Proceedings of the Iowa Academy of Science

Volume 59 | Annual Issue Article 7

1952

Science Talent Searches

F. E. Brown
Iowa State College

Science Talent Searches

F. E. Brown

In 1948 the American Association for the Advancement of Science asked the cooperating academies of science in the several states to encourage larger numbers of qualified students to major in science. Seeking youth for special important service is one of the oldest activities of organized society. The Incas found beautiful maidens whose sacrifice appeased an angry god. The Babylonians trained even their abler captives such as Daniel and his friends for administrative positions. Schools have been founded to train, without charge or for small fees, preachers, lawyers, physicians and teachers as need for such training was evident.

But such treatment for science is new. Experimental science was feared, forbidden, ridiculed and finally after centuries tolerated. Only recently has it been admitted to an honorable place in our educational system. One needs only to remember Galileo, Copernicus, Lavoisier, Pasteur, and Darwin, or recall the Scopes trial or the present day activity of the antivivisectionists to realize how weak a cord binds science to the great multitudes. In the early days of the century, students were not urged to enter science. About 1913, Professor J. U. Nef of the University of Chicago said, "Choosing a scientific career, especially a career in chemistry is like getting married. No one should do it until he can no longer resist the impulse". Since 1913, the membership of the American Chemical Society has increased from 6673 to more than 66,000, almost tenfold. Other scientific societies have grown at a similar rate. Why is there need to set up searches for more scientists when their numbers have increased so phenomenally?

The answer is that industrialized countries have ceased to use naturally occurring materials as they once did. Their roads and bridges are not just rock, gravel and wood. Their houses are not logs, rocks or even easily fabricated brick. Their farm machinery requires special alloys, electrical wiring and prepared fuels. Much of their clothing is composed of artificial fibers. The foods they eat are far removed from ground corn or wheat and home cured pork. The seeds they plant and the live stock they raise are scientifically planned and produced. Their soils are fed commercial fertilizer and stabilized by krillium. Their drinking water taken from rivers which carry the sewage of all cities upstream must be

made clear and safe. Weeds, insects and disease germs are killed or controlled by drugs more potent than any person dreamed of in 1913. People desire these products and services and will pay for them. Manufacturers cannot make these artificial products, much less improve them and add new synthetics, without an ever increasing supply of scientific workers. It is the industrialists who set up the science talent searches.

In 1897, the honor society, Phi Kappa Phi was founded to recognize scholarship in all fields of education including science. Before this time scholarship in science had not been so recognized. In the nineteenth century there must have been a few science scholarships for graduate students who aided in teaching freshman classes, but the pay was far below the subsistence level. There must have been occasional recognition of scholarship in science in high schools, as distinguished from general scholarship before 1932. But at least, in 1932 Bausch and Lomb began awarding Honorary Science Medals to high school seniors. More than 60,000 of these medals have been awarded. In 1944, Bausch and Lomb began the annual selection of five recipients of these medals to receive scholarships. These scholarships valued at $1500.00 each must be used at the University of Rochester.

In 1941 Science Clubs of America organized a national science talent search financed by the Westinghouse Electric Corporation. As these searches are conducted, posters are sent to all secondary schools in the United States. Under the guidance and supervision of teachers: (1) a science project preferably one requiring experimental work is carried out and a report is written, (2) a searching examination is taken, (3) the high school record is reported, and (4) personal recommendations are written by the instructor in science. The winners are selected by a series of hurdles. The first hurdle is the examination. If the examination grade is too low the other papers are not examined. The second hurdle is the high school record. A function of the rank in the senior class divided by the number in the senior class is the criterion. The third hurdle is the set of recommendations. The papers which pass these three hurdles are arranged in order based on the quality of the project report. The students whose projects are given the highest forty ratings are invited to Washington, D. C. with all expenses paid. After five days of personal contact with a committee of eminent scientists these forty are arranged in order and receive cash scholarships varying from $2800.00 to $100.00. The students whose projects received the next 260 ratings receive honorable mention, and are recommend-

ed to colleges of their choice for scholarships and other consideration.

Each year about 16,000 sets of application blanks are requested and about 4,000 applications and examinations are completed and returned to Science Clubs of America. Only 300 receive any recognition in the national competition. In 1945 Virginia and Tennessee organized state science talent searches for seniors of 1946. The next year Georgia, Illinois, Iowa and Indiana organized science talent searches for seniors of 1947. By 1951 twenty-five states, (Arkansas, Connecticut, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin) were conducting state science talent searches. In each of these states some responsible group signed a contract to receive from Science Clubs of America the papers which originated in its territory. It then appointed a committee to examine the papers and make awards or give recognition to deserving entrants not included on the national honor roll. Some states are well organized and have considerable financial support, others have no funds and weak organizations. Iowa has passed through several stages and a report of its experience will illustrate the operation of state science talent searches.

On November 16, 1946, the Executive Committee of the Junior Academy of Science of Iowa met in the Y. M. C. A. building in Cedar Rapids, Iowa. One action of that meeting directed the chairman of the Committee on High School Relations of the Iowa Academy of Science to contract with Science Clubs of America for an Iowa Science Talent Search. It was too late for publicity that year. Very few of the Iowa high school seniors of 1947 who entered the Sixth National Science Talent Search learned that their papers were returned to an Iowa committee which used them for the First Iowa Science Talent Search. Ten names written in script on a piece of paper constitute the first Iowa Honor Roll. The ten winners were notified and each chose a college. The committee recommended that the colleges grant scholarships to these promising young scientists. Several of them received remission of tuition or similar grants from these colleges.

In October, 1947, Midland School carried the announcement of the Second Iowa Science Talent Search for Seniors of 1948. An item on the program of the Junior Academy of Science of Iowa, under the date April 27, 1948 read "10:30-11:00 Presentation of

Awards to winners of the second Iowa science talent search". But delayed receipt of papers from Washington, D. C. and poor organization of a scattered committee in Iowa made notification of the winners impossible before April 27. Their names were read at the appointed time and notification was made later by mail. They were recommended, to colleges which they chose to attend, for scholarships.

The papers for the Third Iowa Science Talent Search were completed in December, 1948. On March 8, 1949, Clinton Foods Inc. (then Clinton Industries Inc.) offered to give $2000.00 for cash scholarships and expenses of the Iowa Science Talent Search. The first public ceremony was held at a meeting of the Junior Academy of Science of Iowa in the Ingham Building of Drake University on April 7, 1949. George T. Peckham, Jr. director of research for Clinton Foods Inc. presented engrossed certificates to the first ten winners of Clinton Foods Science Scholarships, and announced the award of $1400.00 to the winners.

Since 1949 newspapers and radio have announced the competition and the awards. Letters and posters have been sent to all high schools in the state. Winners have been entertained at the meetings of the Junior Academy and at the plant of Clinton Food Inc. and have been interviewed on the radio. The awards have been made at joint meetings of the Senior Academy and the Junior Academy.

The Sixth Iowa Science Talent Search closed this morning. Its climax was the fourth awarding of Clinton Foods Science Scholarships. The assembling of ten secondary school seniors who have already shown so much ability in science and encouraging them to continue by presenting $1400.00 in scholarships is impressive if it were the end. But really this is just the beginning. No one can choose one of these recipients and tell what his future achievements will be, but an accurate prediction can be made for the group.

This group was selected by the same test as the 47 honorees of the first five Iowa Honor Rolls, and the record of this new group will resemble that of their predecessors. Some of the data used for the 47 predecessors is a little old, but reports from about half of the honorees have been received since January first 1952.

Forty-five of the 47 have enrolled in college and the other two entered the navy soon after graduation from high school. In mental and achievement tests, one of the two ranked far above the average of his company; the other ranked second in a company of 60. All but one of the ten on the First Iowa Honor Roll have earned college degrees and several have started graduate work. The one who has

not earned a diploma will complete his term of service in the air force this year and return to college. Since finishing basic training he has taught radar for more than a year and is now supervising all teachers of radar at one of the largest training fields in the United States.

Clinton Foods Inc. has been very generous, but others, including the colleges attended, have also aided financially. Supplementary financial grants reported numerically total $21,500.00. In addition nine students report tuition scholarships, value not given, or that renewal of the first years scholarship would be made if grades were satisfactory. Probably, renewed scholarships would add thousands of dollars to the sum reported numerically. Nearly all of the honorees have participated in college activities. These activities include: bridge clubs, dramatics, music, debate, oratory, school publications, religious work, radio, holding offices in class and group organizations, science clubs, and athletics including team captaincies. Many have worked at a variety of jobs to earn college expenses. At least two are completing a four year physical science curriculum in three years. The scholarship record is excellent. A few reports are indefinite as: average, one of upper 10 in large class, upper 3%, elected Phi Beta Kappa or elected Phi Kappa Phi. Numerical grades or honor point averages are available for 35 of the 47. Only four have honor point averages below 3 (A = 4), and the honor point average for the 35 is 3.361.

The other hundreds of students who have entered the competition have received less benefit per individual than these winners have, but the aggregate benefits of the latter group is probably greater. No one of these hundreds can have participated in the work required in such a competition without great benefit.

The Iowa Academy of Science has responded to the request of the American Association for the Advancement of Science. It is encouraging qualified young people to enter the field of science. Its response has been more effective than that of some other state academies of science. But there is much more to be done.

The National Science Foundation announces the appointment of only 624 graduate fellows in all fields of science in the entire United States for the academic year 1952-53. In 1954 the number of college students graduating with science majors will be only 38% of the number which graduated in 1950 with science majors. Many heads of college science departments have money appropriated to hire graduate assistants and research assistants for the school year

1952-53, but cannot find adequately trained college graduates to fill the positions.

In the number dated March, 1952, the Scientific Monthly published an article entitled "The Survival of Physical Science". The author Dr. R. B. Lindsay head of the department of physics at Brown University and director of the Ultrasonics Laboratory and the Research Analysis group says that four dangers threaten physical science. First the general public does not understand what science is or what it does. Through government support this uninformed public may soon be the principal employer and controler of scientists. Second, many persons believe that scientists are responsible for all misuse of their discoveries, and that scientists are wicked when they give to humanity more power than it is using wisely. Third, the individuality of the scientist is being submerged in programs, while clear thinking, not many data, is what supports and advances fundamental science. Fourth, there are too few mentally competent young people who are fortunate enough to secure early rigid training in fundamentals and also disinterested enough in wealth and acclaim to undergo the preparation necessary to become scientists and practice science. These threats are real. If nothing is done to meet them, free science as we knew it a few years ago may not survive.

Speaking to a group of the American Chemical Society on March 25, 1952, Claude Robinson, president of Opinion Research Institute which operates the Gallup Poll said what can fairly be condensed to,

"Making a better mouse trap does not ensure a path to your door. Good deeds do not guarantee a good reputation. First, the mouse trap must be good and the life must be right, but both must be explained and interpreted or the public will not necessarily respond as it should".

Whether it wishes to be so or does not, the Iowa Academy of Science is the most important symbol of science in this state. Every action of its officers, committees and individual members contributes to the reputation of science. These acts must be good but they must also be explained and interpreted to those in other fields so that all see the necessary place which science occupies in our civilization.

It is not surprising that newspaper reporters and those who read what is published by reporters should ridicule titles of scientific papers such as "Dithio-alpha-morpholinsuccindimorpholide" or "Morphological studies on metacercariae of Brachylaemus virginiana (Dickerson) Krull (Trematoda) and migration route of cercariae in the second intermediate host". These are titles of two papers

printed in the program for this meeting." The non scientist may even believe that much scientific work has as little significance as these words have for him and that most of the money spent by scientists is wasted. Besides the papers prepared in precise scientific terms, scientists must interpret the titles quoted above and similar titles to those who finally are their masters, the general public. The new anaesthetics, internal antiseptics, antibiotics, hormones and drugs for specific purposes were discovered, analyzed and many of them have been synthesized, but only by employing chemicals with names at least one line long. Similarly, Texas fever would still threaten our cattle, and yellow fever threaten our friends if someone had not studied the life histories of ticks and mosquitoes and the smaller organisms with long names which live parts of their lives within ticks and mosquitoes. Sometimes it is necessary to warn scientists whose fields are as far apart as chemistry and psychology that papers presented by both are important and worthy of honor though scientists in neither field fully understand the work in the other field.

Educators are engaged in a laudable effort to furnish a high school curriculum which will enable every normal youth to secure a diploma. This necessitates the inclusion of many courses which do not demand much mental exercise and sometimes leads to inadequate presentation of language, mathematics and science. Since only part of the high school students will go to college none are really prepared for college work in some high schools. When high schools admit that they are not trying to prepare their graduates for college, their diplomas should not be accepted for college entrance. But greater than the wrong inflicted on the college by sending to it, inadequately prepared students, is the often irreparable damage, inflicted on students by four years spent at study which never required any real mental exertion and produced no real mental growth. A way must be found to develop our talented young people, while interesting those who are less talented or less ambitious. Some have no wish to be prepared for college. These may even be a majority in some high schools, but we commit a crime against gifted, vigorous, students when we deprive them of strenuous mental exercise in high school. Societies which fail to develop potential thinkers, lose the service of their potentially great minds and remain mediocre societies.

These eager, able girls and boys should be shown that mental growth has never yet reached its highest possibilities and that science is an unlimited frontier. Business success often consists in selling

what competitors must sell or become bankrupt. Political eminence is all too often reached by personal attacks on the motives or habits of ones rivals. Even a statesman places his own nation higher than other nations by weakening the others as well as by strengthening his own. Other secular occupations often include opposition to other persons. Scientists may attack other scientists but such attacks are not essential parts of science. The conquests of science humble and injure no person. The triumphs of science are discoveries of nature's unknown processes and everyone benefits from these discoveries. The ministry, teaching and science offer to men and women careers which are successful only when others are benefited. In these fields, conferring the greatest benefit is the highest success.

In a few years our leadership will have faded away. During the few years left to us, collectively as an academy of science and individually as scientists, we must, by organized talent searches and by personal endeavor, find those whose ability and ambition enable them to become scientists, see that they have opportunity to secure the necessary training, and continuously and graciously interpret and explain science to anyone who will listen, so that our successors may work in a friendly society. Science will serve the whole world if, but only if, the world understands its purposes, gives it freedom to serve, and uses its contributions humanely and generously.

Department of Chemistry
Iowa State College
Ames, Iowa