

before crushing. This can be readily and cheaply accomplished by machinery similar to that used for hulling cottonseed.

Tests made in the laboratory and in manufacturing plants indicate that safflower-seed oil is a valuable raw material for use in the paint and varnish industries. The press cake is similar in composition to that from flaxseed and should be of equal value as a stock feed.

As a farm crop safflower requires no change in either methods or machinery now in use for the production of the small-grain crops, and if established it will furnish an additional domestic source of a drying oil that will supplement the linseed oil now in use, of which the quantity produced in this country is insufficient to meet the demands of the industries mentioned.

FRANK RABAK.

SCIENCE and Quackery
Frequently Confused
by Uncritical Public

We are living in an age of rampant scientific experiment, an age in which isolated facts regarding such experiments are broadcasted to the public by a multitude of very expensive agencies. But does the public always tune in properly and get the correct scientific wave length? Are their receiving sets good? It is exceedingly doubtful.

For some strangely ignored reason too many individuals still remain in a mental state wherein they fail to differentiate between the scientist and the sciolist. When a popular item from the United States Department of Agriculture, embodying true scientific data, stands in the press beside the pseudoscientific dicta of some quack or the subjective speculations of some mystical charlatan, people too often evaluate these two items as of equal validity and usefulness. While we spend millions to promote scientific investigation and to spread its results abroad, it is complained constantly that people do not stick to science in their practical affairs but pursue and enrich the quack as in earlier ages.

Why is this? Science is a small but gradually broadening body of knowledge which is exact, verifiable, demonstrable, and communicable. A brief but attentive consideration of these four adjectives would give anyone sufficient criteria of judgment with which to distinguish scientific fact from sciosophy or organized ignorance. Is the description of the facts exact? Can I myself verify these facts? Could I, with the same apparatus, etc., demonstrate those facts myself? Can the essence of the experiment be communicated to others so that they also can perform it and get the same results? If the answer is "Yes" in each case, we have to do with science.

But the public had not been taught (1) to use verifiable facts as criteria of judgment; (2) to see knowledge and science as a connected whole, embracing all known facts, and requiring a generalization to be consistent with the whole before it can take on validity; (3) to believe in principles—exact observation, precise description, cautious deduction, etc.—but to hold theories and hypotheses very tentatively.

The Significance of Isolated Facts

Facts are only little truths. Behind facts, and acting as their necessary background, stands the sturdy structure of scientific truth

as gradually enlarged by the scientific method or attitude. Any experimental fact, no matter how isolated and how apparently useless, is important, provided it was correctly observed and accurately described, for an experimental fact which to-day seems absolutely disconnected and without meaning may suddenly assume great significance and far-reaching importance to-morrow.

But there is grave danger in this experimental age of overrating the single experiments, the little facts, the isolated, disconnected data. By overspecialization we tend constantly to ignore or to forget the correlations and universal coordinations which can alone make facts valuable. Intellectual interpretation must fit these facts into the whole synthetic body of organized science to make them practically useful. This means that we must have a philosophy of science, a true scientific metaphysics (using the word only to mean a science of first principles) as a conventional postulate upon which to found future knowledge attainment.

No matter how efficient such agencies as the United States Department of Agriculture are in the accumulation and dissemination of scientific facts their efforts are to-day greatly limited by an uncritical attitude on the part of the public. This springs from a fault in our educational system which obviously does not sufficiently emphasize exact observation, precise description, and accurate logical deduction. We need popular writers and speakers to show adults how to appreciate science, to give them a vision of the scientific attitude, to enable them intelligently to absorb the information which they now so largely ignore, or so inefficiently assimilate and integrate into life.

Facts as Criteria of Judgment

To-day when some mystic declares that he hooks onto infinite sources of power with his medulla oblongata and revivifies himself by thus "scientifically" increasing the motion of his organic molecules, the public sees little incongruity in associating this statement with truly scientific statements regarding ultra-violet rays or inter-atomic energy. Yet the latter statements are exact, verifiable, demonstrable, and communicable, while the former are hazy, unverifiable, undemonstrable, and can not be communicated generally so that others can go and do likewise. People generally need to adopt scientific facts as criteria of judgment in practical matters.

It is a question whether we do not err when we spend so extravagantly upon experimental research and the broadcasting of its results and so completely ignore faulty conditions at the receiving end. We may broadcast isolated scientific facts forever and do so impotently and uselessly unless the public can integrate and utilize these facts, recognizing them as tiny parts of a great, coherent, consistent, coordinated whole. NAA at Arlington, Va., would be utterly useless if all the receiving sets in the United States of America were so imperfect that they brought in only distorted static and verbal nonsense. The possibility of expending some money and effort upon the mechanism of critical public receptivity to scientific data is thrown out, therefore, as a suggestion which, it is hoped, may stimulate thought and activity along this line.

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