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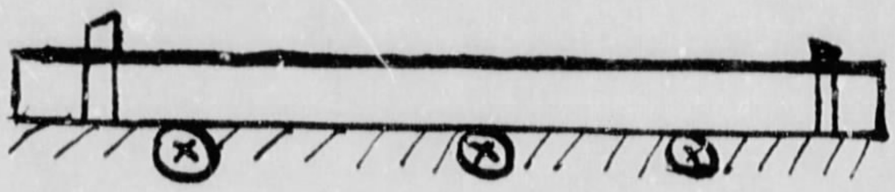
FIELD EXPEDIENTS

By employing materials to be found locally, and by utilizing other resources for purposes they were not meant to serve, soldiers can fashion field expedients which will make life easier for them, and facilitate the performance of their duties.

1. The corduroy road is one of the most important field expedients. It is superimposed as a solid roadway upon dirt tracks, so that the latter can be kept open to vehicular traffic even in mired stretches and during rainy weather. It is superimposed as a solid roadway upon dirt tracks, so that the latter can be kept to vehicular traffic even in mired stretches and during rainy weather. It is also used in the construction of roadways on permanently soggy and swampy ground. In a war of movement, it is frequently employed in building near- and far-shore approach roads to military bridges, as a means of improving defective stretches on routes of march and supply, and -- during lulls in military operations -- for the construction of supply roads in a zone of operations. In swampy areas, troops are absolutely lost without corduroy roads. Considering the well-known road conditions in Russia, military men must thus attribute particular importance to this expedient. The German Army must have built at least hundreds of kilometers of corduroy roads in Russia.

Corduroy roads are constructed in the following manner: Several medium-large tree trunks serving as stringers are laid out in the direction of the road. These stringers are then covered by with a flooring of logs placed at right angles to the road, one next to the other. The flooring logs are

medium large or smaller. Strong wire is preferred to nails for fastening the flooring logs to the stringers and to each other. Their ends are fastened to thin poles [curbing].



In Central and Norhtern Russia, timber is available almost anywhere. At worst, it must be hauled from close by. Best suited are the straight trunks of fir and spruce; pine ranks next in order of quality. The very commonly found birch is least suitable, because of its irregular growth. In order to protect horses and save wear and tear on vehicles, it is advisable to select trunks of equal diameter.

2. Raft Bridges were an expedient frequently used by the Russians, but hardly ever by us. Construction of a raft bridge requires the employment of engineers. Having copied them from the Russians, our engineers had to establish the gross load carrying capacity of these bridges through experimentation. Raft bridges can only be used to span sluggish waters, but nearly every watercourse in Russia falls into that category. Construction of this type of bridge proceeds as follows: Thick logs are placed side by side and fastened to each other. A similar layer of cross logs is placed on top of the first layer, and in turn covered by a third layer of cross logs. Personally, I have never seen raft bridges composed of more than three layers of logs. The top layer is covered with planks forming a treadway.

Raft bridges can be built to have a considerable gross load carrying capacity, as may be seen from the following examples. During the German offensive across the DNEPR I commanded the 52d Infantry Division. On 16 August 1941 that division took two bridges in the vicinity of ROGACHEV in a coup de main. One was an approximately 60-meter-long raft bridge spanning a tributary which flows into the DNEPR west of the city, the other was an approximately 100-meter-long raft bridge leading across the DNEPR east of ROGACHEV. The raft bridge across the tributary was in good condition, and all vehicles of the division, including medium artillery, 5-ton trucks, and military bridging equipment could travel across it. On the other hand, the bridge across the DNEPR had already been reduced to such poor condition that only the infantry and its vehicles could make use of that facility. Thus, thanks to these bridges, our close pursuit of the retreating enemy forces proceeded without delay, and led to a great success. Alongside the raft bridge spanning the DNEPR our forces immediately built a military bridge for the other elements of the division.

Though other armies may not build their own raft bridges, they nevertheless will occasionally encounter them in Russia. For that reason, experience in establishing their gross load carrying capacity and in repairing them will prove to be of value.

3. The light native carts (/or/ sleighs), and the small, strong, and undemanding native horses are absolutely indispensable for the trains of infantry units. They are equally indispensable for the supply of motorized troops during the muddy season and in the winter, whenever military operations grind to a halt. Before long, even the German motorized and armored

divisions had such trains of horse-drawn vehicles at their disposal. I cannot imagine how the German Army could have fought and lived through four years of war against Russia if it had not made use of these carts, sleighs, and horses.

In this connection we have to mention that the Russians shoe their small horses only in rare instances. There is no need for shoeing, because the normal work of these horses in agriculture usually requires them to cover only short distances over soft ground (soil or sand), while activity during wintertime becomes largely restricted. On the other hand, horses employed for military purposes have to pull considerable loads over long distances, and in wintertime have to travel over icy roads. Hoofs are unable to stand the strain. Consequently, native Russian horses employed for military purposes must be shod, and in the winter their shoes must be equipped with calks. Since troops are originally furnished only horses of normal size, it is necessary to insure a supply of small horseshoes and calks for operations in Russia, and to equip veterinary depots from the outset with the same items of equipment. Ample provision must also be made for harnesses, because those commonly used in Russia are not always of durable quality.

4. Dirt tracks are largely the sole routes of travel. In negotiating the many soggy stretches -- especially during rain, but also in traveling through sand and snow -- we found it expedient to carry planks (boards) on our trucks. Another useful item were wire cables, which enabled trucks to pull each other out. Although these time-honored practices by no means originated during the Russian campaign, I nevertheless mention them at this

point because in Russia they can be put to use time and again, and because only very few of our trucks carried the above-mentioned items during the early days.

5. In the beginning, the procurement of spare parts (especially of wheels and sleigh runners) for the badly taxed native horsecarts and sleighs was very difficult. Once we set out to make these spare parts we experienced similar difficulties, because suitable, seasoned lumber was not available. Wherever the front had become static, the troops established wood-drying facilities, by means of which lumber for wheels (hubs, fellies, and spokes) and sled runners could be dried within a short period of time. During the early days of the campaign we could not fall back upon experience, and lumber experts were only rarely available.

6. In the late fall, when the dugouts in the front lines had to be heated, the freshly felled wood produced a large volume of smoke which during daytime drew enemy fire on the dugouts. Inasmuch as charcoal was known to generate hardly any smoke, the troops set out to make that type of fuel for use during the day. They established behind the front lines a number of small kilns, which soon produced the required amount of charcoal. Birch, which is very commonly found in that area, furnishes the best material for charcoal production. Here again we could not fall back upon experience, and particularly in this field there is a scarcity of experts. Thus, the production of charcoal was taken up at a rather late date, after a good many casualties had been suffered. As we know from experience, soldiers are very skillful in fashioning field expedients. Providing them with even a very simple set of instructions in memorandum form will facilitate their efforts

in that direction.

7. In the German Army, a supply of stoves for dugouts in winter positions had not been provided for from the outset. Thus the troops resorted to fashioning stoves from bricks or stones, or to the use of empty gasoline barrels and cans. Stovepipes were always the major problem, because they could not be made without sheet metal. Brick chimneys take up too much room in the cramped dugouts, and require a good many bricks. Moreover, brick chimneys cannot be used for every type of stove. Thus, wherever sheet metal could be obtained, it was used for making stovepipes. To a limited extent, we procured that material from the ruins of houses and factories in larger localities, where the roofs of such buildings frequently consisted of sheet metal.

8. If shelter is lacking, snow huts may serve as winter substitutes. Their construction requires a certain amount of experience and instruction, if it is to be executed in a speedy and orderly manner. The best type is the Finnish igloo. I went through the first two Russian winters without having witnessed the use of snow huts, except in very rare instances. Not even in 1941-42, when my division went through the entire winter campaign in the center of events, did I see them used. Wherever shelter could not be obtained for certain periods of time, e.g., for reserves which were bound to certain localities, the soldiers bivouacked around big fires. In the war of movement during that winter, the troops stayed at one and the same place for a few days at the most. I attribute our neglect to build snow huts to our lack of experience in the rapid construction of these huts, and to the fact that we had not received instructions in how to build them.

9. For ski units the troops constructed small hand sleds so as to facilitate the transport of heavy weapons (machine guns and mortars) and ammunition. These sleds were also used for hauling supplies in the immediate combat zone.

10. Nowhere have I seen as many mice as in Russia. Their main enemy, the crows, appeared in swarms up to 5,000 birds, yet were unable to do away with them. The mice were a plague in the field positions and inhabited localities, particularly in the grain belt, but also in the forest country. Aside from the great damage they cause, the mice constitute a source of danger to the extent that they are the carriers of the so-called rodent disease [Nagerkrankheit]*, a malady with symptoms of high fever and a general weakening of the human organs that render the afflicted unfit for duty over a long period of time. This disease is transmitted through foodstuffs that have been gnawed by mice or soiled by their excrements.

In the rear-area ration depots, in which especially the ready-to-eat foodstuffs such as bread, zwieback, cookies, and chocolate were exposed to contamination, and in the shelters and field positions, in which the soldiers kept at least their bread rations, the crucial fight against the mice was carried on solely by means of improvised expedients. All sorts of mousetraps were devised. Boards serving as bread bins were suspended by wires from the shelter ceilings. Because mice cannot stand the smell of gasoline, we sprinkled the floors with that fuel. However, this procedure could not be used in living quarters, because the high lead content of

*Eds A disease believed to be related to rabbit fever (tularemia).

gasoline affects the eyes of the occupants. During the course of one night the mice would gnaw their way through wooden food boxes. Sheet metal for plating or lining these boxes was of course not available in the necessary quantities. Science should develop a chemical agent, similar to the one used against bedbugs, for the extermination of mice. That agent should be harmless for human beings.

Experience gathered by the troops in improvising a great many field expedients revealed that the requisite basic materials were often unavailable. Yet, every potential means of improvisation must be promoted by supplying the troops with appropriate material. The greatest need was always for tools, boards, and nails.

(Signed) Dr. Rendulic
General

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