

electrical insulation, hose, etc., which may make different demands. Future manufacturing plans, he explained, are dependent on the progress of tests now

being made and will also be governed by the defense needs of the U. S. Government.

Science News Letter, September 21, 1940

GENERAL SCIENCE

Science, Philosophy, Religion Find Ground for Common Front

Emphasize Need for Upholding Human Dignity of Individual As Means for Combating the Dictator Ideologies

By WATSON DAVIS

EMPHATICALLY repudiating the primitive identification of the state and the Deity that the totalitarian states have reestablished, scientists, philosophers and religionists who met in a Conference on Science, Philosophy and Religion joined in a manifesto calling upon America to marshal her intellectual and spiritual forces to a united front in the face of the pseudo-religious philosophies of Hitler, Stalin and the Japanese Emperor. The conference was held at the Jewish Theological Seminary of America, New York, Sept. 9-11, under

the chairmanship of President Louis Finkelstein of the host institution.

The ancient doctrines of human dignity, formulated in terms of modern science and philosophy, the statement declares, may become a motivating power, energizing our people to defend their freedom with a passion equal to that brought by the totalitarians to its destruction.

Some 40 intellectual leaders signed the manifesto.

"The pseudo-religious philosophies of the totalitarian nations have proven formidable weapons in their hands," the manifesto explains. "Decreasing respect

for ethical and religious values among the democratic peoples has introduced intellectual confusion in their educational systems, in their literatures, and in organs of public opinion generally. Taking advantage of this confusion, the totalitarians have won considerable numbers of adherents even among the free peoples of the world. In consequence, the morale of the democracies has deteriorated and their power of resistance to totalitarian arms and diplomacy has diminished.

Union Needed for Defense

"We dare not remain disunited or in conflict with one another, in a world where our opponents are closely united. Nor dare we rear our children as cynical recipients of the benefits of civilized society, rather than as responsible participants in its burdens. A cynical, divided, hyper-individualistic America will necessarily become a doomed America.

"No resort to totalitarianism is needed to overcome the intellectual confusion of our time. America was the first nation to apply the principle of federation to a land of continental dimensions. American genius should be able to apply the same principle to cooperation between groups of different religious, political, and educational views. Without for a moment considering the submergence of any discipline, scientific or philosophical, to any other, and without believing it possible or desirable that Western religions be reduced to a common denominator, our common background gives us a broad basis for a united, dynamic philosophy of American democratic life. This philosophy must take as its major premise the religious principle of the Fatherhood of God, and the worth and dignity of Man. It must uncompromisingly oppose any effort at deification of the state, or the suppression of individual liberty and sense of moral responsibility."

During the coming year the Conference on Science, Philosophy and Religion, called by 80 founding members, and attended by about 500 persons, will endeavor to obtain cooperation from all the leaders of science, philosophy and religion who agree with its fundamental principles for promoting the democratic way of life.

Scientists Favor Naturalism

The conference made it evident that there is a dividing line drawn on the question of supernaturalism. (Turn to page 188)



CONFEREES

Dr. William E. Ritter, biologist and honorary president of Science Service, (left) is here shown chatting between sessions of the Conference on Science, Philosophy and Religion with Prof. Louis Finkelstein, president of the host institution, the Jewish Theological Seminary of America.

From Page 180

The majority of the scientists are on the naturalistic side of the line. For them God is a non-personal deity, such as Prof. Albert Einstein favors in his paper (See page 181). What others call God is to them The Great Unknown, still unexplained by sensory research.

The majority of the philosophers and the theologians hold that there is a realm beyond nature, the supernatural, the property of metaphysics and religion. To the theologians of orthodox faiths there is a personal God, to be prayed to. The philosophers, or rather the metaphysicians, hold, in typical cases, that what they call truths of philosophy are "superior" to the truths of science of sensory experimental derivation which they consider "inferior" of necessity.

This is no new difference. It is as old as the differences between Aristotle and Plato.

This difference has implications in the present world situation, although the authoritarian Church may be aligned with the scientists in opposing the Nazi regime that has set up another religion and flouted or suppressed science.

Scientists Open-Minded

Philosophers and theologians who claim the ultimate truth as their prerogative have difficulty in understanding and appreciating the willingness of scientists to change their minds in the face of new and changing knowledge.

Cognizant of these time-honored differ-

ences, focused anew, the speakers at the natural sciences session of the Conference on Science, Philosophy and Religion drew up a statement setting forth their understanding of science's relations to human reality and to democracy. This statement was adhered to by Dr. William E. Ritter of the University of California, Dr. Philipp Frank of Harvard, Dr. C. P. Haskins of Union College, Massachusetts Institute of Technology and Haskins Laboratories, Dr. Harold D. Lasswell of the Washington School of Psychiatry and Dr. William F. Albright of the Johns Hopkins University. The statement follows:

"The speakers in the field of natural science agree that the rational empiricism through which current science has achieved its present status is prerequisite to the future development of natural science, so far as we know. By rational empiricism they mean the method of reasoning based entirely on data which are perceived by the senses and the consequent reasoning which leads to conclusions verifiable by the senses.

"The speakers do not agree about the limitations of the method of rational empiricism. Some hold that it may be extended to cover all human reality; others that it may not be so extended.

"The ideals of scientific research coincide more closely with those of a democracy than those of any other form of society. By the proper application of scientific method, science can provide knowledge of great value for the protection and realization of democracy."

Makes Democracy Work

Science was hailed as a means of making democracy work in four addresses by leading scientists.

To religion and philosophy, science indicated its willingness to lend its successful method and attitude in order that some of the most pressing problems of the world may be solved.

A new science of democracy that will utilize scientific methods to solve the many social problems that result from technical changes was proposed by Dr. Harold D. Lasswell of the Washington School of Psychiatry.

Religion was defined by Dr. William E. Ritter, veteran University of California biologist and honorary president of Science Service, as a sensory-ideational response to nature when nature is accepted in its seemingly infinite wholeness as constituted of its seemingly infinite number and variety of parts.

The scientific method of thought was recommended by Prof. Philipp Frank of

Harvard as a defense against totalitarianism because there is something in the thought of the scientist that makes him capable of particular resistance against regimented thinking.

Training in scientific work and thought for all American youth to give them a common and fundamentally democratic viewpoint was suggested by Dr. C. P. Haskins, of Union College, the Massachusetts Institute of Technology and the Haskins Laboratories, as a means of providing the beneficial elements in regimented military training shorn of dire implications of such training under the dictatorships.

"Students of physics and mathematics are least susceptible to the propaganda of the dictators, while the most uncritical adherents of totalitarianism are among the students of the engineering sciences," Dr. Frank told the Conference. "The engineer and the physicist are acquainted with the same facts, but the technical man always must consider the immediate application of his knowledge. His desire to maintain the economic structure which is favorable to technical activity makes him peculiarly susceptible to any ideology which seems to maintain that structure."

One of the chief characteristics of the scientific attitude is its refusal to be taken in by mere symbols, Dr. Frank explained. The general propositions may sound ever so beautiful and may be expressed in mathematical formulae, but for science they are only to be judged by the results of their use. If a principle brings suffering to humanity then, Dr. Frank contended, it must be a false principle and its falsity can be recognized through this suffering. Scientific training is a protection against following principles merely because they sound important and right.

Dr. Haskins told the Conference that

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scientific philosophy dictates a method of thinking which is definite and essentially alike among large groups of highly intellectual individuals, and it proposes a rigidity of discipline and offers a set of tangible standards of achievement which greatly reduce the natural variability in methods of work of good minds. The subject-matter of the thought may be various, but it is important to observe that this makes little difference.

"This quality of scientific thought may well show the path to both religion and philosophy," Dr. Haskins said. "Religion, like science, is primarily an attitude and a method, but of feeling, rather than thought. Philosophy is a method for the erection of mental structures from given mental timber. The tasks of both in achieving unity are less definable, more sweeping, and more difficult than those of science, which may well serve as object-lesson. For it is much more difficult to unify feeling than thought on the one hand, and on the other, the structures built by philosophy must vary tremendously with the nature of the timber available, which philosophy offers no way of standardizing. Science, to the contrary, deals with definable thoughts on the one hand, and on the other, can check its basic building materials against a physical world which offers constant if arbitrary standards."

Naturalness and Unity

Dr. Ritter made the point that "man is a speaking, esthetic, religious, thinking, political, economic, moral and idealizing animal more than any of the lower animals" and recalled that Darwin's great work of developing the theory of evolution made clear the naturalness and unity of the living world.

Discussing the relation of science and religion, Dr. Ritter explained that Spinoza's identification of nature with God rules out exactly the aspect of nature with which Darwin produced his theory

of evolution. Dr. Ritter proposed a combination of Spinoza's doctrine and the whole Darwinian conception. This would leave no gap between nature of modern science and the vague conceptions of supernaturalistic existence that all ages and races of mankind have been aiming at under almost countless names.

The new science of democracy proposed by Dr. Lasswell would be concerned, for example, with the waste of man power in the democracies. There is the problem of transferring old resources, material and human, with a minimum of waste and of offense to human dignity. The social and economic status that is now referred to by the expression "the unemployed" should be abolished, with its implication of social uselessness. Man needs more than job security, Dr. Lasswell said. He needs security on a respected job.

"A science of democracy could provide the experience necessary in a world crisis to integrate the need of strength

in directing modern technical warfare, with the need of preserving democratic vitality," Dr. Lasswell continued. "Wise policy is guided by experience, and a science of democracy can provide for the proper application of the fruits of experience, since the full relevance of experience can be distilled when it is patiently observed, recorded, and examined.

"A science of democracy would not inhibit the total growth of science, but would be part of the total enterprise of science, concerned with the totality of human relations, with special reference to the processes that prejudice the attainment, and the perpetuation, of a democratic society. It would be devoted to the timing of knowledge, to the timely application of the available methods and findings of science to the end of realizing democracy in life. Upon a science of democracy depends the fullest realization of both democracy and science."

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HERPETOLOGY

Spitting Cobras' Fangs Specialized for Jets

Serpents in Zoo, Provoked to Eject Venom, Projected It So Forcibly It Audibly Struck Glass Five Feet Off

WEAPONS useful in either peace or war are the possession of three species of cobra, Charles M. Bogert of the American Museum of Natural History stated in a paper presented before the meeting of the American Society of Ichthyologists and Herpetologists in Toronto.

The tip openings of the fangs in most venomous snakes are directed downward, Mr. Bogert said. However, in the three "spitting" cobras, the openings are on the front side of the fang, near the tip,

so that a jet of venom can be thrown straight forward, presumably at the face of a threatening enemy. This, however, does not interfere with the use of the fangs for their normal purpose, which is to catch prey, at the same time paralyzing it with an injection of poison.

Mr. Bogert demonstrated the operation of these specialized fangs experimentally. He used museum specimens, carefully cleaned and attached to a hypodermic syringe. When pressure was applied, a jet of water was thrown forward from the tip openings. Cobras of the "spitting" species, in glass-fronted cages in the zoo, were also provoked to throw their venom. They were able to project it so forcibly and in such quantity that it was heard to strike the glass plate at a distance of five feet.

There are three known species of "spitting" cobras, two in Africa and one in Asia.

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A government biologist has listed 200,000 different local names given to *birds* of the United States.

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