

Society's Simultaneous Need for Paramedical and Information Scientists Is No Coincidence

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Many people assume that the scientific training received by pharmacists must be irrelevant to the practice of their profession. Most of us deal with pharmacists as businessmen, concerned primarily with management of a retail enterprise. Although the pharmacist has a keen appreciation of the beneficial as well as noxious properties of drugs, most of his customers are neither aware of the extent of his knowledge, nor do they find it relevant to the simple act of repackaging capsules, tablets, pills, liquids, and other medications from large wholesale to prescription-size containers.

There was a time when the pharmacist was the maker rather than merely the distributor of drug preparations. Most American pharmaceutical firms originated as neighborhood apothecaries or wholesalers of crude drug supplies. For many people, the pharmacist was the principal health advisor. For over a century he was called upon (by the public if not by the medical community) to bridge the deplorable gulf between the need for medical care and available delivery of it. Community pharmacists bettered and saved many lives by steering their friends and customers away from medically ineffective but poisonous concoctions freely available to the public before the scandalized enactment of our food and drug laws.

Depending upon many factors—socioeconomic, educational, geographic health-care availability—the pharmacist frequently continues in the role of health advisor. For, although the snake-oil panaceas may have disappeared, self-medication with so-called over-the-counter or patent medicines still constitutes a huge percentage of drug use.<sup>1</sup> If anyone can be said to have “regulated” the use of over-the-counter drugs (whose advertisement constitutes an exhaustive and mind-boggling primer of promotional technique), it must be acknowledged that conscientious and responsible pharmacists most deserve what little credit there is to be shared. The pharmacist has been waiting—and working—in the wings for our tardy acknowledgment of the true need for what has come lately to be called “paramedical personnel.”

Technological advancement has made obsolete the old-time pharmacist's compounding skills. Pharmaceutical manufacture and marketing have made it unnecessary for a physician to learn manual prescription formulation. Machines make tablets and capsules better and cheaper. But technology hasn't made obsolete the pharmacist's most important assets: his scientific training, his consequent knowledge of actions and uses of the substances he dispenses, and, last but certainly not least, his ability

to deal with people. More than ever, the modern pharmacist is needed as a working authority on the actions and uses of drugs. He must make himself understood to physician and layman alike. And probably nowhere are these facts so well demonstrated as in the modern hospital pharmacy. What used to be merely drug stockrooms are now becoming drug-information centers.<sup>2</sup>

The modern pharmacy student is being thoroughly prepared for this "paramedical" role. He is subjected to intensive instruction in clinical pharmacy, with examination of drug interactions, side effects, etc. In addition, a majority of pharmacy students elect (and may shortly be required) to do laboratory work in clinical pharmacy. Here they are required to make rounds with physicians. Many students today are taking additional courses which lead to a Pharm. D. degree. In the program, students are trained in pathology, pharmacology, toxicology, and receive extensive clinical training with hospitalized patients. Finally--something I cannot endorse heartily enough--they study data processing and information management. In at least one Philadelphia hospital this kind of training has led the interns to insist on having a pharmacist prescribe or confirm medication once the diagnosis is made.

Many other professions could follow pharmacy's example. At the University of Pennsylvania I teach a graduate course in information management. It is amazing to me that so many graduate students are in almost complete ignorance of a tool so essential to con-

tinuing *professional* competence. In most curricula, the amount of instruction given in modern information handling techniques is less than minimal. Although there is now no shortage of professional information scientists who could teach the necessary courses, the small number of schools--even library science schools--that offer elective training in information retrieval is absurd. Any dean or chairman who wishes to correct deficiencies in this respect should consult the American Society for Information Science, headquartered at 1140 Connecticut Avenue, N.W., Washington, D.C. 20036 (telephone: 202/659-3644). There also exists the possibility of asking present faculty members to assume responsibility for instruction in this area, and these would include special librarians qualified to teach. Though librarians are no more and no less specially qualified to teach, they certainly ought to have enough training today in modern information handling methods to cover considerable ground in a minimal course of instruction.

For those administrators who feel the need for using one of the present faculty members, it may not be at all farfetched to consider sending him to one of several institutions that provide excellent one-year programs as, e.g., the University of Tennessee at Memphis. Recently I lectured to the faculty and students of their program in Science Librarianship. I could not help but be impressed by the program and its contribution to our urgent need for paramedically trained personnel.

1. Leake, C.D. The history of self-medication. *Annals New York Acad. Sci.* 120(2): 815-822, 1965.

2. Welt, I.D., ed. *Drug Information for the Health Professions*. (New York: Gordon & Breach, vol. I, 1969; vol. II, 1970).

In 1967 and 1968 there were two consecutive conferences on the topic of drug information for the health professions. The conversational mode of these two volumes makes extremely easy reading for students and is quite relevant to the problems discussed here. Chaired by the ever amiable Chauncey D. Leake, the participants of the first conference were: H. Beckman, F.M. Berger, D.F. Burkholder, W.G. Clark, W.C. Cutting, T.C. Daniels, N.A. David, P. de Haen, W.B. Beichmann, E. Garfield, J.C. Krantz, Jr., L. Lasagna, G.R.W. Laudahn, P.V. Parkins, A. Ruskin, A.H. Schoen, F.E. Shideman, M.B. Shimkin, M.L. Tainer, F.A. Tate, N. Trieger, J.K. Weston, I.D. Welt, and I.S. Wright. In addition, the following participated in the second conference: A. Artandi, A.D. Bender, O.H. Buchanan, H.I. Hoffman, A.W. Hubbard, R.J. Hunter, H.E. Kennedy, M.J. Reilly, O. Schier, L. Sigell, C.D. Stockbridge, and M.C. Shelesnyak. Last, but not least, Frank Fremont-Smith played a major role in all aspects of the conference. I regret the delay in publicly acknowledging the important contribution these conferences made to the important problem of drug information, which in such a short period of time has become a major preoccupation of laymen and scientists everywhere.