

PRESIDENT'S ADDRESS

Oklahoma Academy of Science in Action

A. D. BUCK, Northern Oklahoma College

The Constitution and Bylaws of the Oklahoma Academy of Science states in Section 2: Purposes of the Academy shall be to stimulate scientific research; to promote fraternal relationship among those engaged in scientific work in Oklahoma; to diffuse among the citizens of the State a knowledge of the various departments of science; and to investigate and make known the material, educational, and other resources of the State.

With this thought in mind, two geologists and a zoologist at the University of Oklahoma met and conceived the idea of an organization, later known as the Oklahoma Academy of Science.

The first meeting was held in Oklahoma City, December 30, 1909 with 21 scientists present. The purpose of this meeting was to draft a constitution. The first annual meeting was held in Norman, November 25, 1910; at this meeting a total of 33 papers were presented. The first volume of the PROCEEDINGS was published in 1921.

The membership has grown from the 21 who attended the first meeting to almost 700 in 1964. The number of sections has increased to ten, with one section being divided into two subsections. Thirty three papers were presented in 1910 and one hundred forty one are being presented in 1964. You can see that the Academy has been in *action* since 1909.

And now let us look to the basic significance of the work of the Oklahoma Academy of Science. A great majority of the Academy members are working in some phase of teaching and have an excellent opportunity to discover new talent and are in a position to assist the student in the particular field of interest. The members who are working with the Junior Academy are able to aid in opening the research field to young, eager minds that have been motivated.

Financial aid is given students to encourage their work on projects. Many of these are entered in Science Fairs; this gives the student an opportunity to compete with other students, thereby creating a greater interest.

The opportunity for a Collegiate Academy of Science in Oklahoma has been made possible. The objective of this program is to improve the quality of science and mathematics education in junior and four year colleges of the State by making available to undergraduate science students the services of graduate faculty and industrial scientists to discuss college training in preparation for graduate studies as well as careers in research. This program will encourage the preparation and presentation of research papers by under graduate and graduate students.

In its program for the Superior High School Student, the Academy is not only helping to discover much needed talent for the future scientists of our nation, but is also helping to cultivate in our young people a deeper appreciation for the ideas and products of scientific genius. Not all high school students in this program will necessarily become scientists, but since they will live in a world much modified by science and technology, they will be better prepared to comprehend that world and to cope with it. Moreover, a young mind that is involved in the pursuit of scientific ideas is not as likely to turn to that type of juvenile behavior that is so destructive of the human person—others and their own.

Another, and perhaps even more fundamental service that the Academy is rendering, concerns the adults of our Oklahoma communities. Most of our citizens, even the leading ones, are not professional scientists or engineers or medical doctors. Nevertheless, all of them are living, and presumably will continue to live in a world that is becoming ever more influenced by scientific developments—for better or worse. And it is precisely on the question of "better or worse," that our educational program for the adults may have the most significance. A public that is informed on the advances and meaning of scientific ideas and their applications, is a public that is far more able to evaluate or make value judgments concerning the uses to which science should be put for the service of man. An ill-informed public can only delegate these basic value judgements to the "experts" or to the government. As Thomas Jefferson long ago remarked, a democracy can not function if its people remain ignorant and voiceless in affairs of government that concern them all. Since scientific ideas and devices are becoming increasingly involved in our national and international affairs, it is all the more necessary to keep the voting public informed on these scientific advances—so that the big and basic value judgments are moral decisions concerning their use, will be left in the hands of the people—as far as is humanly possible. It is our destiny that is involved in these decisions, and our destiny, as a democratic nation, should remain ultimately in our own hands.

Over and beyond such practical matters, there are other services that our adult educational program can provide. The influence of science has not only been in its utility for medical health, engineering, and building instruments of warfare. Most profoundly, science has a bearing upon the realm of *ideas*. Our picture of the world, of the universe, of the origin of life upon earth—our views of God and man, have all been somehow affected by the ideas found in the great theories of science. Theologians as well as the lay public have had to come to terms with these scientific theories—one way or another. Of course, it is still possible to ignore these theories and proceed as if we were still living in the Middle Ages in Europe, but this becomes increasingly difficult as science and technology press in upon us and confront us with their presence.

One of the most valuable services the Academy has offered with regard to these problems, has been the talks which certain members of its lecturing team have given to communities around this state. Through NSF grants for the Scholarly Lecture Series, these teams were enabled to reach deep into the smaller towns of Oklahoma, and open wider the doors of scientific knowledge to its citizens. But even more, it provided some *philosophical* insights into science itself. To "Come to terms with scientific theories" is not necessarily to give up one's religious and theological ideas. No doubt, the layman will have to scrutinize his ideas in these realms, in the light of verified scientific theories, but it is precisely here that some of these public lectures most helped the laymen to carry on such an examination.

The basic questions: "What is Man?"—"What is God?"—"What is the World?"—have been of profound interest to us since at least the beginning of history and of civilization. When these questions are asked in the light of modern science, they take on a new appearance. The struggle with our more orthodox and traditional views on these questions is intensified by many of the new scientific views. It should be emphasized that the traditional views have been in turmoil among the theologians and lay people alike, *long before* the scientific ideas of our times cast their confusing shadows upon the scene. As I said, science has simply *intensified* and extended the problems that are involved in trying to answer the foregoing basic questions.

We cannot over-emphasize the importance of the ways in which we answer these basic questions—for it is always in the light of such answers that our fundamental value judgments and moral decisions are made. Hence it was always important, in the public lecture series, to provide not merely information about the scientific concepts of our day, but to examine together the basic philosophical meanings of those concepts in their relation to these questions. Mere scientific information, mere so-called scientific "facts", may only confuse the layman on these more fundamental matters; hence it was obligatory upon us to see that at least some of our speakers in these lecture series helped to provide the various communities with a real opportunity to explore the broader and deeper philosophical meaning of the so-called scientific "facts." Of course, the answers to the basic questions were ultimately left to the decision of the audience—but the intelligent confrontation with these questions was a genuine sharing between audience and speaker.

Problems of scientific method and the nature of "scientific truth" were a very real part of the public talks in this phase of the series. Of course, an inquiry into the nature of "scientific truth" is necessary in order to understand the strengths and limitations of science itself. Without such inquiries, the broader philosophical issues of science could not have been maturely examined.

Over and beyond this service, the public lecture series may have even other, though somewhat more remote, effects. These concern the growing problem of the role of our "Senior Citizens." One way to prepare for a meaningful life after retirement (which may be compulsory at 65, 60 or even earlier) is to have something meaningful to do with that life. And one way to acquire more meaning in one's life is to study the relation of scientific knowledge to our ultimate values and goals. It is certainly possible that some of our adult audience around this state may have been inspired to look further into this relationship, and to find a richer philosophy of life that could carry them through their later years more creatively. Too many of our senior citizens become bored and even senile because, in losing their professional occupation, they have nothing left with which to provide real significance to their lives. Perhaps our adult educational program can help prevent this mental deterioration in our closing years.

Another value that comes out of both Public Lectures and the Superior High School Student Program concerns the *High School Science Teachers*. It is not unusual for high school science teachers to attend some of these programs and to benefit from the lectures. They obtain new ideas, keep up with the latest scientific news, and even acquire new notions on ways of presenting their teaching material in regular high school science classes. Where a scientific theory brings together many different special sciences into one meaningful whole, as under a lecture on "Cosmogony and Evolution," the "Thematic approach" to teaching of *general science* in the high schools, is thereby advanced: the special fields of science—astronomy, physics, chemistry, biology, geology, etc., are all brought together into a *meaningful whole*—under one central theme.

It is becoming apparent that students and adults alike, learn anything much more effectively when it is taught in a way that ties the subject into the broad and basic questions concerning all of us. Unless one wishes to train only specialists in science and engineering, it behooves us to pay more attention to ways of presenting science to laymen and young people alike, that will direct their ideas along the broader implications of any special developments in science. As we have said, not all of our students in high school or college will become specialists in the various fields of science, so our basic scientific educational programs in high school

and even in colleges should be focused on the over-all significance of the sciences for living and thinking in our world—the world of ideas, and ideals, and the world of human relations, social and political, national and international. We must help train our science teachers to be able to help the rest of us and our children to grasp these broader issues that play such important roles in an increasingly technological society. Specialized training in the specific disciplines of science and engineering can be left for advanced work in the universities and on through the graduate schools. For the large majority of our high school and college students, however, the major emphasis in the sciences should be directed toward instruction that brings out the *total significance* of the Natural sciences *as a whole*—with the deeper philosophical meanings being kept before them as a guide. In this way, we can hope to have an educated citizenship that can cope, in a democratic nation, with a world that is being tied even closer together by science and technology. The *Humanistic* significance of the sciences is quite as important as specialization therein—especially for those who are simply going on to become businessmen in modern industry. If our future program in the Oklahoma Academy of Science can foster this kind of science teaching, it will be going a long way to help the greater majority of our citizens. I hope that the Academy will assist in bringing these plans to fruition.