TABLE III.—TIME OUT OF STOMACH.

Number.	Hours.	Number.	Hours.
58	2	4	9
70	3	12	10
71	4	18	11
58	5	5	15
22	6	12	17
19	7	10	19
6	8	1	21

The largest number of pills passed out of the stomach in four hours, but the average emptying time calculated from this table was found to be five and nine-tenths hours.

The following table gives the emptying time in hours for pills and tablets based upon the type of enteric coating used with no regard to size.

TABLE IV.

Type of Coating.	No. of Pills Out of the Stomach at the End of the Listed Hours. 2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
Tolu (S. B. Penick.)	0	0	1	5	0	2	0	3	0	0	5	0	0	0	0	0	0	4	0	1
Tolu (Huisking.)	0	10	0	10	0	5	0	1	3	7	0	0	0	1	0	2	0	4	0	0
Tolu (Eimer & Amend)	0	0	7	17	0	3	0	0	4	0	0	0	0	0	0	9	0	0	0	0
Tolu (Hopkins)	0	0	12	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0
Keratin.	0	1	0	3	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Stearic acid	0	6	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salol-Balsam	5	12	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salol-Shellac	2	0	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carnauba wax and stearic acid	11	4	9	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0

Several conclusions have been drawn from this study. *First*, that the size and shape of a pill, tablet or capsule have no effect on the length of time it will remain in the stomach. *Second*, that the same individual does not react uniformly toward this type of medication with reference to emptying time. *Third*, that indications point to the fact that the emptying time may be influenced by the type of diet. *Fourth*, that the type of enteric coating does not have any effect on the length of time that pills, tablets and capsules will remain in the stomach.

COLLEGE OF PHARMACY,
UNIVERSITY OF NEBRASKA, LINCOLN, NEBRASKA.

PRESCRIPTION PROBLEMS.*

BY S. W. MORRISON.

A large number of interesting prescriptions has been collected from the files of the Illinois Research Hospital, a few of which are presented in this article. Each one presents some difficulty which can be remedied, instead of compounding as written and dispensing a disagreeable-looking prescription.

℞ 1

Lugol's Solution	20.0
Compound Elixir of Pepsin *q. s.*	120.0

* Section on Practical Pharmacy and Dispensing, A. PH. A., Washington meeting, 1934.

An opaque colloidal precipitate of brown color is produced, giving an unsightly appearance. The remedy is to add 15 cc. of alcohol to the Lugol's Solution before adding the compound elixir of pepsin. A clear solution is obtained.

℞ 2	Sodium Bromide	35.0
	Compound Elixir of Pepsin *q. s.*	120.0

The sodium bromide dissolves easily in the elixir but after standing a few hours a flocculent precipitate forms. This is due to the salting-out action of the bromide and will not obtain in dilute solutions. The precipitation can be prevented by dissolving the sodium bromide in 35 cc. of water before adding the elixir.

℞ 3	Salicylic Acid	0.6
	Coal Tar Solution	4.0
	White Lotion	60.0
	Water *q. s.*	120.0

This prescription was filled by dissolving the salicylic acid in the coal tar solution, then adding the other ingredients. A coarse brown precipitate of the tarry matter formed, possibly due to the acidity of the salicylic acid. The only way the prescription can be satisfactorily filled is to mix the coal tar solution with the water and the white lotion and then triturate this with the salicylic acid in a mortar. No precipitate occurs and a uniform smooth lotion can be dispensed. Perhaps it is because the salicylic acid is not in solution and does not increase the acidity of the solution.

℞ 4	Corrosive Mercuric Chloride	gr. VI
	Dilute Acetic Acid	ʒ ss
	Sodium Borate	ʒ ss
	Glycerin	ʒ IV
	Alcohol	ʒ III
	Water *q. s.*	fl. oz. IV

This prescription will usually produce a yellow to red precipitate of HgO, depending on the manner of mixing. A clear colorless solution is obtainable if the corrosive mercuric chloride and 6 grains of sodium chloride are dissolved in some of the water and the acid added. The sodium borate is then dissolved in the glycerin and a portion of the water; this is mixed with the solution of the mercuric chloride, the alcohol is added and sufficient water to make the required volume. The sodium chloride decreases the ionization of the mercuric chloride, thereby preventing reaction and precipitation of the mercury. Addition of hydrochloric acid instead of sodium chloride will likewise give a clear solution.

℞ 5	Amidopyrine	7.0
	Chloral Hydrate	5.0
	Syrup of Citric Acid	30.0
	Water *q. s.*	90.0

No matter how these ingredients are combined an oily-like mixture separates and settles to the bottom. Chloral hydrate is soluble in oil, and amidopyrine is insoluble in oil. An emulsion was made, hoping that the combining of the chloral

hydrate with the amidopyrine might thereby be prevented. The chloral hydrate was dissolved in 10 cc. of olive oil and mixed with 4 Gm. of acacia. The amidopyrine was dissolved in the water and syrup with the aid of heat. The aqueous solution was added to the oil solution and an emulsion made by means of the syringe method, which proved to be the best procedure. The mixture of the liquids was drawn up into a 50-cc. Leur syringe, then forced out again. This operation was repeated 6 or 7 times and a perfect emulsion formed. It gave a white milky preparation which did not separate after standing 3 days.

The advantage of the syringe method is that less acacia is required, no definite proportion of oil, water and emulsifying agent is necessary and the method never fails. The only precaution necessary is in the trituration of the acacia with the oil, so that there will be no lumps to obstruct the opening of the syringe. This improved method can be recommended for a place in the N. F. VI, instead of the present procedure.

℞ 6	Sodium Salicylate	15.0
	Citric Acid	0.6
	Tincture of Ferric Chloride	15.0
	Glycerin	60.0
	Methyl Salicylate	1.2
	Solution of Ammonium Acetate *q. s.*	120.0

This prescription resulted in a dark colored mixture with a dark gelatinous precipitate of ferric salicylate. A more pleasing preparation can be obtained by substituting Tincture of Ferric Citrochloride. A clear solution is obtained without the precipitate and dark color.

℞ 7	Sodium Bromide	15.0
	Tincture of Belladonna	15.0
	Kaolin	4.0
	Liquid Petrolatum *q. s.*	120.0

At first glance this appears to be an impossible combination as none of the ingredients are soluble or miscible with each other. However, a very satisfactory preparation can be made by adding acacia and water and making an emulsion which will be homogeneous and will not readily separate. The kaolin and 4 Gm. of acacia were triturated with some of the liquid petrolatum. The tincture was diluted with 10 cc. of water and the bromide dissolved in it. This solution was then added to the liquid petrolatum mixture and an emulsion prepared by the syringe method described under prescription No. 5.

℞ 8	Morphine Sulphate	0.3
	Sodium Iodide	5.0
	Bismuth Subnitrate	6.0
	Divide in chart No. 12	

When these salts were triturated together in a mortar, the mixture immediately turned to a brick-red color. This is due to the presence of moisture and reaction of the sodium iodide with the bismuth subnitrate, forming bismuth oxyiodide. Even when mixed lightly with a spatula without trituration the mixture gradually

turned to a yellowish orange color. It is desirable to dispense these powders without decomposition and the addition of 5 Gm. of dried starch to the mixture will prevent the reaction and change in color. However, the mixture should not be triturated in a mortar.

UNIVERSITY OF ILLINOIS,
COLLEGE OF PHARMACY.

U. S. P. AND N. F. PUBLICITY IN MARYLAND.*

BY FRANK L. BLACK.

There has been a great amount of enthusiasm shown in the revival of the use of U. S. P. and N. F. preparations. Back in 1930, Lawrence S. Williams, president of the Maryland Pharmaceutical Association, advocated in his retiring speech the forming of a committee to study the U. S. P. and N. F. Propaganda. The incoming president appointed Mr. Williams chairman of this committee. They worked for two years under Presidents Spire and Kantner and made some progress.

L. S. Williams had to resign due to ill health and, in 1933, President L. V. Johnson appointed a new committee of eight, who selected Marvin J. Andrews as its chairman.[1]

The first meeting of the new committee was held on August 16, 1933, when plans were formulated for the type of work to be done. It was decided at this meeting that mimeographed letters be sent to every physician in the City of Baltimore and the counties of Maryland. These letters were to consist *first*, of general information on the U. S. P. and N. F.; *second*, arguments to induce the physicians to prescribe U. S. P. and N. F. drugs and preparations; and *third*, such other material that the committee may decide upon.

It was also decided that with each letter at least eight or ten seasonable prescriptions be included, titled as to their use. This letter and the list of prescriptions were to be published in the *Maryland Pharmacist*, one month before mailing them to the physicians, so that every pharmacist would be enlightened as to what was being done, with the exception that the use for which these prescriptions were intended would not be mentioned in the *Journal* in order that physicians could not come back with the suggestion that pharmacists were employing these formulas for counter-prescribing.

It was proposed to send out a series of six such letters and lists of prescriptions at intervals of one month. Then came the task of financing this proposition. After very careful study the cost for completing the work was ascertained to be about $575.00 to $600.00, which included stationery, mimeographed letters, printing of prescription formulas and postage; there are about 200 physicians in Baltimore and in the state of Maryland.

The state and city associations had appropriated a sum of money at the first announcement of this project, but due to the financial loss and depression they were not able to make the full payment. Maryland Pharmaceutical Association

---

* Section on Practical Pharmacy and Dispensing, A. PH. A., Washington meeting, 1934.

[1] Assistant Professor of Pharmacy at the School of Pharmacy of the University of Maryland.