

GENERAL SCIENCE

Conference Assays Diffusion of World's Scientific Knowledge

Science Service Gathering Addressed by Drs. Bohr, Millikan, Aston, Bottazzi, Dufrénoy, Ritter and Howell

LEADING foreign and American scientists joined with Science Service in its conference on the diffusion of scientific knowledge which was a part of the recent meeting of the American Association for the Advancement of Science at Chicago.

Taking advantage of the presence of eminent foreign scientists at the meeting as guests of Chicago's Century of Progress Exposition, Science Service asked a number of them to assay the status of science dissemination in their own countries and to evaluate various techniques. The conference held at a luncheon (June 23) was attended by 180 men and women of science, members of the press and other interested persons.

In his capacity of President of Science Service, Dr. J. McKeen Cattell, the psychologist who is editor of the journal *Science*, and chairman of the A.A.A.S. executive committee, presided.

Dr. Cattell introduced, as first speaker, Dr. William Emerson Ritter of the University of California, Honorary President of Science Service.

Dr. Ritter prefaced his remarks with a denial that he was the originator of Science Service. The idea of Science Service, he said, really came entirely from the mind of the late E. W. Scripps. Science Service is therefore an institu-

tion for the popular dissemination of science fathered by a layman. It was always Mr. Scripps' idea that democracy must be intelligent if it is to be successful. This idea underlay his whole life work of building up a great press organization devoted to placing all manner of information in the hands of the common people at the lowest possible prices.

Origin of Science Service

Mr. Scripps first proposed an agency for the popularization of knowledge in economics and the other social sciences. Not meeting the responses he expected on the part of economists, he modified the original idea to envisage an institution for the popularization of knowledge in the physical and natural sciences. It was his idea that this organization should be completely independent of his other, more strictly business ventures. The scientists of this country understood the possibilities behind this idea when it was presented to them by Dr. Ritter, and promised their cooperation in carrying it out. Thus Science Service was born.

Prof. Niels Bohr, of the University of Copenhagen, was the second speaker. Popular dissemination of scientific knowledge, though a completely accepted idea in Denmark now, has not

Denmark the dissemination of popular knowledge in science is largely taken care of by the schools, including the extension courses, theories of teaching, and the theories of knowledge behind them, are matters of great importance and much discussed.

Loss of Freedom

Prof. Bohr closed by expressing his regrets over the situation in "some of our neighboring countries," and the hope that the loss of freedom of expression of thought in these lands may be only temporary.

Prof. F. W. Aston of Cambridge University was the third speaker, replacing on the program his colleague, Prof. Joseph Barcroft, who was unable to be present.

The publication of scientific results in Great Britain, Prof. Aston reported, requires three distinct types of periodical: (1) those for brief preliminary papers, like *Nature*, (2) those for the full publication of scientific results, like the *Proceedings of the Royal Society*, and (3) abstracting journals like *Science Abstracts*. Journals of the type of *Nature* when he visited London, founded a polytechnic school in Copenhagen. Oersted, a giant among his contemporaries, conducted a one-man revolution in scientific education and popularization, and the whole direction of Danish popular instruction in science received its subsequent direction from him.

About fifty years ago an intense national spiritual movement swept over Denmark: a combination of a renaissance in Norse culture and popular religion. One of the fruits of this culture movement was the establishment of a new system of high schools, in which science teaching received great emphasis; and this scientific training of the people in turn had great influence on their social institutions. Since in always enjoyed so favorable a position, he said. Tycho Brahe, Denmark's first great modern scientist, had to suffer many inconveniences and difficulties before he received royal support; and after his great patron died and Brahe left his native land, his observatory, the most notable institution of its kind in his century, was literally demolished within twenty years, peasants carrying away the stones of its walls.

Science has fared better, however, in modern Denmark. Over a hundred years ago Oersted, impressed by the work of the British Royal Institution

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ture are necessarily more or less popular, and the degrees of popularization range through a long scale. Newspapers are now adding science to their former somewhat monotonous offerings of crime and politics, and much of the science material offered in the daily press is well written and has content of genuine merit. Popularization of science in England is no new thing; many noted English men of science in the last century lectured and wrote for popular audiences; Prof. Aston cited such men as Tyndall, Faraday and Kelvin.

Prof. Filippo Bottazzi, of the Physiological Institute of Naples, and editor of *Scientia*, outlined the means for the dissemination of science in present-day Italy. Science dissemination in Italy, he said, has a two-fold object: (1) to present scientific information to specialists, who are likewise laymen in every science except their own, and (2) to lead people, so far as possible, to understand the aims and achievements of modern science.

The task of disseminating special scientific knowledge is taken care of by the Italian National Research Council, through its publications, *La Ricerca Scientifica*, for full publication, and *Bibliografia Italiana*, for bibliography and abstracting. A special department for technical information has also been founded for the special benefit of industrialists and technologists. Each year Senator Marconi delivers an address at the meeting of the Italian Association for the Advancement of Science, in which he summarizes the progress of Italian and foreign science during the preceding twelvemonth. The published Proceedings of the Association carry a full report of this address.

International Review

The international review *Scientia* was founded in Italy and is still edited in that country by Italians; it may therefore in a sense be considered a part of the Italian effort toward the dissemination of science. It is aimed particularly at "people of middle culture," and is therefore written in a form acceptable to educated but not necessarily scientific persons.

Every two years a Volta Congress is held under the auspices of the Royal Academy of Italy, with one predetermined specific scientific problem on its agenda, which receives a thorough discussion.

Special publications, cinema films, and other means are used to instruct

the people in science and in some of its applications, such as nutrition. The daily press now publishes articles by leading men of science, some of the journals periodically printing whole science pages.

In conclusion, Prof. Bottazzi announced the pending publication in Italy of a special review devoted to science.

Prof. Jean Dufrénoy, director of the Station of Agricultural Pathology, Brive, France, outlined the means used in his country for the dissemination of science. Outstanding are the various *Comptes Rendus*, of the French Academy, of the Biological Society, and of other organizations. The French Biological Society has branches in many cities in France, as well as in the Latin countries of Europe and South America, and even in Japan. Besides the *Comptes Rendus* for complete scientific publication, there are numerous *Revue*s, each covering a particular discipline in science. Further dissemination of science in France is achieved through the meetings of many scientific societies, especially of the French Association for the Advancement of Science, through lectures, symposia, motion pictures, and special demonstrations by scientific institutions.

Expansion Urged

The significance of science popularization was briefly discussed by Prof. Dufrénoy. He said:

"The diffusion of scientific knowledge helps each mind to build a clear representation of the familiar natural phenomena.

"The diffusion of scientific knowledge therefore should bring the mind of the well learned and the mind of the less learned into a closer communion nearer to truth.

"The diffusion of scientific knowledge is successful so far as it supplies each mind with the missing link, the link which chains on the sequence of events from the familiar observed phenomena back to the causes. These causes each of us feel more or less consciously to operate.

"But the diffusion of scientific knowledge chiefly has an emotional significance. More important than exposing the actual facts and new theories is making the people who have no access and no business in the laboratories feel the thrill of what research means.

"This we believe that Science Service did and does achieve.

"We therefore wish to see its activity

expanded, that the world over men be both tolerant with the limitations of the scientific control of undesirable natural events and rationally confident in the possibilities of the next century of scientific progress."

Dr. Robert Andrews Millikan, chairman of the executive council of the California Institute of Technology, spoke as the representative of American science. He held that scientists themselves should be trained to express themselves in condensed and popular language, not only for the education of the public but for their own benefit in clarifying their thinking and better expressing their own special knowledge.

Public Must Be Won

In a democratic country, Prof. Millikan continued, public support must be won if science is to go on. Public judgment of value is in the last analysis the final verdict. The education of the public is its largest social problem. To handle it from a more rational and less emotional point of view, people must be given at least the beginnings of a knowledge of the scientific method. This method must be expected eventually to penetrate even into politics.

A third point raised by Prof. Millikan was the inevitability of the popularization of science in the United States. The press, he said, is going to present science in some way or other. Science Service has done great work, he said, in showing that science can be presented in a manner understandable by the people and in a style which will induce them to desire to read articles on science. This work of Science Service has had its influence on the handling of science material by the press generally, until now it often happens that a reporter will make a better precis of a scientist's address or paper than the scientist could himself.

The discussion was closed by Dr. W. H. Howell, Chairman of the Executive Committee of Science Service. Science has long been adequately presented to specialists and to the educated public generally, he said, but the need has been for a good presentation for the mass of the people at large, whose whole source of information is the newspaper. This is the task which Science Service has undertaken; and in spite of difficulties the experiment seems to be succeeding.

The City of Chicago, through Mayor Edward J. Kelly, sent a message of cordial welcome to the conference.