In organic chemistry there should be a good balance between synthetic and mechanistic work. I think it would be good to place emphasis on some of the problems that will plague him later, such as unwanted or deleterious side reactions. As we all know these will rise up and smite him in both catalytic process and recycle processes. It would also be a good thing for him to obtain an understanding of the effect of structure on physical as well as chemical properties. Many of these men will spend large portions of their careers in product rather than process work.

In physical chemistry I think we would agree that we are looking at the basic science he will use most. Coverage of thermodynamic, kinetic, and equilibrium considerations should be intensive. The only plea I would make is that it be kept general in nature and that we fight the temptations to make it a specialized course in atomic physics, or any of the other attractive fields that have only marginal professional utilization for the average engineer.

In summary, the fields of chemistry and their manner of presentation discussed above seem to me to represent the minimum requirement, and represent somewhere around 30 semester hours of instruction. Additional courses such as biochemistry, colloid chemistry and so on may be highly desirable on an individual elective basis, but do not seem to be general requirements.

The problem of chemistry at the graduate level is obviously much more on a case to case basis. The man who plans a career in process or product research work should certainly broaden his chemical knowledge. On the other hand, the man who aims toward the area of applied mathematics in the separational and diffusional areas may have little need for additional courses unless his local chemistry department is very active in these particular areas. In practice he will probably obtain his additional training in his own department. The terminal masters man going for design has little need for additional chemistry. The same is true for the man aiming for management rather than a technical career. I do not believe that it is really possible to suggest any overall definitive additional chemistry training beyond the undergraduate education. In the final analysis we are engineers, not chemists, and while our problems are involved with process and product, they are engineering problems. Our problems frequently include chemical considerations, but very rarely to the exclusion of all others. In our graduate

I would like to see considerable emphasis placed on instrumental methods since these are useful in in-line control problems.

training it seems to me that we should provide the chemical training necessary to perform the chemical engineering research or development area the student is specializing in. We should not confuse this with the chemical training requirements of the research chemist.

In summary, chemistry has been and is an integral part of the training of the chemical engineer. He needs to be well grounded in the fundamentals of the principal branches of chemistry. Of equal importance he must be trained in the application of these fundamentals to his problem solving and decision making activities. As he specializes in graduate work, he should be exposed to those branches of chemistry which contribute to his specialization. Finally, we must constantly remember that chemistry is only one of the many tools of his profession, and that his exposure to this science should be in relation to need and not precedent.

ChE news

Dr. Paul Murrill, professor and head of LSU's chemical engineering department, was one of two college professors in the nation to be presented the Faculty Service Certificate by the National University Extension Association's Division of Conferences and Institutes. Dr. Murrill was recognized for a series of short courses which he developed in the area of computers and their uses. A member of the LSU faculty since 1963, Dr. Murrill has also been awarded the $1,500 Halliburton Award for excellence in engineering teaching.

Dr. Richard H. Wilhelm, chairman of the chemical engineering department at Princeton University died August 6. He was the featured educator in the Spring 1968 issue of CEE. Recently he was appointed to the National Academy of Engineering and he presently held the prestigious Henry Putnam University Professorship at Princeton.