THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

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ACCURACY AND DISTINCTION IN STATE BOARD QUESTIONS.

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Most of us are striving for an ideal; that is, we are attempting to better our profession. The college professor tries to secure higher attainment on the part of his students and at the end of the work he attempts to measure the success of both himself and his students by the use of examinations. Examinations can be made a part of the student's learning as well as a measuring stick of his attainment.

The progressive instructor makes his examination questions better, clearer and more precise each year that he teaches. Likewise, the board of pharmacy which is progressing, and most of them are progressing, should have better examination questions each year. Even though they are better, we believe that there is still room for improvement. In many cases the members of the boards of pharmacy remain in service only four or five years and at the end of that time have just become efficient in writing questions. They are then removed and their places are taken by inexperienced members who go through the same process of learning to write good questions.

We make considerable effort to have our students and clerks learn precision in the matter of weights and measures, knowing the exact number of grains in an avoirdupois ounce and the number of minims in a drachm, but we believe that this precision or accuracy is not as evident in Materia Medica questions. A part of this is undoubtedly due to the lack of uniformity of nomenclature in examination questions. Many cases have occurred where different members of the same board interpret the question in two or three different ways. If mature men of the profession have different views, it is quite certain that the younger men applying for a license will be uncertain as to what is wanted in a question.

One of the most common ways of confusing a student is to ask for the source of a drug. Some examiners expect the Botanical or Zoölogical origin, others expect the country of origin, while others expect the part of the plant from which the drug is obtained. The source of **Mel** is the nectar of flowers and it may be correctly answered as the honey-comb. The source may also be interpreted as meaning the country of origin or habitat, and has been so interpreted by instructors in pharmacy schools. In order to avoid confusion, there should be uniformity, at least in the same list of questions. In a recent State Board examination, the terms "botanical name" and "botanical source" were both used. Evidently, the botanical origin was wanted. Often students have asked what is meant by "the part used," especially when asked of such drugs as asafœtida, camphor, balsam tolu, menthol and such other drugs removed from some part of the plant. He is in doubt as to whether the examiner wants the "part official" or the part of the plant from which camphor, etc., are obtained. The student is justified in asking to have such a

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question made more definite. If he would state that the part used of camphor is the entire tree, he would be correct, but if the examiner had "part official" in mind, he would give credit to the man who answered it with a "dextro rotatory ketone." The "part used" in obtaining asafœtida is the root but that is not the "part official."

It is hoped that the reader will not think that these are hypothetical cases or that they are rarely encountered. They occur rather frequently.

Recently, the question was asked to distinguish between organic and inorganic drugs. The examiner meant crude drugs when he asked for organic drugs. The question, as asked, could have been answered by describing "organic chemical" and "inorganic chemical drugs."

While the term "common name" is usually interpreted correctly to mean synonym, would not an applicant be correct in giving the English name if that were the one "common" in his locality?

The following question in a recent board examination made several applicants wonder what was wanted: "Name the classes of the most active constituents of plant drugs and give an official example of each class." The examiner, undoubtedly, wanted "alkaloids, glucosides, resins, bitter principles, etc." for an answer. Instead of asking the applicant to "give briefly in substance the U. S. P. definition of **Buchu,**" why not simply ask him to "give the U. S. P. definition of **Buchu?**" Not long ago the question was asked, "Outline in substance the U. S. P. definition of **Cannabis** including the standard prescribed for the fluidextract and how this is ascertained." In this case, simply the definition should be requested. The U. S. P. definition for **Cannabis** does not include a standard for the fluidextract but explains how to test **Cannabis** by first preparing a fluidextract of it.

In one list of questions the following two questions were included: "1. Draw a root hair. 2. Give the use of (*a*) lycopodium, (*b*) buckthorn." We leave it up to the reader as to whether these two questions should have the same weight or not. In one set of questions the following two questions were included evidently with equal weight: "1. Draw a parenchyma cell. 2. Give assay requirements of (*a*) clove, (*b*) nux vomica."

Within the last year it has been noted that one board has included in each set of Materia Medica questions three or four asking for the per cent of foreign matter or acid-insoluble ash of crude drugs. This state must be training men for the drug inspection service instead of for practical pharmacy, and this state claims to be very practical in pharmacy. Would it not be better to ask, as one state has done, "Why does the U. S. P. limit the per cent of ash in a crude drug?"

In one list of questions under Pharmaceutical Chemistry, only six of the fifteen questions involved any knowledge of chemistry. The other nine did not require the least bit of knowledge of chemistry but were simply questions in Materia Medica. One list of questions included the following two questions: "1. Name the cavities of the heart. 2. Name a physiological antidote for (*a*) chloral, (*b*) alcohol." The first is an eighth grade question while the second is really a good question to ask a pharmacist.

"How may the suspicion of alcohol poisoning be confirmed?" "What changes take place in inhaled air before it reaches the lungs?" Are students compelled to go to college for three years in order to be able to answer such questions as these?

"Magnesium: How is it found?" (Reader please answer.)

"What is the meaning of desiccation as applied *to* pharmacy?" Did the examiner hint that pharmacy is "dried up?"

Still another common fault to find is for one part of the question to answer another part of the same question. As an example, we may give the following question: "(*a*) What are the alkaloidal requirements of Colchici Cormus? (*b*) Give the official name and state the part of the plant used."

One more criticism is that concerning the proportion of U. S. P. and N. F. questions asked. We have noted that in several instances the questions were evenly divided between the U. S. P. and N. F., while in some a greater number have been selected from the N. F. than from the U. S. P. While there is no question but what the student should know the N. F. drugs, we believe that more emphasis should be placed on the U. S. P. drugs.

For the sake of clarity and precision why not be uniform by using the following terms which are used in all schools and by most boards of pharmacy: Botanical Origin; Latin title; English name; Synonym; Part official; Habitat; Part of plant from which obtained (Oil of Eucalyptus from the leaves); U. S. P. definition; U. S. P. standard of strength; Physiological action; Therapeutic use; U. S. P. dose (not average dose) and Active constituent?

Drugs are logically classified as Crude Drugs, Oils, Extracts, Organic Chemicals and Inorganic Chemicals. Why not use these classes until a better sub-division is established?

THE TRANSMISSION OF DISEASE BY FLIES.

U. S. PUBLIC HEALTH SERVICE.

Every pharmacist should know something about flies as carriers of disease. Such knowledge will enable pharmacists to intelligently coöperate and assist in any anti-fly campaigns in their communities. This article in intended to show the part that flies may take in the spread of certain diseases.

Flies may transmit disease in either of two ways. The first method is by mechanical transference whereby the insect becomes contaminated with the parasite or organism of disease as a consequence of frequenting filth and places where these agents are found, thus carrying the organism directly to food or drink partaken of by man. This is by far the most common method of conveyance. All kinds of flies may act as disease carriers in this manner, but the house fly is the principal offender owing to its prevalence and its great tendency to frequent filth. The stiff hairy parts of the fly are particularly adapted to the transference of contagion in this manner.

Experiments have been conducted to show the length of time flies may carry the organisms of infection. This time varies. If conditions are favorable there is little doubt that bacteria may be transferred in this manner after several days. If the organisms are taken into the intestinal tract of the fly, this period may be lengthened. When it is realized that milk, which is one of the best media for the growth of bacteria, may be contaminated by flies merely through the act of feeding and that "clean flies" may even derive infection from those which have but recently visited the outhouse or the stable, the danger of food contamination may be conceived.

The second method of disease transmission is by what is known as inoculation. Inoculation is the actual injection into the system, in this case by the insect, of organisms or parasites. These are known as pathogenic organisms. Fortunately, disease cannot be transmitted in this manner by flies which do not bite, else our safety would be far less than at present. The blood-sucking varieties are the only ones which are dangerous in this respect. In America these varieties are relatively infrequent. The mode of transmission is similar to that in which malaria is conveyed by the mosquito, typhus fever by the louse, and plague by the flea. The parasites of organisms derived from the blood of the infected person are received into the stomach of the fly where they undergo changes requiring a specified period and are subsequently inoculated into a second individual. The diseases that may be transmitted by flies are typhoid fever, diarrhea, cholera, dysentery, paratyphoid, intestinal parasitic infections, sleeping sickness and a number of others.

Typhoid fever is the most common and important infection of man conveyed by flies. It is an acute infectious disease of bacterial origin contracted only by taking into the system the bacteria-containing discharges of one actually ill of the infection or of some person who serves as a carrier thereof. It may be contracted through sewage-polluted drinking water, infected shellfish or in other manner. It is essentially a disease of filth, but unless means are established for the transference of such filth to the mouths of persons the infection never develops. Flies frequently serve as a means of this transference and are, therefore, in part responsible for the spread of typhoid fever.

During the Spanish-American War the attention of the American people was called dramatically to the fly as a spreader of typhoid fever. Hundreds of soldiers died from this disease, from this altogether preventable infection. The conditions which prevailed during the Spanish-American War exist in thousands of American communities to-day. We look with horror upon the unnecessary sacrifice of life which ensued during the war with Spain, yet within our very vision identical conditions prevail and we remain undisturbed. The unprotected and unscreened outhouse in the country and in many villages where sewage systems do not exist, constitutes a serious menace to the health of any community. Sooner or later such a place is bound to become the depository of typhoid excretions, and that moment becomes a hazard to every resident in the vicinity, for that very environment has created an insect host capable of spreading the scourge to every point of the compass. Typhoid fever bacilli never originate in flies themselves but are always derived from infected human waste. In unsewered districts this hazard is proportionately greater, but even in sections properly provided for in this respect the menace is never negligible if flies exist, due to the presence of carriers and cases of walking typhoid.

Flies which have access to outhouses and to tables may contaminate any variety of food. Milk is frequently subject to such infection, and numerous epidemics of typhoid with resulting deaths have been traced directly to dairies unprovided with proper facilities for the disposal of waste. Food purchased in fly-ridden markets may likewise be a source of contamination and if eaten uncooked may lead directly to illness. Cooked food of whatever nature may be contaminated subsequent to the cooking. This constitutes a serious menace to health. Quite

irrespective then of the precautions which we take as individuals, we are all more or less exposed to the infection of typhoid fever through common sources. As a result of the laxity of others even when we ourselves may have exercised every precaution necessary to prevent the development of flies, our lives are frequently endangered. The eradication of flies then becomes a matter which concerns the entire community, and may be properly classed as community hygiene.

A second infection frequently conveyed by flies is summer diarrhea. This is more particularly a disease of children, but adults are also susceptible. In 1926 in the Registration Area of the United States, 28,374 infants under two years of age died from diarrhea and enteritis, the infectious nature of which has now been definitely determined. Bacteria of various varieties are known to be responsible for the disease. The sources of infection are much the same as in typhoid. The organisms that cause the disease reach the alimentary tract as the result of uncleanliness, infected food, and, very possibly, by contamination of hands or food through the activities of flies. The evidence against the fly as a conveyer of infection is largely circumstantial, yet so conclusive is it that no one would hesitate to place the responsibility upon the insect. If we wish to save the lives of babies, the first step in the process is the eradication of flies.

Cholera and dysentery which are primarily intestinal infections conveyed in the same manner as typhoid, are unquestionably at times disseminated by flies. Fortunately cholera is a rare affliction in this country, originating only from imported cases, but epidemics of dysentery are not uncommon, being especially prevalent in institutions, camps and districts where unsanitary conditions prevail.

In addition to these intestinal diseases, certain other affections, more or less closely related to them, may at times develop from the activities of flies. Paratyphoid, sometimes called the first cousin of typhoid fever, and food poisoning are to be considered in this category. More important still, however, are the numerous parasitic worms, such as the various species of tapeworm, the hookworm, and even those of rarer forms, all of which are continued through the media of eggs contained in the waste of infected persons.

In addition to the diseases cited there are numerous other conditions where the possibility of fly transmission has at least been considered, although definite proof has been difficult to obtain of the truth of the theories advanced. In the majority of such conditions infective secretions are present. These are capable of being transferred through the action of flies, either directly or through the medium of food to healthy persons. Tuberculosis may be mentioned as an example of such a condition. Access to tuberculosis sputum by flies is not only disgusting from an æsthetic standpoint, but, potentially at least, of serious danger. The infectious disease of the eyes, trachoma, is probably conveyed at times by these insects. Anthrax, which occasionally affects man and which is rapidly fatal to cattle and sheep, is another disease in the spread of which the fly is a factor.

In short, the fly is a distinct menace to health and should be treated as a menace; exterminated. Swatting flies, commendable a pastime as it is, is not in itself as important as are eradicative measures which aim to eliminate the breeding places of flies.