

The loss in Cl amounts to about 1% equivalent to about 3½% deterioration of the halazone.

Since this product is not used as an antiseptic the deterioration, combined with slight acidity, is not serious. Halazone can be considered fairly stable for one year at least. It should be remembered that the deterioration of the chloramines is a function of the temperature and that under tropical conditions, for instance, considerably higher speed of decomposition may take place than reported in our investigation.

To sum up we arrive at the following:

#### CONCLUSIONS.

1. In order to assure the greatest possible degree of stability of chloramine-T, dichloramine-T and halazone, these products should be produced with a high degree of purity.

2. Judging from observation extending over the period of one year chloramine-T can be considered stable in crystal form and in aqueous solution, by itself and in mixture with NaCl, Na<sub>2</sub>CO<sub>3</sub> or NaHCO<sub>3</sub>.

3. Dichloramine-T in amorphous powder form begins to deteriorate after about three months. The crystallized commercial product, however, is stable for about eight months and after fourteen months shows only slight degree of decomposition. A specially prepared and exceptionally pure product showed no definite signs of deterioration after fourteen months' storing.

4. Solutions of dichloramine-T in chloroform, of 2½-5% strength, particularly when previously dried with CaCl<sub>2</sub>, are sufficiently stable to be serviceable for use for a couple of weeks.

5. Solutions of dichloramine-T in tetrachlorcarbon of 11% strength showed no signs of decomposition after six months.

6. Halazone is fairly stable and can be stored for one year without serious decomposition. The latter amounts to a loss of about 1% chlorine in the first year equivalent to a decomposition of about 3½% of the halazone.

7. Above conclusions on halazone and dichloramine-T refer to conditions, whereby the products are protected from undue action of light and heat.

MONSANTO CHEMICAL WORKS,  
ST. LOUIS.

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#### PRESCRIPTION CLINIC.\*

BY IVOR GRIFFITH AND ADLEY B. NICHOLS.<sup>1</sup>

In submitting the following list of prescriptions and comments the writers beg to call attention to the fact that they are bona-fide prescriptions and not of the type frequently referred to as arm-chair incompatibilities. It is quite possible to encourage the mind and the hand to formulate prescriptions that would easily present the most freakish incompatibilities imaginable. All of us have seen good journal space dedicated to a ponderous discussion of this type of a

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problem, a prescription that even the most reckless prescriber would not have the wit nor temerity to write. As an illustration a British drug journal recently printed the following peculiar mixture and wasted much good space for its consideration:

Acetanilid.....	40 grains.
Caffeine.....	20 grains.
Quinine hydrobromide.....	20 grains.
Bromine water.....	4 fluidrachms.
Syrup, to make.....	3 fluidounces.

It may happen that we are unduly critical, but who ever heard of prescribing bromine water in a mixture of this kind and what patient would be willing to take a second dose of such a nauseating mess? Of course it does afford the reviewer of the prescription an opportunity to display a little chemical knowledge by saying that acetanilid and bromine will immediately develop a heavy white precipitate, etc., but outside of that, what practical value is there to a discussion of such an impossible concoction? To our mind it is a good deal more instructive and constructive to spend a little time in studying real prescriptions. Only thus are we able to pass along a little information that may be of value to another who may be called upon to fill a similar prescription. All the prescriptions which will be discussed in the following list are genuine doctor-made recipes and were turned over to the writers by students at the College.

We again beg to call attention to the fact that stress should be laid on the statement that not all incompatible prescriptions are non-dispensable, but that it is very often possible to so modify a prescription lacking harmony that it will thoroughly answer its desired purpose. Then again, we do find what has been termed absolute or true incompatibility when dispensing of the prescription in its original form is out of the question and drastic modification is necessary before the pharmacist can let it out of his hands.

PRESCRIPTION NO. 1.

Zinc oxide,	
Boric acid,	
Bismuth subnitrate,	
Glycerin, of each.....	2 drachms.
Lanolin.....	4 drachms.
Phenol.....	20 grains.
Lime water,	
Olive oil, of each, to make.....	8 fluidounces.

This prescription, a favorite with a well-known Philadelphia skin specialist, has caused consternation in the prescription department of many a down-town store. In the hands of a clumsy operator it blooms into an untidy mixture not unlike soured cream, while treatment at the hands of the magister turns out a homogeneous velvety cream, perfectly acceptable by the tenderest skin. There are many ways whereby it may be correctly compounded, but the sensible way is to add the zinc oxide, using elutriated powder, to the lime water and shaking thoroughly. To this mixture is added the olive oil, again agitating. The boric acid and bismuth subnitrate are rubbed together with the melted lanolin and the glycerin. The two mixtures are then poured together and thoroughly shaken. The phenol is added last. This procedure results in a fairly permanent cream.

An incorrect way to compound it is to incorporate the lanolin in the olive oil soap and add the glycerin last.

## PRESCRIPTION NO. 2.

Strontium bromide.....	2 drachms.
Fowler's solution.....	20 drops.
Tincture of belladonna.....	2 fluidrachms.
Elixir of glycerophosphates.....	1 fluidounce.
Elixir of gentian, to make.....	4 fluidounces.

A precipitate occurs no matter how this prescription is compounded, hence we might term it the true type of incompatibility. This precipitation is brought about through the interaction of the strontium bromide with the sodium citrate present in the elixir of gentian, strontium citrate being formed. There is also formed a small quantity of calcium carbonate and possibly other carbonates through interaction of the potassium carbonate in the Fowler's solution, little as it is, with the strontium, calcium and other bases forming insoluble carbonate. The worst offender, however, is the citrate of strontium, which settles in a peculiarly concreted precipitate that stubbornly refuses to mix with the rest of the ingredients.

## PRESCRIPTION NO. 3.

Magnesium sulphate.....	4 drachms.
Sodium salicylate.....	1 drachm.
Sodium bicarbonate.....	2 drachms.
Compound infusion of gentian.....	1 fluidounce.
Water, to make.....	4 fluidounces.

Without experimentation, one would be inclined to hazard the statement that an incompatibility exists here between the bicarbonate and the magnesium sulphate, with the precipitation of magnesium carbonate. This possibly would be more emphatic if the normal carbonate had been prescribed, although hydrolysis of the acid salt might be expected to bring about the same reaction. Nevertheless on compounding the prescription in the usual way, dissolving the ingredients separately in water and mixing, a clear solution results which, however, on standing develops a precipitate that is quite singular in its appearance. Carbon dioxide gas is also given off and in sufficient volume in time to push the stopper out of the bottle. The most confusing feature of all, however, is that after the evolution of gas is over the crystals have disappeared. Explanation of this phenomenon probably lies in the fact that the crystals are the acid carbonate of magnesium which, like the carbonates of the alkali earth metals, is soluble in carbonated water.

## PRESCRIPTION NO. 4.

Berberine hydrochloride.....	4 grains.
Protargol.....	15 grains.
Distilled water.....	1 fluidounce.

This formula for an antiseptic lotion results in a mixture which soon shows the separation of a dark precipitate. There is, apparently, no permissible way of obviating this, since, even with the substitution of the alkaloid for the salt, the same separation occurs. The silver protein compound is not at all well behaved, after the manner of most organic compounds of its type, but acts

very much like the inorganic silver salts. The precipitate observed is silver chloride with what apparently is composed of a silver compound of the alkaloid. The composition of protargol is of such a nature as to make a clear analysis of its incompatibilities quite difficult. Incidentally, the silver protein compounds other than the proprietary behave in a much similar manner.

PRESCRIPTION No. 5.

Diuretin.....	15 grains.
Potassium iodide.....	1 drachm.
Mercuric chloride.....	1 grain.
Distilled water, to make.....	2 fluidounces.

Attention has been previously directed to this peculiar prescription, in view of the precipitation which occurs with it. The alkaloidal precipitant formed through the interaction of the second and third ingredients is the well-known Mayer's reagent, which, we are taught, precipitates all alkaloids, except those belonging to the methyl xanthin group and typified by caffeine, theobromine, *et al.* On compounding this prescription, however, while the diuretin is difficult to dissolve, most of it goes into solution, and a nearly clear solution is dispensed which develops quite a heavy precipitate after standing an hour or so. This also happens in the absence of either the iodide or the mercuric salt. The precipitate is the base theobromine which, through the agency of the sodium salicylate in the diuretin, goes into partial solution, but refuses to stay in solution in the presence of either the mercury salt or the potassium iodide. Addition of a few drops of potassium hydroxide solution corrects the difficulty.

PRESCRIPTION No. 6.

Washed sulphur.....	4 drachms.
Fluidextract of hyoscyamus.....	32 drops.
Fluidextract of cascara.....	4 fluidrachms.
Phenol.....	4 grains.
Camphor.....	18 grains.
Menthol.....	8 grains.
Glycerin.....	4 fluidrachms.
Liquid petrolatum, to make.....	8 fluidounces.

One would wonder whether this is not one of the arm-chair type of incompatibilities referred to, and also wonder whether it was meant for hair-dressing or for internal administration as a reinforced lubricant, whatever that may mean. Still, if we should name the prescriber of the peculiar combination the wonderment would increase, for he is one of America's very well-known internists and a man whose prescriptions usually present no discords. How in the world anyone could hope to dispense a slightly mixture and still adhere to the exact formula is beyond our ken. It cannot be done. It is possible, however, with omission of the glycerin and substitution of equivalent amounts of the powdered extracts for the fluidextracts to turn out a product that is not elegant in its appearance but, nevertheless, much better looking and more inviting than the unsightly concoction afforded by the original prescription.

PRESCRIPTION No. 7.

Chloral hydrate,	
Antipyrin, of each.....	2 drachms.
Tincture of ginger.....	2 fluidrachms.
Distilled water, to make.....	3 fluidounces.

This prescription was submitted to us with the statement that it produced, on standing, a dense yellow precipitate. This was not the case when compounded in various ways. The expected separation of the ginger resins takes place with an additional interaction between the antipyrin and the chloral hydrate, and the separation of a peculiar oily precipitate. This latter separation occurs when, upon mixing the solutions of chloral hydrate and antipyrin, we reach the stage where the antipyrin is no longer in great excess. There is no precipitation in the presence of half the prescribed amount of chloral hydrate. The addition of 10 percent of alcohol partially corrects the difficulty and there is apparently no subsequent separation after standing.

## PRESCRIPTION NO. 8.

Ammonium iodide.....	2 drachms.
Ammonium carbonate.....	8 grains.
Syrup of wild cherry.....	1 fluidounce.
Water, to make.....	3 fluidounces.

An unsightly mixture is the result of compounding this formula as it stands. This is due to a reaction which results between the ammonium iodide and the carbonate, and also with the tannin of the syrup of wild cherry. Strangely enough, ammonium iodide and ammonium carbonate are incompatible, because of the frequent presence of calcium iodide in the ammonium iodide with the consequent precipitation of calcium carbonate, on mixing solutions of these compounds. Then again, ammonium compounds form with tannic and gallic acids a peculiar flaky precipitate. The iodide also disagrees with tannic acid. The addition of some glycerine in place of part of the water ameliorates but does not correct the incompatibility.

## PRESCRIPTION NO. 9.

Corrosive chloride of mercury.....	$\frac{1}{3}$ grain.
Tincture of chloride of iron.....	2 fluidrachms.
Lemon juice.....	5 fluidrachms.
Syrup of wild cherry, to make.....	2 fluidounces.

There is no incompatibility here, due to the foresight of the prescriber, who prevents the reaction between the iron and tannin of the wild cherry syrup by the intervention of the lemon juice. It is quite possible, however, to have varying intensities of color, depending upon the order in which the mixing is done, as well as upon the amount of citric acid in the lemon juice. This is the type of prescription where the variability of the lemon juice in its acid content makes the dispensing of a uniform article difficult.

The prescriptions were discussed by Messrs. Lascoff, Gray, Scoville and others. A special vote of thanks was given the authors, and they were requested to arrange a similar paper for next year.

## "NON-SECRET" VERSUS "SECRET" REMEDIES.\*

BY GEORGE E. ÉWE.

The employment of secrecy regarding the identity of the potent ingredients of medicines is a ragged remnant of the ancient mantle of mysticism, with which the medieval alchemists and apothecaries encircled their "potions."

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