

GENERAL SCIENCE

Human Behavior Rules

Physical universe is interpreted as an ideal human society, and the real human society attempts to ape this ideal as closely as possible.

► THE PICTURE of the physical world accepted by people serves symbolically to set rules of human behavior, Prof. Philipp G. Frank, Harvard philosopher and president of the Institute for the Unity of Science, observed at the Fourteenth Conference on Science, Philosophy and Religion at Harvard University.

The physical universe is interpreted as an ideal human society, Dr. Frank explained. The real human society attempts to become as similar as possible to this ideal. This approach then becomes the rule of its moral behavior.

Dr. Frank traced the effects of man's conception of the physical world upon his actions back to very ancient times.

As an example, we are accustomed to relax every seventh day of the week and the root of this habit is theory of the Old Testament about the way our physical universe originated. Dr. Frank pointed out that the Hebrew cosmology has been interpreted through the ages as a rule of human conduct that has not outlived its validity today.

The picture of the physical world that has been developed by physical science has undergone radical changes since the times of Plato, Aristotle and St. Thomas. However, Dr. Frank said that the picture outlined by Thomistic philosophy has not changed.

The foundations of the Thomistic doctrine have been and are today: first, the doctrine that every material body in the common sense meaning of this word consists actually of "prime matter" and "substantial form," and, second, the doctrine that the laws of nature are not only uniformities but "genuine laws" that are imposed by a lawgiver.

From such ideas arose the identification of evil with matter. Even in this century, a few philosophers and philosophically-inclined scientists have extolled the idea that the largest part of the atom is empty; that only very tiny pieces of matter, the nucleus and the electrons, are solid.

Dr. Frank traced this idea back to the matter-is-evil idea.

When atomic physics abandoned strict determinism as the supreme law for the motions of the smallest particles, Dr. Frank said, this was used as a symbol for the freedom of human actions.

Even communism has been influenced by ideas as to the form of the physical world. This was explained by Dr. Frank as follows:

"The philosophy of Dialectical Materialism which has become the official doctrine of all Marxist groups, has made continuous efforts to shape the picture of the physical world in such a way that the laws of human

behavior would be derived from physical laws by way of 'dialectics.'

"The laws of 'dialectics' have been construed as the most general principles which are equally valid for physical and social phenomena. The most palpable of these principles is the 'transition from quantity into quality.' If a property increases quantitatively more and more, a point will come when the property undergoes a change in quality.

"The most famous example in physics is the heating of water. As its temperature increases more and more, the water remains unchanged in quality; it remains water. But, at the boiling point, water is converted into a body of changed quality, the vapor of water.

"The physicist would not see in this presentation of the boiling process a great help to advancement in the theory of heat. But, Friedrich Engels, the main collaborator of Karl Marx, already has pointed out that this presentation shows clearly the analogy between the physical universe and social behavior.

"If, in a human society, the accumulation of the means of production (capital, machinery etc.) increases, the character of the society changes only quantitatively; the society remains qualitatively a society of private owners. But, if we apply the physical theory in its dialectical presentation, we can expect, that after great quantitative changes, great accumulations of capital in few private hands, there will be a qualitative change by which the means of production will be taken out of private hands and will become property of the community."

Science News Letter, September 18, 1954

PHYSIOLOGY

Attack Brain and Mental Disease With Ultrasound

► EXPERIMENTS LOOKING to an ultrasonic wave attack on some brain and mental diseases were reported by Prof. William J. Fry, Prof. John W. Barnard and Rolfe F. Krumins of the University of Illinois at the meeting of the American Physiological Society in Madison, Wis.

They have used ultrasonic waves to destroy brain tissue in an area as small as one-twentieth of an inch across, about the width of the lead in a pencil, without affecting tissues around, above or beyond the spot.

This precision seems to offer possibilities beyond the surgeon's knife for destroying tumors or deranged brain tissue since any

size or shape of area at any depth in the brain can be attacked. Nerve tissue is destroyed, but blood vessels are not affected.

Although the University of Illinois device has not yet been used on human patients, only a few more tests are needed before it can be given a trial.

The ultrasound used has a wave frequency of 1,000,000 cycles a second, 50 times higher than the highest audible pitch. The beam is sent through a salt solution in contact with both sound source and the brain. The latter is exposed through an opening cut through the skull but not through the protective membrane covering the brain.

Science News Letter, September 18, 1954

SCIENCE NEWS LETTER

VOL. 66 SEPTEMBER 18, 1954 NO. 12

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NORn 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index.



Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, Aldorado 5-5666, and 435 N. Michigan Ave., Chicago 11, Superior 7-6048.

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