

# Education, Science and Democracy\*

General Science—Education

BY EDWIN E. SLOSSON

The object of the effort to spread a knowledge of science among as many people as possible is not with the view of converting them into scientists. That is impossible. A scientist is not one who reads science or studies science. A scientist is a man who makes science. This is a mere matter of language. A musician is a man who makes music. A novelist is a man who makes novels. A painter is a man who makes pictures. A contortionist is a man who makes contortions. So a scientist is a man who is engaged in original research, who is converting the crude phenomena of nature into systematic and logical form.

But if nobody listened to music except musicians, nobody bought books except authors, and nobody looked at pictures except artists, and nobody cared for contortions except contortionists, these arts would not exert much influence in the world. So, too, we believe, science has a value for those who, for lack of time, taste or capacity, can never become professional scientists.

The scientist, pure and simple, is concerned only with the accumulation of knowledge. He usually does not care to bother about its dissemination. What he writes is unread except by the few who are specially interested in the same specialty. And sometimes even they are not able to read it without propping their eyelids up with toothpicks.

It is then not merely because of mental inertia that the average of public opinion lags some ten or twenty years behind scientific thought. It is partly because of lack of opportunity to become acquainted with the recent results of scientific research. Public ignorance has naturally been followed by public indifference. Time was when the microscope and atlas of the heavens formed a part of every gentleman's library; when "Shakespeare and the musical glasses" ranked together in London conversation; when culture was held to include an acquaintance with the latest thing in science as well as in art or music. But nowadays a man who would be ashamed to confess ignorance of Epstein or Scriabin does not manifest the least curiosity to know of Einstein or Millikan.

But this popular ignorance and indifference in regard to science can

readily be remedied. *The beauty and meaning of scientific discoveries can be revealed to the general reader if there is an intermediary who can understand equally the language of the laboratory and of the street.* The modern journalist knows that anything can be made interesting to anybody if he takes pains enough with the writing of it. It is not necessary either to pervert scientific truths in the process of translation into the vernacular. The facts are sensational enough without any picturesque exaggeration.

It is the business of the journalist to build bridges across the chasms which divide humanity, to act as interpreter between all those who speak different languages. We have on the one side a public too often indifferent to the doings of scientific men. We have on the other scientific men who too often are indifferent to the public. There is an esoteric tendency in science as in all professional work. \* \* \*

This attitude is quite natural. It is no advantage to the investigator to be written up. On the contrary, it usually injures him in the estimation of his colleagues without gaining for him the esteem of anyone else. The journalist often destroys a reputation in the attempt to make one. \* \* \*

This is one reason why each science develops a language of its own. A technical vocabulary serves the purpose of a private telephone system, connecting members of the same guild so they can talk to one another anywhere in the world without being overheard and interrupted by outsiders. \* \* \*

But while we must recognize that a secret language has its advantages in securing freedom for the logical development of a science, yet there is need for the interpreter to bring the results of scientific investigation as quickly as possible to the knowledge of those who are to put them into effect. It was to meet this need that Science Service was founded at Washington by the generosity of a public-spirited man, the late E. W. Scripps, as a philanthropic and non-profit-making institution for the popularization of science.

To provide the public with the means of easy accurate scientific information throughout life is a difficult and important task. But it is much more difficult and vastly more important to develop the habit of

scientific thinking. The acceptance of a single scientific fact by any man, or any multitude of men, does little good if it leaves the mind of the man unmoved. What he needs is greater appreciation of the experimental processes by which scientific principles are discovered and established. Otherwise he will not be able to distinguish between genuine scientific discoveries and their pseudomorphs, the fakes, in after-life. He will not know how to distinguish the man who knows from the man who pretends to know. This ability is more important in a democracy than anywhere else. The danger in an aristocracy is that the people will respect and follow those that are not worthy. The danger in a democracy is that the people will fail to respect and follow those who are worthy of such confidence. Envy of the expert is a common human failing. We none of us are free from the desire to look down on those who have the right to look down upon us. We all of us take a secret delight in the humiliation of our superiors, and we rejoice in disclosing the ignorance of those who know more than we do. This natural human weakness becomes a public menace when it is multiplied by a million. It accounts for the votes cast against Aristides the Just and for the disposition to elect as our representatives not outstanding men but average men. This does not matter much in ordinary political affairs, for politics is not yet a science and there are many ways of reaching the same result. In science there is only one truth, but an infinitude of falsehoods. An unwise popular vote on a political question may bring a temporary calamity upon a nation, but an unsound popular opinion of a scientific question may bring permanent ruin to a race. The fate of the nation depends less on how the people cast their ballots than on how they combine their chromosomes.

The main object of education in a democracy is not to teach the people how to vote right, but to train them how to think right. Under any form of government, in an autocracy no less than in a democracy, the real power lies in the people, and it is their individual conduct, guided by their personal beliefs, that determines whether the nation shall advance, stagnate or retrograde.

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\*Extracts from an address on "Adult Education in Science."