

## THE ACADEMY'S OPPORTUNITIES FOR USEFULNESS\*

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With a program so full and interesting as we have before us this morning it certainly would not be fair for your presiding officer, however important his message might be, to take much time in fulfilling the constitutional requirement that he "prepare an address which shall be delivered before the Academy at the annual meeting."

The objects which justify the existence of this organization are stated in Article II of its constitution as follows: first, the promotion of scientific research; second, the diffusion of scientific knowledge and spirit; and, third, the unification of the scientific interests of the state.

The Academy has done much toward accomplishing these aims. It has always made progress. Yet, some of our friends fail to join us, for reasons which they deem adequate, and still others remain indifferent.

If we have, to use the phraseology of another, any "frozen assets," or if we are letting any opportunities for usefulness drift by, it is worth a few minutes of our time to take stock of our assets and liabilities. Our neglected opportunities, if we have any, may be termed our liabilities. Our liquid assets are our accomplishments. Our "frozen assets," if such exist, are our unproductive accomplishments, and they may be turned into liabilities if we do not liquidate them. If your speaker fails to find any real liabilities, other members may at least be stimulated by the thought and so find them or take steps to see that there shall be none in the future.

The first account on the ledger is headed "promotion of scientific research." To our credit, it may be said that we have stood, and shall stand in the future, for better support of, and better facilities for, research in our great centers of learning and in-

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\* Address of the retiring president.

dustry where the patient worker in either pure or applied science must necessarily carry on the greater part of his labors. Many of our present and former members are men and women whose discoveries in science are known the world over. These leaders of scientific thought attend our meetings and appear on our programs. They encourage the isolated worker with his little problems. It is significant that the Council of the Academy at the meeting at Galesburg six years ago had this item in the minutes of its proceedings: "It was the opinion of the Council that the section chairmen should be asked to secure papers for the annual meeting from high school teachers and from those beginning research work, and not so many as in recent years from university research professors."

And before that time President Bayley in a letter to me asking that I arrange the biology program for that meeting, had said: "I hope you will emphasize the importance of having papers by young workers rather than by those of more experience."

Any searcher after Nature's truth may bring his report to our meeting, read his paper, and have it published in the Transactions of the Academy if it has merit. We get some chaff but would lose some good grain if the fan blew all the light stuff away. These grains that are thus saved may make the by-product whose value will give a balance on the credit side of our ledger.

Personally, your president believes that every program should have on it just as many names as possible of the best men and women from the colleges and universities. We should search out, also, men and women of scientific instincts who are not aware of the opportunities to receive encouragement and help from the Academy. Men are certainly making discoveries in the industrial plants in such places as LaSalle, Chicago, Granite City, Rockford, Springfield, and Macomb. Their discoveries may not be of direct application to the industry itself and so go unnoticed. Some of these men know no way and have no way of publishing their findings. It might be worth the effort if the Academy could establish a closer connection with the hundreds of industrial plants and their workers to the end that guidance and encouragement could be extended. Efforts have been made by the writer to interest farm bureau agents and through them some farmers and horticulturists in the hope that the Academy might help them and be benefited by such co-operation, but without success. This is a thing that could be done with proper combination of efforts.

A large number of our members are teachers. Some are high school instructors, but they represent only a small fraction of the total number in the state. High school teachers of science are supposed to have learned the method of research and to have been inspired with the spirit of investigation before leaving the university.

Six years ago, in connection with the program mentioned before, I wrote to more than a hundred high school teachers who had attended the Biology Section of the High School Conference at Urbana the previous November and who were not then members of the Academy. They were asked whether they had been making any investigations outside their class work which would be of any interest to the Academy. About sixty replied, for they were virtually being asked to join the organization and to contribute to the program. Some few joined the Academy, but only one of the sixty indicated that anything was being done in research. His was a case of the spirit being willing and the flesh weak, for his investigations were not completed and he was not secured for the program. His subjects of research were:

- 1st. The History of Evolution.
- 2nd. Instinct and Reason.
- 3rd. The Future of Our World and Its Species.
- 4th. The History and Future of Man.

Would it not be worth while for the Academy to try to wield a greater influence than has been done heretofore to direct toward definite objects of research this little army of teachers all of whom have had some training in scientific ways of thinking? It is true that the facilities for research in isolated situations are very different from those in the university or the great industrial laboratory. But, there are often other facilities that need only the mind of a director and the hand and brain of an eager worker to make some lonely spot a laboratory.

Whether the Academy could set up problems and direct their solution through a committee which could function in the out-of-the-way places that are not now called laboratories, is a question for those more expert in such matters than I. Would it not be possible for our committees on Conservation and Ecological Survey to enlist this aforementioned army and with it a still greater army of high school students? Even though the rank and file were only gatherers of material, such a host, if they could be enlisted, might be directed by competent leaders to have such a thirst for the unknown and to spread such a spirit of original

discovery that the average man of the street would no longer think of the research worker in his laboratory as a hermit set apart from his fellow men.

The second account on our ledger has to do with "diffusion of scientific knowledge and spirit." Here, again, we have much on the credit side of the ledger. Specialists bring to us at our annual meetings the results of years of study. I know of no other meeting in the state where the astronomer may learn from the chemist, the physicist from the biologist, the geologist from the doctor of medicine, as can be done here. This is especially true on our field trips. Men of much learning in one field explain in clear but simple terms to men of equal learning in other fields what to one is commonplace and to the other something new, while those of us who are not specialists in any field are imbued with the spirit of scientific knowledge if not with the substance. I prize a small picture of an ex-president of the Academy taken as he was earnestly trying to learn of a woodsman the almost lost art of splitting clapboards. This picture is typical of the spirit of science. The humble spirit to learn is perhaps of as much value as what we do learn at these meetings. Those who reside at the seats of learning cannot appreciate the stimulation that comes to the less-favored few of us who attend these meetings, often to add but little to the discussion ourselves but to take away that enthusiasm that comes from getting first-hand information while it is yet new. The fact that many of the papers given here are published in scientific journals and that there is a steady, though limited, demand for copies of the Transactions, indicates that scientific knowledge and spirit are being diffused.

Sometimes, before such knowledge has reached the average man of affairs who would appreciate it and profit by it, it has become too diffuse, if not fogged. In other words, too much scientific knowledge never gets to the ultimate consumer with full weight and unadulterated. This is a difficult thing to remedy, and perhaps not within the province of the Academy to approach directly. We are not in close enough contact. The local papers sometimes surround us with an air of mystery by quoting all the long technical titles from our program and leaving the others out. True, some of our papers are, and must be, highly technical. They might be given simpler names and thus dispel some of the fog. The tendency seems to be toward greater simplicity in wording wherever truth and accuracy of statement will not be sacrificed.



The technical language of the paper is, sometimes, inversely proportional to the learning of its author. Most of our speakers are clear and easily followed. Their papers are models of simplicity as compared with the attempts of the average business or professional man to talk about his chief interests before a high school audience. Frequently, medical and dental societies and welfare organizations, seeking to diffuse specially applied, up-to-date, practical knowledge to patient and long-suffering groups of high school students, send out men who can neither express themselves clearly nor entertainingly.

It would be a boon to multitudes of knowledge-hungry, common folks if there were professional men and women and more people trained in science who could talk more clearly and entertainingly. We need fewer so-called scientific writers for the Sunday papers and fewer lyceum lecturers on science who startle but do not inform, and more people of the type of Louis Agassiz who could draw the thousands to his lectures by his personal magnetism and his commonplace elucidation of his subject. So much is said in the name of science which even the novice knows is untrue, that the untrained but intelligent man does not know what or whom to believe. And so the fog gathers. In this age of radios and automobiles there are yet many who will go to hear the man of science if he is known to be an authority and can tell his story well. It is up to us as individuals to frown upon fakes and pretenders of all sorts and to support measures that tend to suppress them. It is also up to us to be anxious and, yea, even prayerful, that we know the truth and dare maintain it, and that we train ourselves, if we do not already have "the gift of tongues," so that when we speak "the wayfaring man, though a fool, shall not err therein."

How many of our scientific assets are "frozen" because so many learned ones cannot diffuse their knowledge! The late Robert Ridgway, in a whimsical mood, wrote to me the following a few years ago: "As to reading a paper or delivering a speech at the meeting of the State Academy of Science, I will say that many years ago when a very small boy, I stood up in school to recite 'Twinkle, twinkle little star.' I got exactly that far when my confidence gave way to stage fright, and I have never since had the courage to try it again." What a boon to himself and especially to the rest of us it would have been if this timidity could have been overcome!

That the Academy is in hearty accord with this second object of its endeavor is evidenced by the fact that though it has had among its twenty former presidents such men as Chamberlain, Coulter, and Weller and others living and dead whose names all stand for much in science, it has honored one with that office whose only claim to distinction is in the diffusion of scientific knowledge and spirit. It has been to me a rare privilege to be permitted to hold one position as teacher, for twenty-five years in a remote but growing community, there to have a little part in inspiring in the hearts of many hundreds of young people and scores of adults an appreciation of the wonders about them and in making their place under the sun a little more delightful by some knowledge of science.

"The unification of the scientific interests of the state," is the third account on our ledger. Here, we have made progress in recent years. Scientific organizations in the state are not numerous. Some of the new ones have been brought into existence partly through the influence of the Academy and are now affiliated. There are enough people in every ten counties in the state outside of Cook county to support a science club similar to the Egyptian Science Club, the one with which I am most familiar. The time may be near when the Academy may need a secretary for the affiliated societies whose business it will be to keep them in close touch with the main organization. Such a need will come before all the possible organizations of such a nature shall have been perfected. The Academy should look forward to the time when the scientific interests of the state are united into a well-articulated whole, each part of which functions alone and along its particular line but works together with the other parts for the common good.