

MEDICINE

Starvation Study Made

Twenty-two starving Jewish doctors made an objective study on the effects of hunger on the men, women and children confined in the Nazis' Warsaw Ghetto.

► A SCIENTIFIC study of hunger, made by physicians who, like all their patients, were starving to death, has just been published.

The authors of this book, "unique in scientific history," were 22 Jewish physicians confined to the Ghetto established by the Nazis in Warsaw in 1940. The last survivor of this group of doctors, Dr. Emil Apfelbaum, died in January, 1946, as a result of his experiences. Originally written by hand in Yiddish on official German Army stationery, the scientific manuscript has been translated into French and published in Warsaw by the American Joint Distribution Committee.

The story of the 500,000 men, women and children completely isolated in Warsaw Ghetto, with no soap, no fuel, no gas or electricity, often no water and no more than 800 calories a day of food, has been told. So has the story of their final armed resistance, their 42-day battle against the German Army, which ended when the last living Ghetto fighter wrapped himself in his flag and threw himself from the roof of the last standing building into the flames below.

Practically unknown to most Americans, including scientists, is the story of the co-operative medical research on starvation carried out by the 22 Jewish physicians.

"The complete scientific detachment of the authors of these studies from their own fate, and from the infernal background and surroundings of their studies, is almost incredible," declares Dr. Martin Gumpert, physician and author of New York, in his account in *THE AMERICAN SCHOLAR*.

In February, 1942, these physicians, recognizing the opportunity to add to scientific knowledge of the effect of starvation on the human body, began their practical work. Many essential scientific instruments were lacking. Those they had were bought outside the Ghetto and smuggled in at the risk of death. The doctors met monthly to discuss their observations. They "worked feverishly without a day's interruption, and in the months at their disposal accumulated a quantity of experiments and observations which would have taken many years to collect under normal conditions," Dr. Gumpert states.

The studies were made on children from six to 12 years and young adults from 20 to 40 years. These ages were chosen so that the biochemical changes of infancy, adolescence and advancing age would not affect the studies of the effects of starvation by itself.

"There is no mention of Hitler in the 262 pages of this work," Dr. Gumpert states. "The word 'Nazi' does not appear. There is no discussion of politics, no note of self-pity."

"The mental changes and attitudes of the children are among the earliest symptoms of hunger: their apathy, which increases with the progress of starvation," is the written observation of one of the 22 physicians, Dr. A. Braude-Heller.

"The organism which is destroyed by prolonged hunger is like a candle which burns out: life disappears gradually without a visible shock to the naked eye," reported Dr. Apfelbaum.

"The hunger sufferer grows lazy. He is a miser who avariciously guards what is left to him—that is, his last physical reserves. His motions are calculated, his slowness, sometimes even the complete lack of motion for several days, are very characteristic; his tendency to remain in a lying position, the somnolence, the silence, the sluggishness of the reflexes, the mental drowsiness: this is the customary picture of cachexia (marked ill health and malnutrition) due to hunger," Dr. Apfelbaum reported.

"Our study," he stated in his section of the report, "has aimed at an understanding of the mechanism which regulates this economizing of energy. The results should throw some light on the pathology (diseased state) of hunger. The material that was at our disposal cannot be compared with any thus far known, because of its magnitude and the advanced degree of starvation."

The orderly, scientific study of starvation continued until at last it was obvious that the manuscript must be removed from the Ghetto while there was still time. It was delivered to Dr. Witold Orlowski of the University of Warsaw.

Science News Letter, July 2, 1949

ENGINEERING

Discharge Jumps 50 Feet In New High-Voltage Lab

► MAN-MADE "lightning" of 15,000,000 volts jumps 50 feet between two huge condensers in the new high-voltage laboratory of General Electric, in Pittsfield, Mass. It is said to be the greatest man-made high-voltage discharge in the world.

General Electric has carried out research in high voltages for many years, most of



MAN-MADE LIGHTNING — A streak of flame, then complete vaporization is the fate of a strand of copper wire charged with 5,000,000 volts of electric power in the new GE High Voltage Laboratory.

the work having been done so far in the old laboratory there or atop the Empire State Building in New York City. At the latter site, natural lightning was recorded during summer periods by means of photography and automatic recording instruments that provide data of value in determining voltage and other matters.

The new laboratory marks a forward step in the entire field of high-voltage research. The objective behind such research is to find the best means of eliminating the hazards of lightning in electric service, and to permit the transmission of steadily higher and higher voltages.

Second only to the 15,000,000-volt discharge at the laboratory is a three-phase arc. In demonstrating this arc, flames caused by tremendous high voltage climb high toward the ceiling. Planned is a series of demonstrations to show the effects of lightning on a scale model of a city street. In it man-made "lightning" will strike the buildings, first protected with lightning arresters and similar equipment, and then without such protection. Model airplanes will be used also to demonstrate the effect of lightning upon modern all-metal aircraft as distinguished from fabric covered planes.

Science News Letter, July 2, 1949

The *sherardizing method* of coating steel with zinc, employed with such objects as nuts, screws and bolt, consists of putting the articles and zinc dust in a revolving container with heat applied; the contact and heat do the coating.