

GENERAL SCIENCE

Science Must Heal Wounds Made by Applied Science

Dr. John Dewey At Dinner Honoring Dr. Cattell Urges Science Extension as Supreme Intellectual Obligation

By Dr. JOHN DEWEY, Professor Emeritus of Philosophy, Columbia University.

EDITOR'S NOTE: Several hundred friends of Dr. J. McKeen Cattell, the psychologist, president of Science Service, and editor of *Science*, *Scientific Monthly*, etc. tendered him a dinner of honor during the Boston meeting of the American Association for the Advancement of Science.

The following are excerpts from Dr. Dewey's address on that occasion.

THE SCIENTIFIC worker faces a dilemma. The nature of his calling necessitates a very considerable remoteness from immediate social activities and interests. It is absorbing in its demands upon time, energy and thought. As men were told to enter their closets to pray, so the scientific man has to enter the relative seclusion of the laboratory, museum and study. He has, as it is, more than enough distractions to contend with, especially if, as so often happens, he is also a teacher and has administrative and committee duties. Moreover, the field of knowledge cannot be attacked en masse. It must be broken up into problems; and as a rule, detailed aspects and phases of these problems must be discriminated into still lesser elements. A certain degree of specialization is a necessity of scientific advance. With every increase of specialization, remoteness from common and public affairs also increases. Division of labor is as much a necessity of investigation into the secrets of nature and of man as it is of industry.

"Unknown Tongue"

Nor does aloofness reach an end at this point. The language in use for common communication does not fit the statement of scientific inquiries and results. It was developed for other purposes than that of accurate and precise exposition of science, and is totally unfitted to set forth comprehensive generalizations in exact form. The result is that the scientist speaks what for the mass of men is an unknown tongue, one which requires much more training

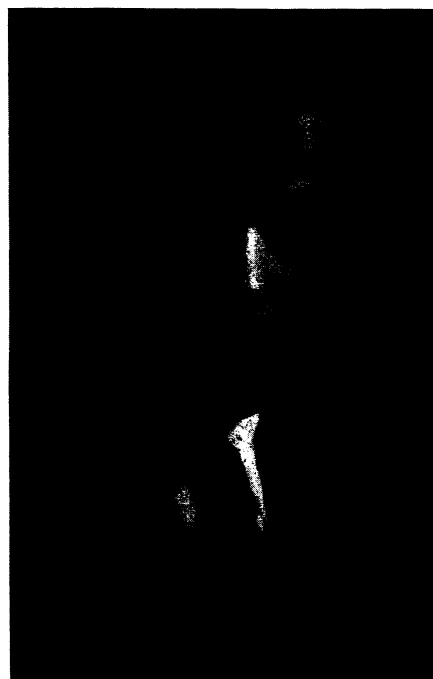
to acquire than any living speech or than any dead language. He can speak about his own direct affairs and problems only to a comparatively small circle of the initiated.

These considerations form and define one horn of the dilemma. The other horn is constituted by the fact that the scientist lives in the same world with others, and that world is being made over by the fruits of his labors. There is hardly a single detail of our common and collective life, whether in transportation of persons and goods, in modes of communication, in household appliances and conveniences, or in agriculture and all the varied forms of productive industry, that is not what it is today because of what science has discovered. The scientist may be aloof in his work and language. The results of his work pervade and permeate, they determine, every aspect of social life. The inventor, the engineer and the business man are unremotely occupied with translating what is discovered in the laboratory into applications of utensil, device, tool and machine, which have largely revolutionized the conduct of life in the home, the farm, and in amusements as well as in industry. . . .

Science Restrained

It is a commonplace that mankind in advanced industrial countries and especially in the United States confronts the paradox of want in the midst of plenty. It is science, which through technological applications has produced the potentiality of plenty, of ease and security, for all, while lagging legal and political institutions, unaffected as yet by any advance of science into their domain, explain the want, insecurity and suffering that are the other term of the paradox. . . .

The demands of the situation cannot be met, as some reactionaries urge, by going backward in science, by putting restrictions upon its productive activities. They cannot be met by putting a gloss of humanistic culture over the brute realities of the situation. They can



WINNER OF \$1,000

Prof. Reuben L. Kahn of the University of Michigan who won the \$1,000 prize for a notable paper delivered before the American Association for the Advancement of Science in Boston. Prof. Kahn's paper, describing his discovery of the fact that when an animal is immunized its body tissues acquire protective properties as well as the blood, was reported in last week's *Science News Letter* (Jan. 6, '34, p. 3).

be met only by human activity exercised in humane directions. The wounds made by applications of science can be healed only by a further extension of applications of knowledge and intelligence, and like the purpose of all modern healing the application must be preventive as well as curative. This is the supreme obligation of intellectual activity at the present time. The consequences of science in life impose a corresponding obligation. . . .

There probably was never a time in the history of the world when power to think with respect to the conduct of social affairs and the remaking of traditional institutions was as important as it is in our own country today. There is an immense amount of knowledge available, knowledge economic, historical, psychological, as well as physical. The chief difficulty lies not in lack of information that might be brought to bear, experimentally, upon our problems. It lies on the one hand in the fact that this knowledge is laid away in cold-storage for safe-keeping; and on the other hand, in the fact that the public is not habituated to a desire for the knowledge nor to be. (Turn to Page 30)

in its career. It remained for archaeologists to probe through the layers of broken walls and debris, and to find the walled capital of Israel's first king.

The excavations reveal that a village of about the twelfth century B.C. first stood on the hill. Traces of fire which destroyed this village can be seen, thus confirming the Bible record of the tragedy that befell Gibeah, as told in the Book of Judges. In the eleventh century, King Saul's royal fortress rose on the hill. And after its destruction, other settlements followed on the site.

A problem which beset archaeologists was that the fortress seemed small, considering its status and the retinue of the king. But this discrepancy is now cleared up. What was thought to be the king's citadel turns out to be merely the corner tower. The entire fortress was at least 170 feet long and 115 wide.

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lief in the necessity of its use. Hunger is lacking and the material to feed it is not accessible. But appetite grows with eating. The trouble with much of what is called the popularization of knowledge, is that it is content to diffuse information, in diluted form, merely as information. It needs to be organized and presented in its bearing upon action. Here is a most significant phase of the obligation incumbent upon the scientifically trained men and women of our age. When there is the same energy displayed in applying knowledge to large human problems as there is today in applying it in physical inventions and in industry and commerce, many of our present problems will be well on their way to solution. . . .

James McKeen Cattell is himself an active scientific worker, one who has initiated in his own field of psychology many movements that have borne rich fruit. But he has found time, thought and energy to devote to the larger questions of the bearing of science upon life. He has given himself without stint to the better organization of scientific workers in all fields, to the improvement of the condition of academic workers, to the task of editing and diffusing the achievements of scientific inquiry. I do not need to press home the moral in connection with the intellectual obligation of which I have spoken. Laboring of the point is unnecessary as long as we have Cattell with us.

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ARCHAEOLOGY

Genealogy of First Family Of America Traced to 1400

SOCIETY leaders and many other people in America who take a keen interest in titled families have probably never heard of the Xiu family. But they should. For the Xiu have the oldest known family tree of the American nobility surviving today. Their genealogical record has been traced back unbroken to 1400 A.D., on American soil.

Members of the Xiu family who live in Yucatan are descendants of a great line of Indian rulers that governed for more than five centuries. These ancestors played star roles in America's greatest ancient civilization. Such were the flower of Indian nobility for whom skilful craftsmen made gold and jade jewelry and featherwork head dresses. They were leaders in the procession and public events.

Now, the Carnegie Institution of Washington has undertaken to bring together as much of their genealogical record as can be traced in ancient documents and in interviews with living members of the family. The evidence is chiefly in a collection of the Xiu family documents in the Peabody Museum at Harvard. There are also unpublished documents in libraries at Tulane University and the University of Pennsylvania which shed light on the career of the distinguished old family.

The Xiu papers present an unbroken history of this famous family from about 1400 A.D. until 1817. Ralph Roys, of the Carnegie Institution of Washington, writing in that institution's annual report, rates this as a unique record. Not even the lineage of the Aztec Montezumas or the ruling Incas of Peru can be traced in this manner.

With the fall of the Spanish regime in Yucatan, the family papers end, and the scientific investigator made a trip to Yucatan to search more recent church and government documents and to interview numerous members of the family.

Practically all the living Xiu who could be located were traced back to ancestors listed in the 1817 patent of nobility.

Like many another noble family, their life has become hard. After ruling for

more than five centuries, and then being privileged nobles for another 280 years, the Xiu for more than a century have earned their bread by hard work.

As one observation of genetic interest, Mr. Roys comments:

"The direct descendants of the last noble head of the family have not done particularly well during their century of economic struggle, for they are less prosperous and show a higher rate of infant mortality than the collateral family groups which were the subjects of this study."

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CHEMISTRY

Cotton Tried As Binder In Asphalt Paving Blocks

COTTON was used as a reinforcing material in making asphalt paving blocks exhibited at a lecture before a Washington audience of the noted Negro chemist, Prof. George W. Carver, who has built up a wide reputation through his life-long researches on new uses for the agricultural products of the South. About 3½ per cent. of the blocks, by weight, consisted of cotton; the reinforcement, Prof. Carver stated, increases their strength and resistance to wear. "Roads made of these blocks would use up forty bales of cotton to the mile," he said. "That should dispose of a lot of our surplus cotton."

Prof. Carver fascinated his audience by fishing up out of a capacious bag samples of an endless array of products, ranging from a dozen kinds of milk and cream to hair tonic and wall paper, all made by chemical manipulation of peanuts. He has made hundreds of synthetic products from these humble vegetables, as well as many more from sweet potatoes and other unpromising materials, some of which have come into commercial use. Being completely indifferent to money himself, Prof. Carver has not profited personally by the exploitation of any of his chemical inventions.

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Statistics show that more schoolboys die from accidents than from all the usual communicable diseases combined.