

hospital kitchen, I found an electric mixer quite suitable for my purpose. The same condition may be present in other institutions so a visit to your kitchen may prove valuable.

Time is an important factor in manufacturing and preparations should be made as far in advance as it is convenient to do so. We believe that we save time in manufacturing our mouth wash by making 3-5-gallon bottles of concentrated mouth wash at one time. The ingredients are adjusted so that half a gallon of the concentrate will make five gallons of finished product. With this method the three bottles represent one hundred and fifty gallons of mouth wash. Of course if space and large storage tanks are available, another system of preparation might be preferable.

The manufacture of sterile solutions undoubtedly represents the greatest economy that can be effected in the hospital pharmacy to-day. Many preparations other than the routine saline, dextrose, procaine and molar lactate can be prepared. The recently accepted vitamins such as thiamin chloride, cevitamic acid and nicotinic acid should be added to the long list of hospital pharmacy sterile solutions which the progressive pharmacist prepares for his hospital.

A practical plan for helping the hospital pharmacist in his manufacturing would be for the Sub-Section on Hospital Pharmacy to edit an annual booklet of workable formulas. The complete directions for making the products could be listed under each formula. If the institutional pharmacists increase the number of products manufactured in the pharmacy they can easily prove the saving accomplished, and if properly managed the result will be a more wholesome respect for pharmacy and pharmacists.

PUBLIC HEALTH AND SOME HOSPITAL PHARMACIES.*

BY MORRIS DAUER.¹

The prime duty of society toward its members is the protection of their health as far as is humanly possible. Culture, habits of industry, correct attitudes in social relationships, adequate knowledge of social, historic and political backgrounds, a wholesome interest in and understanding of one's environment; all these are desirable goals of society, but even greater than these is the cultivation and the protection of health, "Mens Sana in Corpora Sano" (a sound mind and sound body).

It is interesting to note in the annals of mankind the steady progress that has been made in our lives; cultural, political, financial and scientific. As man continues in his tasks and daily work toward that ultimate goal of civilization which is perfection, he pauses at different eras long enough to give him a chance to take inventory and appreciate that which has gone before him. The advocates of Technocracy demand in one phase of their study that the machine age exerts an inhibitory force so that man will be able to appreciably adjust all his faculties gradually and in such proportion as to accommodate all changes.

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With the progress of scientific healing, changes occurred to the extent that most branches of the healing art have been definitely defined, and each branch demands specialists who have had the proper training to perform special tasks in the best manner possible. It is to the credit of the American hospitals and to the various organizations which they represent that these plans have been carefully followed, and we find most departments manned by a personnel which is specifically trained in its own particular field to the ultimate advantage of our sick people. It is unfortunate, however, that this plan is not very faithfully adhered to with reference to the compounding and dispensing of medicines and drugs which are given to hospital patients to assist and safeguard their recovery.

Pharmacy has come down through the ages as a distinct and separate branch of the healing art and has been defined "as the art and practice of preparing, compounding, preserving and dispensing medicines to be used in the treatment of the sick." As such, it has been scientifically developed and with such a degree of precision as to greatly assist in the treatment of the sick.

In most civilized countries various laws and acts have been passed and enforced so that public health will not be endangered. The State of New York has rendered yeoman service by being the first state to pass sufficient legislation of a practical and thorough nature to safeguard the interests of public health and professional pharmacists in their pursuit of the very fine and exacting work which they have rendered. Before one can be admitted to the legal practice of Pharmacy, certain educational requirements, with sufficient subsequent practical training, are required. The courses given in the Colleges of Pharmacy are thoroughly supervised by the authorities.

Only those who are properly qualified may be entrusted to prepare medicine for the sick. This rigid supervision, followed by constant inspection, has done much to raise the standing and usefulness of the Pharmacy to the community; and infractions of any degree are punishable by revocation of license, a penalty, which as evidenced by statistics, very few engaged in pharmacy have been called upon to pay.

It does not seem reasonable, in the light of this knowledge, that the same strict adherence to these safeguards of public health is not paid to pharmacies or drug departments which are part of hospitals. Supervision of these pharmacies is left to those in charge of the hospital.

Many surveys have been made of the hospitals throughout the United States and the percentage of those that entrust the important work of compounding and dispensing of medicines to a pharmacist whose professional conduct is supervised by state authorities. Most of these hospital pharmacies are operated by interns and nurses who are so overworked with other professional duties that it is impossible to expect of them the same degree of careful dispensing that we may expect from a trained, licensed pharmacist. This is evidenced from time to time in the public press by the abuses resulting from this practice. In the light of present knowledge and in the interest of public health, legislation should be enacted which will compel all hospitals to employ at least one pharmacist who is licensed in their respective state to assume full charge and responsibility for the compounding and dispensing of medicines; the same as required of those engaged in private practice.

The compounding and dispensing of medicines in a hospital is just as impor-

tant and technical as in the drug store to which a doctor's prescription is brought for compounding. Poisons have to be delicately measured and weighed, poisonous dosages have to be carefully checked and unpalatable drugs must be elegantly compounded with suitable aromatics and flavoring to render them more palatable. Are not the sick in the hospital entitled to the same legal and human care as the sick in their own homes? It is readily admitted, even by those who advocate differently, that we cannot expect the best when the compounding and dispensing is done by anyone except a well-trained pharmacist.

Institutions and hospitals that do not employ licensed pharmacists, but allow their pharmaceutical operations to be carried on by unlicensed and untrained help, do so obviously because of real or alleged economic necessity. Avoidable errors are constantly being made and very often assume such large proportions that at one stroke lives may be needlessly wasted. News items of the daily press bear this out.

It is economically, morally and ethically unsound for any hospital to permit unlicensed pharmacists and others to attend to drug dispensing:

1. **Economic.** In hospitals which do not employ licensed pharmacists, galenicals, ointments, surgical supplies, cotton, bandages, gauze, etc., are purchased in bulk quantities, usually altogether out of proportion to their needs, and there is much waste due to spoilage, improper handling, improper dispensing and poor storage. A licensed pharmacist can manufacture all galenical and pharmaceutical preparations much cheaper than they can be purchased outside and in the normal amounts needed for use, thereby assuring medicines of official strength and potency at a lower cost and thus automatically eliminating waste. Pharmacists, also, are better acquainted with the market value of drugs, chemicals, etc., and are instrumental in saving money for the institution in this way; they are also trained to assay drugs and chemicals purchased, to assure remedies of proper potency and to detect adulteration.

2. **Morally.** Patients who are treated at their homes are guaranteed by the laws of the state in which they reside that their prescriptions will be compounded by a pharmacist whose training and integrity have been vouched for by the state. Patients in hospitals where dispensing is done haphazardly by non-pharmacists are not accorded this protection. We must conceive that in hospital practice both medical and surgical patients constantly require the administration of drugs, the nature of which are more potent and vary in form and use from the ordinary remedies which may be prescribed for the ambulatory patients, and these should be compounded and dispensed by those who have met the minimum requirements that the state demands of one to practice Pharmacy.

3. **Ethically.** Pharmacy as practiced to-day in the modern hospital is a specialized field. The extemporaneous preparation of Fresh Solutions for intravenous medication properly prepared are preferable to ready-made articles purchased in quantity and probably stored for a period; such duties rightfully belong to the realm of pharmaceutical practice.

In conclusion the writer recommends:

- (a) That in addition to all other requirements for the registration of a hospital, the American Hospital Association and American College of Surgeons require that a hospital be equipped with a pharmaceutical laboratory, the size of which should be

in proportion to the needs of the hospital, as recommended and approved by the Section on Hospital Pharmacy of the AMERICAN PHARMACEUTICAL ASSOCIATION, and that such pharmacy should be under the immediate and personal supervision of a pharmacist licensed in the state in which the hospital is situated.

(b) That the AMERICAN PHARMACEUTICAL ASSOCIATION recommend that the State Departments of Health amend their public health laws so that it shall become mandatory for all hospitals to employ only registered pharmacists in the same capacity as they are employed in the retail pharmacy.

(c) That the AMERICAN PHARMACEUTICAL ASSOCIATION divide the United States into districts and assign a committee of members of the Sub-Section on Hospital Pharmacy to make periodic inspections, and such committee report in writing, together with recommendations for the approval or disapproval of such hospital pharmacy, and that such recommendations be forwarded by the AMERICAN PHARMACEUTICAL ASSOCIATION to the American College of Surgeons and American Hospital Association for their action in this matter.

(d) That the State Boards of Pharmacy shall be empowered to make their periodic inspections and enforce these regulations together with all their other regulations.

(e) That the AMERICAN PHARMACEUTICAL ASSOCIATION appoint committees to study this problem at length and make further recommendations.

EXAMINATIONS IN CHEMISTRY.*

BY EDWARD KREMER.

During a long life time I have not presumed to dictate to my younger associates on the instructional staff how they were to teach or conduct their classes. As a member of a State Board for several years, I have equally refrained from telling my colleagues on the Board how they should conduct their examinations. I have asked for the privilege to conduct my teaching and my examining in accordance with my own views. Having been granted that privilege, I deemed it but right and proper to accord the same privilege to others, no matter how divergent our views on the subject. In accordance with these principles I am to-day subjecting to your criticism a series of State Board examination questions, with the hope that a free discussion thereof may result beneficially to myself as well as others.

Possibly, I should preface my presentation with a few personal remarks. As a student, I have always been willing to do my duty by any subject required of me, be it irregular French verbs, or Kepler's laws in astronomy. But I greatly disliked examinations. As a mere lad, I would get up at sunrise and study Latin or Greek declinations and conjugations. Likewise, I uncomplainingly crammed zoölogical classification from the textbook, though I should have preferred to collect animals, and acquired a knowledge of zoölogical systematics by handling animals as I did, *e. g.*, with beetles. Examinations, however, as already stated, I detested. Hence, at the close of my junior year at the Philadelphia College of Pharmacy, when every-

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