THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

The curricula of our colleges of pharmacy are receiving careful study at this time, because we go to the four-year course in 1932. The following three papers by Deans Muldoon and Leigh and Professor Gathercoal discuss the place that three different subjects should occupy in our curricula and are therefore very timely.—C. B. JORDAN, *Editor*.

A COURSE IN DRUG ANALYSIS.

BY HUGH C. MULDOON.*

I. Shall the Course Be Given?—Is a knowledge of drug analysis of value to the pharmacist? Work of this character is specified in the suggested two-, and three-year courses outlined in the Pharmaceutical Syllabus. Those schools which do not now offer a separate course in drug analysis, give a considerable portion of the work in other courses.

The work is intrinsically valuable. It improves technique. The course provides a review of the work of other courses. It presents no unusual teaching problems.

II. When Shall the Course Be Given?—Since the work may utilize the student's knowledge of inorganic chemistry, qualitative analysis, organic chemistry, quantitative analysis, mathematics, biology, pharmacognosy and other courses, its proper place seems to be in the work of the last year. It is so placed in the Syllabus. What shall be its position in the four-year curriculum?

III. Shall the Work Be Given as a Separate Course?—The work of drug analysis is both qualitative and quantitative in character. Shall a considerable portion of the quantitative work of drug analysis be used as a means of teaching quantitative analysis, or shall this course follow a course in general quantitative analysis? The latter plan is effective. It will probably be followed in the university schools where the department of chemistry teaches quantitative analysis for the school of pharmacy. A similar plan works well when a course in general inorganic chemistry is followed by a course in the pharmaceutical applications of inorganic chemistry.

IV. Content and Time.—The selection of material for this course must depend upon the time available and the amount of analytical work that is to be given in other courses. Those schools which offer a separate course allow from three to six semester hours for this work. The Pharmaceutical Syllabus suggested 50 clock hours as a minimum under the two-year course. With the change to the three-year curriculum there was no increase in hours. What shall be the minimum number of hours to be devoted to a course in drug analysis under the four-year plan?

Material is not lacking. The United States Pharmacopœia and the National Formulary supply far more work than can be covered in the usual short course. This is true even when such exercises as alcohol determination; viscosity; melting, congealing and distilling points; and the detection and identification of alkaloids are included in the laboratory work of organic chemistry; when the arsenic tests, the tests for heavy metals, and the qualitative tests for the identity and purity of inorganic chemicals are performed in qualitative analysis; when the microscopic

* Duquesne University.

examination of drugs is studied in pharmacognosy; the determination of p_H values in bacteriology; sugar determinations in urine analysis; and gravimetric assays, and volumetric assays involving neutralization, precipitation and oxidation and reduction are studied in quantitative analysis.

With all these exercises disposed of, there is still a wealth of material, such as: iodine and saponification values; ester number; the chemical analysis of vegetable drugs; proximate alkaloidal assays; the examination of volatile oils, resins and waxes; turbidimetric tests; the determination of unsaponifiable matter; ash determinations; and gasometric, electrometric and biological assays; the use of the colorimeter, polarimeter and refractometer.

Much of this work will not be completed in a first course. Shall a second course be given, possibly as an elective in the fourth year? Such a course might well include the more difficult and unusual determinations; further work on the alkaloids; electrometric assays; the biological assays for cod liver oil, and for aconite, digitalis cannabis indica and the other drugs for which the Pharmacopœia directs biological assays; and other work of interest to the analytical and control chemist rather than to the retail pharmacist.

Should Work on Nostrums Be Included?—One school lists an elective course in the assay of nostrums. There is plenty of work to be done on official drugs and preparations. Shall trade-marked preparations be analyzed? Will a few such exercises be profitable? Would they give a special interest to the course?

The following questions are submitted:

1. *Is the work of drug assay worth while?*
2. *If it is, how much time shall be devoted to it?*
3. Shall the work be given as a separate course?
4. *Where shall such a course be placed in the curriculum?*
5. What shall be the general content of the course?
6. *Shall there be both an elementary and an advanced course?*
7. *Shall only official drugs and preparations be examined?*

THE PLACE OF PHYSIOLOGICAL CHEMISTRY IN THE FOUR-YEAR CURRICULUM.

BY T. R. LEIGH.*

About fifty per cent of the colleges in the Association, now offering the Bachelor of Science Degree in Pharmacy, require physiological chemistry, the amount varying all the way from 54 to 396 clock hours, seventy-two being the most common. This nearly equal division of opinion as to the advisability of having that subject a requirement for the degree is a cogent argument for its discussion. Since the majority of the chemicals and drugs commonly handled by the pharmacist and the prescriptions compounded by him are for the human body, physiological chemistry is beyond cavil an important branch of the science to him. A glance over the questions asked by the state Boards of Pharmacy will often disclose a leaning toward physiological chemistry. That a knowledge of this subject is valuable and desirable would hardly be denied by any one who has considered its relation to pharmacy. But there are many other subjects of prime importance, so many, in

* University of Florida.