge cloth until all scraper marks vanish, and finish as above directed. Curved or molded parts should be first scrubbed with an old stiff tooth brush charged with the paste above mentioned, then with a soft brush charged with whiting and a little ammonia, and finally scrubbed with soap and water, and finished with chamois.

Renovating Paper Charts and the Like.

Paper that has become yellow through age may be bleached with javelle water without injury if, after being bleached, it is washed in a weak solution of sodium thiosulphate. The following formula for javelle water is satisfactory:

Sodium bicarbonate .... 4 pounds.
Chlorinated lime ..... 1 pound.
Boiling water ..... 1 gallon.

Boil the bicarbonate in the water for ten or fifteen minutes; stir in the lime, avoiding lumps; when solution is complete let the liquid cool.

Engravings, prints and the like, which have been stained with water, may be renovated by immersing the sheet in clean water, allowing it to become thoroughly saturated, and pinning to a flat surface to dry.

Stains that are due to mold may be removed by applying a 25 per cent. alcoholic solution of salicylic acid with a soft sponge or pledget of cotton.

Age stains, smudges, soot and smoke stains, if not of too long standing, may be removed by rubbing the soiled places with the inside or crumb of stale bread, preferably rye bread.

Grease spots or oil stains may be removed by spreading over the soiled surface magnesium carbonate, chalk, kaolin or talc made into a thin paste with water. The powder is gently brushed off after the paste has dried.

Before experimenting on a valuable picture or document, we suggest that the proposed processes be tried on some worthless paper as nearly similarly affected as possible.

To Clean Wall Paper

For cleaning wall paper the following methods have been proposed:—

I.

To clean wall paper, the dust should first be removed by lightly brushing, preferably with a feather duster, and the surface then gently rubbed with slices of moderately stale bread, the discolored surface of the bread being removed from time to time so as to expose a fresh portion for use. Care should, of course, be taken to avoid scratching the paper with the crust of the bread, and the rubbing should be in one direction, the surface being systematically gone over as in painting, to avoid the production of streaks.

II.

Mix 4 ounces of powdered pumice with 1 quart of flour, and with the aid of water make a stiff dough. Form the dough into rolls 2 inches in diameter and 6 inches long, sew each roll separately into a cotton cloth, then boil for forty or fifty minutes, so as to render the mass firm. Allow to stand for several hours, remove the crust, and they are ready for use.

III.

Mix together 1 pound each of rye flour and wheat flour and make into a dough. This is partly baked and the crust removed. To this add by kneading 1 ounce of common salt and ½ ounce of powdered naphthalin and then 1 ounce of corn meal and 1 dram of finest burnt umber. This composition is formed into a mass of proper size to be held in the hand, and in use should always be drawn only in one direction over the paper to be cleaned.

IV.

A simpler method is to tie up 2 quarts of wheat bran in a coarse flannel cloth or a bag made of flannel, and rub it over the paper briskly, all in one direction, taking care to miss none of the space. Before rubbing, however, the walls or ceiling must be carefully dusted.

V.

Take a shallow 2-quart vessel, put in 1 pint of water with ½ ounce of powdered borax. Bring the two to boiling very quickly, so that as little of the water shall evaporate as possible; then, while boiling, pour into the vessel 1 pound of best flour and stir all the while, keeping the vessel on the stove. Keep stirring until the flour and water are thoroughly mixed, then dump the mass onto a clean board and knead it for several minutes the same as a baker kneads dough when making bread, when it is ready for use. In cleaning walls or ceilings take a piece about the size of your two fists and rub on the surface with sufficient pressure to make the cleaner crumble off

slightly. Try it in some out of the way corner first; if it crumbles too much there is too much borax in it, or you did not get enough water in it. If it is sticky you have too much water or not enough flour. There is quite a difference in flour; with the kind employed by the writer the above proportions used exactly as given, do the best work. When in use, work the cleaner in your hands the same as you would putty, so as to keep a fresh surface to clean with all the time, and with practice you will succeed.

Removal of Picric Acid Stains

A correspondent of the Medical World says that picric acid stains on the hands may be removed by washing with fresh milk or with warm water sweetened with sugar.

Removing Pyrogallol Stains

The Photographic News gives the following formula for a preparation to remove stains of pyrogallol from negatives or from fingers:

Alum	1 ounce.
Ferrous sulphate	3 ounces.
Citrid acid	1 ounce.
Water	20 ounces.

To Remove Silver Nitrate Stains

According to the Medical Times the following mixture will immediataely remove the stains of silver nitrate from the skin:

Corrosive mercuric chloride	1 ounce.
Ammonium chloride	1 ounce.
Potassium bromide	4 drams.

The mixed salts are to be rubbed on the stain.

On account of the poisonousness of the mercury salt, this mixture should be employed with great caution, and not used at all on broken skin.

Another authority omits the potassium salt.

Removing Methylene Blue Stains from the Hands

Although the powder is more soluble in water than in alcohol, in practice alcohol has been found to remove its stains from the hands more readily than water. Indeed, so far as we know, the effect on the skin being considered, alcohol is the best agent for cleaning hands that have been stained with the blue.

To prevent the hands from becoming stained, grease them slightly with petrolatum before handling the blue.

To Remove Photographic Stains from the Hands

First wash the hands in a solution of potassium permanganate, then rinse in a solution of oxalic acid, and lastly wash with a solution of hydrogen dioxide. The first two solutions should not be too strong: they are poisonous. —George F. Greeley.

To Remove Gold Print from Leather

To take gold print from leather, as the gilding is put on by means of a size containing rosin, application of alcohol or oil of turpentine may do the work, although the impervious character of the gilding layer makes the success of even this expedient somewhat problematic.

CHAPTER IX.

INSECT, VERMIN AND RODENT DESTROYERS

Methods of Destroying Flies, Roaches, Moths, Ants, Mice and Rats. Sprays for Fruit and Other Trees.

Always consult the index when using this book.

A Study of the Fly Problem

According to a Government bulletin, L. O. Howard made a somewhat exhaustive study of the fly problem. A portion of The Druggists Circular abstract of Mr. Howard's findings is here given:

He says that the house fly cannot bite, but that the stable fly (stomoxys calcitrans), which very closely resembles the other breed, and is perhaps second to it in abundance, does bite.

Then there are other kinds and varieties of flies, so that in case man is able to escape one sort there is sure to be another on hand to plague him. Some of these are quite small, which has given rise to the erroneous idea that they are the young of the larger flies. One breeds in the dust under carpets and is known as the window fly. Another is found on over-ripe fruit; and there are various and sundry others.

From the time that the egg of a fly is laid until the adult fly flies forth ready for business, some ten days or two weeks (according to season, climate, etc.), generally elapse. The female fly lays about 120 eggs, which hatch in eight hours. The larva period lasts five days and the pupa stage five days. This fills the ten-day period mentioned. A single stable in which a horse is kept will supply an extended neighborhood with flies.

Remedies and Preventives

Screens and sticky paper are recommended as the best combination for use against flies.

Experiments at treating the breeding places with lime and with kerosene were not very encouraging, but keeping these breeding places about shut off from the flies was found to have the desired effect. The sweepings from the stable each morning were placed in a closed closet and sprinkled with "chloride of lime" when breeding stopped and the occupants of near-by offices noticed the diminution of flies. Mr. Howard recommends that boards of health in cities require this kind of disposition of the sweepings from horse stables.

Druggists and the Fly Problem

Druggists may render a service to their neighborhoods and to humanity—and incidentally make a little profit for themselves—by educating their customers on the fly subject and supplying them with the wherewithal to combat the common enemy. A few suggestions for means to be employed in waging warfare upon our old acquaintance follow:

Insect Powder

A pure, fresh, high-grade insect powder (ground pyrethrum flowers) plentifully blown about in a close, warm room will kill or stupefy all the flies in it, when they may be swept up and burned. The objection to this application is its dustiness.

Sticky Fly Paper.

As already noted, one of the most effective means of destroying flies is by means of sticky paper. This means has the advantage of freedom from "muss"—provided the paper is kept out of the reach of cats, dogs, children and other careless and over-inquisitive vertebrates. Those who prefer to prepare this paper for themselves may find the appended suggestions of value. Of course, there are little refinements in the manufacture of this article, as in other fields of endeavor, which come from experience. For instance, the paper should be of a convenient size and of appropriate thickness, and should be sized—that is, rendered non-absorbent.

I.

Boiled linseed oil	6 ounces.
Olibanum	1 ounce.
Castor oil	2 ounces.

Mix with the aid of heat and spread on paper.

II.

Rosin	6 ounces.
Lard oil	2 ounces.
Balsam of fir	1 ounce.

III.

Thus	3 pounds.
Amber resin	3 pounds.
Castor oil	2¾ pounds.
Viscum	4 pounds.

Melt together, and apply hot to parchment paper.

Poisonous Fly Papers.

These are prepared by saturating absorbent paper with poisonous solutions.

I.

Quassia chips	5 ounces.
Cobalt chloride	2½ drams.
Tartar emetic	½ dram.
Tincture of capsicum	2½ ounces.
Water, to make	1 pint.

II.

A. E. Magoffin contributed the formula which follows, at the same time writing that the preparation had been

on the market since 1868, and had never failed.

Arsenic, powdered	4 ounces.
Potassium bicarbonate	4 ounces.
Molasses	8 ounces.
Water, to make	2 gallons.

Boil the first two ingredients with 1 gallon of water until they are dissolved, remove from the fire and add the molasses and enough water to make 2 gallons.

"This," he said, "will soak about 500 sheets of rag paper, 9 by 12 inches." He directed each sheet to be soaked two hours, and, after draining, to be hung on a line until dry.

With the directions to go with papers of this class should be a warning as to their poisonous nature, and suggestions for emergency treatment of any one who might be so unfortunate as to ingest any of the poison. It would be a good idea to have the word "poison" printed on each sheet of the paper in large letters.

Non-Poisonous Preparations.

I.

Quassia	100 parts.
Molasses	15 parts.
Alcohol	5 parts.
Water	575 parts.

Macerate the quassia in three-fourths of the water for one day, boil for half an hour and set aside for a day, then press out the liquid. Mix this with the molasses and evaporate to 20 parts, adding the alcohol and the remainder of the water.

II.

Quassia	40 parts.
Rosin	5 parts.
Pepper	8 parts.
Syrup	10 parts.
Water, to make	120 parts.

Mix these and boil, adding water as may be necessary. Saturate soft paper with the liquid and dry rapidly.

III.

Mix powdered black pepper and simple syrup to form a thick paste. Spread this upon blotting paper and allow to dry. For use moisten with water.

IV.

Black pepper	1 ounce.
Brown sugar	2 ounces.
Cream	4 ounces.

V.

It is said that growing mignonette plants in a room will keep flies out.

To Kill Flies

In the Monthly Bulletin of the Department of Health of the City of New York the following directions for killing flies appear: Dissolve potassium dichromate in water in the proportion of 1 dram of the salt to 2 ounces of water. Add a little sugar to the solution and place it about the house in shallow dishes. Of course, such solutions should be kept out of reach of the children.

Injun Jo's Fly Dope

An application that will protect man from the attacks of sand flies, midges and black flies:

Oil of sassafras	4 drams.
Oil of tar	1 ounce.
Castor oil	1½ ounces.

Blue Color Avoided by Flies

Marre and Fe observed that stables the walls of which were painted blue were evidently avoided by the common housefly. They, therefore, recommend that, to keep flies away from the stables, the walls be painted once or twice yearly with a mixture of chlorinated lime, 10 pounds; water, 25 gallons, and enough ultramarine blue to color.

Getting Rid of Flies

The following notes are taken from an article in the World's Work, reprinted in The Druggists Circular:

Kerosene Fly Trap.

A form of fly trap that is especially effective in stores and restaurant kitchens consists of a trough of tin three-quarters of an inch wide and of the same depth, and as long as the width of the window. If this is placed close against the window on the inside and kept half filled with kerosene every fly approaching the window will fall into it, for the fumes of the kerosene have an overpowering effect on the insect.

To Keep Flies From Screens.

Screen doors are a favorite gathering place for flies, which hang about them waiting for someone to let them in. Mix a teaspoonful of phenol with a quart of kerosene and rub the solution on the screen door. It will at once cease to attract the flies.

Fly Traps in Garbage Cans.

The same carbolic acid and kerosene solution may be used in an ordinary plant sprayer to spray the garbage can, which is the principal attraction for flies indoors. A better plan, however, is to keep the garbage can outdoors and put a fly trap in the cover of it. Any local tinsmith can attach a trap to the cover readily and at a very small expense. Fly traps can also easily be attached to the window screens so that flies which do get in will be caught as they are going out.

When Flies Breed.

There would be no flies to kill if there were no filth for them to breed in. Ninety per cent. of all flies are bred in horse manure, so keep the stable tightly screened, with fly traps set in the window screens. Spray the floors around the horse stalls with pyroligneous acid. Kerosene is good but increases the fire risk. Keep the stable refuse in a bin tightly covered with a wire-netting cover.

Clean up every place where decaying animal or vegetable refuse accumulates . Spray every receptacle for refuse with one of the kerosene or pyroligneous acid preparations

or with good commercial disinfectant. Remember all the time that flies and filth begin with the same letter and mean the same thing.

Don't let waste paper or old rags accumulate where they can decay. Flies will breed in them if exposed to moisture.

After the refuse pile has been removed sprinkle the ground thoroughly, as the fly maggots crawl down into the earth to develop.

If the house drains empty on the surface of the ground, pour kerosene into them. If your sewerage system leaks, pour kerosene into it.

If possible, burn all garbage. There are garbage incinerators that may be attached to the stove pipe that reduce the garbage to a combustible mass without odor.

If you cannot trace the flies about your premises to any other source, look in the cuspidor.

Diseases Carried by Flies

It has been said that a single fly can carry enough disease germs to kill an army. According to the Dietetic and Hygienic Gazette, some of the diseases carried by flies are:—

Anthrax, from cattle to man and man to cattle; cholera, from animal to man, man to animal or man to man; consumption, from man to man, animal to man, or man to animal; filariasis, from man to man, animal to man or man to animal; gastrointestinal diseases of various kinds, from man to man; eye affections of many kinds, from man to man; plague, from man to man, animal to man and man to animal; typhoid fever, from man to man and from decayed matter (animal or vegetable) to man; wound infection, such as suppuration to be followed by gangrene, and probably tetanus, or lockjaw; yellow fever, from man to man, together with various other serious complaints; skin diseases of various kinds, with possibly smallpox, gonorrhoea and syphilis.

Circumventing Bed Bugs

In a circular (No. 47) issued by the United States Department of Agriculture, C. L. Marlott of the Bureau of Entomology discusses the history, life, habits and means of circumventing the bed bug. From an abstract of this paper, published in the Druggists Circular, some quotations are given below:—

The bed bug, on account of its habits of concealment, is usually beyond the reach of powders, and the ordinary insect powders, such as pryethrum, are of practically no avail against it. If iron or brass bedsteads are used, the eradication of the insect is comparatively easy. With large wooden bedsteads, furnishing many cracks and crevices into which the bugs can force their flat, thin bodies, extermination becomes a matter of considerable difficulty. The most practicable way to effect this end is by very liberal applications of benzin or kerosene or any other of the petroleum oils. These must be introduced into all crevices with small brushes or feathers or by injecting with small syringes. Oil of turpentine may be used in the same way. The liberal use of hot water, wherever it may be employed without danger to furniture, etc., is also an effectual method of destroying both eggs and active bugs. Various bed bug remedies and mixtures are for sale, most of them containing one or another of the ingredients mentioned, and these are frequently of value. The great desideratum, however, in a case of this kind is a daily inspection of beds and bedding and of all crevices and locations about the premises where these vermin may have gone for concealment. A vigorous campaign should, in the course of a week or so at the outside, result in the extermination of this very obnoxious and embarrassing pest.

In the case of rooms containing books or where liquid applications are inadvisable, a thorough fumigation with brimstone is, on the authority of the late Dr. J. A. Lintner, then New York State entomologist, an effective means of destruction. He says:—

"Place in the center of the room a dish containing about four ounces of brimstone, within a larger vessel, so that the possible overflowing of the burning mass may not injure the carpet or set fire to the floor. After removing from the room all such metallic surfaces as might be affected by the fumes, close every aperture, even the keyholes, and set fire to the brimstone. When four or five hours have elapsed the room may be entered and the windows opened for a thorough airing."

The sulphur or brimstone remedy has been used very successfully by Dr. C. W. Stiles of the Bureau of Public Health and Marine Hospital Service, for the disinfection of frame cottages such as at seaside resorts, where, from neglect, infestation with bed bugs often occurs. The treatment is inexpensive compared with use of hydrocyanic acid gas and offers much less risk of danger to human beings. Two pounds of sulphur are recommended for each thousand cubic feet of space, and the building should be closed for treatment at least twenty-four hours. Sulphur candles may be used where available. The precautions indicated in the quotation from Dr. Lintner should be observed.

The fact that the bed-bug had a very active enemy in the common house cockroach has already been alluded to, and the proof seems to be fairly conclusive. Another common insect visitor in houses, and a very annoying one also to the careful housekeeper—the little red ant (monomorium pharaonis)—is also known to be a very active and effective enemy of the bed-bug.

Some Bed-Bug Killers

It is said that liquid bed-bug killers act by dissolving the grease on the bug and then reaching the pores of the skin, through which he breathes, and smothering him. Any good liquid grease solvent applied to bed-bugs will kill them. Benzin, being cheap, is much used, but it is so dangerous, on account of its great inflammability and the explosiveness of its vapor, that its use should be discouraged. Alcohol, ammonia water, oil of turpentine, strong soapy solutions and other such solvents may be used. Kerosene is less dangerous than benzin, but is objectionable on account of its odor. Carbon tetrachloride is better than either, but is rather expensive in comparison, and its fumes have an anesthetic effect similar to those of chloroform but more powerful; as these fumes are heavier than air and so fall to the floor of a room in which they are free, they have not proved especially objectionable in cases in which the operator understood their nature and was careful to secure good ventilation.

Solutions of corrosive mercuric chloride, which have often been used to kill bed-bugs, are believed to be no

more efficacious than the solvent would be without the mercuric salt, and the latter, left on the bed to be dusted about, is decidedly dangerous to human beings.

A good grade of insect powder is said to be an efficient bug killer. The trouble with the powder lies in the difficulty with which the bugs may be reached with it.

It is, of course, highly desirable that in endeavoring to kill insects one should avoid danger of injuring human beings. Many preparations which have been and are used as insecticides carry risks in this direction. A non-poisonous, non-inflammable preparation, proposed as a bed-bug killer, is made of—

Soft soap	100 parts.
Caustic soda	15 parts.
Water	1,400 parts.

The soap solution is intended to remove the waxy coating of the bug, and by penetrating the body, poison or suffocate, and so destroy the insect.

If one is successful in exterminating the insects by any procedure, he has still trouble to expect from their eggs. These may remain unaffected by the agent which proves fatal to the bug; they probably usually do.

To meet this difficulty, it has been suggested to use—

Soft soap	100 parts.
Gum turpentine	50 parts.
Hot water	650 parts.

The turpentine being deposited on the eggs on evaporation of the solution forms a coating which is supposed to prevent them from hatching.

There is no better bed-bug exterminator than kerosene. For general sale, it may be made safer, as far as inflammability is concerned, by addition of carbon tetrachloride. It may be colored with alkanet and distinctively perfumed. Such essential oils as sassafras, eucalyptus, cedar and savine may be used, or blends of such as suit the manipulator. Striking the proper blend, the druggist will have a product which is not an imitation and which, in turn, cannot be easily imitated.

Some of the bed-bug killing preparations on the market, that are sold as non-explosive and non-staining, are solutions of cresol in water. These contain usually 5 per cent. of cresol. In some there is a little soft soap. The liquid may be perfumed with any essential oil.

Combined Bed-Bug Killer and Deodorizer

Oil of thyme	30 minims.
Oil of lavender	30 minims.
Oil of eucalyptus	1 dram.
Oil of rosemary	1 dram.
Benzin	2 pints.

This is as efficient an antiseptic as one need look for in a preparation of this kind, and also has a pleasant odor. The oils, being less volatile than the benzin, will linger after the latter has disappeared.

Destruction of Mosquito Larvæ

On the Isthmus of Panama the breeding of mosquitoes is combatted by flowing over the water in which it is suspected that larva exist, a solution made as follows:

One hundred and fifty gallons of crude carbolic acid, of a specific gravity not greater than 0.96 and containing no less than 15 per cent. of phenols and cresols, is heated to 100° C., when 200 pounds of rosin are added and the mixture constantly stirred until the rosin is dissolved. Then 30 pounds of caustic soda are added. The mixture is kept at 100° and stirred until solution is effected and tests of a small portion in a test-tube are made with water until perfect emulsification is attained.

Protection from Mosquito Bites

L. O. Howard, Entomologist and Chief, Bureau of Entomology of the United States Department of Agriculture, in Farmers' Bulletin No. 444, Remedies and Preventives Against Mosquitos, suggests the following protective liquids against the bites of these troublesome insects:

Spirit of camphor rubbed upon the face and hands or a few drops on the pillow at night will keep mosquitoes away for a time, and this is also a well-known property of pennyroyal. Neither of these substances is durable; that is to say, a single application will not last through the night. Oil of peppermint, lemon juice, and vinegar have all been recommended, while oil of tar has been used in regions where mosquitoes are especially abundant. Oil of citronella is one of the best substances to be used in this way. The odor is objectionable to some people, but not to many, and it is efficient in keeping away mosquitoes for several hours. The best mixture tried by the writer was sent to him by Mr. C. A. Nash, of New York, and is as follows:

Oil of citronella	1 ounce.
Spirit of camphor	1 ounce.
Oil of cedar	½ ounce.

Ordinarily, a few drops on a bath towel hung over the head of the bed will keep the common house mosquitoes away. Where they are very abundant and persistent a few drops rubbed on the face and hands will suffice. Even this mixture, however, loses its efficacy toward the close of a long night. It is the habit of the yellow-fever mosquito to begin to bite at daylight. By

that time the average person is sleeping very soundly, and the effects of the mixture will usually have passed largely away. It follows that in the Southern States, where this mosquito occurs, these protective mixtures are not supposed to be as effective as they are in the North. As a matter of fact, however, this last mixture, could it be applied shortly before dawn, would be as effective as under other circumstances.

A mixture recommended by Mr. E. H. Gane, of New York, is as follows:

Castor oil	1 ounce.
Alcohol	1 ounce.
Oil of lavender	1 ounce.

This mixture was prepared for the purpose of avoiding the odor of the oil of citronella.

Oscar Samostz, of Austin, Tex., recommends the following formula:

Oil of citronella	1 ounce.
Liquid petrolatum	4 ounces.

This mixture greatly rectards the evaporation of the oil of citronella.

Mr. B. A. Reynolds has used successfully in New Orleans 20 minims of oil of citronella to the ounce of petrolatum or lanolin.

A 5 per cent. solution of sulphate of potassium has been recommended, as also the oil of cassia. Pure kerosene has also been used extensively in the Philippines.

Mosquito Chaser

As a lotion, perhaps oil of citronella diluted with its own bulk of alcohol is as good as any, or maybe some would prefer one of the following:

I.

Oil of eucalyptus	2 drams.
Oil of sassafras	6 drams.
Alcohol	1 ounce.

II.

Equal parts of oil of pennyroyal, oil of camphor, ox gall, extract of quassia and alcohol.

Either might be put up in two-ounce perfumery bottles with a neat label bearing directions that the liquid be sprinkled on the face, hands and ankles, and sprayed about the room.

A Mosquito Pastille.

Powdered charcoal	16 ounces.
Powdered saltpeter	2 ounces.
Insect powder	8 ounces.
Phenol	1½ ounces.
Water	enough.
Mucilage of acacia or tragacanth	enough.

Mix the powders well. Dissolve the saltpeter in a small quantity of water, mix with the phenol, and sprinkle the whole evenly over the mixed powders, then form the whole into a smooth paste by means of the mucilage. Form this into small cones, each weighing about a dram, and dry thoroughly.

When used, they are to be placed on a dish and the apex of the cone lighted with a match. They burn slowly, and give off a dense pungent smoke that is sure death, not only to mosquitoes, but all other insects. The room should be tightly closed while the cone is burning, and afterward should be well aired.

Lotions for Mosquito Bites

Mosquito lotions are of two kinds, repellant and ante-sting, and relieving or anti-sting, or they serve the dual purpose of chaser and anodyne. Aromatic spirit of ammonia is said to act well in both capacities. The addition of enough eucalpytol to give the spirit the characteristic eucalyptus odor enhances its repellant efficency.

Oils that contian a large proportion of a phenol (oil of cloves and oil of bay) and those containing cineol (oil of eucalyptus and oil of cajuput) when applied undiluted or mixed with an equal quantity of alcohol or acetone will afford relief in many instances.

Tincture of pyrethrum, perfumed if desired, is reputed to be an efficacious anodyne for painful stings.

Solutions of the caustic alkalies in alcohol or acetone—admixed sometimes with dimethylbenzol—containing a little Canada turpentine are recommended.

Several working formulas follow:

I.

Menthol	1 gramme.
Naphthalene	1 gramme.
Alcohol	5 mils.
Castor oil	5 mils.
Collodion	50 mils.

II.

Camphor	16 grammes.
Menthol	16 grammes.
Oil of citronella	65 mils.
Strong ammonia water	90 mils.
Water	65 mils.
Alcohol, to make	1,000 mils.

Mix, and apply after the mosquito bites; or apply before he does, and maybe he will not.

For Insect Bites

In France the following is used as an application for bites of fleas and bedbugs, as well as mosquitos:

Menthol	10 drams.
Ether	100 mils.

Mosquito Powder

Oil of eucalyptus	30 parts.
Talc	60 parts.
Starch	420 parts.

Apply to hands, face and other exposed portions of the body with a powder puff.

Iodine Application for Mosquito Bites

Gallois prescribes (Bull, gen. de. therap.) 40 per cent. solution of iodine in acetone to abort boils and to relieve the irritation following bites of insects, especially mosquitoes. Generally one application is sufficient, but if required it may be repeated at the end of five or six hours. The discoloration lasts about twenty-four hours, and is easily removed with soap and water.

Mosquito Talcum

A powder made after the following formula is said to ease the bites of mosquitoes and keep away the biters:

Oil of vetivert..... 40 minims.
Eucalyptol .....140 minims.
Powdered china clay... 1 pound.
Powdered talc..... 5 pounds.

Circumventing the Festive Mosquito

I.

Oil of eucalyptus.....1½ ounces.
Acetic ether..... 6 drams.
Cologne water..... 6 ounces.
Tincture of insect powder (1 in 5)....7½ ounces.

Dilute with from three to six times its volume of water and use as a bath for the hands and face and for spraying the room.

II.

Menthol .....30 grains.
Eucalyptol ..... 1 dram.
Alcohol ..... 1 ounce.

III.

A powder made of equal parts of sabadilla, coculus indicus, parsley seed, anise seed and tobacco snuff.

IV.

Phenol ..... 6 drams.
Potassium nitrate.....1½ ounces.
Insect powder..... 5 ounces.
Charcoal ..... 10 ounces.
Mucilage of tragacanth enough.

Make into a paste from which pastilles for burning are to be moulded.

V.

Benzoin ..... 2 drams.
Balsam of tolu..... 2 drams.
Charcoal .....10 drams.
Insect powder..... 3 drams.
Potassium nitrate..... 1 dram.
Mucilage of tragacanth enough.
To be used as the foregoing.

VI.

Camphor evaporated in a tin vessel over a flame will fill the room with an odor which is objectionable to mosquitoes. A sponge dipped in spirit of camphor will have a similar effect. The odor of oil of sassafras, pennyroyal, and citronella seems to be quite distasteful to most insects as well as many people.

VII.

A solution of quinine sulphate in glycerin has been recommended abroad as the best preventive of insect bites. It has not been established whether this action is due to the bitter taste of the quinine or its toxic action on the insects.

VIII.

Oil of citronella..... 1 dram.
Alcohol ..... 1 dram.

Apply freely to face, neck, hands and ankles to prevent mosquitoes from biting.

For Bites and Stings of Insects

I.

For the sting of wasp, hornet, bee, or for the bite of ant, spider or other insect, says the Medical World, the local application of ammonia is the best treatment. Soap or other alkaline substance will also give relief.

II.

Menthol ..... 1 gramme.
Alcohol .....50 mils.
Stronger ammonia water .....20 mils.

Place a drop on the irritated spot occasionally.

III.

According to Royet (Lyon Medical) a 1 per cent. solution of calcium hypochlorite is an excellent topical application for the bites of mosquitoes and other insects.

To Keep Off Gnats and Other Insects

The following is said to be an efficient repellant for gnats, midges, mosquitoes and the like:—

Oil of cajuput..... 2 mils.
Tincture of pyrethrum.... 4 mils.
Ammoniac mixture, to make .....40 mils.

To be applied to the exposed parts of the body.

Anti-Midge Pastilles

Benzoin .....125.0 grammes.
Cascarilla .....125.0 grammes.
Myrrh ..... 41.5 grammes.
Charcoal .....750.0 grammes.
Oil of nutmeg..... 25.0 grammes.
Oil of clove..... 25.0 grammes.
Potassium nitrate.. 66.5 grammes.
Mucilage of tragacanth ..... enough.

The first four ingredients, in moderately fine powder, are carefully

mixed with the potassium nitrate; the oils are then added, and enough mucilage of tragacanth gradually incorporated to form a plastic mass. This is rolled into the desired shape, divided and dried.

Lotions for Pediculus Capitis

Desmons (Jour. med., Paris), points out that the external shell of the ova of the pediculus capitis, because of its chitinous nature, is resistant to liquid applications unless they contain acetic acid. For the destruction of the insects and their ova he suggests that the infested parts be carefully wetted with the following:—

Tincture of benzoin.	5 mils.
Corrosive mercuric chloride	1 gramme.
Glacial acetic acid...	12 mils.
Cologne water, to make	1000 mils.

Make a solution.

Because of the desquamative effect of too frequent applications of solutions of acetic acid to the skin, lotions containing it should not be dispensed except for use under the direction of a physician; and the well-known danger of using solutions of corrosive mercuric chloride should prevent druggists from indiscriminatingly putting this nit killer into the hands of the laity.

To Destroy Head Lice

In the Lancet Dr. Arthur Whitehead gives the following rapid method of freeing girls' heads from lice and nits:

The patient is laid on her back on the bed with the head over the edge, and beneath the head is placed a basin on a chair so that the hair lies in the basin. A solution of 1 in 40 carbolic acid is then poured over the hair into the basin and sluiced backward and forward until the whole of the hair is thoroughly soaked with it. It is especially necessary that care should be taken to secure thorough saturation of the hair over the ears and at the nape of the neck, since these parts are not only the sites of predilection of the parasites, but they are apt to escape the solution. The rule I give is that this sluicing shall be carried out for ten minutes by the clock. Lister showed that if the hair is soaked with carbolic acid solution for an appreciable time it takes up the phenol and the solution becomes progressively weaker. At the end of the ten minutes the hair is lifted from the basin and allowed to drain, but is not dried or even very thoroughly wrung out. The whole head is then swathed with a thick towel, or better, a large piece of common house flannel, which is fastened up to form a sort of turban, and the head is allowed to remain like this for an hour. It can then be either washed or simply allowed to dry, as the carbolic, being volatile, quickly disperses. At the end of this period every pediculus and, what is more important, every ovum is dead, and although the ova are left on the hair they will not hatch, and no relapse will take place unless exposure to fresh contagion occurs. Incidentally, any impetiginous scabs are softened so that they come away easily and allow any ointment which is used for the cure of this complication to be applied easily. In cases where there is impetigo no further treatment is necessary.

The next two formulas are also from a British source, the Chemist and Druggist:

Non-Poisonous Nit-Lotion

Contused quillaja	240 grains.
Quassia chips	480 grains.
Chirata	120 grains.
Salicylic acid	120 grains.
Compound tincture of lavender..	60 minims.
Boiling water	2 pints.

Infuse the crude drugs for one hour in the water, then strain and add the acid and the tincture.

Directions.—After combing the hair thoroughly, apply the lotion to the roots with a sponge, sprinkle some upon the hair brush, and well brush the hair in order to distribute the lotion equally.

Quillaja is poisonous, and so a lotion containing it is dangerous, especially in cases in which there are abraded places on the scalp, as there are apt to be after much scratching. Of course, almost any drug that would kill lice is apt to be poisonous if applied to broken places in the skin, or if absorbed through the skin, and preparations of such drugs intended for general use should be sold only under a warning labeled to this effect. Possibly the quassia directed in the foregoing formula is sufficiently insecticidal without the presence of the quillaja, and as it is less harmful to humans, perhaps the place of the quillaja could with advantage (so far as safety is concerned, at least), be taken by a lathery soap.

Here is a third formula from London:

Nit-Destroying Lotion

Stavesacre seed	2 ounces.
Acetic acid	9 drams.
Alcohol	2 ounces.
Glycerin	1 ounce.
Oil of geranium.....	2 minims.
Oil of lavender.....	2 minims.
Oil of lemon.....	4 minims.
Water, to make.....	19 ounces.

Crush the stavesacre seed and boil it with the acetic acid and 15 ounces of water for ten minutes in a covered vessel; set aside until cool and add the oils dissolved in the alcohol. Filter and add enough water to make 19 ounces.

Fish Oil Soap to Free Animals of Lice

A formula for a fish-oil soap for use in freeing animals of lice is:—Six pounds of caustic soda are dissolved in 1½ gallons of water, and 22 pounds of the oil gradually added, with constant stirring.

Compound Tincture of Larkspur

Larkspur is a popular poison for pediculi, and a number of formulas for compound tinctures of this drug have appeared in The Druggists Circular during the past few years. Some of these follow:

I.

Larkspur seed, ground...	8 ounces.
Green soap.....	2 ounces.
Potassium carbonate.....	1 ounce.
Oil of lavender flowers..	1 dram.
Alcohol	24 ounces.
Water	8 ounces.

Macerate for ten days with occasional agitation and filter, adding enough of a mixture of alcohol 3 parts and water 1 part, to make 32 fluid ounces; or the tincture may be prepared by percolation, after maceration for a few days.

II.

The following formula is for a preparation which is said to give better results, to be cheaper, and to be more easily made than the ordinary tincture:

Larkspur seed..... 100 grammes.
Potassium carbonate 10 grammes.
Alcohol ..... 500 mils.
Water to make.....1.000 mils.

Mix the seed and the carbonate with 500 mils of water; boil the mixture for five minutes; when it has become cold, add the alcohol; strain, and add enough water to make the finished product measure 1,000 mils. Filter, if not clear.

III.

A tincture which seems to give satisfaction to the trade in a town which is the seat of one of our largest universities, is as follows:

Larkspur seed..... 4 ounces.
Boiling water..... 6 ounces.
Alcohol .....10 ounces.
Diluted alcohol, to make 1 pint.

Crush the seed in an iron mortar, transfer them to a suitable vessel, pour the boiling water upon them, cover the vessel and let the whole stand until cool; add the alcohol, stir well, and after twenty-four hours, filter through cotton.

This class of preparations is poisonous, and may even exert their toxic effect through abrasions in the skin.

Sabadilla for Body Lice

Sabadilla or cevadilia or, as the Germans write it, läusekörner, is used in the shape of powder, ointment or decoction to destroy vermin. The United States Dispensary refers to a pulvis capucinorum, of which sabadilla is the principal ingredient, in use in Europe for the destruction of lice in the hair. It is composed of equal parts of sabadilla seed, stavesacre seed, parsley seed and tobacco, in powder form.

Sabadilla is very poisonous and is said to have caused death when applied on a scalp that was ulcerated. It may be absorbed in toxic quantities through the lacerations of the skin caused by scratching.

House Fleas

Writing on the subject of a little insect pest which never fails to receive notice wherever he goes, L. O. Howard, chief of the Bureau of Entomology, United States Department of Agriculture, in one of those official circulars (No. 108) which we frequently recommend that druggists procure and read, says:—

To sum up:—Every house where a pet dog or cat is kept may become seriously infested with fleas if the proper conditions of moisture and freedom from disturbance exist. Infestation, however, is not likely to occur if the (bare) floors can be frequently and thoroughly swept. When an outbreak of fleas comes, however, the easiest remedy to apply is a free sprinkling of pyrethrum powder in the infested rooms. This failing, benzin may be tried, a thorough spraying of carpets and floors being undertaken, with the exercise of due precaution in seeing that no lights or fires are in the house at the time of the application, or for some hours afterwards. Finally, if the plague is not thus abated, all floor coverings must be removed and the floors washed with hot soap-suds. This is a useful precaution in any house which it is proposed to close for the summer, since even a thorough sweeping may leave behind some few flea eggs from which an all-pervading swarm may develop before the house is reopened.

Ridding a House of Fleas

A correspondent says in regard to this:

"The only satisfactory exterminator was found to be a quart of kerosene, in which were dissolved several ounces of moth balls and four ounces of oil of cedar. With this inflammable liquid we painted the floor of each room with particular reference to crevices and door sills, keeping the room closed for twenty-four hours, and only after airing for twenty-four hours was it deemed safe for use. Thus we proceeded from room to room, avoiding danger of fire by tightly shutting the room so treated, not using it until after it had been aired. In a week the house was once more habitable."

"Flea Driver"

The following formula is said to produce a preparation which is effective in driving fleas and mosquitoes away from the person, beds, rooms, etc.:

Oil of lavender..... 2 drams.
Oil of pennyroyal..... 1 dram.
Oil of cajuput..... 1 dram.
Oil of cassia..... 1 dram.
Oil of sassafras..... 1 dram.
Alcohol .....16 ounces.
Water .....16 ounces.

Dissolve the oils in the alcohol; add the water and filter through talcum powder.

Application for Chigger Bites

It is said that a saturated solution of sodium hyposulphite applied to a chigger bite will instantly relieve the itching. Put up in 6-dram vials and sold for 10 or 15 cents a vial, there is good money in this solution.

Exterminating Roaches or Water Bugs

The United States Department of Agriculture, in a bulletin issued several years ago, stated that, "A thoroughly effective and simple means of ridding one's premises of roaches . . . is in fumigating with hydrocyanic-acid gas. The experience of the past few years has demonstrated that this gas . . . is particularly applicable and satisfactory against all species of house roaches. The gas is extremely poisonous to human beings, but, with the proper precautions, may be employed with complete safety." Knowing the deadly character of this gas, we would urge that its use be not recommended to the laity, but, with the proper precautions, it might be feasible for a pharmacist to use it in his own premises. The Department of Agriculture has issued a special bulletin on the use of this gas.

Carbon bisulphide has also been used successfully as a fumigant, but is hardly applicable for general use, as the odor is so objectionable.

Many formulas have been suggested for the destruction of the pests and no single substance has been more widely advertised than sodium borate. Enthusiasts claim that roaches immediately leave any premises which have been thoroughly sprinkled with it.

I.

A mixture of plaster of paris and flour, placed near a bowl of water, is said to be effective. Arsenic mixed with flour may be used where there is no danger of children getting hold of it.

II.

Chamomile	2 ounces.
Sodium borate	12 ounces.
Pyrethrum powder	2 ounces.
Plaster of paris	1 ounce.
Sulphur	3 ounces.
Powdered arsenic	2 drams.

Dealing With the Roach Problem

If age is entitled to respect, we should take off our hats to the cockroach; if industry and pertinacity are commendable, the croton bug sets an example for us to follow. There are perhaps more than 5,000 species of the beetle in the world today.

It is said by those who have studied the cockroach—notably C. L. Marlott, whose report on the subject has been published as a circular by the United States Department of Agriculture—that this pest has two redeeming qualities, one that he is a scavenger, and the other that he eats bed-bugs and worms. Some other points taken from Mr. Marlott's paper are given below:

It has been said that if tree frogs are enclosed in a roach-infested room overnight they will clean it of the pest.

Houses may be freed of roaches by fumigating with hydrocyanic vapor, but so poisonous is hydrocyanic acid that even in the hands of those who understand its danger serious results have followed its use as a vermicide. [There is a Government bulletin on the subject.]

Pastes of various kinds, containing arsenic, were used by the Department of Agriculture to poison the croton bugs which were eating the department's books, but the bugs were too wary to partake.

Good, fresh insect powder, liberally applied, paralyzes roaches, when they may be swept up and destroyed, but leaves a "muss." The powder may be burned in a closed room, when its vapor will have a similar effect upon the roaches. The room should be kept closed from six to twelve hours after the fumigation.

Flowers of sulphur dusted about where roaches abound has proved a very effective repellant in Washington, but proprietary "foods" have been found of little value. An exception to this rule is a phosphorus preparation, consisting of sweetened flour paste containing 1 or 2 per cent. of the poison. Spread on paper and left in the runways of the bugs this paste not only proved a repellant but an actual poison to them.

Carbon disulphide, left in open vessels in a tightly closed room in the proportion of about 1 pound to each 1,000 cubic feet of space, will destroy roaches and other vermin. Like hydrocyanic acid, this substance, as well as its vapor, is poisonous to man. The liquid is dangerously inflammable, and its vapor is explosive when brought into contact with fire. It should not be used by any except experts, and even then it is doubtful whether the end justifies the risk necessarily incurred.

A mixture of 1 part of plaster of paris with 3 or 4 parts of flour may be placed in a saucer and left in a room infested by roaches. Near it may be placed a plate containing water, with bridges joining them, as well as small bits of wood on the surface of the water. Roaches eating of the flour mixture and then drinking of the water will be killed by the hardening of the plaster.

Sodium Fluoride as a Roach Poison

Surgeon Means, of the United States Navy, in an article in the Naval Medical Bulletin states that at one time the store rooms and pantries of the ship on which he was stationed became infested with roaches, and the ordinary insect powders seemed to have no effect on them. Sodium fluoride was then used with marked results. Not only were the roaches killed, but also ordinary black beetles.

Roach Food

Borax	77 parts.
Flour	33 parts.

Cucumber as a Roach Poison

It is said that slices of ripe cucumber spread about the places frequented by roaches will have a good effect.

Emmett Powers says that he has found that a mixture of equal parts of insect powder and borax will destroy more roaches than any powder in the market and will do its work in less time than the others take.

Another contributor said that he had found the following combination the best:

Borax .....10 parts.
Insect powder ..... 1 part.
Starch ..... 1 part.

The starch, he said, made the powder stick to the body of the insect; the insect powder was the active ingredient; and the borax was a diluent. Other authorities state, however, that borax alone has been known to be effective in ridding a room of roaches.

A different kind of formula in which a fluorine salt is exhibited follows:

Silex .....22 parts.
Sodium fluoride .....40 parts.
Sodium chloride .....10 parts.
Sodium carbonate, dried.... 5 parts.
Sodium sulphate .....10 parts.

Hooper's and Peterman's Foods

As a result of analyses of Hooper's and Peterman's roach foods made by him and published in The Druggists Circular, Dr. R. G. Eccles stated that a typical formula for this class of preparation was:

Borax .....37 parts.
Starch ..... 9 parts.
Cocoa ..... 4 parts.

In Bulletin No. 68 of the United States Bureau of Chemistry, dated 1902, the composition of Peterman's roach food is stated to be 20.6 per cent. of borax with potato or pea meal and a little red coloring matter; Hooper's fatal food is said to contain 92.44 per cent. of borax with corn meal and red coloring matter.

Swat the Cockroach, Too

A writer in the British Medical Journal notes that the number of cockroaches is increasing as well as the extent of the territory which they infest, and says that unless preventive measures are adopted the insect is likely, in the course of time, to become very troublesome and possible very dangerous.

It eats not only the common food of man, but also sputum, pus and decaying refuse. It has been shown that contamination with its feces will bring about the souring of milk, and the insect is in all probability an active agent in the souring of milk kept in kitchens and larders; and, in addition, is undoubtedly a very important factor in the distribution of molds to food and numerous other articles, especially when they are kept in dark cupboards and cellars where cockroaches abound. The cockroach may also play a small part in the dissemination of tuberculosis and in the transmission of pyogenic organisms.

Combatting Clothes Moths

Method more than deterrent substances is needed to exterminate moths in houses or to exclude them from houses. Among other anti-moths mentioned from time to time in The Druggists Circular are camphor, naphthalin, red pepper, oil of cedar, tobacco dust, oil of turpentine, and powdered insect flowers. Most of it, if not all these—the liquids are probably exceptions—act only to exclude the moths and are useless if these or the larvae be present in the fabric when it is put away.

The Government entomologists have given much study to the moth question, and have prepared a pamphlet entitled "The True Clothes Moths.' issued as circular No. 36, second series, revised, of the Bureau of Entomology, United States Department of Agriculture.

Moth Powder

Camphor is one of the best-known moth repellants, and but for its high price would doubtless be the most popular one as well. Naphthalin is much cheaper, and so, notwithstanding its disagreeable odor and the fact that scientific men have said that its presence does not prevent the breeding of moths or the ravages of their larvæ, is largely used by the public to keep moths away, and seemingly with results that take it out of the class of hoodoo remedies. Frequently camphor and naphthalin are mixed, and volatile oils with strong and pleasant odors, or cedar wood chips, added, to make a moth powder. Tobacco dust is used for the same purpose, either alone or in connection with some of the other things mentioned.

A few formulas from The Druggists Circular follow:

I.

Lupulin ..... 1 ounce.
Powdered camphor..... 8 ounces.
Powdered black pepper... 8 ounces.
Tobacco dust (snuff).... 1 pound.
Cedar-wood sawdust.... 2 pounds.

II.

Powdered capsicum..... 4 ounces.
Powdered naphthalin.... 1 pound.
Insect powder..... 1 pound.

III.

Powdered camphor..... 5 ounces.
Powdered naphthalin.... 1 pound.
Coumarin ..... 5 grains.
Oil of neroli.....16 drops.
Oil of mirbane.....16 drops.

The surest protection against moths is to pack the articles that may suffer from them in bags and so securely close them that the insect can find no entrance. Paper answers well as a packing material, but all joints should be pasted. Of course, the packing should be done before the moth has had a chance to lay its eggs in the material.

Tenacious Insecticide Sprays

When destroying insects it is of importance to insure a close adherence of the toxic wash or sprayed liquor. The addition of a small quantity of an alkaline soap has been suggested to facilitate this, but it is now shown that the saponins are still more effective, are more widely applicable, and have no action on the vegetation. The fruit of sapindus utilis, a tree which has been cultivated for a considerable time in Algeria, is very rich in saponin, and Gastine (Compt. rend.) reports that two grammes of the powdered sapindus fruit in 10 liters of water will produce a very fine emulsion with 700 grammes of tar oil. Preferably a heavy tar oil (specific gravity 1.045) and a lighter oil (specific gravity 0.950) are mixed in such proportions that the density of the mixture is about that of water. The surface tension of the saponin solution is lowered by the addition of the mixture of oils and the final mixture has a marked wetting power. Copper salts may be added without increasing the surface tension. A very efficient mixture is water, 10 liters, sapindus powder 20 grammes, normal copper acetate 100 grammes, mixture of oils (specific gravity 1) 200 mils.

Destruction of Insects on Plants

For the extermination of scale insects, resinous preparations are employed, which kill by covering with an impervious coating. Such a wash may be made as follows:

Rosin	3½ pounds.
Caustic soda	1 pound.
Fish oil	8 ounces.
Water	20 gallons.

Boil the rosin, soda and oil with a small portion of the water, adding the remainder as solution is effected.

For the San Jose scale a stronger preparation is required, the proportion of water being decreased by half, but such a solution is applied only when the tree is dormant.

For use on house plants one of the following might be tried:

I.

Soft soap	4 drams.
Quassia	72 grains.
Salicylic acid	30 grains.
Alcohol	5 ounces.
Water, to make	24 ounces.

Mix the first four ingredients and macerate several days, then filter and add the water. Apply with a brush or plant sprinkler, the latter being so shaped as to throw the spray on the under side of the leaf.

II.

Tobacco waste	1 pound.
Soft soap	1 pound.
Water	12 gallons.
Alcohol	1 gallon.

Boil the tobacco with the water, strain, and add the other ingredients.

The liquid is diluted with an equal quantity of water when required for use; the solution being applied to the plants in the form of a spray.

Ants on Plants

Both the ant and the plant must be taken into consideration in determining upon an insecticide that will exterminate the former with no injury to the latter. Of plants there are many; of ants there are likewise quite a good number of species varying in habit and habitat, size and tenacity of life. Perhaps there are ants that might survive the application of many bug destroyers that would work havoc with some delicate plant.

Dalmation insect powder and white hellebore have been used with success in exterminating ants on rose bushes and the like. The insect powder is mixed with an equal quantity of wheat flour and blown over the plants in the evening. It is sometimes used in the form of a spray, 1 ounce to 2 gallons of water. This should be mixed at least 24 hours before it is to be applied. The hellebore is used in the same manner, but diluted with from 5 to 10 parts of flour and applied in the morning before the dew has evaporated.

A decoction of quassia, 1 to 50, has been recommended as an efficient spray against ants.

Here is a powder that has given satisfaction when poured in small heaps at the roots of ant-infested plants:

Antimony and potassium tartrate	1 ounce.
Sugar	4 ounces.
Borax	4 ounces.

Mix intimately and place where desired in the early morning.

Carbon disulphide has come into prominence as a destroyer of ants and other plant-infested insects. Its use is not unattended with danger, however, owing to its extreme inflammability, and should not be attempted by inexperienced persons. From Bulletin No. 127 of the Department of Agriculture we quote the following methods of using this substance:

The treatment as successfully practiced by Professors Garman and Smith consists in covering the young vines with small tight boxes of either wood or paper, and introducing under each box a saucer containing one or two teaspoonfuls of the very volatile liquid-bisulphide of carbon. The vines of older plants may be wrapped about the hill and gathered in under the larger boxes or tubs, and a greater, but proportional, amount of bisulphide used. The covering should be left over the plants for three-quarters of an hour to an hour.

For ants' nests an ounce of the substance is poured into each of several holes made in the space occupied by the ants, the openings being then closed; or the action is made more rapid by covering with a wet blanket for ten minutes and then exploding the vapor at the mouth of the holes with a torch the explosion driving the fumes more thoroughly through the soil.

Below is presented a further collection from various sources of notes on this subject:

To kill these industrious heterogynous hymenopterous insects by wholesale, drop some quick-lime on the mouth of their nests and wash it in with boiling water; or pour into their retreats water in which camphor or tobacco has been steeped.

Grease a plate with lard and set it where the ants can readily get at it. They will gather by the plateful. The plate may be held over an open fire, when lard and ants will quickly disappear not to return again. But more ants will come, and these may be treated in the same way.

Saturate a piece of cotton with chloroform and stuff into the entrance of their burrows and seal entrance so as to keep the fumes inside.

Saturate a sponge with sweetened water and when the ants have gathered in it, plunge the sponge into boiling water.

A spray of benzin from an atomizer is sudden death to most insects. Benzin is so dangerous, on account of fire, that its use is not recommended except in the hands of careful and experienced people.

Here is a way that has been suggested: Take 2 parts of sulphur and 1 part of potash; put them in an earthen vessel and keep over a fire until they have united to form a mass. Reduce this mass to powder, infuse a little of it in water, and sprinkle in places infested by the ants.

Boil aloes in water, add camphor, and sprinkle around the place frequented by the ants.

Chalk on the shelves along which ants travel to and fro about the house will cause them to seek new routes. Chalk marked around a pail or barrel will keep ants out of it.

Cracked walnuts or hickory nuts will attract ants, and fire may be made to do the rest.

Bread crumbs soaked in tincture of quassia will poison such ants as eat it.

Smear a "dead-line" about the places ants frequent with carbolated petroleum.

Sprinkle the haunts of the insects with a mixture of 1 pint of camphor and 20 parts of quick-lime.

Squirt oil of turpentine into the cracks and holes in which the pests hide, by means of an ordinary sewing machine oil can.

To poison ants, feed them on borax and sugar, or yeast cake and sugar.

To drive ants out of a room and keep them out use good insect powder, ground mustard, sulphur, camphor, tobacco, cloves, oil of cedar, kerosene, persistence.

Peru balsam, smeared on table legs or the feet of a cupbard keeps ants off such furniture. If 1 ounce of the balsam be boiled in 1 gallon of water the liquid used as a wash has a similar effect.

If at all possible of application the best remedy is boiling water, which should be poured into the nest. Sodium cyanide is also an effectual remedy. The various preparations of which naphthalene is the basis will simply drive the ants from one part of the house to another. A solution of phenol containing 1.25 per cent. is often used, and if it does not result in the death of the insects it certainly repels them. One of the most crude and dangerous remedies is a proprietary ant destroyer composed of arsenic and honey. Such an ant destroyer could be made as follows:

Arsenical Ant Destroyer (Liquid)

Arsenious oxide	5
Sugar	40
Liquid glucose	20
Water	enough to make 100

Mix the arsenious oxide in very fine powder with the other ingredients.

If the nests cannot be located, one of the two following pastes could be employed. They should be smeared on sticks and placed about.

Nicotine Ant Destroyer (Paste)

Nicotine	10
Suet	5
Lard	85

To these add a trace of oil of anise and color with chlorophyl.

Arsenical Ant Destroyer (Paste)

Arsenious oxide	5
Sugar	25
Liquid glucose	20
Flour	enough to form a paste.

Flavor with a little oil of anise and color with paris green. This should not remain in contact with air or moisture, otherwise it becomes uncomfortably sticky. The merest trace of oil of anise must be used. A little appears to attract the insects, but more than a trace repels them. If for any reason the use of liquid or paste be impossible the following powder is very destructive, and is much more effective than ready-made naphthalene powders without lime:

Ant Powder

Camphor	10
Naphthalene	40
Lime	50

This may be sprinkled about the haunts of the insects or, better still, be introduced into the nests.

The sale of arsenical preparations should be attended with the greatest caution.

Destruction of House and Lawn Ants

Farmers' Bulletin 740, published by the United States Department of Agriculture, describes the origin of house ants; the kinds of ants found in North America; something of their life history and habits; and certain means of controlling the house and lawn varieties.

One method of destroying the pests is described in which sponges are soaked in sweetened water and placed where they can be reached by the ants. These sponges are collected several times a day, and the ants swarming in them are destroyed by immersing them in hot water. This method is not satisfactory except where the ant colonies are small, and the placing of the bait frequently tends to increase the number of ants in the locality, instead of decreasing it. A more effective method is described as follows:

A more efficient remedy, where it can be safely used, is a syrup poisoned with arsenate of soda, the idea being that the ants will collect this poison syrup and convey it to their nests, so that not only the ants which collect the syrup are ultimately killed, but the inmates of nests feeding on it also succumb. The formula for the preparation of this syrup is as follows: One pound of sugar dissolved in a quart of water, in which should be added 125 grains of arsenate of soda. The mixture should be boiled and strained, and on cooling used with sponges, as already described. The addition of a

small amount of honey is said to add to the attractiveness to ants of this mixture. Naturally, the greatest precaution should be taken in preparing this syrup and in safeguarding it afterwards to prevent its being the cause of poisoning to human beings or domestic animals. This method of control has been tested for three years by an expert of the Bureau of Entomology of this department, and has given very satisfactory results. Similar success with it has been reported by others, including persons engaged professionally in insect extermination. A related formula experimentally worked out for the Argentine ant is given in a special bulletin on this insect. This formula is as follows:

Granulated sugar.....	15 pounds.
Water	7½ pints.
Tartaric acid (crystallized)	¼ ounce.

Boil these ingredients together slowly for 30 minutes and allow them to cool. Then slowly dissolve three-fourths ounce sodium arsenite ($NaAsO_2$) in one-half pint of hot water. Allow this to cool, then add it to the syrup, stirring thoroughly. Add 1½ pounds of pure honey to the syrup and the mixture is ready for use.

Destruction of Lawn Ants

In the case of lawn ants where only a small area with few nests are concerned, drenching the nests with boiling water or injecting a small quantity of kerosene or coal oil will be effective, and similar treatment will apply to nests between or beneath paving stones.

An effective control method for larger ant colonies is to inject into the nest a quantity of disulphide of carbon. This substance can be placed in the nest, with an oil can or small syringe, the quantity varying from half an ounce for a very tiny nest to 2 or 3 ounces or more, depending on the size of the nest. An oil can or syringe with a long spout is convenient for this purpose, as this can be inserted into nests and the liquid injected without its being too near the operator's nose. To facilitate entrance of the chemical, the ant hole can be enlarged with a sharp stick or iron rod. The depth of the injections will depend on the size of the nest, from an inch or two to greater depths. After injection of the carbon disulphide the entrance opening should be closed by pressure of the foot to retain the disulphide, which will then penetrate slowly throughout the underground channels of the nest and kill the inmates. The efficiency of this remedy is increased by covering the nest immediately after the injection with a wet blanket or other heavy cloth, to better retain the fumes of the chemical. The disulphide should be kept away from the fire, as its fumes are inflammable and may explode if ignited, much like gasoline vapor.

Poisons for Rats and Mice

Farmers' Bulletin No. 896, issued by the United States Department of Agriculture, states that the common rat is the worst animal pest in the world; that it carries bubonic plague and many other diseases fatal to man, and has been responsible for more untimely deaths among human beings than all the wars in history. It is estimated that the damage done by rats and mice amounts to more than $200,000,000 per year in the United States alone.

After describing the various methods for constructing ratproof buildings and guarding against the inroads of the rodent the several methods of trapping are mentioned, and the usual poisons employed are treated of as follows:

While the use of poison is the best and quickest way to get rid of rats and mice the odor from the dead animals makes the method impractical in occupied houses. Poisons may be effectively used in barns, stables, sheds, cribs and other outbuildings.

Caution.

In the United States there are few laws which prohibit the laying of poisons on lands owned or controlled by the poisoner. Hence it is all the more necessary to exercise extreme caution to prevent accidents. In several States notice of intention to lay poison must be given to persons living in the neighborhood. Poison for rats should never be placed in open or unsheltered places. This applies particularly to strychnine or arsenic on meat. Packages containing poisons should always bear a warning label and should not be kept where children might reach them.

Among the principal poisons that have been recommended for killing rats and mice are barium carbonate, strychnine, arsenic, phosphorus and squills.

Barium Carbonate.

One of the cheapest and most effective poisons for rats and mice is barium carbonate. This mineral has the advantage of being without taste or smell. It has a corrosive action on the mucous lining of the stomach and is dangerous to larger animals if taken in sufficient quantity. In the small doses fed to rats and mice it would be harmless to domestic animals. Its action upon rats is slow, and if exit is possible the animals usually leave the premises in search of water. For this reason the poison may frequently, though not always, be used in houses without disagreeable consequences.

Barium carbonate may be fed in the form of dough composed of four parts of meal or flour and one part of the mineral. A more convenient bait is ordinary oatmeal with about one-eighth of its bulk of the mineral, mixed with water into a stiff dough. A third plan is to spread the barium carbonate upon fish, toasted bread (moistened) or ordinary bread and butter. The prepared bait should be placed in rat runs, about a teaspoonful at a place. If a single application of the poison fails to kill or drive away all rats from the premises it should be repeated with a change of bait.

Strychnine.

Strychnine is too rapid in action to make its use for rats desirable in houses, but elsewhere it may be employed effectively. Strychnine sulphate is the best form to use. The dry crystals may be inserted in small pieces of raw meat, Vienna sausage or toasted cheese, and these placed in rat runs or burrows; or oatmeal may be moistened with a strychnine syrup and small quantities laid in the same way.

Strychnine syrup is prepared as follows: Dissolve a half ounce of strychnine sulphate in a pint of boiling water, add a pint of thick sugar syrup and stir thoroughly. A smaller quantity may be prepared with a proportional quantity of water and syrup. In preparing the bait it is necessary to moisten all the oatmeal with the syrup. Wheat and corn are excellent alternative baits. The grain should be soaked overnight in the strychnine syrup.

Arsenic.

Arsenic is probably the most popular of the rat poisons owing to its cheapness, yet our experiments prove that, measured by the results obtained, arsenic is dearer than strychnine. Besides arsenic is extremely variable in its effect upon rats, and if the animals survive a first dose it is very difficult to induce them to take another.

Powdered white arsenic (arsenious acid) may be fed to rats in almost any of the baits mentioned under barium carbonate and strychnine. It has been used successfully when rubbed into fresh fish or spread on buttered toast. Another method is to mix twelve parts by weight of corn meal and one part of arsenic with whites of eggs into a stiff dough.

An old formula for poisoning rats and mice with arsenic is the following, adapted from an English source:

Take a pound of oatmeal, a pound of coarse brown sugar and a spoonful of arsenic. Mix well together and put the composition into an earthen jar. Put a tablespoonful at a place in runs frequented by rats.

Phosphorus.

For poisoning rats and mice phosphorus is used almost as commonly as arsenic, and undoubtedly it is effective when given in an attractive bait. The phosphorus paste of the drug stores is usually dissolved yellow phosphorus, mixed with glucose or other substances. The proportion of phosphorus varies from one-fourth of 1 per cent. to 4 per cent. The first amount is too small to be always effective and the last is dangerously inflammable. When home made preparations of phosphorus are used there is much danger of burning the person or of setting fire to crops or buildings. In the Western States many fires have resulted from putting out home made phosphorus poisons for ground squirrels, and entire fields of ripe grain have been destroyed in this way. Even with commercial pastes the action of sun and rain . . . leaches out the glucose until a highly inflammable residue is left.

It is often claimed that phosphorus eaten by rats or mice dries up or mummifies the body so that no odor results. The statement has no foundation in fact. No known poison will prevent decomposition of the body of an animal that dies from its effects. Equally misleading is the statement that rats poisoned with phosphorus do not die on the premises. Owing to its slower operation no doubt a larger portion escape into the open before dying than when strychnine is used.

The Biological Survey does not recommend the use of phosphorus as a poison for rodents.

Squills.

The squill, or sea leek, is a favorite rat poison in many parts of Europe and is well worthy of trial in America. It is rapid and very deadly in its action, and rats seem to eat it readily. The poison is used in several ways. Two ounces of dry squills, powdered, may be thoroughly mixed with eight ounces of toasted cheese or of butter and meal and put out in runs of rats or mice. Another formula recommends two parts of squills to three parts of finely chopped bacon mixed with meal enough to make it cohere. This is baked in small cakes.

Poison in Poultry Houses.

For poisoning rats in buildings and yards occupied by poultry the following method is recommended: Two wooden boxes should be used, one considerably larger than the other, and each having one or more holes in the sides large enough to admit rats. The poisoned bait should be placed on the bottom and near the middle of the smaller box, and the larger box should then be inverted over it. Rats thus have free access to the bait, but fowls are excluded.

Getting Rid of Rats

Using Broken Glass.

A. E. Magoffin, harking back to 1872, gives an account of a trick he perpetrated on the rodents that was as effectual as it was ingenious. When the foundation of a new house was being laid, he scattered four or five barrelsful of broken glass all around the wall to the depth of about four inches, and covered this over with dirt. The result was that no rat was ever able to penetrate.

Molasses and Lye Rat Poison.

A farmer says he rid his premises of rats as follows: "On a very large number of old shingles I put about a teaspoonful of molasses, and on that, with my pocketknife, scraped a small amount of concentrated lye, then placed the shingles around under the doors and under the cribs. The next morning I found forty dead rats and the rest vamoosed. Have cleared my farm of the pests in the same way, and have never known it to fail."

Rhodium Rat Bait.

Another one of the good old "standbys" in this line is the following formula for rat bait:

Oil of rhodium	20 drops.
Oil of caraway	60 drops.
Oil of lavender	5 drops.
Oil of anise	5 drops.
Tincture of musk	5 drops.

A Bas the Cat.

And then there is probably a lot of good common sense in the advice given by the Idaho Board of Health that in a food-products store almost any other form of rat exterminator is to be preferred to letting a cat run around promiscuously.

Starving the Rats.

Those about to erect a new brick building or repair an old one, whether of frame, brick or other construction, may learn from a recent bulletin issued by the United States Public Health Service what sanitary and economic benefits are to be derived from permanent rat-proofing. The rat is far too prolific to be exterminated by such agencies as traps, poisons, gases and the like; these may reduce the numbers of the rodents, but if there is food within reach, the surviving rats will have more to eat proportionally, and procreation will be stimulated the more. Rat extermination can be effective only by cutting off the rats' food supply. The bulletin contains all necessary information to this end, so far as relates to buildings. Those already erected may be rat-proofed by the closure of all natural or accidental openings; but being remodeled with material impervious to rats; by the removal of structures which will give refuge to rats, and by the protection or removal of foods which rats will eat.

Phosphorus Rat Pastes

Not only is phosphorus a dangerous drug to handle, but pastes made from it are extremely poisonous and should not be left where children or pets may reach them. Working with phosphorus is dangerous to the health, producing, among other things, decay of the bones. On the whole, we should not advise those who are not prepared to handle this drug more carefully than it would probably be handled in the average drug store, to try to make a phosphorus paste. Some formulas follow:

I.

Phosphorus	1 dram.
Beef dripping	5 ounces.
Wheat flour	2 ounces.
Sugar	1 ounce.
Powdered biscuit	1 ounce.
Water	enough.

Melt the dripping and put it into a wide-mouthed bottle placed in a pan of hot water. Drop in the phosphorus (cut small), cork, and shake the bottle until the phosphorus is dissolved (dipping into the hot water occasionally). Place the powders in a warm mortar and pour the phosphorized dripping upon them, mix, and add warm water to make a soft paste.

II.

Take of wheat flour, 16 troy ounces; beat to a smooth paste with 3 pints of water; put on the fire and add 2 ounces of stick phosphorus, 3 ounces of glycerin, 2 ounces of salt, and 2 drams of pulverized corrosive mercuric chloride. Stir with a wooden paddle constantly during the breaking of the starch cells and thickening of the paste. When the paste is sufficiently solid, color with a small quantity of Venetian red, and, when cold, bottle.

III.

Phosphorus	1 dram.
Pure carbon bisulphide	½ ounce.
Beef dripping	5 ounces.
Biscuit powder	3 ounces.
Compound tragacanth powder	½ ounce.
Oil of anise	10 drops.
Oil of peppermint	5 drops.
Boiling water	3 ounces.

Heat the dripping until it is quite clear, and transfer to a hot mortar; pour into this the carbon bisulphide in which the phosphorus has been dissolved; stir, then add the two powders and the oils, and finally the boiling water all at once, kneading the mass thoroughly until a perfect mixture is obtained.

The carbon bisulphide must be the redistilled or odorless variety. Most of

the bisulphide is dissipated by the hot water, and, as the solvent evaporates, access of air, therefore exidation of phosphorus, is prevented.

IV.

Melt 1 pound of lard in a wide-mouthed bottle in a water-bath; introduce ½ ounce of phosphorus; then add 1 pint of proof spirit; cork the bottle firmly, keeping the contents heated to 150 degrees F., and agitate smartly until the phosphorus becomes uniformly diffused, forming a silky-looking liquid. This liquid on cooling affords a white compound of phosphorus and lard, from which the spirit spontaneously separates, and may be poured off to be used again, as it only serves to diffuse the phosphorus in very fine particles through the lard. This phosphorized lard, on being warmed very gently, may be poured into a mixture of its own weight of barley or wheaten meal and sugar incorporated therewith, and after flavoring with oil of rhodium, etc., the dough may be made into pellets. Or, mix the lard with powdered cheese (3 to 1), to be spread on bread.

V.

The following formula is given in the Pharmaceutisk Revy for making phosphorus paste: Boil 100 grammes of rye flour with 400 grammes of water until 400 grammes of paste are obtained and add 75 grammes of olive oil or other vegetable fixed oil. To this mixture add an emulsion consisting of 15 grammes of mucilage of acacia, 5 grammes of water, 5 grammes of anethol and 10 to 15 grammes of phosphorus. The emulsion should not be too fine in order to prevent too quick an oxidation of the phosphorus.

An Attractive Rat Poison

First on the rodent delicatessen list is cheese, then comes animal fat—preferably dripping—fish oil and sweetened meal or crumbs. The choice of poisons may be made from red phosphorus, arsenic trioxide, tartar emetic, barium carbonate, sodium fluoride and powdered squill. Here is a suggestion to a prepared "food":

Sodium carbonate	10.0 grammes.
Sodium benzonate	0.5 gramme.
Grated American cheese	10.0 grammes.
Wheaten meal	30.0 grammes.
Fatty drippings, to make	a paste.

Mummifying Rat Killer

It is stated that the only rat poisons that inhibit the putrefaction of the carcass (this decomposition cannot be entirely prevented) are tartar emetic and barium carbonate. The latter is the more efficacious, and at the same time is less toxic to human beings or domestic animals. Barium carbonate exerts a corrosive action upon the intestinal membrane and excites an intense thirst, which induces the rodent to search for water. If no water is available in the infested buildings, the rats which have eaten the poison will make their exit before their demise occurs. If the animal gets no water before death ensues, the carcass dries up, and decomposition progresses very slowly, with little, if any, emanation of odor.

In Farmer's Bulletin 369 of the United States Department of Agriculture, entitled, "How to Destroy Rats," the following directions for using barium carbonate are given:

Barium carbonate may be fed in the form of dough composed of four parts of meal or flour and one part of the mineral. A more convenient bait is ordinary oatmeal with about one-eighth of its bulk of the mineral, mixed with water into a stiff dough. A third plan is to spread the barium carbonate upon fish, toasted bread (moistened) or ordinary bread and butter. The prepared bait should be placed in rat runs, about a teaspoonful at a place. If a single application of the poison fails to kill or drive away all rats from the premises, it should be repeated with a change of bait.

Poison for Moles

Lard	1 pound.
Salicylic acid	1 dram.
Squill	1 bulb.
Beef suet	4 ounces.
Barium carbonate	1 pound.
Verdigris	to color.

Cut up the squill and fry in the lard and suet; add the other ingredients.

Bordeaux Mixture

Copper sulphate	5 pounds.
Quicklime	5 pounds.
Water	50 gallons.

Dissolve the copper sulphate in 10 gallons of water; slake the lime in half a barrel of water. Dilute the copper solution to 20 gallons, strain in the lime mixture, and dilute to 50 gallons.

Woburn Bordeaux Mixture

Copper sulphate	1¼ pounds.
Lime water	17 gallons.
Water, to make	100 gallons.

Self-Boiled Lime and Sulphur Spray

Quicklime	10 pounds.
Sulphur	10 pounds.
Water	50 gallons.

Put the lime with 1 gallon of water in a barrel; add the sulphur; stir, and add enough water to make a thin paste. Stir vigorously until the ebullition subsides to slight proportions and dilute to 50 gallons.

Lime Arsenite Spray

a. Arsenic trioxide..... 1 pound.
Sodium carbonate ..... 4 pounds.
Water ..... 1 gallon.

Boil together for twenty minutes, replacing the water evaporated. Stock solution.

b. Quicklime ..... 24 pounds.
Water ..... 4 gallons.
To be freshly prepared.

For use, the lime mixture (b) is mixed with water in a proportion of 1 in 40; and to each 40 gallons of this dilution 1 pint of stock solution (a) is added.

Red Oil Emulsion

Red oil ..... 2 gallons.
Hard laundry soap..... 1pound.
Sodium carbonate ..... 1 ounce.
Water, to make..... 30 gallons.

Boil the soap and the sal soda in 1 gallon of water until dissolved; remove from the fire; add the oil; re-apply heat until boiling ensues, agitate until emulsified. For use, dilute to 30 gallons.

Lead Arsenate Spray

Farmers' Bulletin No. 127 of the United States Department of Agriculture states that the lead arsenate spray may be used at any strength from 3 to 15 pounds of the chemical to 100 gallons of water without injury to the foliage. A recipe for making lead arsenate is given in the bulletin, which should be procured by any one interested in insecticides.

Rosin Wash

Rosin ..... 4 pounds.
Soda lye (78%)..... 4 pounds.
Fish oil ..... 8 ounces.
Water, to make.....20 gallons.

Boil the rosin with the lye, the oil and a couple of quarts of water until a dark coffee-colored liquid is obtained. Dilute to 5 gallons with hot water to make the stock solution, which is diluted 1 to 3 for use.

Quassia Plant Spray

A French horticulturist recommends the following spray for killing parasites on vegetables and ornamental plants:

Extract of quassia..... 30 parts.
Camphorated oil [French Codex] (10%) ..... 20 parts.
Soft soap ..... 100 parts.
Alcohol ..... 50 parts.
Water, to make..... 1000 parts.

To Protect Trees from Climbing Insects

Any combination of cheap greases with tar, pitch, resin or ozokerite, which will remain sticky when cold, and not melt too easily, may be smeared around the trunks of trees to prevent insects from crawling up them.

The following combinations are suggestive, and may be modified to suit. Any combination which is soft or sticky when cold and will not run at summer heat may be used:

1. Pitch, 12; rosin, 10; rosin oil, 2.
2. Tallow, 7; palm oil, 5.
3. Ozokerite, 15; petroleum, 3 to 6.
4. Rosin, 4; linseed oil, 1; molasses, 1. Boil together.
5. Rosin, 12; rosin oil, 12; soda lye, 1. Boil together.
6. Tar, 10; rosin, 5; palm oil, 8.
7. Thus, 20; rosin, 100; turpentine, 14; liquid tar, 8; lard, 50; rape seed oil, 24; tallow, 20.
8. Rosin, 5; lard, 4; stearin oil, 4.
9. Rosin, 3; rape seed oil, 4; lard, 2; soft soap, 1; wood tar, 10.

These mixtures may also be applied by means of brown or waterproof paper.

Nikoteen Aphis Punk

This seems to be porous paper soaked in a fluid extract of tobacco and potassium nitrate, and dried.

Fumigant for Greenhouse or Conservatory

Empyreumatic oil of tobacco .....300 grammes.
Camphor ..... 50 grammes.
Safrol .....250 grammes.
Oil of citronella.....200 grammes.
Alcohol .....150 grammes.

An ounce of this liquid suffices for 2,000 cubic feet of space. It is used by evaporation over a flame. The fumes are harmful to man and animals, and the fumigated enclosure should not be entered for several hours after the fumigant is evaporated.

A variant of the above is—

Nicotine, crude..... 30 grammes.
Camphor ..... 5 grammes.
Naphthaline ..... 5 grammes.
Oil of camphor (or safrol) ..... 25 grammes.
Oil of citronella..... 25 grammes.
Alcohol .....100 grammes.

Compound Plant Insect Powders

I.

Powdered pyrethrum....14 ounces.
Powdered quassia..... 6 ounces.
Powdered white hellebore 2 ounces.

II.

Powdered pyrethrum.... 8 ounces.
Powdered colocynth..... 4 ounces.
Powdered white hellebore.16 ounces.

These powders are of especial value in combatting plant lice.

Lawn Sand for Bugs and Slugs

Powdered quassia, 9; powdered cocculus indicus, 1.75; powdered green vitriol, 1.75; powdered sodium sulphate, 6.25; green peat moss, 25; soil, enough to make 100. The mixture is used by sprinkling thinly on the lawn and watering freely by means of a fine hose.

To Kill Weeds

Ferrous sulphate, 75; ammonium sulphate, 15; fine sand, 10. The ingredients should be finely powdered together, and then carefully sifted. The mixture should be kept in a cool, dry place, and if it should become hard must be finely powdered before use. In dry weather, 3 or 4 ounces may be sprinkled over each square yard of lawn. In wet weather the quantity may be increased to double this amount. A little should be placed on the crowns of decapitated dandelions and plaintains. Other formulas follow:

I.

Potassium dichromate... 5 pounds.
Water .....15 gallons.

II.

Sodium chloride..... 3 pounds.
Chrome alum ..... 2 pounds.
Water .....15 gallons.

III.

Ferrous sulphate..... 5 pounds.
Water .....15 gallons.

Destroying Weeds in Sidewalks

It is said that weeds ordinarily growing in sidewalks may be destroyed by the application of common salt. To apply it, proceed thus: Boil the salt in water, 1 pound to 1 gallon, and apply the mixture boiling hot with a watering pot that has a spreading rose. It is claimed that this will keep weeds and worms away for two or three years. Put 1 pound to the square yard the first year; afterward a weaker solution may be applied when required. Refuse fish salt or brine will, of course, answer.

Here is another way: The plants should be cut off close to the ground and a few drops of kerosene poured on the crowns. They immediately commence to decay and are entirely destroyed. Troublesome weeds on the lawn can thus be speedily disposed of, but others will likely take their places.

Fertilizer for Flowers and Herbs

Ammonium nitrate.... 20 pounds.
Ammonium chloride... 2½ pounds.
Ammonium phosphate. 10 pounds.
Potassium nitrate.....12½ pounds.
Calcium sulphate..... 3 pounds.
Iron sulphate ..... 2 pounds.

This mixture is employed by dissolving a teaspoonful in a gallon of water, and sprinkling the latter on the plants.

For Potted Plants.

I.

A mixture of potassium nitrate 30, potassium phosphate 25, ammonium sulphate 10, and ammonium nitrate 35 quickens the growth of the whole plant. If the formation of the blossoms is to be hastened, the ammonium nitrate should be omitted.

II.

Ammonium sulphate 100, sodium chloride 10, sodium nitrate 5, magnesium sulphate 5 and sodium phosphate 2 may be used. Dissolve 1 teaspoonful of this mixture in one liter of water and sprinkle the plants every other day.

For Vegetable Gardens or Orchards

Ammonium phosphate 30, potassium nitrate 25, sodium nitrate 25 and ammonium sulphate 20. This mixture contains in 100 parts 13 parts of phosphoric acid, 13 parts of nitrogen and 11 parts of potash. An aqueous solution of 1 to 1000 should be used every third, fourth or fifth day. The sprinkling should be omitted from October to April. This mixture may also be used for house plants, but in this case sufficient access of light, air and heat should be available.

CHAPTER X

CULINARY RECIPES

Flavoring Extracts in Liquid, Paste and Powder Forms—Baking Powder, Relishes, Spices and Sauces—Manufacture of Yeast, Table Mustard, Curry Powder, Etc.

Always consult the index when using this book.

Making and Selling Flavoring Extracts

Herewith are the formulas and a few words of explanation taken from a series of articles contributed by H. C. Bradford to The Druggists Circular and published in the early months of 1914:

Notwithstanding the druggists' reputation for handling a superior line of goods, the grocer has taken from him the larger part of his business in flavoring extracts. The reason is that the grocer makes it more convenient for the housewife to order goods of him. The druggist might offset this by making a list of all his household goods, with prices, and sending his errand boy out daily to solicit orders. The druggist himself might call on hotel men, bakers, and others who use large quantities of flavors, spices, baking powders, etc.

Extract of Vanilla.

The general public does not want a pure vanilla extract, preferring one fortified with tonka beans, vanillin or coumarin. Especially is this true when the flavoring is used in cooked articles.

In the making of a vanilla extract there are two main points to be borne in mind; first, that it is very difficult to exhaust the beans, and second, that the product requires to be aged. This ageing may very properly be made a part of the time expended in the maceration. It is difficult to say what is the best method of procedure, and one will likely modify any process to suit his own demands, but the time required for ageing and extraction at once point to the advantage of operating on quantities as large as convenient. A year's supply would seem to be small enough, and while the first year's product is being sold another should be in process of preparation. The other point is, that by the use of wooden vessels in making the extract a finer and better product can be obtained than if those of glass or other material are employed. An empty cask or barrel that has contained either whisky or alcohol is ideal for the purpose. A square hole of convenient size is sawed out of the top, through which the beans are to be introduced. The hole is then to be stopped by means of the square of wood that was removed with the saw. The sawing should be done at an angle, so that the outer part of the sawed-out part shall be larger than the inner, and its edges should be covered with a thin sheet of rubber. Care should be taken to make it as large as the diameter of the barrel will permit.

Thus prepared, the barrel should be put into a warm place (so that the effect of digestion or gentle heat may be added to that of maceration), the menstruum poured in and the beans, reduced to powder, suspended in it near the surface in a cheese cloth bag. When the maceration is completed, the bag containing the beans is to be removed, drained well, and the beans transferred to a percolator; this, when weak alcohol is used, should not be plugged with cotton but with either coarse sponge, or well-washed excelsior. The beans being placed, the liquid in which they have macerated is slowly passed through, and then enough fresh menstruum is passed to make the total volume measure the desired quantity. It is then a good point to pass through an amount of fresh menstruum equal to the quantity necessary for the next maceration, and employ it as the basis of the next lot.

Now a word as to the menstruum to be employed. A mixture of one part of alcohol and two of water, both by volume, will exhaust vanilla very well; of course, it leaves behind the resin and oil previously mentioned, but that is a small matter compared with the fact that it also dissolves the mucilaginous matters present, and renders the extract cloudy and almost non-filterable. If a mixture of two volumes of alcohol to one of water be used, this mucilage will be left behind; the extract will be clear so as to require no filtering if all has been carefully done. This greatly increases the cost, but if the long maceration, the careful and slow percolation, and the final washing of the marc with the menstrum to be

used for macerating the next lot, all be carefully done, it will be quite possible to dilute the resulting extract with water. To make the matter plainer, a formula covering these points is here given:

Strong Vanilla Extracts to Be Diluted.

Vanilla beans..... 8 pounds.
Alcohol .....32 pints.
Water .....10 pints.

Extract in the manner already described. If this is carefully done, the sponge or excelsior will not be required, but a piece of cotton will serve, and will be clear and bright. Then add to it 5 gallons of water and mix well. If glycerin or syrup is used in making the extract they should be mixed with the water before it is added.

Of course, the same plan may be followed with any formula, the point being to use only a portion of the water in the maceration and extraction, half that of the alcohol being the usual quantity, and add the remainder after the extraction is complete.

Vanilla Extract With Added Synthetics

Best Bourbon vanilla beans ..... 4 pounds.
Alcohol .....16 pints.
Water ..... 5 pints.

Mix the alcohol and water, and place in a keg of 5 gallons capacity, prepared in the manner already indicated. Grind the beans fine in a meat chopper (this instrument is the best possible for this purpose, and is valuable for many other purposes as well), running them through twice if necessary; then tie in a cheese cloth bag and macerate in the manner described. When the maceration is complete remove to a percolator, pass the liquid slowly through, and then enough more of a mixture of alcohol 16 parts, and water 5 parts, both by volume, to obtain 3 gallons of extract. Now take 6 pounds of cut loaf sugar, add enough warm water to make the whole measure 2 gallons, stir until completely dissolved, and add slowly to the extract; mix well. This gives 5 gallons of the pure bean extract, to which is to be added the following:

Vanillin ..... 10 drams.
Coumarin ..... 5 drams.
Alcohol ..... 4 pints.
Syrup ..... 2 pints.
Water .....to make 20 pints.

This makes 7½ gallons of extract ready for use. The extract will be further improved if placed in the keg or barrel in which it was made and allowed to age; the longer the better. The above synthetic mixture should be prepared at the same time the beans are placed to macerate, so they will age together, and when mixed, the resulting product will be ready for use at once.

This extract has a much stronger and fuller odor and aroma than that from the bean, as might be expected. It is light in color, and caramel may be added if a darker color is wanted. If the addition is made, to comply with the federal food and drug law, the fact must be stated on the label.

"White" Vanilla.

Under this name a solution of vanillin and coumarin is sold. It may be made by the last portion of the formula above.

It will be noted that in that formula the proportion of coumarin is large, being one-half that of the vanillin. In the opinion of the writer this is excessive; a trained sense of smell easily catches an odor of bitter almonds from this compound; however, if it pleases the public, as it seems to do, there is no more to be said. Still, if the coumarin were reduced one-third to one-half the product would be better.

Prune Juice.

Latterly, it has been the custom to add some prune juice to all dark vanilla extracts, say, one to two pints to the gallon, and there is little doubt but that it sweetens, smoothes and improves the blend. It would seem that it might be possible to prepare this juice direct from prunes and thus reduce the cost.

The National Formulary Extract.

Prof. W. L. Scoville is authority for the statement that the compound tincture of vanillin of the National Formulary approaches very closely in all its sensible properties a first class extract made from beans. If used in an uncooked product the bean extract would be superior, but if in a product which undergoes heat it is likely that the synthetic extract would prove better.

Compound Tincture of Vanilla.

Vanillin ..... 6.5 grammes.
Coumarin ..... 0.4 gramme.
Alcohol ..... 200.00 mils.
Glycerin ..... 125.00 mils.
Compound tincture of cudbear. 16.00 mils.
Water, to make...1,000.00 mils.
Mix, dissolve and filter.

Artificial Vanilla Extracts.

The base of all artificial vanilla extracts, when these were in use, was usually benzoic acid and peru balsam, with various other ingredients to modify the flavor. Formulas for such extracts are rather scarce, but one is given here which is probably as good as any. It is only offered as a curiosity of a past age, and is not recommended for use except possibly as an experiment.

Tonka beans	2 ounces.
Prunes	16 ounces.
Raisins	4 ounces.
Currants	3 ounces.
Peru balsam	3 ounces.
Powdered orris root	4 ounces.
Molasses	2 pints.
Diluted alcohol	18 pints.
Water	4 pints.

The prunes, raisins and currants are to be boiled with the water until all the soluble matter is extracted. The orris, tonka and balsam are extracted with the alcohol, the fruit solution added and finally the molasses.

This could be made stronger by reducing the amount of solvents; also, about 20 grains of coumarin could be used instead of the tonka.

Extract of Lemon.

Extract of lemon comes next to that of vanilla in popularity. Much less labor and trouble are required to make a lemon extract than one of vanilla. Lemon extract should be freshly made. Oil of lemon is the base of this extract, but the use of fresh lemon peel notably adds to its quality. This peel may be had at practically no cost. It is only necessary to collect it and carefully pare or grate the outer yellow portion into a bottle of alcohol. This yellow, oil-bearing portion is the only valuable part. About an ounce of the peel in a pint of spirit is correct for the extract, and the amount of oil may be varied to suit.

Oil of lemon is prone to oxidize, and when once it has acquired the odor of oil of turpentine it is worthless as a flavoring. When the supply is received, it should at once be mixed with an equal bulk of alcohol and stored away in amber bottles, well corked and in a cool, dark place. Handled in this manner, it will keep indefinitely.

Citral.

Citral is distilled from oil of lemon grass, and practically represents the oil of lemon. It is very much more concentrated, an ounce being fully equal in strength to a pound of good oil, but it is less delicate. For a strong extract, where the delicacy and fine aroma are not likely to be missed, it is invaluable, and its use will result in a considerable saving. For best results it should always be used in combination with the oil, and by varying the proportions, an extract of almost any desired strength and cost may be made. It is also more soluble than the oil, and results in a saving of alcohol.

Terpeneless Oil.

By fractional distillation the better grades are also freed from the sesquiterpenes, being thus rendered much stronger and more soluble. They possess all the flavor and delicacy also of the natural oil, so that quality is not lost in attaining concentration. They are costly, but when the saving of alcohol and the greater permanence of the product are taken into consideration, they are really cheaper; that is, 2 ounces of the terpeneless oil are fully equal in strength, flavor, aroma and all other qualities to 3 pounds of the best natural oil. This terpeneless oil is soluble in dilute alcohol, while the natural product will dissolve permanently in the necessary quantity in nothing less than the 95 per cent.

The first formula will be the one employed by the writer for several years with perfect satisfaction in every respect except cost.

Extract of Lemon, No. 1.

Oil of lemon, best	12 ounces.
Alcohol, to make	1 gallon.

Extract of Lemon, No. 2.

Citral	4 drams.
Oil of lemon	4 ounces.
Alcohol	4 pints.
Distilled water, to make	1 gallon.

Dissolve the citral and the oil in the alcohol; add the water, which should be warmed, slowly, in small portions, with constant stirring. It is possible, especially when the temperature is low, that this may not make a clear solution; generally, a very gentle warming will suffice to clear up any cloudiness, but if not, the alcohol may be slightly increased and the water correspondingly decreased. Extreme cold throws some of the oil out of solution, which is brought back by warming. The practice often recommended of filtering such extracts through magnesium carbonate, purified talc, etc., is a bad one. Such filtration renders the product bright and clear, but at the expense of the oil which remains behind. Very much better is it to rely on a proper temperature, or the addition of a little more alcohol. It is also well to have a small slip label printed explaining this.

This extract is slightly less delicate than No. 1, but it would require an expert to detect any real difference.

Extract of Lemon, No. 3.

Terpeneless oil of lemon	4 drams.
Alcohol	4 pints.
Water	4 pints.

Dissolve the oil in the alcohol, and add the water slowly with frequent shaking.

It will probably be found more generally satisfactory than No. 2 by reason of its greater delicacy of flavor and the fineness of its aroma.

Of course, a proportion of citral could be added to this, or to any other, and mixtures of all kinds may be made, but it is only desired here to give the basic rules and principles governing the process.

Soluble Lemon Extracts.

It is possible that the formulas above, just as they stand, will not give

"soluble extracts," the preparations made by them being very concentrated, but the soluble extract may easily be prepared from these. If either of the extracts Nos. 2 or 3 be diluted with 2 pints of a mixture of alcohol 1 part and water 3 parts, and then filtered clear through a little magnesium carbonate, it will mix clear and bright with all aqueous liquids, syrups, etc. Or, perhaps, a better method would be to reduce the proportion of flavoring materials one-fourth to one-third, and use alcohol, 3 parts, water, 5 parts, for a menstruum, filtering through magnesium carbonate as before. In doing this, take just as little of the carbonate (in impalpable powder) as will serve, probably a half ounce to the gallon; shake it repeatedly and thoroughly with the extract, during five or six hours, then filter, returning the first portions until it comes through bright and clear.

When experimenting with such a solution it is best to expose it for a time to a temperature as low as that which it will be likely to encounter under any ordinary condition of storage. It is does not then remain perfectly clear, more alcohol should be used. A little care in this matter at the outset is well worth the time and labor required.

Peel and Color.

In these formulas nothing has been said of the matter of the lemon peel or of color. These are the same in either case, hence what is now said will apply to all. The peel will give the necessary color, and will also add to the fullness and delicacy of the flavor, hence its use in all cases is recommended. It should be macerated with the alcohol for two or three days before the other ingredients are added, and then strained or filtered out. Four to six ounces to the gallon will give the beautiful golden color so much admired, and which is so hard to duplicate with any other agent. The weighing should not be overlooked, since it will render the product uniform in color.

If the peel is not employed, the next best coloring agent is turmeric, about 2 drams to each gallon. Owing to the great variation in the quality of this drug, a good fluidextract would be more uniform, and would save filtration. This latter should be avoided whenever possible, since under best conditions it is expensive and wasteful, and the product exposed to the air.

Storing

When completed the extracts should be stored in a cool dark place, either in amber glass or in jugs, kegs or barrels, and when bottled into retail packages, these should also be kept in the cool and dark.

Extract of Orange

The oil of orange is a counterpart of that of lemon, except that it has no principle corresponding to citral; but there is a terpeneless oil of orange which is more expensive and much stronger than that of lemon. While the latter is as 1 to 24, the orange oil is as 1 to 36. While only one-half stronger, it is more than twice as costly; hence, orange extracts cost more than those of lemon. One ounce of terpeneless orange oil costs $4.25 per ounce, and that ounce may be considered as equal to 2¼ pounds of the natural oil, and the latter costs $2.85 per pound, or $6.40 for as much as will equal 1 ounce of the terpeneless oil.

Orange extract may be made by formulas similar to those used for the extracts of lemon, including the use of the peel.

There is now to be had an artificial terpeneless oil which is said to replace the natural to great advantage. It is as soluble as the natural, and the cost is less than half. The writer has no experience with this product, but judging from like products, it is highly probable that its use in any extract to replace one-fourth to one-half the product of nature would give practically identical results as to quality. This synthetic oil seems well worth looking into. To determine the best combinations will require careful experimentation on the part of the maker, but this need be neither costly nor troublesome. With a small pipette, combinations of various strengths and kinds may be made, the total product not measuring more than 1 or 2 drams; these tested carefully by the dilution method will soon give results that are sufficiently practical for our purpose; once this is done, the experimental lots may be mixed cautiously with the commercial quantities, so that no loss whatever is sustained, and the quality is not altered sufficiently to be discernible. It is not pretended that this method of examination and standardization can be accurate in the usual sense of the term, but it will serve our purpose here very well indeed, since it is the only one employed commercially, and that, too, very often, by those unskilled and untrained in the art.

Extract of Spicy Condiments.

It has long been the idea of the writer that spices could be almost if not entirely replaced with an extract made from the corresponding oil. He once had a very fair business in nutmeg extract, and no doubt the others could very largely replace the spices themselves with the greatest satisfaction and profit, both to maker and user. The great variety and fluctuations in quality of the latter are both practically eliminated by the use of an ex-

tract made from the oil, since the oil is both much more uniform and of good quality. This idea, properly elaborated and placed before the consumer in the proper light, should prove to be very profitable.

In marketing these or other flavorings, the Federal and State laws regarding permissibility of sale or requirements of labeling must always be looked into.

Nutmeg Extracts.

Oil of nutmeg.....	1½ ounces.
Alcohol, to make....	1 pint.

Any other strength could be employed, and that of an ounce to the pint is a very common one.

Wintergreen Extract.

Methyl salicylate.....	2 ounces.
Alcohol	18 ounces.
Water, to make.....	2 pints.

Dissolve the salicylate in the alcohol, and add the water.

Almond Extract.

Benzaldehyde	½ ounce.
Alcohol	1 pint.
Water	1 pint.

Dissolve the benzaldehyde in the alcohol and add the water. It may be necessary to filter this product to render it perfectly clear; if so, the precipitated calcium phosphate is the clarifying agent to use.

Cinnamon Extract.

There are three oils from which this product may be made; the oil of Ceylon cinnamon, the artificial substitute for it, and the oil of cassia. The first is much the best so long as it is not subjected to heat, which spoils it. The synthetic oil seems to be thin and lacks fullness and body, and is far from satisfactory, though it is quite possible, and even probable, that in line with other products of that class, a reasonable proportion added to the natural oil would make a product superior to either when used alone. With our present state of knowledge, it seems that the cassia will be the most satisfactory from all points of view. It may be made by the formula following:

Oil of cassia.....	12 ounces.
Alcohol, to make.....	1 gallon.

Rose Extract.

So far as the writer's personal knowledge goes, this has always been made from the natural oil; but the economy of the artificial oil is a strong argument in its favor. The color is usually imparted by red rose petals, and they are much the best agent to use if they can be had reasonably fresh and of good quality. It may even be advisable to collect and dry them for this purpose. Such a leaf not only imparts its own delicate color, but also adds appreciably to the odor and flavor of the product.

Oil of rose.....	1 dram.
Oil of clove.....	6 minims.
Rose petals.....	2 ounces.
Alcohol .....24ounces.	
Water, to make.....	2 pints.

Mix, macerate two or three days to extract the color from the petals, and then filter.

The clove is added to bring out the rose effect. It also imparts to the extract a slight spiciness or piquancy which is agreeable to many. It will scarcely be required, however, if anything less than the best quality of oil of rose be employed, since the lower grades contain quite a sufficiency of geranium to do all that the trace of clove is capable of performing, and even more.

Onion Extract

Courage fails me when I undertake to describe the compounds sailing under this name. From a cursory examination of them it is quite certain that asafetida is the odorous agent, with never a trace of onion or allied product. Oil of onion is usually to be obtained in the primary markets, and if not, then oil of garlic is an acceptable substitute. This latter agent is both strong and costly, but is required in very small proportion. A working formula is not within the reach of the writer, but it is highly probable that a solution in alcohol of one-fourth to one-half of one per cent. would answer all purposes.

Pistachio Extracts.

The name "pistachio" has been given to widely varying compounds. Formulas are here offered for mixtures which I include under that heading.

I.

Vanillin	2 drams.
Oil of pimento.....	½ ounce.
Benzaldehyde	1 ounce.
Oil of cassia.....	1 ounce.
Oil of lemon.....1½ ounces.	
Oil of raspberry, artificial	½ ounce.
Alcohol, to make.....	4 pints.

This compound, while apparently incongruous and revolutionary, is in reality a most excellent article, and the combination of flavors is usually very attractive and pleasing. The raspberry oil is the usual compound of ethers, esters, etc., sold under that name.

Of quite a different nature and flavor, but still pleasing, are the following compounds. These combinations have been used with success. It should be possible to build up a very nice business on one or more of these by exploiting them under a coined or local names.

II.

Oil of lemon.....1½ drams,	
Oil of cassia.....	1 dram.
Benzaldehyde	1 dram.

Oil of nutmeg	½ dram.
Alcohol, to make	8 ounces.

III.

The next formula originated in England. The product is most delightful to the great majority of persons, imparting a nutty, fragant tang to food. Such a product is eminently adapted to introduction by sample, as nothing but a personal trial can convey any adequate idea of the flavor, and it is these compounds or mixtures, sold under coined or local names, that are most profitable, since the product is not likely to be successfully imitated.

Oil of rose	10 drops.
Coumarin	5 ounces.
Alcohol	60 ounces.
Syrup, to make	360 ounces.

This may be colored with caramel.

Artificial Maple Extract.

We next come to consider a product for which numerous very crude, unsatisfactory and even worthless formulas have been published. Corn cobs, hickory bark, green maple wood, and various other things have been recommended as materials to be used in imitating maple flavor, and, with all these things against it, it is strange that the product has retained its place in the markets. Competent authorities state that by far the largest portion of both maple syrup and maple sugar that enter the markets of the country is fictitious, and many of these fictitious articles must be made from some of the crude materials mentioned above, if quality be any indication. The formula which I here offer is a good one, and while of course the product can not be sold as genuine, there is no need for it to be, for a syrup prepared from this extract is not only delicious in flavor but there is every possibility that it is far more cleanly and wholesome than even the average genuine product.

Vanillin	20 grains.
Coumarin	10 grains.
Oil of rose	2 drops.
Oil of anise	1 drop.
Oil of celery	10 drops.
Tincture of fenugreek	½ ounce.
Fluidextract of coffee	1 dram.
Maple sugar, pure	1 ounce.
New Orleans molasses	2 ounces.
Glycerin	1 ounce.
Alcohol	3 ounces.
Water, to make	1 pint.

Dissolve the first five items in the alcohol; dissolve the molasses, sugar and glycerin in the water; mix the two solutions, add the other materials, mix well, and then keep for at least a month in a warm place. Keep protected from light.

Artificial Maple Syrup.

Dark brown sugar	6 pounds.
Water	4 pints.
Maple extract, as above	1 to 2 ounces.

Heat the water to boiling, add the sugar, stir till dissolved, and continue the heat for about five minutes, meantime carefully skimming off any impurities that may rise from the brown sugar. When cool add the extract, 1 to 2 ounces being the correct proportions. The first quantity gives a rather mild flavored syrup, which is liked by many, while the second quantity gives a very strong flavor, and, of course, there are all the gradations between these two.

Artificial Peach Extracts.

I.

Methyl salicylate	1 ounce.
Amyl butyrate	5 ounces.
Butyric ether	5 ounces.
Acetic ether	5 ounces.
Peach juice	30 ounces.
Alcohol	150 ounces.

Mix, adding the juice last. It may be colored, of course, as may all the others if desired.

Dilute with alcohol as required.

II.

Glycerin	1 part.
Amyl alcohol	2 parts.
Aldehyde	2 parts.
Benzaldehyde	5 parts.
Valerianic ether	5 parts.
Butyric ether	5 parts.
Formic ether	5 parts.
Acetic ether	5 parts.
Peach juice	20 parts.
Alcohol	250 parts.

Mix, adding the juice last.

Dilute with alcohol as required.

Artificial Tomato Extract.

Glycerin	1 ounce.
Valerianic ether	5 ounces.
Aldehyde	5 ounces.
Alcohol	100 ounces.

Dilute with alcohol as required.

Artificial Banana Extract.

This is probably the most used extract of this class, unless it be strawberry. It is more than probable the sales of these two will more than equal all the others of the list combined.

Artificial Banana Oil.

Amyl acetate	15 ounces.
Butyric ether	80 ounces.

Mix.

For ordinary use the above compound should be diluted with—

Glycerin	50 ounces.
Alcohol	650 ounces.

This formula, which is of English origin, illustrates sharply the almost universal tendency to employ too much alcohol; at least half the above can be replaced with water, and the greater portion, if not all, the glycerin with a syrup made of glucose. This will in no degree reduce the quality or appearance of the product, and will materially cut down the cost.

Strawberry Oil.

Nitrous ether	1 part.
Acetic ether	5 parts.
Formic ether	1 part.
Butyric ether	5 parts.
Methyl salicylate	1 part.
Amyl acetate	3 parts.
Amyl butyrate	2 parts.
Glycerin	2 parts.

For making extract, use 1 part of oil to 30 of alcohol.

Pineapple Oil.

Amyl acetate	1 part.
Ethyl butyrate	5 parts.
Amyl butyrate	10 parts.
Glycerin	3 parts.

For making the extract, use 1 part of oil to 30 of alcohol.

This is sufficient of these artificial extracts. They are the poorest and most unsatisfactory portion of the entire line, large as it is.

Extracts in Powder Form.

These have long been known. Their keeping qualities are very poor, and they have never gained much popularity. Artificial vanilla made of vanillin and coumarin is an exception; it keeps perfectly, and is in quite extensive use. It is largely sold under the name of vanilla sugar.

When essential oils, such as those of lemon or orange, are mixed with sugar, and the whole rubbed down to powder, there is offered the best possible condition for the oxidation of the terpenes of which these oils are so largely composed. If the terpeneless oils or citral, or a mixture of the two be employed, and the product thus made be preserved in a package nearly airtight, these products should prove reasonably permanent and satisfactory.

Extracts in Paste Form.

Flavoring may also be prepared in the form of paste put up in collapsible tubes. This form offers many advantages over both liquid and powder, to both the manufacturer and user. In this form, alcohol is practically dispensed with, while the form of package is not only a preservative against the action of the atmosphere but also against any contamination.

In this line the flavoring ingredients are not different from those usually employed; the difference is in the base or vehicle, and there are a number of these from which to choose, all containing more or less glycerin. One of the best is the heavy-bodied glucose. This is usually too stiff to run out of a bottle or jar, so should be mixed with some glycerin. It is best to have the glucose as heavy as can be handled conveniently through the tubes, since the finished product is not a solution, but a mixture, and this density is necessary to hold the mixture together and prevent its separating. The oils or other flavoring material should first be mixed with the glycerin, and this then added to the glucose. The heat of a water-bath will materially assist the blending Sometimes glycerin alone is used, but it is rather too light to give best satisfaction. Again, tragacanth is sometimes used, and this also forms a good basis. A half pound of good, clean gum, though it need not be of the highest grade, especially as regards color, is soaked in a gallon of water for three or four days or until it becomes perfectly soft and has absorbed its maximum content of the liquid; the mass is now stirred and strained through a piece of gauze or cheese cloth. Four ounces of this softened gum, 12 ounces of glycerin, and the desired flavoring material are now to be thoroughly mixed, the oil to be added slowly, and triturated thoroughly in a mortar.

As these pastes sell for less cost than the liquid extracts, it is usual to make them strong. To the quantity of softened gum and glycerin just stated add 2 ounces of the oil of lemon, orange, cinnamon, clove, peppermint, wintergreen, or allspice. For nutmeg, 1 ounce, and for almond, ½ ounce of benzaldehyde free from both prussic acid and chlorine, will suffice, and the same is true of celery. For vanilla, the usual plan is to employ vanillin and coumarin, in the proportions usually employed for any other extract, say 60 grains of the first and 20 of the second, and it will be found an excellent plan to dissolve these in just sufficient warm alcohol, and then mix the solution with the glycerin. This will insure the smoothness of the product.

Flavoring Extracts in Powder Form

Vanilla Flavor.

Vanillin	60 grains.
Cumarin	8 grains.
Powdered sugar	1 pound.

Lemon Flavor.

Soluble oil of lemon	30 minims.
Citric acid	1 ounce.
Powdered sugar	1 pound.
Tincture of turmeric	to color.

Orange Flavor.

Soluble oil of orange	30 minims.
Oil of mandarin orange.	3 minims.
Citric acid	4 drams.
Powdered sugar	1 pound.
Orange color	enough.

Almond Flavor.

Benzaldehyde	2 drams.
Powdered sugar	1 pound.

Ginger Flavor.

Oleoresin of ginger	2 drams.
Caramel	15 minims.
Powdered sugar	1 pound.

Cinnamon Flavor.

Oil of Ceylon cinnamon.	3 drams.
Caramel	5 minims.
Powdered sugar	1 pound.

Clove Flavor.

Oil of clove buds.....	3 drams.
Powdered sugar.....	1 pound.

Nutmeg Flavor.

Oil of nutmeg.....	3 drams.
Powdered sugar.....	1 pound.

A contribution from the Chemist and Druggist in which the use of tartaric acid is directed is appended, although we think citric acid preferable from both gustatory and hygienic standpoints:

There is a steady and growing demand for fruit-crystals during hot weather, and I have found the following formulæ "go" very well. Tartaric acid in small crystals is used. The flavoring and coloring are mixed with the granulated sugar, the acid then added and the mixture dried:

Lemon.

Tartaric acid.....	3 pounds.
Granulated sugar.....	6 pounds.
Oil of lemon.....	2 ounces.
Rectified spirit.....	2 ounces.
Quinoline yellow	to color.

Orange.

Tartaric acid.....	1 pound.
Granulated sugar.....	3 pounds.
Oil of bitter orange.....½	ounce.
Rectified spirit.....	1 ounce.
Croceine orange.....	to color.

Raspberry.

Tartaric acid.....	1 pound.
Granulated sugar.....	3 pounds.
Conc. essence of raspberry.....	2 ounces.
Raspberry coloring.....	enough.

Strawberry.

Same as raspberry, but with 2 ounces of concentrated essence of strawberry in place of raspberry essence.

Cherry.

Same as raspberry, but with 2 ounces of concentrated essence of cherry in place of raspberry essence.

Making a Clear Vanilla Extract

Cut the vanilla beans into small pieces, about one-fourth inch long with a bright cutter; place the cut beans in a glass bottle or jar, and cover them with deodorized alcohol to about two inches above the beans. Allow this to macerate with frequent shaking from forty-eight to seventy-two hours at a temperature of about 80 deg. F. Drain or pour off the alcoholic liquid and reserve it. Repeat the maceration two more times in exactly the same manner, reserving the several alcoholic liquids, and mix all three portions for further use. Transfer the cut beans to a convenient porcelain vessel and allow them to dry in a warm current of air or overnight. Reduce the beans with the sugar in a brass mortar or a tinned meat cutter to a uniform 20 to 30 powder. Transfer the powdered beans to a glass container of the necessary size; then add the reserved liquid with enough alcohol to make 50 mils for every 100 grammes of vanilla used. Allow this to macerate for twenty-four hours with occasional shaking, then add 200 mils of distilled water, shake thoroughly, and allow to macerate with daily shaking from four to eight weeks —the longer the better. Transfer quickly to a glass percolator, the neck of which has been previously well fitted (not tight) with a pellet of mixed tasteless whitewood shavings and absorbent cotton, well moistened. Return the first portion of the percolate and regulate percolation to suit. When all the liquid has disappeared add enough of a mixture of alcohol, 65 mils, and water, 35 mils, to obtain the desired quantity.

Tincture of Vanilla That Is Worth While

Louis A. Ribar writes:

Tincture of vanilla made according to the U. S. P. process is tincture of vanilla. Those who make it by this process will wonder why they don't sell more of it. They have tincture of vanilla U. S. P. all right, but they have not enough tincture of vanilla with the flavor that age gives it.

Take your vanilla beans (choice Mexican 8- or 10-inch, not smaller), cut up into small bits, beat into smithereens with the sugar, put into a sweet, clean jug or keg, pour on your menstruum, let 'em soak (allow to macerate, as we degree men should say), shake 'em up good every once in a while (or agitate thoroughly at frequent intervals), don't attempt to filter for six months at least —and you will get tincture of vanilla that is. If you will let it stand one or two years before using you will have tincture of vanilla that will make 'em come to you. Under no circumstances allow yourself to be deluded into the belief that tonka beans in any proportion improve the flavor of vanilla. "It ain't so!" Each little bean has a flavor of its own.

Making Extracts of Vanilla

Made according to official directions, tincture of vanilla should be clear enough without filtering. Paul Caldwell advises cutting the beans in a "galvanized" meat cutter. He says that contact with iron injures the bean or the tincture. He adds that the longer the beans are macerated the better, advising six weeks as a minimum length of time for continuing the maceration. He says that the tincture can be made to pass through ordinary filtering mediums by using 1 dram of potassium carbonate for every 8 ounces of crushed bean employed and macerating them in enough water to cover the mixture. According to his statement this amount of the alkali has no appreciable effect upon the taste of the tincture, but this is a point which each manufacturer must decide for himself.

Commenting on the trouble experienced in filtering tincture of vanilla, C. B. Braden writes: "Put a small piece of sponge in a funnel, push in tight, and then add about 4 ounces of bird gravel. Filter the tincture through this."

A formula in which the potassium carbonate is embodied follows:

Vanilla beans, chopped fine	30 parts.
Potassium carbonate	1 part.
Boiling water	1,450 parts.
Alcohol	450 parts.
Essence of musk	1 part.

Dissolve the potassium carbonate in the boiling water, add the vanilla, cover the vessel, and let it stand in a moderately warm place until its contents are of the room temperature. Transfer the contents to a wide-mouthed jar, add the alcohol, cork and let them stand for 15 days. Then decant the clear extract, and filter the remainder. Mix the two liquids and add the essence of musk.

Another formula contributed to The Druggists Circular some years ago as being the best the contributor had ever used, follows:

Mexican vanilla beans	3½ pounds.
Granulated sugar	7 pounds.
Deodorized alcohol	4 gallons.
Water	3 gallons.

After having carefully selected a lot of prime vanilla beans the first step is to divide them into small pieces from ¾ to 1 inch long by means of a herb-cutter. The bean should not be allowed to come into contact with iron, as such contact destroys the flavor very quickly, and may be the cause of a poor tincture. Place the cut beans in a porcelain jar and pour upon them 7 pints of boiling water. Cover the jar and let it stand for twenty-four hours. The object of this maceration or infusion is to bring the beans as nearly as possible to their natural green state. The beans as found in the market are much wrinkled. The maceration swells the fiber and brings that portion of the surface which was formerly hidden where it is exposed to the action of the menstruum, which later is poured upon it. This maceration also prepares the vanilla for the next step, facilitating its passage through the chopper, and causes it to go through without becoming heated and without sticking to the blades of the machine as it would if not previously treated as stated. After maceration for twenty-four hours, pour off the supernatant liquid and transfer the beans to a machine, which will cut or grind them up as fine as possible, the finer the better. Place the now finely ground vanilla in a porcelain jar, add to it 7 pounds of granulated sugar, then the liquid with which it had previously been macerating and 8 pints additional of water. Stir frequently during twenty-four hours, and then add 1 gallon of deodorized alcohol. No longer than twenty-four hours should elapse before the addition of alcohol is made, otherwise there will be danger of fermentation taking place. Macerate for seven days and add another gallon of alcohol, macerate another week, and add 4 pints of alcohol. It is this last portion of alcohol which contributes to the appearance of the finished product. Up to this time the liquid has a turbid appearance, but upon the addition of these last four pints it becomes clear, the albumin present is coagulated, and the finished product requires no filtration. If a menstruum less alcoholic is used, the tincture of vanilla will not have this bright appearance, and will require filtration, which is not to be advised in the making of vanilla extract. Allow the mixture to macerate thirty days more and at the expiration of that time transfer the whole to a percolator and cover with a muslin diaphragm. After the liquid with which it has been standing has run through, add a menstruum made of 9 pints of water and 12 pints of alcohol. The percolate will yield an excellent tincture or extract of vanilla, perfectly bright and clear and ready for use. It is advisable to keep this in wood for six months, but of course it may be used at any time. There is no method to be followed which will yield a satisfactory product in a few days.

Another operator quoted in The Druggists Circular, adds alcohol first in the proportion of two-thirds of the intended quantity of menstruum, following immediately with boiling water. He shakes the container many times a day for four weeks, then drains off and passes through a coarse strainer into a stock keg, in which is a faucet. To the dregs in the macerating keg is added about one-third of the quantity of fresh menstruum in the same proportions of water and alcohol. Maceration is continued for four weeks more with agitation, and the liquid expressed without much pressure, and strained (not filtered) as before. This is reserved to be used as one-third of the next menstruum, and so on in all future manufactures. This operator found that too long-continued maceration imparts a woody flavor to the product. He lays much stress on the matter of keeping the extract at least one year before offering it for sale, and says it is better if kept from two to five years, especially if kept in wood. He finds that in making in 7½-gallon lots there is a loss by maceration and by evaporation in a year's keeping of at least a gallon. He uses not less than 1½ ounces of good bean to the pint, and recommends French cologne spirit of the best quality as the alcoholic part of the menstruum.

The Federal requirements for various flavoring extracts say that extract of vanilla must be a 10 per cent. extract of vanilla bean in alcohol of proper strength. It may contain sugar and glycerin, but nothing is said about musk or potassium carbonate. Possibly the addition of the latter would make the "extract" a "compound extract."

W. G. Napp, appreciating the difficulties that confront the maker of extract of vanilla, offers as a supplement to the foregoing suggestions a description of a process which he has used with entire satisfaction for a number of years. He writes:

The process or manipulation which I offer is one I have not yet seen suggested. I have used it in the years past, producing an extract rich in aroma, perfectly bright and clear and of a rich dark color. In this process the object is to abstract first all of the oil and moisture from the beans, which is very readily done by the deodorized alcohol. Then by drying by exposure the beans may be quickly reduced to a powder of any desired fineness, either in a mortar or a meat cutter. This powdering is very essential so as to extract all flavor. I have completely exhausted the bean (2 ounces in a pint) of all its flavor with a menstruum of U. S. P. alcoholic strength as an experiment. At first glance it may seem that the powdering would be difficult, but the treatment with alcohol brings the beans into a condition which permits their being powdered without much labor. Another feature—There is no clogging or gumming of the marc in percolating. If transferred after a vigorous shake into the percolator, packing takes place

of itself, and after the first single portion the percolate comes through with steady dropping, bright and clear.

This is the process:—Cut the vanilla beans into small pieces, about one-fourth inch long with a bright cutter; place the cut beans in a glass bottle or jar, and cover them with deodorized alcohol to about two inches above the beans. Allow this to macerate with frequent shaking from forty-eight to seventy-two hours at a temperature of about 80 deg. F. Drain or pour off the alcoholic liquid and reserve it. Repeat the maceration two more times in exactly the same manner, reserving the several alcoholic liquids, and mix all three portions for further use. Transfer the cut beans to a convenient porcelain vessel and allow them to dry in a warm current of air or overnight. Reduce the beans with the sugar in a brass mortar or a tinned meat cutter to a uniform 20 or 30 powder. Transfer the powdered beans to a glass container of the necessary size, then add the reserved liquid with enough alcohol to make 500 mils for every 100 grammes of vanilla used. Allow this to macerate for twenty-four hours with occasional shaking, then add 200 mils of distilled water; shake thoroughly and allow to macerate with daily shaking from four to eight weeks—the longer the better. Transfer quickly to a glass percolator, the neck of which has been previously well fitted (not tight) with a pellet of mixed tasteless whitewood shavings and absorbent cotton, well moistened. Return the first portion of the percolate and regulate percolation to suit. When all the liquid has disappeared add enough of a mixture of alcohol, 65 mils and water 35 mils to obtain the desired quantity.

It will be noticed that in this process nearly three-fourths of the menstruum is used to extract the beans and the other one-fourth to exhaust the marc. Glass percolators must be used for small or large batches; this is essential to the preservation of the aroma.

Imitation Vanilla Extract

I.

Vanillin	1½ ounces.
Cumarin	1 ounce.
Benzoic acid	3 ounces.
Alcohol	1 gallon.
Glycerin	4 pints.
Sugar	4 pounds.
Caramel	enough.
Water, to make	6 gallons.

For cold processes this product is said to be a good one; for cooking, the figures for vanillin and cumarin should be interchanged.

II.

Vanillin	1 ounce.
Sugar	1 pound.
Powdered tonka	4 ounces.
Alcohol	24 ounces.
Glycerin	1 pint.
Water, to make	1 gallon.

Coloring, as desired.

Macerate the tonka in a mixture of alcohol and an equal quantity of water for a week, agitating daily. Add the vanillin dissolved in the glycerin, and the sugar dissolved in a pint of water. Let this mixture stand for a week; add enough water to make 1 gallon of product and filter after two days.

Here is a formula that produces an extract said to have been sold to the extent of 100 gallons a week; it certainly is cheap:

III.

Cumarin	2 ounces.
Sugar	10 pounds.
Alcohol	10 pints.
Liquid caramel	2 pints.
Water, to make	10 gallons.

Of course, none of these products should be sold as extract of vanilla or labeled so as to lead the purchaser to believe that a vanilla flavor is being supplied.

Essence of Tonka

A so-called artificial essence of vanilla containing no vanilla has been made as follows:

Tonka beans	2½ ounces.
Prunes, bruised	4 ounces.
Raisins, bruised	2 ounces.
Black currants	1 ounce.
Orris root	1 ounce.
Peru balsam	6 drams.
Treacle, dark	10 ounces.

Bruise the tonka beans and infuse for three hours in 10 ounces of hot water. Separately macerate the prunes, raisins, black currants and orris root (in powder) in a mixture of spirit, 25 ounces, water, 40 ounces; add to this the infusion of tonka, macerate fourteen days, and add the other ingredients and filter.

Cheap Lemon Extract (Soluble)

Oil of lemon	5 ounces.
Alcohol	2 pints.
Water	6 pints.
Magnesium carbonate	2 ounces.
Tincture of turmeric	to color.

Rub the oil and the carbonate in a mortar, slowly adding the alcohol. Set aside for two days, then add the water, a little at a time, and shake well. After a week or ten days filter and add the coloring matter.

Root Beer Extract (from Oils)

Oil of lemon	2 drams.
Oil of sassafras	2 drams.
Oil of spruce	2 drams.
Oil of wintergreen	1 dram.
Oil of nutmeg, essential	1 dram.
Alcohol, deodorized	12 fl. ounces.
Water	4 fl. ounces.
Talcum, purified	2 ounces.

Dissolve the oils in about 2 fluid ounces of alcohol, triturate the solution with the talcum, add the remainder of the alcohol mixed with the water and filter. Add through the filter enough of a mixture of 3 parts of alcohol to 1 of water to make 16 fluidounces.

Root Beer Extract

Sassafras,	
Yellow dock,	
Pimento,	
Wintergreen, of each	1 ounce.

Wild cherry bark,
Coriander,
Hops, of each.....½ ounce.
Proof spirit..... 6 ounces.

Bruise the drug plants and macerate for six hours in the proof spirit. Then pack in a percolator and add another 2 ounces of the menstruum. When dropping ceases, pour on a few ounces of water. Collect the first 6 ounces of percolate and reserve; continue percolation with a pint of water, evaporate the percolate to 4 ounces and add to the first 6 ounces.

The term "root beer" is rather elastic; we are inclined to believe, in the first place, that the "extract" commonly represents barks, seeds, etc., to the exclusion of roots, and then the combination of ingredients varies considerably. One of the appended formulas may be found satisfactory:

I.

Pimento ..... 1 ounce.
Sassafras bark..... 1 ounce.
Wintergreen ..... 1 ounce.
Hops .....½ ounce.
Coriander seed.....½ ounce.
Diluted alcohol..... enough.

Percolate until 10 ounces of tincture are obtained. This tincture is used to flavor syrup according to taste, which syrup is then mixed with carbonated water in the customary soda fountain way.

II.

Methyl salicylate.....12 drams.
Oil of sassafras, true.... 9 drams.
Oil of cloves..... 3 drams.
Tincture of ginger, U.S.P.12 drams.
Alcohol, enough to make.. 1 pint.

In making a syrup from this, citric acid is added, about twice as much of, say, a 30 per cent. solution, as of the extract.

Flavor for Gallic Sausage

Black pepper..... 1 pound.
Clove ..... 5 ounces.
Nutmeg .....4½ ounces.
Ginger ..... 9 ounces.
Anise .....2½ ounces.
Coriander .....2½ ounces.
Grind all together.

Another Sausage Flavor

It will be noticed that this formula, from a British source, omits that old American stand-by, sage:

Capsicum ..... 1 part.
Cumin ..... 1 part.
Cassia ..... 1 part.
Nutmeg ..... 2 parts.
Pimento ..... 6 parts.
Black pepper..... 8 parts.
Salt ..... 8 parts.

Celery Salt

Sodium chloride ..... 1 pound.
Celery seed, bruised..... 2 drams.
Alcohol ..... 6 drams.

Macerate the seed in the spirit for a week, then filter and thoroughly incorporate the filtrate with the salt.

Pickling Vinegar

I.

For each gallon of vinegar, take 1 ounce each of capsicum, ginger and pimento, 3 ounces each of black, white and long pepper, and 8 ounces of mustard seed. Bruise the spices, boil with part of the vinegar, then add the remainder of the vinegar, and strain, after allowing the liquid to stand for a week or more.

II.

Ginger ..... ½ ounce.
Allspice ..... ½ ounce.
Curry powder..... 1 ounce.
Black pepper..... 2 ounces.
Capsicum ..... ½ ounce.
Mustard seed ..... 4 ounces.
Vinegar .....4½ pints.

Bruise the spice and macerate for two days in a warm place with the vinegar previously heated to boiling.

Pasteurization of Milk

A United States Government bulletin on this subject says:

Milk is conveniently pasteurized in the bottles in which it is delivered. To do this use a small pail with a perforated false bottom. An inverted pie tin with a few holes punched in it will answer this purpose. This will raise the bottles from the bottom of the pail, thus allowing a free circulation of water and preventing bumping of the bottles. Punch a hole through the cap of one of the bottles and insert a thermometer. The ordinary floating type of thermometer is likely to be inaccurate, and if possible a good thermometer with the scale etched on the glass should be used. Set the bottles of milk in the pail and fill the pail with water nearly to the level of the milk. Put the pail on the stove or over a gas flame and heat it until the thermometer in the milk shows not less than 150 degrees nor more than 155 degrees F. The bottles should then be removed from the water and allowed to stand from twenty to thirty minutes. The temperature will fall slowly, but may be held more uniformly by covering the bottles with a towel. The punctured cap should be replaced with a new one, or the bottle should be covered with an inverted cup.

After the milk has been held as directed it should be cooled as quickly and as much as possible by setting in water. To avoid danger of breaking the bottle by too sudden change of temperature, this water should be warm at first. Replace the warm water slowly with cold water. After cooling, milk should in all cases be held at the lowest available temperature.

This method may be employed to retard the souring of milk or cream for ordinary uses. It should be remembered, however, that pasteurization does not destroy all bacteria in milk, and after pasteurization it should be kept cold and used as soon as possible. Cream does not rise as rapidly or separate as completely in pasteurized milk as in raw milk.

Curry Powder

I.

Coriander	5 pounds.
Turmeric	1½ pounds.
Fenugreek	12 ounces.
Black pepper	8 ounces.
Cumin	8 ounces.
Mustard	8 ounces.
Dill	4 ounces.
Pimento	4 ounces.
African ginger	4 ounces.
Table salt	1½ ounces.
Capsicum	1¼ ounces.

Grind the ingredients together to a fine powder.

II.

Turmeric	2 ounces.
Coriander	1 ounce.
Ginger	2 ounces.
Cardamom	½ ounce.
Capsicum	½ ounce.
Cumin	½ ounce.
White pepper	1 ounce.
Lemon peel	1 ounce.

III.

Coriander	13 ounces.
Black pepper	5 ounces.
Capsicum	1 ounce.
Cumin	6 ounces.
Fenugreek	6 ounces.
Turmeric	6 ounces.

Grind all together and sift.

It is said that a better flavor is obtained by using whole, fresh ingredients and grinding them all together at once.

Kitchen Spice

Ginger	1 pound.
Cinnamon	8 ounces.
Black pepper	8 ounces.
Nutmeg	8 ounces.
Allspice	8 ounces.
Clove	2 drams.
Sodium chloride	6 pounds.

Reduce all the spices to about a No. 30 powder and mix thoroughly.

Preparing Table Mustard

There are dozens of methods of preparing mustard for table use, ranging all the way from making a paste of ground mustard with vinegar to concocting a condimental olla podrida out of a dozen or more seeds, barks, roots, leaves and fruits, with saline, acetic, and saccharine additions. We give a few of them below:

Plain Table Mustard.

Mix 8 pounds of ground mustard seed with 1½ pints of good vinegar; heat the mixture over a moderate fire for one hour, and add 1 dram of ground Jamaica pepper. When cold transfer to jars, which should be kept well closed.

Very Fine Table Mustard.

Digest over a water bath 1¾ ounces of fresh tarragon leaves, 2 bay leaves, 1 lemon (juice and rind), ¼ dram each of cloves and cinnamon, ¾ dram of black pepper, ¾ ounce of dill and 1 onion in ½ gallon of good vinegar. Then strain the fluid into a porcelain vessel, and while it is yet warm mix with it 1 pound of ground black mustard, 1 pound of ground white mustard, 1 pound of sugar and 3½ ounces of common salt. Let the whole digest, stirring frequently, until the mustard has lost some of its sharpness by the evaporation of the ethereal oil, and then dilute, according to taste, with more or less vinegar.

French Mustard.

Mix with good wine vinegar (or, better yet, a vinegar in which has been macerated some celery root, garlic, onion and chives), ground mustard, 900 parts; sugar, 100 parts; salt, 100 parts; pepper, 50 parts; cinnamon, 25 parts; cardamom, 10 parts, and ginger, 15 parts.

Savory Essence for Soups

Black pepper	4 ounces.
Allspice	2 ounces.
Nutmeg	1 ounce.
Clove	2 drams.
Cinnamon	2 drams.
Coriander	2 drams.
Caraway	2 drams.
Alcohol	2 pints.

Crush the spices and macerate in the alcohol for ten days. Filter.

Albumin Milk

Sweet, whole milk	2 pints.
Essence of pepsin	4 drams.
Fat-free buttermilk	1 pint.
Maltose dextrin	enough.
Boiled water	enough.

Bring the milk to a boiling temperature; cool to 100 deg. F.; add the essence of pepsin, and allow to curdle. Pour off the whey and drain the curd in a muslin bag for two hours. Place the bag containing the curd in 8 ounces of the water previously cooled. Remove as soon as saturated, letting the surplus water drip back into the unabsorbed portion. Place the curd in a sieve; add the buttermilk, and pass the curd through the sieve three or four times. Wash the adhering curd from the bag in the water used previously to soak the mass. Pour this water into the sieve; add enough water to bring the total volume to 2 pints and add the desired quantity of maltose dextrin.

Easter-Bun Spices

Three formulas for these spices are given in Pharmaceutical Formulas, as follows:

London

Nutmeg	6 ounces.
Mace	1 ounce.
Red pepper	2 ounces.
Cinnamon	4 ounces.
Ginger	8 ounces.

Provincial

Mace	2 ounces.
Ginger	1 ounce.
Oil of cloves	6 minims.

Scotch

Ginger	5 ounces.
Coriander	5 ounces.
Caraway	3½ ounces.
Cloves	1 ounce.
Pimento	6 drams.
Cassia	6 drams.
Nutmeg	4 drams.

The spices are to be powdered, mixed and sifted, and 1 ounce of the mixture is to be used with 7 pounds of flour in making the buns.

Worcester Sauce

Garlic	12 ounces.
Shallots	28 ounces.
Tamarinds	28 ounces.
Cloves	4 ounces.
Capsicum	4 ounces.
Anchovies	3 pounds.
Oil of lemon	1 ounce.
Sugar	4¼ pounds.
Soy	7 pounds.
Vinegar	5 gallons.

Macerate two months with frequent stirrings and then strain.

Matzoon and Kumyss

Matzoon is the trade-mark name of a form of fermented milk. A recipe for making fermented milk is given in the National Formulary. Kumyss is made by fermenting milk with a special organism known as kefir.

In a paper read before the Kings County Pharmaceutical Society, Thos. J. Keenan gave the following working directions for making kefir:

1. Take of kefir fungus 2½ drams, soak in a mixture of milk and water, equal parts (sufficient to cover the kefir), for four hours, pouring off and renewing at intervals of one hour, keep the mixture at a temperature of 80 degees.

2. The washed and moist fungus, now in a softened condition, is enclosed loosely in a piece of sterilized gauze and added to one quart of pasteurized milk heated to a temperature of from 80 degrees to 85 degrees. The milk with the kefir is allowed to stand, the same temperature being maintained for from twelve to fifteen hours, or until curdled. The cream is then removed and the curd separated and allowed to drip until fairly dry, when an equal weight of sugar of milk is added and the whole spread thinly upon gauze or upon a fiberless filter paper and allowed to dry in a current of warm air at a temperature of not over 80 degrees F. The mixed substance is then powdered gently and put up in dry, sterilized 1-ounce wide-mouthed vials, bearing some such label as the following:

Directions for Use

To 1 quart of milk diluted with ½ pint of water add a pinch of salt and a level teaspoonful of the ferment powder. Keep at a temperature of 85 degrees F. for twelve to fifteen hours, shaking or stirring as often as convenient; then bottle and keep on ice.

Keenan suggests that before bottling and sending out the powder the pharmacist make a control experiment in order to satisfy himself of the activity of the product and the quality of the milk. This could be done, he said, by taking three bottles of milk and putting into one a pinch of the ferment, into another a pinch of sugar, and leaving the third bottle without any added substance, when, if the powder was of the desired activity, the milk containing the ferment would be completely curdled at the end of twelve or fifteen hours.

I. V. S. Stanislaus read a paper on the history, chemistry and manufacture of kefir at the meeting of the American Pharmaceutical Association (see the Proceedings for 1907, page 465), in which he stated that the following points should be observed in the preparation of kefir.

The milk should be fresh, previously skimmed and boiled; the latter condition is imperative to prevent butyric fermentation. It is also advantageous to sometimes add a teaspoonful of lactose to the milk, as in this wise more alcohol and CO_2 is formed and the albuminous bodies undergo peptonization much more readily. Good kefir should be a homogeneous, viscous fluid not readily separating into two layers. Ferrated kefir for anemics is prepared by adding to each bottle 0.1 gramme of ferric lactate. Pepsinated kefir is made by adding 0.75 gramme of powdered pepsin to each bottle.

Preserving Milk for Analytical Purposes

For preserving milk for future analysis Deniges (Rev. de pharm.) recommends adding to 100 mils of the milk 1 mil of a mixture of 50 grammes of phenol and 10 mils of alcohol, heating the mixture at 40 degrees C. and allowing it to cool with constant shaking. Such an addition, he says, in no way interferes with the estimation of the acidity, of the milk sugar with Fehling's solution, of the butter-fat, or of the casein.

Baking Powder

Some years ago a United States Government expert, after examining the baking powders on the market and conducting an elaborate series of experiments of a practical as well as of a theoretical nature, published the conclusion that a baking powder composed of potassium bitartrate, 2 parts, and sodium bicarbonate, 1 part, gave the best results chemically, hy-

gienically and in actual practice. For "body" he recommended the use of corn starch, 1 part. In making the powder each ingredient should be dried separately, and the whole should then be thoroughly mixed and kept in well-closed containers.

Manufacture of Yeast

Compressed yeast of the semi-solid sort is prepared from beer-yeast, a by-product of breweries, and can not be manufactured with profit by one not having a plentiful supply of the raw material. The processes of preparing it are many, but as they are quite similar, the following may answer:

Strain the beer-yeast through a very fine filter, then stir it with three times its bulk of cold water in a suitable vat fitted with a stop-cock. Allow the mixture to stand for ten minutes, and draw off the supernatant liquid. Repeat the washing twice; to the first wash-water add 1½ ounces of sodium bicarbonate to each 15 gallons of yeast; to the second water add ½ ounce of tartaric acid to the same quantity of yeast; to the third water add 1 ounce of ammonium carbonate. After the last water has been drawn off the yeast is pressed into cakes.

Dry Yeast.

Hops	3½ ounces.
Rye flour	3¾ pounds.
Corn meal	7¾ pounds.
Beer-yeast	½ pint.
Hot water	30 pints.

Mix the hops and the rye flour with the hot water; when the mixture has cooled to lukewarmness, add the beer-yeast and allow to ferment. The following day, add the corn meal, knead the mass into a stiff dough, roll into a cake and divide with a glass knife. Dry in a warm room.

If further details concerning the manufacture of brewers' yeast is desired, four pages devoted to the subject in Sadtler's Industrial Organic Chemistry may be studied.

Preserving Eggs in Water Glass

According to official experiments made in North Dakota the preservation of eggs by covering them with water-glass (solution of sodium silicate) gives fairly satisfactory results. The eggs should be packed in kegs, which should be clean and well scalded before use. Then a solution consisting of 1 volume of the commercial syrup-thick water-glass and 10 volumes of pure water should be poured over them until they are covered. It is better to boil the water and allow it to cool before use. The keg of eggs should be kept in a cool place. It is stated that 1 gallon of the solution is sufficient for fifty dozen eggs if they are properly packed.

To prevent eggs so preserved from cracking when boiled, a pin prick should be made in the blunt end of each egg before it is put into the water for boiling.

A Connecticut reader, seeing the above note, wrote:

A sterile (infertile) egg will keep much longer than a fertile egg. Eggs placed in water-glass in May or June and kept in a cool place will be found in good condition the following December. I think earthen crocks are much better for packing the eggs than kegs. It is advisable to look occasionally at the container to see if the solution has evaporated enough to leave any of the eggs uncovered. In case it has, more should be added.

Commissioner James W. Helm of the dairy and food department of Michigan advises egg raisers to kill the old roosters at the close of the breeding season and so raise only infertile eggs for a period.

Raspberry Vinegar

Fresh raspberries...1,500 grammes.
Strongest wine vinegar .....1,000 grammes.

Wash the berries, let them drain, macerate with the vinegar for fifteen days and strain.

Food Preserving Powder

A "canning compound" on the market is said to consist of about 95 parts of boric acid and enough common salt and benzoic acid to make 100 parts. In the Yearbook of the Department of Agriculture for 1900 is the report of analyses of a hundred or so food preservatives. These were found to contain borax, salt, saltpeter, boric acid, ammonium fluoride, salicylic acid, sodium benzoate, formaldehyde, sodium sulphate and sodium benzoate.

Just which of these preservatives may be used without danger to the consumer is largely a matter of opinion, except that it is generally agreed that formaldehyde should not be employed. Which may be used, and to what extent, without danger of punishment under the various food and drugs acts depends upon the particular law applicable to the case. As a rule, the use of chemical preservatives in foods does not receive the sanction of the law, this rule, of course, not applying to sugar, salt, vinegar and certain other universally employed and innocent preservatives.

Liquid Butter Color

Griffith has collected and published in his Non-Secret Formulas three

recipes for butter coloring, these being herewith given:

I.

Sodium carbonate..... 2 pounds.
Potassium carbonate.... 2 pounds.
Cold water..... 5 gallons.

Dissolve the sodium and potassium carbonates in the water and set aside.

Annatto ..... 2 pounds.
Cold water ..... 4 gallons.

Let stand one day, stirring occasionally. Use clear water and stone crocks for mixing purposes.

Directions: Use one teaspoonful of the coloring in 5 quarts of cream; add just before churning.

II.

Orange anilin (soluble in oil) ..... 1 dram.
Olive oil, sweet oil or cottonseed oil.....20 ounces.

Dissolve the orange anilin in the oil by the aid of gentle heat from a water-bath.

One teaspoonful will be sufficient for about 10 gallons of cream.

This will not color the buttermilk.

III.

Annatto ..... 10 ounces.
Caustic potash.....1½ ounces.
Borax ..... 1 ounce.
Water .....100 ounces.
Tincture of turmeric... 20 ounces.

Mix, let stand forty-eight hours and filter.

The orange anilin color whose use in food products is permitted under Food Inspection Decision 76, is "85. orange I": the yellow is "4. naphthol yellow S."

Chop Relish

Black pepper..... 1 ounce.
Allspice ..... 4 drams.
Salt ..... 1 ounce.
Horseradish ..... 4 drams.
Shallots ..... 4 drams.
Walnut ketchup.....20 ounces.

Steep for fourteen days, strain and put into small bottles.

Chutney Sauce

Seeded raisins ..... 4 ounces.
Crab apples ..... 8 ounces.
Brown sugar ..... 4 ounces.
Powdered ginger..... 2 ounces.
Salt ..... 2 ounces.
Capsicum ..... 2 ounces.
Garlic ..... 1 ounce.
Vinegar ..... enough.

Pound the solid ingredients together in a mortar until reduced to a pulpy mass, add enough vinegar to bring the whole to the consistence of cream, and bottle for use.

Possibly a somewhat larger quantity of molasses might be used in place of the brown sugar, and a few onions from the garden in place of the garlic.

Cucumber Sauce

Peel and slice 3 large cucumbers and 1 onion, put them into a basin and sprinkle a handful of salt over them. After they have stood all night, bring the liquid to the boiling point and then allow it to simmer for half an hour, and strain. Then add—

Bruised mace..... ½ dram.
Bruised nutmeg..... 1 dram.
Bruised black pepper... 4 drams.
White wine..... 10 ounces.
Vinegar ..... 1 pint.

Bring to the boiling point and strain.

Walnut Ketchup

Crush 10 dozen green walnuts, and to the mass add ground black pepper, 1½ ounces; ground nutmeg, 1½ ounces; ground cloves, ½ ounce; ground ginger, ½ ounce; ground mace, ¼ ounce. Boil the whole in ½ gallon of vinegar for half an hour, then set aside for a week, and strain.

Caramel.

The following information appears in Cyclopedia of Formulas: Dissolve 7 pounds of crushed sugar in 1 pint of water; boil it in a 5-gallon copper kettle, stirring it occasionally until it gets brown; then reduce the fire and let the sugar burn "until the smoke makes the eyes water." When a few drops, let fall into a tumbler of cold water, sink to the bottom and harden sufficiently to crack, it is done. Then pour on it, by degrees, about 2 quarts of warm water, stirring all the time. When well mixed, filter it, hot, through a coarse flannel filter. Some use lime water to dissolve the burnt sugar. Care must be taken not to over-burn it, as a great quantity is thereby rendered insoluble. The heat should not exceed 221 degrees C. nor be under 204 degrees C.

Preserving Eggs.

According to official experiments made in North Dakota the preservation of eggs by covering them with water-glass (solution of sodium silicate) gives satisfactory results. The eggs should be packed in kegs, which should be clean and well scalded before use. Then a solution consisting of 1 volume of the commercial syrup-thick water-glass and 10 volumes of pure water should be poured over them until they are covered. It is better to boil the water and allow it to cool

before use. The keg of eggs should be kept in a cool place. It is stated that 1 gallon of the solution is sufficient for fifty dozen eggs if they are properly packed.

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Commissioner James W. Helm, of the dairy and food department of Michigan, advises egg raisers to kill the old roosters at the close of the breeding season and so raise only infertile eggs for a period.

The note concerning fertile and infertile eggs is of particular importance, it having been proven that only infertile eggs should be used if best results are to be hoped for.

Mixed Spices.

I.

Powdered allspice	½ ounce.
Powdered nutmeg	1 ounce.
Powdered clove	1 ounce.
Powdered cinnamon	1 ounce.

II.

Allspice	140 parts.
Clove	140 parts.
Ginger	115 parts.
Long pepper	100 parts.
Black pepper	75 parts.
Coriander seed	75 parts.
White pepper	60 parts.
Cassia bark	55 parts.
Nutmeg	55 parts.
Capsicum	45 parts.
White mustard seed	45 parts.
Cassia buds	35 parts.
Mace	25 parts.
Caraway seed	10 parts.
Anise seed	3 parts.
Cardamom seed	3 parts.

CHAPTER XI.

VARNISHES AND POLISHES

Automobile and piano polish—Violin varnish—Wood stains—Floor paint—Furniture cleaners and polishes—Desk stains—Metal polishes—Rust removers—Metal cleaners—Plating mixtures

Always consult the index when using this book

Automobile and Piano Polish

Perhaps the best method for polishing pianos, carriage or automobile bodies, and other high-class varnished surfaces is to go over the varnish first with a pledget of absorbent cotton saturated with kerosene. Then go over it with a piece of chamois leather dipped first in olive oil and then in finely powdered and bolted rotten stone, using a circular movement. Wipe off the rotten stone with the palm of the hand, moving in a rotary direction and wiping off the hand after each rotation; and then go over the surface with a piece of chamois saturated with olive oil. Finally wipe dry with a piece of soft silk.

A Good Varnish

Alcohol	75 parts.
White shellac	15 parts.
Venice turpentine	2 parts.
Sandarac	8 parts.

Dissolve the shellac and sandarac in the alcohol and then add the Venice turpentine.—R. D. Brown.

Violin Varnish

Sandarac	160 parts.
Mastic	80 parts.
Alcohol	21 parts.
Turpentine varnish	750 parts.

Mix and set aside in a warm place, agitating occasionally until solution is complete; then strain.

Another note on the subject, from One Thousand More Paint Questions Answered is herewith reproduced:

Staining and Finishing a Violin

The true Cremona varnish is of unknown formula, and its preparation one of the lost arts. To stain, varnish and polish a violin is a special art and requires expert knowledge, but we will give you an idea of how the work is accomplished.

The German violin makers stain the violins with a mixture of campeachy wood, 3 parts by weight, and yellow dyewood 1 part, boiled for two hours in five times its weight of water in an earthenware vessel, as iron would make the stain black. This is strained, after cooling, through a fine cloth and a little alcohol is added to it. It is applied to the violin with a cloth and wiped out. If not the right effect, apply the stain as often as required to give the proper tone. The varnish is made by dissolving in 32 ounces of 95 per cent. rectified alcohol, 6 ounces gum sandarac, 2 ounces gum shellac, 1 ounce mastic, 2 ounces gum benzoin, 2 ounces Venice turpentine. The last named ingredient is added, when all the gums are dissolved and all is strained through the fine muslin. Apply with a clean varnish brush and polish with sweet oil and rotten stone.

Waterproof Varnish

An old English patent was issued for a varnish made of aluminum palmitate or aluminum oleate dissolved in ether, benzole or benzin. It was claimed for such a varnish that after the solvent evaporated an impermeable varnish was left. The danger from fire attending the use of such varnish should be borne in mind.

Reviver for a Varnished Surface

Hydrochloric acid	1 ounce.
Alcohol	3 ounces.
Linseed oil	1 pint.
Butter of antimony	3 ounces.
Acetic acid	6 ounces.
Water	10 ounces.

Mix the acetic acid with 6 ounces of water and add the linseed oil; shake vigorously. Mix the butter of antimony with the alcohol and add the oily mixture and shake again. Add finally the hydrochloric acid diluted with 4 ounces of water.

This polish must be well shaken before use, and applied with a soft cloth. The surface is to be rubbed dry with a piece of silk.

Colored Floor Paint, Lac Type

I.

Rosin	3 pounds.
Venice turpentine	2 pounds.
Pale drying oil	1 gallon.
Oil of turpentine	2 pints.

Melt the rosin, add the Venice turpentine and the oil, cool a little and add the oil of turpentine.

II.

Canada balsam	20 ounces.
Pale rosin	3½ pounds.
Oil of turpentine	1 gallon.

III.

Gum copal	30 parts.
Camphor	2 parts.
Oil of turpentine	150 parts.
Gum anime	8 pounds.
Clarified linseed oil	3 gallons.
Litharge	¼ pound.
Lead acetate	¼ pound.
Iron sulphate	¼ pound.
Oil of turpentine	5½ gallons.

Boil all together until it strings, then mix well and strain.

The anilin colors used to give these varnishes the desired shades are those known as "fat colors" or "Soudan dyes." The proportions and blending would have to be learned from practice.

Oak Stain for Wood

First apply to the wood as a mordant, a 15 per cent. solution of soda. Then apply a catechu solution, preferably hot, made by boiling 300 grammes of catechu in 900 grammes of water for about an hour, straining, adding 35 grammes of iron-free alum, and once more raising to the boiling point. Finally, when dry, apply to the mordanted wood a 5 per cent. solution of potassium dichromate.

Floor Wax

I.

Yellow wax	25 parts.
Yellow laundry soap	25 parts.
Glue	12 parts.
Sodium hydroxide	25 parts.
Water	enough.

Dissolve the sodium hydroxide in 400 parts of water, add the wax, and boil down to 250 parts; then add the soap. Dissolve the glue in 100 parts of hot water. Mix the two solutions.

II.

Yellow wax	25 parts.
Potassium carbonate	3 parts.
Oil of turpentine	3 parts.
Water	100 parts.

Heat the wax and water together to the boiling point; add the potassium salt; boil another minute, remove the vessel from the fire; add the oil; and stir until cold.

Much depends upon the skill of the operator who applies the wax to the floor.

To Preserve and Polish Wood

Five parts of beeswax and one of potash are boiled in sufficient water to thoroughly dissolve the potash. The mixture should be boiled until the water combines completely with the wax. The mixture is then taken from the fire, and a quantity of boiling water is added, with constant stirring. It will be found, if the process has been conducted properly, that 225 parts of water can be added to the original quantity, and the substance will still retain its homogenous character, no clear water appearing. The mixture is then heated for five or six minutes, but is not allowed to boil. It is then taken from the fire and stirred vigorously until cool. This forms a sort of cream, which gives a brilliant polish to wood in a very little time. It should be applied with a piece of linen, and the wood then rubbed with another piece of the same material.

Wax for Dark-Colored Woods

Stearin	100 parts.
Yellow wax	25 parts.
Potassium hydroxide	60 parts.
Yellow soap	10 parts.
Water	60 parts.

Dissolve the potassium in one-half the water; heat the stearin with this lye until saponification is complete and add the wax. Dissolve the soap in the rest of the water; mix the two solutions.

Wax for Light-Colored Woods

White wax	75 parts.
Bleached shellac	75 parts.
Pale rosin	6 parts.
Oil of turpentine	100 parts.
Alcohol	400 parts.

Melt the wax, shellac and rosin together; remove from the source of heat and add the oil and the spirit previously warmed.

Great care should be taken in warming these fluids, as they are quite inflammable.

Boat Varnish

A good copal varnish is the best to use for boats, says the Chemist and Druggist, which adds that a suitable formula is as follows:

Oil of turpentine	1 to 2 parts.
Zanzibar copal	1 part.
Linseed oil	3 parts.

The varnish, comments the British journal, can not be made economically on a small scale.

Furniture Cleaner and Polisher

Probably one of the following formulas, or a modification of it, may be found serviceable:

Mahogany Polish.

I.

Hydrochloric acid	2 drams.
Butter of antimony	12 drams.
Alcohol	12 drams.
Linseed oil	4 ounces.
White wine vinegar	8 ounces.

Mixed in order given.

II.

Raw linseed oil	4 pints.
Butter of antimony	4 ounces.
Shellac varnish	1 pint.
Oil of turpentine, enough to make	1 gallon.

Cleanser for Natural or Stained Woodwork.

If the woodwork of the store is of natural or stained finish it may be kept clean with the following:

Chloroform	4 drams.
Ether	4 drams.
Benzin	6 ounces.
Linseed oil, to make	1 pint.

Apply and rub dry with a soft cloth, bearing in mind the highly inflammable nature of certain of the ingredients, and that electric sparks are often generated by rubbing and may inflame inflammable material.

Cleaning Painted Woodwork.

For painted woodwork an oil polish is unsatisfactory and the continued use of soap and water is not beneficial to the paint. Such surfaces may be cleaned without harm with a soft flannel cloth dipped in warm water, wrung almost dry and dipped in powdered French chalk. The surface so cleaned should be polished with a dry cloth.

Polish for Oak Furniture.

Linseed oil	40 ounces.
Vinegar	6 ounces.
Oil of turpentine	3 ounces.
Hydrochloric acid	1 ounce.
Alcohol	2 ounces.

Mix in the order named.

Creamy Furniture Polish.

Animal oil soap	1 ounce.
Solution of potassium hydroxide	5 ounces.
Beeswax	1 pound.
Oil of turpentine	3 pints.
Water, to make	5 pints.

Dissolve the soap in the lye with the aid of heat; add this solution all at once to the warm solution of the wax in the oil. Beat the mixture until a smooth cream is formed, and gradually beat in water until the whole is completely emulsified.

Cleaner-Polish for Furniture.

Quillaja	2 ounces.
Linseed oil	2 pints.
Oil of turpentine	4 ounces.
Butter of antimony	2 ounces.
Alcohol	8 ounces.
Hot water	8 ounces.
Diluted acetic acid	8 ounces.

Digest the quillaja with the hot water; when cool, add the alcohol and squeeze through a straining cloth. Mix the liquid with the diluted acetic acid; add the linseed oil previously mixed with the oil of turpentine, and shake thoroughly. Finally add the butter of antimony slowly with thorough agitation.

White Polish for Wood

Crushed white lac	1½ pounds.
Powdered borax	1 ounce.
Alcohol	3 pints.

The lac should be thoroughly dried, especially if it has been kept under water, and, in any case, after being crushed, it should be left in a warm place for a few hours, in order that all the moisture may escape. The crushed lac and borax are then added to the spirit, and the mixture is stirred frequently until solution is effected, after which the polish should be strained through muslin.

Miscellaneous Furniture Polishes

Alcohol	8 ounces.
Shellac	2 drams.
Benzoin	2 drams.
Poppy oil	2 drams.

Dissolve the gums in the alcohol in a warm place, with frequent agitation, and, when cold, add the poppy oil.

This may be applied on the end of a cylindrical rubber made by tightly rolling a piece of flannel which has been torn, not cut, into strips 4 to 6 inches wide.

II.

Beeswax	125 parts.
Hard soap	30 parts.
Glue	60 parts.
Soda ash	125 parts.
Water	enough.
Ochre	enough.

Dissolve the soda in 2,000 parts of water, add the wax, boil down to 1,250 parts, and add the soap. Dissolve the glue in 500 parts of water by the aid of heat, stir in the ocher, add the mass to the soap and wax mixture.

Apply hot.

III.

Shellac	180 parts.
Sandarac	15 parts.
Mastic	16 parts.
Copal	16 parts.
Rosin	15 parts.
Alcohol	1,300 parts.

Mix, set aside in a warm place, shaking occasionally until dissolved, and filter.

Many of the anilin dyes are readily soluble in the liquid, and may be added thereto when it is desirable.

The woodwork is first carefully cleaned, and the polish is, after dilution with acetone, applied with a soft brush.

IV.

Beeswax	1 pound.
Linseed oil	1 pint.
Oil of turpentine	1 pint.

Melt the wax; mix with the oils; stir while cooling.

Linseed oil is likely to darken the color of wood.

V.

Pearlash	12 ounces.
White wax	8 ounces.
Hot water	enough.

Dissolve the pearlash in 4 parts of hot water; add the wax; boil gently for half an hour and allow to cool. Remove the mass and work into it enough hot water to soften it.

VI.

Oil of turpentine	1 pint.
Linseed oil	2 pints.
Carnauba wax	1 pound.

Add the mixed oils to the melted wax and stir until cold.

VII.

White wax	12 ounces.
Oil of turpentine	20 ounces.

VIII.

Sandarac	1 ounce.
Alcohol	10 ounces.
Beeswax	1 ounce.
Oil of turpentine	5 ounces.

Dissolve the sandarac in the alcohol and the wax in the oil. Add the alcoholic liquid to the other, in divided portions, shaking after each addition.

Hard Finish for a Counter Top

One may put a nice finish on a common board counter or table in the following manner, giving it the appearance of veneer: Smooth off the top, after having filled all cracks and crevices with putty or wood filler. Take a piece of heavy wrapping paper of proper size, wet one side of it with water, and then apply a coat of liquid glue, making sure that every spot is covered; put this on the counter and rub until every part adheres and there are no air bubbles. Allow thirty-six to forty-eight hours for drying, and then apply one or two coats of varnish. If the work is carefully done the result will be a happy surprise.—F. W. Scott, Jr.

Laboratory Desk Stain

The following formula has been proposed for the A. Ph. A Formula Book:

I.

Copper sulphate	125 grammes.
Potassium chlorate	125 grammes.
Hot water	1000 mils.

II.

Anilin oil	120 grammes.
Hydrochloric acid	180 grammes.
Water	1000 mils.

III.

Raw linseed oil.

Directions: Apply in order given, 24 hours apart.

Cheap Stains for Wood Fixtures

Oak.

Potassium permanganate	1 ounce.
Water	40 ounces.

Walnut.

Potassium dichromate	40 grains.
Vandyke brown	1 ounce.
Sodium carbonate	200 grains.
Water	10 ounces.

Boil together and apply hot.

Black.

I.

Ferrous sulphate	3 ounces.
Water	40 ounces.

II.

Crushed nutgalls	6 ounces.
Water	40 ounces.

Boil the galls in the water for half an hour, and when cold strain the liquid into a bottle. Apply I and II alternately to the wood, giving it several coats of each.

Red.

Brazil wood chips	4 ounces.
Glacial acetic acid	2 ounces.
Alum	½ ounce.
Water	20 ounces.

Boil the chips and the alum in the water for half an hour, add the acid, and when cold strain.

Green.

Copper acetate	2 ounces.
Potassium bitartrate	½ ounce.
Glacial acetic acid	½ ounce.
Water	20 ounces.

Shake together in a bottle until solution is almost complete, and add

Indigo	30 grains.
Glacial acetic acid	1 dram.
Boiling water	5 ounces.

Luminous Paint

For ordinary opaque paint for sign work or house numbers, etc., the following formulas are said to produce good results:

I.

Mix 20 pounds of pure white lead in oil, 1 quart of pale rubbing varnish, 1 pint of pale gold size japan to a creamy consistency, then add 1 pound of freshly calcined calcium sulphide to the mixture and enough spirit of turpentine to make 1 gallon.

II.

Mix 12 pounds of pure white lead in oil, 4 pounds of pure French zinc white in oil, 1 pint of bleached linseed

oil, 1 pint of pale gold size, 1 pint of white japan and 1 pint of spirit of turpentine to a creamy consistency, and then add 1 pound of freshly calcined calcium sulphide, which will make 1 gallon of luminous paint.

III.

Luminous or phosphorescent paint for clock dials, etc., may be made by heating strontium thiosulphate for fifteen minutes over a bunsen burner or gas lamp, and then for five minutes over a gas blast. When cooled mix the powder with melted paraffin for application with a brush and expose the painted surface to sunlight for a time, when it will give a green phosphorescent light in the dark.

All luminous paints require exposure to strong sunlight for a time to become active in the dark.

Luminous Mixtures

I.

Potassium dichromate	4 grammes.
Gelatin	4 grammes.
Calcium sulphide	50 grammes.
Boiling water	enough.

The solid ingredients are thoroughly dried and ground together in a suitable mill. For use a portion of the dry mixture is mixed with twice its weight of boiling water, and applied with a brush.

II.

Strontium carbonate	100.0 grammes.
Sulphur	30.0 grammes.
Sodium carbonate	2.0 grammes.
Sodium chloride	0.5 gramme.
Manganese sulphate	0.2 gramme.

Heat these together at 1300 deg. C. for an hour. For use the resulting mass is powdered and ground with a good dammar varnish, or better with a vehicle made as follows:

Zanzibar copal	15 grammes.
Oil of turpentine	60 grammes.
Linseed oil	25 grammes.

Melt the gum on a sand bath, dissolve in the oil of turpentine, and filter. Heat the linseed oil and allow it to cool: then mix it with the turpentine and the gum.

In grinding luminous paints iron rolls should be avoided, as their use injures the luminous properties of the finished product.

Liquid Paint Remover

The man desiring to go into the manufacture of paint remover at the outset meets the obstacle that the use of practically all the efficient paint removing fluids, such as alcohol, benzol and acetone, are covered by basic patents. This leaves (unless the investigator hits an unprotected solvent among organic liquids which are constantly entering the market) only alkaline fluids, as, for example:

Sodium hydroxide	3 pounds.
Whiting	4 pounds.
Flour	1 pound.
Water	½ gallon.

Dissolve the sodium hydroxide in part of the water and mix the whiting with more water to form a cream. Add the sodium hydroxide solution to the whiting cream, then mix in the flour made into a paste with the rest of the water.

For use 1 pint of this solution is mixed with about 2 gallons of water.

After such an alkaline remover is applied the bared surface should be washed with acidulated water, and even then the results are far from satisfactory, since the alkali raises the grain of the wood (requiring laborious sandpapering to get it smooth again), and usually staining the wood, requiring bleaching with oxalic acid before revarnishing.

While carbon disulphide and crude carbolic acid have been used as varnish removers, these are so dangerously poisonous (and the first so highly inflammable, also) that their employment is not to be advised.

A few other formulas follow:

I.

Flour (or wood pulp)	385 parts.
Hydrochloric acid	450 parts.
Chlorinated lime	160 parts.
Oil of turpentine	5 parts.

This mixture is applied to the surface and left for some time. It is then brushed off and brings the paint away with it. It keeps moist quite long enough to be easily removed after it has acted.

II.

Sodium hydroxide	5 parts.
Solution of sodium silicate	3 parts.
Flour paste	6 parts.
Water	4 parts.

III.

Soap	10 parts.
Potassium hydroxide	7 parts.
Potassium silicate	2 parts.

Blackboard Paint

I.

Lampblack	30 grammes.
Pumice, in very fine powder	125 grammes.
Boiled linseed oil	250 mils.
Oil of turpentine, to make	1,000 mils.

II.

Shellac	4 ounces.
Lampblack	2 ounces.
Emery powder	1 ounce.
Ultramarine	1 ounce.
Alcohol	2½ pints.

Dissolve the shellac in the spirit; place the lampblack, emery and ultramarine on a cheesecloth strainer, pour on part of the shellac solution, stirring constantly and gradually adding the rest of the solution until all the powders have passed through the strainer.

Metal Polishes

Liquids.

I.

Levigated silex	10 pounds.
Kerosene	5 gallons.
Oleic acid	2 gallons.
Stearic acid	2 pounds.

II.

Kieselguhr	56 pounds.
Kerosene	30 pounds.
Alcohol	20 pounds.
Oil of turpentine	5 pounds.
Ammonia water (sp. gr. 0.910)	3¾ pounds.

III.

Putty-powder	6 ounces.
Kieselguhr	10 ounces.
Powdered pumice	2 ounces.
Indian red	10 ounces.
Emery flour	1 ounce.
Rottenstone	1½ ounces.
Alcohol	30 ounces.
Oil of turpentine	20 ounces.
Kerosene	100 ounces.
Ammonia water	20 ounces.
Oil of citronella	½ ounce.

Mix the powders thoroughly and add gradually the liquids in the order given.

IV.

Kerosene	5 pints.
Oleic acid	2 pints.
Stearic acid	4 ounces.
Levigated kieselguhr	20 ounces.

V.

Kieselguhr	4 ounces.
Precipitated chalk	3 ounces.
Talc	2 ounces.
Magnesium carbonate	2 ounces.
Powdered soap	2 ounces.
Potassium carbonate	1¼ ounces.
Oleic acid	¾ ounce.

VI.

Prepared chalk	2 ounces.
Ammonia water	2 ounces.
Water, to make	8 ounces.

Powders.

I.

Kieselguhr	8 parts.
Tin oxide	30 parts.
Pipeclay	30 parts.
Tartaric acid	3 parts.

II.

Kieselguhr	28 parts.
Pipeclay	10 parts.
Sodium hyposulphite	3 parts.
Ferric oxide	2 parts.

Creams or Pomades.

I.

Solution of sodium silicate	5 pounds.
Oleic acid	5½ pounds.
Kerosene	enough.
Kieselguhr	enough.
Oil of citronella	enough.
Methyl salicylate	enough.

Heat the oleic acid almost to boiling; heat separately the solution of sodium silicate; pour the latter gradually into the former with constant stirring. Remove to a place remote from the open flame, preferably out of doors, and when cooled to below 100 degrees F. stir in sufficient kieselguhr previously made into thin cream with kerosene. Finally add the odorous substances and mix well.

II.

Prepared chalk	8 ounces.
Oil of turpentine	2 ounces.
Alcohol	1 ounce.
Ammonia water	2 drams.

III.

Petrolatum	3 ounces.
Refined paraffin	1 bunce.
Prepared chalk	1 ounce.
Oleic acid	½ dram.

IV.

It is said that putz pomade ("putz" in German meaning "polishing") may be made by making a paste of Armenian bole and oleic acid, and scenting with oil of bitter almonds.

V.

Rotten stone	1 part.
Iron subcarbonate	3 parts.
Lard oil	enough.

VI.

Iron oxide	10 parts.
Pumice stone	32 parts.
Oleic acid	enough.

Lacquer for Brass

Celluloid varnish, made by dissolving yellow or colorless celluloid in acetone or a mixture of acetone and amyl acetate is widely used as a protective coating to retard the tarnishing of metals. Acetone collodion is similarly employed. Lacquers of earlier origin generally have a composition somewhat as follows:

Pale orange shellac	1 ounce.
Gamboge	1 dram.
Cape aloes	3 drams.
Alcohol	1 pint.

Dissolve the shellac in the alcohol and add the other ingredients.

Removing Rust from Steel Instruments

Various authors recommend immersing the rusty instruments in a saturated solution of tin chloride as a means

of removing rust spots—by reduction. Place the instruments in a saturated solution of tin chloride and allow them to remain there over night. The following morning rinse them in running water and polish with dry chamois.

Rust Remover

A fine preparation for removing rust can be made by the following formula:

Amyl acetate	1 ounce.
Acetone	½ ounce.
Cylinder oil	½ ounce.

Removal of Rust from Metals

The following information is published in Hopkins' Cyclopedia of Formulas:

A simple and effective way of cleaning rusted iron articles, no matter how badly they are rusted, consists in attaching a piece of ordinary zinc to the articles and letting them lie in water to which a little sulphuric acid has been added. They should be left immersed for several days, or until the rust has entirely disappeared, the time rusted. If there is much rust, a little sulphuric acid should be added occasionally. The essential part of the process is that the zinc must be in good electrical contact with the iron, depending on how deeply they are A good way is to twist an iron wire tightly around the object, and connect this with the zinc. Besides the simplicity of this process, it has the great advantage that the iron itself is not attacked in the least so long as the zinc is in good electrical contact with it. Domestic Engineering says that when there is only a little rust, a galvanized-iron wire wrapped around the object will take the place of the zinc, provided the acid is not too strong. The articles will come out a dark gray or black color, and should then be washed thoroughly and oiled. The method is specially applicable to objects with sharp corners or edges, or to files and other articles on which buffing wheels ought not to be used. The rusted iron and the zinc make a short-circuited battery, the action of which reduces the rust back to iron, this action continuing so long as any rust is left.

Iron articles thickly coated with rust may be cleaned by allowing them to remain in a nearly saturated solution of chloride of tin from 12 to 14 hours.

Rust Remover: Ground pumice, 30 grammes; oleic acid, 20 grammes; tallow, 2 grammes; paraffin, 4 grammes. The last three ingredients are melted together and the powdered pumice is slowly stirred in.

Removing Rust

To remove rust from iron or steel, plunge the rusty article into a vessel of boiling water; this will loosen the rust, which may then be brushed off easily. Then dry the article before a fire if necessary, when the rust which has not dropped off may be removed. A good body of boiling water should be used, and the longer the boiling the better. All oil and dirt goes with the rust.

Metal Cleaning Paste for Collapsible Tubes

A paste for cleaning dental instruments, that may be put up in collapsible tubes:

Jewelers' rouge	1 ounce.
Rotten stone	16 ounces.
Powdered quartz	2 ounces.
Green soap	4 ounces.
Stronger ammonia water	9 drams.
Hot water	enough.

If the ammonia water attacks the metal of the tube, possibly the following recipe would yield a more satisfactory product:

Oil of turpentine	5 parts.
Paraffin	25 parts.
Emery (finely powdered)	25 parts.
Animal charcoal (finely powdered)	45 parts.

Thin with alcohol or oil of turpentine if necessary.

Polishes for German Silver, Brass and Copper

I.

Sodium chloride	2 parts.
Oxalic acid	3 parts.
Water	40 parts.
Bolted pumice	100 parts.
Oil of turpentine	2 parts.
Soft soap	12 parts.
Lard oil	12 parts.

Dissolve the salt in the water and the acid in this solution. Mix the solution with the powdered pumice; incorporate the soap; then beat in the oils.

II.

Liquid petrolatum	8 ounces.
Butter of antimony	¼ ounce.
Alcohol	4 ounces.
Diluted acetic acid	8 ounces.
Jewelers' rouge	½ ounce.

Mix the butter of antimony with the oil and shake well for several minutes; let stand for several hours, and add the alcohol, shaking thoroughly. Shake the rouge with the acid, and mix the two liquids.

III.

Mix 4 parts of charcoal, 2 parts of oil of turpentine, and 3 parts of alcohol

with enough solution of oxalic acid (1 in 3) to make a semi-liquid mixture. This is poisonous.

Creamy Gasoline Metal Polish

Whiting, to be suspended in the lighter hydrocarbon oils, must be in a very fine state of division; or a mixture of very fine whiting, levigated silex, and white kieselguhr may be used. One of the most satisfactory suspension agents is a soft soap made by saponifying a mixture of 3 parts of oleic acid and 1 part of castor oil with a strong potash lye. Some of this soap, which should be slightly alkaline, is dissolved in the benzin or gasoline, and the abrasive is gradually added by sifting on the surface of the liquid.

Nothing but practice will enable the operator to produce a satisfactory mixture. It is not possible to state the proper proportions of oil, soap, and powder, as many an experimenter will fail with the combination that is satisfactory in the hands of a dozen others. Too much saop will give a sticky mixture. If the amount of abrasive be too large, the greater part will settle.

Silver Polishes and Creams

I.

White kaolin	4 pounds.
Prepared chalk	8 pounds.
Infusorial earth	8 pounds.
Carbon tetrachloride	6½ pounds.
Ammonia water	3 pounds.
Alcohol	4 gallons.
Water	5½ gallons.

II.

Cream of tartar	2 ounces.
Prepared chalk	2 ounces.
Alum	1 ounce.
Water	to form a paste.

III.

Soap in thin shavings	80 parts.
Tartaric acid	4 parts.
Tripoli	4 parts.
Alum (ammonia)	4 parts.
Lead carbonate	4 parts.
Water	to form a paste.

IV.

To a saturated solution of sodium hyphosulphite add a little fine whiting. Apply with a brush or sponge and rub well. Rinse in hot water and rub dry with a polishing cloth or chamois.

As a simple, harmless, inexpensive and efficacious silver cleaner the ordinary whiting, ammonia water and water mixture is not likely to be displaced by any of the fancy combinations. For very fine work jeweler's rouge is preferable.

Gold-Plating Mixture

I.

Gold chloride	20 parts.
Potassium cyanide	60 parts.
Potassium bitartrate	5 parts.
Prepared chalk	100 parts.
Distilled water	100 parts.

Dissolve the gold chloride in a portion of the water and the potassium salts in the remainder. Mix the solutions and then add the prepared chalk.

Too much emphasis can not be laid upon the poisonous character of this and most plating solutions.

II.

Metallic articles may be gilded by supporting them upon a clean piece of zinc immersed in a solution made of—

Fine gold	6 grains.
Nitro-hydrochloric acid	enough.
Potassium cyanide	36 grains.
Hot water	1 pint.

Heat the gold on a sand-bath with sufficient acid to dissolve it, and when it is dissolved, add the solution to the water in which the cyanide has been dissolved. Stir with a glass rod; filter through paper if necessary.

Before it is applied, this gilding solution should be heated to about 180 degrees F.

Nickel Plating Fluid

Nickel and ammonium sulphate	10 parts.
Boric acid	5 parts.
Water	200 parts.

Dissolve each of the two solids in 100 parts of hot water and then mix the two solutions.

It is hardly necessary to say that such a fluid does not give a permanent coating and that electroplating is the only truly satisfactory way of getting a nickelized surface.

Nickel-Plating Powder

This is a patented article and is stated to be composed of nickel-ammonium sulphate ($NiSO_4[NH_4])_2SO_4 + 6H_2O$, 60 parts; magnesium (powdered), 3 parts; precipitated chalk, 30 parts; and talc, 7 parts. When this is moistened an electrical action is started and the nickel is deposited as in electroplating. The powder is applied by rubbing with a wet cloth. Of course, the brass or copper should be clean, or the nickel will not stick.

Magoffin's Silver Polish

Dissolve a teaspoonful of table salt in 4 ounces of boiling water, then add whiting to make the whole of a creamy consistence. Apply with a flannel cloth, then wash the silver in hot soft (rain) water, dry with a soft towel and polish with chamois.

CHAPTER XII.

INKS, GLUES, PASTES AND CEMENTS

Inks, Black and Colored, Drawing, Stencil, Mimeograph, Sympathetic, Etc,—Glues, Lutes, Pastes and Cements.

Always consult the Index when using this book

Making Black Ink

In an exceptionally interesting paper on the making of black ink, appearing in The Druggists Circular for January, 1909, page 13, Prof. W. L. Scoville gives the following formula:

Scoville's Formula

Tannic acid	3 ozs. av.
Gallic acid	1 oz. av.
Ferrous sulphate	2 ozs. av.
Solution of ferric chloride, U. S. P.	11 fl. ozs.
Indigotin	1½ ozs. av.
Acacia	60 grains.
Phenol	60 grains.
Water	1 gallon.

Dissolve the tannic and gallic acids and indigotin in 6 pints of warm water. Dissolve the iron salts, acacia and phenol in the remaining 2 pints of water, and mix with the first solution. Shake frequently during several days. Allow the ink to stand at least two weeks, and then filter.

Prof. Scoville says that he has made ink according to this formula; that it was a good article; that he had made tests by exposing writing done with this ink to sun and water, and that the ink stood them well. As to the solubility of indigotin, Prof. Scoville says that he found a soluble kind on the market.

Magoffin's Formula

Extract of logwood	8 ounces.
Potassium dichromate	½ ounce.
Potassium ferrocyanide	¼ ounce.
Alcohol	8 ounces.
Oil of cloves	1 ounce.
Boiling rain water	5 gallons.
Cold rain water	1 gallon.

Dissolve the extract of logwood in the boiling water, and add the two potassium salts. Then add the cold rain water, and the alcohol in which the oil has been dissolved. When cold, strain through flannel and keep in tightly corked bottles.

Mr. Magoffin explains that the old-time black sticky extract that used to come in 12½ and 25-pound boxes is the kind to use.

Fountain Pen Ink

Gallic acid	80 grains.
Ferrous sulphate	120 grains.
Diluted sulphuric acid	4 drams.
Gum arabic	160 grains.
Liquefied phenol	30 minims.
Glycerin	140 minims.
Phenol blue	20 grains.
Distilled water to make	20 ounces.

Dissolve the ferrous sulphate, gum arabic, liquefied phenol, glycerin, and diluted sulphuric acid in 8 ounces of the distilled water, without heat. Then dissolve the gallic acid in 5 ounces of the distilled water, with the aid of a gentle heat; continue the heating until the liquid just begins to boil, and add to it gradually the solution containing the ferrous sulphate, etc., shaking after each addition. Make up to the required volume (20 fluid ounces) with distilled water, filter, and add the phenol blue, shaking until it is dissolved.

Writing Fluid

We have seen it stated that a non-corrosive and permanent writing fluid may be made by neutralizing a solution of indigo sulphate with diluted ammonia water (or with diluted solution of potassium hydroxide), allowing the precipitate to settle, and decanting the clear liquid.

A few other formulas are appended:

I.

Finely powdered indigo	5.0 grammes.
Sulphuric acid	30.0 grammes.
Iron wire	15.0 grammes.
Powdered Turkish nut galls	60.0 grammes.
Acacia	15.0 grammes.
Sugar	8.0 grammes.
Oil of cloves	0.1 gramme.
Water	1,050.0 grammes.

Into a suitable vessel containing 50 grammes of water, put the indigo and the sulphuric acid. When the solution has cooled, add the iron wire, which should be in the finest possible state of subdivision. Let the interaction cease. Make an infusion of the nut galls in the balance of the water. Strain this, and, when cool, mix it with the iron solution. Lastly add the gum, the sugar and the oil.

II.

Powdered nut galls	120.0 grammes.
Oxalic acid	2.0 grammes.

Indigo carmine, about	2.5 grammes.
Iron sulphate	50.0 grammes.
Acacia	15.0 grammes.
Water	1.000.0 grammes.

Digest the powdered nut galls with the greater part of the water for two days; strain the liquid and mix with it the iron sulphate previously dissolved in a little water. Add the oxalic acid and shake until dissolved, then add the indigo carmine (as much as is necessary to give the liquid a nice green color) and finally add the acacia.

III.

Powdered nut galls	100 grammes.
Acacia	40 grammes.
Iron sulphate	43 grammes.
Alcohol (90%)	25 grammes.
Ammonia water	5 grammes.
Phenol	2 grammes.
Water	800 grammes.

Macerate for eight days and strain or filter.

Mimeograph Ink

Balsam copaiba	9 ounces.
Lampblack	3 ounces.
Indigo	5 drams.
Prussian blue	5 drams.
Indian red	6 drams.
Yellow soap, dried and powdered	2 to 3 ounces.

Rub well together until a smooth, creamy paste results.

Fast Green Ink

Crystallized copper acetate	4 parts.
Potassium bitartrate	2 parts.
Water	16 parts.
Mucilage of acacia	1 part.

Boil the chemicals with the water in a porcelain (or clean copper) vessel until the liquid acquires an intensely green color. Then filter and add the mucilage.

Anilin Green Ink

The following formula is for a typical anilin ink, but it may be said in passing that writing done with anilin inks usually fades upon exposure:

Soluble anilin green	2 parts.
Glycerin	16 parts.
Alcohol	112 parts.
Mucilage of acacia	4 parts.

Dissolve the anilin green in the alcohol and then add the other ingredients. Filter, after standing.

While most of the acacia will precipitate from the ink, enough will remain to make it sufficiently slow-flowing.

Red Ink

I.

Eosin (or some other water-soluble anilin red)	1 part.
Acacia	2 parts.
Water	97 parts.

Dissolve the dye in the water and in this solution dissolve the acacia.

II.

Brazil wood	1 ounce.
Tin chloride	15 grains.
Dextrin	30 grains.
Boiling distilled water	1 pint.

III.

Cochineal	1 ounce.
Acacia	1 ounce.
Cream of tartar	2 ounces.
Alum	½ ounce.
Distilled water	1 pint.

Boil the first three ingredients in the water for several minutes; filter, and dissolve the alum in the filtrate.

IV.

Carmine	2 drams.
Caustic soda	4 drams.
Mucilage of acacia	1 ounce.
Water to make	1 pint.

Dissolve the caustic soda in a couple of ounces of water; in this dissolve the carmine; add the rest of the water and then the mucilage.

Red Drawing Ink

Formerly red inks were made of carmine or vegetable colors, but in this day of synthetics they are more frequently solutions of anilin dyes. Dye dealers will give information as to the best brands to use for any given purpose; or experiments may be made with package or other dyes. Fuchsin dissolved in a solution of white shellac in borax water makes a good drawing ink. A heavy-bodied drawing ink may be made by suspending very fine vermilion in a solution of acacia. The following formulas for red draughting inks yield preparations which are said to be permanent in color:

I.

Carmine	1 gramme.
Solution of ammonium acetate	15 grammes.
Distilled water	15 grammes.

Mix the water and the solution, and triturate the carmine with this liquid. Set aside for twelve hours. Filter the solution and thicken it with pure sugar syrup.

II.

Carmine, finely powdered	6 parts.
Solution of sodium silicate	75 parts.
Distilled water	675 parts.

Triturate the pigment with the water-glass; gradually add the water; set aside for several days, and decant the fluid ink.

III.

Carmine ..... 5 parts.
Sodium silicate..... 5 parts.
Solution of sodium silicate enough.

Ink Powders or Tablets

Black.

I.

Methyl violet..... 16 grains.
Bengal green..... 20 grains.
Bismarck brown..... 12 grains.
Acacia ..... 80 grains.

The quantities here given will make with a pint of water a very good copying ink, which is not sufficiently lasting to do for keeping records.

II.

Galls ..... 84 parts.
Madder ..... 6 parts.
Ferrous sulphate..... 11 parts.
Ferrous acetate..... 4 parts.
Indigo carmine..... 1 part.

Exhaust the galls and the madder by percolation with hot water. In the percolate dissolve the iron salts and indigo carmine; and then evaporate to dryness.

The addition of a small amount of acacia makes the ink flow more evenly.

Blue.

For a blue ink powder we assume that what is known in the trade as soluble blue (an iron salt) would serve the purpose, since it is stated that this chemical dissolved in water gives the most permanent blue ink known.

Red.

Likewise, a water-soluble red anilin dye of the right hue should answer for making red ink.

Ink for Writing on Celluloid

Tannic acid ..... 10 parts.
Ferric chloride, dry..... 10 parts.
Acetone .....100 parts.

Dissolve the tannic acid and the ferric salt separately, each in 50 parts of acetone, and mix the solutions.

Fluoride Ink

Ammonium fluoride, barium sulphate and an acid are the usual components of these liquids or semi-liquids. Specimen formulas follow:

I.

Barium sulphate.....3 parts.
Ammonium fluoride.....1 part.
Sulphuric acid..... enough.

The salts are mixed with enough acid to bring the mixture to the consistency of rich milk.

The mixture should be made in a lead receptacle and kept in guttapercha bottles.

II.

Ammonium fluoride.....1 part.
Barium sulphate.....1 part.
Calcium fluoride.....1 part.
Hydrofluoric acid, fuming, enough.

The first three ingredients are intimately mixed in a porcelain mortar, the mixture transferred to a lead dish and enough fuming hydrofluoric acid stirred into it to give the desired consistency. This "ink" may be used with a steel pen.

In experimenting with fluorine compounds their effect upon the skin and mucous membrane should be taken into consideration; hydrofluoric acid produces severe burns, which are difficult to heal.

Record Inks.

Any finely divided, non-fading color may be used as the pigment; petrolatum is the best vehicle, and wax the best corrigent. In order to make the ribbon last a long time with one inking as much pigment as feasible should be used. To make black record ink: Take some petrolatum, melt it on a slow fire or water bath and incorporate by constant stirring as much lampblack as it will take up without becoming granular. Take it from the fire and allow it to cool. The ink is now practically finished, except if not entirely suitable on trial it may be improved by adding the corrigent wax in small quantity. The ribbon should be charged with a very thin, evenly divided amount of ink. Hence the necessity of a diluent —in this instance a mixture of equal parts of benzin and oil of turpentine. In this mixture incorporate a sufficient amount of the solid ink by vigorous agitation to make a thin paint. Try the ink on the extremity of the ribbon; if too soft add a little wax to make it harder; if too pale add more coloring matter; if too hard add more petrolatum. If carefully applied to the ribbon and the excess brushed off the result will be satisfactory.

On the same principle other colors may be made into ink; but for delicate colors white petrolatum and bleached wax should be the vehicle and corrigent respectively.

The various printing inks may be used if properly corrected. They require the addition of petrolatum to make them non-drying on the ribbon, and of some wax if they are found to be too soft. Where printing inks are available they will be found to give excellent results if thus modified, as the pigment is well milled and finely divided. Even black cosmetic may be made to answer by the addition of some lampblack to the solution in the mixture of benin and oil of turpentine.

Copying Inks.

For copying inks anilin colors form the pigment; a mixture of about 3

parts of water and 1 part of glycerin, the vehicle; transparent soap (about ¼ part), the corrigent; stronger alcohol (about 6 parts), the solvent. The desired anilin color will easily dissolve in the hot vehicle, soap will give the ink the necessary body and counteract the hygroscopic tendency of the glycerin, and in the stronger alcohol the ink will readily dissolve, so that it can be applied in a finely divided state to the ribbon, where the evaporation of the alcohol will leave it in a thin film.

After the ink is made and tried, if too soft, add a little more soap; if too hard, a little more glycerin; if too pale, a little more pigment. Printers' copying ink can be utilized here likewise.

Blue Stencil Ink

Shellac	2 ounces.
Borax	1½ ounces.
Water	10 ounces.
Prussian blue	1 ounce.
China clay	½ ounce.
Powdered acacia	½ ounce.

Boil together the shellac, borax and water until the volume of the solution is reduced to 10 ounces. Rub the other three ingredients together, and add the liquid. At first the liquid should be added in small portions at a time.

The resultant ink may be preserved by the addition of a little salicylic acid or by rubbing with the three latter ingredients a small portion of methyl salicylate or other suitable preservative.

Liquid India Ink

India ink consists of a special kind of lampblack beaten into solid form with a weak solution of fine white glue or gelatin. Sometimes a little perfume or preservative is added. It is said that the Chinese, to obtain their lampblack for this purpose, incompletely burn a mixture of colza, sesame or other fixed oil, with varnish and lard. The history and technic of the process is rather fully described in an interesting little volume entitled, "Inks, Their Composition and Manufacture," published by Charles Griffith & Co., Exeter street, Strand, London. Ordinary lampblack may be purified for use in making india ink by washing with caustic soda.

To liquefy india ink, it should be well rubbed wth water. Perhaps the addition of a small proportion of gum arabic would make the ink flow from the pen more evenly.

Inking Typewriter Ribbons

The constituents of an ink for typewriter ribbons may be broadly divided into four elements: 1, the pigment; 2, the vehicle; 3, the corrigent; 4, the solvent. The elements will differ with the kind of ink desired, whether permanent or copying.

Quick-Drying Printing Inks

For use on roll paper printing machines, inks made according to the appended formulas might serve:

I.

Ultramarine	1 ounce.
Linseed oil	1 ounce.
Olive oil	enough.

Reduce the ultramarine to an impalpable powder; triturate with the linseed oil and about 2 ounces of olive oil, and add enough olive oil to produce the proper consistency.

II.

Oil-soluble anilin blue	1 ounce.
Crude oleic acid	1 ounce.
Castor oil	8 to 10 ounces.

Make a solution.

III.

Paris blue	10 parts.
Ultramarine	20 parts.
Borax	5 parts.
Shellac	5 parts.
Alcohol	30 parts.
Water	enough.

Dissolve the shellac in the alcohol and the borax in 40 parts of water; mix the two solutions. Mix the pigments intimately, reducing them to the finest state of division; triturate or levigate the mixed pigments with the borax-shellac liquid, adding more water if necessary. The addition of a little glycerin may be necessary in a dry climate.

Ink for Writing on Metal

I.

Shellac (or rosin)	20 parts.
Alcohol	150 parts.
Borax	35 parts.
Water	250 parts.
Water-soluble dye	to color.

Dissolve the shellac (or rosin) in the alcohol, the borax in the water and pour the shellac solution slowly into that of the borax. Then add the dye, previously dissolved in a little water.

II.

Bleached shellac	2 parts.
Venice turpentine	1 part.
Oil of turpentine	3 parts.
Lampblack	1 part.

Melt the first three ingredients together over a water-bath, and then stir in the lampblack, incorporating thoroughly.

A subscriber writes:

The simplest and best ink to use is a solution of purple anilin in tincture of benzoin. It does not corrode the metal, nor does it affect the polish.

I have used it for years in marking cutlery. After a sale is made a drop of alcohol on a rag will wipe off the mark. Purple makes

the best color, as it is easily read. Another little tip as to marking cutlery—I always mark the stock number on the article, as cutlery is usually sold from display boards; this makes it easy to replace an article sold without rooting through a lot of boxes to find number wanted.

Use a fine pen. A good point about the ink is, it dries quickly.

Stamping Ink

One should be able to make a satisfactory ink for use with steel dies by experimenting with some of the following formulas:

I.

Oleic acid, purified.....	5 parts.
Castor oil.....	55 parts.
Oil-soluble anilin black..	3 parts.

By using other anilins, red, blue, violet, etc., inks may be produced, although as the tinctorial power of some of these colors is greater than that of the black dye, suitable allowance must be made in deciding upon the proportions.

II.

Dissolve 1 part of asphalt in 4 parts of oil of turpentine and add enough lampblack to bring the solution to the proper consistency.

III.

Copaiba	9 ounces.
Lampblack	3 ounces.
Indigo	3 drams.
Prussian blue.....	5 drams.
Indian red.....	¾ ounce.
Dried yellow soap.....	3 ounces.

IV.

Heat 100 parts of olein to 80 degrees C. and dissolve in it 1 part of oil-soluble anilin black.

Upon seeing the foregoing note, G. F. Dunbar wrote:

A very satisfactory stamping ink may be made by grinding anilin colors with very thin colorless varnish, and reducing with oil of turpentine if necessary. I believe there is a concern in Philadelphia which makes a varnish expressly for this purpose.

Light Colored Inks for Stamping on Leather

I.

Oil-soluble anilin color	90 grains.
Zinc oxide.....	1 to 3 ounces.
Crude oleic acid....	5 drams.
Boiled linseed oil...	1 pint.

II.

Shellac	2 ounces.
Borax	2 ounces.
Water	24 ounces.
Acacia	2 ounces.
Pigment	enough.

Mix the first three and boil until solution is effected; add the acacia and enough pigment to bring to the proper consistency.

As a pigment, zinc oxide will do for white; chrome yellow for yellow; venetian red or vermilion for red; prussian blue for blue; ultramarine and chrome yellow for green, etc.

Show Card Ink

Black.

I.

Brown shellac.....	4 drams.
Alcohol	4 ounces.
Borax	7 drams.
Distilled water.....	6 ounces.
Water-soluble nigrosin..	12 grains.

Dissolve the shellac in the alcohol, and the borax in the water with the aid of heat. Pour the alcoholic solution slowly into the aqueous solution, stirring constantly. When cool dissolve in the liquid the nigrosin.

A more intensely-black ink might result from the addition of a little lampblack or india ink in the foregoing.

II.

Ferric chloride.....	10 parts.
Tannin	15 parts.
Acetone	100 parts.

Dissolve each of the solids in a portion of the fluid and mix the two solutions.

III.

Nigrosin	1 part.
Water	14 parts.
Glycerin	4 parts.

IV.

Asphaltum	3 ounces.
Venice turpentine.....	1 ounce.
Lamp black.....	½ ounce.
Oil of turpentine.....	8 ounces.

Red.

I.

Rosanlin acetate.....	2 parts.
Alcohol	1 part.
Water	10 parts.

III.

Bordeaux red.....	3 parts.
Alcohol	2 parts.
Water	20 parts.
Glycerin	1 part.

Violet and Blue.

Anilin violet or blue (2 RB).....	1 ounce.
Hot water.....	7 ounces.
Alcohol	4 ounces.
Glycerin	2 drams.
Ether	5 drops.
Phenol	1 drop.

Dissolve the anilin in the hot water, allow this to cool, then add the other things.

Other Colors.

Shellac, borax, gum arabic, of each equal parts; pigment, water, of each, a sufficient quantity. Boil the shellac and borax together with sufficient water to effect solution; then add the

acacia and sufficient pigment to give the desired color.

The thickness of the ink is regulated by the amount of water used.

The regular water-colors in tubes will probably be the best pigments. It might be worth while to experiment with water-soluble anilin colors of the desired shade.

Black Indelible Ink

To undertake the making of indelible ink by most of the formulas published is extremely dangerous. The formulas referred to direct silver nitrate and ammonia water, with or without caustic soda, or sodium carbonate. In the use of one such formula frequent explosions have occurred, the accident being due to the formation of silver nitride. This compound may be produced by ammonia alone; perhaps by other alkalies alone. All such formulas are dangerous; none should be used. The following are not open to this objection:

I.

Grind 1.75 grammes of anilin black well with 60 drops of strong hydrochloric acid and 42 grammes of alcohol. Dilute the liquid thus obtained with a hot solution of 2.5 grammes of gum arabic in 170 grammes of water.

II.

Extract of logwood..... 1 ounce.
Potassium dichromate... 85 grains.
Hydrochloric acid.....190 minims.
Oil of mirbane..... to perfume.
Boiling water..... 16 ounces.

Dissolve the extract of logwood in 15 ounces of water, dissolve the potassium salt in the remainder, to which the acid has been added; mix the two solutions.

III.

This formula is for an ink to be used in marking linens which are to be bleached with chlorine:

Coal tar..... 20 ounces.
Benzol ..... 25 ounces.
Lampblack ..... 3 ounces.

Mix well. The liquid is very inflammable.

IV.

Powdered sugar..... 40 grammes.
Lamp black..... 10 grammes.
Manganese sulphate.. 20 grammes.
Water ..... 10 grammes.

The mixture is imprinted upon the cloth with a rubber stamp and the marked fabric is dipped into diluted alkali and then washed with considerable water.

V.

Japan black, M. B. G., 25; malachite green, 2; anilin, 73. Dissolve with aid of warmth.

This ink writes well, becomes fixed in the fabric in a few hours without heating, so that it resists washing. It does not burn holes in the linen, and does not become thick.

An Acid-Resisting Ink

Experiments might be made with liquid india ink, which may be made by dissolving shellac in a hot aqueous solution of borax, and grinding the india ink in this. Ordinary lampblack may be used instead of india ink, but, of course, is not so good.

Red Indelible Ink

I.

Dilute fresh egg albumin with an equal weight of water; stir with a glass rod until the mixture foams, and filter it through linen. Stir the filtrate well. Add levigated vermilion in small portions to the filtrate with constant trituration until a thick liquid is formed.

The desired marking is done with a clean gold or quill pen and the reverse side of the fabric is then touched with a hot iron, which coagulates the albumin, fixing the pigment.

II.

It is said that by proceeding according to the following formula an intense purple-red color may be produced on fabrics, which is indelible in the customary sense of the word:

a. Sodium carbonate..... 3 drams.
Gum arabic..... 3 drams.
Water .....12 drams.

b. Platinic chloride..... 1 dram.
Distilled water..... 2 ounces.

c. Stannous chloride..... 1 dram.
Distilled water..... 4 drams.

Moisten the fabric to be written upon with a and rub a warm iron over it until dry; then write with b, and, when dry, moisten with c.

A very rich purple color—the purple of Cassius—may be produced by substituting a solution of gold chloride for the platinic chloride in the above formula.

After it has been marked with indelible ink the fabric may be held in the jet of steam issuing from a kettle of boiling water, instead of being subjected to the heat of a hot iron, which may scorch it.

Ink for Writing on Photographs

Iodine ..... 1 gramme.
Potassium iodide.....10 grammes.
Mucilage of acacia.... 2 grammes.
Water .....35 mils.

Ink for Writing on Glass

Powdered india ink..... 1 part.
Solution of sodium silicate 2 parts.

Invisible and Sympathetic Inks

A solution of mercurous nitrate used with a quill, on ordinary white paper, when dry, produces marks which are invisible. A small quantity of strong solution of ammonia is placed in the bottom of a large cylindrical glass jar, which thus becomes filled with ammonia gas in a suitably moist condition. On placing the paper with the invisible marks inside the jar a few seconds and then withdrawing it, it will be found that the marks come out in distinct and permanent black.

A sympathetic ink is one that becomes visible and then vanishes again as required. To meet this requirement, use a fairly strong solution of phenolphthalein. Writing with such a solution on ordinary white paper is quite invisible when dry, but when placed for a few seconds in the jar above mentioned the writing becomes a beautiful pink color, which fades as the ammonia evaporates. By breathing upon the paper the color disappears almost immediately.

There are many sympathetic inks which become visible on being warmed, and among these none is more satisfactory than lemon juice fortified by the addition of an extra amount of citric acid.

Ink Invisible When First Used

An inquirer wants a formula for an ink that is invisible when first used, but which will become visible a few minutes later. A solution of silver nitrate possesses the desired property. We suggest the following formula:

Silver nitrate..... 5 grains.
Powdered acacia.....10 grains.
Distilled water, to make. 1 ounce.

The "ink" should be kept in a dark bottle and used with a glass or quill pen.

From a little monograph on inks, by W. W. Smith, the following information is given. The language is not altogether pharmaceutical, or even grammatical, but the facts, and not the medium through which they are conveyed, are the important thing, and these are given as found:

1. Sulphate of copper and sal-ammoniac, equal parts, dissolved in water, writes colorless, but turns yellow when heated.

2. Onion juice like the last.

3. A weak infusion of galls turns black when moistened with weak copperas water.

4. A weak solution of sulphate of iron turns blue when moistened with a weak solution of prussiate of potash, or black with infusion of galls.

5. Solution of acetate of cobalt, to which a little nitrate has been added, becomes rose color when heated, and disappears on cooling.

6. New milk, written on white paper, is made legible by sprinkling with coal dust or soot.

7. Sulphuric acid, 1 part; water, 20 parts; mix together; write with a quill pen, which writing can be read only after heating it.

8. Dissolve nitrate of bismuth in water; write with the solution, which will be invisible when dry, and visible again when immersed in water.

9. Write with a solution of ferrocyanide of potassium; develop by pressing over the dry invisible characters a piece of blotting paper moistened with a solution of iron sulphate.

10. Write with pure dilute tincture of iron; develop with a blotter moistened with strong tea.

11. A weak infusion of galls is turned black by sulphate of iron (copperas).

12. Reversing the above, writing with copperas turns black by moistening with infusion of galls.

Blue Sympathetic Inks.

Writing with copperas turns blue if wetted with a solution of prussiate of potassa.

Nitrate of cobalt turns blue on being wetted with a weak solution of oxalic acid.

Rice water or a solution of boiled starch turns blue in a solution of iodine in weak spirit.

Sympathetic Inks Developed by Heat

There are a number of colorless substances that may be used as inks which are developed by the application of heat only.

Lemon juice, a very weak solution of either aqua fortis, oil of vitriol, common salt or saltpeter, will turn yellow or brown on exposure to the fire.

A weak solution of chloride of cobalt and chloride of nickel is turned a beautiful green by heat.

A solution of chloride, or nitro-muriate of cobalt turns green when heated, and disappears on cooling.

A dilute solution of chloride of copper becomes a fine yellow at moderate heat, and disappears on cooling.

A solution of acetate of cobalt, with a little nitrate added to it, turns rose-colored by heat, and disappears again when cold.

These last, which disappear again on cooling, are the best sympathetic inks for purposes of correspondence, as the others are more or less indelible when once developed.

To Make a Hectograph

Hectograph pads may be made by melting together 1 part of good clean glue, 2 parts of water and 4 parts of glycerin (all by weight), evaporating some of the water, and adding more glue or glycerin if the season or the climate requires a modification of the

original formula. The mass, when of proper consistency, which may be ascertained by cooling a small portion, should be poured into a shallow pan and allowed to set. If the mixture is not clear it should be strained; and air bubbles should be removed by skimming the surface with a piece of cardboard.

Other formulas for making this simple and useful manifolder are:

I.

Gelatin	100 parts.
Water	375 parts.
Glycerin	375 parts.
Kaolin (in fine powder)	50 parts.

Soak the gelatin over night in the water, and the next day, after pouring off any water remaining unabsorbed by the gelatin, add the jelly to the glycerin previously heated to about 200 degrees F. on a salt water bath. When the gelatin has dissolved in the glycerin add the kaolin, heating on a salt water bath until a sample taken from the mass and cooled has the proper plasticity.

II.

Glycerin	12 ounces.
Gelatin	2 ounces.
Water	7½ ounces.
Sugar	2 ounces.

III.

Gelatin	15 ounces.
Water	10 ounces.
Dextrin	1½ ounces.
Sugar	2 ounces.
Glycerin	15 ounces.
Zinc oxide	1½ ounces.

The writing to be copied by means of the hectograph is done on good paper with an anilin ink. Formulas for suitable ones are appended. The purple ink is most frequently used, we think; it is said that more copies may be obtained from writing done with it than with other kinds.

Hectograph Inks.

Appended are some recipes for hectograph inks:

Black.

Methyl voilet	10 parts.
Nigrosin	20 parts.
Glycerin	30 parts.
Gum arabic	5 parts.
Alcohol	60 parts.

Purple.

Methyl violet	2 parts.
Alcohol	2 parts.
Sugar	1 part.
Glycerin	4 parts.
Water	24 parts.

Dissolve the violet in the alcohol mixed with the glycerin; dissolve the sugar in the water; mix the two solutions.

Blue.

Resorcin blue M	10 parts.
Dilute acetic acid	1 part.
Water	85 parts.
Glycerin	4 parts.
Alcohol	10 parts.

Dissolve by aid of heat.

Red.

Fuchsin	10 parts.
Alcohol	10 parts.
Glycerin	10 parts.
Water	50 parts.

Green.

Anilin green, water soluble	15 parts.
Glycerin	10 parts.
Water	50 parts.
Alcohol	10 parts.

The writing is allowed to dry without blotting. The pad having been moistened with clean water, the paper is placed on it, face inward, of course, and rubbed gently but firmly over every portion, care being taken to prevent it from changing position. A roller is useful here. The paper is allowed to remain on the pad for from two to five minutes, and is then carefully removed. Copies are now taken by pressing dry paper on this surface and removing immediately. The operation should be carried out with as little interruption as possible. It is said that the distinctness and sharpness of hectograph prints may be materially heightened by wetting the paper upon which the prints are to be made with alcohol and removing the excess by blotting paper.

After using the pad the ink should be removed from the surface immediately with a soft sponge and warm water. The pad should then be well dried, when it will be ready for another operation. It may be used a great many times if properly manipulated.

Ink Erasers

A.

Citric acid	2 ounces.
Water	1 pint.
Saturated aqueous solution of borax	3 or 4 ounces.

Dissolve the acid in the water and add the borax solution.

B.

Chlorinated lime	6 ounces.
Water	1 pint.
Saturated solution of borax	3 or 4 ounces.

Mix the lime and water, shake well, set aside for a week in a well-stoppered bottle, decant the clear liquid, and add the borax solution.

This eraser is used by saturating the spot with A, removing the excess of the liquid with a blotter, and then applying B. When the spot has disappeared, apply the blotter and wash the spot by the alternate use of clear water and blotting paper.

A single solution eraser may be made thus:

Take of chlorinated lime 4 ounces, thoroughly pulverized, and 2 pints of distilled water. Shake well and set the mixture aside for 24 hours; then strain through cotton cloth, after which add 2 ounces of acetic acid to each pint of the strained water.

Ink for Rubber Stamp Pad

Anilin violet	1 part.
Glycerin	3 parts.
Alcohol	4 parts.
Gum arabic	3 parts.
Water	16 parts.

Marking Paste for Laundry Use

Copper sulphate	2 parts.
Anilin hydrochloride	3 parts.
Dextrin	1 part.
Glycerin	to make a paste.

Mix well and put up in tin boxes.

Office Adhesive

Russian glue	10 pounds.
Brazilian isinglass	10 ounces.
Liquid glucose	½ gallon.
Acetic acid	18 pounds.
Distilled water	1½ gallons.

Soften the glue and isinglass in the water overnight, then heat on a water bath with the acetic acid and glucose until it is homogeneous.

Less water may be used if desired.

Syndetickon

Sugar	6 ounces.
Water	18 ounces.

Dissolve by boiling and add, with constant stirring, to the hot solution

Sifted slaked lime	1½ ounces.

Set aside for a few days to settle and decant the clear solution. In it soak

Gelatin	6 ounces.

for twenty-four hours, then heat on a water bath until dissolved.

Dextrin Paste.

A strong aqueous solution of reasonably pure dextrin forms a cheap mucilage. Alcohol is usually added when the mucilage is to be used for gumming envelopes or postage stamps, in order to facilitate the drying, and acetic acid is employed to increase the mobility of the fluid. A working formula follows:

Brown dextrin	1 pound.
Acetic acid	4 ounces.
Alcohol	4 ounces.
Water, to make	2 pints.

Dissolve the dextrin in 1 pint of boiling water, strain through Canton flannel, add the acetic acid and when nearly cold add the alcohol and the rest of the water, stirring thoroughly.

In our experience, we have found that a high-grade dextrin does not give as good results as one that contains some unchanged starch.

Library Paste.

I.

Tragacanth in powder	20 parts.
White dextrin	10 parts.
Wheat flour	60 parts.
Glycerin	10 parts.
Cold water	40 parts.
Salicylic acid	3 parts.
Boiling water	400 parts.

Over the tragacanth pour 160 parts of boiling water, stir well and set aside. Mix the wheat flour and the dextrin with the cold water, stir in well and then add the mixture to the tragacanth. Pour into the batter thus formed the rest of the boiling water, stirring constantly while doing so. Rub up the acid with the glycerin and add to the batter; put the mixture on the fire, bring to a boil under constant stirring, and let cook for five or six minutes. Let cool and the paste is ready.

II.

Gelatin	50 grains.
Water	10 ounces.
Alcohol	1 ounce.
Oil of cloves	1 dram.
Wheat starch	enough.
Rice starch	enough.

Swell the gelatin in the water for a day, and heat gradually until solution is effected. Allow the solution to cool to a little below 70 degrees F., and stir in enough of the starches, mixed in the proportion of 2 parts of wheat starch to 1 part of rice starch to produce a thin batter. Heat slowly in a double boiler until the mass thickens and continue the heating until the bulk is reduced about one-sixth, stirring constantly. Remove from the heat and stir in slowly the oil dissolved in the alcohol.

III.

Gelatin	4 ounces.
Water	2 pints.
Flour paste	2 pounds.
Solution of sodium silicate	1 ounce.
Oil of cloves	2 drams.

Soak the gelatin in 1 pint of water until softened, then dissolve with the aid of a gentle heat. While hot pour in the paste with the mixed silicate and stir, while the mixture cools, using a wooden paddle. When cold heat in the oil.

Solid Mucilage.

Gelatin	40 grammes.
Acacia	60 grammes.
Tragacanth	10 grammes.
Glycerin	20 grammes.
Oil of wintergreen	3 drops.
Water	200 mils.

Soften the gelatin in 80 mils of the water, then add the gums, glycerin and the remainder of the water, and heat on a water-bath until a homogeneous creamy mass is formed, a drop of which becomes firm on cooling. Remove from the heat, add the oil, and when the mass is cool cut it into cakes of convenient size and shape.

A Paste That Will Keep.

Alum	1 dram.
Water	2 pints.
Powdered rosin	30 grains.
Spirit of cloves	30 minims.
Flour	enough.

Dissolve the alum in the water and bring to a boil. Stir in enough flour, with which the rosin previously has been well mixed, to make a creamy paste, and to this add the antiseptic. Pour the paste into a crock and keep in a cool place. To use, dissolve a chunk in enough hot water to make a paste of the proper consistence.

Marine Glue.

Cabinet makers' glue	17 parts.
Water	23 parts.
Litharge	2 parts.
Acetic acid	6 parts.
Raw linseed oil	8 parts.
Lead sulphate	6 parts.

Soak the glue in the water until it is soft, then melt it by the aid of heat, stirring in the acid. In another vessel heat the oil and litharge together for 10 or 15 minutes, then mix the two hot liquids and stir in the pigment.

Liquid Cement

Gelatin	100 parts.
Water	100 parts.
Zinc chloride	1 part.
Hydrochloride acid	enough.

Heat the gelatin with the water on a water-bath until the mixture becomes homogeneous. Add the zinc chloride and continue the heat until a portion of the mixture does not set solid when allowed to cool. Sometimes a little more zinc chloride is required. If the liquid is alkaline it must be neutralized with hydrochloric acid.

Liquid Glue

I.

Slaked lime	5 grammes.
Sugar	200 grammes.
Glue	enough.
Water	enough.

Mix the lime intimately with the sugar and add enough water to make 600 mils. Heat the mixture to about 65° C. and maintain this temperature for about three hours, stirring the mixture occasionally. Allow the mixture to cool and settle; decant as much liquid as possible, and in this liquid dissolve glue in the proportion of 1 to 5.

II.

Dissolve 1 ounce of good glue (or gelatin) in 3 ounces of hot water and ½ ounce of glycerin; add 1 ounce each of acetic acid and alcohol. This makes a smooth adhesive, the use of which is not likely to make paper wrinkle.

III.

Glue	200 parts.
Diluted acetic acid	400 parts.
Alcohol	25 parts.
Alum	5 parts.

Dissolve the glue in the acid by the aid of heat, and to the solution add the alum and alcohol.

Waterproof Glue

I.

A solution of 20 grammes of sandarac, 20 grammes of turpentine and 20 grammes of mastic in 250 mils. of alcohol is poured into an equal volume of a strong hot solution of glue and isinglass.

II.

A waterproof glue which is not miscible with water is obtained by heating on a water-bath 100 parts of gelatin, 10 parts of glue, 25 parts of alcohol, 2 parts of alum and an excess of acetic acid for 6 hours, replacing from time to time the acetic acid lost by evaporation. The resulting mass is then rubbed with acetic acid into a thin syrup.

III.

Macerate 1 to 2 ounces of caoutchouc, cut into small pieces, in 16 fluid ounces of benzol (not benzin), promoting solution by the application of heat and by agitation. The heat should not be applied by means of an open flame, on account of the danger of taking fire, but by a hot-water coil. To the solution when formed, which should have the consistence of thick cream, add 30 ounces of powdered shellac, and heat the mixture with constant stirring until complete fusion and combination have been effected. Pour this mixture while hot on plates of metal, so that it may cool in sheets like leather. In using this cement, put some of it into an iron vessel, heat to 120° C., and apply with a brush to the surface to be joined.

IV.

Glue	5 av. ounces.
Water	4½ fluid ounces.
Acetic acid	1 fluid ounce.
Ammonium dichromate	1½ drams.

Soak the glue in 4 fluid ounces of water until soft, then heat on a waterbath until dissolved; incorporate the acetic acid, transfer the solution to a dark-amber-colored bottle, and then add the dichromate dissolved in the remainder of the water.

If an amber bottle is not at hand, the mixture may be kept in an ordinary bottle in a dark place. In using, expose to a strong light, which makes the glue insoluble.

V.

It is said that liquid glue made by dissolving common white glue in skim-milk is waterproof.

VI.

If the layer of glue can be exposed to the action of light while setting, any ordinary liquid glue may be made waterproof by dissolving in it 1 or 2 per cent. of potassium dichromate.

VII.

Guttapercha	1 part.
Benzin	enough.
Shellac	2 parts.

VIII.

Softened glue	6 parts.
Isinglass	1 part.
Diluted alcohol	enough.
Oil varnish	a few drops.

Mix the glue which has been softened in water, with the isinglass, and dissolve in the diluted alcohol with the aid of a gentle heat. When cool add the varnish, and strain.

Belt Glue

Soak 50 parts of gelatin in water, pour off the excess of water, and heat on a water-bath. With good stirring add 5 parts of glycerin, 10 parts of oil of turpentine, and 5 parts of linseed oil varnish. The ingredients are to be added in the order named, and the parts should be weighed rather than measured.

This glue is to be thinned with water as necessary, and applied to the two ends of the belt to be united. Pressure is then applied for 24 hours; when the cement is dry and the belt ready for use.

Glue to Form Paper Pads

For glue to bind the edges of paper so as to form pads the following formulas have been published:

I.

Glue	3½ ounces.
Glycerin	8 ounces.
Water	enough.

Pour upon the glue more than enough water to cover it and let it stand for several hours, then decant the greater portion of the water; apply heat until the glue is dissolved and add the glycerin. If the mixture is too thick, add more water.

II.

Glue	6 ounces.
Alum	30 grains.
Acetic acid	½ ounce.
Alcohol	1½ ounces.
Water	6½ ounces.

Mix all but the alcohol, digest on a water bath until the glue is dissolved, allow to cool and add the alcohol.

Leather Cement

Gutta percha raspings	1 ounce.
Carbon disulphide	5 ounces.

Dissolve and spread a portion of the solution on each of the two pieces of leather to be united. After a few minutes, when the disulphide has evaporated, the leather is to be heated over a gas flame and the parts are to be stuck together and pressed with a warm iron.

It should be remembered that carbon disulphide is dangerously inflammable.

II.

Gutta-percha shreds	20 parts.
Asphalt	20 parts.
Carbon disulphide	50 parts.
Oil of turpentine	10 parts.

Dissolve the shreds of gutta percha in the carbon disulphide and oil of turpentine. To this solution add the asphalt in powder and set the whole away for several days until the asphalt is dissolved.

The cement should be of about the consistency of honey, and if thinner than this should be left in an open vessel until evaporation has made it of the proper consistency. Articles to be patched with this cement should first be washed with benzin.

Both the carbon disulphide and the benzin should be kept away from fire.

III.

Soak for one day 1 pound of common glue in enough water to cover it. At the same time soak 1 pound of isinglass in stale ale. Then mix the two and heat gradually until the boiling point is reached. At this point add a little tannin and continue the boiling for an hour. Water may be added if the mixture is too thick at any time during the making.

When this cement is applied the leather joined should be kept under pressure for not less than twelve hours.

Steam-Proof Mucilage for Envelopes

A paste which is said to be proof against the softening powers of hot water or steam may be made by softening a good quality of glue in sufficient water to cover it; then straining off the water and melting the glue at a moderate heat in sufficient linseed oil to

make the mixture of the proper consistency.

Cement for Celluloid Motion Picture Films

I.

Shellac ..... 1 part.
Camphor ..... 1 part.
Alcohol ..... 4 parts.

Dissolve the camphor in the alcohol and in this solution dissolve the shellac.

II.

Celluloid scraps..... 5 parts.
Ether ..... 3 parts.
Amyl acetate..... 3 parts.
Acetone ..... 6 parts.

See caution below as to inflammability.

III.

Proxylin ..... 5 parts.
Oil of cloves..... 2 parts.
Amyl acetate..... 25 parts.
Benzol ..... 20 parts.
Acetone, to make.....100 parts.

Dissolve the pryoxylin in 50 parts of the acetone; add the oil of cloves, the amyl acetate and the benzol, and make up to the required volume with acetone.

The last two products are very inflammable and should be kept remote from a flame; the same precaution is necessary as to their ingredients.

To obtain satisfactory results the "glued" portions of the film should be kept under pressure from the moment of attachment until thoroughly dry. For this purpose an ordinary letter press might be utilized.

Glue for Celluloid

To mend broken celluloid articles, mix 3 parts of alcohol and 4 parts of ether, and apply to the broken edges of the article. Press the two parts together and leave them for twenty-four hours.

To Affix Paper to Glass

I.

Gelatin .....63 ounces.
Acetic acid..... 4 ounces.
Alum .....30 grains.
Water ..... 2 ounces.
Alcohol ..... 1 ounce.

Heat all together, except the alcohol, for half a day, strain and add the spirit.

II.

Russian isinglass, in shreds ..... 1 ounce.
Water ..... 2 ounces.
Salicylic acid.....10 grains.
Acetic acid..... 1 ounce.

Place the isinglass and water in a double boiler and gradually heat until the water in the boiler boils, stirring the mass until the solution is effected. Then add the acids.

III.

Dextrin .....4 ounces.
Acetic acid.....1 ounce.
Water .....5 ounces.
Alcohol .....1 ounce.

Rub the first three ingredients together until a smooth paste is obtained, and then add the spirit.

IV.

Dextrin ..... 4 ounces.
Borax .....½ ounce.
Glucose .....½ ounce.
Water ..... 4 ounces.

Dissolve the borax in the water by the aid of a gentle heat, then add the dextrin and glucose, continuing the heat until solution is effected.

V.

Acacia .....120 grammes.
Tragacanth ..... 30 grammes.
Water .....500 mils.
Glycerin .....150 grammes.
Oil of thyme..... 2 mils.

Dissolve the acacia in 250 mils of water. Mix the tragacanth with the rest of the water, and, after it has stood for several hours, shake the tragacanth mixture until it froths; mix it with the acacia solution. Strain through linen, and add the glycerin previously mixed with the oil.

Waterproof Cement

Coal tar .....12 parts.
India rubber.....1 part.
Powdered shellac.....20 parts.

Heat the tar and the rubber gently together; when homogeneous, incorporate the shellac. Pour the mass on a flat surface to cool. For use the cement is heated to about 250 degrees F.

To Fasten Pestle Handles

A satisfactory cement for fastening wooden handles in wedgwood pestles is made by adding to glycerin enough finely powdered and sifted litharge to make a soft paste. Clean the cavity in the pestle, partly fill it with the cement and force in the handle.

Other cements for this purpose consist of plaster of paris made into a thin paste with water; equal parts of plaster of paris and rosin, mixed by the aid of heat; plaster of paris, sand and water; melted sealing wax; melted shellac; shellac and gutta percha, melted together; gutta percha, shellac and rosin, melted together.

If the wooden handle does not fit tightly into the head, a bit of twine or rubber adhesive plaster might be wrapped around it.

In using any of the cements which need heat for their application, the

head of the pestle should be warmed before pouring the cement into it.

After the cement has been applied, the pestle should be laid aside in a warm place, under pressure, for a week or two.

Metal Cement

Casein	4 parts.
Slaked lime	5 parts.
Sand	20 parts.
Water	enough.

Cement for Broken Glass or Porcelain

I.

Sandarac	30 grammes.
Mastic	30 grammes.
Oil of turpentine	30 mils.
Isinglass	enough.
Glue	enough.
Water	enough.
Alcohol (90 per cent.)	500 mils.

Dissolve the resins in the alcohol and add the oil of turpentine. Make about 500 mils of a rather strong solution of glue in hot water and add to it a quantity of isinglass equivalent to the amount of glue used. Heat this mixture slowly until it begins to boil. Pour the hot liquid slowly into the alcoholic mixture, stirring constantly, until a paste, thin enough to strain through muslin, is formed.

II.

A waterproof glue can be made by mixing with common glue 1 part of acid calcium chromate in solution, to 5 parts of the glue. An adhesive made in this manner is insoluble in water after exposure to light, and can be used for mending glass objects likely to be exposed in hot water. It is necessary, to effect this end, that the fractured objects be exposed to strong light for some time.

It is said that the acid calcium chromate is much better than the more generally used potassium dichromate. The glue, when mixed, must be kept in the dark.

III.

Isinglass	25 parts.
Ammoniac	2 parts.
Mastic	1 part.
Alcohol	5 parts.
Water	enough.

Soak the isinglass in water all night and then suspend it in a cloth until all superfluous water has drained off. Then put it into a suitable flask and heat on a water bath until it becomes fluid. Dissolve the gums in the alcohol and add this solution to the soft isinglass, which has been removed from the water bath and allowed to cool to about 160 degrees F., and mix all thoroughly together.

Cement for Iron

I.

Probably stove putty composed of equal parts of iron filings, wood ashes and salt and made into a paste with water might answer.

II.

Powdered iron	17 ounces.
Sublimed sulphur	2 ounces.
Ammonium chloride	1 ounce.

The ingredients are rubbed with sufficient water to form a thick mass, and applied to the parts, previously well cleansed. After eight days the luting becomes as hard as iron.

III.

Manganese dioxide	1 ounce.
Clay, dry	4 ounces.
Borax, powdered	5 ounces.

Mix well. In using mix enough water to form a paste and press in cracks. Useful for mending cracks in stoves.

Magnesium Cement

A magnesium cement for mending meerschaum is made by dissolving 1 part of casein in 6 parts of solution of sodium silicate and stirring in sufficient magnesium oxide to produce a soft, pasty mass. This cement must be freshly prepared.

A somewhat different preparation has the following formula:

Magnesium oxide	2 parts.
Magnesium chloride	1 part.
Water to make a soft paste.	

Acid-Resisting Cement

Solution of sodium silicate	12 parts.
Glycerin	2 parts.
Red lead	7 parts.
Sifted cinders	20 parts.

Mix the solution of sodium silicate with the glycerin and incorporate the other ingredients.

The cement soon hardens and, when heated to 212 degrees F., unites with brick or concrete to form a strong, acid-proof joint.

Knife Handle Cement

Rosin	4 parts.
Beeswax	1 part.
Plaster of paris	1 part.

Melt together and fix the handles while warm.

Cement, Brass to Glass

Knead resin soap with one-half its weight of plaster of paris.

Cement, Copper to Sandstone

Take 7 parts of white lead, 6 parts of litharge, 6 parts of bole and 4 parts of broken glass, and rub up with 4 parts of linseed oil varnish.

General Adhesive

Below is a formula for an adhesive for wood, glass, cardboard and all articles of a metallic or mineral character:

Boiled linseed oil	20 parts.
Glue	20 parts.
Slaked lime	15 parts.
Powdered rosin	5 parts.
Alum	5 parts.
Acetic acid	5 parts.

Melt the glue with the acetic acid, add the alum, lime, rosin and oil in the order named. Stir all together and use like any other glue.

Spirit Gum

This adjunct of the buskin and wig is as variously constituted as is the cream used in removing it from the face. In its simpler forms spirit gum is a (1) solution of mastic in ether, (2) a solution of mastic in alcohol, (3) a solution of sandarac in ether, (4) a solution of shellac in alcohol, (5) any one of these "gums" in any one of the solvents.

Waterproofing Portland Cement.

We believe that mixtures of calcium sulphate and a soluble sulphate or soluble silicate are used for this purpose. A similar process which we have seen described consists in adding 1 per cent. of powdered alum to the mixed cement and sand, and using 1 per cent. of common yellow soap in the mixing water. Some processes for waterproofing Portland cement are patented.

Practical men say that brushing over the surface several times with a saturated solution of zinc sulphate and painting over all with a good heavy paint is better than waterproofing the cement before use.

A coating for cement work is made of—

Quicklime	1 bushel.
Sodium chloride	8 pounds.
Rice flour	8 pounds.
Whiting	2 pounds.
White glue	2 pounds.
Hot water	enough.

Slake the lime with enough hot water to make a thin paste; add the salt dissolved in a minimum of hot water and the flour made into a thin paste with more hot water; and then add the glue. Mix the whiting with 10 gallons of hot water; stir into the other solution; and set aside for a week.

This mixture is to be heated to boiling when it is to be applied.

Cement for Wooden Vessels

Cracks in barrels, tubs, tanks, or other wooden vessels may be filled with a preparation made as follows:

Lard	6 pounds.
Common salt	4 pounds.
Beeswax	3½ pounds.
Sifted wood ashes	4 pounds.

Melt the wax with the lard over a gentle heat; add the salt and mix thoroughly, then stir in the ashes. Apply hot.

Pasting Labels on Tin

I.

Powdered starch, best	1½ ounces.
Powdered acacia	2 ounces.
Granulated sugar	½ ounce.
Alum	40 grains.
Water	½ pint.

Dissolve the alum and the acacia in the water, add the sugar and starch and heat in a water-bath until quite clear. To prevent souring add a small quantity of some antiseptic.

Charles T. Heseltine uses an ordinary dextrin paste and puts a coat of shellac on the tin before applying the pasted label. We can vouch for the efficacy of this method, having used it many years ago.

Another druggist writes that he adds a little tartaric acid to the paste just before using.

Still another sandpapers the surface of the tin before pasting on the label.

Charles T. Kutteroff uses solution of sodium silicate as the adhesive, which he finds as effective on iron and wood as on tin.

II.

Rye (or wheat) flour	8 ounces.
Powdered acacia	1 ounce.
Glycerin	2 ounces.
Oil of cloves	40 drops.
Water	1½ pints.

Rub the flour and acacia with 8 ounces of water to a smooth paste; strain through cheese cloth; heat the remainder of the water to boiling, mix and continue to heat until as thick as desired; when nearly cold add the remaining ingredients.

III.

Moisten the back of the label with some glycerin on the tip of a finger and then immediately apply the paste in the usual manner.

For Lacquered Tin

Wheat flour	2 to 4 ounces.
Corn starch	2 drams.
Powdered alum	2 drams.
Phenol (86.4%)	1 dram.
Clarified honey	1 to 2 ounces.
Balsam of fir	1 ounce.
Water	8 ounces.

Mix the solids with the water and heat the mixture on a water-bath until a stiff paste results. Then add the phenol, and the honey, and after mixing well, slowly pour in the balsam of fir and stir until it is thoroughly distributed. In place of balsam of fir, 2

ounces of imitation Venice turpentine can be used.

For Unlacquered Tin.

The following method has been recommended for unlacquered ware: Wipe off as much of the grease from the can as possible; then apply to label a paste made as follows: Get 8 ounces of solution of sodium silicate, the heavy, thick and cloudy kind (the clear transparent sort is no good), and add 1-3 ounce of solution of potassa (1 in 10) and 1 ounce of glycerin. Mix these well together. The silicate may thicken when the glycerin is added, but with constant stirring it will thin out; then if too thick, add enough boiling water to thin. One-half to one ounce is usually enough.

To Paste Labels on Wood

An old household recipe is as follows:

To 1 pint of best wheaten flour add rosin, very finely powdered, about 2 large spoonfuls; of alum, 1 spoonful in powder; mix them all well together, put them into a pan and add by degrees soft or rain water, carefully stirring it until it is of the consistence of the thinnest cream; put it into a sauce pan over a clear fire, keeping it constantly stirred that it may not get lumpy. When it is of stiff consistence, so that the spoon will stand upright in it, it is done enough. Be careful to stir it well from the bottom, for it will burn if not well attended to.

Rubber Tire Cement

Cements for thin rubber fabric, such as the inner tubes of vehicle tires, are usually simple solutions of gutta-percha or scrap unvulcanized rubber in carbon disulphide or benzol; sometimes a little rosin or shellac is added. The following formulas are typical:

I.

Gutta-percha	½ av. oz.
Rosin	40 grains.
Carbon disulphide	8 ounces.

II.

Scrap rubber	½ ounce.
Rosin	⅛ ounce.
Beeswax	¼ ounce.
Carbon disulphide	8 ounces.

Digest the rubber in 4 ounces of the carbon disulphide for twenty-four hours; add the rosin, finely powdered, and lastly the beeswax mixed with the rest of the solvent.

For cuts or rips in outer tires, a heavier cement is necessary, the following being a typical formula:

Gutta-percha	2 ounces.
Caoutchouc	4 ounces.
Isinglass	1 ounce.
Carbon disulphide	1 pint.

In handling carbon disulphide, benzol or benzin, or preparations containing any of them, the fact that they are extremely inflammable should be borne in mind.

A solution of gutta percha was recognized in the 1880 Pharmacopoeia; the formula may be found in the appendix to the National Formulary.

Rubber Cement

Pieces of rubber may be united by means of the pasty mass obtained by dissolving pure rubber in ether, benzin, carbon disulphide, or oil of turpentine. However, it is difficult to dissolve rubber satisfactorily on a small scale, and dangerous to handle most of its solvents, and as the cement may be bought ready made at a low price, we do not advise promiscuous experiments in making it. Those who wish to try it will probably succeed best by cutting pure, unvulcanized rubber into very thin slices, boiling it in water so as to soften and expand it, and then digesting it in benzin or hot oil of turpentine. Several days are required to effect the solution. When this cement is used for uniting pieces of rubber, the surfaces which are to be joined must be fresh; they should, therefore, either be pared with a knife or rasped with a file. They may then be coated with the cement, pressed firmly together, and exposed to a gentle heat for a few days.

Here is another formula, or a modification of the first one: Virgin rubber is cut with a wet knife into the thinnest possible slices, which are then divided by shears into threads as fine as small twine. A small quantity of the shreds (say 1/10 of the capacity of the bottle) is then put into a wide-mouthed bottle and the latter is three-fourths filled with benzin of good quality, free from kerosene. The rubber almost immediately commences to swell, and, in a few days, if often shaken, it will assume the consistency of honey. Should it be inclined to remain in undissolved lumps, more benzin must be added. Thinness may be corrected by adding more rubber. A piece of solid rubber no larger than a walnut will make a pint of the cement. It dries in a few minutes, and, by using three coats in the usual manner, leather straps, patches, rubber soles, backs of books, etc., may be joined with great firmness.

Two more formulas are appended:

I.

Gutta-percha	20 grammes.
Caoutchouc	40 grammes.
Isinglass	10 grammes.
Carbon disulphide	160 grammes.

II.

Caoutchouc	4 grammes.
Rosin	8 grammes.

Japan wax..... 6 grammes.
Benzin ..... 16 grammes.

Filler for Pneumatic Tires

Sheet glue..... 1 pound
Molasses ..... 3 pints.
Hot water ..... enough.

Soften the glue in hot water in the usual manner, using enough water to produce a rather thick fluid. While the mixture is warm, add the molasses and mix thoroughly.

This mixture is injected into the tire through the valve stem and forms a jelly-like cushion.

Another preparation used in the same manner and for the same purpose is a mixture of glycerin and gelatinous silica. The manufacture of this preparation is protected by letters patent.

Moisture-Resisting Cement

Thoroughly mix 8 parts of melted glue, of the consistence used by carpenters, with 4 parts of linseed oil boiled into varnish with litharge. This cement hardens in about forty-eight hours and renders the joints of wooden cisterns and casks air- and water-tight.

Slide Paste for Moving Picture Show Advertising

Powdered acacia.....½ dram.
Prepared chalk..... 1 ounce.
Water ..... 4 drams.

Triturate the acacia with the water until it is entirely dissolved, then add the prepared chalk and reduce the mixture to a uniform paste.

W. C. Lane, author of this recipe, says:

This paste when applied to a plain glass slide with a camel's hair brush and allowed to dry makes a perfectly opaque background, and any writing that is desired may be cut in with a sharp-pointed instrument, as a slate pencil. When projected on the screen the letters appear white against a black field. The moving picture people usually use for this purpose undeveloped photographic plates. These can be used only once and are costly. By using this paste the same glass can be re-lettered over and over again at a trifling cost, as the above amount of paste will cover a great surface. The above formula was worked out in response to many calls for such a preparation. We charge 25 cents for the quantity specified in the formula.

CHAPTER XIII.

VETERINARY RECIPES

Horse, Cattle, Dog, Sheep and Hog Remedies — Preparations for Chickens and Birds.

Always consult the Index when using this book.

Some Diseases of Horses.

There are many books and pamphlets on veterinary subjects issued by the United States Government, some of which are sent free for the asking and others of which are sold for a nominal price. One such book is called "Diseases of the Horse."

Heaves.

Speaking of heaves, this book says: "When the disease is established there is no cure for it." It goes on to tell what should be done in the way of feeding and other attention for horses suffering from this trouble, and also exposes some of the tricks of horsemen who try to conceal the disease when it is present in any of their animals. We quote a few passages:

Proper attention paid to the diet will relieve the distressing symptoms to a certain extent, but they will undoubtedly reappear in their intensity the first time the animal overloads the stomach or is allowed food of bad quality. Clover hay or bulky food which contains but little nutriment have much to do with the cause of the disease, and therefore should be entirely omitted when the animal is affected, as well as before. It has been asserted that the disease is unknown where clover hay is never used. The diet should be confined to food of the best quality and in the smallest quantity. The bad effect of moldy or dusty hay, fodder, or food of any kind can not be over-estimated. A small quantity of the best hay once a day is sufficient. This should be cut and dampened. The animal should invariably be watered before feeding; never directly after a meal. The animal should not be worked immediately after a meal. Exertion, when the stomach is full, invariably aggravates the symptoms. Turning on pasture gives relief. Carrots, potatoes or turnips chopped and mixed with oats or corn are a good diet. Half a pint to a pint of thick, dark molasses with each feed is useful.

Arsenic is efficacious in palliating the symptoms. It is best administered in the form of the solution of arsenic, as Fowler's solution or as the white powdered arsenious acid. Of the former the dose is 1 ounce to the drinking water three times daily. Of the latter one may give 3 grains in each feed. These quantities may be cautiously increased as the animal becomes accustomed to the drug. If the bowels do not act regularly, a pint of raw linseed oil may be given once or twice a month, or a handful of Glauber's salt may be given in the feed twice daily, so long as necessary. It must, however, be borne in mind that all medical treatment is of secondary consideration; careful attention paid to the diet is of greatest importance. Broken-winded animals should not be used for breeding purposes. A predisposition to the disease may be inherited.

Spavin.

The same book, under the head of "Spavin," says: "Serious in its inception, serious in its progress, it is an ailment which, when once established, becomes a fixed condition which there is no known means of dislodging." The writer goes on to describe rather fully, yet plainly and succinctly, the cause, symptoms, prognosis and treatment of the trouble. Under the latter lead he puts rest first and foremost, stating most emphatically that it is essential: "less than a month's quiet ought not to be thought of—the longer the better." Continuing, he says:

Good results may also be expected from local applications. The various lotions which cool the parts, the astringents which lower the tension of the blood vessels, the tepid fomentations which accelerate the circulation in the engorged capillaries, the liniments of various compositions, the stimulants, the opiate anodynes, the sedative preparations of aconite, the alternative frictions of iodine—all these are recommended and prescribed by one or another. We prefer counter-irritants, for the simple reason, among many others, that they tend by the promptness of their action to prevent the formation of the bony deposits. The lameness will often yield to the blistering action of cantharides, in the form of ointment or liniment, and to the alterative preparations of iodine or mercury. And if the owner of a "spavined" horse really succeeds in removing the lameness, he has accomplished all that he is justified in hoping for; beyond this let him be well persuaded that a "cure" is impossible.

For this reason, moreover, he will do well to be on his guard against the patented "cures" which the traveling horse doctor may urge upon him, and withhold his faith from the circular of the agent who will deluge him with references and certificates. It is possible that nostrums may in some exceptional instances prove serviceable, but the greater number of them are capable of producing only injurious effects. The removal of the bony tumor can not be accomplished by any such means, and if a trial of these unknown compounds should be followed by complications no worse than the establishment of one or more ugly, hairless cicatrices, it will be well for both the horse and his owner.

In conclusion the writer gives some points on the use of the cautery for the relief of the trouble under discussion, and adds some suggestions concerning other surgical operations, but says that these belong to the peculiar domain of the veterinary practioner.

Heaves in Horses.

The following remedy is reported to have been used with success in a number of chronic cases:

Lobelia leaf	2 ounces.
Skunk cabbage	1 ounce.
Camphor	1 ounce.
Elecampane	4 ounces.

Mix and divide into 2-dram powders, one to be given night and morning, mixed with the food.

Long-continued treatment and good care are essential. As in the case of asthma, it is difficult to effect more than a temporary relief in chronic cases.

As a remedy for heaves "Veterinary Counter Practice" gives the following formula:

Canada balsam	4 ounces.
Copaiba	4 ounces.
Calcined magnesia	enough.

Make into ½-ounce balls and give one night and morning for eight days.

Absorbent Liniment for Horses.

Spirit of camphor	1 pint.
Tincture of capsicum and myrrh	12 ounces.
Oil of turpentine	12 ounces.
Linseed oil	4 ounces.
Crude petroleum	24 ounces.
Oil of amber	2 ounces.
Oil of origanum	3 ounces.
Barbadoes tar	1½ ounces.

Resorption Liniment for Horses

Crystal of iodine, 1 dram; as much ether as is necessary to dissolve. This solution added to an equal quantity of flexible collodion makes an irritant that will often induce the resorption of carneous or osseous enlargements when all other means have failed, says the Missouri Valley Veterinary Bulletin. Shave off the hair and apply with a small brush, allowing to dry as applied; nothing else equal to it for sealing up an open but non- or only slightly-infected joint. It stops the flow of synovia and is a counter irritant.

Applications for Spavin

I.

Camphor	4 ounces.
Oil of turpentine	6 ounces.
Oil of wormwood	2 ounces.
Tincture of iodine	4 ounces.
Corrosive mercuric chloride	30 grains.

II.

Corrosive mercuric chloride	10 grains.
Tincture of arnica	2 ounces.
Oil of peppermint	2 ounces.
Tincture of iodine	1 pint.

III.

Tincture of iodine	4 parts.
Tincture of myrrh	4 parts.
Oil of turpentine	6 parts.
Tincture of cantharides	2 parts.
Alcohol	4 parts.

Caustic Balsam

Sulphuric acid	1 oz. av.
Croton oil	1 fl. oz.
Corrosive mercuric chloride	60 grains.
Oil of turpentine	6 fl. ozs.
Camphor	½ oz. av.
Cottonseed oil	8 fl. ozs.

Mix the oils of turpentine and croton, add the corrosive sublimate in fine powder and the camphor, and dissolve; then add, a little at a time, the sulphuric acid, taking care that the mixture does not become too hot and, when all has been added and the mixture has become cool, add the cottonseed oil, and mix them thoroughly.

This is used for sprains, ringbones, strains, swellings, puffs, etc.

Veterinary Caustic Balsam and Absorbent

Linseed oil	5 gallons.
Oil of turpentine	30 ounces.
Commercial sulphuric acid	1½ ounces.
Oil of tar	6½ ounces.
Cantharides oil (see below)	27 ounces.
Oil of origanum	1 ounce.
Croton oil	10 ounces.

Mix the linseed oil with 20 ounces of oil of turpentine in a stoneware or enameled iron dish; add the acid slowly and cautiously and allow the mixture to clear. Then add the remainder of the oil of turpentine and the other ingredients in the order given. Cover the vessel with a sheet of glass and set it in the sunlight for about three days; stir occasionally. Finally decant the clear solution and bottle it.

If desired, the preparation may be colored with an oil-soluble acid-proof color.

Cantharides Oil.

This ingredient of the caustic balsam is made by digesting cantharides in oil of turpentine in the proportion of 1 to 16.

Smith's Wonder Worker

T. S. Newby says that this is a liniment, very popular with drivers and trainers for the turf, for which he offers the following formula:

Compound tincture of iodine	2 ounces.
Tincture of arnica	2 ounces.

Camphor	2 ounces.
Oil of turpentine	2 ounces.
Hamamelis water	3 ounces.
Alcohol	7 ounces.

Veterinary Blistering Agents

A blistering agent much esteemed by veterinary surgeons is red mercuric iodide, which may be applied mixed with seven times its weight of lard. For a liquid blister try—

Powdered cantharides	1 ounce.
Ether	1 ounce.
Alcohol	8 ounces.
Oil of origanum	½ ounce.

Pour the ether over the cantharides and let them stand for a day in a closed vessel. Then add the other ingredients, macerate for eight days, and filter.

A third recipe is for a blister in paste form, so—

Mercury	½ ounce.
Iodine	¼ ounce.
Corrosive mercuric chloride	¼ ounce.
Lard	enough.

Make a paste.

This prescription is not quite as weird as it appears at first. In fact, except that the amount of iodine is smaller than it might be, there is little to criticise from the pharmaceutical standpoint. When mercury and iodine are triturated along with a small amount of alcohol, a mixture of the iodides of mercury is produced. In the proportion of the two elements in 200 parts of mercury to 254 parts of iodine, red mercuric iodide will be the product, and this chemical rubbed up with lard, either with or without corrosive sublimate, makes a blistering salve used rather largely in veterinary practice. In the proportions directed in the prescription a green or yellow (mercurous) iodide will be produced, but when this is rubbed with the corrosive sublimate a change in color to red will indicate the formation of mercuric iodide.

In short, the finished prescription is apt to contain a mixture of mercurous and mercuric iodides.

Sweating Liniment.

Sweating liniments are mixtures exploited for the reduction of splints, ringbones and similar enlargements on horses. They are directed to be applied with friction until moisture exudes; discontinued for several days and again applied.

Here are a few typical formulas:

I.

Oil of turpentine	36 ounces.
Camphor	5 ounces.
Acetic acid	7½ ounces.
Yolk of	9 eggs.
Rapeseed oil	20 ounces.
Water	24 ounces.

II.

Mercury bichloride	1 dram.
Alcohol	2 ounces.

III.

Camphor	1½ ounces.
Soft soap	5 ounces.
Oil of rosemary	1 ounce.
Ammonia water	3 ounces.
Alcohol	20 ounces.
Water	7 ounces.

Veterinary Embrocation.

I.

Oil of origanum	1 ounce.
Liniment of soft soap	3 ounces.
Oil of turpentine	4 ounces.
Ammonia water	4 ounces.
Camphor	1 ounce.
Camphor tincture of benzoin	1 ounce.

II.

Soap liniment	4 ounces.
Oil of origanum	4 ounces.
Oil of turpentine	4 ounces.
Linseed oil	4 ounces.

Farmers' Stock Liniment.

Camphor	1 ounce.
Phenol	1 ounce.
Oil of origanum	2 ounces.
Pine tar	2 ounces.
Oil of turpentine	10 ounces.
Kerosene	2 ounces.
Fish oil	16 ounces.

This is a good all-around stock liniment.

Gall Cure.

In the treatment of the equine abrasions popularly known as galls the most essential thing is to remove the cause, usually ill-fitting harness, and to permit the animal to rest a few days until the healing is progressing well. To hasten the healing, resort is usually had to an ointment, a wash, or a powder, the adaptability of each sort being considered. A successful veterinarian of our acquaintance tabooed all ointments in the treatment of galls of any nature. His prescription was a mixture of alcohol, zinc sulphate and lead acetate, the composition varying with the nature of the gall. The following preparation is typical:

Zinc sulphate	½ ounce.
Lead acetate	½ ounce.
Alcohol	1 pint.

In "Diseases of the Horse," published by the United States Department of Agriculture, are mentioned as remedies for simple galls (1) alcohol, 1 pint, shaken with the whites of 2 eggs; (2) a solution of silver nitrate, 10 grains to

the ounce of water; (3) lead acetate or zinc sulphate, 20 grains to the ounce of water; and (4) phenol, 1 part, glycerin, 15 parts.

A correspondent offered some four years ago the following as a first-class gall cure of the polymerous ointment type:

Zinc oxide	1 ounce.
Dried alum	1 ounce.
Camphor	1 ounce.
Phenol	½ ounce.
Calomel	½ ounce.
Bismuth subgallate	¼ ounce.
Benzoinated lard	4 ounces.
Petrolatum	12 ounces.

Mix the powders well together and reduce them to a smooth paste with the camphor, previously dissolved in the phenol. If desirable to make the paste perfectly smooth, a little castor oil may be used. Now add the lard and petrolatum, and mix well. In warm weather 2 ounces of the petrolatum should be replaced by wax.

A simpler ointment consists of—

Lead acetate	1 ounce.
Boric acid	1 ounce.
Ointment of zinc oxide	4 ounces.
Lard	12 ounces.

Some galls, particularly those covering a large area, but not extending very deep into the tissues, respond less rapidly to treatment with a fatty medicament than to the application of an astringent powder. The following formula is for such a powder.

Powdered quicklime	1 part.
Powdered charcoal	1 part.
Powdered naphthalene	1 part.

Hufflederkitt (Hoof Putty).

I.

Guttapercha	2 parts.
Ammonaic	1 part.
Soot	enough.

Melt the first two ingredients together; stir in enough soot to color, and pour while warm into the cracks, which should have been well cleaned.

II.

Turpentine	3 parts.
Ammoniac	4 parts.
Guttapercha	4 parts.

Melt together at a gentle heat and apply as directed under the first formula.

Veterinary Worm Powder

I.

Santonica	1 ounce.
Iron sulphate, dried	½ dram.
Powdered licorice	4 drams.
Powdered ginger	2 drams.

One such powder is to be given to a horse or cow, and followed next day with a full dose of sodium sulphate, say ½ pound. The dose is to be repeated once after three days.

II.

L. H. Howard contributes the following formula for a remedy which he says has been successfully used for worms in horses:

Powdered rosin	1 part.
Powdered bloodroot	1 part.
Powdered saltpeter	1 part.

The ingredients are to be intimately mixed; and a tablespoonful is given to the animal every other day, mixed with chopped food.

A Veterinary Lice Powder

Tobacco stems	2 pounds.
Crude carbolic acid	1 pint.
Neatsfoot oil	4 pints.
Crude petroleum, to make	1 gallon

Digest the tobacco stems in a mixture of the oils for ten days; strain and mix with the carbolic acid (so-called).

When applying this preparation take the animal out of the stable and begin the application at the ears, and finish at the feet.

A Veterinary Vermifuge

Areca nut should be kept whole, powdered as needed and given with a dose of flaxseed meal in doses of 1 ounce, for a horse. For dogs give 1 to 2 drams moistened with a little oil of turpentine, and next day give a dose of castor oil.

Scotch Horse Powder

Peruvian bark	2 ounces.
Hydrastis	2 ounces.
Sassafras	2 ounces.
Fenugreek	2 ounces.
Capsicum	2 ounces.
Black antimony	2 ounces.
Lobelia seed	½ ounce.
Ginger	8 ounces.
Oil of amber	1 ounce.
Oil of juniper	2 ounces.
Spirit of nitrous ether	2 ounces.
Haarlem oil	2 vials.

Mix the powders thoroughly and pass them through a sieve. Mix the liquids and gradually incorporate them with the powder.

Keep the product in a glass container, and transfer portions of it to tin boxes, for retail.

The directions should read somewhat like this: The usual dose is one tablespoonful. This should be wrapped in tissue paper and placed far back on the horse's tongue, and washed down with a little water. It has a powerful dimetic and anti-spasmodic action, and usually proves efficacious when given to a horse taken suddenly or violently ill.—Mary E. Doyle.

In place of the spirit of nitrous ether, it seems that the same quantity of

potassium nitrate would be preferable from the standpoint of permanence.

Tonic Cattle Spice

Seed cake	12 pounds.
Salt	24 ounces.
Powdered gentian	8 ounces.
Powdered licorice	8 ounces.
Powdered ginger	4 ounces.
Powdered black pepper.	1 ounce.
Powdered fenugreek	3 ounces.

The seed cake is a mixture of cottonseed cake and linseed cake containing from 8 to 10 per cent. of oil.

Magoffin's Horse and Cattle Powder

Here is a formula for a horse powder which came into my possession March 4, 1856, along with other assets of a drug business. In 1871, when the epizootic was so bad among the horses in Southern Ohio, I changed and materially improved the formula by the addition of asafetida. I have had a grand retail trade for it.

Powdered copperas	5 pounds.
Powdered rosin	5 pounds.
Powdered sulphur	5 pounds.
Powdered saltpeter	3 pounds.
Ground oil cake	10 pounds.
Powdered asafetida	3 pounds.
Powdered alum	3 pounds.

Mix carefully by means of seive.

Directions:—Give a horse a heaping spoonful every morning in wet oats, or provender, for six or eight mornings; afterward; the same every other day for a few days. The same dose for a hog or cow, and double the quantity for an ox.

There is no disease among horses and cattle in which this valuable powder may not be used with profit.—A. E. Magoffin.

Spring Tonics for Live Stock

In Farmer's Bulletin 430 of the United States Department of Agriculture, the following formula is given for a condimental stock food, with the statement that it has the recommendation of the Vermont and Maine experiment stations:

Ground gentian	1 pound.
Ground ginger	¼ pound.
Powdered saltpeter	¼ pound.
Powdered iron sulphate.	¼ pound.

One tablespoonful to be given in the feed once daily for ten days and for ten more days after an interval of three days.

The Iowa station suggests the following formula for a cattle condiment, which, the director naively remarks, will not take the place of common sense and intelligence in the feeding of domestic animals:

Fenugreek	8 pounds.
Ginger	8 pounds.
Gentian	8 pounds.
Sulphur	8 pounds.
Saltpeter	8 pounds.
Rosin	8 pounds.
Cayenne pepper	4 pounds.
Flaxseed meal	44 pounds.
Wood charcoal	20 pounds.
Common salt	20 pounds.
Wheat bran	100 pounds.

Stock Powders

Why a horse or a cow should need fenugreek and "black antimony" rather than green grass and plenty of ambling space does not seem quite clear. No more apparent is the superiority of sulphur and saltpeter over hygienic stabling as a prophylactic. However, the horse owner who sticks to the faith of his forbears in matters of veterinary medicine may be satisfactorily served with a powder made in accordance with the formula below:

Sassafras	½ pound.
Ginger	1 pound.
Fenugreek	1 pound.
Gentian	1 pound.
Copperas	½ pound.
Saltpeter	½ pound.
Aloes	¼ pound.
Cascara	¼ pound.

Veterinary White Liniment

White castile soap	6 lbs. 4 ozs.
Water	7 gallons.
Stronger ammonia water	6 pints.
Camphor	3 lbs. 4 ozs.
Ammonium carbonate	3 lbs. 4 ozs.
Oil of turpentine	2 gallons.
Oil of origanum	12 ounces.

Dissolve the camphor in the oil of turpentine and add the oil of origanum. Dissolve the soap and then the ammonium carbonate in the water, which has been warmed; add the ammonia water. Pour the aqueous solution into the oily one little by little, with thorough agitation.

All-Round Veterinary Liniment

Iodine	3 ounces.
Camphor	8 ounces.
Oil of origanum	2 ounces.
Oil of turpentine	4 ounces.
Alcohol	5 gallons.

Veterinary White Oil

Olive oil	8 ounces.
Oil of turpentine	1 ounce.
Ammonia water	2 ounces.

For Galls on Horses

A successful veterinarian of our acquaintance tabooed all polymerous gall ointments; in fact, would never use

any oily or greasy application upon the various equine abrasions popularly classified as galls. His prescription was an alcoholic solution of equal parts of zinc sulphate and lead acetate, the concentration varying with the nature of the gall.

There are, however, in wide use gall ointments, a typical formula being:

Zinc oxide	1 ounce.
Lead acetate	1½ ounces.
Gallic acid	¼ ounce.
Boric acid	1 ounce.
Phenol	½ ounce.
Yellow wax	4 ounces.
Petrolatum	12 ounces.

Melt the wax and incorporate it with the petrolatum; melt the phenol and add it to the base; and incorporate the other solids, previously reduced to a fine powder and mixed. Should a green ointment be desirable, ¼ ounce of verdigris may be added.

Gall Powder.

I.

Powdered camphor	1 ounce.
Prepared chalk	6 ounces.
Burnt alum	4 ounces.

Put up in ¼-pound round paper boxes with sprinkler top.

II.

Dried alum	3 ounces.
Phenol	½ ounce.
Powdered camphor	1½ ounces.
Boric acid	11 ounces.

Triturate the phenol with a portion of the boric acid; triturate the camphor with the alum and the rest of the boric acid. Mix the two powders intimately.

A cheaper powder may be prepared by diluting this mixture with a sufficient quantity of precipitated chalk.

"Cure" for Colic in Horses

Permit us first to quote from "Diseases of the Horse," a publication of the United States Department of Agriculture, which may be obtained in cloth binding for 60 cents. Referring to colic, the authors of the chapter on diseases of the digestive organs say:

The disease of the horse that is most frequently met with is what is termed "colic," and many are the remedies that are reported to be "sure cures" for the disease. Let us discover, then, what the word "colic" means. This term is applied loosely to almost all diseases of the organs of the abdomen that are accompanied by pain. If the horse evinces abdominal pain, he is likely to be put down as suffering from colic, no matter whether the difficulty be a cramp of the bowel, an internal hernia, overloading of the stomach, or a painful disease of the bladder or liver. Since these conditions differ so much in their causation and their nature, it is manifestly absurd to treat them all alike and to expect the same drugs or procedures to relieve them all. Therefore it is important that the various diseased states that are so roughly classed together as colic shall so far as possible be separated and individualized in order that appropriate treatments may be prescribed.

The subject is continued with a description of engorgement, obstructive, tympanitic, spasmodic, and worm colics, their symptoms and treatment. Engorgement colic is usually fatal. In the other forms the indicated remedies are such as will overcome the flatulence, ease the pain, and excite excretory movements. A combination of carminatives and anodynes is generally the first-aid medicament, to be followed with an aloes ball, a saline draught, or an enema. Typical formulas for the emergency remedies are as follows:

I.

Compound spirit of ether	½ ounce.
Tincture of opium	½ ounce.
Infusion of anthemis	1 quart.

II.

Tincture of opium	1 ounce.
Tincture of ginger	1 ounce.
Spirit of nitrous ether	1 ounce.
Chloroform	1 ounce.

III.

Ether	1½ ounces.
Tincture of opium	1½ ounces.
Linseed oil	8 ounces.

Sheep Dip Recipes

I.

Arsenic trioxide	8 pounds.
Sodium hydroxide	4½ pounds.
Stockholm tar	2½ gallons.
Tallow	8 pounds.
Water	400 gallons.

Two pounds of the caustic soda are dissolved in 2½ gallons of water in a 5-gallon vessel; the solution is heated to boiling and the arsenic added gradually. The heat being continued, cold water is added in small quantities until the vessel is full, whereupon the heating is stopped. In a tank capable of containing the finished product, 100 gallons of water are heated to boiling, the remainder of the caustic soda is dissolved in this; the tallow is added, and while the solution boils briskly the tar is introduced in a thin stream with constant stirring. When the boiling has continued for thirty or forty minutes the arsenic solution is added, and, without removing the heat, enough water is run in to produce the required volume.

II.

In "Veterinary Counter Practice" it is stated that the so-called "non-poisonous" dips are effectively represented by any of the "soluble cresols," 1 gallon to 50 gallons of water. The "soluble cresol" of the French Codex is a mixture of equal parts of cresol and solution of caustic soda (specific gravity 1.332 at 15 degrees C.).

Apparently the compound solution of cresol of the United States Pharmacopoeia might well be studied in

this connection, but such preparations are not non-poisonous.

III.

Liquefied phenol (97%). 60 ounces.
Good soft soap..... 5 pounds.
Water.....to make 100 gallons.

Dissolve the soap in the phenol with the aid of a gentle heat, and mix with enough water to make 100 imperial gallons.

IV.

Crude carbolic acid..... 3 pounds.
Caustic lime ..... 2 pounds.
Caustic potash ..... 2 pounds.
Soft soap ..... 6 pounds.
Water .....70 gallons.

V.

Soap ..... 1 pound.
Crude carbolic acid..... 1 pint.
Water .....50 gallons.

Dissolve the soap in a gallon or more of boiling water, add the acid, and stir thoroughly. Finally add the remainder of the water.

Zundel's Carbolic Dip

Crude carbolic acid..... 2 pounds.
Caustic lime..... 2 pounds.
Caustic potash..... 2 pounds.
Soft soap..... 6 pounds.
Water .....70 gallons.

The arsenical type, because of its markedly poisonous character, is scarcely fit for general sale, and in this country, those of the cresol type are the ones generally used.

The United States Department of Agriculture has issued a booklet on the "Animal Parasites of Sheep," in which formulas for various dips—a coal-tar dip included—are given. Doubtless a copy of this booklet may be obtained from the Secretary of Agriculture.

To Keep Flies from Stock

Cover a few walnut leaves with water and allow them to stand over night, then boil for fifteen minutes. When the decoction is cold, sponge the animal with it.

Smartweed may be used in the same way, or it may be rubbed on the animal while green.

A mixture of camphor, oil of turpentine and asafetida is said to keep flies away from the head of sheep.

A few formulas follow:

I.

Rancid lard..... 1 pound.
Kerosene ..... 8 ounces.

II.

Fish oil..... 3 parts.
Kerosene ..... 1 part.

III.

Crude cottonseed oil..... 2 parts.
Pine tar..... 1 part.

IV.

Fish oil.....10 parts.
Crude carbolic acid..... 1 part.

V.

An oil for spraying on cattle and horses to drive flies away from them, which may be sold for $1 a gallon, is made by mixing—

Synthetic oil of sassafras 4 ounces.
Crude castor (or lard, or neatsfoot) oil..... 2 pints.
Crude petroleum to make 1 gallon.

VI.

Phenol ..... 1 dram.
Oil of pennyroyal..... 2 drams.
Spirit of camphor..... 2 ounces.
Oil of tar..... 4 ounces.
Glycerin ..... 2 ounces.
Lard oil..... 4 ounces.

VII.

Compound solution of cresol ..... 1 dram.
Olive oil (or other suitable vehicle)..... 1 quart.

Rub on the animal with a cloth.

VIII.

Oil of cloves..... 3 parts.
Oil of bay..... 5 parts.
Tincture of eucalyptus.... 5 parts.
Alcohol .....150 parts.
Water .....200 parts.

Use as a spray. (Rather too expensive for general use.)

IX.

The United States Department of Agriculture publishes five formulas for sprays to protect cattle from flies, and the South Dakota experiment station reports the following to be the best of these:

Fish oil.....100 parts.
Oil of tar..... 50 parts.
Crude carbolic acid..... 1 part.

Mange in Animals

The disease of animals known as mange is produced by the attacks of minute insects which cause itching, accompanied by scurfiness of the skin and baldness. There are at least two species of these insects, one producing, in the case of dogs, a generally spread mange, and the other a localized one affecting the back.

The first may be killed by an application of sulphur ointment. A lotion of equal parts of oil of tar, oil of turpentine and olive oil is also recommended, but must be used with caution on account of its irritating properties; only a small portion of the surface should be treated at a time and the application should not be repeated oftener than once in two days.

The second parasite may be destroyed by the lotion mentioned, it is said; probably the sulphur ointment

would also answer. Eggs of the parasite remain unaffected by the treatment, and eventual hatching brings about a recurrence of the trouble, which, of course, should be watched for. Some formulas follow:

Mange Ointment.

Yellow mercurous iodide	10 grains.
Salicylic acid	½ ounce.
Sublimed sulphur	3 ounces.
Pine tar	3 ounces.
Coal tar, washed	½ ounce.
Sturgeon oil....to make	2 pints.

Shake well and apply at night; wash off in the morning.

II.

Liquid storax	5 mils.
Tincture of green soap	15 mils.
Oil of birch tar	1 mil.
Solution of potassium hydroxide	5 mils.
Alcohol.....to make	100 mils.

Mix and after two days filter.

This is to be applied twice a week after washing.

III.

Sublimed sulphur	2 ounces.
Solution of coal tar (B.P.)	4 ounces.
Water.....to make	8 ounces.

With these tar and sulphur compounds, says the Chemist and Druggist, it is usual to dress only about one-third of the body each day, and the application should not be repeated until a week has elapsed. The addition of powdered hellebore, which is occasionally found, is not to be recommended, as the animal is apt to absorb the poison through the skin, which is usually broken on account of the irritation of disease causes.

Filler for Poultry and Stock Powders

Ship-stuff, bran, linseed meal and cotton-seed meal are among the fillers used, singly or in combination, by makers of poultry and stock powders.

Veterinary Medicaments

Wherever man is, there will be found some of his animal friends, and wherever the latter are, there will remedies be in demand at some time or other, or all the time.

The recipes which follow are prescriptions of veterinary surgeons, and, so far as we know, were first published in The Druggists Circular, although the remedies had long been used quite successfully:

Veterinary Embrocations.

I.

White of	3 eggs.
Pyroligneous acid	5 ounces.
Water	5 ounces.
Oil of turpentine	½ ounce.
Alcohol	6 ounces.

II.

Spirit of camphor	1 pint.
Tincture of capsicum and myrrh	12 ounces.
Oil of turpentine	12 ounces.
Linseed oil	4 ounces.
Oil of stone (crude petroleum)	1½ pints.
Oil of amber	2 ounces.
Oil of origanum	3 ounces.
Barbadoes tar	1½ ounces.

Spavin and Ring Bone Liniment.

Corrosive mercuric chloride	10 grains.
Tincture of arnica	2 ounces.
Oil of peppermint	2 ounces.
Tincture of iodine	1 pint.

Canine Distemper Cure

Fluidextract of buckthorn	1 ounce.
Tincture of ginger	½ ounce.
Syrup of poppies	2 ounces.
Syrup	1 ounce.
Cod liver oil....to make	8 ounces.

Give a dessertspoonful three times a day.

The Druggists Circular has more than intimated on several occasions that it had little confidence in the ability of a "condition powder" to make a sick horse well or of an "egg-producing" food to make hens lay. Still, there is a demand for these things, and H. C. Bradford, in Merck's Report, says: "I do not believe a better condition powder can be gotten up than the one I give here. It certainly satisfied my customers, and I had many who used many other brands, and were thus competent to determine their respective value." His formula follows:

Condition Powder

Fenugreek	5 parts.
Sulphur	5 parts.
Resin	5 parts.
Flaxseed meal	5 parts.
Epsom salt	5 parts.
Ginger	4 parts.
Gentian	4 parts.
Copperas	4 parts.
Sodium bicarbonate	4 parts.
Black antimony	2 parts.
Sodium chloride	2 parts.
Potassium nitrate	1 part.

All are to be in fine powder, and well mixed. Mr. Bradford continues:

"This will cost about 6 cents per pound to manufacture. Commercial grades only need to be used. It is equally effective for horses, cattle, sheep and swine. It can be used for poultry also, but for this purpose it is much improved by the addition of 1 ounce of powdered capsicum to each pound of powder. Thus fortified, it is a first-class 'egg-making' food, and

may be sold as such with perfect satisfaction. The ordinary dose is a tablespoonful once or twice daily, and this quantity is about right for a dozen hens."

In the same article are other formulas for veterinary preparations, some of which are given below, the directions and comments, as well as the formulas themselves being by Mr. Bradford:

Liniment

Camphor ..... ½ ounce.
Tincture of iodine..... ½ ounce.
Tincture of capsicum... 1 ounce.
Aromatic spirit of ammonia ..... 1 ounce.
Tincture of opium..... 1 ounce.
Oil of turpentine.....4 ounces.
Alcohol.....to make 2 pints.

Mix, putting in the oil of turpentine last of all.

Direct it to be rubbed well into the affected parts, once or twice a day. This liniment is excellent for sprains, stiffness, sore muscles from hard work, and sweeny, big shoulder, fistula, etc., and, in fact, anywhere that a strong, penetrating liniment is useful. It is not suited for wire cuts and other wounds, however.

Barbed Wire Healing Oil

Crude carbolic acid.....4 ounces.
Pine tar.....4 ounces.
Oil of spike.....4 ounces.
Cheap lubricating oil, to make .....4 pints.

The lubricating oil here mentioned may be any that happens to be on hand, but the best is the heavy, stiff, cheap "black oil," which may be purchased at about 10 cents a gallon. This oil is a good healing agent of itself, and is also a good disinfectant and insecticide. It is largely used for this latter purpose, and with very satisfactory results.

Colic Cure

Colic primarily comes from indigestion or constipation, or both. The first thing to do is to relieve the pain, the next to cause an evacuation of the bowels. For the pain, give the following as a drink in a quart of hot water:

Tincture of opium..... 1 ounce.
Tincture of ginger..... 1 ounce.
Sweet spirit of niter..... 1 ounce.
Chloroform ..... 1 ounce.

This is a full dose for a large horse. For a small horse or a slight attack less may be given.

The best purgative to use in colic is a pint of castor oil or a quart of linseed oil. A dram of oil of turpentine should be given also.

Gall Ointment.

Zinc oxide..... 1 ounce.
Burnt alum..... 1 ounce.
Camphor ..... 1 ounce.
Phenol ..... ½ ounce.
Calomel ..... ½ ounce.
Bismuth subgallate..... ¼ ounce.
Benzoinated lard..... 4 ounces.
Petrolatum ..... 12 ounces.

Mix the powders well together and reduce them to a smooth paste with the camphor, previously dissolved in the phenol. If desirable to make the paste perfectly smooth, a little castor oil may be used. Now add the lard and petrolatum and mix well. In warm weather 2 ounces of the petrolatum should be replaced by wax.

This is said to be not only a first-class gall cure, but a most excellent healing ointment. Galls, so called, that is, where a large area of skin is rubbed off, but with little damage to the lower tissue, leaving a raw surface covered with bloody serum, are not treated in the best manner with an ointment. Those cases need a powder, and it is astonishing how quickly they will heal if the proper powder is applied. The following one will give results which will easily justify its being called the proper one:

Healing Powder.

Zinc oxide ..... 1 ounce.
Calomel ..... 1 ounce.
Bismuth subgallate ..... 1 ounce.
Burnt alum ..... 4 ounces.
Boric acid ..... 16 ounces.
Acetanilide ..... 1 ounce.

All in very fine powder. Mix well and sift.

This powder is excellent for galls as mentioned above, and is also a most excellent dry dressing for surface wounds. Especially deep or punctured ones, require very careful cleansing with bichloride or other antiseptic solution before it is applied. Were this not done, the powder would heal the surface and leave the bottom contaminated and unhealed, with the probable result later of a very deep, dangerous, sloughing putrid ulcer, or even worse. On the other hand, the "barb-wire healing oil" will at once penetrate to the bottom of the wound and render it aseptic throughout. Use of the "healing powder" should be confined to skin abrasions and shallow or gaping wounds. In these it has no superior and will heal them quicker than anything known.

Here follows a formula contributed to the Bulletin of Pharmacy by Frank Farrington, who is unstinting in his praise of its efficacy:

For Thoroughpin or Bog Spavin.

Tincture of iodine ..... 2 ounces.
Spirit of camphor ..... 1 ounce.
Ammonia water ..... 1 ounce.
Oil of turpentine ..... 1 ounce.
Tincture of arnica ..... 2 ounces.
Olive oil ..... 1 ounce.

To be rubbed on the affected part twice a day.

The Chemist and Druggist vouches for the following:

Alterative Powder for Cattle.

Potassium nitrate ..... 1 ounce.
Black antimony sulphide.. 1 ounce.
Resin ..... 1 ounce.
Sulphur ..... 2 ounces.

Mix and divide into eight powders.

Calf Meal, or Milk Substitute.

Freshly ground flaxseed... 1 part.
Barley meal ..... 2 parts.
Wheat meal ..... 2 parts.

A small quantity is to be made into a thin paste with cold water, then boiling water is to be poured upon it.

Cracked Heels Ointment.

Zinc oxide..... 1 dram.
Phenol .....10 grains.
Lard ..... 1 ounce.

Mange Smear.

Black sulphur ..... 2 drams.
Oil of cade..... 2 drams.
Spirit of tar..... 1 ounce.

Dog Medicines.

The Chemist and Druggist gives the following formulas for dog medicine:

For Worms.

Thymol ..... 2 grains.
Castile soap to make a pill.

This pill is for a small dog. One such is to be given daily for two or there days, followed by a mild purgative. For a larger dog the dose should be doubled.

As a good anthelmintic for all kinds of worms in dogs there is nothing to equal areca nuts and santonin, with or without male fern, as in the following pill for a small or lap dog:

Freshly powdered areca nuts ..... 5 grains.
Powdered jalap ..... 2 grains.
Santonin ..... 1 grain.
Extract of male fern, to make a pill.

This is to be given when the dog is fasting.

For a larger dog the dose should be increased.

Condition Pills.

Reduced iron..... 6 grains.
Quinine sulphate..... 6 grains.
Strychnine sulphate....1/10 grain.
Extract of gentian..... enough.
Make twelve pills.

Dose: One to three pills three times a day.

Mange Lotion.

Black sulphur..... 1 pound.
Stockholm tar ..... 2 ounces.
Heavy petroleum..... enough.

Mix the tar with the sulphur, and add heavy petroleum to make the lotion of the consistence of cream.

Hog Cholera

This, like a great many other diseases, of which smallpox is the best-known type and to which typhoid fever is a comparatively recent addition, is more easily prevented by immunization than cured by drugs. The United States Department of Agriculture issues information on the subject which all druggists should have. One of its formulas:—

Wood charcoal..... 4 ounces.
Sulphur ..... 4 ounces.
Sodium sulphate..... 4 ounces.
Black antimony..... 4 ounces.
Sodium chloride..... 8 ounces.
Sodium bicarbonate..... 8 ounces.
Sodium hyposulphite.... 8 ounces.
Reduce to a powder and mix well.

A large tablespoonful for each 200 pounds of animal should be given once daily with food.

This is recommended by the United States Department of Agriculture. It is said even to be a preventive of hog cholera.

For Hog and Chicken Cholera.

The following are the United States patent office specifications for a medicine for the cure of hog and chicken cholera, the patent being granted in 1871:—

To 5 gallons of water add 5 pounds of blackberry root. Let this boil thoroughly for one hour, after which take out the roots, and while the water is boiling add one half pound of bruised allspice, 1 ounce of tincture of iron, 1 ounce of asafetida and one-half ounce of camphor. Let it continue to boil about twenty minutes, then strain through a fine sieve and then reduce the liquid by boiling to 1 gallon, which, when cooled, may be bottled for use.

In administering to hogs, for every dozen hogs take 5 gallons of scalded bran slop and add 4 ounces of the medicine. This should be given every morning while threatened with the disease or while actually sick.

In administering to chickens or other fowl, for every dozen take 2 quarts of cornmeal, one-half pint of lard and 3 tablespoonfuls of medicine.

Worms in Pigs

On this subject "Veterinary Counter Practice" says:—

It does not always pay to keep pigs, and never does to keep worms. If any are noticed, measures should be taken at once to get rid of them, as they multiply with astounding rapidity. If a pig does not respond to the ration he is receiving, and shows no sign of illness, he may justly be suspected of worms, and suitable remedies prescribed. These are santonin, powdered glass, dolichos (cowage), buchu, salt, turpentine, areca nut and ol. filici maris. It is most difficult to lay down the dose for animals varying from two pounds to two hundredweight, but we have found a fairly

practical working scale by estimating the pig's weight to that of the human child or adult, and giving proportional doses.

For Mange on Swine

Sulphur	4 ounces.
Linseed oil	1 pint.
Camphor	½ ounce.

Lice on Fowls

Nathan Banks, of the Bureau of Entomology of the United States Department of Agriculture, has prepared a bulletin on this subject from which liberal quotations are made. Referring to mites, Mr. Banks says:—

Cleanliness and sunlight are the best means of preventing an abundance of mites. A chicken house cannot be kept too clean. It should be cleaned out every few weeks at least, and it is a great advantage to have the nests and roosts so built that they can be removed and washed in some cleansing liquid.

A treatment much in favor is that of whitewashing the inside of the house. If this is done, about 4 ounces of crude carbolic acid should be added to each gallon of whitewash. Like all other treatments, this should be repeated in three or four days, to destroy the young which have hatched since the first application.

In cleaning the henhouse it is useful also to scatter a mixture of 3 parts of dry air-slaked lime and 1 part of sulphur. The doors and windows should be closed and the mixture thrown up to the roof till the air is filled with it. It will then settle upon everything, the sulphur killing many mites and the lime aiding in drying the droppings. Setting hens need not be disturbed.

But the best remedy against the "chicken mite" is to spray with kerosene emulsion. To make this, shave one-half pound of hard soap into 1 gallon of soft water and boil the mixture until the soap is dissolved. Then remove it to a safe distance from the fire and stir into it at once, while still hot, 2 gallons of kerosene or coal oil. The result is a thick, creamy emulsion. Dilute this stock mixture with 10 parts of soft water, and apply as a spray or with a brush, being careful to work it into all cracks, crevices and joints of the building. Two or three applications on the same day are necessary to obtain the best results, and this treatment should be repeated in three or four days to kill the young mites which will have hatched since the first application.

Lice are said to be more numerous than mites, but, as they do not suck blood, less injurious. "Dampness, filth, and warm weather favor the increase of the lice, and a setting hen in a foul nest is their paradise," writes the author of the pamphlet. Continuing, he says:—

Many people who keep a few hens consider the infestation by lice a natural state of affairs, and so long as the lice are not so excessively numerous as to interfere seriously in egg production no attempts are made to exterminate them. Lice, however, are readily killed by a number of substances, although there is more or less difficulty in getting at them. Hidden among the feathers or close against the body the parasites are secure against any remedy unless it be applied very thoroughly. Moreover, one application is not enough. What will kill the lice may not affect the eggs or "nits," so it is necessary to repeat within a few days any method of treatment that may be used.

Carbolic acid, tobacco, sulphur, naphthaline, or any oily substance will kill the lice if it touches them.

Carbolic acid must be used with great care, for it is a burning poison. It is used mixed with lime or kerosene. To make the lime mixture, stir 2 ounces of 90 per cent. carbolic acid in 1 pint of cold water, sprinkle it in a half bushel of lime, and leave the lime to air slake. This can be sprinkled anywhere about the henhouse, but is most effective if put in the nests and mixed with the dust in the "wallow." If kerosene is used, take 2 ounces of carbolic acid to 1 gallon of kerosene, stir it thoroughly, and paint the mixture upon the roosts and nests, keeping the poultry out of the house till the mixture is dry.

Tobacco is used as an infusion, made by pouring hot water on tobacco stems. The hens are dipped into the liquid thus made. This is not a pleasant method to practice, and care should be taken to prevent the fowls from taking cold. Tobacco dust is the basis of various powders which are advertised to be used against lice. Their value depends largely upon the strength and freshness of the components. They are often used successfully, although frequently they are expensive.

Sulphur mixed with air-slaked lime, 10 pounds of sulphur to a half bushel of lime, is often used against lice. This may be scattered everywhere in the house, or mixed in the dust wallow. Sulphur can also be used in fumigation. To avoid danger from fire, the sulphur or sulphur candle should be put on an old tin can or something similar, and this placed in the middle of a pan of wet ashes or earth. Light the candle and shut the house tightly for several hours; then air it well before allowing the hens to enter.

Kerosene may be used in conjunction with naphthaline. Dissolve in kerosene all the flake naphthaline it will take, and paint the roosts and nests with this saturated solution every week or so for a few months. Sawdust wet with this liquid may be placed in the nest, but should be put beneath the straw, so that the eggs will not rest upon it. Naphthaline is not poisonous, however, and may be handled without danger.

Chicken Lice Powder

Powders, as we understand the matter, do not kill lice; but simply make them vacate the places to which the application is made. For this purpose many powders are serviceable, including the well-known pyrethrum, sulphur, tobacco, wood-ashes, and naphthalene. The addition of some pungently aromatic oil, as sassafras, may add to the powders' efficacy.

Any of these powders to be of most service, should be used abundantly and frequently, not only on the fowls themselves, but in their nests and the places in which they wallow, on their roosts, and all about their houses. Of course, cleanliness is a great aid to the protection of fowls from lice.

A powder made according to the following formula, freely strewn about the nests, will rid them of objectionable insects:—

Crude carbolic acid	1 pint.
Carbon disulphide	1 ounce.
Oil of tar	1 ounce.
Coal oil	4 ounces.
Sawdust	enough.

Mix the liquids and add as much sawdust as the mixture will saturate.

Roup Pills for Poultry

Calomel .....1 dram.
Antimonial powder.....1 dram.
Powdered licorice.....1 dram.
Copaiba ..... enough.

Make 60 pills, and give one night and morning.

Gape Remedy

Take a wooden box, a little bigger than a biscuit-tin, and divide it in two by means of a piece of wire netting. Now, place half an ordinary brick, made very hot, on one side of wire netting and the chicks on the other. Cover the whole box with a cloth, and then insert under the cloth a tablespoon with a teaspoonful of phenol in it. Now, pour the liquid on the hot brick and withdraw the spoon. The fumes will cure the chicks in two minutes. Take out the chicks just before they are apparently suffocated. If the chicks are not cured, keep them in the fumes longer.

Be careful to keep the hands and face away from the liquid when it is poured on to the brick, as it will blister the skin.

Douglass' Mixture

This preparation which has long enjoyed popularity as a tonic for birds, particularly during the moulting period, is made as follows:

Iron sulphate.....120 grains.
Diluted sulphuric acid. 15 drops.
Water ..... 8 ounces.

Dissolve the sulphate in the water, and add the acid.

A teaspoonful of this mixture is to be added to each quart of the drinking water of the birds.

Chicken Pills

Ferrous sulphate.....1 grain.
Calcium sulphate.....5 grains.
Quinine sulphate.....1 grain.
Make 1 pill.

Three such pills are given each day.

Chicken Tonic

In Britain the agricultural officials and experts are testing their theory that the addition of mineral salts to the food of chicks lessens the mortality and increases their development. According to the Journal of the board of agriculture this is the best mixture:

Sodium chloride.....30 parts.
Sodium phosphate..... 9 parts.
Calcium fluoride..... 1 part.
Ferrous sulphate..... 1 part.
Bone-ash .....30 parts.
Chalk .....14 parts.
Magnesium sulphate.....10 parts.
Charcoal ..... 2 parts.
Sublimed sulphur..... 3 parts.

Poultry Spice

Powdered capsicum.....2 ounces.
Powdered fenugreek.....4 ounces.
Powdered gentian.....4 ounces.
Powdered licorice.....4 ounces.
Powdered chalk.....4 ounces.

Hirtz's Inhalation

Beechwood creosote.. 25 grammes.
Tincture of benzoin. 20 grammes.
Eucalyptol ..... 10 grammes.
Thymol ..... 20 grammes.
Gomenol ..... 20 grammes.
Alcohol .....200 grammes.

Two tablespoonfuls of this mixture are used with a quart of boiling water.

"Red Albumin" for Hens

This is said to consist of ground oyster shells, red oxide of iron, and a small quantity of red pepper.

Limberneck in Fowls

A reader says that limberneck is caused by fowls eating putrid meat, which paralyzes the muscles of the neck. His remedy is:

Fill the crop with warm wafer by pouring down the mouth of the fowl, hold the fowl by legs, and gently with the hand force out the contents of crop through the mouth, or else give 5 grains of calomel or a tablespoonful of saturated solution of epsom salt. Take your choice of cures, as any one of them will do the work.

W. R. White says that kerosene enjoys some reputation as a remedy for limberneck in fowls.

Chicken Lice Killer

Gas tar.....12 ounces.
Sodium hydroxide..... 2 ounces.
Sulphur ..... 4 ounces.
Rosin ..... 2 ounces.
Water ..... 1 gallon.

Boil the tar with the soda and some of the water; add the rosin; after dissolving, add the sulphur and the balance of the water.

Poultry Powder

An owner, whose chickens are perhaps too fat, or, maybe, not fat enough, to lay the desired number of eggs, may be pleased with the following "egg-producer"; while it may not appeal half so much to the chickens as would a run among the neighbors' garden truck, it is less dangerous:

Charcoal	1 pound.
Capsicum	1 pound.
Ginger	1 pound.
Sodium sulphate	1 pound.
Sodium phosphate	½ pound.
Spanish brown	½ pound.
Bone meal	10 pounds.
Middlings	10 pounds.

Any stock or poultry powder may be "filled" with middlings, ground oil cake, corn meal or cracked oats to the desired cost; but a "strong" powder with a small dose will appeal more strongly to the user when he has been told that he can "fill" it himself at a large saving.

Poultry Insect Powder

Naphthalene	32 ounces.
Snuff	8 ounces.
Sulphur	8 ounces.
Insect powder	6 ounces.
Borax	4 ounces.
Oil of cedar	2 ounces.
Sifted bran	2 pounds.

Mix the oil with the bran, add the other ingredients, and finally sift.

The bran, says Pharmaceutical Notes, from which the foregoing is taken, is used as a filler and may be replaced by other substances. The powder is put up in tins with sprinkler tops.

Poultry Food

In such preparations the idea is to supply lime and a tonic appetizer. Ground bone or oyster or egg shells furnish the former, and for the latter black or red pepper, ginger or mustard are used, with or without iron sulphate.

A few formulas for such tonic foods —which we offer for what they are worth, as we believe that hens, like people, need something more than food and medicine when they languish—are given below:

I.

Black pepper	1 part.
Fenugreek	2 parts.
Silver sand	2 parts.
Calcium phosphate	4 parts.
Iron sulphate	4 parts.
Capsicum	4 parts.
Dog biscuits or lentils	6 parts.

II.

Oyster shells, in coarse powder	56 parts.
Calcium phosphate	8 parts.
Black pepper	8 parts.
Capsicum	1 part.
Venetian red	1 part.

A teaspoonful or more should be mixed with a quart of the regular feed.

III.

Ground oyster shells	8 pounds.
Dried sodium sulphate	4 pounds.
Dried iron sulphate	4 pounds.
Ground gentian	4 pounds.
Ground cumin	4 pounds.
Ground capsicum	1 pounds.

This recipe is a typical one, recommended by poultrymen for increasing the egg-laying power of hens. It is given by mixing about a tablespoonful of it with sufficient food for twenty hens.

IV.

Iron sulphate	1 pound.
Bone meal	10 pounds.
Oat meal	20 pounds.
Ground shell	20 pounds.
Glauber salt	2 pounds.

A teaspoonful is enough for eight hens. It should be used thrice a week.

V.

Gentian	1 dram.
Capsicum	1 dram.
Fenugreek	1 dram.
Black antimony	2 drams.
Licorice	6 ounces.

Reduce all the ingredients to powder and mix thoroughly.

Put a tablespoonful in the food for two or three dozen times, every day or two.

Bird Preparations

Tonics

I.

Terebene	1 dram.
Brandy	1 ounce.
Syrup of wild cherry	1 ounce.
Syrup of the phosphates of iron, quinine and strychnine	1 ounce.
Simple syrup, to make	8 ounces.

This syrup may be colored with cochineal, and should bear a shake label. It is recommended as a tonic for canaries suffering with pulmonary diseases. It is administered by putting 10 or 12 drops in the bird's cup of water. However, the bird should not be entirely deprived of pure drinking water.

II.

Powdered capsicum	0.25 gramme.
Powdered gentian	0.75 gramme.
Ferric hydroxide	3.00 grammes.
Powdered sugar	3.00 grammes.
Honey, to make a mass.	

Make 24 pills, and leave one in the cage daily.

III.

Iron sulphate	½ ounce.
Diluted sulphuric acid	½ dram.
Water, to make	20 ounces.

A tablespoonful of this mixture is to be added to each quart of the drinking water.

Bird Manna

I.

Sweet almonds	8 ounces.
Wheat flour	16 ounces.

Capsicum ..... ½ ounce.
Yolk of eggs..... enough.
Honey ..... enough.

Blanch the almonds, reduce them to a smooth paste and add the flour, capsicum and enough yolk of eggs and honey to form a mass which may be worked into small cakes.

II.

Sweet almonds,
blanched ..... 8 ounces.
Pea meal..... 16 ounces.
Butter (unsalted).....1½ ounces.
Honey ..... enough.

Work into a stiff paste and force through a sieve or colander to form into granules. Egg yolks may be added if desired.

Asthma Remedy for Canary Birds

Tincture of capsicum.. 5 drams.
Spirit of chloroform... 90 minims.
Iron citrate..... 45 grains.
Fennel water.....3½ ounces.
Mix and dissolve.

Give a few drops on a lump of sugar once daily.

Canary Bird Food

Yolk of egg, dried..... 2 parts.
Poppy heads, in coarse powder ..... 1 part.
Cuttlefish bone, in coarse powder ..... 1 part.
Granulated sugar..... 2 parts.
Soda crackers, powdered.. 8 parts.

For Constipation of Birds

Fluidextract of senna.... 2 drams.
Syrup of manna..... 1 ounce.
Fennel water, to make.. 4 ounces.

Give a few drops of the liquid on a lump of sugar once daily.

Tonic Pills for Pigeons and Poultry

I.

Red cinchona bark..... 1 grain.
Extract of calumba..... 60 grains.
Extract of chamomile... 60 grains.
Extract of gentian..... 60 grains.
Mix. Dose 4 to 12 grains.

II.

Ferrous sulphate..... 60 grains.
Extract of jaborandi.... 1 grain.
Mix. Dose 2 to 6 grains.

Mixed Bird Seed

Mustard and maw seed, of each..... 1 part.
Hemp and rape seed, of each ..... 4 parts.
Canary seed..... 32 parts.

Mocking Bird Food

Three Meals

Corn meal..... 2 parts.
Poppy seed meal..... 1 part.
Pea meal..... 2 parts.

Fry in a little lard, guarding against burning.

Hemp Seed Food.

Hemp Seed..... 16 ounces.
Rape seed..... 8 ounces.
Crackers ..... 8 ounces.
Rice ..... 2 ounces.
Corn meal..... 2 ounces.
Lard oil..... 2 ounces.

Reduce the solids to a coarse powder, mix well and work in the oil.

A little capsicum may be incorporated in this.

Heart and Eggs

Ox heart, dried..... 2 ounces.
Poppy seed meal..... 2 ounces.
Crackers ..... 2 ounces.
Ants' eggs, dried..... 2 ounces.
Hemp seed..... 1 ounce.
Corn meal..... 1 ounce.
Lard ..... 1 ounce.

Proceed as in the foregoing.

The ox heart is prepared by boiling it well in water, chopping fine and drying in an oven until crisp. This food, when given to the birds, should be mixed with an equal quantity of grated carrots.

CHAPTER XIV

MISCELLANEOUS INFORMATION

How to Figure Profit—Cost Marks—Trade-Marks and Copyrights—Shoe Dressings—Sweeping Powders—Polishing Cloths—Window Cleaners—Anti-Freeze Mixtures—Disinfectants — Cough Candy—Water-and Fireproofing of Materials, etc., etc.

Always Consult the Index When Using This Book

An Improved System for Marking Merchandise

By this system the source of the supply and the date of purchase are shown at a glance, no complicated system of books or cards being needed at all. It was described in The Druggists Circular by Dr. Byron E. Dawson, who said, in part:

It is regrettable that some merchants think such marking is burdensome, as others do that it is necessary to mark goods at all. To such this system will not appeal; but to the careful, systematic, particular individual its simplicity and great value become quickly apparent, and upon trial its continued use is assured.

Dating Goods

The system consists in placing upon each article or package or container a number suggestive of the date of the invoice in which it was billed. For instance, the date December 25, 1913, will by many be written 12-25-13, and February 22, 1914, will likewise be written 2-22-14. Now, if the hyphens be eliminated we have 122513 and 22214, respectively, which numbers, as dates, are as intelligible to those who have been let into the secret as if hyphenated. When the date is earlier than the tenth of the month a cipher must be written at the left of the day of the month, thus, 110113 for November 1, 1913, to distinguish it from 11113 for January 11, 1913. A simple rule; two figures for the year and two figures for the day of the month.

Marking as to Source

Now let this number be preceded by the initials of the firm billing the article, and the system is complete. Thus. McKR30213 instantly informs the dealer that the article on which it is placed was billed by McKesson & Robbins, March 2, 1913; MC12009, billed by Merck & Co., January 20, 1909; SC12111, by Schieffelin & Co., January 21, 1911; Dir102110, billed direct by the manufacturer (name on the label), October 21, 1910.

Mfg50113 indicates that the article was manufactured or finished May 1, 1913. The date when a prescription was filled, or when a copy is given, may be thus noted on the margin, and a history of every prescription thus be preserved. A notation of the weight of an article on different dates, to record loss of substance, as of camphor, may be made by the use of this system, or a note on the physical condition of any galenical product at any time. By writing the purchase or manufacturing dates on the back label on a shelf bottle, together with the cost, each time the bottle is refilled, one may have a perfect record of the advances and declines in the price of the article. The date of the receipt of a catalogue may be noted by writing this date number on the front cover page. These suggestions may give rise to other possibilities of such a marking system, the use of which may be still further elaborated by each man using it.

A Baffling Costmark.

The compound word "iron-sulphate" admirably lends itself for use as a model costmark, thus:

i r o n s u l p h a t e
1 2 3 4 5 6 7 8 9 0 b r

It is a word not generally used by the laity. Besides ten letters necessary to represent the ten digits, it contains one —t—for use as a "blind," and one—e—for use as a "repeater." The "blind" may be used or not, at the merchant's option. It is to be placed at the left of the costmark proper and made part of it. Like a cipher similarly placed in a number, it has no value. The "repeater" has a changing value. It is always to be used in the place of, and instead of, the second letter when any letter is to be used twice, as, *tsca* for 550, *toeo* for 333, *tre* for 22. The letter *e* as a "repeater" is a particularly fortunate choice, for the reason that it is used oftener than any other letter in

the English alphabet. It is better to use some other letters than *r* for "repeat" or *b* for "blind," as is usually done.

In marking articles bought or sold by the pound, dealers usually add the abbreviation *lb.* or a double cross after the costmark. Now, instead, let the double cross be reduced to a single cross, which at once becomes the plain letter *x*. Let *x* be used exclusively as the pound sign. Let it be joined to the costmark on the right and be made part of it. An article which costs 21 cents per pound will be marked *trix*. Let *x* also stand for pint, and let it be used interchangeably by druggists.

It has been my custom also to use the letter *x* arbitrarily for *each*, instead of the word each, when pricing writing tablets, papeterie, fountain pens, tooth brushes, and all articles bought or sold singly. This saves the multiplication of characters. In this way *tiusx* means $1.65 per pound, per pint, or each, depending upon the article on which it is found.

The sign of the apothecaries' ounce is often called *z*. Let *z* stand instead for avoirdupois ounce since all commercial transactions are conducted on the avoirdupois scale, and *d* for either dram or ⅛ ounce. We then have *tlsz*, meaning 75 cents an ounce, and *tued*, 66 cents an ⅛ ounce. Arbitrarily, *z* (part of dozen) may also be used as the abbreviation for dozen, as *tirsz*, $1.25 per doz. Likewise, *z* may be used for fluid ounce.

Similarly, *g* becomes the abbreviation for gallon, or gross, or grain; *y* for yard, and *f* for foot. We may borrow from the Roman notation *m* for 1,000, and *c* for 100. There is no need for other letters denoting numerical count as all other quantities should be calculated to the basis of the 100 or 1,000 cost, although *d* may be used for 500 if desired. Pills and tablets should be marked as costing so much a hundred or a thousand. Similarly, also, should fractions of a pound or pint be calculated to the cost basis of pound or pint, or ounce, or both, for convenience. Thus, a fluidextract which cost 35 cents a ¼ pound should be marked *tinax*, $1.40 a pound, or *thz*, 9 cents an ounce, or both. In case of heavy chemicals *m* and *c* may be used to denote 1 000 or 100 pounds, or ounces, where a fraction of a cent is involved, as, *tnrsc* or *tnrscx*, $4.25 per 100 pounds; or *tolsamz*, $39.50, per 1,000 ounces.

Let one of these letters, as the occasion may require, always be joined to the costmark on the right, to indicate the unit. This does away with the special mark for quantity everywhere.

Just a Bookkeeper's Check.

For price marking proprietaries bought on the two-four-and-eight basis, I adopted a bookkeeper's check, represented in this text by the letter *r*— placing the retail price below it. This mark is placed on every article sold at 50 per cent. above the cost, regardless of the price. It is merely a mark of certification, indicating that the retail mark is correct, and the cost is right. It places all right-priced goods in the same class. Without acquainting clerks with the costmark they may be advised to give preference to the sale of articles bearing this mark. The following examples explain its use:

	v	*v*	*v*	*r*	*v*	*v*
Retail price.	10	15	25	35	50	1.75
Jobbing price	80	1.20	2.00	2.80	4.00	14.00

Thus it may be seen that whatever word is chosen for a costmark it should not contain the letters *x, z, g, y, f, m, c, d,* or *r*, as the model costmark does not. But, as a matter of fact, any letter not in the model costmark may be used occasionally as a "blind," or even as a "repeater." However, the compound word "iron-sulphate" is good selection and its use is recommended.

Comment from Outside.

Upon reading Dr. Dawson's article, M. J. Fadgen wrote:

Dr. Dawson's system is an ideal one for the druggist opening a new store. I take my hat off to the Doctor.

Unfortunately, however, it is extremely inconvenient, if not impossible, for many of us to change our costmarks under certain conditions. Such was the case with me, and, necessity being the mother of invention, I have evolved a system which would be extremely difficult for the uninitiated to solve and at the same time one which is easily mastered by the user. Its only point of advantage over Dr. Dawson's is that it permits the retention of the existing mark.

The store I purchased some years ago was an old-established one in which some tens of thousands of prescriptions were on file. My predecessor had marked the price of all prescriptions with his costmark. It would be folly to attempt to remark such a collection, and still it was necessary to decipher the price of any renewal. I found the price mark was the common property of the neighborhood. When I put in a line of new goods I found some secrecy was imperative. This is my system: I used two costmarks. The old one was:

s	*u*	*t*	*h*	*e*	*r*	*l*	*a*	*n*	*d*
1	2	3	4	5	6	7	8	9	0

I adopted another—

c	*h*	*c*	*a*	*p*	*d*	*r*	*u*	*g*	*s*
1	2	3	4	5	6	7	8	9	0

Whenever the new costmark was used it was prefixed by the letter *n;* if I used the old, I either prefixed the letter o or left it without a key letter. This proved a most effective damper on the former wiseacres. The same article could be marked in a variety of manners, proving most puzzling to the

uninitiated, but readily deciphered if the key was but known.

I also use the letters *x, y, z,* which serve a similar purpose to the three letters used by Doctor Dawson. The *x* stands for one pint, or one dozen. As a pound and a pint are more than an ounce, I believe it is more consistent to use *x* for the dozen mark than *z*, which the Doctor uses. The *y* is the repeater, and *z* stands for ounce or each.

To give an example: In using my system an article costing 17 cents could be marked *s l, osl,* or *n c r,* or with all three marks; an article costing 11 cents could be marked *s y, osy,* or *n c y,* or with all three.

It is not difficult to remember two costmarks, especially when a key letter is used, showing the system.

Comment from Inside.

[It seems to us that if both the old and the new costmark were used on the same packages, the "wiseacres" would not only learn the cost of the goods through the old mark, but would use the old mark as a key to the new, and so soon know the new also.]

Trade-Marks and Copyrights.

A bulletin, United States Statutes Concerning the Registration of Trade-Marks, With the Rules of the Patent Office Relating Thereto, issued by the government, states that "An application for the registration of a trade-mark must be made to the Commissioner of Patents and must be signed by the applicant."

A complete application comprises a petition, requesting registration; a statement specifying the name, domicile, location and citizenship of the party applying; the class of merechandise, a description of the goods, etc., etc.; a declaration; a drawing of the trade-mark; five specimens of the trade-mark; and a fee of $10.

The bulletin referred to above tells how these various forms should be made out and gives other information that should be in the hands of anyone intending to apply for the registration of a trade-mark. The bulletin can, no doubt, be secured through the Superintendent of Documents at Washington, D. C., or through the Commissioner of Patents himself.

A certificate of registration remains in force for twenty years, unless it has been previously registered in a foreign country, in which case it ceases to be in force on the day on which the trade-mark ceases to be protected in the foreign country. A certificate of registration may be renewed for twenty-year periods.

Trade-marks are not subject to copyright registration under the copyright law and decisions of the courts.

It is advisable to secure trade-mark rather than copyright protection of labels, because the former gives better protection in foreign countries.

How to Figure Profits

There has been much discussion as to the proper method of figuring profits, some maintaining that the cost of the merchandise should be used as the base for all calculations, while others insist that profits should be figured from the selling price or sales cost. Such institutions as the National Association of Credit Men, Burroughs Adding Machine Co., the National Implement and Vehicle Associations, and the Harvard System of Accounts have announced themselves in favor of the latter method.

Under the chapter heading, "Figure Percentages from Selling Price," D. Charles O'Connor, in his Treatise on Commercial Pharmacy, cites the following concrete instance as showing the advantage of figuring profits from the selling price:

Both percentages should be figured from the same base, the selling price. Take this case, for instance. You get an "inside deal" on a lot of sponges that cost you 60 cents each, retailing regularly at $1.25. You say, "I will have a sale on these, put them in the window and run them off in a few days and make 25 per cent. on them." So you mark them at 25 per cent. above cost or 75 cents each. Now let us see if you made 25 per cent. on them. Your percentage expense is 25 per cent., so 25 per cent. of 75 cents is 18¾ cents, which added to the cost, 60 cents, amounts to 78¾ cents. As the sponge sold for 75 cents you actually lost 3¾ cents on each sponge sold. The difference between the cost, 60 cents, and the selling price, 75 cents, is 15 cents, the gross profit, and this figure is 20 per cent. of the selling price, 75 cents. If you had even said: "I don't care to make any money on this deal, all I want to do is to break even," but you don't do even that, as the gross profit is 20 per cent. and your percentage expense is 25 per cent., so you actually lose 5 per cent., as 3¾ cents, the money loss, is 5 per cent. of 75 cents, the selling price.

Dressings for Black Shoes

Pastes.

I.

Soap	12 parts.
Potassium carbonate	6 parts.
Beeswax	50 parts.
Water	200 parts.
Bone-black	100 parts.
Powdered sugar	15 parts.
Powdered acacia	6 parts.

Mix the soap, potassium carbonate, wax and water and boil together until a smooth paste is obtained; then add

the other ingredients, mix thoroughly, remove from the source of heat, and while hot pour into boxes.

II.

Tragacanth	1 ounce.
Neatsfoot oil	2 ounces.
Bone-black	4 ounces.
Prussian blue	1 ounce.
Sugar	4 ounces.
Water	4 ounces.

Allow the tragacanth to soften in the water and add the other ingredients.

III.

Acacia	2 ounces.
Sugar	1 ounce.
Bone-black	1 ounce.
Water	enough.

Saponaceous Polishing Paste.

Soap	20 parts.
Starch	10 parts.
Galls	10 parts.
Iron sulphate	10 parts.
Syrup	60 parts.
Bone-black	30 parts.

The first four ingredients are to be boiled together for an hour and the liquid then strained. While the solution is still warm, the other two are to be stirred in.

Casein Paste.

Shoe polish may be made to give a greatly improved gloss by the addition of a solution of casein, prepared by boiling that article in water with borax or soda. At the same time the addition of iron resinate imparts the property of staining the leather a deep black, instead of merely forming a black coating.

The iron resinate is prepared by adding an aqueous solution of green vitriol (ferrous sulphate) to a resin soap obtained by boiling resin with soda. The other ingredients of the polish are as usual: Ivory black, syrup or dextrose, fat or oil. A blue-black sheen may be imparted to fine polish by addition of a little Paris blue dissolved in water.

The following is a typical recipe for these polishes:

Casein	32 parts.
Soda crystals	12 parts.
Water	96 parts.

By weight, dissolved and mixed with—

Ivory black	290 parts.
Dextrose	150 parts.
Olive oil	25 parts.
Iron resinate	10 parts.

This should be further mixed with 10 parts of "soluble blue" dissolved in 10 parts of water, the whole being well stirred.

In Collapsible Tubes.

Ozokerite	5½ ounces.
Ceresin	2 pounds.
Carnauba wax	5½ ounces.
Beeswax	1⅜ ounces.
Oil of turpentine	4 pints.
Lamp black	2 pounds.
Black anilin dye	30 grains.
Perfume	enough.

Liquids.

I.

Indigo	2 drams.
Tragacanth	2 drams.
Glue	4 ounces.
Logwood	8 ounces.
Glycerin	3 ounces.
Water	1 pint.
Diluted acetic acid	2 pints.

Boil all together and strain.

II.

Shellac	2 ounces.
Nigrosin (spirit-soluble)	1 dram.
Lampblack	2 ounces.
Castor oil	2 ounces.
Oil of turpentine	1 ounce.
Alcohol, to make	1 pint.

Dissolve the resin and the dye in 8 ounces of alcohol. Mix the oils and the lampblack thoroughly. Mix the two liquids and add enough alcohol to make one pint.

III.

Extract of logwood	1 part.
Nutgalls	30 parts.
Ferrous sulphate	8 parts.
Acacia	8 parts.
Sugar	100 parts.
Molasses	80 parts.
Alcohol	50 parts.
Shellac	2 to 4 parts.
Soluble indigo	2 parts.
Water	500 parts.

Boil the extract of logwood and the nutgalls in the water for fifteen minutes, express the liquid and dissolve in it the ferrous sulphate. Let this stand for twenty-four hours, decant the supernatant liquid, and in it dissolve the sugar and the acacia with the aid of a gentle heat. When cool, dissolve the indigo in the liquid and strain, and add the molasses. Dissolve the shellac in the alcohol and add the solution thus formed to the aqueous fluid.

Turpentine Shoe Polishes.

Oil of turpentine	66 parts.
Yellow wax	18 parts.
Spermaceti	6 parts.
Asphaltum varnish	5 parts.
Borax	1 part.
Lampblack	5 parts.
Prussian blue	2 parts.

Nigrosin 1 in 80.

Melt the wax and stir in the borax. In another vessel melt the spermaceti, and while it is warm stir in the asphaltum varnish, previously mixed with the oil of turpentine. To this add a portion of the wax and borax mixture, with a vigorous stirring, reserving a portion to be rubbed with the pigments, which then is to be added.

Self-Shining Dressing for Women's Shoes

Sandarac	2 drams.
Gum thus	4 drams.
Shellac	12 drams.
Oil of turpentine	4 drams.
Lamp black	1 ounce.
Alcohol	6 ounces.

Dissolve the resins in the alcohol and add the oil and pigment. The blackness of the dressing may be intensified by the addition of a small quantity of nigrosin, or 1 dram of the anilin dye may be made to take the place of the lamp black entirely.

Patent Leather Polish

Shellac	4 ounces.
Sandarac	1 ounce.
Glycerin	6 drams.
Castor oil	1 ounce.
Nigrosin (spirit-soluble)	4 drams.
Methyl blue	40 grains.
Alcohol to make	2 pints.

Shoe Cream, Any Color

I.

Beeswax	10 parts.
Ozokerite	10 parts.
Carnauba wax	5 parts.

Melt and mix with—

Castor oil	5 parts.
Oil of turpentine	100 parts.

Color with a fat-soluble anilin dye.

The castor oil may be replaced by 10 parts of glycerin.

II.

To produce a cheap cream dissolve 3.000 grammes of crystallized sodium carbonate in 30 liters of water; add 300 grammes of Marseilles soap; heat the mass to boiling. When solution has taken place add rosin 400 grammes, yellow wax 2,500 grammes and carnauba wax 1,500 grammes and heat the mixture until uniform. Then add 500 grammes of potassium bitartrate in small portions, remove the mixture from the bath, add 2,500 grammes of oil of turpentine and stir until a viscid liquid is obtained. For coloring yellow, oil-soluble chrysanilin is used; oil-soluble Bismarck brown is employed for brown coloring, and nigrosin to produce a black color.

Casein Shoe Cream

Casein possesses the property of furnishing with thick turpentine a shining compound suitable for various purposes, especially polishing. To make a shoe polish, 4 parts of galipot (crude Burgundy pitch) are melted, strained through a sieve and boiled with 3 parts of water and 2 of caustic soda lye (density 37 deg. B.) until a film has formed on the surface, whereupon another 1 part of the soda lye and 50 to 60 parts of warm water are added; 15 parts of soda crystals are dissolved in the liquid and 10 parts of powdered casein are stirred in until dissolved. This is followed by 10 parts of gray carnauba wax, and the whole is boiled until homogeneous. If a cooled sample be found too stiff, a little water is added. An anilin dye that is fast to alkali may be used for coloring.

Modern Shoe Dressing

In the Journal of the Society of Chemical Industry has appeared a comprehensive treatise on the manufacture of shoe dressings and polishes, by J. T. Donald. Some of the descriptions of typical dressings are appended:—

Liquid, French, or Ladies' Shoe Dressing

This is essentially a colored solution of shellac in water, dissolved with the aid of borax or an alkali. Nigrosin is the usual color in black dressing. A little glycerin is generally added to prevent hardening and cracking of the leather.

Gun-Metal Dressing

This is prepared by adding a solution of soap to the liquid dressing described above.

Patent Leather Dressing

The liquid enamel or paint first applied is a solution of gun-cotton in amyl acetate, colored with a spirit-soluble black dye. The finishing polish is olive oil, cottonseed oil, petrolatum, or a mixture of beeswax and oil of turpentine.

Suede Dressing

The cleansing dressing for nappy, ooze, suede or castor leather is simply alcohol with a dye of the desired shade, that is insoluble in water.

White Leather Dressings

These are usually pipe-clay, or, better, a mixture of pipe-clay and light magnesium carbonate, sometimes made into a cake with tragacanth mucilage. Another sort is a suspension of zinc oxide in a light mucilage. This kind is better adapted for use on smooth finished leather.

For Colored Shoes

For colored canvas or leather shoes, dressings like the foregoing are tinted with ocher, umber or other pigment.

Friction Polishes

Carnauba wax is the basis of the best modern friction polishes. Candelilla wax may be substituted for the cheaper qualities of polishes. The wax is boiled until emulsified with a solution of borax. The product is known as "white stock." If a paste is required, the "white stock" is mixed with a sufficiency of hot, strong solution of common yellow soap and tinted with nigrosin. A soft paste is thus obtained. If a liquid is required, the best castile soap is used, as this does not gelatinize on cooling. With moderate friction, the hard waxes held on the leather by the soap give a fine polish. Another method is to melt carnauba or candelilla wax, or a mixture of these, with paraffin, or beeswax in hot oil of turpentine, and mix with very finely powdered animal black. A firm paste is thus obtained, which easily spreads. When this is poured into boxes it must be quickly cooled, or separation of the waxes may occur. Beeswax gives a toughness and lack of shortness to the paste, with a smooth finish, which cannot be obtained without it. For tan leather polish the basis is the same, but brown or yellow dyes are used instead of nigrosin.

Moorhof's Bone Wax

Iodoform	20 parts.
Spermaceti	40 parts.
Sesame oil	40 parts.

Heat the ingredeints together slowly to 100 deg. C., and allow the mixture to cool while stirring. For use as a bone plug it is heated to 50 deg.

Tan Shoe Dressing

I.

Oil of turpentine	40 grammes.
Yellow wax	80 grammes.
Petrolatum	80 grammes.
Castor oil	20 grammes.
Powdered turmeric	30 grammes.
Linseed oil	20 grammes.

Dissolve the wax in the oil of turpentine, then add the petrolatum and the castor oil. Mix the turmeric with the linseed oil and add the mixture to the other ingredients.

II.

Yellow wax	50 grammes.
Oil of turpentine	100 grammes.
Soap	5 grammes.
Powdered turmeric	10 grammes.
Water	100 grammes.

Dissolve the yellow wax in the oil of turpentine. Boil the turmeric with the water and then add the soap and, when a more or less uniform fluid is obtained, mix it with the turpentine solution.

III.

Yellow wax	90 grammes.
Oil of turpentine	200 grammes.
Soap	10 grammes.
Boiling water	200 grammes.

Dissolve the yellow wax in the oil of turpentine by warming on a water-bath, exercising great caution to prevent the oil from catching fire. When dissolved, transfer to a warm mortar and add the soap, previously dissolved in boiling water, and triturate until a creamy mass results.

Cleansers for White Buckskin Shoes

I.

Powdered oxgall	1 part.
Powdered tallow soap	2 parts.
Fuller's earth, white	7 parts.

This is applied to the dampened shoe and rubbed in to form a complete coating. When perfectly dry it is brushed off with a stiff brush.

II.

White bole	600 grammes.
Oatmeal (not "rolled oats")	300 grammes.
Powdered soap	75 grammes.
Borax	150 grammes.
Ammonium chloride	25 grammes.

This is employed as directed under the above formula.

Dressings for White Shoes

Pipe clay	1 pound.
Spanish white	½ pound.
Precipitated chalk	10 ounces.
Powdered tragacanth	2 drams.
Phenol	2 drams.
Oil of verbena	30 drops.
Water	enough.

The powders are intimately mixed and then made into a thick cream with water, to the first portions of which the phenol and the oil have been added.

The only good done by the phenol is as a preservative. Perhaps salicylic acid or something of that kind would answer just as well and at the same time be free from some of the objections which may be urged against phenol.

A Good Whitener

A good whitener which will not rub off may be made by adding to mucilage of tragacanth enough of fine quality of whiting (paris white), or prepared chalk, to produce a paste of the desired consistency. About 1 per cent. of salicylic acid should be added to the mucilage as a preservative; and any desired odorous oil may be added as a perfume.

To Blacken Tan Shoes

First wash the shoes with oil of turpentine, then with alcohol, and finally with warm water and soap. When they have dried, paint with the following, giving them two coats:

Powdered galls	2 ounces.
Copperas	1 ounce.
Copper sulphate	30 grains.
Acacia	1 dram.
Boiling water	2 pints.

Triturate all the solids together; pour the boiling water over them; let the mixture stand for a week, and strain.

When the second coat is dry the shoes are ready to be polished.

Harness Dressing

I.

Neatsfood oil	½ gallon.
Fish oil	½ gallon.
Lamp black	1 ounce.
Oil of turpentine	enough.

Mix the lampblack with a small quantity of turpentine, then mix with the oils. Put up in empty malt bottles or bottles of this nature.

II.

Isinglass	1 pound.
Indigo	1 pound.
Logwood	4 pounds.
Glue	5 pounds.
Vinegar	1 gallon.

Boil all together until the glue is dissolved, then strain and bottle.

III.

Neatsfoot oil	1 gallon.
Bayberry tallow	2 pounds.
Beeswax	2 pounds.
Beef tallow	2 pounds.
Castor oil	1 quart.
Lampblack	1 ounce.

Peppering Harness Oil

Harness oil should be flavored with black pepper, to keep rats from gnawing the leather to which it is applied. A heaping teaspoonful of finely-ground pepper to the pint of oil is about the right proportion.

Sweeping Powder

The powder is hardwood sawdust, treated with some liquid petroleum preparation or crude oil, and colored with an anilin dye. Sometimes cresol solution is used on the powder. For home use, ordinary sawdust, moistened with water, is about as efficacious as anything else in this line. A sweeping brush made of bristles raises less dust than an ordinary broom.

While not so efficacious as the preparations containing oil, the following mixture will be found suitable for most uses:

Calcium chloride	1 ounce.
Sea salt	5 pounds.
Bran, to make	15 pounds.

The following is perhaps the safest of the oil-containing mixtures:

Heavy paraffin oil	12 pounds.
Portland cement	88 pounds.

Mix thoroughly until the mass first formed breaks up into a granular powder.

Waterproof Dressing for Leather

Cylinder oil	1 pint.
Carnauba wax	3 ounces.
Tallow	3 ounces.
Molasses	3 ounces.

Dustless Dusters

I.

A reader of The Druggists' Circular wrote that he had made very satisfactory dustless dusters by taking black or navy-blue cheesecloth, soaking it thoroughly in crude petroleum, wringing it thoroughly, and afterward repeatedly washing it, using hot water, until the washings no longer showed any free oil. Made in this way, he said, the "dusters" cost about 7 cents each, and were ideal. His had been in use four months and had been washed often, and were just then ready for another treatment with oil.

II.

Some time prior to the receipt of the note just above referred to, another reader sent the following recipe for making oiled dust cloths: Saturate a suitable piece of cloth with kerosene and lay it aside until the surplus oil has evaporated. Rub it on a wooden surface until it no longer leaves a streak, and it is ready for use. This cloth should be well shaken after each use, and re-oiled about once a month.

III.

From another source we take the next formula: Mix 30 parts of paraffin with 10 parts of double-refined rapeseed oil, heat moderately, and stir into it 1 part of melted benzoin. Saturate the cloth with the liquid, wring it well and dry in a shady place.

Polishing Cloths

I.

Polishing cloths usually consist of a piece of flannel which is coated on one side with wax holding some gritty agent which is hard enough to polish but fine enough not to scratch. The making of such cloths is beset by some technical difficulties; that is, if they are to be made attractive. The formula is simple enough, but putting the things together properly is an art. Only enough wax is needed to hold the polishing agent on the cloth. A mixture of ceresin and infusorial earth, or ceresin and tripoli, would make a good base, only enough of the ceresin being used to make a firm mass when cold. The earth should be sifted into the melted wax and stirred until it sets. The coating of the cloth is a technical operation that probably requires special machinery. The mixture must be put on warm and spread smoothly and evenly. If too hot it will strain through, and if cold it will not adhere. We are unable to suggest a method for doing this work by hand that would be likely to prove satisfactory, and doubt whether it is practicable to make such cloths as these on a small scale.

II.

In a mixture of 1 quart of gasoline, ½ pound of whiting and ⅛ ounce of oleic acid, soak woolen cloths, and dry them in the air and shake.

The operation should, of course, be conducted out of the reach of fire or flame, on account of the extreme inflammability of gasoline.

II.

Jewelers' rouge	1 part.
Castile soap	2 parts.
Water	to dissolve.

Dissolve the soap in water and thoroughly mix in the powder; soak the

cloths in square pieces in the solution, wring out, and dry.

III.

Prepared chalk.....16 parts.
White bole..... 1 part.
Armenian bole..... 1 part.
Water.....to make a thick paste.

Dip flannel rags into a solution of 20 parts of dextrin and 30 parts of oxalic acid in 20 parts of logwood decoction, wring them gently, and sift over them a mixture of finely powdered tripoli and whiting. The moist rags are then hung up to dry.

The Complete Window Cleaner

If you would have the plate glass shiningly immaculate as the shirt-front of an aldermanic toastmaster, see to it that your kit contains these things or implements, to wit: A muslin bag, so big as to contain comfortably a pint of bran and an equal measure of lampblack—it must be well seamed that it does not leak; two or several sections of an old felt hat, softened by much wear and cleansed with soap and boiling water; a piece of light-weight woolen cloth some 20 inches square or more; another piece of similar cloth of heavier texture; a hank or two of clean cotton waste; a piece of very soft "shammy" leather, and a quantity of elbow grease.

And thus you will employ each:

The first, that is the bag containing the bran and lampblack, you will use primarily to remove from the glass the "bloom" of smoke and soot.

Secondly, you will use the lighter piece of woolen cloth to brush off the particles escaped from the bran bag.

The next step will be to go over the entire glass with a piece of the felt well saturated with water, which may be warmed against the rigors of wintry months.

Then you will rub weightily and thoroughly with the cotton waste and dry with the second woolen cloth.

Finally, you will impart a sparkling brilliancy to the pane with elbow grease and the soft leather. And the passerby will pause to admire and perchance to purchase.

Window-Polishing Paste

Castile soap..... 2 ounces.
Boiling water..... 3 ounces.

Dissolve and add the following in fine powder:

Precipitated chalk..... 4 ounces.
French chalk..... 3 ounces.
Tripoli ..... 2 ounces.

Mix and reduce with water to the consistency desired.

Washing the Window

Strange as it may seem there is a right and wrong way to wash windows, and as this operation is usually dreaded, says a writer in the Commercial Reporter, the following method will doubtless be appreciated, as it saves both time and labor: Choose a dull day, or at least a time when the sun is not shining on the windows, for when the sun shines on the glass it causes it to dry streaked, no matter how much it is rubbed. Take a painters' brush and dust them inside and out, washing all the woodwork inside before touching the glass. The latter must be washed slowly in warm water and ammonia—do not use soap. Use a small cloth with a pointed stick to get the dust out of the corners; wipe dry with a soft piece of cotton cloth—do not use linen as it makes the glass linty when dry. Polish with tissue paper or old newspaper. You will find that this can be done in half the time taken when soap is used, and the result will be brighter windows.

Pencils for Writing on Windows

Pencils for writing on glass, porcelain, metal, etc., may be made by incorporating talc in melted wax, adding the desired pigment, as lampblack, zinc white, chrome yellow, vermilion, etc., and rolling, as a pill mass is rolled, to form into the desired shape. About equal parts of wax and talc may be used.

Removing Scratches from Glass

While it is difficult to remove deep scratches, slight ones that have made show-case tops somewhat opaque may be polished out and the transparency of the glass restored by rubbing the parts with jewelers' rouge wet with water on a piece of soft chamois skin or leather. If the scratches are deep, however, they must be ground out with washed flour of emery and water, as is done by opticians in grinding eye glasses, and then the spot is polished with rouge, as described for slight scratches. To do this by hand is rather tedious—and where there is much of this sort of work a buff wheel made of wood and run by a little motor will save time and labor, and fine pumice stone and water should be used instead of rouge.

To Remove Enamel Letters from Glass

Oil of turpentine or solution of oxalic acid applied to the top of the characters and allowed to soak down through the cement will remove them.

Separating Wool and Cotton

T. M. Smith, replying in the Chemist and Druggist to a query on this subject, says: "Boil cloth in a strong solution of caustic soda in water for a minute or so, when the soda will dissolve out the wool and leave the cotton in the form of a skeleton. Real 'Scotch tweed' completely dissolves."

Transfer Paper

This special paper is prepared by coating one surface of white paper with a suitable compound, usually zinc oxide mixed with a little starch and enough glue to make it adhere. After drying it is passed between calender rolls under great pressure. All brands of this paper found in the trade are not equally good for transferring purposes.

Anti-Freeze Mixture for Automobile Radiators

Requests for anti-freeze mixture formulas reach us every year, and we are reprinting here an item which appeared originally in the New York Tribune, and later, in January, 1918, in The Druggists Circular. The article follows:

The first method given, the use of an anti-freezing solution, is, perhaps the best for all-round purposes, although there are some who do not favor its use. Calcium chloride, alcohol and glycerin are non-freezing elements. In using calcium chloride the commercial form should be avoided, as it contains acid. Crystalized calcium chloride contains about 50 per cent. of water of crystalization and dissolves in about half its weight of cold water; consequently, eight pounds dissolved in one-half gallon of water will obtain one gallon of the saturated solution.

The alcohol solution is favored by many because it is easily obtained and prepared. An alcohol solution may be made with either wood or denatured alcohol . . . [The danger of using wood alcohol should be borne in mind, even its vapors having been known to cause blindness.]

Alcohol and glycerin is a combination that is liked by some because of the low boiling point of the latter. The disadvantage of using glycerin is that it attacks the rubber hose of the circulating system, causing the piles of fabric to disintegrate. Another factor mitigating against its use is the cost. Whenever used it generally means renewing the hose in the spring.

In the use of calcium chloride, and when employing other than the chemically pure article, one must guard against the action of acid. This may

Anti-Freezing Solutions

Calcium Chloride

			F.
2 pounds	1 gallon water	Freezing point	18°
3 pounds	1 gallon water	Freezing point	1.5°
4 pounds	1 gallon water	Freezing point	—17°
5 pounds	1 gallon water	Freezing point	—39°

Alcohol

Per ct.	Per ct.		F.
Alcohol..... 5	Water.....95	Freezing point	25°
Alcohol.....15	Water.....85	Freezing point	11°
Alcohol.....20	Water.....80	Freezing point	5°
Alcohol.....30	Water.....70	Freezing point	—5°
Alcohol.....35	Water.....65	Freezing point	—16°

Glycerin

Per ct.	Per ct.		F.
Glycerin.....10	Water.....90	Freezing point	28°
Glycerin.....30	Water.....70	Freezing point	15°
Glycerin.....40	Water.....60	Freezing point	5°
Glycerin.....48	Water.....52	Freezing point	0°
Glycerin.....54	Water.....46	Freezing point	—5°
Glycerin.....58	Water.....42	Freezing point	—10°

Alcohol-Glycerin

Per ct.	Per ct.		F.
Alcohol-glycerin..15	Water..85	Freezing point	20°
Alcohol-glycerin..20	Water..80	Freezing point	15°
Alcohol-glycerin..25	Water..75	Freezing point	8°
Alcohol-glycerin..27	Water..73	Freezing point	5°
Alcohol-glycerin..29	Water..71	Freezing point	0°
Alcohol-glycerin..30	Water..70	Freezing point	—5°
Alcohol-glycerin..32	Water..68	Freezing point	—15°
Alcohol-glycerin..40	Water..60	Freezing point	—23°

be neutralized by gradually adding ammonia or soda ash until blue litmus paper no longer turns red when dipped in the solution.

With the alcohol solution one must expect it to give off an odor when heated and to boil readily when the thermometer registers above the freezing mark, or in mild weather. Because of these factors and the tendency of the alcohol to evaporate readily, thus lowering the freezing point of the fluid, many object to the solution. If one employs alcohol it is advisable to purchase and use a hydrometer graduated to read below 1,000. They indicate to the user the strength of the solution which should be maintained according to the requirements of the locality.

It is well to avoid the practice of using any anti-freezing solution until the radiator and other components of the cooling system are inspected for leaks, for the alcohol will escape through openings where water will not pass. It is also important that all "fur," scale or other deposits be displaced from the radiator, matter generally deposited through the use of hard water.

Liquid for Room Deodorizing

I.

Eucalyptus oil.....20 grammes.
Lavender oil.....10 grammes.
Rosemary oil.....10 grammes.
Formol .....10 grammes.

Vaporize one teaspoonful mixed with one tumbler of hot water.

II.

Eucalyptol ..... 10 parts.
Oil of thyme..... 5 parts.
Oil of lemon..... 5 parts.
Oil of lavender..... 5 parts.
Alcohol .....110 parts.

Spray about by means of an atomizer.

III.

Guaiacol .....10 mils.
Eucalyptol .....10 mils.
Menthol ..... 5 grammes.
Thymol ..... 2 grammes.
Oil of gaultheria.....30 mils.
Oil of peppermint, to make.....75 mils.

Use by means of an atomizer.

We suggest that the recipe be improved by using as diluent pine needle oil. We have obtained excellent results in room deodorizing by keeping on the steam radiator a can of water into which pine needle oil was poured from time to time.

IV.

According to the Bulletin General de Therapie a few drops of the following mixture placed on a plate in a room will effectively deodorize the atmosphere:

Camphor .....20 grammes.
Chlorinated lime.....50 grammes.
Alcohol .....50 grammes.
Oil of eucalyptus..... 1 gramme.
Oil of cloves..... 1 gramme.
Water .....58 grammes.

Mix in a capacious vessel kept cool.

Deodorizing Spray for Theatres

In the Pharmaceutical Journal the following suggestions as to preparing a cheap deodorizing spraying fluid for moving picture theatres are given:

We have on various occasions referred to spray liquids used at such places, but so far we have been unable to give a working formula. There are evidently many different kinds in use. In some cases terpineol is the odorous principle, and it seems to be suspended in water in sufficient quantity just to make a milky liquid. An alcoholic solution of terpineol, in any desired quantity, could be added to a pailful of water and worked into a kind of emulsion by means of a fine rose syringe. If you wished to add an antiseptic, thymol would be a suitable substance to use; it is soluble in water to the extent of 1 in 1,500, and might conveniently be dissolved in the alcoholic terpineol solution. As cheapness must be largely an important consideration, it seems very likely that such substances as those named, as well as various mixtures of essential oils, are simply dissolved in a convenient quantity of alcohol, and so much of the liquid worked into a can of water for immediate use with the syringe.

In the article particular emphasis is laid upon the necessity of providing adequate ventilation of the hall, without which all attempts to improve the air are little short of worthless.

Two formulas from other sources are appended:

I.

Oil of lavender..... 4 ounces.
Oil of bergamot..... 2 ounces.
Oil of peppermint.....10 minims.
Oil of cloves..... 1 dram.
Benzoic acid..... 1 dram.
Alcohol .....18 ounces.

Use 24 ounces in perfuming a good-sized theatre.

II.

Oil of lavender..... 2 ounces.
Oil of rose geranium.... 1 ounce.
Oil of bergamot.....½ ounce.
Formaldehyde solution (37 per cent.)..... 1 ounce.
Alcohol, to make.....16 ounces.

This is generally employed in the proportion of 1 ounce to 40 ounces of water.

While the small proportion of formaldehyde directed in this formula might not prove objectionable, still as

formaldehyde is an irritant to the eyes and mucous membrane, it would be better to ventilate the room thoroughly after using it and before admitting the spectators.

Perfumed Disinfectant

Practically all real disinfectants are either poisonous or possess distinctive odors that are not considered agreeable. The following recipes give products that are pleasant enough, but which are of little value as disinfectants:

I.

Eucalyptol	10 parts.
Thymol	10 parts.
Alcohol	1000 parts.
Oil of cinnamon	1 part.
Sulphur dioxide	enough.

The alcohol is saturated with sulphur dioxide, and the aromatics are then added.

II.

Guaiac	10 parts.
Eucalyptol	8 parts.
Phenol	6 parts.
Thymol	2 parts.
Menthol	4 parts.
Oil of clove	1 part.
Alcohol	170 parts.

III.

Cheap German cologne is a suitable perfume to mix with some of the more popular so-called disinfectants for use as a deodorizing moving picture theatre spray.

Hygienic Laboratory Pine Oil Disinfectant

The hygienic laboratory of the United States Public Health Service has given out a method for preparing a liquid disinfectant that is cheap, efficient and readily compounded from materials obtainable on the market, the chief ingredient being pine oil. The latter is described as probably a mixture of many essential oils of the terpinol family, having an amber color, a characteristic odor of pine, and being perfectly clear, transparent and free from considerable sediment. The pine oil should be freshly distilled when purchased, as it has been found that its germicidal power grows less on standing. The germicidal power of an old oil may be brought back to its original degree by redistillation.

The oil here described can be purchased from concerns manufacturing wood turpentine by the steam or solvent process.

The liquid disinfectant may be made as follows: The pine oil, 2,500 grammes or 5.5 pounds, is heated together with 1,000 grammes or 2.2 pounds of good strained North Carolina grade E, rosin in a covered enameled ware pail until the rosin is all dissolved. The mixture is cooled to 80° C. and 500 grammes or 1.1 pounds of a 25 per cent. solution of sodium hydroxide (commercial lye) are added and the liquid is violently stirred for at least ten minutes, preferably with a rotary egg beater. Sufficient water is then added to make the mixture measure 3.75 liters or 1 gallon. The preparation is then cooled quickly by placing the pail in cold water. It is stored in glass or metal containers until used.

The cost of the materials in the quantities given above is 41.5 cents.

The finished product, according to the chemists of the hygienic laboratory, is a dark reddish-brown liquid, rather thick and oily in appearance and free from turbidity or cloudiness. It makes a perfectly white emulsion, much resembling milk when added to water. If the dilution water is at a temperature of less than 30° C. the emulsion will last for weeks. If hot water is used, a layer of oil eventually forms on the surface. The germicidal power of the disinfectant remains practically constant for about two months. After that, a noticeable deterioration occurs. Samples four months old show a phenol co-efficient of about 3.5. The pine oil itself is more stable than the emulsified product. It is well to buy only a few months' supply of the oil at a time, and to make up only enough disinfectant for a month's use.

This disinfectant may be used wherever the ordinary coal-tar compounds are used. It has a much more pleasing odor than the coal-tar compounds, and can be used where these products, on account of their odor are not practical. It will not attack fabrics or metals and is recommended for the disinfection of all articles used in the care of contagious diseases.

Antiseptic Naphthol Solution

J. C. Dills writes to The Druggists Circular:

Another preparation that we have is a 15 per cent. solution of alpha-naphthol in glycerin, to which is added 5 per cent. of sodium hydroxide. We have had it tested by a reliable bacteriologist, who reports it to be of the same germicidal power as the official liquefied phenol. This solution is non-poisonous except in very large doses, it makes a clear solution in all kinds of hard water, and does not affect surgical instruments in any way. It keeps well in brown glass bottles, but darkens when exposed to the light. Our physicians are well satisfied with it, particularly in antiseptic washes and in cases in which it is dangerous to put into the hands of ignorant patients such things as phenol, cresol, corrosive mercuric chloride, and other poisonous antiseptics.

We have no adverse reports concerning the preparation up to date; in fact, it seems, within reasonable bounds, to be the most satisfactory antiseptic and germicide of which we have any knowledge. Adding a few drops of phenolphthalein test solution gives it a fine ruby color and distinguishes its solutions from "drinkables."

Fumigating Pastilles.

Below is reprinted a formula which should prove satisfactory:

Benzoin	125.0 grammes.
Cascarilla	125.0 grammes.
Myrrh	41.5 grammes.
Charcoal	750.0 grammes.
Oil of nutmeg	25.0 grammes.
Oil of clove	25.0 grammes.
Potassium nitrate	66.5 grammes.
Mucilage of tragacanth	enough.

The first four ingredients, in moderately fine powder, are carefully mixed with the potassium nitrate; the oils are then added, and enough mucilage of tragacanth gradually incorporated to form a plastic mass. This is rolled into the desired shape, divided and dried.

A somewhat more complex formula —which may be considerably pruned to suit the ideas of the manufacturer— as given by Dieterich, follows:

Potassium nitrate	375 grains.
Water	25 ounces.
Powdered wood charcoal	30 ounces.
Powdered tragacanth	375 grains.
Storax	300 grains.
Benzoin	300 grains.
Vanillin	8 grains.
Coumarin	3 grains.
Musk	3 grains.
Civet	1½ grains.
Oil of rose	20 drops.
Oil of bergamot	15 drops.
Oil of ylang ylang	10 drops.
Oil of rhodium	10 drops.
Oil of sandalwood	5 drops.
Oil of cinnamon	5 drops.
Oil of orris	1 drop.
Oil of cascarilla	1 drop.

Saturate the charcoal with the potassium nitrate dissolved in the water, dry the mass, powder, add the other ingredients and mix thoroughly. Beat the mixture to a plastic mass with the addition of sufficient mucilage of tragacanth containing 2 per cent. of saltpeter in solution and form into cone-shaped pastilles. In order that the storax may be evenly distributed throughout the mass, it may be previously dissolved in a small amount of acetic ether.

Incense Powder

Sandal wood, which is the base of many incense powders, is a regular article of commerce and may be obtained through the usual channels. Doubtless the wholesale houses would supply it with added perfume if requested, but perhaps no two houses would add exactly the same perfume.

Wood smoke is objectionable in an incense powder, and so some makers omit the wood and use charcoal instead.

Two formulas for incense powders follow, in one of which sandal wood is called for and in the other charcoal:

I.

Sandal wood, ground	2 ounces.
Benzoin	3 ounces.
Tolu	½ ounce.
Oil of sandal	15 minims.
Oil of cassia	15 minims.
Oil of cloves	15 minims.
Potassium nitrate	1½ ounces.

II.

Willow charcoal	4 ounces.
Benzoic acid	3 ounces.
Oil of thyme	15 minims.
Oil of caraway	15 minims.
Oil of rose	15 minims.
Oil of lavender	15 minims.
Oil of cloves	15 minims.
Oil of sandal	15 minims.
Potassium nitrate	3 ounces.

By the use of mucilage of tragacanth these powders may be made into pastilles.

Removing Tattoo Marks

India ink, with which tattooing is usually done, generally consists of finely divided charcoal, which cannot be brought into solution. Other pigments are sometimes used which are soluble, it is true, but not in any agent which could be applied to the skin; nor could such an agent, if it existed, penetrate deep enough to reach the particles unless possibly by surgical procedure. The only known method of obliterating tattoo marks is to take away with them the skin in which they are imbedded. This has been accomplished by the application of an electric current, by use of caustics and in other ways.

When the destruction of the true skin has been accomplished, it becomes a foreign body, and if the destruction has extended to a sufficient depth, the other foreign body, the coloring matter which has been tattooed in, may be expected to be cast off with it.

Pepsin and papain have been proposed as applications to remove the cuticle. A glycerole of either is tattooed into the skin over the disfigured part, and it is said that the operation has proved successful. Ohmann-Dumesnil recommends papain, 5; water, 25; glycerin, 75; diluted hydrochloric acid, 1. Rub the papain with the water and the hydrochloric acid, allow the mixture to stand for an hour, add the glycerin, let it stand for three hours, and filter.

Salicylic acid massed with glycerin to the consistence of dough applied over the marks with a compress and strips of adhesive plaster, and allowed to remain in contact for a week, has been recommended. After the first dressing with this preparation the epidermis over the marks is removed, and a fresh

application of the salicylic paste is made. It is said that usually the second application removes the marks, but sometimes it is necessary to make a third.

A physician has communicated the following to The Druggists Circular:

Apply a highly concentrated tannin solution to the tattooed places and treat them with a tattooing needle as the tattooer does. Next vigorously rub the places with a lunar caustic stick and allow the silver nitrate to act for some time until the tattooed portions have turned entirely black. Then take off by dabbing. At first a silver tannate forms on the upper layers of the skin, which dyes the tattooing black; with slight symptoms of inflammation, a scurf ensues, which comes off after fourteen or sixteen days, leaving behind a reddish scar. The latter assumes the natural color of the skin after some time. The process is said to have good results.

It is scarcely necessary to say that suppuration is likely to follow any of the treatments mentioned, and that all carry with them the risk of scarring. In view of this it becomes apparent that such operations should be undertaken only by a surgeon skilled in dermatological practice. Not only might an amateur cause the patient suffering without success in removing the marks, but might add another disfigurement to the one already existing and get himself into serious difficulties.

Chilblains

L. H. H., New Jersey.—It has been said that "those who suffer from chilblains are a distinct class of the community," having but poor circulation or possessing blood that is deficient in some important constituent. It is said that calcium chloride has been administered internally with marked success in certain cases, and that the administration of tablets of ferrous carbonate and arsenic, the latter in one-fortieth grain doses, has relieved some cases of long standing, but medical treatment, of course, is a problem for the physician rather than the pharmacist.

The following formula may be employed in preparing an external application intended to give temporary relief:

Phenol	6 grains.
Liniment of belladonna	2 drams.
Liniment of aconite, B. P.	1 dram.
Flexible collodion	1 ounce.

To be painted on the parts each evening.

Solidified Alcohol

In The Druggists Circular for May, 1916, page 271, appears the formula for this preparation offered for use in the proposed American Pharmaceutical Association Recipe Book.

Alcohol	1000.0 mils.
Stearic acid	60.0 grammes.
Sodium hydroxide	13.5 grammes.

Dissolve the stearic acid in 500 mils of the alcohol. Dissolve the sodium hydroxide in 500 mils of the alcohol. Warm each solution to 60° C. Mix them and pour into suitable containers which have previously been warmed to 60° C. and allow to solidify.

Denatured alcohol or wood alcohol may be used in place of alcohol to make a cheaper product, and the mixture may be colored, if desired, by the addition of suitable coloring material.

On account of the dangers in the fumes of wood alcohol, we think its use as a fuel by the public should not be encouraged.

In The Druggists Circular for April, 1916, page 203, we quote the New Hampshire Board of Health as having said that "the addition of as little as 3 per cent. of soap to alcohol will thicken it to a jellylike consistency." The same authority found that the price of a so-called solid alcohol on the market was at the rate of $1 per quart of denatured alcohol, the retail market price of denatured alcohol being about 25 cents a quart.

Still quoting from that almost inexhaustable storehouse of pharmaceutical information, The Druggists Circular, we offer (with a few typographical changes), a note which appeared in its issue for November, 1915, page 724:

Heat 1,000 parts of denatured alcohol (90 per cent.) in a flask of double the capacity necessary to hold the liquid, on a water-bath to about 60° C., and then mix with 28 to 30 parts of well-dried rasped castile soap and 2 parts of shellac. After repeated shaking, complete solution will take place. The solution is put, while still warm, into metallic vessels, which are to be closed up at once and the mixture allowed to cool therein. The admixture of shellac effects a better preservation and also prevents the evaporation of the alcohol. When the solidified spirit burns the soap remains behind.

Prof. E. V. Howell, of Chapel Hill, N. C., informed us that hexamethylenamine was an excellent fuel for use instead of solidified alcohol, and we have published a note on the subject in The Druggists Circular. Emery W. Thurston, California, states that a half-gramme tablet of "hexy" will burn for about three and a half minutes and give an intense heat. At the Atlantic City meeting of the American Pharmaceutical Association Professor Howell had something to say on the subject of hexamethylenamine as a fuel.

Freezing Mixtures

The degrees are given according to Fahrenheit.

1. Ammonium nitrate, 1 part, water 1 part, reduces temperature to 4 degrees.

2. Ammonium chloride 5 parts, potassium nitrate 5 parts, water 16 parts, reduces temperature to 10 degrees.

3. Ammonium chloride 5 parts, potassium nitrate 5 parts, sodium sulphate 8 parts, water 16 parts, reduces temperature to 4 degrees.

4. Sodium nitrate 3 parts, diluted nitric acid 2 parts, reduces temperature to 3 degrees.

5. Ammonium nitrate 1 part, sodium carbonate 1 part, water 1 part, reduces temperature to 7 degrees.

6. Sodium phosphate 9 parts, diluted nitric acid 4 parts, reduces temperature to 12 degrees.

7. Sodium sulphate 5 parts, diluted sulphuric acid 4 parts, reduces temperature to 3 degrees.

8. Sodium sulphate 6 parts, ammonium chloride 4 parts, potassium nitrate 2 parts, diluted nitric acid 4 parts, reduces temperature to —10 degrees.

9. Sodium sulphate 6 parts, ammonium nitrate 5 parts, diluted nitric acid 4 parts, reduces temperature to —10 degrees.

10. Snow or crushed ice 5 parts, sodium chloride, 2 parts, ammonium chloride 1 part, reduces temperature to —12 degrees.

11. Snow or crushed ice 21 parts, sodium chloride 10 parts, ammonium chloride 5 parts, potassium nitrate 5 parts, reduces temperature to — 18 degrees.

12. Snow or crushed ice 12 parts, sodium chloride 2 parts, ammonium nitrate 5 parts, reduces temperature to —25 degrees.

13. Snow 3 parts, diluted sulphuric acid 2 parts, reduces temperature to —23 degrees.

14. Snow 8 parts, diluted hydrochloric acid 5 parts, reduces temperature to —27 degrees.

15. Snow 7 parts, diluted nitric acid 4 parts, reduces temperature to —30 degrees.

16. Snow 4 parts, calcium chloride 5 parts, reduces temperature to —40 degrees.

17. Snow 2 parts, cryst. calcium chloride 3 parts, reduces temperature to —50 degrees.

18. Snow 3 parts, potash 4 parts, reduces temperature to —51 degrees.

Softening Dry Cigars

The following ideas have been advanced by subscribers:

"I do not attempt to get along without a hygrometer. I place a brick in the lower part of the case to serve as a base for a small alcohol stove. Then a small pan of water is placed over the lighted stove, and as the water rises in temperature the vapor rises and covers the glass of the case as if it were frosted. When this stage is reached I extinguish the flame and leave the cigars to do the rest. They absorb the moisture in about ten minutes, leaving the glass clear again and not streaked. By following this method I am able to keep the cigars at any desired stage of moisture and at little inconvenience."

Here is an easier way to moisten those Kansas stogies. "Put a 1-pound ointment jar in the cigar case. Fill it half full of water. Shove in an electric bulb and turn on the 'juice.'

"See that you keep water in the jar, and turn off the 'juice' when moist enough. But in case 'juice' is not available, take a few soft bricks, soak them in water (to which a little glycerin may be added), and distribute about the cigar case and you will have no kick on dry cigars. But keep your bricks moist and watch your cigars. When the weather is hot and dry the bricks must be moistened oftener than when there is much humidity, and in the winter months, with artificial heat, your cigar case needs attention the most. I always put two or three blotters under the brick to absorb surplus moisture."

Drug Store Sinks

In a discussion of the drug store sink carried on through The Druggists Circular, various kinds were suggested. One man thought a metal sink with a rubber mat on its bottom the right thing, but the final word was contributed by a druggist who said that artificial stone washtubs served the purpose ideally.

China Painting

The oil for china painting (usually called the medium) consists of copaiba thinned to the consistency of glycerin with oil of lavender and oil of cloves. The so-called "thick oil" or "fat oil" medium is oil of turpentine which has been exposed to the air in an open vessel for some months until it has become thick.

As to pigments, the gold paint may be prepared as follows:

Dissolve in a weighed capsule any convenient quantity of pure gold in nitro-hydrochloric acid and add to the solution sufficient uranium oxide to give the solution a rich brown color.

Evaporate the liquid to dryness on a sand bath, cool the capsule and weigh. Then to the residue so ascertained and counted as one part, add:

Sulphur .....1 part.
Damar resin.....2 parts.
Turpentine oil.....6 parts.

With due precautions against the mixture inflaming, heat it over a quick fire, with constant agitation, until it becomes homogeneous and acquires a fine reddish-brown color. Add while still hot sufficient rosemary oil to give it the consistency of a thick syrup. Finally, for every 100 parts of the gold originally used, add 35 parts of bismuth flux (bismuth trioxide, or bismuthous oxide, obtained by gently igniting basic bismuth nitrate) and let cool.

Some of the colors used are antimony oxide, Naples yellow, barium chromate, lead chromate, silver chloride and chromic oxide.

Transferring Designs to Glass

Coat the glass with damar varnish or with Canada balsam mixed with an equal volume of oil of turpentine, and let it dry until very sticky, which takes half a day or more. The picture to be transferred should be well soaked in soft water and carefully laid upon the painted glass after removing the surplus water with blotting paper and pressing upon it so that no air bubbles or drops of water are seen underneath. The picture should then dry a whole day before it is touched. Then, with wetted fingers rub off the paper on the back. If this be skillfully done, almost the whole of the paper can be removed, leaving the ink upon the varnish. This accomplished, another coat of varnish should be added.

The same method could be used with china instead of glass.

Paint for Signs on Paper

Dissolve 1 part of shellac in 3 parts of 95 per cent. alcohol and mix in the appropriate color. Thin with alcohol if the varnish becomes too thick.

We have found no better material for making black lettered charts than ordinary asphalt varnish applied with a camel's hair brush.

Fixative for Pencil Drawings

Floating the drawing on skimmed milk has been found efficacious. Another fixative is made of—

Shellac ..... 4 parts.
Sandarac ..... 2 parts.
Alcohol .....94 parts.

In applying this, care should be used to see that the drawing is not smeared with a brush.

Dry Cell Batteries

In the so-called dry batteries the exciting substance is a paste instead of a fluid—some moisture being necessary to cause the interaction. The composition of the paste used in many makes of batteries is a trade secret. A typical dry cell consists of a containing vessel of zinc, which forms the positive element; a cylinder of carbon, which is the negative element, and a paste, filling the space between them, made of:

Zinc oxide.....1 part.
Ammonium chloride.....1 part.
Plaster of paris.....3 parts.
Zinc chloride.....1 part.
Water .....2 parts.

Transferring Printed Pictures to Paper

I.

Prepare a liquid by dissolving 1½ drams of common yellow soap in 1 pint of hot water, and, when nearly cold, add 3¼ ounces of oil of turpentine and then shake thoroughly together.

II.

Make a solution by dissolving ½ ounce of soft soap and 2 drams of potassium carbonate in 16 ounces of distilled water.

The fluids are used to thoroughly wet the print, which is then spread face down on the damp paper on which the transfer is to be made. The two sheets are then placed between thicker paper and pressure applied either with a letter press or by rubbing with a blunt instrument like the bowl of a spoon.

Painting Signs on Muslin

The paint must not strike through, therefore the fabric requires sizing with a solution of gelatin or pale sheet glue, to which a few drops of glycerin may be added for each half-pint of solution. Some of the liquid glues on the market, thinned with a little water and vinegar are excellent for sizing.

The oil paint used for lettering must be ground as stiff as possible, and is reduced with a small quantity of drying japan and varnish (or when quick drying is not required with boiled linseed oil and drier) to a soft paste, which is then thinned to stout painting consistence with oil of turpentine or benzin, so that after application with the brush it will dry semi-flat. This paint will not run.

When the letters are to stand exposure to the weather and gloss is desirable, the stiff-ground oil color is reduced somewhat with boiled oil, in which has been melted pure beeswax

at the rate of 1 pound to 1 gallon of the oil. This also tends to keep the color from running after thinning with benzin or "turps," but lettering color must always be held stout. Benzin should never be used in a room where there is an open flame.

Good Machine Oil

I was informed some years ago that 3-in-1 oil consisted of three parts of sperm oil and one part of kerosene. Whether this is correct or not, the two oils mixed in that proportion made one of the best machine oils that can be had.—T. W. Norwood.

Transparent Coating for Silverware

Bleached shellac	2 ounces.
Camphor	½ ounce.
Alcohol	16 ounces.

We suspect, however, that many modern metal coatings are celluloid varnishes. A satisfactory one may be made by dissolving 1 ounce of shredded celluloid in 10 ounces of acetone and 10 ounces of amyl acetate. The solution is effected rather slowly, so it is best to cork the container tightly and allow the mixture to stand several days.

Tinting Wax Figures

In tinting wax images, notably in making wax flowers and fruit, the pigments are employed by mixing with the melted wax, by painting on with a brush after mixing with the proper "size," or even by dusting the dry color on the molded object. The dry colors suggested are prussian blue, ultramarine blue, carmine, chrome yellow, rose pink, purple, scarlet powder, and chrome green numbers 1 and 2. Most of these are poisonous.

Solution of Iodine for Skin Sterilization

Dalangre (Presse med) suggests the following formula for a stable solution of iodine, which, he says, applied thrice, renders the skin perfectly sterile, without exerting any caustic action:

Iodine	45 grains.
Sodium borate	45 grains.
Alcohol	1 ounce.
Ether	1 ounce.
Chloroform	1 ounce.

The sodium borate does not go into solution.

Haines' Solution

I.

Copper sulphate	2 grammes.
Glycerin	15 grammes.
Distilled water	15 grammes.
Solution of potassium hydroxide (5 per cent.)	150 grammes.

II.

Copper sulphate	2 grammes.
Glycerin	20 grammes.
Potassa	9 grammes.
Water	175 grammes.

Boil 4 mils of the solution and add 6 to 10 drops (not more) of urine, and boil again. If sugar is present a yellow or yellowish-red precipitate forms.

Harrington's Solution

Corrosive mercuric chloride	16 grains.
Hydrochloric acid	2½ ounces.
Water	12½ ounces.
Alcohol	27 ounces.

Glegg's Nasal Lotion

In the Practitioner, Dr. W. Glegg gives the following formula for his nasal lotion:

Sodium chloride	6 drams.
Sodium sulphate	2 drams.
Sodium phosphate	2 drams.
Sugar	14 drams.
Thymol	3 grains.
Menthol	3 grains.
Water, to make	6 ounces.

British Oil

Crude petroleum	35 mils.
Barbadoes tar	105 mils.
Crude oil of amber	140 mils.
Oil of juniper	140 mils.
Linseed oil	280 mils.
Oil of turpentine	enough.
To make	1000 mils.

Mix them.

A New Antiseptic

The Revista Central Farmaceutico Uruguayo gives the following formula for a new antiseptic solution:

Sodium iodide	3 grammes.
Hydrogen dioxide solution	100 grammes.
Distilled water	100 grammes.

This antiseptic, it is said, has an advantage over others in that its action is not superficial alone. The dioxide acts on the albuminoids of the tissues and the iodine being in a semi-colloidal state can therefore adhere more intimately to these than when in simple solution.

Grease-Proof Boxes

The following is the composition of a preparation used for painting the interior of cardboard or wooden boxes to make them grease-proof:

Fish glue	1 pound.
Rosin	¼ ounce.
Litharge	½ ounce.
Glycerin	½ ounce.
Kaolin	½ ounce.
Water	40 ounces.

Boil the glycerin, litharge and part of the water together to dissolve, then mix in the other ingredients.

The liquid is applied to the inside of the boxes with a brush and allowed to dry, the application to be repeated if necessary.

Lees' Antiseptic Inhalation

Creosote	2 drams.
Phenol	2 drams.
Tincture of iodine	1 dram.
Spirit of ether	1 dram.
Spirit of chloroform	2 drams.

Blair's Inhalation

Menthol	5 grains.
Thymol	5 grains.
Oil of eucalyptus	2 ounces.
Oil of sylvester pine	3 ounces.

Lotion for Ivy Poisoning

Sodium bicarbonate	1 dram.
Sodium sulphite	1 dram.
Glycerin	2 drams.
Fluidextract of grindelia	1 ounce.
Water, to make	4 ounces.

Apply with a soft brush two or three times a day.

Dyeing Ivory Billiard Balls

First, wash the balls in a solution of sodium carbonate; then plunge them for a few seconds in a bath of equal parts of water and nitric acid. Next, rinse them well, preferably in running water, and leave them in an alcoholic solution of fuchsin until the required color has been imparted.

If the fuchsin hue is too pronounced, this process for giving a less fiery one may be found useful: After cleansing and rinsing as above directed, leave the balls for a few moments in a 2 per cent. solution of tin chloride, after which boil them in a solution of logwood. The final color is produced by leaving the balls in a solution of potassium carbonate.

Easter Egg Dyes

Herewith are several formulas for dyes suitable for Easter eggs. These are taken from Pharmaceutical Formulas, where it is stated that the amounts directed in each formula should be put into 20 packets, and that each packet will then contain enough dye, when dissolved in a half pint of boiling water, to color a dozen eggs. After the eggs have been immersed in the solution and allowed to dry, they should be polished with a little olive oil. The weights are in the apothecaries' system.

Blue

Marine blue	1 dram.
Citric acid	10 drams.
Dextrin	2 ounces.

Chocolate Brown

Vesuvin	1 ounce.
Citric acid	10 drams.
Dextrin	1 ounce.

Green

Brilliant green	½ ounce.
Citric acid	5 drams.
Dextrin	2 ounces.

Orange

Azo orange	2½ drams.
Citric acid	5 drams.
Dextrin	2½ ounces.

Rose

Eosin	75 grains.
Dextrin	3 ounces.

Violet

Methyl violet	1 dram.
Citric acid	5 drams.
Dextrin	2½ ounces.

Yellow

Naphthol yellow	½ ounce.
Citric acid	10 drams.
Dextrin	2½ ounces.

Red

Diamond fuchsin	1 dram.
Citric acid	5 drams.
Dextrin	2½ ounces.

Floor Oil

The following formulas may be used in preparing dust-absorbing floor oils: suitable for use in factories, stores, offices, etc.:

I.

Yellow petrolatum oil	1000 parts.
Linseed oil	1000 parts.

II.

Rape seed oil	1000 parts.
Linseed oil	1500 parts.

III.

Yellow petrolatum oil	1000 parts.
Rape seed oil	500 parts.
Linseed oil	2000 parts.

It should be remembered that any article dropped on a floor treated with any of the above described oils is apt to be soiled or ruined.

Styptic Pencils

We understand that these pencils are made of alum by fusion. Some skill is required to get the alum to just the proper consistency, a little added water to replace that driven off

by the heat being necessary. When the liquid is ready it is poured into moulds to harden.

Objections have been raised by hygienists to the use of a "public" styptic pencil, and their use is forbidden in some places. It is easy to conceive of disease being spread by the touching of a cut on one man's face with any article which has been in contact with the blood of another.

The present-day demand is for an alum pencil that is transparent, that is, one in which there is still enough water of crystallization to make a "clear" crystalline point. To obtain a product of this character means very careful manipulation and the operation is usually successful only when large quantities of alum are molded at one time.

Zinc Soluble in Castor Oil

It is said that zinc is appreciably soluble in castor oil; hence the oil should never be stored in a zinc vessel.

Stove Polish

The best stove polish is finely powdered "fatty" graphite made into a paste with water. In some types the graphite is thinned out with petroleum distillate, but these are practically tabooed because of their dangerously inflammable character. Another type consists of mixtures of graphite and lampblack, with oil of turpentine, ceresin and Japan wax, but we will not give the formula, since it, too, is apt to catch fire when rubbed on the stove. A safe liquid polish is the following:

Solution of sodium silicate	1 part.
Water	2 parts.
Lampblack	enough.

How to Mix Plaster of Paris

In mixing plaster of paris, says Machinery, do not pour the water on the plaster, but turn the plaster gradually into the water, spreading it about in shaking it in and not stirring until all the plaster has been added. If mixed in this manner, a smooth cream or thin dough without lumps will result. The proper quantity of gypsum is usually enough to peep out over the surface of the water over the greater part of the area; that is, about equal volumes of each ingredient. The addition of glue water to the mixture retards setting.

To Regulate the Setting of Plaster

To make plaster of paris set quickly, mix it with water in which a little potassium sulphate has been dissolved. To make it act slowly, mix it with fine slaked lime. The time of setting may be regulated by changing the relative quantities.

Whitewash

Lime, freshly burnt	17 parts.
Plaster of paris	7 parts.
Curds, freshly precipitated	8 parts.
Water	enough.

Slake the lime by sprinkling and dipping and with it mix the curd, using a thin wooden paddle for the purpose, and working it thoroughly in. Now add the plaster and mix all together, using a little water from time to time and grinding the mass on a slab or in a mill until of the consistence of cream. When well ground thin down with water and apply at once. In a short time the mass hardens, and hence only enough for present use should be prepared.

Apply with a brush as ordinary whitewash is applied.

Stick Salve, or Roll Turpentine

Yellow wax	1 pound.
Resin	4 pounds.
Linseed oil	4 ounces.
Oil of turpentine	4 ounces.

Make into sticks weighing about ½ ounce each.

Antiseptic Glove Lubricant

Tragacanth	1 ounce.
Boric acid	4 drams.
Formaldehyde solution	1 dram.
Oil of gaultheria	5 drops.
Oil of rose geranium	3 drops.
Alcohol	4 ounces.
Water	24 ounces.

Soften the tragacanth in the water, in which the boric acid has previously been dissolved. Dissolve the oils in the alcohol, and add this solution, portion by portion, to the mucilage of tragacanth, shaking the mixture after each addition. Then, lastly, add the formaldehyde solution.

Dobell-Pynchon

Sodium borate	26 grammes.
Sodium bicarbonate	26 grammes.
Antiseptic solution U. S. P.	1000 mils.
Glycerin	3000 mils.

Mix the two salts with the antiseptic solution and add the glycerin in small portions, allowing the reaction to subside before adding the next portion.

Strain the finished product through cotton.

Moldable Splints

Dissolve 1 pound of shellac and 1 dram of borax in 1½ pints of alcohol. Apply the solution to one side of an

old woolen cloth with a brush. Allow this to dry thoroughly before a hot fire, to do which requires about an hour. Then apply a second coat on the same side and dry as before. If a stronger piece is desired apply the mixture on one side of each of two pieces that have been previously prepared, dry, and place them together and press with a hot iron, when they will unite and become as one piece. Always be sure to dry out all the alcohol. To temper the cloth for use, hold before a hot fire until it becomes soft, then apply. It will adapt itself to the shape of the limb at once. Cold air or cold water will make it set quickly.

Medicated Baths

Considerable information on this subject may be obtained from the more comprehensive works on dermatology and hydrotherapy.

The seventh (1905) edition of the Spanish Pharmacopœia contains formulas for an alakaline bath, an aromatic bath, a sea-water bath, a gelatined bath, and two sulphurated baths. The formulas for the sulphurated baths follow:

Bano-Sulfuroso.

Balneum Sulphurosum.

I.

Sulphurated potassa. 70 grammes.
Water .....700 grammes.

Dissolve and add to a bath of 250 liters of water.

II.

Sodium sulphide .... 50 grammes.
Water .....200 grammes.

For a bath of 250 liters. This bath closely imitates the natural.

In the British Pharmaceutical Codex (1911) are formulas for an acid bath, a boric acid bath, an alkaline bath, two effervescent baths, an effervescent formic bath, a bran bath, a mustard bath, a salt bath, a sulphurated bath, a sulphur bath and a creosote vapor bath. A few of these formulas are appended (the proportions are those of the finished bath).

Balneum Effervecens, B. P. C.

Effervescent Bath.

I.

Sodium bicarbonate ... 15 ounces.
Sodium acid sulphate..7½ ounces.
Water ..... 30 gallons.

Dissolve the sodium bicarbonate in the water, and add the sodium acid sulphate, in lumps or cakes, to the solution.

II.

Sodium bicarbonate ... 15 ounces.
Sodium acid sulphate..7½ ounces.
Sodium chloride ..... 50 ounces.
Calcium chloride .....7½ ounces.
Water, to make..... 30 gallons.

Balneum Sulphuratum, B. P. C.

Sulphurated Bath.

Sulphurated potassa... 8 ounces.
Water, to make..... 30 gallons.
Dissolve.

Balneum Sulphuris, B. P. C.

Sulphur Bath.

Sodium acid sulphate.. 5 ounces.
Sodium thiosulphate, in crystals ..... 5 ounces.
Water, to make..... 30 gallons.

Dissolve the salts separately, each in 40 ounces of the water, mix the two solutions and pour into the remainder of the water.

Coloring Electric Bulbs

From a previous issue of The Druggists Circular we quote:

Electric light globes may be colored for temporary use by coating them with a varnish or with flexible collodion that has been tinted with the appropriate anilin dye. A special varnish that has been suggested is:

Sandarac ..... 20 parts.
Mastic ..... 10 parts.
Ether ..... 20 parts.
Benzin ..... 14 parts.

The anilin dyes that may be used to advantage are anilin magenta, malachite green or methyl green and methylene blue or methyl blue.

But, after all, why go to the trouble to make such colored globes and that with results that will be decidedly amateurish, when any electrical goods house will furnish permanent and beautiful globes of colored glass? And it should also be mentioned that as the globes become quite hot there is a risk of a collodion or varnish coating taking fire; there is also much danger in handling the solvents named in the foregoing formula, on account of their inflammability.

Frosting Glass

C. W. Wrightman, Texas, has been kind enough to send us his process for frosting electric light globes. It follows:

"Dip the globe in a solution of liquid glass, then, with a quick, downward movement, shake the surplus liquid from the globe. Then, while the globe is still moist, sprinkle over it fine 'diamond dust.' When the globe is dry the surplus dust may be removed from it with a stiff brush. This gives a brilliant, crystal frost."

Hien Fong Tincture

Hager gives an analysis of Schoepfer's Hien Fong tincture according to which it is a weak hydro-alcoholic tincture of dried laurel berries and

laurel leaves, containing also 8 per cent. of ether, 1.5 per cent. of camphor, 1 per cent. of oil of mentha crispa, 1.5 per cent. of oil of peppermint, and 0.25 per cent. each of the oils of anise, fennel, lavender and rosemary.

Improving Lime Liniment

Heckman (Medical World) says that the addition of 75 grains of thymol to the pint of carron oil increases the efficiency of the oil as an application to burns.

Cough Candy

Candy-making is an art in itself, and one in which few pharmacists are prepared, with respect to training or equipment, to engage. Below are reprinted from The Druggists Circular formulas for a number of different kinds of cough candy: those who want the best results from their use are advised to collaborate with a professional candy-maker:

Menthol Rock Candy

Sugar, crystal A	20 pounds.
Cream of tartar	2 drams.
Menthol	4 drams.
Water	enough.

Put the sugar in a suitable kettle; add the cream of tartar and 5 pints of water. Set the kettle on the fire and stir the batch until it comes to a boil. With a little water wash down the sides of the kettle, and cook the batch to 340° F. Pour the mass on an oiled slab; let it cool a little, and work in the menthol by folding the mass over and over. Work the mass into a long round strip; pull into sticks, and cut into half-inch pieces.

Aniseed Drops

Sugar, crystal A	5 pounds.
Water	22 ounces.
Cream of tartar	40 grains.
Oil of anise	40 minims.
Red color	enough.

Put the sugar in a suitable container; add the water and the cream of tartar. Cook to 335° F.; pour out on an oiled slab; as it cools add the oil of anise and the color; fold over until cool enough to handle, then work thoroughly and stamp into "drops."

Wild Cherry Drops

Sugar, crystal A	4 pounds.
Water	1 pint.
Cream of tartar	24 grains.
Extract of bitter almond	3 drams.
Powdered orris	3 drams.
Red color	enough.

Cook the sugar, water and cream of tartar to 335° F. Pour out on an oiled slab; let it cool a little; add the extract, the orris and the color. When cool enough, work thoroughly, and stamp into "drops."

Licorice Drops

Sugar	12½ pounds.
Water	3 pints.
Cream of tartar	1 dram.
Powdered extract of licorice	1 ounce.
Oil of wintergreen	30 minims.
Oil of anise	20 minims.
Powdered charcoal	1 dram.

Cook the sugar, water and cream of tartar to 340° F.; pour out on an oiled slab; add the other ingredients, and fold and knead until well mixed; then stamp into "drops."

Hoarhound Drops

Sugar	20 pounds.
Hoarhound	2 ounces.
Water	8 pints.
Cream of tartar	90 grains.

Boil the hoarhound with 3 pints of water until reduced to 1 pint, and squeeze through muslin. Cook the sugar with 5 pints of water and the cream of tartar, to 335° F.; add slowly the infusion of hoarhound and cook the batch to 340°. Pour out on an oiled slab, fold over the edges as it cools and when cool enough stamp into tablets.

Old-Fashioned Cough Candy

Canada snake-root	1 ounce.
Pectoral species, N. F.	2 ounces.
Sugar	12 pounds.
Molasses	8 ounces.
Oil of wintergreen	10 minims.
Oil of sassafras	10 minims.
Oil of anise	10 minims.
Water	enough.

Make a decoction of the herbs with 4 pints of water, and strain. Cook the sugar, the molasses and a little water until it forms a homogeneous mass; slowly stir in the decoction, and cook the batch to 310° F. Pour the mass on an oiled slab; and as it cools, incorporate the oils. Finally cut into drops of the desired size.

Hoarhound Candy

Decoction of hoarhound (2 ounces to 1 pint)	10 ounces.
Brown sugar	7 pounds.
Water	2½ pints.

Boil to feather (a confectioners' term, indicating a state reached by sugar in boiling just before it begins to candy or grain). Stir the mass against the sides of the pan with a spatula for two or three minutes; then mix the whole together and pour into tin frames.

Peppermint Cough Candy

White sugar	7 pounds.
Tartaric acid	½ ounce.
Oil of anise	2 drams.
Oil of peppermint	1 dram.
Water	3 pints.
Saffron color	enough.

Boil to crack (about 252° F.) and pull. The pulling process makes the candy look like satin. It is formed into rods and cut up to cushion-shaped pieces with scissors.

Clear Lime Mint Drops

Crystal A sugar	2 pounds.
Cream of tartar	1 teaspoonful.
Tartaric acid	2 ounces.
Oil of lime	1 ounce.
Oil of peppermint	½ ounce.
Chlorophyl	enough.

Mix the sugar, the cream of tartar and the water in a suitable pan. Put the pan on the fire and stir the batch until the sugar is dissolved; cook to 335° F.; pour the batch out on a greased marble slab and allow it to cool. Work in the color, the acid, and the oils. Fold the batch over and over again until it becomes homogeneous in color and is cool. Cut into drops of the required size.

Everton Toffee

Sugar	4 pounds.
Water	3 cupfuls.
Cream of tartar	½ teaspoonful.
Butter	2 ounces.

Put the water, sugar and cream of tartar into a pan and stir until they boil, but no longer. Add the butter after the other comes off the fire, but do not stir it in.

Blue Stains for Bacteria

Roux's Stain

(a)

Violet dahlia..... 1 gramme.
Absolute alcohol..... 10 grammes.
Distilled water to make .....100 grammes.

(b)

Methyl green ..... 2 grammes.
Absolute alcohol..... 20 grammes.
Distilled water to make .....200 grammes.

Prepare the solutions separately by rubbing the dyestuff in a mortar with the alcohol, gradually adding the water. Let each liquid stand for 24 hours; then mix the two; filter and store in a well-stoppered bottle.

Kuehne's Stain

Alcoholic solution of methylene blue..... 30 mils.
Aqueous solution of ammonium carbonate (1 per cent) .....100 mils.
Filter before using.

Black Eye Lotion

Potassium nitrate..... 1 part.
Ammonium chloride..... 2 parts.
Aromatic vinegar..... 16 parts.
Water, to make.....240 parts.

Howell's Artificial Serum

Sodium chloride.. 7.00 grammes.
Calcium chloride. 0.26 grammes.
Potassium chloride ..... 0.30 gramme.
Sodium bicarbonate ..... 0.20 gramme.
Sterilized distilled water .....1,000.00 mils.

Druew's Paste

Salicylic acid..... 2 grammes.
Pyrogallol ..... 4 grammes.
Purified wood-tar..... 4 grammes.
Zinc oxide..... 4 grammes.
Soft soap..... 5 grammes.
Anhydrous wool-fat... 5 grammes.

Darier's Lotion

Acetic acid.....10 to 20 grammes.
Spirit of camphor 250 grammes.
Cherry-laurel water ..... 250 grammes.
Glycerin ..... 500 grammes.

Magnesium Flashlights

I.

Metallic magnesium in coarse powder or thin ribbons. If ribbon is used, it should be free from rust or tarnish, and beaten very thin at the end to be ignited.

II.

Magnesium powder blown into an alcohol flame by means of a special apparatus.

III.

Metallic magnesium .....4 drams.
Potassium chlorate .....1 dram.
Manganese dioxide .....½ dram.

IV.

Metallic magnesium.... 6 drams.
Potassium chlorate.....1½ ounces.
Antimony sulphide ..... 2 drams.

V.

Metallic magnesium.....2 drams.
Potassium permanganate..2 drams.
Barium dioxide.....1 dram.

In handling the chlorates and permanganates it is well to bear in mind the fact that they are explosive at times, especially when in combination. The powders in which they occur should be rubbed, if at all, on a sheet of paper with a wooden spatula in an open place.

Drilling Holes in Glass

Make a solution of 1 ounce of camphor, 1½ ounces of spirit of turpentine and 3 drams of ether. Keep the end of the drilling tool wet with this fluid. The sharp corner of a freshly broken point of a file is one of the best drilling tools for this purpose.

To Prevent Waste at the Bung

To pour liquids from the bung holes of barrels and kegs without spilling, use the wooden pieces that are supplied at each end of a roll of paper.—C. T. Heseltine.

Embalming Fluid

Thymol .....15 grains.
Alcohol .....½ ounce.
Glycerin .....10 ounces.
Water ..... 5 ounces.

A formula for embalming fluid approved by a committee of the National Funeral Directors' Association of the United States is as follows:

Solution of formaldehyde ..... 11 pounds.
Glycerin ..... 4 pounds.
Sodium borate .....2½ pounds.
Boric acid..... 1 pound.
Potassium nitrate.....2½ pounds.
Solution of eosin (1%).. 1 ounce.
Water, to make..... 10 gallons.

The sodium borate, boric acid and potassium nitrate are dissolved in six gallons of water; the glycerin is added, then the solution of formaldehyde and lastly the solution of eosin and the necessary amount of water.

Colored Lights for Theatrical Purposes

These fires serve to illuminate, hence intensity of light with as little smoke as possible is aimed at. In the preparation of such mixtures the ingredients, which should be perfectly dry, must be reduced separately by grinding in a mortar or otherwise to very fine powders, and then thoroughly mixed together on sheets of paper with the hands or by means of cardboard or horn spatulas. The mixtures are best packed in capsules or tubes about 1 inch in diameter and from 6 to 12 inches long, made of stiff writing paper. Greater regularity in burning is secured by moistening the mixtures with a little whiskey, packing them firmly down in the cases by means of a wooden cylinder, and then drying. To facilitate ignition a small quantity of a powder composed of mealed (very fine, dust-like) powder, 16 parts; nitre, 2 parts; sulphur, 1 part, and charcoal, 1 part, loosely twisted in thin paper, is inserted in the top.

White Light.

Saltpeter	4 ounces.
Sulphur	1 ounce.
Black sulphide of antimony	1 ounce.

Green Light.

Chlorate of baryta	2 ounces.
Nitrate of baryta	3 ounces.
Sulphur	1 ounce.

Pink Light.

Chlorate of potash	12 ounces.
Saltpeter	5 ounces.
Milk sugar	4 ounces.
Oxalate of strontia	1 ounce.

Yellow Light.

Chlorate of potash	4 ounces.
Sulphide of antimony	2 ounces.
Sulphur	2 ounces.
Oxalate of soda	1 ounce.

Red Light.

Nitrate of strontia	25 ounces.
Chlorate of potash	15 ounces.
Sulphur	13 ounces.
Black sulphide of antimony	4 ounces.
Mastic	1 ounce.

Blue Light.

Chlorate of potash	3 ounces.
Sulphur	1 ounce.
Ammonio-sulphate of copper	1 ounce.

The nomenclature is a little "old-timey," but we reproduce it just as it appears in the Scientific American Cyclopedia, believing that our readers will be able to "translate" it into modern chemical language. We might add, however, that mealed powder is very fine, dust-like gunpowder.

To Waterproof Tents

Linen, drill and other fabrics may be rendered waterproof by coating both sides with a chromatized solution of gelatin containing about 10 per cent. of glycerin. The following formula may be adapted to most uses:

Potassium dichromate	2 parts.
Gelatin	10 parts.
Glycerin	10 parts.
Water	100 parts.

Soften the gelatin in about one-fourth of the water; add the glycerin and 50 parts of water and shake until dissolved. Dissolve the potassium dichromate in the remaining water, and mix the solutions. This mixture must be protected from light, and applied away from actinic light. After the cloth has been coated it should be hung up in the sun for an hour or two to "set" the chromatized gelatin.

Otto Raubenheimer writes:

Some time ago one of my customers wanted a preparation to render a tent waterproof. I solved the question promptly and economically by selling him the moist precipitate, in the form of a magma, which is formed in the preparation of Burow's solution. I might remind your readers that Burow's solution, or liquor alumini acetatis crudus, is prepared by the mutual decomposition of aqueous solutions of lead acetate and alum. The precipitate of lead sulphate, which is usually thrown away, I sold to my customer, and I advised him to paint it on both sides of the canvas, and I was informed that it made the same waterproof.

A three-ply formula is as follows:

a.	Gelatin	5 parts.
	Rain water	300 parts.
b.	Alum	10 parts.
	Water	300 parts.
c.	Rosin soap	5 parts.
	Hot water	300 parts.

Mix equal portions of a, b and c and apply with a soft brush.

Waterproofing Fabrics with Rubber

Cravenette is made by saturating cloth with viscose. The general problem of waterproofing fabrics is an art in itself.

I.

Heat 1 pound of boiled linseed oil in a capacious vessel until it fumes strongly, then add gradually 1 ounce of rubber in small lumps, letting each lump fuse in the mass before adding another one.

This gives a sticky mass which is diluted with oil of turpentine until it is of proper consistency for spreading with a brush.

II.

Dissolve 1 pound of rubber in 1 pound of oil of turpentine and 2 pounds of petroleum by heating on a water-bath. When solution is complete add 4½ pounds of linseed oil.

Waterproofing Silk Banjo Strings and Fishing Lines

Perhaps silk banjo strings could be waterproofed in the manner in which silk fishing lines are protected from moisture. This consists in placing the line in a loose coil in a suitable vessel, pouring over the line enough boiled linseed oil to cover it, placing the vessel under the bell of an air pump, exhausting the air, and allowing the apparatus to remain so for several hours. The line is then taken out and stretched for drying in a protected place. Sometimes the oiled line is varnished by dipping it in a thin solution of copal resin in oil of turpentine.

To Make Paper and Pasteboard Waterproof

Take ordinary paper, pasteboard, or cardboard, and if it is intended for maps, manuscripts, drawings, or permanent prints, paint it with celluloid varnish. The surface which this produces will turn out to be washable, smooth, durable, and waterproof. Maps used in geographic, geodetic, and marine surveys are usually so treated. Almost any kind of manuscript or painting which is passed around a great deal, subject to moisture and use, should be coated with this varnish.

The paper or cards may be dipped into the varnish, or it may be applied with a large brush. In any case, it quickly dries by evaporation in the air. No warping occurs and the durability of any paper-board thus varnished is usually doubled. Nor is the elasticity and bending qualities of the paper injured in the slightest degree.

This varnish is very easily made; it is merely a matter of dissolving celluloid in the compound called amyl acetate. An old discarded roll of films from a camera can be cleaned and used for the celluloid. Slice this up with scissors and shake up the bits in the amyl acetate. A tumblerful of the latter and a tablespoonful of cut-up celluloid will do. Then add as much alcohol as you have of the solution. Add the alcohol slowly so that you can stop the moment any of the celluloid is thrown out of the liquid.

It is now ready to dry quickly, so it must be kept carefully closed and protected from evaporation.

The varnish is very inflammable.

Waterproofing Cloth

I.

Dissolve 1 pound of sugar of lead in 1 gallon of soft water, not in a metallic vessel; dissolve 1 pound of alum in another vessel, non-metallic, in one gallon of salt water; mix the solutions. Then at once put in the cloth or garment and let it become thoroughly saturated or soaked; when this has been effected take it out and hang over a line to dry, without wringing and without washing through other water.

It is said that this formula is hundreds of years old. This also makes the cloth, to a certain extent, fireproof, useful for tents, etc.

II.

One pound of sugar of lead, and 1 pound of zinc sulphate are dissolved in 2 gallons of water. The garment to be water-proofed is then dipped into this and worked about until thoroughly soaked. The garment is then wrung out, and when about half dry is rinsed in several separate lots of clean water; then entirely dried, and ironed back into its original shape.

III.

Cloth, according to an old authority, may be rendered waterproof by brushing it over with a solution of gelatin, and when dry, with an infusion of nutgalls. The latter brushing changes the gelatinous mass into a sort of leather. Presumably this brushing should be on the wrong side of the cloth.

IV.

Another method consists of rubbing the under side with a lump of beeswax until the surface presents a uniform white or grayish appearance. This method it is said renders the cloth practically waterproof, although still leaving it porous as to air.

V.

Another plan is to cause aluminum stearate to form in the fiber of the cloth, which may readily be done by immersing the latter in a solution of aluminum sulphate in water (1 in 10) and without allowing it to dry passing it through a solution of soap made from soda and tallow or similar fat, in hot water. Reaction between the aluminum sulphate and the soap produces aluminum stearate and sodium sulphate. The former is insoluble and remains in the fiber; the latter is removed by subsequently rinsing the fabric in water.

VI.

Here is a formula giving in detail a process involving the same principle:

Soap	2 ounces.
Glue	4 ounces.
Water	1 gallon.

Make a solution by the aid of heat and boil the cloth in this liquid for an

hour or more, the time required depending upon the kind of fiber and the thickness of the cloth. When properly saturated, wring the excess of liquid out, expose the cloth to the air until it is nearly dry, and then let it soak for from five to twelve hours in the following solution:

Alum	13 ounces.
Salt	15 ounces.
Water	1 gallon.

Finally, wring the cloth out, rinse it in clean water, and dry at a temperature of about 80° F.

VII.

Another one not entirely different is this: Brush over the cloth with a solution of gelatin, alum and soap; or first with a solution of soap and then with a solution of alum.

VIII.

Brush first with glue and subsequently with infusion of catechu.

IX.

Varnish the wrong side of the goods with a solution of India rubber.

X.

a. Alum	4 pounds.
Bluestone	3 pounds.
Water	5 gallons.
b. Resin soap	2 pounds.
Hot water	5 gallons.

Soak the canvas in solution "a," dry slightly; pass it through solution "b" several times, and stretch to dry.

Fireproofing Muslin

Ammonium sulphate.	16 grammes.
Ammonium carbonate	5 grammes.
Sodium borate	4 grammes.
Boric acid	6 grammes.
Starch	4 grammes.
Water	200 grammes.

Soften the starch in 40 grammes of hot water; dissolve the solids in the rest of the water, and stir in the starch mixture. Heat the solution to 86° F. and immerse the cloth. When the cloth has been saturated it is hung up to dry, and then pressed with a hot iron.

The most widely used preparations are solutions of sodium tungstate.

Protecting Cloth from the Effects of Heat

Sodium tungstate	1pound.
Sodium phosphate	2½ ounces.
Water	2½ pints.

Dissolve the first salt in 1½ pints of water and the second in the remainder, and then mix the two solutions. The cloth should be thoroughly wetted in this solution, wrung and dried.

Coating for Oil-Skins

I.

A water-repellent coating can be made by boiling China wood oil at a temperature of not over 280° F. for from three to four hours, then taking the kettle from the fire and allowing the oil to cool to somewhere between 135° and 140° F., thinning it with one-fifth its volume of oil of turpentine that has been heated on a water-bath or by steam to at least 120° F.

This mixture will give a film that will dry in less than forty-eight hours, and yet is very elastic. It may be applied with a brush or the fabric may be dipped in the liquid.

II.

Another waterproofing is made by mixing 15 parts, by weight, of litharge with 15 parts of boiled linseed oil in which had been dissolved with the aid of heat 1 part of yellow beeswax. When the mixture has stood for about twenty-four hours the liquid is decanted. It should be applied with a brush.

Fireproofing Cloth.

At the Eighth International Congress of Applied Chemistry, held in 1912, William Henry Perkins, of Manchester, England, delivered a general lecture on "The Permanent Fireproofing of Cotton Goods." This lecture may be found in Volume XXVIII of the Transactions of that body, pages 119 to 134. In one of the processes described by the distinguished chemist the material is saturated with sodium stannate solution 45° Tw., then pressed out well and dried between hot copper rollers. When dry the fabrics are dipped into ammonium sulphate solution, 15° Tw., wrung out again and dried. Besides tin oxide the fabrics then contain sodium sulphate which can be removed by washing. It is claimed that fabrics treated by this process are completely fireproof, and retain this property even when washed with soap.

The figures refer to degrees on the Twaddell specific gravity scale, on which 45 equals a specific gravity of 1.225 and 15 equals a specific gravity of 1.075.

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