

cling armies was due less to Hindenburg than to Haber, who discovered how to extract nitrogen for explosives from the air that blew over the blockade.

"War has been virtually a branch of applied chemistry ever since the invention of gun powder, or even since the forging of the first steel sword from the ore. The question now pending is, therefore, not the elimination of chemical warfare but its limitation to the older and less effective forms.

"The aversion against 'villainous saltpeter', the stink-pot of the Malay pirates, and the Greek fire which saved Constantinople from the Mohammedans, is at bottom the same as the abhorrence excited by submarines, airplane bombing and poison gas in the late war. It is essentially a reaction against war itself. The modern weapons of warfare are more efficient but not more deadly or more cruel than the old. Cain killed Abel as dead as any man has been killed since, and no more ingenious means of inflicting suffering have been invented than those employed by Nebuchadnezzar in his campaigns. Further advance of the art of war in this direction is forever impossible.

"The methods of warfare changed so rapidly during the late war, that if the United States had been completely prepared in 1914 its equipment would have been out of date when the United States entered in 1917. A large part of the thirty-five thousand articles necessary to equip a modern army was of a type unknown when the Great War began. For war had for the first time in history entered the third dimension with airplanes above the surface of the ground, and submarines below the surface of the water.

"Now we are given to understand that the War Department knows where to go to get each item of 700,000 components of the military equipment needed, and arrangements are being made with 20,000 manufacturing plants of the country to supply them according to specifications. Against preparedness of such a sort even a pacifist cannot object.

EVOLUTION SHOULD BE TAUGHT TO ALL STUDENTS, SAYS BOTANIST

Instruction in evolution for all college students is advocated in a recent number of Science by Dr. John M. Coulter, formerly head of the department of botany at the University of Chicago and now associated with the Boyce Thompson Institute for Plant Research at Yonkers.

There are at least three important reasons why evolution should be regarded as a necessary part of college training, Dr. Coulter says.

"It has revolutionized modern thought. Every subject today is being attacked on the basis of its evolution. Not only are inorganic and organic evolution being considered, but also the evolution of language, of literature, of society, of government, of religion. In other words, it is a point of view which represents the atmosphere of modern investigation in every field.

"It is persistently misunderstood. From the press, the lecture platform and even the pulpit, one frequently hears or reads amazing statements in reference to

organic evolution. If it were made an essential feature of student training, there would be developed a propaganda of information instead of misinformation.

"It has revolutionized agriculture. The practical handling of plants and animals, in the way of improving old forms and securing new ones, was made possible and definite when the laws of inheritance began to be uncovered through experimental work in evolution."

The idea of evolution is no new thing under the sun, Dr. Coulter declares. "It is as old as our record of men's thought," he says, "for all the old mythologies are full of it. No modern man, therefore, is responsible for the idea, although it is a common misconception to load this responsibility upon certain distinguished modern students of evolution. For example, the name of Darwin is so conspicuous in connection with evolution that many seem to think that Darwinism and evolution are synonymous."

Dr. Coulter divides the history of evolutionary thought into three periods, comparing them with the ancient, medieval and modern epochs in the development of civilization. The first, or ancient period is by far the longest, occupying all known time until a little over a century and a quarter ago. During this time men merely speculated about the possibility of the process - it was a part of philosophy rather than of actual, objective science.

The "medieval" period was one of observation of natural phenomena, and deductions from the observations, without much testing of the conclusions in the laboratory or garden. This period began in 1790, with the work of St. Hilaire, Goethe, and Erasmus Darwin, the grandfather of Charles Darwin. It virtually corresponded with the nineteenth century, and the present great names of evolutionary theory belong to it, including Charles Darwin himself.

The "modern" period, in Dr. Coulter's classification, has only begun, but it has already borne very important fruits in the fields of plant and animal breeding and even of human eugenics. Dr. Coulter is of the opinion that the future food supply of the world's increasing population is dependent on an intelligent appreciation and application of the data made available by studies of evolution.

As for its status as a theoretical science, Dr. Coulter states that it is taken as a matter of course by scientists everywhere. What differences of opinion exist are only on questions of detail. He says:

"The present status of evolution as a body of doctrine may be said to be in a state of flux, out of which the truth will emerge eventually. Any meeting of biologists at which evolution is discussed discloses considerable diversity of opinion, not as to the fact of evolution, but as to some attempt to explain the process."

Farm wages, which figure so prominently in production costs, were higher in 1925 than they have been in any year since 1920.
