

was, of course, not confined to the area covered by it. In most cases new railroad spurs had to be built, heavy rails substituted for the lighter ones in use in existing tracks, sidings built in the vicinity, highways built or improved to provide for trucking, and every possible provision made for handling the enormous amounts of materials without loss of time.

"It is worthy of note that the cantonments have in all instances been built on waste land, land that had not in any way been devoted to agriculture or the raising of crops. The cantonments have cost from \$5,000,000 to \$7,000,000 each, and not far from \$100,000,000 altogether."

### WANTED: A CLOTHES ADMINISTRATION

**W**HAT HE TERMS "shoddy regulation" is demanded by W. W. Reynolds, an Ohio farmer, writing in *The American Sheep Breeder* (Chicago, November). Pure food is guaranteed us by careful labels and analyses, but where is the label that guarantees us pure wool in our clothes? Shoddy everywhere—complains Mr. Reynolds, who is himself a wool-producer. "Every bolt of woollens that leaves the maker's hands should have his name on it," he reasonably asserts. Of all of life's necessities at present, writes Mr. Reynolds to *THE DIGEST*, "the very scarcest is wool. Try buying a good suit." And the price of manufactured wool is out of relation, he charges, with the price that the farmer gets for his raw product. "My good wife is paying . . . \$7.20 a pound for wool bought at 30 to 50 cents, made into first form. And the 'patriotic' woollen manufacturers are yelling for more wool 'to clothe the boys in the trenches.'" In his article Mr. Reynolds writes:

"Not a package of fertilizer or feed, without the name of the maker, the place of making, and the correct analysis can be sold without breaking the law. . . ."

"The readers may imagine the feeling of goneness in a full-grown fertilizer-buyer when he looks at his burlap knees, after the short fiber fur which was blown on or prest into the warp and woof, has deserted, when he thinks his noble form has been clothed in the cast-off rags of European paupers, and what a sense of disgust and loathing comes to him as he rips the seams of his coat and digs the 'mouse nests' out. If, after thirty years' study on this subject, I could see one objection to this line of talk, I would stop right here, even if my last suit has proved part cotton and taken some conceit out of me, and I will say that when a man who has grown wool for forty years can be fooled, there is a poor show for ninety-nine people out of a hundred. Wool men are a little arbitrary with us about twine, tags, paint, tying, and grades of wool, and would make an awful howl if we ran in some old carpet, overalls, or rags on them. When they buy wool, they want pure wool, and they are right, so we claim similar rights. When we pay

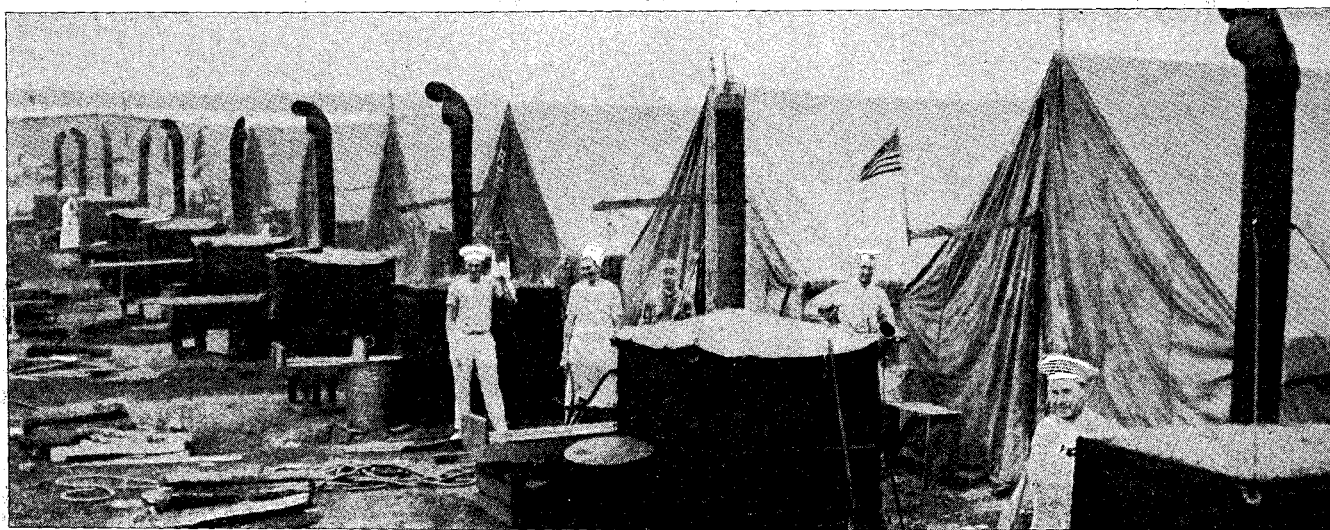
for wool, that is what we demand, and I would smile to see any party dispute it.

"There is another matter, not quite so serious as the power to hoodwink every one, but by no means trifling. Shoddy has affected the sheep census materially. Perhaps some who have had it as their mainstay have been yelling for more sheep. There has been no need to buy much wool when the rags of the world were at our service. There are a lot of them and they are almost indestructible, and, with the exception of what wears off and is blown off, can be reworked. This shoddy has made some very discouraging prices for good wool, and some hopelessly discouraged men. There have been other depressing elements also that put it low, without dispiriting the price of clothes, but shoddy has been the arch offender. In these days of Food Administration perhaps we can gently turn to a Clothes Administration that will help the same people who use food. All need both of them from the cradle to the grave.

"Every bolt of woollens that leaves the maker's hands should have his name on it. All makers of everything else want their names on their wares and you can find them from a steam-shovel to a pocket-knife. Associated with this name we want (it is a long-felt want, also) the exact per cent. of each raw material used in them and down to the smallest retailer there should be duplicate tags attached to each garment. Will some one give us one valid objection against the above?"

**THE BABY AND THE TELEPHONE**—Wet fabrics conduct the electric current—a fact unknown to many of the general public. The fact and the public's ignorance of it are both illustrated in the following tale communicated by C. W. Taylor, a deskman employed by the New York Telephone Company, to *The Telephone Review* (New York, October):

"A prospect subscriber when answering a test on a line reported for steady light complained that the operator was giving her poor service. She said the operator was ringing on the line and cutting her off and causing a 'frying' noise on the telephone. The test showed that there was a short-circuit caused by water somewhere, and the deskman told the subscriber that the operator did not cause the trouble, but if she would look over the green cord she would see a wet spot that caused all the trouble. The subscriber said: 'Yes, there is a wet spot on the cord. I gave the cord to the baby to play with while I was talking on the telephone and she put it in her mouth.' . . . With plentiful apologies for what she had said about the operator, the subscriber asked if she could not fix the trouble. She was told to warm an iron, not hot enough to scorch, and run it over the spot on the cord. About five minutes later the steady light disappeared and in five minutes more the line was clear. Evidently her efforts had been successful. The deskman called the subscriber and thanked her for her assistance, and she announced that she would never again let the baby chew the green cord."



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A RAPID-FIRE BAKERY FOR AMERICAN FIGHTERS.



## NEGATIVE GRAVITY

A REVERSE KIND OF GRAVITY that should repel instead of attracting has figured in numerous scientific speculations and romances. It will be remembered that certain heroes of one of H. G. Wells's earlier tales were enabled to reach the moon by some such device. Experiments



Illustrations by courtesy of "The Scientific American," New York.

UNITED STATES ARMY EMERGENCY RATION OF CHOCOLATE AND CORN-MEAL.

recently reported by Prof. Francis E. Nipher, of Washington University, St. Louis, indicate that gravity depends to some extent upon electrical charge, and that in certain cases its sign may even be altered so that it becomes negative and the bodies concerned repel each other instead of attracting. It would seem to follow that if Professor Nipher's experiments could be carried out on a sufficiently huge scale, the weight of objects on or near the earth's surface might be increased, lessened, or abolished, and that they might even be caused to fly off into space. Professor Nipher's researches began several years ago, and in July, 1916, he had already announced to the St. Louis Academy of Science his conclusion "that gravitational attraction between masses of matter depends on their electrical potential due to electrical charges upon them." This dependence, it should be noted, is not simply the addition of ordinary electric attraction or repulsion to the gravitational attraction, as he took the precaution to eliminate this by interposing metal screens through which such ordinary electric effects can not be transmitted. Referring to the conclusion quoted above, he says in a paper printed in *The Transactions of the Academy* (St. Louis, November 8):

"Every working-day of the following college year has been devoted to testing the validity of the above statement. No results in conflict with it have been obtained. Not only has gravitational attraction been diminished by electrification of the attracting bodies when direct electrical action has been wholly cut off by a metal shield, but it has been made negative. It has been converted into a repulsion. This result has been obtained many times throughout the year. On one occasion during the latter part of the year, this repulsion was made somewhat more than twice as great as normal attraction."

The masses whose attraction was measured were spheres of lead ten inches in diameter and smaller spheres of one inch, the latter hung from silk threads. Vibration of the small spheres, due to gravitational attraction between them and the large masses, was found to differ with varying degrees of electrification of the latter.

## FOOD TO FIGHT ON

THE FIGHTING ABILITY OF AN ARMY depends primarily on its food. The human body can not create energy, but only transforms it; and it is the energy bottled up in such prosaic stuff as beef and beans that wins our battles. In an article on "The Inner Man of Armies," contributed to *The Scientific American* (New York, December 1), Mr. L. Lodian tells us that the food-essentials of an army are four—meat, bread, sugar, and tea, stated in the order of importance, it being understood that fats are included in "meat" and all cereals, legumes, etc., in "bread." The "sugar" item includes all sugar-containing fruits, and under "tea" are counted coffee, chocolate, cocoa, and national beverages. Writes Mr. Lodian:

"All armies possess emergency rations. The one illustrated herewith, from our own Quartermaster's establishment, is typical of the lot. None of them is entirely up to the mark; and the problem is still to find an emergency ration which shall be passably satisfactory. For instance, the American article is lacking in proteins and fats; and the chocolate tablets which accompany it are an indifferent substitute.

"There are three different parched maize-meal packets and three chocolates. The former article is but a revival of the parched maize-meal of the American Indians, on which they could exist for days when hunting or on the war-path. But even this hardy race finally abandoned it for the better known pemmican—dried chopped meat with grains mixed in, to which no straight cereal product can compare as a sustaining food. The German Army pea-sausage, or *Erbswurst*, has been much overpraised by those whose familiarity with it is scant. It is about as unsatisfactory a concentrated ration as any extant, and is actually inedible when uncooked, being of a nauseating, bitterish, and raw flavor. It would seem that an emergency ration should above all things be edible, as it is to provide for the not remote contingency in which cooking facilities are lacking."

The finest known combination of sustaining and heating qualities among meat foods is a form of sausage with high fat content, called by the French *boulet ramé* (chain-shot). This is also used by the Belgians and the Germans. It is a winter food and is never issued for summer campaigning. The string is so formed that each ball constitutes a single substantial ration. To quote further:

"There are more than a dozen varieties of compressed teas



ONE OF THE MOST NOURISHING OF EMERGENCY MILITARY RATIONS.

The French "chain-shot." Each ball, of compressed sausage, constitutes a single winter ration.

used by the Russian commissary, appearing in various forms—bar, slab, tablet, disk, ball, etc. One is a high-grade whole-leaf tea. Comprest tea occupies very little space and preserves well. A three-pound slab snugly fits the coat pocket. The meaning of this will be amply demonstrated by an attempt to stow three pounds of loose tea into the coat-pocket without bulging.

"The compressed rice-macaroni of oriental forces is an instant rice—place it in water, bring it to a boil, and it is ready to serve without further formalities.