

The use of the Arnold sterilizer live steam for 30 minutes did not produce a sterile product in any instance (see experiments Nos. 6 and 9). Evidently this method requires, reheating on successive days to be satisfactory.

It has been suggested that probably a sterile, freshly distilled water might be prepared by direct distillation with a glass Liebig condenser, collecting the distillate in a sterile flask, under aseptic conditions. This method did not yield a sterile product in any instance (see experiment No. 2).

Conclusions.—Use the autoclave method if practicable for preparing sterilized distilled water and suggest it in the U. S. P. text. Always use freshly distilled water and a sterile, hard-glass flask. If the boiling method is to be followed, stopper the flask with absorbent cotton or the tubes and stopper, heretofore suggested, and boil the liquid actively for at least thirty minutes.

PRESCRIPTION CLINIC.*

BY CHARLES H. LAWALL AND IVOR GRIFFITH.

(1)	Sodium Salicylate.....	2 drachms.
	Sodium Bromide.....	1½ drachms
	Caffeine Citrate.....	36 grains
	Peppermint Water.....	1½ fluidounces
	Syrup.....	2 fluidounces

At a recent meeting of the Pittsburgh Branch, A. Ph. A., the foregoing prescription was discussed and it was said that it was twice prepared by different dispensers and each time exhibited a brown precipitate. According to the journal in which the article appeared suggestion was made that the precipitate was probably due to some impurity present in the sodium salicylate or to a trace of iron due to coming in contact with the spatula (?), used in compounding. These were mere conjectures, however, and the filled prescription was not exhibited.

Filling the prescription as it stands, with sodium salicylate U. S. P., and without a *spatula* (!!!), resulted in the unsightly mixture shown herewith and, no matter in what order the ingredients were mixed, the same reaction was in evidence. The precipitate is salicylic acid. It is simply a case of the stronger organic acid, citric acid of the caffeine citrate (which is not a true salt but a mixture), displacing the weaker organic acid, salicylic acid from its combination with sodium. The alkaloidal caffeine goes into solution. The incompatibility is corrected by using caffeine (alkaloid) 18 grains instead of the 36 grains of the caffeine citrate.

(2)	Thymol Iodide.....	1 drachm
	Zinc Paste (Lassar).....	
	(without salicylic acid).....	8 drachms

A student brought this prescription in with the statement that it had resulted in a dark ointment compared with the product dispensed by another phar-

* Presented before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918. Several of the prescriptions were discussed; Charles H. LaWall, H. P. Hynson, J. H. Beal, J. C. Peacock, C. M. Ford, and others participated in the discussion.

macy. We did not find this to be the case when the prescription was filled with U. S. P. thymol iodide, but found the solution of the problem by compounding the same prescription with a poor grade of thymol iodide, which an examination proved to contain a trace of free iodine. The modified Lassar's paste is stiffened with starch and the latter reacts with the free iodine and the latter thymol iodide gave rise to the dark color of the ointment. This is simply another argument in favor of using nothing but high-grade chemicals, and from reputable manufacturers. It recalls to our mind the dilemma of a pharmacist who purchased a stock of thymol iodide from a peddler and found it only partially soluble in alkali solution. Examination of it under the microscope demonstrated the presence of a considerable quantity of lycopodium, with which it had been sophisticated. One experience of this type usually cures a peddler patron.

- (3) Solution of Hydrogen Dioxide,
Glycerin, of each sufficient to make... 4 fluidounces

We referred in our paper last year to the fact that it had been stated in several drug journals that this prescription, on standing, developed oxalic and tartaric acids, through oxidation of the glycerin by the dioxide. We have failed to find any evidence at all of oxalic acid or tartaric acid in the prescription after a period of one year. It was originally filled with an acetanilid-free dioxide solution and C. P. glycerin. The experiment was later made with dioxide preserved with acetanilid but the results were exactly the same. One fact clearly demonstrated by occasional assaying of this prescription was the preservative effect of the glycerin on the peroxide. Prof. E. A. Ruddiman in his authoritative work on *Incompatibilities* carefully states that "hydrogen dioxide is said to oxidize glycerin to glyceric, oxalic and tartaric acids." (IV Edition, page 200.)

In the face of the foregoing evidence, we are inclined to say, that while this may be true with greater concentration and higher temperature, it is not true of mixtures of peroxide and glycerin under prescription conditions.

- (4) Heavy Magnesium Oxide..... 10 grains
Phenyl Salicylate.....
Acetyl Salicylic Acid, of each..... 5 grains

"In the presence of moisture, and this is furnished by the acetyl salicylic acid crystals, calcined magnesia reacts with the acetyl salicylic acid with the production of magnesium acetyl salicylate. Further chemical interaction takes place with the possible production of magnesium salicylate and magnesium acetate. There will also be an exchange of radicals of the salol and the magnesium oxide with the formation of more magnesium salicylate and pure phenol or magnesium phenolate." The foregoing is a statement which recently appeared in the *Journal of the American Medical Association*.

In order to test its correctness the prescription was compounded under ordinary conditions with pure chemicals and dispensed in parchment papers. One paper was left open to atmospheric contact for one week, but there was no apparent change in the physical character of the powder, nor was there any appreciable difference in its odor. The magnesium oxide was apparently unaltered (at least

not to a great extent) for the alcohol-insoluble portion of the powder at the end of a week was practically the identical weight of the magnesium oxide originally used. We are not prepared to state that no changes will take place, in the presence of much moisture, and in time, but think that under ordinary conditions and with precautions to exclude moisture the prescription is dispensable, and would be all used up before any marked changes occurred.

(5)	Iodine.....	24 grains
	Methyl Salicylate.....	2 drachms
	Anhydrous Lanolin.....	4 drachms
	Cotton-seed Oil.....	6 fluidounces

The iodine was reduced to a fine powder and the melted anhydrous wool fat added to it. To this was added, with constant trituration, the oil slightly warmed, and finally, the methyl salicylate with shaking. A qualitative test performed on this mixture, two days after its compounding, resulted in the discovery that the iodine had been completely absorbed and was tightly held in organic combination with the oils. It is questionable therefore, whether the physician gets the action desired from the iodine prescribed.

(6)	Argyrol.....	40 grains
	Potassium Iodide.....	20 grains
	Iodine.....	20 grains
	Glycerin.....	6 grains
	Water.....to make	1 fluidounce

(Year Book, 1916, p. 275.)

Attention was originally drawn to this prescription through an article printed in the *Critic and Guide*. The above prescription was filled and used by the patient with the result that the throat became intensely inflamed and irritated. What actually happens is that, contrary to expectation, the organic silver compound is dissociated and attraction takes place between the free iodine and the silver with the production of some silver iodide, which evidently caused the intense irritation of the inflamed mucous membrane instead of soothing it. There is no way of preventing this and the doctor should be informed of the dangerous incompatibility and advised to leave one of the reacting factors out.

(7)	Bismuth Subsalicylate.....	2 drachms
	Sodium Bicarbonate.....	4 drachms
	Cerium Oxalate.....	30 grains
	Elixir of Orange, to make.....	3 fluidounces

To all appearances there is no difficulty about filling this prescription. When it leaves the counter, it is a harmless looking, white mixture, and a shake well label is affixed in a prominent place. In about fifteen minutes, however, trouble starts through evolution of copious amounts of carbon dioxide and the reaction is violent enough to burst the bottle or push out the cork and spill the contents. This happens even when the bismuth salt contains no free salicylic acid. The presumption is that the varying and unstable bismuth compound is dissociated and the liberated salicylic acid reacts with the sodium bicarbonate with the production

of sodium salicylate and carbon dioxide. The cerium oxalate apparently plays no part at all in the reaction.

(8)	Resorcinol.....	20 grains
	Zinc Oxide.....	4 drachms
	Boric Acid.....	20 grains
	Olive Oil.....	2 fluidounces
	Solution of Calcium Hydroxide.....	6 fluidounces

This looks like a formidable prescription at first glance, but should cause no difficulty in the hands of a thoughtful compounder. There are several ways of incorrectly compounding it. One is to dissolve the boric acid and resorcinol in the lime water, add the zinc oxide and finally the olive oil. A better way to fill it and one where no difficulty is encountered, is to dissolve the resorcinol in the lime water. The olive oil is then added and the mixture thoroughly shaken. Then the zinc oxide, in the form of a fine impalpable powder, is added and the mixture thoroughly shaken. Finally, the boric acid is incorporated by rubbing it up in a mortar with a little of the mixture, and then transferring into the remainder of the prescription. The result is a smooth mixture that does not readily separate out.

(9)	Corrosive Mercuric Chloride.....	1 grain
	Solution of Potassium Arsenite.....	2 fluidrachms
	Syrup.....	1 fluidounce
	Peppermint Water to make.....	3 fluidounces

No matter how this prescription is compounded, trouble will be encountered. The arsenite in the presence of the excess of carbonate in the Fowler's solution brings about a change in which the corrosive sublimate is converted partly into mercurous chloride and partly into metallic mercury with the change, at the same time, of the arsenite into the arsenate. Neutralizing the solution of potassium arsenite with hydrochloric acid or rendering it slightly acid will retard the change. The doctor would do better by using solution of sodium arsenate in equivalent amount.

(10)	Iodoform.....	
	Bismuth Subnitrate.....	
	Mild Mercurous Chloride of each.....	2 drachms
	Use as dusting powder.	

This prescription was filled by a Philadelphia pharmacist and dispensed in a white vial topped with celluloid. In a day or so, the patient returned the vial requesting an explanation for the chameleon-like tendency of the powder to change its color. When dispensed, the mixture was a light canary-yellow. After being placed in the sunlight for a while the actinic rays get in their work by releasing some of the iodine from its combination and this iodine and calomel make friends with the ultimate production of the red iodide of mercury. Oddly enough, on shaking the vial well, the red color apparently fades, although, in reality, it only lessens in its intensity of tint by being neutralized by the heavy yellow of the rest of the powder on being shaken with it. The red color reappears on the side exposed to the light as often as it may be remixed and exposed again.