

NUTRITION

Feeding the Hungry

Special rations to restore health to the starving peoples of countries now occupied by the axis are being developed for immediate use when countries are set free.

By JANE STAFFORD

➤ **WHATEVER PLANS** for feeding the world in the coming years of peace may be developed, the first part of the job will have to be one of feeding the people in Axis-occupied countries as the United Nations forces set them free.

Four emergency rations for this job have already been developed by scientists in the Bureau of Home Economics at the U. S. Department of Agriculture.

Planning the rations was a difficult job, even for these skilled and experienced nutritionists. First, of course, they had to consider the nourishing quality of the rations. Each must furnish sufficient calories, proteins, fats, sugar and starch foods, minerals and vitamins. Scientists know the amounts of these necessary for a good diet, but immediately there arose the problem of what might be needed by people who had been half-starved for prolonged periods. Should the ration be merely a fair subsistence one or should it be planned to make up rapidly for past deficiencies of diet? What would those deficiencies be?

The last question is part of another problem the nutritionists planning the rations had to consider, and solve if possible. The rations must be planned to feed people of any previous food tastes and habits, of any nutritional state, and in any climate, since the planners could not know when they planned the rations where they would be sent.

Transportation a Factor

Transportation, available supplies in the face of Army, Navy, Lend-Lease and civilian requirements, and packaging and keeping qualities were other considerations. In addition, the foods would have to be the kind that could be easily prepared in regions where there might be no cooking facilities left except, perhaps, a kettle of water and a fire.

The rations finally developed were devised by Miss Charlotte Chatfield, in charge of the food composition section of the Bureau of Home Economics, who

described them at a meeting of the National Research Council's committee on food habits early this year.

They are planned so that the recipients may live on them without any other food for several weeks after reoccupation of Axis-held territory. Locally available foods are expected to be added or substituted as soon as possible. The rations furnish 2,000 calories at a weight of slightly over one pound per person per day. This is slightly less in calories than the 2,400 usually recommended for adults at sedentary work, but much more than the amount peoples in occupied countries are reported to have received for some time past.

No Metal or Glass

No metal or glass containers are used except for small amounts for items included especially for infants.

Dry skimmed milk was used as the source of efficient or high-grade protein to supplement the proteins in soy and wheat, as a source of calcium and of the needed B vitamins, especially riboflavin. Brewer's yeast furnished more of this vitamin. By the time the amounts of these foods had been juggled around to make the rations, more than adequate amounts of thiamin, or vitamin B₁, had been included, what with soy beans and yeast and so on.

Getting vitamins C and A into the ration was the biggest problem, because the usual sources of these, fresh fruits and vegetables, were too bulky and perishable. Dried fruits and vegetables and the concentrates would not be available in large enough quantities in 1943. The vitamin C problem was solved by including dried viable peas or beans that could be sprouted easily in four or five days, when they would furnish this vitamin, or by using citrus fruit concentrates if possible.

Fish liver oil preparations were included to supply vitamins A and D, though there is some doubt about the availability of these rations. Vitamin D is also included in the fortified margarine.

In bread and butter terms, the rations contain the following:

Two to four ounces of a dry soup which contains brewer's yeast, dry skimmed milk, dry peas and seasoning.

Three or four ounces of a reinforced (vitamins and minerals added) cereal, already cooked.

One to five ounces of a biscuit identical with one of the two the Army uses in its K ration.

A peanut-butter-soybean spread to use on the biscuit.

Some fat that can be used either as a spread or go into the soup.

Vitamin C in the form of peas or beans to be sprouted, or in citrus fruit concentrates.

In addition, for very young children, whole milk in powdered or evaporated form and citrus concentrates or tomato juice.

A new yeast powder, with such a "slight, not unpleasant flavor" that large quantities could be eaten with relish, promises to be one of the important nutritional props for the post-war feeding problem.

The new yeast food was developed by Dr. A. C. Thaysen and his colleagues at the chemical research laboratory of the Department of Scientific and Industrial Research at Teddington, England.

New Yeast Strain

These scientists got around the one great disadvantage yeasts have as human food, their bitter taste, by developing a suitably palatable strain of an already known yeast species, *Torula utilis*. This yeast dries into light, straw-colored flakes which can be incorporated without fear of detection in bread, biscuits, soups, stews and the like.

News of this new yeast food, which has already successfully passed feeding tests on humans and animals, has just reached this country through the editorial pages of the English medical journal, the *Lancet*, and the *Monthly Science News*. (See *SNL*, May 29).

Back in 1919 two American pioneers in the nutrition field, Dr. T. B. Osborne and Dr. L. B. Mendel, called attention to the value of yeast as a food because of its protein value.

"The idea of the use of yeast as a source of food protein for man and the higher animals is not a new one," they

wrote in a report to the *Journal of Biological Chemistry*. "It has, however, been given renewed emphasis by the exigencies of the food situation during the war."

That paragraph, as the editor of the *Lancet* points out, might well have been written today when nutritionists are gathering forces and laying plans for feeding starving and near-starving peoples whose crops and animals have been laid waste by the present war.

The protein value of yeast, its ability to supplement or substitute for meat, was what made it seem important to nutritionists in 1919, when vitamins were in their infancy. Today we know that it is a very rich source of the B vitamins. It contains more of two of these, riboflavin and the pellagra-preventing niacin, than any other food, the editor of the *Lancet* points out. In addition, it is a good source of thiamin or vitamin B₁, popularly named the morale vitamin, and of vitamin B₆ and pantothenic acid.

Yeast's protein is important both because of the quantity available and because it is of high biological value, like the protein of meat, eggs, milk and other animal food sources.

Adding 5% of yeast to a two-pound loaf of bread would increase the nourishing value of the bread as much as would the addition of one-fourth of a pound of beefsteak or two eggs.

Yeast grows rapidly, multiplying itself eight times in as many hours, which, compared with the rate of producing other high-grade protein food, such as beef or mutton or even eggs or chickens, gives it a tremendous advantage for post-war feeding.

Yeast can be grown very economically on waste molasses, with ammonium salts added as a source of the necessary nitrogen. In the West Indies there is an almost unlimited supply of molasses for this purpose, and *Monthly Science News* reports that the first plant for the manufacture of food yeast is to be set up in Jamaica.

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● RADIO

Saturday, June 12, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. George C. Ruhland, District of Columbia Health Officer, will discuss "Health Conditions in War-Crowded Cities."



FRONT LINE DISPATCHER—This steel tubing and plywood plane designed to take off from small fields and carry men and supplies to the actual battle areas is rapidly fabricated and simply assembled for mass production. It is the new Loadmaster, built by Cessna.

PUBLIC HEALTH

Dust Prevents Lung Ill

Contrary to what might be expected, working in dusty trade might lessen susceptibility to pneumonia, investigators find.

► WORKING at one of the dusty trades may, contrary to what might be expected, lessen rather than increase susceptibility to pneumonia.

This possibility appeared in a report by Dr. Anna M. Baetjer and Dr. Frederick J. Vintinner, of Johns Hopkins University School of Hygiene and Public Health, at the meeting of the American Industrial Hygiene Association in Rochester, N. Y.

Experiments with rats furnished the basis for this view of pneumonia susceptibility in relation to certain dusts. The scientists caution against applying the results too definitely to man until more is known.

The rats were exposed eight hours a day to high concentrations of fine quartz or feldspar dust for periods varying from one day to about five months and were then inoculated with pneumonia germs. For some rats the dust exposure was continued after inoculation with the germs. Control groups of rats were kept under similar conditions but without dust exposure and were given similar inoculations with pneumonia germs.

When the pneumonia germs were given in broth, there was not much difference between "dusted rats" and controls in the rate at which they died of pneumonia. When the germs were given in mucin, however, the mortality was consistently greater among the control rats than among those that had been exposed to the dusts. Mucin is the chief constituent of mucus.

The protective effect of the dusts against the pneumonia germs in mucin increased with the duration of exposure to the dusts. Rats which had developed pneumoconiosis, the lung condition that comes with exposure to certain dusts such as silica, were completely resistant to a dose of pneumonia germs which killed half the control rats.

The increased resistance of the "dusted rats" to the pneumonia germs in mucin, the scientists believe, was probably due to the absorption of mucin by the dust. This allowed the defense mechanisms of the body to attack the germs which apparently would otherwise be protected by the mucin.

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