

cation of animals. The art of harnessing the energy of coal and oil in engines created the Power Age, the next great cultural advance.

Technological activity is stimulated or repressed by the existing social system, Professor White declares. Using the art of agriculture as an example, he points out that from 2000 B.C. to 1800 A.D. there was no fundamental improvement. The reason for such a cultural lag, even though the urge for security and efficiency was as great then as now, was that the social system obstructed technological advance, Professor White states.

To obtain more wealth, he explains, the ruling class merely increased taxes, rents or other levies upon the producers of wealth. If the masses produced more by increasing efficiency, it would only mean more for the tax-gatherers of the ruling class. Lack of incentive inherent

in the social system thus discouraged agricultural improvement for almost 4,000 years.

Professor White then discusses the inadequacy of our social system for our technological system: "At the present time our technology has outgrown our social system; the great forces of the Power Age are straining within the confines of institutions that were fashioned in stage coach days. The great wars of the Twentieth Century are expressions of this cultural conflict, and are chiefly significant for one reason: they are the means by which an old order is to be scrapped and a new one brought into being."

While not specifically describing social changes which may take place, Professor White predicts that they will be as profound and far-reaching as those effected by World War I, if not greater.

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vaccine, made from living, attenuated tubercle bacilli.

The suffocation of the tuberculosis germs must be done under carefully controlled conditions which include an absence of oxygen, presence of moisture and a temperature high enough to keep the germs' metabolism active. Under these conditions, the germs die partly as a result of self-sabotage. By continuing their living processes they deprive themselves of oxygen as they breathe, and since no more is supplied them, they suffocate.

Destruction of the germs by this method, Dr. Potter believes, is less likely than other methods to reduce or destroy the tuberculosis antigen. Antigen stimulates the body's defensive mechanism so that, when vaccination is successful, the body defenses are ever on guard in suitable strength to overcome fresh invasion of the germs that produce the antigen. This is the principle of vaccination in general. In the case of tuberculosis, the problem has been to find a way of getting enough antigen into the body to develop immunity without giving so much or giving it in such form, for example in living germs, that it will cause tuberculosis.

In his latest research, reported to the Society for Experimental Biology and Medicine, Dr. Potter used a vaccine from asphyxiated human-type tuberculosis germs to protect rabbits. Of 33 vaccinated rabbits, only four showed minimal lesions of tuberculosis when large doses of virulent germs were injected into their veins after the vaccination. Of 33 unvaccinated rabbits, 25, including three that died, showed frequent severe lesions.

Science News Letter, December 25, 1943

MEDICINE

Vaccine Against TB

► INCREASED possibility of preventing tuberculosis by vaccination is seen in research by Dr. Truman Squire Potter, of the Laboratory of Preventive Medicine of the University of Chicago, according to an announcement from the University.

The vaccine which Dr. Potter believes will be effective, although it has not yet been tried on human beings, is made

from tuberculosis germs that are killed by suffocating them. Vaccines against tuberculosis have in the past been made either from living but weakened strains of the germs or from germs that were killed by heat or chemicals. None of these has been generally accepted as safe and effective, although promising results have been reported with B.C.G.



CHRISTMAS PATTERN—The reason for the popular belief that the red leaves of the poinsettia plant compose its flower is clearly evidenced in this photograph, taken by Fremont Davis, Science Service staff photographer, at the United States Botanic Garden in Washington, D. C.

BOTANY

Laymen Often Mistaken About Poinsettia Flowers

See Front Cover

► WHAT APPEAR to be three-horned, grotesque creatures in the picture taken by Fremont Davis on the cover of this SCIENCE NEWS LETTER are actually the true flowers of a poinsettia plant. These naked pistillate and staminate flowers are clustered near the center of the whorl of brightly colored leaves which are popularly considered to be the poinsettia flower. (See SNL, Dec. 18) The cup-shaped receptacle on which the flowers are situated secretes a sticky substance that tastes sweet.