

NUTRITION

Streamlined Rations

For Emergency Use, Army Research Has Prepared New Concentrated Foods for Quick, Intensive Energy

By EMILY C. DAVIS

A HIGHLY specialized candy bar that is a whole emergency meal in itself. This is the U. S. Army's new answer to the problem of packing a tiny lunch for soldiers who may find themselves unexpectedly "on their own" when mess time comes.

While the army's research was intended for soldiers entirely, it may do a good turn for civilian explorers, mountain climbers, and hikers, not to mention motorists who can't discover that hoped-for tea room, and stenographers who grow weak an hour before quitting time.

Developed in the Quartermaster Corps' subsistence laboratory at Chicago, the new emergency ration looks like any small chocolate bar. Actually, besides chocolate it contains vanilla, sugar, milk, and oat flour. It tastes all right. Meaning to say, the American soldier will find it an improvement over the not-too-tempting chocolate emergency ration the Quartermaster Corps handed out to our soldiers when they were fighting in France in 1918. And besides being easy to take, the new ration is an improvement nutritionally. Concentrated foods can be made more palatable now, as a result of research in recent years.

Calories a Strong Point

Calories are the strong point of the chocolate-soldier ration of 1940. Calories are what an emergency ration is expected to supply, in greatest possible quantity. Calories, which the lady-on-a-diet considers a word to shudder at, are vital to a stranded, hungry man, perhaps on outpost duty and cut off by mischance from his division.

The little packet represents 600 calories, or units of energy-producing food—sugar, starch, protein, fat. That is about the amount of calories in a lunch or light dinner. But understand, the little emergency ration is not, emphatically, a balanced meal. It is no proper substitute for a regular lunch or dinner. It has one job to do—supplying staying power and energy to enable a man in time of emergency to keep going.

"In rationing for emergency," says Major Paul P. Logan of the Army Indus-

trial College, "the problem is to pack concentrated energy food into smallest possible space and into a package that will resist wear-and-tear, including heat up to 120 degrees, and even war gas."

Major Logan conducted research for the new chocolate ration.

"The most highly concentrated food we know of would be fat," he explains. "Pure fat, with no water in it, would provide 4,100 calories to a pound. But the fat would not be edible. The chocolate ration, representing 2,400 calories to a pound, is the nearest approach to straight fat that we could make edible."

Bureau of Standards Aids

To aid the Army in the research task of making a weather-proof, gas-proof wrapper for the ration, the National Bureau of Standards tested various materials. The result is a three-layer wrapping. First around the chocolate bar goes aluminum foil heavier than that on ordinary candy. This forms a hermetic seal. Then comes a wrapper of white vegetable parchment, which becomes tougher in damp weather. An additional overcoat of green paper is simply what is technically called a bumper, and it takes the label "U. S. Army Emergency Ration," with a warning not to eat the ration fast—take half an hour.

To make sure the ration would not go soupy in the tropics, the Quartermaster Corps has already given it experimentally to American soldiers in Panama, Hawaii, and the Philippines to carry in their pockets, haversacks, and saddle bags.

As a stiff war conditions test, some of the ration packets were turned over to the Chemical Warfare School at Aberdeen, Maryland. There, for three hours, the ration packets were bombarded with fumes of mustard gas. Then, peeling off the protective wrappings, Army chemists fed shavings of the "gassed" emergency ration to laboratory rats. The rats showed no ill effects, so the Army feels confident that it has a gas-proof wrapping.

The Quartermaster Corps does not call its new chocolate ration an emergency ration, says Capt. John Powers of the subsistence division of the Quartermaster Corps. Ration D is the correct, official

name. The pocket ration fits into the Army's new set of alphabet names for field or wartime rations: A, B, C, and D.

Capt. Powers says American soldiers enjoy singing.

"They feed us carrots every day,

"Wonder when they'll feed us hay?"

And they like to echo the bugler at mess call, chanting:

"Soupy, soupy, soupy without a single bean,

"Porky, porky, porky without a streak of lean,

"Coffee, coffee, coffee, the thinnest ever seen."

But actually, the American soldier is the best fed in the world. To make field and wartime rations as near as possible to the peacetime garrison ration, the Quartermaster Corps devises ingenious plans for transporting, packing, space saving. It mounts field kitchens—a new model was recently christened—on trucks and transports them to camp grounds, to insure hot food whenever possible. It has even landed eggs and other perishables by parachute from planes. Quartermaster officers can tell you that by trimming and boning a ton of beef, they can reduce 134 cubic feet of beef in shipping to a mere 32 cubic feet.

Vegetables and Fruit

So, Ration A, which is the preferred field ration, is complete with fresh vegetables, butter, fruit, meat, and other bulky but desirable foods, Capt. Powers states. Ration B is similar, with substitution of some canned goods, jelly instead of butter, and hard bread for fresh. The Army goes on Ration B when it moves in streamlined transport minus everything but necessary equipment.

A brand-new Ration C—the reserve ration — also streamlined, has been evolved. Taking its first large-scale test in April and May, the new Ration C has been fed to 65,000 soldiers during the spring maneuvers in Mississippi and Texas.

Reserve rations are nothing for a soldier to cheer over. But the new one, so new that labels have not been made yet for cans, is rated a big improvement over the one that has been used. Ration C is a two-can meal, to be eaten either hot or cold. One can contains a meat and vegetable combination, and there are three variations on this. The other can contains sugar, soluble coffee and nine bis-

cuits. Rationed out to the men at the rate of six cans a day, this reserve chow provides four pounds of food for a day. This is less than the American soldier is accustomed to regularly, but then the reserve ration is intended only for use when normal transport is interrupted, and the Quartermaster Corps does not recommend its use even then for more than three days.

That brings us back to Ration D, which is the newest equivalent of the old British Iron Ration, and all the other last-ditch rations in history.

The Iron Ration was so distinctly a last-resort meal that British soldiers used to say the orders were:

"Never eat your Iron Ration until after you've starved to death!"

Even the present tinned emergency ration supplied to British fighters carries the warning, "To be consumed only when no other ration of any other kind is procurable."

The American soldier's chocolate bar carries no stern warning—only instructions to eat it slowly. Nor has any effort been made to make the new ration unpalatable, Major Logan states. After all, a man who sits down to a chocolate bar supper, when somewhere back in camp other men are getting a round meal, needn't be additionally harassed by finding the ration is deliberately made just barely edible.

Uses of the new emergency ration by civilians are not the Army's problem. But Quartermaster Corps officers can see that the energy ration might fit into other situations, provided the public recognizes its limitations.

The Army's Ration D may become familiar to a public that will never get even a taste of Rations A, B, and C.

Science News Letter, June 22, 1940

ICHTHYOLOGY

Higher Fish Species Born Alive in Membrane

THE EMBRYOS of higher fish species that are born alive instead of being hatched from eggs laid in the water are surrounded before birth with sheathing membranes somewhat resembling those of the warm-blooded animals that are uniformly born alive, Dr. C. L. Turner of Northwestern University has found. Although there are considerable differences in detail and in mode of functioning, even the technical names are the same: amnion, chorion, allantois.

Science News Letter, June 22, 1940



CANNED CHOW FOR THE ARMY

The U. S. Army's new reserve ration, alphabetically called C, is shown served up. For real emergency use, the doughboy is supplied with Ration D, a specialized chocolate bar, shown lower right, partly opened.

NUTRITION

Vitamin Famine Prevalent In the United States

Chronic Deficiency is Due to Unbalanced Diet And Also to Loss of Vitamins in Processing of Food

WAR may be causing famine in Europe but here in America, even without war, there is a chronic famine, Dr. Tom D. Spies, of Birmingham, Ala., declared at the meeting of the American Medical Association. The chronic famine we have here is a starving for vitamins, minerals and other precious substances found in minute amounts in foods. Large numbers of people are starved for these substances partly because they do not eat enough of the foods containing them and partly because foods as they come to the table today have lost much of their normal content of these protective substances.

About 90 per cent. of the vitamin B₁, preventive of beriberi, in bread has been lost from the flour in the milling process. Water soluble vitamins are also lost to us by being washed out of the soil, so

the plants today do not furnish enough of these to the animals and men that live on them, Dr. Spies said.

Death figures do not show the extent of this chronic famine in America, Dr. W. H. Sebrell of the U. S. Public Health Service declared. This, partly, is because deaths from this cause are not all recorded as pellagra or scurvy or beriberi deaths. Partly, too, it is because this famine does not kill, although it keeps people ailing and miserable and unfit for work. At least 100,000 people are probably suffering from pellagra, Dr. Sebrell estimates.

For a more complete picture of the extent of the vitamin deficiency in the country, Dr. Sebrell turned to figures on consumption of vitamin pills and similar preparations. In 1938 the people of the United States spent more than \$100,000,-