

GENERAL SCIENCE

Can Civilization Survive Another World War?

Scientists Writing or Speaking Before the Guns Boomed Expressed Pessimism; Fear Progress May Be Doomed

By WATSON DAVIS

WITH a major war raging, the great question before the world is:

"Can civilization survive another world war?"

Can civilization's brain, which is its science and accumulated knowledge, remain essentially unimpaired and capable of carrying on? Will civilization's body, composed of the millions of men, women and children in the world, escape irremediable wounds that would be visited upon future generations?

The great scientific minds have pondered these questions as the stage for the second Great War was being set with bombs, guns, black-outs, flying death and distorted mentalities. Uninfluenced by the actual beginnings of hostilities, scientists in various fields have attempted to predict what war in the frightful modern manner would mean to the better way of living on earth fashioned during the long centuries of men's evolution up from the beast.

Frank pessimism rules these opinions of scientific leaders.

"The peoples of all countries, including the dictatorships, are coming more and more to the realization that another war can bring only death and destruction to everybody—the end of civilization, not the world domination which the demagogic leader promises," said Dr. Robert Andrews Millikan, American Nobel in physics.

Another Nobel, Dr. Harold C. Urey, Columbia University chemist, has said that "chemistry can and perhaps will destroy our European civilization."

Mass Suicide

Man in his blind march to possible destruction has been compared to the little lemmings, the Arctic animals which commit mass suicide by millions when the ocean interferes with their mass movement.

"One scarcely envisages mankind marching to a watery grave just behind a horde of frantic lemmings," Dr. Raymond Pearl, the Johns Hopkins Uni-

versity biologist, has remarked, adding: "But does anyone find it difficult to conceive of man marching off in the not too distant future to a war? Or to doubt that once well started that war will entangle in its meshes the major portion before it is finished?"

That brilliant British biologist, Prof. J. B. S. Haldane, wrote over a decade ago in "Possible Worlds" that even if man does not perish, there is no reason why civilization should not do so.

Complicated Invention

"All civilization goes back to a common source less than 10,000 years ago, very probably in Egypt," said Prof. Haldane. "It is a highly complicated invention which has probably been made only once. If it perished it might never be made again. . . . A modern war followed by revolutions might destroy it all over the planet. If the weapons are as much improved in the next century as in the last, this will probably happen.

"But unless atomic energy can be tapped . . . we know that it will never be possible to box up very much more rapidly available energy in a given place, than we can already box up in a high explosive shell, nor has any vapour much more poisonous than 'mustard gas' been discovered in the forty-one years that have elapsed since that substance was first produced. I think therefore that the odds are slightly against a catastrophic end of civilization."

Dr. Lancelot Hogben, British scientist and author, wrote only last year:

"If the chemist devotes his ingenuity to making gases and sprays to blind and suffocate the inhabitants of great cities, and bacteriologists consent to spread plagues to infect the reservoirs and stock of enemy populations, the survivors of our civilization will declare that our science has exacted too high a price for its benefits. Even if science and civilization do not perish together, both will suffer a heavy setback for many years to come."

The possibility that the United States is the only hope for civilization's survival was expressed as long ago as 1931

by Bertrand Russell in his book, "The Scientific Outlook."

"It may be that a scientific civilization will be found essentially unstable," he wrote then. "There are several reasons which make this a not unpalatable view. The most obvious of these is war. It happens that recent innovations in the art of war have increased the power of the attack much more than the power of defence, and there seems no likelihood that the arts of defence will be able to recover the lost ground before the next great war."

"There are those who say that in the next great war nobody will be allowed to be neutral. If that is so, the only hope for the survival of civilization is that some one nation will be sufficiently remote from the theatre of operations and sufficiently strong to emerge with its social structure undestroyed. The United States has the best chance of occupying this position."

While others shudder at war's destruction of human life and cities, the psychologists and psychiatrists point to more hidden damage which may be even more serious. Not long ago the Society for the Psychological Study of Social Issues in a statement declared:

"The damages of war are tremendous. We, as psychologists, note particularly the great increase in numbers of mental breakdowns, the ruin of many personalities through shocks and strains, the irremediable harm done to those who are mangled and disfigured, the devastation of economic depressions which follow war—these alone are sufficient, we think, to overbalance any conceivable benefits from war."

Loss of Human Values

"But we must add to these the great loss of human values, the destruction of our moral standards, which are an inevitable part of war. We spend years teaching our children the sanctity of human life, the rights of other people to freedom of action, possession of property, etc. We punish violators severely. But, as soon as war is declared, we tell young men to kill, maim and hurt other men; to destroy homes and lay waste cities; to bomb and gas women and children. Such actions inevitably leave their marks on the characters of these men. Indeed, we know from the post-war years that such damage to personalities was done, and that it can never be completely undone."

Dr. William A. White, pioneer psychiatrist and for many years superintendent of St. Elizabeth's Hospital in

Washington, said just a month before he died in 1937:

"Nothing activates the aggressive instinct more seriously than does war. An orgy of killing lets it loose and it is a good many years before it is ever chained up again."

Many scientists feel that they must take an active part in everyday affairs to protect civilization against the dangers of war. They will agree with Dr. Franklin Fearing, University of California psychologist, who said that psychologists "must step in to control and suppress war propaganda or they will be destroyed. Psychologists cannot afford to leave political and social matters to the non-scientists. The psychologist who must dance to the tune called by politician or industrialist is no more than a serf. That is the condition of many scientists even today."

Scientists are often blamed for their part in making war more horrible as it is made more scientific. New knowledge and inventions add to the frightfulness and destruction of war. To these charges the reply is that war's utilization is a mere accidental by-product of scientific research and invention. The scientist alone can not be expected to control the misuse of his gifts to civilization any more than the cutlery manufacturer can prevent a murder being committed with a butcher knife he makes. But intelligent mankind should be able to prevent civilization from committing suicide with the butcher knife of scientific advancement.

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AGRICULTURE

Wilt-Resistant Alfalfas To Be Ready in 1942

WILT-RESISTANT alfalfa varieties, developed under a long-range breeding program by the U. S. Department of Agriculture, will be available to limited distribution in 1942.

The new alfalfas are being produced by crossing resistant strains, brought from Turkistan by H. L. Westover, with varieties already established in the United States.

Alfalfa wilt began to become a serious problem in this country about 15 years ago. Up to that time, a good stand of alfalfa could be counted on to last from 6 to 12 years without reseeding, but lately the wilt organism has been wiping out alfalfa fields in from 2 to 4 years.

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PRIMITIVE

Man rose from the cave, and the new war promises to send him back there, perhaps figuratively in loss of culture as well as literally in his air raid shelters. Psychiatrists point out that the man in the gas mask has aggressive and destructive impulses unleashed by war that are as primitive and uncontrollable as those of his stone age forebears. The photograph of the cave man is of an exhibit in the Field Museum of Natural History, Chicago.

PHYSICS

Beams Of Neutrons Produced By Hole Through Water Wall

Discovery Expected To Be of Great Aid in Study of Transmutation of Matter and Artificial Disintegration

BEAMS of piercing neutron particles are now being produced at the department of physics at Cornell University in an experimental advance which will be of great aid to all scientists studying the transmutation of matter, artificial disintegration, and other tricks of the atom smashers' art.

Prof. R. F. Bacher of Cornell and Dr. D. C. Swanson, now at the University of Florida, report in the *Physical Review* (Sept. 1) that by placing a thick wall of water around a source of neutrons and then putting a "hole" through the water by means of a tube they have achieved a distinct collimation of their neutrons into a beam.

Neutrons, because they lack electrical charge, easily penetrate into any atoms with which they come in contact. Previous attempts to produce a beam of them have only been partially successful. And

yet such beams have been greatly needed to improve the geometry of many nuclear experiments in which scattering occurs and cross sections of atoms for neutrons of different energies can be determined.

Many of the experiments in nuclear physics require well defined beams of particles just as spectroscopy requires well defined beams of light rays. Much of the early work in nuclear physics, for it has really been in quite a primitive stage of development, was done in experiments that in spectroscopy would have been equivalent to working with very coarse slits in a spectrograph.

The new beam technique of Prof. Bacher and Dr. Swanson does not yet attain perfect results in producing a true, collimated beam but it does produce much better results than hitherto.

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