

"When the United States entered the First World War in 1917, wide ignorance and indifference, and some antagonism, existed among both civilians and soldiers about her war aims," said Dr. Fryer. "In contrast with the British and French, American soldiers at the front were not sure for what they were fighting. Responding to German propaganda, some mountaineers of the South were convinced that a revolution was necessary to take America out of the war.

"For this reason civilian and army morale work in the United States in 1917-18 was aimed primarily at establishing conviction of evils to be averted in an intolerable situation which would result from an enemy victory.

"This, interestingly enough, is the conviction giving popular support to military activities of the United States in 1941."

But education or propaganda are effective in building morale only when the biological and economic foundations of morale are assured to the people, Dr. Fryer indicated.

"The Republican Army of Spain," he explained by way of example, "finally lost its morale because of one thing, insufficient ammunition, which changed an efficient army into a rabble that catabolized a whole population into France. Propaganda had not affected this morale, cold and hunger had not destroyed it, but the loss of the means of immediate personal defense did just that. The one remaining support for biological adaptation was eliminated."

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ENGINEERING

Turbine Shell Resembles Machine Gun and Mortar

See Front Cover

NOT a new development of science in a combination machine gun and giant mortar, as it would appear, but the upper half of an 80,000-kilowatt turbine shell being built by General Electric Co. for the Duke Power Company in North Carolina, is shown on the front cover of this week's SCIENCE NEWS LETTER. Instead of destructive projectiles, this mammoth machine will hurl kilowatts of useful electricity to keep the wheels of industry turning in grinding out the country's defense program.

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The Bureau of Mines has exploring parties searching for usable deposits of manganese ore in the Appalachian region.

PSYCHOLOGY

When Youngster Pleads for Sweets, He May Need Them

WHEN Mary or Bobby pushes away the nice meat and spinach and pleads tearfully for dessert, mother may be wise if she gives in to the childish demands.

Small humans are like other animals, recent research indicates, in naturally craving the sort of foods they need at the time. When a child is tired and emotionally upset, his digestive apparatus is incapable of caring for the foods of his regular diet. Sugar is easily digested and a quick source of energy for the tired child.

Suspecting that emotional upsets cause the unusual craving for sweets and loss of appetite for more substantial food displayed by small children who have "feeding problems," Dr. Weston A. Bousfield, child psychologist of the University of Connecticut, decided to test out this theory in laboratory experiments.

The humble laboratory rat was selected as subject because Dr. Curt P. Richter, of Johns Hopkins Medical School, and other scientists had already demonstrated that when a rat is given free choice of foods he will pick a diet that is good for him.

Dr. Bousfield's task was to discover whether emotionally roused rats would choose more sweets than usual. In order to keep strict account of the animals' food intake, he kept each one in a cage by itself. Fortunately for the experiment, this "solitary confinement" made ready fighters of the rats so that it was easy to

produce an emotional situation. Whenever two of the rats were brought together, there was pretty sure to be a rousing fight. After the fight, sure enough, the sugar intake was stepped up in relation to the amount of regular dinner eaten.

An interesting sidelight of the experiment was the observation that the rats in "solitary confinement" even before the excitement of the "quarrel" were gradually increasing the amount of sugar they ate.

Dr. Bousfield hesitates to say that those rats living alone become chronically emotional or excitable. Nevertheless, they did fight more readily than rats caged together. Perhaps there may be some significance in the fact that the feeding problems of youngsters often disappear when they are put with others in the nursery school.

These rat experiments in general confirm the findings of nutritionists that if children are given free choice to eat what they want and to go without if they wish, they will generally adapt their diet to their individual physiological needs.

When the child wants candy and refuses his dinner, it is probably a sign that he needs rest and soothing more than he needs food, Dr. Bousfield concludes. A scene at the table only increases his desire for sweets and his distaste for regular diet.

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RADIO

Ocean Cables, Like Radio, Affected By Static

TRANSATLANTIC cables, just like radio circuits, are subject to static interference, J. W. Milnor, of the Western Union Telegraph Company, told members of the American Institute of Electrical Engineers in Philadelphia.

He explained technical details of the apparatus used for sending photographs from England to the United States by cable. Interference becomes especially objectionable, he said, where current varia-

tions are faster than 110 times a second, so slower vibrations are used.

The pictures are scanned by an electric eye in London, which sets up a fluctuating flow of electricity. This varies from the maximum negative current, corresponding to blacks in the original, to the maximum positive current for whites. Intermediate positions, including no current at all, correspond to grays.

Land wires carry the picture signals to

Bristol, where they are boosted at a repeater station, then they go to Penzance, the British terminus of the cable. Under the ocean they travel for 2024 nautical miles to Bay Roberts, Newfoundland, where there is another repeater, feeding them into 1345 miles of cable ending at Rockaway, N. Y. They are again given a boost, and carried over land wires to the receiver in New York City. Here a light, which fluctuates in step with the current, impresses the picture on a photo-

graphic film wrapped around a drum.

Mr. Milnor explained how the electrical waves become distorted by their long passages through the cables. Electrical "shaping networks" are included in the repeater stations to restore the waves to the forms which will give a faithful reproduction of the original picture. The speed of transmission, he said, is 2.2 square inches per minute with 60 lines of the picture to each inch.

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MEDICINE

Army, Navy Go Into Action In War Against Influenza

Navy Laboratory Is Testing Vaccines; Army Planning Defense Against Possible Epidemics in Training Camps

THE ARMY and Navy have gone into action against influenza. The Navy is attacking on the laboratory front, while the Army is preparing for defense against possible epidemics in training camps.

Latest move is the appointment by Surgeon General James C. Magee, U. S. Army, of a board of civilian physicians to investigate influenza and other epidemic diseases in the Army.

This board consists of Dr. Francis Blake, Yale University School of Medicine, chairman; Dr. O. H. Perry Pepper, University of Pennsylvania; Dr. A. R. Dochez, Columbia University; and Dr. Ernest W. Goodpasture, Vanderbilt University. Others probably will be added to this group.

Almost simultaneously, Secretary of the Navy Frank Knox has "called up" Laboratory Research Unit No. 1 of the U. S. Naval Reserve. This unit, organized at the University of California under the direction of Dr. Albert P. Krueger, will concern itself primarily with research and experiments on the influenza virus.

The Navy has plans for other Laboratory Research Units but is not ready yet to announce details about them.

The Army's board is comparable to the "Pneumonia Board" and other special boards organized during the World War in 1918. It will advise the Surgeon General on measures for preventing or controlling epidemic diseases and investigating their causes. In addition to the central board there will be a team of expert scientists and "technicians" who may be called on consultation, and spe-

cial investigative teams who may be sent for temporary duty at military stations for the study and control of epidemics.

First move of Laboratory Research Unit No. 1 of the Naval Reserve will be to test the influenza vaccine developed at the Rockefeller Institute. The value of this vaccine is said still to be unknown. The tests will be made on naval personnel. One-half of the personnel of a ship, for example, will be vaccinated

and the other half left untreated. If the disease appeared among the crew, the worth of the vaccine, it is stated, could then be determined with greater accuracy than might be possible under ordinary civilian conditions.

These studies may yield clues which may help to bring about the production of an even more effective vaccine than that being tested. The present vaccine has been given in large quantities all over the country, but Dr. Krueger stated that it is too early to verify results of these vaccinations and that it may be a year or more before any definite conclusions about the vaccine can be reached.

The work of the Navy Unit will be to isolate the strains of the influenza virus and that of other diseases, and to develop means of curing and control of infections. They will also direct a program for preventing epidemics.

The unit, one of two in the United States, is composed of a lieutenant, seven chief pharmacists, and two pharmacists' mates, according to Navy ratings, in addition to Dr. Krueger. The lieutenant, second in command, is Dr. Robert A. Hicks, of Tucson, Arizona. The remainder are young scientists trained at the University of California.

Headquarters of the unit will remain on the Berkeley campus. Field work will be done with the fleet and throughout the Twelfth Naval District.

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ALOFT

This Navy air leviathan hasn't its wings yet, but already it soars forty feet above the assembly floor with the aid of a power crane. This 20-ton PBM-1 patrol bomber is being manufactured by the Glenn L. Martin Company, who claim to be turning them out at the rate of more than one a week.