The group on General Chemistry met in Room 210 Wallace Hall at 4:00P M Nov.14. After introductions and a brief scientific life history of each member, discussion began.

The first discussion was on the problem of the students with and without high school Chemistry. Some had found their better students had had high school Chemistry while others had found their better students among those with no previous Chemistry training. The explanation for this variance was given that, in Iowa at least, approximately 75% of the high schools do not offer chemistry therefore there is no selection of students. In other cases, it was the better students who elected Chemistry in high school. Grinnell and Wheaton reported separate classes, Milwaukee-Downer reported all in the same lecture but segregation in quiz section and laboratory. Illinois State Normal reported the same class work but different laboratory work. Some others reported two classes in General Chemistry but the basis for separation was the high rank in aptitude tests rather than a credit in high school Chemistry.

The question of theutilization of class period was next discussed. Prof. North of Lake Forest College said he took about 15 minutes to check students preparation and to compare their outline with his, then started discussions and explanations allowing no one to ask questions who had not studied the material. There were few other comments made.

The question of Mathematics difficulties then was presented. It seemed the basic difficulties in reading and mathematics could be spotted with tests. High correlation was reported between both English and Mathematics test scores and Chemistry success. At Grinnell, remedial mathematics is required before enrollment in Chemistry or Physics if the tests were low. It was suggested that remedial English should also be a prerequisite. Some decided that the trouble was not mathematics as such but the lack of ability to analyze the problem or simply the inability to think. It was suggested that a mathematics prerequisite would help the difficulty with mathematics in Chemistry but that was not accepted as the satisfactory way to solve the problem.

At this juncture, Dr. Haenisch appeared and the election of officers ensued. H.B. VanValkenburg of Iowa Wesleyan College, Mount Pleasant, Iowa was chosen chairman and Isa Ruth Plank of William Penn College, Oskaloosa, Iowa was named Secretary. Dr. Haenish left and discussion resumed on the problem of Mathematics ~~resumed~~.

About 50% of those present encouraged the use of logarithms and slide rule in General Chemistry and most all encouraged their use in the more advanced courses. For thoses that could not use the logarithms, time was taken to teach enough to satisfy the needs for pH.

The opinion was that we were teaching Chemistry principles and not multiplication tables therefore problems on gas laws should be set up with reducible numbers or require only that the student set the problem with the indicated operations.

The next problem discussed was course content. Grinnell is trying an experiment of one semester devoted to non-metals and theother semester to Organic. Objections here were that entrance examinations to many fields of further work asked questions on metals. The time devoted to Organic by the colleges represented averaged about three weeks. Time spent on the gas laws averaged about three meetings. The metals seemed to be handled rather hurriedly and in a more descriptive manner using field trips and films available through the U.S.Bureau of Mines. Some favored giving a few typical metallurgical processess rather than all the metals. Discussion the time and place of introduction of atomic structure in the General course revealed that the majority felt it to be the logical way to start and favored its early introduction. The Periodic Table was introduced about the same time and used continuously thereafter. If Chemistry was considered the study of elements, laws governing their reactions and the energy changes therein, then it was necessary to include metals, nonmetals, atomic structure and chemical laws. In considering the laboratory time, several felt that one 3 hour period a more economical use of time than two 2 hour periods. Experiments on testing simple properties and simple preparations rated second to the more quantitative which involved more thought and longer sequence of operations. Workbook type manuals were not in highest favor. Some preferred a short summary written to give procedure , reasons why, and results. In larger schools, two courses were given, one for the Chemistry major and another,with a somewhat different content, for the pre-profesional student. On the problem for Chemistry for nurses, it seemed a full year course divided into Inorganic, Organic and Biological was most favored.

Next for discussion was the objectives for General Chemistry Laboratory which were summarized as follows: 1. Emphasize lecture and discussion points, 2. Give concrete experiences with otherwise abstract ideas,3. Develop good citizenship stressing habits of cleanliness,neatness and orderliness,4. Train the hands and develop Chemical techniques. Objectives for the recitationpart of Chemistry: to teach to think without confusion,clearly. Chemistry seems to create its own problem more naturally than other fields therefore it gives a better opportunity for teaching the scientific method of reasoning. Some factual material is necessary but thinking seemed to be the emphasis favored.Creating an interest in and developing an enthusaism for Chemistry was also given as a goal.

Group adjourned for dinner.

The second session of the General Chemistry section was called to order by Chairman Van Valkenburgh in room 305 Wallace Hall at 9:00 A M Nov.15.

The first question for discussion concerned the amount of qualitative to be included in General Chemistry. Of the group attending, about 50% included qualitative and 50% did not. When qualitative was included, it was the laboratory work for most of second semester. The recitation work continued with regular topics and most of the qualitative theory was included in the laboratory sessions. Semi-micro procedures were in general use as was some other method of producing H_2S other than large generators. Paraffin sulfur mixture or thioacetamide were chief substitues used. The purpose of the qualitative course was suggested as: a means of studying the metals and opportunity to organize material learned in the general course. The number of unknowns given averaged around ten which included the common anions and cations with some being systematic separations and others single unknowns in solution or solid form.

Next question was the value of lecture demonstrations. It was generally agreed that they were worth the time and effort necessary to give them but do not demonstrate the experiments which the students will do in the laboratory. An exception was made here at the first of the term when it might be desireable to show the student what was expected in the laboratory.

Should the laboratory work be ahead of or behind the lecture work was next discussed. General opinion was that if the laboratory was ahead then there was more thinking in the laboratory but with several sections and assistants it was more easy to keep all correlated to have the lecture ahead of or parallel with the laboratory work.

On the question of the place of History in the General Chemistry course, the general opinion seemed to be to include it incidentally for interest and vitalization.

Another question on content discussed was concerning the amount of physical chemistry to be included. The amount was not decided but the general idea seemed to be that whatever was presented would be in descriptive terms rather than rigorous mathematical solutions.

Another question for dicussion was the type of test used in General Chemistry. About 1/3 of those present used the ACS tests. They were favored as a means of teacher evaluation, a means of correlation between different teachers and their classes. The essay type test, which emphasizes recall and the objective test, which stresses recognition were discussed and the general opinion seemed to favor a diversified type of testing program.

The testing question led to the question of evaluating the students work. The final

test grade was not necessarily the determining factor for passing although no uniform agreement was reached as to its value. The general trend of test grades throughout the term was considered significant. Laboratory grade based upon reports, personal technique, setting of experiment, neatness and skill counted 30 to 40% of the final grade in many cases. The other part of the grade was based upon recitation work, tests, problems and personal evaluation by instructor, if class is small enough for that without prejudice, was advocated by many.

In conclusion it was decided that the teaching of Chemistry is an Art rather than exact science and that the personal equation is very great in all teaching.

Ina Ruth Pearce
Secretary
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Insertion at /. If the General Chemistry Course was ten hour credit then almost all favored including qualitative analysis in the course but if it were an eight hour credit then there was much question and disagreement about including the qualitative in the first courde.

GENERAL CHEMISTRY SECTION MEMBERS

1. Anderson, N. Arthur	Illinois College	Jacksonville, Illinois
2. Baker, J. Allen	Simpson College	Indianola, Iowa
3. Bailey, W.F.	MacMurray College	Jacksonville, Illinois
Brooker, Robert M.	Indiana Central College	Indianapolis, Indiana
Chase, Harold A.	Wheaton College	Wheaton, Illinois
Cherry, Marianna	Milwaukee-Downer	Milwaukee, Wisconsin
Culbertson, J.B.	Cornell College	Mount Vernon, Iowa
8. Fulmer, Jervis M.	DePauw University	Greencastle, Indiana
9. Gooding, R. U.	Illinois State Normal University	Normal, Illinois
10. Hall, Wade E.	Parsons College	Fairfield, Iowa
11. Koenig, H.	Valparaiso University	Valparaiso, Indiana
12. Long, Mrs. W.S.	Taylor University	Upland, Indiana
13. McMullen, Warren A.	Greenville College	Greenville, Illinois
Meibohm, A.W.	Valparaiso University	Valparaiso, Indiana
15. Merkle, Paul A.	Simpson College	Indianola, Iowa
16. Miller, Arild J.	Carleton College	Northfield, Minnesota
17. North, E.O.	Lake Forest College	Lake Forest, Illinois
18. Paulson, M.C.	Bradeley University	Peoria, Illinois
19. Plank, Isa Ruth	William Penn College	Oskaloosa, Iowa
20. Sherman, Leo P.	Grinnell College	Grinnell, Iowa
22. VanValkenburgh, H.B.	Iowa Wesleyan College	Mount Pleasant, Iowa