

## GENERAL SCIENCE

# Draft Test Tough

Although the AFQT is difficult if one finishes in the 45 minutes allowed, it is easy to get enough correct answers to be accepted by the Army.

By MARJORIE VAN DE WATER

► THE induction test given to drafted men is plenty tough. I know because I took it. On the other hand, it would be easy to get the small score required to pass it and get into the Army.

The test I took is the AFQT, Armed Forces Qualification Test, the source of so much controversy recently. Selective Service Director Lewis B. Hershey says that too many men are flunking it. The Army insists that it is no more difficult than is necessary to keep out of the Army men who are so stupid that they would be more dangerous to the Army than the enemy. The test is designed to pass all but the lowest 13% of men drafted.

First you work out two pages of samples. These give you a chance to learn how to mark your answer sheet so that it can be scored by machine, and how to go about solving the problems. These sample questions are answered for you, or you are given the answers by the examiner and have a chance to rub out your answer and put the right one down.

Then, at the signal, you turn the page and start in. You meet a group of questions on the meaning of words. In each case you have to make a choice of one out of four words that is nearest in meaning to an underlined word in a sentence. This was as easy as apple pie for me.

Then came a group of arithmetic questions. These were easy too.

Next were a group of patterns. Here you had to look at a design and choose one out of four drawings that could be folded up to look like the figure given at the left, that could be unfolded to form it, or that could be turned around to match it.

This job was tough for me. The psychologists say that ability on this test is a good index of ability at mechanical work such as that required in the Army.

I dare say that most of the men tested would breeze through these patterns and might have more trouble than I did with the word tests. But my impression was that even if I had been trying to fail them, the chances are I might have passed by accident. I really had to puzzle. In the whole test I missed seven questions and six of them were these patterns.

After a few of these questions on patterns you come to another group of word tests and then another group of arithmetic problems and another set of patterns. This is followed by other groups of these three types of question, each group more diffi-

cult than the preceding in an ever ascending spiral of toughness. If you finish the whole test in the 45 minutes allowed you really reach some brain busters.

But, on the other hand, it is hard to see how any school boy would fail to get enough answers correct to get the score required to be acceptable in the Army. I answered more than two and a half times as many questions correctly as are necessary to pass.

All the representatives of the press who took the test with me received scores that would make them eligible for Officers Candidate School.

I am not going to Officers Candidate School, but, except for the accident of sex and age, I might be on my way.

While we of the press were taking the test, some drafted men who had failed were being interviewed. This is regular procedure to guard against goldbricking. A few of the men were found, on the basis of their answers in the interview, to be clearly malingering on the test. They are going into the Army. A few others were just as clearly incapable of passing. One man left the Army officer in doubt as to whether he was dumb or pretending to be. He was sent back to his local draft board for investigation.

Science News Letter, October 28, 1950

## NUTRITION

# Beriberi Threat Cut

► FOR 1,000,000,000 people of the world's ricelands, a scientific experiment on Bataan Peninsula in the Philippines has offered new hope that the white, polished rice of half the world's diet will not always bring with it the crippling, killing disease called beriberi.

In two years, doctors of the Philippine Government, aided by the U. S. Public Health Service and a private U. S. foundation, the Williams-Waterman Fund, have saved an estimated 220 lives and cut the beriberi mortality rate to zero in at least

one area, by widespread distribution of vitamin enriched rice.

Nutrition specialists of the United Nations' Food and Agriculture Organization in Washington, although not involved directly in the two-year-old program, said the figures and results released by the Williams-Waterman Fund were "very impressive."

They said nutritional deficiencies of the Far East's rice-based diet have long been considered a top-ranking item on the UN's list of world problems. This year in Ran-



**RADIOACTIVE DATING**—Charcoal from three hearths (see arrow in right background) dated by the radiocarbon calendar were found to be about 5,000 years old. Taken from the Lamoka Lake site in New York State, these charcoal samples show that fishing and hunting Indians were living in New York State about 3000 B.C., prior to the New Stone Age of western Europe and about the time the Great Pyramids on the Nile were erected.

goon, the Nutrition Committee for South and East Asia recommended that a team of international experts be sent to study the startling results of the experiment on Bataan.

Before it is milled and polished, rice has a coating of bran and germ which contains most of the grain's vitamin and mineral richness. But most Asiatic peoples will not eat unmilled rice. It is a mark of social prestige to eat rice which is white and clean of its natural coat. In addition, rice which has been milled can be stored longer without spoilage.

In parts of India, parboiled rice is eaten, and the beriberi mortality is low. During World War II in Japan, a government order cut down the amount of milling which rice could be given, and with the resultant increase in nutritional value of the rice, beriberi went down.

The third method of fighting rice malnutrition is to "enrich" white rice artificially, by adding a coating of thiamine (vitamin B<sub>1</sub>), niacin and iron. This process, developed by the Hoffmann La Roche chemical

corporation in this country, is the basis of the experiment on Bataan.

Dr. Robert R. Williams, a chemist world-famed for his synthesis of vitamin B<sub>1</sub> in the 1930's, got his first lead by observing dramatic beriberi cures from treatment with extracts of ordinary rice bran in the Philippines in 1910. It was the proceeds from the thiamine patent which set up the Williams-Waterman Fund, and it was this fund which initiated the Bataan experiment in 1948.

In an area which had the highest beriberi mortality in the Far East, the conversion to vitamin-enriched rice for 65,000 people dropped the mortality rate 67% in the first year. In a neighboring control area, the rate went up slightly.

Dr. Williams is now on his way around the world with the statistics from the experiment. His aim is to visit each of the major rice-eating nations, showing them what vitamin enrichment has done—and can do—in combatting a major disease of half the world's peoples.

Science News Letter, October 28, 1950

#### ENTOMOLOGY

## Tough Insects Being Bred

► CANADIAN scientists in a Dominion laboratory in Belleville, Ont., are trying to breed tough new strains of the world's "good" insects—insects which benefit man and can laugh at DDT.

What this could mean to the farmer is startling. He could release super honey bees to pollinate his crops or super-parasites to attack destructive caterpillars. At the same time he could spray his fields with insecticides, knowing the harmful insects would be killed but not the friendly insects.

Resistance to chemical poisons is not a new thing in the insect world. Only a short time after DDT was first used in World War II science began reporting mosquitos, flies and other pests which seemed immune to it.

The possibility of breeding this resistance into beneficial insects has already brought

new knowledge of DDT and benzene hexachloride, another insecticide in the same chemical family.

Dr. D. P. Pielou of the Dominion Parasite Laboratory describes in the journal *SCIENCE* (Oct. 6) how crystals of these chemicals are laid on glass plates in extremely thin films used for the experiments.

The pure DDT crystals, left as a solution evaporates, appear under the microscopes like pine needles against a bank of snow. Benzene hexachloride crystals form a lattice of horizontals and verticals.

These kaleidoscopes of poison crystals enable the scientists to give ether-drugged insects precise doses of the insecticides. If the experiments are successful, they may some day produce "good" insects with iron constitutions as good as gas masks.

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#### GENERAL SCIENCE

## Price of World Suicide

► THE PRICE of world suicide is about \$40,000,000,000 and the work of a few years by a major power. And even then the money and time might be wasted.

This is the conclusion of Dr. James R. Arnold, member of the staff of the Institute for Nuclear Studies at the University of Chicago, who examined a recent statement by Dr. Leo Szilard, the A-bomb scientist, that a hydrogen bomb could be built which would wipe human life off the earth with radioactivity. Dr. Arnold's conclusions appear in the *BULLETIN OF THE ATOMIC SCIENTISTS* (Oct.).

Dr. Szilard declared, in a broadcast last February, that a huge hydrogen bomb with a casing of cobalt could produce trillions of fine particles of radioactive dust. This dust, he said, if spread by the winds evenly over the face of the earth, could kill every human being.

Dr. Arnold concludes that it would take a bomb ranging in size from one-quarter as big as the 40,000-ton battleship Missouri to two-and-a-half times the size of the Big Mo to do the job. Even then, he says, it is a question whether the neutrons produced by the fusion of the heavy hydrogen in the

bomb would be absorbed by the cobalt so as to give rise to a dangerous radioactive isotope.

However, if that happened, he goes on, Dr. Szilard's assumption that the cobalt dust could be effectively distributed around the earth in the atmosphere is incorrect. Dr. Arnold says that the particles could be rained out of the atmosphere, or made harmless by other natural means before they spread evenly.

Dr. Arnold concludes that the world is in no immediate danger. He and Dr. Szilard agree that it would be much harder to build a bomb of the type that would confine its horror to one continent than it would be to build an indiscriminating bomb.

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## On This Week's Cover

► DATING the remains of ancient cultures by means of radioactive carbon is a direct product of the atomic age, and this method has found the sandals shown on this week's cover of *SCIENCE NEWS LETTER* to be the oldest articles associated with man in America. Approximately 9,000 years old, the sandals were woven and worn by the ancient Americans around 7000 B.C., thereby antedating the oldest agricultural village in Iraq, which dates back to 5000 B.C. (See *SNL*, p. 285, this issue and p. 243, Oct. 14, for more on radiocarbon calendar.)

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#### MATHEMATICS-ENGINEERING

## Low-Cost Computer Permits More Use

► LOW-COST electronic computers, costing less than \$5,000 each, are now in use in Seattle in several departments of the Boeing Airplane Company solving aviation dynamic problems in a week that would require a year by older methods.

There are now many types of electronic computers, often called giant brains, in use throughout the nation but most of them are costly and complicated devices that must be used in computing centers. This new type is cheap and simple enough to be used in individual engineering rooms where problems in dynamics are solved. A competent engineer in dynamics can learn to operate it in one day.

The new instrument, nicknamed BEAC for Boeing Electronic Analogue Computer, is a simplified form of a large analogue computer put into service a year or so ago. The parent device solves problems relative to how a proposed plane or missile will behave in the air even before actual construction begins. The BEAC is so simple that it is described as a companion instrument to the slide rule.

Science News Letter, October 28, 1950