Salaries and Academic Training Programs for Information Scientists*

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Current salary trends, availability of graduates, and education in science *vs.* information science are discussed.

In 1963, at the 26th Annual Meeting of the American Documentation Institute, I gave a short paper on "Information Specialist Training Programs: Student Support: Graduate Prospects." At that time, I reported that there was a serious shortage of professional personnel in the information sciences; that there was a need for more training of such personnel; that there was a serious lack of support for students; and that salary levels, compared to salaries received by others in science and technology, were low.

Essentially, despite all of the continuing discussion of needs, expanded research funds, the COSATI report, and even the greater availability of scholarship money, the situation is still very much the same, with one important exception—salaries are somewhat better.

In 1962–1963, master's graduates of library schools with undergraduate degrees in chemistry could look forward to receiving about the same starting salary as if they had had no graduate training in information science at all. In fact, if their undergraduate degree were a BCE, they were likely, if they had been so incautious as to take an MLS with an emphasis on information retrieval at, say, Western Reserve, to have started at $700 a year less than with the BCE alone.

This situation has, as I have noted, improved somewhat. At present, the graduate of a good library school, who has emphasized science literature and documentation in his work, is likely to receive only $200 to $300 less than if he had carried on his work in chemistry to the master's level.

There are several problems in these figures, however. The most recent data I have on salaries for beginning information specialists are for 1965 (*1*), fleshed out by data I have gotten from several library schools for 1966, and by informal survey. The original data for my 1963 report were from comparable sources for 1962–63. The data on chemists' salaries for the earlier report were from *Chemical and Engineering News* (*2*), published in June 1963, and covered 1962. The data on chemists' salaries for this report comes from *Chemical and Engineering News* for December 1963 (*3*), and also covers 1962.

This means that a reasonably informed guess would be that the beginning information specialist's salary would still lag, by about $700 to $1000, behind the figure he would have obtained if he had stuck with chemistry.

Women chemists lag behind other chemists in both educational level achieved and in salary received at comparable educational levels. As of 1962, their beginning salary at the master's level was about that of information specialists, male or female. It may be that the fairly high percentage of women in librarianship depresses beginning information specialists' salaries. Men certainly do better in their later careers than women; however, though whether or not this is due to sex discrimination I am not prepared to argue here.

As a working figure, then, we may say that a beginning information specialist, without experience, starts at $6500 to $7000. While the data base is small, it seems that having or not having an undergraduate degree in the sciences makes no significant difference in salary received.

These data all come from library school experience: no significant body of data on graduates of the few schools of information science or science information is as yet available. The figure would probably not be much different there, although many of their graduates may fall into the category of those with previous experience in science or in information work and accordingly receive higher salaries.

At this point I would like to make a few remarks about library schools for those of you who are unfamiliar with such institutions. The admission standards are as high as those for advanced work in the sciences, usually requiring a B average and a satisfactory (upper third) score on the Graduate Record Examination. The same is true of those schools offering courses or degrees in information science or science information, such as Georgia Tech, Drexel, Lehigh, or American University.

For all of these institutions the level of support available for students lags far below that in the sciences. The situation in this respect is almost unchanged from 1962, when an article on a study carried out by the National Research Center indicated that science students rated as "poor" by their instructors had as good a chance for fellowship support as those rated "superior" or "excellent" in other disciplines. I say almost unchanged, because there has been some spillout or spinoff from grants which has gone to student support. There has not been much of this, nor has it always gone to the right people, as the lead time is too short. Funds for students (substantial funds

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in this case) have just this fall come out of the Higher Education Act to library schools. Here, not only is the lead time short for finding the best people, but the fellowships are mostly above the master's level, and intended for those who want to become teachers. We need good teachers badly but training teachers will ease the shortage of information specialists for industry and the universities only slowly. We are still left, in effect, without anything resembling adequate student support.

This leads me to a point which I almost hesitate to make, but which seems inescapable. The student who goes to a good school, whether a library school or one directed solely at training science information specialists or specialists in newer systems, does so almost with the certainty that he will get no stipend, or at any rate far less than he could have gotten by continuing in some other branch of the sciences. He also goes to such a school with the near certainty that he will receive a lower starting salary than if he had continued with his earlier studies in chemistry and been supported through them.

In addition, so far as I can tell, he would be able later, without formal training in the field (other than perhaps short courses or institutes), to switch from chemistry to information science with every chance of staying in the higher salary level he has achieved. It is true, of course, that salaries in the better positions would be comparable, after a time, for those who studied information science. It is my belief, too, that while an intelligent man with a trained mind and motivation can teach himself almost anything, it is easier and occasions fewer blunders to have formal training in the subject; after all, this is the basic premise of our total educational system.

Information science is new. The library schools have neither pointed up the value of their instruction to it, nor modernized their curricula rapidly enough, as is clearly shown in a recent report in *American Documentation* (*4*). The newer schools have not yet really regularized their curricula (Drexel and American University excepted), and tend, if you will pardon a personal opinion, to emphasize areas of theory as yet not broadly applied. We certainly need schools concentrating on a new theoretical background, but these schools are still quite small, as compared with the conventional library schools. They are certainly not, with the exception of Drexel again, producing people in quantity.

It is true, too, that they have as difficult a problem in recruiting good faculty as do the library schools, which are themselves anxious to broaden their coverage in documentation (*5*).

Despite the fact that only a small percentage of library school courses are specifically in science literature or documentation, they, rather than the more specialized schools, remain the major source for information specialists trained in the field rather than opted from other disciplines and trained entirely on the job. I am sure that this is not well known in industry, and that personnel officers, relatively seldom having to venture into the field, do not know that they should turn to the library schools. The schools do, after all, have on their faculties, full-time or adjunct, such names in documentation as Ralph Shaw, Jesse Shera, Robert Hays, Donald Swanson, and many others. They number among their graduates, such noted information specialists as Mortimer Taube, founder of Documentation Incorporated, and Eugene Garfield, founder of the Institute for Scientific Information, a fact which too few people seem to realize.

Even if the personnel officer should turn to library schools to recruit new information scientists, he is not likely to be flooded with applications. For reasons already noted, in terms of support and salaries, few people with scientific backgrounds enter library schools, though the proportion is increasing. Then, too, the demand for librarians is far beyond the supply capabilities of the 38 existing or the 13 or so projected new schools.

Indeed, it would seem more likely that it is the demand for librarians rather than documentation people which has raised beginning documentation salaries to the $6500–7000 level. While the statistics cited (*6*) are not so organized as to make this clear, it appears that beginning salaries in industrial or science information centers are not higher than those in public and school libraries, and that it is the push for public, university, and school librarians which has raised salary levels so far.

Again, the statistics are not so kept as to indicate the proportion of library school graduates who go into modern information services, whether in industry, university, or other information centers. My guess, which I would call fairly informed, is that this would be fewer than 300 people per year.

In hiring, I believe the tendency in industry is to be unrealistic in trying to seek more scientific background than is reasonable to expect from library school graduates at present, certainly at the salaries presently offered.

I definitely do not intend, here or ever, to run down the capabilities of those who enter the documentation field directly from the sciences; they represent a high proportion of the truly creative minds in the field, and, I might add, include library school professors and a dean or so. Those recruited today, however, at the lower levels in science information, are less likely to be outstanding, simply because they could have done so much better for themselves and improved their chances of contributing to the field had they continued their education in the sciences.

A factor which contributes to keeping salaries down is, I am afraid, the university structure. In some instances known to me, universities have been unable to hire indexers for specialized information centers at beginning salaries because, although the applicants were capable, they did not have library degrees. In other instances, such centers have been unable to attract librarians with the necessary qualifications because they could not pay them above the university scale for those librarians not in science information. This sort of thing affects industry, too, since the tendency is to pay the going rate (even if this is mythical, because there is no one to be had at the going rate).

In my own view—and I should warn you that this is a controversial topic with many indeed holding a different view—industry and the societies have insisted on more scientific training in their information people than is obtainable or often required in particular situations. Notice that I did *not* say more training in these areas than is desirable. More training is always desirable, the question is whether it is really necessary and whether you are willing to pay for it.

I would like to digress here a moment to say that I think there are two kinds of knowledge: knowledge about an area or discipline, and knowledge of it. Knowledge *of* it is what you need to practice the discipline and to perform acceptably in it; this practitioner's knowledge takes a long time to get. Knowledge *about* a discipline—an understanding of its issues, vocabulary, and methods—is often sufficient for information purposes, if you can then draw upon the practitioner for help. This knowledge about the discipline can be acquired much more quickly, if interest and motivation are present, than knowledge of the discipline can be. And after all, the information scientist has a discipline of his own to learn. If he is to learn it well, he must cease to be a bench scientist or practitioner anyhow, and give himself over to the new field. Hence, his knowledge in his own older discipline becomes more and more knowledge *about* rather than *of* it, too.

What we are after, I think, is capable people with interest and drive and some reasonable background in the areas in which we are interested. The interest and drive are so hard to find, and so basic, that as employers in a time of shortage and in the early stages of a field, we cannot afford to be choosy about this degree or that.

I have already mentioned the university problem, in some cases, of not being able to pay enough to people without library school degrees. The contrary case I can cite, too. A friend of mine, who runs a major documentation system, one of the larger computer-based systems, would never hire anyone without a strong background in chemistry. He made, with many misgivings, one exception and hired a graduate of a good library school with no chemistry background but with what Ralph Shaw would call "a fire in his belly" about information science. This particular recruit has since become his right-hand man and collaborator. I wish I could report that this had changed my friend's attitude, but I cannot. The exception proves the rule.

So far, I have talked only about the lower level or beginning positions. Senior positions seem to me now to be fairly well paid, and a man with a good reputation who publishes and is flexible can always command at least $15,000 if he is willing to move. Salaries are not what they should be, but will rise as management gradually realizes it must mean what it says when it notes that information not only costs money but is worth money—*e.g.*, the day when buying a new subscription to *Chemical Abstracts* in the company is as easy as getting management to buy a new spectrometer, or when indexers' salaries are as easy to get as a new computer. After all, it would be fairly reasonable to set the existing number of good practitioners identified as reasonably senior information scientists at less than 2000 for the country as a whole. We are so scarce that recruiting at the lower level is the problem, not salaries for the upper brackets. If we solve the recruiting and training problem, if we convince management of the value of information, these salaries will take care of themselves.

What can we do about the beginning levels? Grow our own people, for one thing. Take a promising person in your company who has a knowledge of company needs and has training in a basic discipline, and send him to one of the library schools with good courses in science information or to one of the good specialized schools, and pay him, when he returns, as if he had taken another degree in chemistry. Pay realistic beginning salaries; for now, $7800 to $8200 for really promising people with an appropriate BS plus an advanced degree in librarianship or information science. Insist, through the societies, that more student support is needed in information work, enough to parallel the support in other scientific and technical disciplines.

As a believer in the unity of information work, I am not at all sure that we should expect library schools to add more courses in "documentation" or "information retrieval" or "information systems." Rather, they should broaden the whole curriculum, almost every course, to include modern retrieval methods, science, and technology. From experience I know this is hard to sell to scientists and those in specialized information work in science. Yet the social sciences and humanities are as much in need of the new techniques pioneered in science and technology as science and technology ever were, and the techniques and theoretical basis are, I do believe, the same for every discipline.

We are in an emerging field. We cannot afford to be rigid. We must experiment. Since we have work to do, we must also cut our coat to fit the cloth we have. I am optimistic, but salaries and student support will rise far too slowly to meet the need unless we all bestir ourselves to do something about it. It is those at the top level in science and science information work who must inspire, encourage, set the example, recruit, advise and assist the schools, push for adequate student support, convince management, fight for salaries; in short, who must set the stage for the future for providing the information services we desperately need.

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