

HISTOLOGY—ITS IMPORTANCE IN PHARMACEUTICAL EDUCATION AND LEGISLATION.*

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Professions at large are noted for their ultra-conservative methods and the slowness through which they adopt changes in their profession. Pharmacy is no exception. There are times when it is possible to gain a transitory and fleeting glimpse of one of the many factors that eventually produce a change in the established order of things; if we observe these factors we should take time for consideration and devote some attention to the possible effects.

Such a factor is at work in the fields of pharmaceutical education and legislation which, in the opinion of some, should not be overlooked or relegated into the background. The particular influence referred to is the increasing importance of endocrinology in the medical picture. Any development in Medicine, especially if it is concerned with therapeutics and dispensing of therapeutic agents eventually becomes a problem of the pharmacist and his relationship to the public health professions. Endocrinology is presenting a problem and is creating new therapeutic agents and new interests for pharmacists. Frankly, the ever-increasing use of glandular substances and their derivatives is being forced upon us as pharmacists whether we like it or not, and it behooves us as professional individuals to be able to present definite knowledge of certain phases of the subject. This has been done in a more or less orderly manner through medical and pharmaceutical research, the demand for the products resulting from this research, and the recognition by some of the states that it may be desirable to control the dispensing of these products by legislation. It may readily be seen that the pharmacist, to fully appreciate and understand progress in the science of endocrinology, thereby enabling him to take his rightful place in the public health scheme, must have a fundamental training in phases of the subject.

The obvious time and place for the pharmacist to gain this fundamental knowledge is in the pharmacy college during his student days. It has not been so very long ago, and the condition may exist yet, that, as pharmacy students, we listened to an instructor in Physiology relate briefly the names, and probably omit much regarding the function, of the glands of internal secretion, the omission being due to the rather rudimentary state of the science of endocrinology. We were later introduced to the medicinals from animal sources official in the U. S. P. and N. F., and learned the nomenclature, the use and the dose of the various substances. This seemed to suffice at that time. At present this sort of training is not sufficient to give the student a basic understanding of the science of endocrinology and will not equip him to serve the physician and dentist, and in that way render a true public health service. It would seem that the pharmacist is woefully lacking in fundamentals of the subject, and that becomes an immediate problem of the pharmaceutical educator.

At the present time we may be witnessing a change that may eventually contribute materially to a permanent alteration in professional practice. The time is

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here for a study of suggested changes in curriculum that will fit our students to render a more efficient professional service, especially in the rather extensive field of endocrinology. What courses should be introduced into the pharmacy curriculum to accomplish this? There is no question that many and varied are the subjects that might be thought of, but surely there can be no question as to the value of a study which would give the student an understanding of normal tissues from whence come the products so widely used in the treatment of glandular dysfunctions; such a study is histology.

Why introduce a subject like histology into the pharmacy course? Histology will give the student a picture of the normal structure and location of the tissues of the body, it will give him a background for advanced work, it will enable him to discuss as a practitioner associated problems with physicians, and will place him in a position to assist in the formulation of proposed legislation directed at glandular substances and their derivatives. Let us consider more specifically the above statements.

The present literature of Medicine and Pharmacy, with reference to the science of endocrinology, is rather extensive, which indicates the vast amount of original investigation that has been done, and pointing to work that must be done to further the science. As a matter of fact, one need not seek the academic journals of the scientist to find a paper on this subject; all one need do is consult one of the many advertising mediums of the pharmaceutical manufacturers and in all probability some authentic information on this subject will be found. So much of the literature, be it the erudite journal or the advertising medium, contains histological description in order to place before the reader an accurate picture of a piece of research or the development, standardization, use and dosage of a particular product of glandular nature. The assumption must have been made by the authors of this literature that their readers will be trained in the fundamentals, trained in histology to know the appearance of normal tissue. Note that this material, a goodly portion of it, is being directed at the physician and the pharmacist through their respective journals. The point is this; many factors are forcing histological nomenclature, description and thought into the pharmacies of to-day, and the individual pharmacist to serve efficiently must have accurate knowledge of the location, normal structure (microscopic and macroscopic) and characteristics of body tissue. This knowledge will have to be gained by the somewhat questionable route of self instruction or in a regularly established course of instruction in a pharmacy college. By obtaining this instruction in a pharmacy college the student would have the advantage of correct information and procedure, and further, prepare himself for a better appreciation of advanced work in Biological Assaying, Pharmacology and advanced work in Pharmacy.

Somewhere in the pharmacy course, usually near the close, the student is introduced to some of the newer pharmaceuticals of New and Nonofficial Remedies, and among these newer pharmaceuticals are representatives of the endocrine glands. The student's ability to fully appreciate, organize and retain the essential information of the newer Pharmacy is directly proportional to his knowledge of fundamentals of Pharmacy. We have considered Pharmaceutical Botany as being essential because of its relationship to the future study of Pharmacognosy; yet, we have given no thought to the proper background for such increasingly important

and popular studies as Pharmacology and advanced Pharmacy as associated with current literature and references. Histology offers an ideal background for such work, and gives the student a fundamental training that will be drawn upon many times in his professional career of specialist in medicines—their source, preservation, etc. It is quite possible that histology is of sufficient importance to replace much of the present-day Pharmacognosy that is being given to pharmacy students, and it may be predicted that histology will become more and more basic to the study of Pharmacy.

It seems that about seventy-five per cent of the students in Pharmacy establish themselves eventually as pharmacists in a retail outlet wherein physicians' prescriptions are being compounded and the physicians' offices are being supplied, at least in part, with chemicals and pharmaceuticals. Immediately the young pharmacist is faced with the problem of the traveling representative of a pharmaceutical manufacturer promoting a new and recently developed therapeutic product by calling upon the physicians in the community. So many times the physician considers the pharmacist as the one to properly evaluate and classify these newer products and will call upon him to ask further questions regarding the therapeutic agent shown by the representative of the manufacturer. The pharmacist must be able to supply the correct information, as well as the product itself, in order to retain his professional prestige and the confidence of the physician. Many times the questions are regarding problems of administration, dosage and effect of preparations related to the endocrines; the young pharmacist must know the answers or where to find the answers to these questions. The proper orientation of standardization, dosage, administration and effect of glandular substances or related compounds is one of the outstanding difficulties that many pharmacists face to-day. Apparently the pharmacist's job is to be more than a medium of transfer of an item from the shelf to the patient on a physician's order; he is expected to contribute to the advancement of Medicine and Pharmacy and have rather extensive knowledge of the items that he dispenses. To gain this, he must continually search current medical and pharmaceutical literature. It helps so much to have had the fundamentals in pharmacy college, and until one actually encounters this problem it is impossible to conceive the value of organized histological information in solving so vital a problem to professional practice.

In these days of fashionable slimness the use of thyroid gland has been overdone, and in order to protect the public from overindulgence in such dangerous medication, it has been deemed necessary to regulate its sale by law. As a matter of fact, the State of Oregon, by promulgation, declares epinephrine in certain concentration, pituitary gland, thyroid gland and compounds or preparations of these, shall be sold at retail only on the written prescription of a duly registered physician and by a registered pharmacist recognized by the Oregon Board of Pharmacy. If men propose laws and promulgations governing the sale and distribution of pharmaceutical products to a legislative body for adoption, it should follow that the ones making the proposals know whereof they speak and write. Again, the pharmacy colleges should consider the possibility that there are other courses basic to Pharmacy and they might be properly introduced into the curriculum; it would aid those later interested in legislative procedure. If the trend in legislation to restrict the distribution of glandular substances continues, which it might very well

do, and when our students of to-day become the individuals to present the legislation of to-morrow, we want to see them well qualified to do so by reason of their collegiate training. With reference to glandular substances the student would do well to have fundamental training in histology.

We think of legislation and immediately court trials come to mind. Not so long ago there took place a trial in which the question involved was whether a certain substance was a food or a drug. The main ingredients of the particular compound, as established by evidence, were liver and stomach. It was established by expert testimony that it would be possible by microscopic examination to show at least qualitatively the presence of these substances. It is interesting to note that in this trial one of the expert witnesses was a pharmacist. Happenings of this nature remind us that we never know what the following day has in store for us or what our students are apt to do. There is no doubt that the pharmacist on the witness stand in this case would have occasion to use any histological information concerning liver and stomach he might have.

Few of us take time out to contemplate the tremendous responsibility, moral and legal, that is placed upon the pharmacist in practice, no matter how little the professional practice he really carries on. As educators we can assist by anticipating the needs and wants of years to come, and shaping our courses of study to fit the conditions that medical and pharmaceutical research may present. From all appearances, the study of endocrinology will not die in a few short years, but rather open new fields for research in which the pharmacist will play an important part. It will open new fields in legislation and court procedure, and the pharmacist who is not equipped cannot fit into the picture. A closer coöperation between the physician and pharmacist is coming. As a matter of fact, it is here now; many physicians expect the pharmacist to act as consultant in their proper capacity, to be sympathetic with respect to the physician's professional problems, and further, to be able to understand the physician's language.

Once again to the pharmaceutical educators training young men and women to enter a professional career of Pharmacy, consider carefully changes beginning to manifest themselves and think about adapting courses of instruction to meet the change. In the field of endocrinology, histology will materially aid the pharmacist in fulfilling his mission in the scheme of public health.

U. S. CIVIL SERVICE EXAMINATION FOR PHARMACOLOGIST.

The Civil Service Commission has recently announced an open competitive examination No. 29 (Unassembled), for Senior Pharmacologist, \$4,600 a year; Pharmacologist, \$3,800 a year; Associate Pharmacologist, \$3,200 a year; and Assistant Pharmacologist, \$2,600 a year.

Applications must be on file not later than March 27th, or March 30th for the Western States. Applicants will not be required to report for examination at any place but will be rated on the extent of their education and on the extent and quality of their experience. Application Form 8 can be secured from the Commission.

Among other requirements applicants must have successfully completed a full four-year course leading to a bachelor's degree in a college or university of recognized standing, majoring in Pharmacology, Toxicology, Pathology, Pharmacy, Chemistry, Biology or a closely related subject.
