THE FORMULA.

A BOOK FOR LAUNDRYMEN,

CONTAINING FORMULAS FOR VARIOUS LAUNDRY OPERATIONS, INCLUDING

Washing, Bleaching, Bluing, etc.

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INDEX.

INTRODUCTORY.

VARIOUS BOOKS have been issued from time to time claiming to be of value in the Laundries. These works are for the most part misnomers. They are made up of vague hints, lengthy essays upon well understood processes, various recipes—most of which are out of date and few of which have any particular value. In short, the work that should be of any value to the Laundryman as an instructor has not heretofore been published.

Feeling that there is need of such a work, the author, an old Troy Laundryman, has sought to supply this need by "The Formula."

In this work no space is given to sermonizing or worthless recipes; but, as the name implies, various formulas are given in the use of which the Laundryman may be the manufacturer of his supplies to a very large extent and thereby save every

year many dollars, the amount depending, of course, upon the magnitude of business done.

It is a well known fact, for instance, that the one article of soap pays to the manufacturer nearly 100% profit; in other words, the Laundryman who makes his own soap saves from two to three cents upon every pound used. The trouble has been, heretofore, that those parties aiming to instruct the Laundryman in the fabrication of soap call for a large payment for instruction and an expensive apparatus. "The Formula," however, costs but $10, and the apparatus required to make soap by the given process is comparatively inexpensive, while the process itself is simple and the result as good soap as made by any manufacturer. The same is true regarding the various "fluids" for bleaching, in some cases as high as $200 being asked for the apparatus and "secret." The fluid of "The Formula" has no superior for the turning out of fine work, and the cost of apparatus is almost nothing.

The "Trojan Blue" is equal in color to

aniline, having none of the disadvantages of the latter and *no sour is required.*

In short, there is hardly a formula given which is not worth more than the cost of the whole work, and some of them will save the laundryman every year many times the cost of the book.

The author hopes for compensation in large sales. He could not afford otherwise to publish his information—the product of years of study and experiment, and he therefore most earnestly requests the buyers of this work to keep the information to themselves, leaving others to pay for it as they themselves have done.

THE AUTHOR

THE FORMULA.

SOAP MAKING.

It is fully demonstrated that pure tallow soap made by the "cold process" is the most economical and efficient for laundry use. The chip soap of commerce is almost entirely made by this process.

In making soap it should be remembered that this useful compound is the result of chemical combination between grease and alkali. As these articles vary in purity and strength as well as in other particulars it will be readily understood that an absolute unvarying formula is difficult. Approximation is the first thing, judgment and experience come next. The soaps of different makers differ quite as often in skillful manipulation as in quality of material.

The formula for pure tallow soap is as follows: For a given quantity of tallow use one-half its weight of alkali of 38

degrees strength. For example, to saponify 100 pounds of pure tallow, 50 pounds of caustic alkali of 38 degrees strength are needed. We will give our formula upon the basis of 100 pounds of tallow, premising that after the process is understood, that it will be found as easy and, therefore, more economical, to use larger quantities. Hence in procuring apparatus the same should be of sufficient capacity for 400 pounds of tallow or more.

In making soap the most crude apparatus may be used. For instance, the melting may be done in a barrel by means of an improvised steam coil. The coil may be removed and the mixing may be done in the same barrel. The alkali may also be prepared in a barrel or tub, and the cooling done in tubs or boxes, but it will be found much more convenient to have proper apparatus, which is as follows: First, kettle for melting (may also be used for mixing); second, vat for mixing alkali; third, cooling vats; fourth, hydrometer for testing strength of alkali; fifth, thermometer; sixth, crutch for stirring.

The kettle may be of copper, brass or iron, and heated by fire underneath, or steam jacket (which is the best) or steam coil. The alkali vat may be of iron or galvanized iron, or even wood will do. The cooling vats are of galvanized iron, say 36 x 12 x 12 inches.

The hydrometer and thermometer may be obtained of any druggist. The crutch consists of a flat piece of steel, brass or copper, cut in oval form say 6 x 4 inches, having an upright handle brazed to the center and of sufficient length to make the work of stirring the soap convenient.

We give the *modus operandi* as follows for 100 pounds of tallow: Take 15 pounds of pure caustic soda and 5 pounds of pure caustic potash and dissolve in sufficient water to bring the total weight to 50 pounds. This work should be done the day before the soap is to be made, as much heat is generated and it must cool before use. The potash is not necessary. Soda may be used alone, but the potash improves the soap. This alkali as thus made should test 38 degrees by the hydrometer, if less, add more soda.

Having melted the tallow stir it until it falls to about 110 degrees of heat (thermometer). Then bring the alkali up to the same heat. The alkali and tallow are then mixed together and stirred with the crutch until the whole mass begins to thicken. It is then poured into the cooling vats, covered with muslin (in a warm place) and allowed to stand for about two days, at the end of which time the soap is ready for cutting up. Care should be taken to have all materials of the utmost purity. It is also essential that the alkali should be of full strength (38 degrees) and when the time comes for mixing the tallow and alkali about the same degree of heat in both alkali and tallow is essential.

If, while stirring, the mixture shows nothing of a soapy smell a little more alkali may be added. After turning into vats note closely for any evidence of separation. In case this seems likely, return again to the mixer and continue the stirring.

SOFT BLEACH FORMULA.

Dissolve 20 pounds chloride of lime in 32 gallons cold water; dissolve 40 pounds

carbonate of soda (soda crystals) in 11 gallons warm water. Mix the two solutions together and filter or allow to settle. When settled draw into carboys and keep corked. (For use see page 16.)

OZONE FLUID FOR BLEACHING.

Ten pounds chloride of lime, 3 pounds pure caustic soda, 1 pound oxalic acid, 40 gallons water. Dissolve the lime in 20 gallons of water; dissolve the caustic soda in 10 gallons of water; dissolve the oxalic acid in 10 gallons of water. Mix all together and keep covered. When made it should test 2 degrees by the hydrometer.

This makes a beautiful bleach and is especially valuable as it may be used on colored fabrics. It must not be used with soap, but instead, make the bleaching a separate operation, after suds and several rinses, using about 2 gallons to every 60 shirts or their equivalent. Run for 15 or 20 minutes in warm water. The colored work may be run in with the white.

JAVELLE WATER.

FOR BLEACHING.

Five pounds chloride of lime, 10 pounds sulphate of soda, 4 pounds sal soda, 12 gallons of water. Mix well. The precipitate will be sulphate of lime, which has some value.

FORMULA FOR ANTI-HEAT INK.

Procure one pint asphaltum varnish, also ivory drop black ground in japan, turpentine and crude carbolic acid (liquid).

To prepare—Take a lump of drop black about the size of an English walnut; work it into liquid (not very thin) by using turpentine, using just turpentine enough for the purpose. Mix this into the varnish by thorough stirring. Use the carbolic acid to thin down to proper consistency for use with a common pen. Should it thicken at any time, thin with carbolic acid.

NITRATE OF SILVER MARKING INK.

Nitrate of silver, 5 parts; distilled water, 12 parts; powdered gum arabic, 5

parts; carbonate of soda, 7 parts; solution of ammonia, 10 parts. Dissolve the nitrate of silver in ammonia; powder the soda and gum, then mix. Heat gently until it becomes a dark color. The marking should be set by applying heat.

TROJAN BLUE.

INDIGO SOLUTION.

Three and one-half ounces indigo, 1 quart best sulphuric acid. Have the indigo dry and powdered. Mix it into the acid a little at a time, stirring it while mixing. Let it stand 24 hours, then keep in tight bottle. In mixing, space must be allowed for foaming.

ANILINE SOLUTION.

Dissolve 1 ounce aniline in 1 quart water.

TO MAKE.

Mix together one-half pint indigo solution, 1 pint aniline solution, 1 gallon water.

LIQUID PRUSSIAN BLUE.

Two ounces Prussian blue, two ounces oxalic acid. Dissolve in one gallon water and filter.

LIQUID BLUE OF COMMERCE.

Dissolve 2 ounces of soluble blue and 1 ounce oxalic acid in 1 gallon soft water.

PREPARATION OF ANILINE BLUE.

The usual method of preparing aniline blue is to dissolve 1 ounce of the aniline in 1 gallon of soft water. If soft water is not available use distilled water. Stir the blue in a little at a time. Be sure you have a perfect solution. When well mixed add 3 ounces of acetic acid. Filter before using.

WASHING MIXTURE.

FOR HAND WASHING.

Three quarts water, 5 pounds best bar soap, 4 ounces sal soda, 4 ounces borax, 1 ounce turpentine. Slice up the soap and dissolve in the water by heating and

stirring; when dissolved, stir in the soda, borax and turpentine; when cool, cut into bars. Very little rubbing is necessary when this mixture is used.

STARCH GLOSS.

One pint glycerine, 1 pound oxide zinc, 1 pound precipitated chalk, 1 pound white glue. Rub zinc and chalk together; melt glycerine and glue together (using little water). Then mix all well together until it makes a thick, pasty mass. To one gallon cooked starch add about one ounce of paste dissolved in hot water and stirred in while cooking.

BEST METHOD OF MAKING SOFT SOAP FROM SOAP CHIPS.

Dissolve $1\frac{1}{2}$ pounds caustic soda in 3 gallons of water. Put in 5 pounds neutral tallow soap, and boil 30 minutes. Then add three gallons more water and boil 15 minutes longer. Pour this mixture into a 30-gallon barrel and fill with clear water, stirring all the time. Potash may be used in place of the caustic soda if preferred. An addition of one-half

pint turpentine just before filling ba
with clear water will improve the soa

WASHING AND BLEACHING

(Example, 50 shirts or equivalent.)

Start with lukewarm water, one-
pint of soft bleach and soap enough
make good suds. Run thirty minu
Then draw off and fill with quite
water. Use 1 pint soft bleach and s
enough to make suds. Run 30 minu
last five minutes quite hot. Now r
three times. Then sour 10 minu
For fine work use oxalic acid. R
three times more, then blue.

BLEACHING.

The bleaching done by laundrymen
for the most part, *re-bleaching*, and
this reason our soft bleach is better t
anything else, the deleterious effect u
the fabric being very slight, and it als
readily removed by rinsing. At tin
more thorough bleaching is necessary
for this purpose prepare, first, chlorid
lime solution of 2 degrees strength (al
10 pounds lime to 40 gallons wa

second, prepare a sour bath of water and sulphuric acid, using just enough of the acid to give the water a sharp, sour taste.

OPERATION.

First wash the goods in a strong alkaline water, rinse several times and then put into the chloride of lime solution. Let it steep for from 15 to 30 minutes, depending upon the amount of bleaching desired. Then remove directly to sour solution for from 5 to 10 minutes. Rinse thoroughly. If required color is not obtained, repeat the operation. [N. B.—This operation is for bleaching and not for re-bleaching, and great care must be used to prevent damage.]

SOAP TEST.

To test the purity of soap, take a pint bottle and fill it half full of alchohol. Put in 2 ounces of the soap to be tested and place the bottle in a basin of water and boil the water until the soap in the bottle is dissolved. Cork the bottle and put away to cool. When cool, the im-

purities (if any) will have settled to the bottom of the bottle, showing a dark colored substance.

BLACK SPECKS.

THEIR CAUSE, PREVENTION AND REMOVAL.

Generally, soaps used in the public laundry have an excess of alkali. Quite frequently this alkali is added by the laundryman instead of the soap maker, and is therefore not perfectly incorporated with the soap. The tendency of alkali is to combine with grease and form soap.

All soiled wearing apparel contains more or less matter of a greasy or oily nature, hence, in washing, if any of the alkali in the soap becomes "free"—*i. e.*, separated from the soap—it combines with the oily matter in the clothes and forms soap. If there be any dirt present the soap so formed will be dark color or black. Thus are the dark specks formed. Now this soap so formed is different from ordinary soap in that it is not soluble in water, hence, to remove it we must have a solvent and this solvent is found in spirits of turpentine.

To prevent specks: First, be careful not to use any more alkali than necessary; second, in washing always be sure to keep the suds "alive." The separation spoken of above always takes place when the suds die away. So if at any time this seems likely to occur, put more soap to the wash so as to hold the suds.

To remove specks, boil for a few minutes in water to which is added a little neutral soap and a small quantity of turpentine.

GENERAL HINTS.

Laundrymen should beware of waste.

Starch should cook one hour before use.

Sulphate of indigo makes a very good blue.

Kerosene oil is said to make a fine starch gloss.

Keep your laundry and all appliances neat and clean.

See that your bleaching solution (lime) is always clear and of a greenish hue.

Equal portions of wheat and corn starch make the most popular laundry mixture.

Aim to reduce the use of chemicals to the finest point compatible with good work.

To clean the headers of washing machines, steam thoroughly with a jet of steam through hose.

Starch is composed of minute grains which expand and burst with heat, hence the necessity of cooking.

SOUR.—For souring purposes sulphuric acid is the cheapest, acetic acid the least harmful and oxalic acid the best.

A perforated coil makes the best starch cooker. Provide a drip to take away the condensation before the steam enters the coil.

Exhaust steam is valuable. By having tanks and coils through which the exhaust may pass you will always have plenty of hot water.

Kerosene oil, turpentine, camphine,

ammonia, bicarbonate of soda and borax all have good detersive qualities and if used with judgment are valuable.

Do not depend too much upon the bleach. Soil and discoloration should as far as possible be removed in the wash, the bleach being simply the finishing touch.

All wool goods are washed in water of about 120 degrees and rinsed in the same temperature. They may be wrung in the centrifugal but not in the roll wringer. Use mild, pure soap and borax. Dry quickly.

Bleaching and Washing.—While the soft bleach allows washing and bleaching to be done at the same time, the best results are obtained by bleaching separately. The former method saves time and possibly soap; the latter gives clearer work. We advise the former for shirt work, the latter for collars and cuffs.

Piece prices in large custom laundries run something as follows: Finishing shirts after starching machine, 5 cents to

6 cents per dozen ; starching shirts by hand, 10 cents to 15 cents per dozen ; finishing collars after starching machine, 8 cents to 12 cents per hundred ; starching collars by hand, 4 cents to 5 cents per dozen ; finishing shirts after machine and body ironer, 50 cents to 75 cents per hundred ; finishing shirts after machine, 1 cent to 1½ cents each ; ironing shirts by hand, 3½ to 6 cents each.

Dust is the laundryman's enemy. In the summer season it creeps in through every door, window, crack and crevice, and, as a result, laundrymen must be eternally on the alert, otherwise baskets, boxes, shelves and tables will become sprinkled and many beautiful jobs will be spoiled and will need to return again to the wash room. In point of fact this happens more frequently than many suppose. As a remedy we suggest the following : *Do away with your baskets and use bags.* The bags may be made of canvas, jean or any serviceable material, of the right size to be convenient—say about two bushels capacity—and drawn together with a strong cord. Provide

suitable wooden holder to hold the bags open while being filled. When full the cord is drawn together and the goods are safe from dirt. The advantages over baskets may be seen at a glance.

Some laundrymen experience trouble in getting a perfect solution of aniline. Try the following: Weigh out the amount you wish to use. Put it into a small bag made of heavy cotton cloth and tie securely. Place this bag in the required amount of water and boil until the aniline seems to have left the bag (*i. e.*, is dissolved). Bluing thus made will not need filtering unless the cloth used is very coarse. Do not squeeze the bag. You can better afford to lose a few grains of aniline than to have blue specks in your work.

The merits of Brimstone as a bleacher are not generally appreciated. Burning brimstone throws off sulphurous acid, a most powerful disinfectant and bleacher as well. Should you at any time have clothing to handle which you have reason to believe is disease infected, it should be submitted to the fumes of burning brim-

stone before being otherwise handled. For this purpose provide an apartment nearly air-tight. Hang the goods to be acted upon upon lines. Put the required amount of Brimstone in an iron vessel and apply fire to it. Close the room and let the goods remain until the fire is spent. Do not enter the room until it has been well aired. This method of disinfecting is also bleaching. The effect upon woolens is especially fine.

Don't give away the information in this book. Let others pay for it if they want it, as you have done.