

Notes on the Discussion by the Physical Chemistry Teachers of
Midwest Liberal Arts Colleges, Monmouth College, Nov. 14-15, 1952

Participating in the discussion:

Maurice Armstrong	Millikin University, Decatur, Ill.
John Biester	Beloit College, Beloit, Wis.
E. R. Ericson	Augustana College, Rock Island, Ill.
Harold R. Grady	Muskingum College, New Concord, Ohio
Clifford R. Keizer	Central College, Pella, Iowa
Lawrence L. Motiff	St. Norbert College, West De Pere, Wis.
H. G. Nachtsheim	College of St. Thomas, St. Paul, Minn.
Ben H. Peterson	Coe College, Cedar Rapids, Iowa
S. J. Vellenga	Monmouth College, Monmouth, Ill.
Eugene Weaver	Wabash College, Crawfordsville, Ind.

Ben Peterson was chosen to act as chairman of the group and Cliff Keizer as secretary.

At one time or another in the discussion periods, these topics came in for some batting around:

1. Special courses--intended for pre-meds, non-majors;
2. Mathematics prerequisites for P. Chem. courses;
3. Textbooks and laboratory manuals;
4. Plan of laboratory work;
5. Laboratory reports, data;
6. Redistribution of topics;
7. Preparation for graduate work;
8. Advanced P. Chem. courses.

1. Approximately one-half of the colleges represented offer more than one elementary P. Chem. course; the one intended for pre-meds and non-majors usually does not require calculus as a prerequisite. It was agreed that where staff, space, and student personnel permit such an arrangement, it is convenient to have such a course. This permits giving chemistry majors a more intensive course.

2. The standard prerequisite of calculus makes it impossible in most colleges to offer P. Chem. to majors in their junior year.

3. It was found that the group was almost evenly divided in the use of the two most popular textbooks. There was not complete satisfaction with either one, particularly in the treatment of thermodynamics. Few use published laboratory manuals.

4. Some instructors prefer to assign a comprehensive project rather than a series of weekly experiments. There is value in each method.

5. Practice varies as to data treatment; some require a permanent record in a bound notebook; others ask for a record on loose leaf sheets, with a duplicate copy to be turned in to the instructor at the end of the experiment. Reports vary from the fill-in type to extensive surveys on comprehensive topics. Grading of reports is based on (a) quality of experimental work, (b) quality of write-up, neatness, comprehension of principles, (c) attitude in laboratory. Grading preferably on a semester or long term basis rather than on individual reports.

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6. To relieve pressure on crowded P. Chem. courses, it was considered that these topics might be adequately covered in the courses in analytical chemistry:

- a. Ionic Equilibria, pH, etc.
- b. Colloids
- c. Electrochemistry, Redox Potentials
- d. Instrumental Analysis

These topics might well be taken care of in Physics courses:

- a. Quantum Mechanics
- b. Sub-atomic Phenomena
- c. Statistical Analysis

7. In view of the varying demands of different graduate schools, it was felt that there was a great need for personal counseling of entering graduate students. If we are to continue to produce liberally trained chemistry majors, we cannot offer many hours in advanced courses.

8. Few courses in advanced P. Chem. are offered. In some cases Adv. Inorganic or Quant cover some important topics. Other colleges offer opportunities in Senior Honors and Seminar work or Special Problems courses. The offerings depend on personnel.

In summary, it seems that although there is great variety exhibited in approach to Physical Chemistry and in methods of teaching, it is mutually beneficial to share ideas. Although there may be no drastic changes brought about, each of us was challenged to do the best job possible, particularly in the light of the current shortage of chemistry majors.

O. R. Keizer