must be done in the mornings so that drugs can be sent to the wards in the early afternoon.

The afternoon in the hospital pharmacy, however, will bring no extended periods of rest. We come back from lunch to tackle a pile of prescriptions, and orders which in the filling will require considerable time and care. Also there are the numerous solutions to be made up and filtered; and the capsules and powders which must be ready for use on the following day. We will find time, too, for making suppositories; and for filling orders from the laboratories and operating rooms. When night comes we are ready to close up shop for the day, and do so at seven o'clock. This is one feature of our work which would appeal strongly to our friends in the retail stores.

With the hospital pharmacist, however, as with the retail pharmacist, his responsibility does not cease when he parts company with his medicines. The labels on the containers which he has sent out must be legible, and the directions for use, if such are on the label, must not be confusing. We have given considerable thought at our institution to the question of proper labeling.* Ambiguous or poorly written labels are fruitful sources of error—especially so in a large hospital. At present we are using printed labels on practically all hospital drug containers and, in instances where materials or names are of similar appearance, we have tried to design labels which are not likely to be confused by nurses or physicians. It has been a source of satisfaction to our department and to the hospital that errors in the administration of medicines furnished have been extremely rare. This, in spite of the fact that more than four hundred nurses are on duty in this institution.

In concluding this paper I would like to say that the present trend in hospital designing and building offers an opportunity for pharmacists to make this branch of pharmacy an important one. Modern hospitals are being built with space and equipment included for this service. The importance of the pharmacy as an adjunct to medical and surgical service, and the place we will occupy in future hospital developments, will depend largely on the energy and ability of the individual pharmacists in this field.

THE HYDROGEN-ION CONCENTRATION OF AROMATIC ELIXIR.*

BY JOHN C. KRANTZ, JR., AND C. JELLEFF CARR.

INTRODUCTION.

The formula for the preparation of Aromatic Elixir was introduced into the Pharmacopœia of 1890. In this formula precipitated calcium phosphate is employed as a filtering agent. In the Pharmacopœia of 1900 the formula was changed to include purified talc as a filtering agent instead of precipitated calcium phosphate. It is a matter of general knowledge among pharmacists that the basic hydrated magnesium carbonate of the Pharmacopœia can be used advantageously in place of talc as a filtering agent. The filtration is more rapid and a clear finished product is obtained more readily. Magnesium carbonate has been objected to in

* Section on Practical Pharmacy and Dispensing, A. PH. A., Baltimore meeting, 1930.

many preparations as a filtering agent on account of the alkalinity which it imparts to the product. Furthermore, Parry (1) observed that magnesium carbonate when used in a preparation containing oil of cassia caused the product to become yellow upon standing.

With these facts established the authors decided to investigate the hydrogen-ion concentration of aromatic elixir and if possible determine why, of the two filtering agents, magnesium carbonate and talc, the former is the more efficient.

EXPERIMENTAL.

A sample of U. S. P. precipitated magnesium carbonate $(MgCO_3)_4.Mg(OH)_2.5H_2O$ was shaken with distilled water and filtered. Several samples of aromatic elixir were prepared, using the product as a filtering agent. The hydrogen-ion concentration of these products was determined electrometrically, using a Wilson (2) electrode.

Table I shows the results of these observations:

TABLE I.

Aromatic elixir prepared with precipitated magnesium carbonate.	p_H.
Sample 1	9.15
2	9.11
3	9.10
4	9.20
5	9.12
Distilled water shaken with precipitated magnesium carbonate	9.80

These results indicate that aromatic elixir prepared with precipitated magnesium carbonate as a filtering agent is distinctly alkaline, possessing an alkalinity which is approximately equivalent to a $\frac{N}{100,000}$ sodium hydroxide solution.

Following these experiments several samples of talc marked U. S. P. were shaken with water and filtered. Although the Pharmacopœia requires neutrality to litmus for water shaken with talc, it was found that frequently distilled water when agitated with talc became quite acid. One sample was found to have a p_H 3.73. However, nearly all of the samples of aromatic elixir prepared with talc as a filtering agent were practically neutral. The p_H of the elixirs prepared with various samples of talc marked U. S. P. was between 7.00 and 7.35.

In order to determine whether or not it was the alkalinity which precipitated magnesium carbonate imparted to the elixir which facilitates filtration, the following experiment was conducted. A sample of the elixir was prepared using in place of water a buffered sodium carbonate solution of approximately the same p_H as a saturated solution of precipitated magnesium carbonate in water. The presence of this alkalinity did not facilitate filtration with talc which indicates that the alkalinity imparted by precipitated magnesium carbonate is not responsible for its superior qualities as a filtering agent.

To further study the influence of hydrogen-ion concentration upon filtration in this product, a sample of finely divided magnesite or normal magnesium carbonate was employed as a filtering agent. This product produced a clear filtrate as rapidly as did the basic hydrated salt. The hydrogen-ion concentration of the elixir pre-

pared with normal magnesium carbonate as a filtering agent is p_H 6.8. This indicates also that the alkalinity imparted by the precipitated magnesium carbonate is not a factor in aiding filtration.

Using precipitated calcium phosphate as a filtering agent two samples of aromatic elixir were prepared. The hydrogen-ion concentration of one sample was p_H 5.95 and that of the other p_H 6.30.

A series of experiments was conducted to determine the effect of the presence of the alkalinity imparted to aromatic elixir by the use of precipitated magnesium carbonate upon certain alkaloidal salts dissolved therein. These solutions were stored in flint glass in direct light over a period of two months.

Table II records the results of these experiments.

TABLE II.

Alkaloidal salt.	Concentration.	Discoloration.	Precipitation.
Morphine sulphate	0.120 Gm. per 90 cc.	Yellow	None
Codeine sulphate	0.120 Gm. per 90 cc.	Slightly yellow	None
Strychnine sulphate	0.060 Gm. per 90 cc.	None	None
*Morphine sulphate	0.120 Gm. per 90 cc.	Slightly yellow	None

* This was dissolved in an elixir prepared with talc p_H 7.0.

These results indicate that the alkalinity of aromatic elixir prepared with precipitated magnesium carbonate as a filtering agent is not sufficient to precipitate the foregoing alkaloidal salts. It does, however, increase the rapidity with which morphine is converted into pseudo-morphine (3) by contact with atmospheric oxygen.

CONCLUSIONS.

1. The hydrogen-ion concentration of samples of aromatic elixir prepared with various filtering agents has been determined.

2. Normal magnesium carbonate seems to be admirably suited for use as a filtering agent in this preparation.

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(1) J. M. Parry, *Western Drug.* (1902), page 8.
(2) Wilson, *Ind. Eng. Chem.*, 17 (1925), 74.
(3) Hager, "Handbuch der Pharmazeutischen Praxis" Band II (1927), page 342.

PHARMACEUTICAL RESEARCH LABORATORY,
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FOAMING TOOTHPASTE.

This product contains seven and one-half parts of pulverized medicated soap, 3.75 parts of extracted pulverized soap bark (quillaja), 480 parts of precipitated calcium carbonate and as much soluble carmine and aromatic oils as desired together with 120 parts of glycerin-gelatin mixture. The glycerin-containing gelatin solution is made from seven and one-half parts of white gelatin, 120 parts of distilled water and 210 parts of glycerin. The following mixture is used to perfume the preparation: 3.75 parts of oil of rose, 7.5 parts of oil of cinnamon, 33.75 parts of oil of caryophyll, 2625 parts of lemon oil, 90 parts of tincture of vanilla and 270 parts of alcohol.—*Pharm. Monatshefte*, through *Drug Markets*, September.