

## INFLUENCE OF LOCAL INDUSTRIES ON THE DETERMINATION OF THE CHEMISTRY CURRICULUM

BY

WALDO HORRABIN

*Western Illinois State Teachers College, Macomb*

During the last ten years, and especially the last half of the decade, the matter of a desirable curriculum in high school chemistry has been thought upon by various chemistry teachers. They are quite correctly asking themselves if much of the material upon which they drill is in the curriculum for purely traditional reasons. They have wondered if there is not a body of subject matter right in the students' immediate neighborhood which is far more important to his use in understanding his own environment. What should then be the content of the high school chemistry course? Various groups interested in science education have attempted an answer to this question. The American Chemical Society Committee on Chemical Education has called to our attention a group of "Minimal Essentials" which in their opinion must be met in the curriculum. These points of subject matter are extremely well chosen and quite above question. In fact the average high school text goes far beyond them. Obviously there is a well chosen body of subject matter which we term as fundamentals which every acceptable course must contain. Every teacher will of course see that these fundamentals are mastered.

Now there is another distinct group of chemical facts which bear a direct relation to minimum essentials and which rank equally with them in importance. We have chosen for purposes of identification to designate them as "local essentials" of the curriculum. By local essentials we mean the things and materials which influence the every day life of the student, facts with which he rubs shoulders right in his own community. Facts which if well understood will aid him in making better use of his environment and aid him in his appreciation of local problems.

The cardinal objective of teaching high school chemistry (Committee on Education, American Chemical Society) is stated thus:

1. To show the service of chemistry to the home, to health, to medicine, to agriculture, to industry, etc.—In a word, to show the service of chemistry to the nation and to humanity.

You will notice that the primary aim is not to prepare students for special college work or make technicians. In other words it is to prepare them for life, to give them a better understanding of their immediate local surroundings.

Assuming this aim to be the correct one, then is it not true that a great many of us have failed to fulfill it if we have failed to teach the student in every available opportunity in terms of his local needs. How many of us have stressed some obscure application in the field of industry to the neglect of one more important to the student closer home?

At present the college and university are beginning to believe that they can teach fundamentals better than the high school. This is probably true. If it is true, then more than ever before comes to the high school the job of developing interest and appreciation for the subject so that it will be the field of the student's choice in the college and university.

With all these points in mind a group of us set out to determine for our own use the relation of chemistry to the lives of boys and girls in our own neighborhood. At first thought it did not seem such a difficult job but we were soon amazed to find how intricate and involved were the applications of chemistry. The moment we thought we were through, some new and overlooked point would arise. We visited industrial plants, stores, garages, photographic galleries, etc. In fact sixty-three different sorts of trades and businesses were visited. When we thought we had exhausted the list one of my practice teachers said, "We have visited every place except the banks, and there would be no need of going there." He was mistaken, for the important facts of tear-gas bombs and various inks were to be uncovered there. We are not so much interested today in the actual results as the use that was made of it. We had quite specific information about our local industries, and everyday facts of a chemical nature which should be called to the attention of the student; we then set to work making a curriculum embodying these local applications. Before the investigation we knew of the local applications in a very general way, now we knew them in a specific way. In order to make this material available it was first carefully organized. Our next step was to insert each fact of local importance brought out by our study into a text book which we were using. For example: Under the topic of chlorine was placed all the information we had gathered about chlorine in our inspection of the city water works. The material was definite and complete. No need for making estimates or guessing. Under the topic of lead

was inserted notes on the material supplied by the local battery station and plumber. In other words we knew that the material must be made usable or we would simply slip into the old rut. We recognized also that definite and accurate material is of more value than indefinite approximation and opinion. We found at once that this made our material extremely easy to handle and that we were able to introduce it at a time when it meant most to the students.

We feel that actual teaching results have repaid us for our trouble. We have noted the following results:

1. An awakening of interest which I do not think could have been secured in any other way.
2. When students found that we were stressing local applications they immediately began to supply them themselves. They became seekers of applications which is perhaps the most important result.
3. The development of a greater interest in less local and more general industrial applications and an appreciation for the service of the subject.
4. By means of this vitalizing of subject matter we found it increasingly easy to teach the fundamentals. In other words when they saw a reason for learning fundamentals they were perfectly willing to do so. In this way we made use of a very useful tool for motivation.

One other important viewpoint can be taken. It is often said that one trouble with our city and national government is that there are not enough officials and lawmakers trained in the elements of sense. Of course it can certainly be carried to our voters. Now for example, as a recent investigation shows, 28 per cent of our city ordinances over this country, such as smoke nuisance, sewage disposal, etc., require a science background. We can make vastly more intelligent voters on these topics. We can show for instance, that smoke nuisance is a dangerous, wasteful practice and quite easily remedied and perhaps give to these future citizens something which will help them solve their local problems of a science nature.

You will say, "Every good teacher has done this already." Perhaps that is true. We all think we do it but too many make the mistake of being far too general and indefinite. Unless we have really investigated we too often overlook more than we can well afford to pass by in view of the existing philosophy of chemistry teaching.

From the Ohio School Standards we find this statement: "We should like to express the hope that all teachers will get away from the notion that the studying of lessons by the pupils is like learning the lines of a play and that the recitation is the dress rehearsal. Nothing

seems more viscerously unpedagogical than these parroted recitations that reveal no instructional ideals higher than the repetitions of subject matter."

It was in order to accomplish this that we set out to make our investigation and then establish a curriculum based thereon. We hope that if any of you have not been thinking along these lines, it may prove a suggestion.