EDITOR'S OUTLOOK

OPPORTUNITIES FOR THE "FOUR-YEAR" CHEMIST. Because we believe it to be of general interest we share with our readers the following correspondence. The first letter is from a professor of chemistry in a small midwestern college. The others are two of a number received from executives of national chemical and manufacturing corporations. They are representative of the general tenor of the replies to our inquiry in behalf of our first correspondent.

"The changes that have been inevitable as a result of the past few years of depression have, as far as one can observe, placed the new graduate in chemistry in a rather precarious situation. Today what is the young man fresh from college with his bachelor's degree in chemistry fitted to do? Are there direct openings in industry, business, or teaching for him? If so, what is the general nature of these positions and what is the best procedure for him to follow in making the necessary contacts? If these positions all require experience, how can the young man get the type of experience that is required as a prerequisite for the position?

"I am aware of the fact that the best students among the graduates should be encouraged to go on to do advanced work in chemistry in some recognized graduate school. This I do and am each year sending a few into advanced work. Most of these students have done well and now hold good positions. ... But what of the student who is not financially able to continue his schooling, even though a good student? What is there available in chemistry for him to do? What is there available for the student who is a little too slow to keep pace with those in graduate school and yet does thorough, intelligent work in chemistry? He may be gifted in laboratory technique, but not quick enough to grasp the theory to be a successful graduate student. Does industry offer opportunities for him?

"The type of positions available to our graduates in chemistry before 1930 now, in many cases, seem to be closed to them because they do not have practical experience. This situation has caused me to try to devise some way by which our students will, to some degree, have this necessary experience. ... I have been considering introducing a course in industrial analytical chemistry, conducting the course as an industrial laboratory. The object would be to teach the student rapid and accurate technique, rather than variety of methods, so that this will not have to be acquired after entering the industrial laboratory. Do you feel that such a course would be practical, and would it put the student in a better position to be located in an industrial laboratory upon graduation? Would such a course, properly conducted, be recognized as of value by the employment division of most industrial corporations?"

"I fully sympathize with [your correspondent's] situation. Many, if not most, of the collegiate institutions do not normally have the advantage of direct contact with the employing industries, due to the fact that these industries concentrate their recruiting efforts on the larger institutions and particularly those of university or engineering standing. A few employers are becoming wise to the fact that the best undergraduate training in the sciences is not necessarily found in the larger institutions from the standpoint of effective teaching of undergraduates. Some of the larger institutions definitely fall below the standard of a few of the smaller colleges.

"The best suggestion that I can make to [your correspondent] is that he attempt to make direct contact with the industrial relations or personnel executives of [several large chemical and manufacturing companies, names here omitted] and send them complete information concerning the personal qualifications and the training of two or three of his outstanding seniors.

"In my opinion, he should not attempt to sell the idea to the officers of any of these companies or any other employers that these men are chemists. That, I think, will defeat his purpose. Most, if not all, of these enterprises are at this time looking for young men with good personal characteristics whom they can put into their regular operating lines organizations for training. If these young men have good foundation training in their undergraduate courses, particularly in physics, mathematics and chemistry, he should have no difficulty in placing them this year, but they will not be placed ordinarily as chemists. They will be taken, if at all, on the basis of the individual's promise of development, and they are most likely to be placed upon direct productive operations. Some, of course, may be placed in laboratories as helpers. Each enterprise has its own system of training and development, in some instances consisting of a definitely scheduled program. . . .

"Concerning his suggested plan of introducing a course in industrial analytical laboratory work, I personally would recommend against it. If he is in a situation where he can give his undergraduates who have the desire to become chemists or chemical engineers a good grounding in fundamental physical sciences, including, of course, mathematics, that will be as much as can be done effectively in a four-year undergraduate course, and if he does this his men will be much better prepared if they go from his institution directly to industry to develop their individual capacities to the best advantage.

"I realize that there is a direct temptation on the part of the responsible teachers in collegiate institutions to attempt to introduce specialization in undergraduate years . . . but . . . after thirty years of experience in industrial work, during much of which time I have been responsible for employing young men from many institutions, I am today more firmly convinced than ever that any attempt at specialization in undergraduate work is unfair to the young man and undesirable from the standpoint of the employer generally."

"I think [your correspondent] exaggerates the difficulties with chemical graduates unable to carry through into graduate study. I know that such institutions as my own, and from conversation with competitive industry, there are always certain available openings in chemical plants for students who have been unable to take graduate work. As a matter of fact, outside of certain limited research opportunities, practically all of the college men hired each year are of this type. Attention is paid to the character of the fundamental education and not to the question of whether they have had practical experience or not, for this latter is not expected. These men are placed in the laboratories in the plants where they undergo training of a practical nature and superimposed upon what they are supposed to have learned in college. . . .

"After all is said and done the chemical industry employs a few thousand men in research and some hundred thousand in its factories. The opportunities for employment in the operating and management staffs are correspondingly many times greater than in the research laboratory and I am afraid that [your correspondent] has not properly appreciated the problem. Perhaps he is not instilling into his men the correct idea of the chemical industry and that is that it is after all a competitive manufacturing operation and untrained employes must start practically in competition with unskilled labor prepared to work routine and shift work and get their hands dirty. Their training, however, gives them a decided advantage in that they advance very rapidly if they have any of the latent characteristics that make for service. It may be that his system has brought about a most interesting situation in that I was just informed this week of two large chemical companies exhausting the graduates of an institution that never graduated anything but mechanical engineers. We all know the character of the material that this particular institution turns out, that it is sturdy, resourceful, well trained and not afraid of going to work on any job that promises a future. . . . When an institution makes a record for turning out competent men and instills in them an idea that there is still a lot to learn after they leave the school, and that they will have to buckle down to hard work, the chemical companies will grab those men frequently in preference to a chemical graduate who has been taught that his only service in life is to wear a white collar behind a clean laboratory table."