

SUMMARY.

1. Two practical methods of clearing highly colored urines for the purpose of quantitative estimations of barbiturates are described.

2. The urine has a limited buffering capacity manifested in the conversion of sodium barbital into the acid form even in alkaline urines. The amount of barbital so converted is inversely proportional to the amount of sodium barbital originally added to the urine.

3. Large volumes of blood (after Folin-Wu precipitation) may be extracted with chloroform without obtaining interfering materials in the chloroform extract even after concentration.

4. The liquid air method of direct extraction of barbiturates can now be applied to the central nervous system after removing the phospholipids from the chloroform extract with acetone.

REFERENCES.

- (1) Koppanyi, Dille, Murphy and Krop, *JOUR. A. PH. A.*, 23, 1074 (1934).
- (2) Koppanyi, Dille and Krop, *J. Pharmacol. and Exper. Therap.*, 52, 121 (1934).
- (3) Koppanyi, Murphy and Krop, *Arch. intern. Pharm. Therap.*, 46, 76 (1933).

A PLAN FOR PHARMACY INTERNSHIPS AT THE UNIVERSITY OF MICHIGAN HOSPITALS.*

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Pharmacy as a profession is unquestionably suffering influences that are tending toward pronounced changes. It will not be argued here that pharmacy is or is not wholly conscious of the drift. Certain it is, however, that the authors feel their incapability of intelligent argument or prediction.

Since words have been spoken and written it has been charged that many things are wrong with pharmacy. It has been said that the profession requires fewer and better pharmacists, fewer and better pharmacies and fewer and better schools of instruction. Professional mediocrity does exist within the rank and file of pharmacists and likewise professional morals and business standards are frequently unobserved. This condition reflects to the disadvantage of the public and the physician. Others have claimed that colleges of pharmacy should not and cannot be required to turn out a finished professional and business product. This reflects to the disadvantage of the pharmacist. For comparison it is argued that medical men do not expect such finished products to be graduated from medical schools. However, there are those in the medical profession who recognize this deficiency and consequently make some provision toward a remedy. One needs only mention the general requirement of service as intern before the graduate physician is licensed to practice medicine. It is because the authors sense the same deficiency in pharmacy that the outline of service that follows is proposed for our hospital group.

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A competent and well-organized pharmacy is an essential part of every large modern hospital. In operation it becomes necessary that the hospital pharmacy properly appreciate its duties and privileges in the matter of pharmaceutical and medical education. Medical education, yes, for pharmacy still remains a branch of the practice of medicine. Moreover, and especially if a unit of an important teaching institution, the rôle of the hospital pharmacy attains a superior position in such endeavors. It is therefore the further purpose of this plan to provide at once for the hospital pharmacy as an efficiently functioning service unit and an educational unit for training such graduates in pharmacy as may be interested in postgraduate practical and professional services. Some experience with this proposed plan has been had in the past through the unannounced policy of engaging for duty only recent graduates of the University College of Pharmacy. These individuals have been appointed after being encouraged to believe it would be possible to gain considerable valuable experience. Generally successful efforts have resulted from the subsequent attempts to find permanent places for such experienced "interns."

It is therefore proposed that the personnel of the Hospital Pharmacy be constituted and appointed in accordance with the following scheme:

A. Permanent (Staff) Employees. No.		B. Temporary (Term) Employees. No.	
1. Chief Pharmacist	1	1. Pharmacist, Master Grade	2
2. Assistant Chief Pharmacist	1	2. Pharmacist, Senior Grade	2
3. Pharmacist-Secretary	1	3. Pharmacist, Junior Grade	2
		4. Pharmacy Assistants, nonregistered	0

It may be taken for granted that the functions and duties of the permanent employees will be well understood. It is anticipated the term employees will be selected from a list of approved applicants. An approved applicant is defined as a recent graduate of one of the member schools of the American Association of Colleges of Pharmacy. It may be further understood that applicants from the University of Michigan will be shown first favor. Such an applicant when accepted will receive an appointment as Junior Grade Pharmacist, enduring for one year. If this probationary period is successfully passed the candidate will be re-appointed for a second year as Senior Grade Pharmacist. At the completion of the internship, he may, if he so desires, apply for the third year of postgraduate instruction leading to the award of Master Hospital Pharmacist. It is anticipated further that candidates receiving the certificate of Master Hospital Pharmacist will merit the respect of the entire staff of the University Hospital and that this institution will offer all possible help, that he may put to practical use the information and experience acquired during his residence.

The experiences and services offered to the pharmacy intern will be of that order peculiar to the hospital pharmacy and representative of the highest order of professional practices. Since the hospital pharmacy in fact and influence reaches into practically every department of the hospital it is a matter of considerable concern that this department's operative skill and "end-products" be flawless and faultless. In many instances the responsibility centered in the chief pharmacist will of necessity be divided to some degree among the junior staff members, generally in extent compatible with their grade. The major departmental work

is divisible by the number of grades in the term group and is separable into particular endeavors for rotating service. Such segregations may include, for example: magistral pharmacy; galenical and official preparations; colloidal, isotonic and parenteral solutions; and analytical and control work. Particular attention is also given to bacteriological procedures, sterilizing processes, hydrogen-ion concentration, laboratory reagents and solutions, surgical dressings and preparations and the modern materia medica (including clinical evaluations of experimental material).

Further, since it is the prescription that unites the pharmacist and the physician in the medical arts, particular stress is laid upon the interpretation of such orders. Prescriptions may be properly interpreted upon the basis of intent, bringing into consideration all known facts pertinent or relating to the drug and the patient. It is further contemplated that service will include a directed program of extramural work. Such efforts, essays, reports and reviews will be regularly presented to all members of the staff in regular meetings. Material regarded, by the staff, as of importance to the other departments of the hospital will be submitted thereto for disposition.

It necessarily follows that the adoption of such a plan should also include a definite schedule of remuneration for the individual. It is obvious, despite the attractiveness of the type of work, the graduate student will regard such employment as competitive, and to meet the competitive phase and to maintain the attractiveness of the offer provides no small problem. It is quite generally agreed, to attract graduates of a higher order, that current professional wage scales will have to be paid. In this respect comparisons with medical internships offer a severe change.

A CHEMICAL STUDY OF SULPHUR OINTMENT.

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The industrial, biological and medicinal importance of sulphur have made its quantitative determination a common laboratory procedure. Sulphur has been used as a remedial agent since antiquity and still enjoys popular recognition. Notwithstanding the medicinal importance, little attention seems to have been given to the quantitative determination of sulphur when combined with a fatty base.

Among samples submitted for analysis at the Oregon Board of Pharmacy Drug Laboratory were several of sulphur ointment. These samples were obtained through counter purchases (not prescriptions) made by inspectors in drug stores, which were variously located in the state. A survey of the literature revealed no satisfactory method for a gravimetric determination of sulphur in this preparation. Elsdon (1) has recommended the oxidation of the sulphur to sulphur trioxide by a mixture of bromine and nitric acid, removal of the fat from the resulting mixture by ether extraction, and a gravimetric determination of the sulphur trioxide in the aqueous solution by barium chloride precipitation. The details for conducting the method and data for known samples were not given. The

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