

R50-16

New Objectives in Feeding Our Fighting Forces^a

(Manuscript received June 28, 1956)

THE ARMED FORCES have new objectives. They arise out of the "ashes," if I may call them so, of the first two nuclear bombs.

Perhaps I should explain why this is so.

Consider, if you will, the time-honored principles of supply as they existed "before the bomb." These supply lines began at scores of points of origin and ended at the main lines of resistance. Along those lines were innumerable specialized service and communications agencies linking up transportation, storage, reshipment functions—and handling the countless routine and emergency requests that governed the flow of supplies. The "Man from Mars" looking down on this network of rail, water, and (more recently) air traffic doubtless found little that made sense in this busy scene—with people, and ships and trains and planes, and orders (and perhaps rescinded orders) flowing haltingly along, *to* and sometimes *fro*. But the system did make sense—before the nuclear bomb. It made sense in Korea, where, fortunately, no bombs of the nuclear type were dropped (Figure 1).

One trouble with this system in today's world, as General Gavin has ably pointed out, is that the old concepts of linear supply, with tempting targets all along the way, doubles the task of defense; namely, defending position *and* defending concentrations of supply. Food research and development at the Quartermaster Food and Container Institute for the Armed Forces contributes to the prevention of such concentrations.

New thinking in regard to supply visualizes bases of supply, i.e., large concentrations of materiel, well out of range of atomic mass destruction, with smaller depots (or piles in some cases) of re-supply as required. The new supply pattern, because of the fact that planes are free to operate in three dimensions, can take any form required. Thus, though fighter protection will still be needed, it can be applied more effectively, and with dispersed targets, losses will be minimized. If necessary, in any emergency, the supply pattern can literally be changed in midair, making it yet harder for the enemy to find a profitable target. Under this system, also, supplies destined for one region can be deflected to another more critical region when desirable.

Although the foregoing explanation is highly generalized—and perhaps well known—the effect of this new pattern of supply on military feeding will be tremendous, particularly so since the points of delivery for foods will probably be more or less isolated battle groups always ready to move in any direction—afloat, by ground vehicle, or by air. Chief impact on food supply will be that food must be functional in the Nth degree. Weight must be low, cube must be minimum, speed of

preparation and consumption must be maximum. But above all, rations must fit into the whole complex of systems that govern the operations of combat and support forces under atomic warfare conditions.



Figure 1. Motor pool area of the 7th Qm Company, "the eightball express" 7th Infantry Division, showing trucks laden with clothing, fuel, food, and equipment at the start of a convoy run.

New objectives. New objectives are therefore best defined in terms of (1) equipment, (2) feeding methods, and (3) the ration and its components. Let us pause briefly on the first of these—equipment. Perhaps the basic emphasis as it relates to new food equipment will be on the development of collapsible equipment—and already a collapsible range is being worked out. Multiple-use characteristics are also being given renewed attention—a food package, for example, that can double as a food-service device. Research effort is of course being expended on much more comprehensive food preparation equipment, but this is not the time to go into these matters.

A second objective is the development of feeding methods. The problem is a difficult one; namely, how to get food—hot, if possible—from a food sanctuary out of range of the bombs to little patches of well-dispersed battle groups. An easily transported packaged meal, held hot over the distance of transport trips—or easily reheated if it arrives cold—is a possible answer, and possibly the only answer. The question still remains—how to do it?

There is some real logistical algebra connected with this problem. The soldier even after he has his ration delivered will probably have to carry it for a time. The marching load of a soldier cannot exceed 55 pounds—actually, it has been found that 45 pounds is the limit in combat. The battle-load part of this 45 pounds—weapons, etc.—is calculated at 25 pounds. The so-called "existence" part is 20 pounds. From this 20

^a Presented at the Sixteenth Annual Meeting of the Institute of Food Technologists, St. Louis, Missouri, June 13, 1956.

pounds, the weight of nonfood items—medical aid kit, toilet articles, trenching tool, water—must be subtracted. With the pressure on to increase mobility and flexibility in the “new army” it is easy to see where the demand for less and less weight is going to hit hardest. No matter how the soldier travels he will always have to handle and carry everything he uses himself. He, the soldier, is therefore likely to be the first to want reduced weight in rations. Being an American soldier he will be able to make his wants, in this regard, known. These brief comments will perhaps serve as a backdrop to my concluding comments; namely, what are our objectives regarding the ration itself?

First objective, perhaps, is to attain palatable, easily prepared food that can be bounced around without suffering too much damage—you will recall that air transport, including the possibility of air drop, is involved. It is plain to see that concentrated or completely dehydrated precooked foods are needed to implement this objective (Figure 2). If any other forms of preserved foods are supplied it will certainly be necessary to leave every ounce—perhaps I should say every gram—of the nonedible portion at the point of manufacture. As to our progress on this compact, ready-to-eat meal, it is possible to say that item by item the menus are being composed. Perhaps the item most interesting at present is dehydrated meat, a development of the industries and the colleges, but one that the Institute can lay claim to having helped along with a continuous and lively interest. Dehydrated fish sticks are also eligible components of the proposed ration.

Packaging the completely dehydrated precooked individual meal is also an extremely difficult problem. A number of concepts are being entertained—for example, compartmentizing the container to permit reconstitution of the dehydrated foods by the simple operation of pouring hot water into the individual compartments. The complete, compartmented container would thus be its own “cooker.” This is an ingenious idea, and it can probably be worked out by our packaging and applications engineering group. But it will have to be relatively inexpensive to make since present thinking calls for a readily disposable container. A reusable container of



Figure 2. The precooked dehydrated meal for small group feeding. Components include: 1. chili and beans, 2. instant rice, 3. fruit mix, 4. bread, 5. soda crackers, 6. margarine, 7. jam, 8. cookies, 9. instant cocoa beverage, 10, 11, 12. accessories, 13. stirring spoon, 14. shipping case.

rigid construction would offer advantages in easy preparation of food, but weight and the problem of dish-washing must immediately be entered on the “disadvantages” side of the ledger.

No group can walk alone. In concluding my comments I would like to emphasize that our adoption of new objectives does not mean that we have abandoned all of our old ones. At the Institute we are still interested in and working upon better ways to preserve foods, to retain the nutritive qualities of packaged foods, and to learn more about what foods the Serviceman likes, how much he likes it, and what stresses, within himself or his environment, do to his attitude toward food. In all of our research and development objectives, we derive great profit from our close association with food technologists. In the technical world of today no group can walk alone. We in the military phase of food research cannot afford to walk alone since our sustained objective—one that takes precedence over all others—is to assure that in regard to foods and containers our Nation will be prepared for any possible emergency.