RESEARCH AND DEVELOPMENT REPORT

TENTAGE AND EQUIPAGE SERIES REPORT NO. 8

HISTORICAL REVIEW OF THE LOAD OF THE FOOT-SOLDIER

by
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DEPARTMENT OF THE ARMY
OFFICE OF THE QUARTERMASTER GENERAL

Office of The Quartermaster General
Research and Development Branch
Textile, Clothing and Footwear Division

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FOREWORD

In every period of history all armies have been faced with the problem of supplying soldiers with clothing and equipment, when and where required. Growth in the scale of military operations and changes in technology have made the problem of military supply immensely more complex, although its basic nature has remained the same. Yet, persons studying in this field are often unaware that they share this problem with the past.

One of the difficulties has been the determination of what clothing and equipment individual soldiers should transport and what kind of carrying device should be developed. In an attempt to clarify the problem Lt. Carré of the 13th Infantry Regiment, French Army prepared this report which was later translated into English by Captain P. L. Miles of the 14th U. S. Infantry Regiment for publication in the Infantry Journal, volume V, 1908. In view of the renewed interest in this field, it is felt that reproduction of this historical record will be of value to many of those concerned with the problem. Accordingly, these articles are reproduced in uncondensed form. The translation has been carefully reviewed and revised in a considerable number of places, and the metric figures have been converted to the English system.

Readers of this report will undoubtedly be impressed with the fact that there are no easy solutions to the problems imposed by individual equipment and the means of carrying it. That change is possible in the future is indicated by the availability to the modern army of such techniques as direct supply by parachute or free fall and others unkown to the planners of the past. In addition, scientific methods of analysis and synthesis applied to logistical systems may enable a modern army to meet more effectively the demands imposed by modern war. It remains to be seen to what extent these innovations in our technology can be counted upon to relieve the combat soldier from the burden of excess equipment.

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I. THE ROMAN LEGIONARY

Usefulness of this Study. If we go so far back into history to study the Roman Legion, it is not only because the legionary remains the soldier-type of antiquity, but also because, however strange it may appear, the weight and conditions of his load have served as a basis for that of the French soldier of modern times.

Indeed, the military commission of 1861, profiting by the example of the Roman soldiers, fixed the normal load of the foot-soldier at 62 pounds and designated 66 pounds as a maximum.

Arms. The defensive weapons of a legionary soldier consisted of the shield, the pelum or heavy javelin, and the sword (glaive). These arms were very heavy, but the Roman soldier counted them as nothing, accustomed as he was to considering them as a part of himself.

Equipment. The equipment was as follows:

A broad sword-belt. The legionary soldier could never, under penalty of death, be separated from his sword, even while at work.

A leather strap for suspending the shield from the shoulder.

A strong wicker basket attached to the shoulders by two leather straps, but resting on the man's lumbar region. This basket served as an earth-carrying receptacle in the construction of the daily entrenched camp. Therefore it was not a dead weight.

Load Carried in the Basket. In this basket were a small iron chain; leather thongs for securing prisoners; a tool. (The tools were distributed to individuals so as to make up in every decury a complete set). On the outside of the basket, placed across it, one or two strong paling stakes.

Portable Rations. As field rations, the soldier carried either the menstruum or the semi-menstruum of wheat (53 or 26 pounds). Issues were normally made fortnightly. This wheat was enclosed in a folliculus, a leather bag attached to the end of a long traveler's stick, called aerumnule, to which were also secured the utensils.

Utensils. A metal cup holding two cotyles (approximately 1.1 pints). Let us add that the brass helmet, which was not lined, served as a large measure.

A small stew-pan useful for several purposes, the preparation of the wheat pap, cooking meat, carrying meat roasted on the spit.

The legionary ground his wheat at the common grist stone of the decury carried on a pack animal.

A salt cellar. The soldier carried considerable salt to improve the taste of the wheat broth or cake; hence the word salarium, salary. Such, in sum, was the ordinary subsistence of the soldier of the legion, who regarded meat as a food of secondary importance. Receiving his plain wheat for a fortnight, there remained for him only the procuring of water and wood. Moreover, he never waited until his cooked rations were exhausted, but took advantage of opportunities to prepare others.

"Under the Roman method, troops could go to the world's end," said Nopoleon, who was always dreaming of replacing the issue of bread by that of flour or even of wheat.

The aerumnule, thus very heavily loaded with the wheat bag and utensils, was carried alternately on each shoulder; on one side, between the neck and the helmet; on the other, between the neck and the shield.

Weight of the Load. The man's load, said Flavius Josephus, did not, at that time, differ at all from that of the horse. Therefore, whenever it was possible, the general had the baggage of a certain number of men carried by pack animals. These men were the milites expediti.

The total load amounted to 110 or 136 pounds (when the soldier carried the entire menstruum), distributed as follows:

Rations and utensils, 37 or 64 pounds;

Arms, tools, basket, stakes, and accessories, 62 pounds;

Clothing and foot-wear, 11 pounds.

This weight seems tremendous when we consider that, beside the marches, which were frequently very long, the Roman soldier was obliged to work every day on the entrenched camp, which

was constructed with rigorous care. But the legionary soldier of an elite corps, inured from youth to the roughest kind of exercise, was recruited entirely among the strongest and most robust men. His average height was 67 inches.

Critical Survey. The following thoughts concerning the load carried by the Roman soldier of the legion suggest themselves:

1. His burden has two distinct and almost equal parts:

His basket and weapons on the back and shoulders.

His rations and utensils at the end of his stick.

During the halts, he merely deposited his aerumnule on the ground, and this immediately relieved him of half his burden.

The division of the load into two parts, which has just been tried in the French Army, is therefore nothing new. This fact is one reason for our dwelling perhaps somewhat at length on the load of the Roman soldier.

2. Heavily loaded as he was, the legionary soldier was neither bound nor pressed upon. His belt did not choke him; his basket rested upon the small of the back, and was suspended by shoulder straps having some play.

Moreover, his burden was one for the march alone. In combat, he carried nothing but his offensive and defensive arms, and left his portable baggage behind with the pack animals.

3. This heavy load included no dead weight, since the wicker basket served to carry earth in the construction of entrenchments.

II. FRENCH ARMIES UP TO 1740.

Before Louis XV. Up to the time of Louis XIV, the clothing and equipment of the foot-soldier, left to the fancy of corps commanders, were of every variety and kind. The administration of Louvois, which gave uniforms to the regiments, created at the same time regulation arms and equipments.

Let us study the type of soldier of the first years of the reign of Louis XIV.

Arms. The arms were the musket and sword.

The musket, model 1715, weighed about 9.5 pounds, and was 4 feet 10 inches long. The bayonet had a length of from 17 to 18 inches, including the socket.

The sword, at first carried only by the grenadiers, was soon given to all French infantrymen. It had a blade 26 inches long and was two-edged up to the point.

Equipment. The equipment comprised:

A fairly wide leather belt which carried the powder flask on one side and the bullet pouch on the other.

A leather shoulder belt that supported the sword and threw it back behind in a horizontal position.

A sack or wallet in which the soldier carried his field outfit. It was carried suspended from or even slung over the shoulder. It contained:

1 shirt
1 pair of stockings
2 collars
1 pair of shoes
1 ration of bread
The meat issued at the halting place.

This bag, which was made of coarse cloth, had not yet been made regulation. Each soldier made it to suit his own idea. The bag was abolished by the royal ordinance of May 27, 1767. At any rate, the adoption of the knapsack had been decided upon as early as 1747.

Portable Tools. An edict of the 15th of October, 1701, introduced tools: "It is the will of His Majesty that in every infantry company, even in the grenadier companies, there should always be six tools suitable for digging in order to repair roads and to facilitate the march. They will be carried by the soldiers with their arms in turn."

Subsequently, there were issued to each grenadier company ten large axes and to the other companies axes with hammer heads. Each company had in addition digging tools (shovels and picks), and cutting tools (billhooks, axes, and hatchets).

These tools were carried by the regular bandolier of the equipment or by a special bandolier. The soldiers had to keep them in good condition. These tools could be used "for entrenching when necessary, for making fascines, cutting out palisades, forcing gates."

They had to "have good handles," be made "of good well-tempered iron, well sharpened at the edges, with points reinforced by good and strong head-sockets, something that is rarely seen."

Utensils. The soldier in the field carried no kitchen utensils, but borrowed them from the inhabitants. What was called at the time the gamelle was an earthen or wooden bowl used only in barracks by three, five, or seven soldiers of the same mess.

Each foot-soldier carried a gourd which he procured for himself. One sergeant in each company carried in his gourd some vinegar, which he issued to the men to mix with water. This use of vinegar dates back to the Roman soldier.

Rations. Bread furnished by the commissaries,[1] was three pounds for two days, composed two-thirds of wheat and one-third of rye. The soldier usually carried but one loaf in his pack, but sometimes, when necessary, the general "could issue six or eight days' supply, but only in urgent cases, because of the abuse of rascals who sell their bread without knowing what they will live upon during the last days of the period."

The ration furnished at the stopping place consisted of 24 ounces of baked and stale bread, "mixture of brown and white;" a pint of native wine, or a tankard of cider or beer, Paris measure; a pound of beef, veal, or mutton, as decided by the station furnishers.

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[1] Quartermasters. (Ed.)

It will be seen that vegetables were not a part of the regulation ration. As a result, these vegetables, as well as fowls, were the principal objects of the unrestrained marauding indulged in by the soldiers.

III. FROM 1740 TO THE REVOLUTION

Arms. The musket was replaced by that of the 1777 model, weight 9.5 pounds.

The bayonet of the new weapon was carried in a scabbard attached to a tawny leather belt by a single sling.

Equipment.

The Crossed Belts. The equipment of this period is characterized by the appearance of the well-known crossed belts, dating from 1740, the use of which continued for nearly a century.

The crossed belts consisted of:

A shoulder belt (baldric) supporting the short sabre;

A bandolier for holding the cartridge-box.

These two belts, from 2.3 to 2.7 inches wide, were made of "white buff securely sewed without pins or punctures," and rested flat on both shoulders, crossing on the center of the man's breast.

In 1760, the short sabre replaced the grenadier's sword, and, from 1766, that of the other companies. It had a curved and massive blade, weighed about 3 pounds, and was carried in a large leather scabbard. The shoulder belt that supported it passed from the right shoulder to the left hip. The belt that passed from the left shoulder to the right hip supported the cartridge-box. The latter, designated demi-giberne by the ordinance of 1747, was a pouch of red or black calfskin having a wooden form for twenty cartridges. The rest of the cartridges were carried in the knapsack.

The Knapsack.[1] The adoption of the knapsack was a second characteristic of the equipment of this period.

The German Reiter imported both the name and the thing into France. The authorities are not agreed as to the etymology of

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[1] The French word for our knapsack is havresac. The French word for haversack is musette. (Ed.).

the word. Some claim that the word havresac is derived from haben Sack (sack for holding), others, from Hafer Sack (oats bag).

In 1747, the knapsack was made regulation by d'Argenson at the time of the organization of the clothing service with separate accountability to the State. It was designed to be more easily carried than the old bag, to secure its contents from moisture, and to avoid the destitute appearance of the old coarse cloth bag.

In 1751, the knapsack was a large cloth bag, 4 feet long, 2 feet 6 inches wide, with rounded corners. Besides its normal use as a wrapping, it served as bedding for the soldier, and contained a little hide pouch for the smallest articles (called nippes).

It was carried like a game-pouch by a strap of the width of the belt, which was fastened two feet from the open end. This strap was arranged to be buckled to another piece of strap sewed on the left side. The empty part of the bag beyond the strap was folded under. The volume of the bag was therefore capable of extension or reduction according to its contents.

The ordinance of March 21, 1768, made the gallicized expression havresac official. Moreover, it prescribed that regimental commanders should make personal inspections of it each month.

The regulations of 1776 substituted for the cloth bag one made in two thicknesses. The inner thickness was made of drill and the outer one of goat or dogskin or of horse or cowhide with the hair left on. At the same time, this knapsack was furnished with double slings of white buff, the width of which was a little less than that of the crossed belts.

When the soldier had it filled, which was exceptional, the knapsack was carried on the small of the back on the lumbar region. Its framework of drill gave it a semi-regidity without depriving it of its flexibility.

When a charge or a volley in file or in three ranks was ordered, the bag was first placed on the ground. It was not conceived as possible for a man to fight with a pack on his back.

Interior Load of the Knapsack. Here is what the ordinary contents of the knapsack were about 1773:

1 pair cloth trousers, and sometimes a cloth smock-frock,[1]
1 wad-extractor, 1 priming-wire, 1 screw driver (musket accessories),
2 pairs of gaiters (three counting the ones worn on the feet), one white, one black, and one of wool,
1 piece of chalk for the belts,
1 thimble, thread, and needles,
1 button-hook for the gaiters,
1 pair of spare garters,
1 queue ribbon for the hair,
1 shirt,
1 pair of shoes,
2 handkerchiefs,
2 pairs of stockings,
2 collars,
Pomade,
1 wig comb,
Beeswax,
1 powder bag and puff,
Shoe-buckles and garters,
1 clothes brush,
1 brush for brasses,
1 belt brush.

The soldier was forced to wear three garters on each leg, one to hold up the hose, one to bind the breeches, and the third to secure the gaiters.

With such contents the knapsack must have been heavy, but it was exceptional for the soldier to carry it in the field. This duty was left to the servants, called goujats, who during marches carried even the muskets. The abuse of these servants led to the reduction of their number to one goujat for three soldiers (ordinance of 1758).

According to military writings, around 1785 two or three military marches were made each year without the soldiers carrying packs. Drill usually took place without the bag; but if for some reason the bag was carried, it was empty. In the very frequent changes of garrison, the foot-soldier was permitted to lighten his load by putting his effects in a bundle and paying for their transportation by wagon. Among the special duties of the sergeants was the overseeing of the knapsacks and their loading.

The Field Tent. In 1778, one tent per group of eight musketrymen and two large blankets per tent were granted. They were carried by two company horses. At the same time, the soldier carried a bed-sack in addition to his knapsack.

Kitchen Utensils. Kettles and bowls (gamelles) were issued to the men, but only in camp. These utensils were therefore not carried by the soldiers. On the march, the foot-soldier

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[1] "A coarse frock or long shirt, worn over the other dress, as by farm laborers, esp. in Europe." -- Webster. (Ed.)

borrowed those of the inhabitants.

In 1778, a canteen was issued to each man, and one camping vessel given per tent, that is, to eight men. Two sergeants per company carried a camping vessel with vinegar.

Portable Tools. The portable tools were distributed at the rate of one shovel, one pick, one billhook, and one ax per tent.

The soldier, who transferred to the servant the duty of carrying his baggage, looked upon digging as unworthy of him. He feared that, as had been done before in the time of Montluc, he would be treated as a pioneer or gastadour, terms which he considered insulting.

Diet. The diet furnished by the supply officers remained the same as set forth before, as did the amount per ration.

Toilet Articles and Uncleanliness of the soldier. One who looks at the above-mentioned list of articles will perhaps be astonished at the detailed care with which the knapsack was supplied with toilet articles, combs, powder, ribbons, etc; but we must not forget that, from 1740, parade became the great, almost the only occupation and preoccupation of commanders and soldiers. They spent their time cleaning their clothes and linen, and polishing their arms and the twenty-seven buckles of their uniform.

The head-dress alone required the most minute care; and we behold a royal ordinance of 1767 gravely prescribing that curls, called cadenettes, should be made by rolling up the hair on laminae of cardboard!

But what filth beneath this brilliant exterior!

"Stocking, shoes, and feet decay together. The soldier, so finely curled and powdered, is often covered with filth, vermin, and wretchedness from head to foot. In the field the soldier's hair becomes a very dirty ornament. Once the rainy season sets in, his head is never dry." (Marshal de Saxe, Lois de la tactique.)

Count de Saint-Germain, minister of war, did not dare, in 1776, to suppress the use of powder completely. He could only restrict it to Sundays, holidays, and days of important parades. This reform appeared at that time singularly audacious.

Total Weight of the Foot-soldier's Pack. That of the Prussian soldier reached 59 pounds 11 ounces, but he carried rations in considerable quantity. We read, indeed, in the instructions of Frederick II, "In all expeditions, it is necessary to be provided with bread or biscuit for from eight to ten days." The Prussian soldier carried from four to six and even eight days' rations.

As for the French foot-soldier, his total burden, according to General Pajol, amounted to 65 pounds distributed as follows:

Knapsack full of articles	15 pounds.
Musket, bayonet, and sling	14 pounds.
Sabre, scabbard, and braces	4 pounds.
Shelter tent, support, blanket, and canteen (when the man carried them) . . .	5 pounds.
60 cartridges in 10 packages	6 pounds.
Field rations (quite exceptionally). . . .	21 pounds.

This total figure of 65 pounds, however, seems to have been a theoretical maximum. The tents and blankets were normally carried by the company horses and the field rations were only very rarely issued complete.

Moreover, as we have already said, the soldier did not fight with his pack on his back, and marched but seldom with his baggage.

IV. THE ARMIES OF THE REVOLUTION.

Arms. The musket, still of the 1777 model, resembled the Prussian musket. Its weight was 10 pounds.

The waist-belt disappeared; the shoulder-belt which supported the sword also held the bayonet scabbard, the latter being placed next to the sabre scabbard.

Equipment. Thus, the soldier was still armed with his short sabre. However, this weapon had become unnecessary in battle since the widespread use of the bayonet; but it served in duels and in the work about camp or bivouac, where it took the place of tools which the soldier almost always lacked.

The cartridge-box, of rather voluminous dimensions, retained its wooden form with holes for the cartridges, and its weight was supported on the small of the soldier's back. His sides remained entirely free because of the abolition of the waist-belt.

The white cross-belts remained the same as under the old regime, but the form of the shoulder belt brought the sabre behind in a horizontal manner, called "en verrouil."

This method, though advantageous for the soldier himself, whose legs were free from the encumbrance of the scabbard, was very annoying to his neighbors in the ranks.

The Knapsack. The knapsack remained the same as in the last years of the old regime: semi-flexible, semi-rigid, without wooden frame-work, and with the hairy side of the hide outward. The contents, however, were essentially different from those of the former period.

Personal belongings included linen and shoes. Whenever the soldier received another pair of shoes, he carried them hung behind his pack suspended on the large middle strap.

The pack still contained the nippes, the soldier's small articles, also called butin. In fact, the word butin designated the knapsack itself as well. "We received the order to set out without butin," we read in the journal of the gunner Bricard, which proves that the packs were sometimes transported on the wagons. Again, we find an identical measure in the memoirs of Marshal

Gouvion Saint-Cyr: "For the plan of attack on Mayence of July 13, 1794, it was decided that the young soldiers, in order to increase their mobility, would be permitted to leave their packs in camp, where they were to be loaded upon wagons and guarded by a few men."

Although the men's packs were sometimes carried by wagons, it often happened, by contrast, that officers marched afoot with packs on their backs, as the trains then existed only in an embryonic state.

Cartridges. By regulations, the soldier should have carried 50 cartridges, but corps commanders and other officers did not see to it that the men had their packs and cartridge-boxes filled. Thus, on the morning of September 7, 1793, "Jourdan's divisions found themselves without bread, without brandy, and almost without ammunition, notwithstanding the fact that the strictest orders had been given by Jourdan and by Houchard for the corps commanders to cause to be carried two days' rations and 150 rounds of ammunition per man." (Gay-Vernon, Mémoires sur la campagne de 1793 à l'armée du Nord.)

Kitchen Utensils; Tools; Shelter. Kitchen utensils were not issued to the soldier, who picked them up wherever he could. All kinds were seen. "There are soldiers who march carrying stewpans and chafing dishes hung by their handles on the muzzles of their shouldered muskets." (Journal of Joliclerc, volunteer in the Revolutionary Armies.)

However, we read in the Journal du Canonnier Bricard that on the 12th of September, 1792, kitchen utensils were issued: kettles, dishes, and canteens; as well as tools: axes, picks, and choppers. But the same Bricard informs us that in Italy in 1797, the soldier, entirely destitute of utensils for cooking food, was, besides, always lodged without straw or blankets.

Portable Rations. The portable rations were issued so sparingly, so irregularly, that their weight encumbered the soldier very little.

The biscuit, of very poor quality, was issued in flat cakes, which were carried around the neck strung on a cord. The bold grenadier, La Tour d'Auvergne, who picked up the cakes thrown away by his comrades, marched under a veritable harness of biscuit.

As for bread, it was made of poor rye, and went "through the stomach like children's pap within twenty-four hours. However poor it might be, we couldn't do without it," says Gouvion Saint-Cyr.

"It was made of a small part rye or barley flour and the greater part of oatmeal and pea flour. It was offensive to the taste and to the smell. One had to be famished to eat a crumb of it." As detestable as it was, even this bread did not always arrive in time. At the siege of Mayence, the trains traveling with extreme slowness, the soldiers did not receive their bread. Then "the fields were laid bare and turned over with the bayonet, in order to carry off, grain by grain, barley, peas, and lentils, even to the smallest pieces of potatoes. As soon as the ears of wheat appeared the soldiers reaped them without waiting for them to ripen, drying them in the sun, and made a kind of pap which nourished them better than the poor bread of peas or oats that they got from time to time."

During the whole summer of 1796, the soldier drew only one pound of bread of very poor quality per day. "Many a dog would not have eaten it." Theoretically, he received in addition each day one quart of peas and a half pound of meat called "charogne," (carrion) but often as many as six days elapsed without any issue.

In Egypt, during the march on Cairo, the soldiers received wheat carried in cloth rolls placed cross-wise on the packs. The grain was ground between two stones, and a flat cake or kind of unleavened bread was made from the meal by the soldiers. At the time of the famous crossing of the desert, the soldiers had drawn four days' biscuits, but most of them had thrown them away, so insufferable had the packs become in consequence of the heat and the difficulties of the march. At a later period, 1,710 of the 3,000 donkeys collected by Bonaparte's order for the Syrian expedition were distributed among the soldiers at the rate of one donkey to ten men, in order to lighten their burdens.

The Canteen. The canteen issued to the men was of about a quart's volume. It held water mixed with brandy or vinegar. During the crossing of the desert just referred to, the soldiers who had brought their water from Alexandria had provided themselves for only one day. On the second day of the march--there were fourteen leagues of sand to cross--the soldiers, choked by thirst, came to a village, upon which they flung themselves. The inhabitants, however, had emptied their wells and concealed the receptables full of water. The admirably disciplined troops did not attempt to seize this expensive water by force, but paid for it as much as a crown of six francs for a canteen full. Fortunately, the soldiers discovered that the natives preferred uniform buttons to current coin, and consequently they paid in that strange kind of money.

Supplies of the Prussian Armies at the Time of the Revolution; Shelter. The French soldiers, who were in need of everything, found themselves in Europe struggling with the Prussian armies, which were abundantly supplied with tents, horses, and vehicles. It is true that with respect to food these troops were no better supplied than the French Army. "They sighed for bread and they had to be content with dust. In the driving rain, the soldiers were in need of water." (Goethe, Campagne de France.) At the same time, the Prussian general staff was publishing an order that an ample "supply of chalk for cleaning the belts should be procured." Cleanliness of this kind had become the least care of the French armies, as much from the spirit of reaction against the extreme views of the old regime concerning neatness as from the general scarcity of articles of equipment in the store-houses.

The Revolutionary soldier usually bivouacked without blankets or tent. Almost entirely without portable tools, he improvised shelter with tools borrowed from the inhabitants. In each Prussian company, on the contrary, tents were transported by four-horse wagons according to Prussian regulations; and the least among officers brought with him "a complete bed, a trunk, a tent, and a heap of accessories piled on an unfortunate pack-horse."

Estimation of the Equipment and Clothing of the Revolutionary Soldier. Summing up, the equipment and likewise the clothing of the Revolutionary soldier was irregular or whimsical and always dilapidated. The foot-soldier was reduced to carrying inside his pack the most incongruous articles and to suspending from it the most curious utensils. The burden, therefore, was so irregular that it appears to us to be impossible to define, or even approximate, its weight and detail.

All that can be asserted is that the soldier carried a pack resting on the small of the back and balanced without compression on the shoulders. But, however poorly supplied, fed, and equipped he was, the foot-soldier of the Revolution, by his enthusiasm, his endurance, his stoicism under hardships of every kind, remains a very interesting type of ragged hero, a superb tatterdemalion.

V. THE INFANTRY OF THE FIRST EMPIRE.

Arms.

The Musket and Accessories. The musket was still that of the model of 1777. The accessories of the musket were three flints which the soldier was to check at the time of battle; a screwdriver; a wire to clear the vent of the musket. This was a thick brass wire furnished with a ring which permitted it to be suspended to a button of the coat well in evidence and convenient to the right hand. When the soldier lost this wire, as often happened, he replaced it by a knitting needle.

The Cartridge Load. The foot-soldier and the dragoon regularly carried fifty cartridges, but the difficulty of resupply often made it necessary to issue more. In 1808 and 1810, the number was increased to sixty. In 1801, at the time of the crossing of the Splügen, MacDonald's soldiers carried supplementary packages of cartriges. Occasionally, the scarcity of ammunition caused the regular figure to be reduced, as in 1805, when Boudet's and Molitor's divisions carried only 20 cartridges per man and the division of Carra-Saint-Cyr 35; or, as in 1814, when the soldiers never received more than 40.

The cartridges were carried partly in the knapsack and partly in the cartridge-box, the inside of which always had a form pierced with holes. Before a battle, the soldier fitted cartridges in the places provided in his cartridge-box.

The Bayonet. The nature of the war required little ammunition, so much was the use of the bayonet resorted to. The latter became the fashionable, the favorite weapon, the French weapon par excellence. In his last reviews, Napoleon devoted his attention almost exclusively to the bayonet, and he ordered the three edges to be sharpened so that the enemy could not lay hands on them. When he inspected Heudelet's division, he saw a first sergeant of the 26th who had lost his bayonet. "It would have been better," said he, "had you lost your breeches."

The Short Sabre. Besides the bayonet, the soldier always carried his sabre suspended to the white shoulder belt. In combat this weapon served only to interfere with his neighbors in the ranks, but it was utilized, as has already been said, in duels and

in various works about camp. This sword also served to advantage as a spit upon which to roast meat or cook potatoes. Around the leather scabbard of the sword was fastened the full dress plume in its case. This curved blade sword received in the year II[1] a new shape slightly more convex, which made it heavier.

In 1808, Napoleon prepared a decree which withdrew the sabres (in order to supply the conscripts with them) from the grenadiers, the voltigeurs, and the foot artillery. In exchange, the latter had to receive camping tools and mattocks; but this decree was never published.

Equipment.

The Cross-Belts. As equipment, we find again the famous cross-belts of the old regime, the sword-belt, and the cartridge-box bandolier. This cartridge-box, of large dimensions, with leather flap ornamented with a copper eagle, rested on the small of the back and supported the lower part of the knapsack. The shoulder belt was kept flat on the shoulder either by the fringed epaulet or by the fringeless epaulet.

These cross-belts, from 2.4 to 2.8 inches wide and approximately two tenths to three tenths of an inch thick, formed a fairly good protection against bullets. They were whitened with chalk on parade days.

The Haversack. The cloth haversack was not a regulation article. Bread was carried either in the knapsack or behind it, perforated and run through by the large strap.

Nevertheless, in Davout's corps, incomparably the best supplied and equipped of the whole army, we find in 1812 the mention of a cloth bag carried suspended from the shoulder and containing two loaves of three kilograms. This was evidently a kind of haversack. The Journal of Captain François gives us this word musette for the first time, we believe, in the account of the retreat from Russia in 1812. "A few soldiers," said he, "carried

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[1] Presumably of the Empire, which would be 1806. (Ed.)

on the shoulder a small bag or musette of flour, and a jug hung by a string at their side."

The Knapsack. The knapsack remained the same flexible one made of hide with the hair on and with slings and belts of white buff. A knapsack found at Waterloo furnishes us with the following dimensions:

Width, 15 inches
Height, 14 inches
Width of belts, 2 inches

The flap fastened by means of three buckles. An inner pocket was provided for flour. This sack, of limited size, was carried very low on the man's back.

The interior load of the sack comprised:

1 pair of trousers of coarse cloth,
1 pair of cloth trousers to be worn with suspenders,
1 pair of gray gaiters,
1 pair of black gaiters,
1 linen smock-frock
1 forage cap,
Underclothes,
1 or 2 pairs of shoes.

Spare foot-straps were provided, because, during the marches, the foot-straps for the gaiters were constantly breaking, leaving the shoes helplessly fast in the sticky mud.

Besides its ordinary contents, the knapsack often contained the product of marauding or pillage. Sergeant Bourgogne in the course of his travels in the retreat from Moscow in 1812 itemized the contents of his knapsack as follows: "It was quite well supplied with rice and contained several pounds of sugar, some biscuit, a half bottle of liquor, a Chinese woman's dress of silk cloth woven with gold and silver, several fancy articles, among others a piece of the great Ivan cross, my full uniform, a woman's cloak, useful in riding horseback, and two silver plates. As may be seen, by knapsack with my musket, my supplies, and sixty cartridges in my cartridge box, became quite heavy."

The Complete Load in 1812 (Davout's corps). In crossing the Niemen in 1812, if the soldier was properly equipped, he had to march with his overcoat rolled up on top of the knapsack.

Inside the latter he carried:

1 pair of trousers,	2 shirts
1 pair of cloth half-leggings	2 pairs of shoes.

But it was probably not like this anywhere, for Davout, who was very strict on the subject of equipment, took from the soldier his heavy clothing and sent back to the rear the jackets and cloth trousers in order to compensate him for the overwhelming weight of his reserve provisions. His foot-soldiers were "so lightly clad that they appeared intended for the sands of Africa rather than the snows of the North."

So it was that on the 23rd of June, Friant's foot-soldiers passed before the Emperor frightfully burdened. They carried about them, in and on their knapsacks:

2 pairs of shoes with nails and spare soles, as we have seen,	The full dress,
10 pounds of flour, in a straight roll placed along the top of the knapsack,	2 shirts,
1 bandage for dressing wounds,	Lint,
1/2 pound of salted meat,	60 cartridges,
	1 oz. of rice,
	A few utensils for cleanliness,
	4 pounds of biscuit.

They carried also, slung over the shoulder, a coarse cloth bag containing two enormous loaves of bread.

With their muskets, their sabres, and their cartridge-boxes, these unfortunate foot-soldiers had more than 65 pounds on their bodies. They crossed the Niemen slowly, heavily, and breaking step in order not to shake the bridge. If they straightened their bodies for a moment before the Emperor, they were immediately bowed down again under their crushing burden.

However, the river had scarcely been cleared before the soldiers threw away their provisions and gave themselves up to pillaging. After the 26th of June, Davout recommended to Gudin "to inspect the knapsacks and shoot the scoundrels who are pillaging."

Outside Load. On the back of the knapsack, between the large belt and the clothing, the soldier carried the marching hat folded in two in a drill case striped blue and white. The busby, in the corps that were supplied with it, was carried in a drill

case behind the knapsack; but after 1809, at the time of the crossing of the Danube, the foot grenadiers of the Guard threw their embarrassing marching hats into the river (Captain Coignet); this hat was then suppressed and replaced thenceforth by the busby invariably worn as a head-dress without plumes or bands.

The cover of the busby then became dispensable as such and was used by the soldier to carry the most outlandish articles.

On the knapsack, the exterior load carried by the soldier consisted only of an overcoat rolled up and flattened out. This coat was often of poor quality, but it was appreciated in bivouac. After 1809, this overcoat had a cloth cover striped white and blue.

The Guard carried in addition the full dress which it wore on the days of battle. "The soldier of the Guards considered it as his ball costume, his luxury, and the guarantee of his amorous successes in the towns that he visited as conqueror." (Derniers jours de la Grande Armée, by Captain Mauduit.)

The soldier also sometimes carried glorious supplementary burdens. Thus, in September, 1805, Ney's order for the passage of the Rhine at Lauterburg mentioned the following curious provision: "All of the infantry, cavalry, and artillery will wear oak branches in their hats, in recognition of the victory which the French Army will win over its enemies," a presumption that would be laughable if it were not sublime coming from the mouth of a chief like Ney.

Officer's Knapsack. Until 1805, officers were seen afoot who carried their effects in knapsacks. If this was exceptional in Germany, it was almost a rule in Soult's army in Portugal, where the deplorable state of the roads deprived the subaltern officers of the baggage wagons altogether.

Little by little, the officers obtained servants or followed the usage, tolerated except in the Guard, of requiring the service of soldiers, to whom was given the sobriquet of "philistins."

Neither in marches nor in combat did the infantry place their knapsacks on the ground. At least officers never ordered this, as it was not regulation.

So, either from recklessness or from fatigue, it often happened that the soldiers rid themselves not only of their utensils, as we have already seen, but also of their reserve

rations and even of their knapsacks. However, they always kept their overcoats, which, as the nights in bivouac had demonstrated, were exceedingly precious.

The Soldier fought with his knapsack. The soldier fought with his knapsack and never quit this inseparable companion of glory and misery; but, as we have seen, the foot-soldier did but little firing on the battlefield. Officially supplied with 50 or 60 cartridges, a number that was not always received, he was especially eager to make use of his bayonet, his favorite weapon; and, in the assault, he took pride in charging at a walk. He was therefore not accustomed to running on the battlefield, and this fact explains the possibility of keeping the knapsack on his back during the whole combat, in firing and in the assault.

Shoes. The soldier of the Empire was loaded with shoes, and carried as many as possible, sometimes three pairs: one on the feet, one in the knapsack, and the other hung on the outside by the great belt. Thus in October 1806, the foot-soldiers of Soult's corps had two good pairs of shoes carried on the knapsack. In the same year, Junot, in reviewing his men, had to make sure "that the men carried three pairs of shoes in and on the knapsack" according to the Emperor's orders. This figure seems fantastic, but it often happened that a pair of shoes was worn out by the frightful mud within ten days.

In 1812, Davout's soldiers carried two pairs of shoes in the knapsack and, besides, nails and spare soles. But in Spain the deplorable state of the roads ruined all the footwear of the soldiers. They were reduced to the necessity of making light shoes of a kind similar to Spanish sandals from the hides of young cattle. They attached these improvised buskins to their bare feet with the straps of knapsacks thrown away on the march.

The Gourd and the Glass Canteen. Each soldier carried a bottle gourd suspended crosswise from right to left either by a thick string or by a fine leather thong. In 1806, osier bottles in the shape of canteens were tried, but were given up on account of their fragility.

In Spain, as utensils were becoming scarce among the inhabitants, Napoleon demanded that the government send to Bayonne 30,000 bottles packed in straw, each capable of containing half a pint. One can imagine how long these fragile receptacles lasted, and yet the soldier often threw away the tin canteen, "which is oxidized from one day to the next, and which quickly

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corrupts the water mixed with brandy and vinegar. As a consequence, the soldiers fling themselves upon every spring in order to quench their thirst, and so ruin their stomachs and contract fevers."

Little by little, necessity aiding, the soldiers became accustomed to the goatskin of the Spaniards.

At the close of 1806, besides the canteen carried by each man, there was a camping vessel for each mess.

The Company Camping Vessels. At the time of the institution of camps in 1802, Bonaparte granted four portable camping vessels for each company. One was to contain vinegar to correct the water according to the old tradition, the others brandy. Moreover, each soldier received a canteen holding a pint which was to be "carried on the knapsack," but which the soldier soon began to suspend crosswise.

This regulation model did not always exist. "The canteens are too long in coming," wrote Napoleon to Berthier in 1807; "have them bought from the inhabitants and pay for them."

Camping Utensils. Always foreseeing things, Napoleon attempted to provide the soldier with camping utensils; but, beginning with the first marches, the soldier rejected overload of which experience had not demonstrated to him the necessity, and, careless of authority, scattered them over the roads.

In 1802, eight camp kettles were issued per company. Upon breaking up the camp of Boulogne, the soldiers threw every one of them away. At the first stage to the Rhine, the carbineers of the 26th Light divested themselves of all their utensils. The colonel had them marched with coats turned inside out and with their musket butts up, and in each lodging place had the mutineers put in prison until they consented to take back their utensils. But throughout the whole army a great number of men got rid of them for good.

As the custom was to live on the country, kitchen utensils were seized in Bavaria and in Austria, and these habits became rooted in the soldier. Thus, when the war against Prussia became imminent, there were in Davout's corps, which was considered as a model, no longer any camp kettles or vessels. The captains had to procure, by private agreement with the inhabitants, kettles of beaten sheet iron of the kind used in Germany.

At the different stages these articles were replaced, thanks to the store-houses, and at times the soldier consented to be burdened with them. However, he was reckless and improvident, and as soon as he went into cantonment in rich regions he immediately forgot the usefulness of the utensils, and exchanged them from day to day according to the chances of the bivouacs.

Thus it was that, in crossing the Brandebourg, he threw away the camp kettles with which he was provided, abandoning them in the mud, and upon arrival in Poland found himself absolutely destitute. Every regiment was without them, although several villages had been disfurnished. The soldiers were therefore soon reduced to making meals of potatoes dug up in the fields with the points of their swords.

In Ney's corps, camp kettles, bowls and camping vessels were all lacking. The whole army suffered from a like scarcity which lasted till summer. On the eve of Heidelberg, cavalry officers were seen "making a little tea in the bottom of a case-shot."

In the spring of 1808, after nine months of peaceful cantonments in Prussia, the Emperor advised the corps commanders to buy a certain number of utensils, as there were none left of any sort.

In 1812, one kit per soldiers' common mess was given, but in 1814 there was no longer any question of utensils. The thing seems to have been superfluous at that time, when men were without equipment, many lacking even cartridge boxes and carrying ammunition in their pockets.

Portable Mills. Wheat as such being sometimes issued to the soldiers, it was attempted several times, without great success, to give them portable mills to make flour.

In the Portugal Army, Marmont got mills for his men, but they soon became useless for lack of grain, and the soldier preferred to rid himself of this overload. He was content to grind his grain as well as he could between two polished stones.

On the departure from Moscow in 1812, the Guard received hand mills, but they were gotten rid of "within twenty-four hours."

Portable Tools. "There are five things which must never be separated from the soldier," said Napoleon; "his musket, his cartridges, his knapsack, his rations, and his entrenching tool." It is true that later in a letter addressed to General Clarke, Minister of War, the Emperor wrote: "We have to abandon the plan of giving tools to the infantry. They are too heavy and would embarrass it on the march. The soldiers would throw them away in the end. This would be a great loss to the engineers."

In 1802, at the institution of camps, there were issued to each company four picks, four shovels, four axes "of very good quality, well sharpened, and not for parade," said the instructions.

In each company, there were detailed men who were to carry these tools; this did not happen "without grumbling."

In camp the soldier readily admitted the usefulness of the tools, but when it was a question of going on campaign, "it was not without a sharp feeling of pain that he saw this increase of his burden."

At the time when war with Austria became inevitable, Napoleon prescribed that there should be issued "to half of the elite companies axes with handles and to the other half mattocks," tools which the men would carry slung over the shoulder, and that in each company of foot artillery axes should be given to the first squad, picks to the second, shovels to the third, spades to the fourth.

In spite of this order, the scarcity of tools, which were lacking even in the parks, was such that the artillery companies remained altogether unprovided.

Likewise, in 1810, the Emperor wished to have axes made in order to give one to each squad leader in place of the short sabre and mattock, but this project was not put into execution.

Portable Provisions. Nothing was less regular than the load of provisions carried by the imperial soldier. In this respect, he was not a whit more fortunate than the soldier of the Revolution. Sometimes he carried no ration at all, because there was none issued to him; at other times he was overloaded with four and eight days' or even a fortnight's rations, according to the prevision of the command, the necessities of the moment, or the resources of the country passed through.

At Vehlau, certain battalions of the Guard received a fortnight's rations; but, however elite these soldiers were, they did not wait long to waste them and to throw away a large part of them. This foresight of the command seemed of ill omen to them, contrasting unfavorably with the unconcern of former campaigns, when the food supply remained a matter of chance. Indeed, the example of the old soldiers was followed by the conscripts in the spirit of imitation as well as through physical weakness.

More than once in the course of the campaigns, the Emperor ordered a fortnight's rations to be provided; but, as has been often observed, never were more orders for subsistence given by a commanding general, and never were they less observed in the execution.

The Army of Dalmatia, in 1811, carried eleven days' rations. We have seen that the armies of Portugal and Spain carried as many as a fortnight's. In Catalonia, issues of dry codfish were made, which the soldiers hardly appreciated. However, the infantry of Soult, driven out of Portugal and returning to Galicia, received only a quarter or an eighth of a ration, which was bread or biscuit with 3.2 oz. of meat without salt.

Bread. Bread was not always regularly issued. Its quality, always questionable, left much to be desired. There was a tradition among the suppliers of rapidly acquiring fortunes by furnishing food described as "good for soldiers," that is, of quality poorer than mediocre. This sour rye bread was often "mouldy and quite blue." It was carried in or on the knapsack, run through and held in position by the great belt or suspended by a string to the part of the sword support.

The number of rations carried by the soldier was most variable. We find the troops that cleared the Rhine in 1805 carrying four days' bread. But, at the close of 1806, in the region of Pultusk, not even bread was received for eight days. To replace it, soldiers harvested standing rye, cut it with their swords, threshed it on their cloaks, ground it to coarse flour between stones, kneaded it in poor vessels taken from the inhabitants, and had it baked in the shape of cakes under the embers of the bivouac fires. They thus succeeded in having for consumption a "semblance of bread."

Having arrived in Vienna, the Emperor regulated the contributions to be levied on the occupied country, and, desiring to increase the size of the ration, fixed it at

1 1/3 pound of ration bread,
1/3 pound of bread for soup.

Theoretically, this ration was brought, beginning the 1st of August, 1810, to

1 3/5 pounds of bread, or
1 pound of biscuit.

Bread for soup was no longer considered, since it was procured with difficulty in a country ground down by the conqueror.

This theoretical ration was rarely obtained. In practice, beginning the 20th of June, 1811, the Guard, though cared for and supplied before all other corps, was reduced to the following:

4/5 pound of bread,
1/3 pound of flour.

Flour. Because it was unable to make bread, the supplies service more than once issued flour or even natural wheat, as we have seen them do in Spain.

In 1811, at the departure from Bamberg, an order by Davout, who was as far-sighted a chief as he was an exacting one, required each military person, officer and soldier, to carry ten days' rations. In the execution of this requirement each soldier carried ten pounds of flour in a roll, which was placed on the overcoat carried on top of the knapsack.

In Portugal, during Massena's march on Lisbon, the deplorable state of the roads and the weakness of the horses compelled the soldier to be overloaded. He was made to carry on his knapsack 20 pounds of badly sifted flour and biscuit that was still damp and moulded every day. Again, in Marmont's army, the foot soldier carried through an insufferable heat, besides his arms and his baggage, a fortnight's rations, eight days of which were if wheat, plus portable mills.

Finally, after the evacuation of Galicia by Soult's army, which was advancing against the English, the infantry carried two weeks' biscuit and salt. The difficulty of transportation over the roads doubtless rendered such an overload obligatory, but what a source of fatigue and destroyer of discipline it was!

We have seen that the flap of the knapsack was furnished on the inside with a pocket to hold flour. Indeed, Napoleon desired to be entirely free from the care of making bread for his

troops. He wished his soldiers to make their own bread as the Roman legionary soldiers had done. "There will be a real army," he said in the Mémorial de Sainte-Hélène, "only when the soldier, like the Romans, will be issued wheat directly, will have portable mills, and will bake his own bread. Under the Roman method, soldiers could go to the end of the earth; but we would have to create new military habits."

Perforce, and on account of the necessities of life in the field, the soldiers of the Empire were several times compelled to imitate the Roman legionary soldier.

We have already shown that this happened in Poland. During the retreat from Moscow, in 1812, the troops of the Guard, which bivouacked near the Emperor, received a little flour taken from the baggage wagons, but the other troops received nothing.

Pap: At the time of that disastrous retreat, certain men, according to the account of Captain François, carried flour in a small bag or in a sort of haversack " in order to prepare the meals. While some were making pap, others were preparing cakes under the ashes. Then each group took from their bags horse meat and threw it on the fire to have it broiled. I have lived thus," François continues, "twenty-three days without salt or bread. Sometimes I ate rye, barley or oat cakes that my soldier obtained for me."

Pap was made from all sorts of flours diluted with the melted snow. It was a blackish mixture full of sand. Musket powder, which had a saltish property or at least removed the insipidity from the food, was put into it. It can therefore be said with those who have left us the accounts of these tragic hours, that the soldiers lived indeed "miraculously."

When issues of salt were not forthcoming, the soldier supplied the lack of it by the use of powder, which has, however, some drawbacks as a means of seasoning. "It makes soup like wax and blackens the pap!"

Meat. The meat ration, which was 8.7 oz. in garrison, varied in the field according to the resources of the country operated in. As the soldier received little vegetable or none, he was issued as much as 1 1/10 pounds of meat of mediocre quality.

In 1808, in Prussia, the soldiers received in the peace cantonments 4/5 pound of meat, but this ration was soon reduced to

3/5 pound. Finally, on the 1st of February, 1809, the amount of the meat ration was brought back to 1/2 pound. Meat was put either in the knapsack or in the inside of the utensils when the soldier had any. The busby case also served occasionally for this purpose. It was thus that, in 1812, an old soldier of the Guard, in the retreat from Moscow, "carried 15 pounds of fresh meat in this improvised receptacle."

Vegetables, Rice, and Composite Rations. Vegetables were usually kidney or broad beans or peas. Fézenzac retained a disagreeable memory of a "frightful cheese and hard peas fricasseed in oil." And Coignet remembered "eating from wooden vessels, with spoons of the same material, beans which dated from the creation of the world."

Rice began to figure in the issues about 1806. At Vienna, where he arrived in 1809, the Emperor fixed the ration at:

1 pound of meat,
1/8 pound of rice,
1/4 pound of dried vegetables.

There is never any question of potatoes in the issues of the supplies service; but more than once these vegetables, taken from the inhabitants or dug up in the fields, as in Poland, prevented the soldiers from starving to death.

About 1810, when the continental blockade was established in all its strictness, the food from the colonies rose in price. The rice ration of 1/8 pound was reduced to 1 oz, that of dried vegetables to 1/8 pound in place of 1/4. At the same time, there were issued ½ oz. of salt and ½ pound of salt meat. As a compensation, we have seen that the bread ration was increased to 1 3/5 pounds.

In 1811, the Guard still received only 1 oz of rice, although they received only 4/5 pound of bread and 1/4 pound of flour.

Davout's foot soldiers, always the best provisioned, carried in 1812:

1½ ozs of rice,
8.7 oz of salt meat.

Wine and Brandy. In order to keep the soldier up, Napoleon had as much wine and liquor issued as possible. After the taking of Berlin, he ordered the rations of these stimulants

to be increased. "It is wine," he said, "that will make my victory in winter." He would have liked a gigantic cellar to follow the army.

Strong liquors were given to the soldiers in abundance, the victors dipping into the cellars in the conquered country. At Vienna, the Emperor prescribed that there should be issued:

1/16 pint brandy, 1/2 jug wine or beer.

And in 1810, he fixed the ration at:

1/4 pint of wine,
1/16 pint of brandy,
1/20 pint vinegar.

We have seen that one of the great company camping vessels was to hold vinegar and another brandy, intended, like the vinegar, "to correct the water." But this prescription was never observed, and it happened that the brandy was drunk "by bumpers one after the other."

Bad Food in Campaign. The troops often ate meat scarcely cooked and without vegetables, or even partook hastily of "a water soup, greased with tallow and seasoned with powder." Soup was made when the order for it was given. Thus, at the time of the march of Ney's corps toward the Rhine in August, 1805, Ney wrote in his orders: "Every morning soup will be eaten before leaving." And in 1812, according to the order for the crossing of the Niemen for the First Corps, the officers "must make sure that the men have eaten soup and that they carry with them four days' rations." Moreover, each officer was to inspect every morning and "make sure that each soldier has eaten only one day's ration and has preserved the number of days' provisions required."

But beyond Smolensk, the varied regime of chance rations began. "Honeycomb was taken from the hives and placed in a frying pan over a great fire. When all the wax was converted into a liquid mass, each man filled his utensils and even his water bottle with it." There was cabbage seasoned with gunpowder, candles found in the knapsacks of the Russians, and vile brandy found in their canteens.

After Moscow, those who were "lucky" ate preserves, spiced bread taken from the looted baggage wagons, and honey. Men who carried frying pans on their backs lent them to comrades in exchange for any kind of victuals.

Quartering in the Field. In the course of his campaigns, the soldier rarely knew the comforts of the cantonment. In bivouac, he had no tents and blankets; but he was a past master in the art of improvising shelter. Portable tools and short sabres did marvels and were used much more in bivouac than on the battlefield. Trees, swiftly and ruthlessly felled, were fashioned roughly by the ax into posts and beams. Three walls of straw, surmounted by a roof of the same material, formed shelters against wind. The soldiers tore off doors, shelves, and window shutters from the houses.

In 1807, in the camp near Eylau, soldiers slept in barrels and issue sacks which the Emperor had made by the thousands by cutting up the cloth tents found in great quantities in the Prussian storehouses.

The establishment of a camp meant the ruin of the country for five leagues around, as the soldier had acquired the habit of "taking the villages apart." Not only did he take from them all the wood that he could carry away or tear off, but all sorts of articles to his fancy, even pieces of cloth and canvas from which he improvised tents, pitching them on four legs. In the neighboring hamlets, there remained no trace of doors, windows, or even roofs.

In Russia, we see the Old Guard making its bivouac in a square and sheltering itself, around Napoleon and Berthier's drill blue-white striped tents, with green wheat woven among boughs or interlaced fir branches. In Spain, the soldiers seized a number of paintings from the convents that they had taken by storm and used the canvas for shelter.

The Road Marches of the Imperial Infantry. How were the marches of the armies of the Empire made? In order to complete the picture of the soldier's life, we believe that we must give some information upon this subject.

On the road, the march was generally made in three ranks. After marching an hour, a halt of five minutes, called the "halte des pipes" (halt for smoking) was made; and at the following halt, in most of the corps, the superior officers stood drinks for their men and for their subordinate officers. This was called "doing the brandy honors."

At noon, if the march was long, an extended halt of an hour was ordered, during which the men had a piece of meat roasted. In times of intense dust, in order to prevent the soldiers from getting sore throats, the officers who marched afoot required them to keep a straw between their lips to compel them to keep their mouth closed.

The stages were often very long. Certain marches began at 2 o'clock in the morning and ended at 8 o'clock at night. On the 30th of September, 1805, Ney wrote the Emperor: "Although your Majesty's troops, which I have the honor to command, have covered ten leagues a day since leaving the coast, they are in sufficiently good condition to continue the marches and to increase them to twelve leagues."

Because of the generally bad condition of the roads, the foot-soldier, heavily loaded, suffered frightfully above all from the mud, in which the shoes stuck by the foot-straps of the gaiters and remained fast. The description of the grenadier withdrawing his legs with his two hands "like carrots" was not a figure of speech, but often a painful reality. The length and monotony of the road was sometimes broken by the drum and fife. Thus, in 1805, Ney's order for the day prescribed: "A drum and fife at the head of each battalion, relieved hourly, will play marching tunes continuously."

In 1812, from the 24th of June to the 14th of September, 660 miles from the Niemen to Moscow were covered in twenty-five marches of eight and a half hours each. But of 247,000 men who crossed the Niemen in June there remained only 127,000 to fight at the Moskowa. In the retreat from Moscow, thirty-eight days of marching were accomplished at five and a quarter leagues per stage. Weariness took a fearful toll of the men; and even in the Old Guard, at the time of this disastrous retreat, eye witnesses relate that men were often seen "to stagger, fall, and expire under the weight of their knapsacks."

But when, after these long marches, these days of hardship, these terrible nights of bivouac, the soldier arrived on the battlefield wet through, blackened, and famished, he quickly forgot his fatigue and misery. He tested his flint, counted his cartridges and filled the wooden form in his cartridge-box; then, when he had time for it, he took his best-looking uniform, whitened his crossed belts with chalk, and polished his brasses in the ashes of the bivouac in order to fete death and await it in full dress uniform!

An Estimation of the Equipment and Load Carried by the Imperial Foot-Soldier. We shall close this study of the imperial infantry by summing up what we have said concerning his equipment and by discussing the conditions of the load carried by the foot-soldier.

The equipment of the foot-soldier included:

1. The white shoulder belt passed over the shoulder from right to left, the two ends being joined behind the left hip

to support the short sabre, either in the form called "en verrouil" (horizontally) or suspended along the man's left thigh.

2. The bayonet scabbard. This was held by the belt near the joining point of the belt's two ends. It was placed next to the sword scabbard.

3. The banderole of white buff, passed from right to left and supporting the cartridge-box.

4. The cartridge-box, 9 inches long by about 6 high, resting on the small of the soldier's back, its inside face against the body.

The two large cross-belts crossed at the middle of the breast, but without too much compressing the latter because of the play allowed to each of the two banderoles by their great length. Moreover, the weight of the sabre, about 3 pounds, was obviously made to balance that of the cartridge-box supplied with 30 cartridges (3 pounds). We know that the rest of the cartridges were carried in the knapsack.

5. A narrow strap carried crosswise from left to right, holding the jug or canteen.

The load, properly speaking, besides arms and cartridges, included the knapsack without the form which we have described. Carried very low, this knapsack conformed, by reason of its semiflexibility, to the saddle-shape of the lumbar area, which is a reasonable place for the burden.

Moreover, the height of the hide cover was not considerable. Even when surmounted by the overcoat-roll, the exterior load of the knapsack did not exceed the line of the man's shoulders. The sack was therefore suspended and balanced naturally on the loins. Besides, it was supported without pressure of the braces around the shoulders, because the arc of the circle formed by the brace between its two points of attachment, upper and lower, was of large dimensions. This result was obtained precisely by the very low position of the knapsack. Finally, the lower face of the latter rested partly on the cartridge-box, whence a better distribution of the weight resulted.

Here is how General Bonnal considers this manner of loading the foot-soldier:

"By carrying the knapsack so low that its under part was supported on the pelvis bone, its weight was more or less equally distributed between the hips and the shoulders.

Besides, the foot-soldier carried less than to-day." (General Bonnal, Landshut, 1809).[1]

To sum up, the load of the imperial soldier was the exact opposite of the famous high-placed load of the African troops. It was the man's lumbar region that supported the burden and not solely the convex region of the shoulder blades.

Napoleon's foot-soldiers were so far from being partial to the high-placed load that they never carried anything above the overcoat-roll. Bread was carried behind the knapsack, shoes on the side, or like the utensils, hung by the great belt.

Moreover, they wore no kind of waist-belt and the flanks were completely disengaged. The weight of the cartridges in the cartridge box was supported like the rest of the burden by the lumbar region.

Thus, characteristic elements of the load of the imperial soldier appear to us to be the fact that it was carried as low as possible and that the flanks were entirely free. We can learn from this a practical lesson.

Indeed, it does not seem rash to admit that the system of the old soldier had some good points, since he had tested it in the course of those terrible journeys across Europe that will never be duplicated by any infantry in the world.

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[1]Actual title, in part: La maneuvre de Landshut, Paris, 1905. (Ed.)

VI. THE RESTORATION AND THE AFRICAN WARS

Origin of the Knapsack with Rigid Frame. So far as equipment is concerned, the great, and it may be said the deplorable transformation of the period was that from the supple bag to the rigid bag with the inflexible frame. The origin of the rigid knapsack is found in a very curious anecdote.

In 1812, a young soldier named Chaudelet conceived the idea one review day of fixing wooden boards in the interior of his regulation flexible knapsack. It was thus given a shape, which permitted it to lie close to the shoulders by keeping it stretched.

Thus equipped, Chaudelet, a little uneasy, took his place in ranks. The captain, inspecting the company before the arrival of the colonel, perceived the fancy knapsack of the young soldier and immediately put him under arrest. When the colonel arrived, he was struck with the extraordinary appearance of the new sack and admired its geometrical form. Addressing the abashed Chaudelet, the colonel said to him:

"Come to me with your knapsack after the review."
"But colonel, the captain has just put me under arrest."
"I remit the punishment."

Quite happy, the young soldier proceeded to the colonel's bearing the wonderful knapsack. The colonel, after examination, declared himself very much pleased with the fine appearance of the new model, and put at the disposal of the inventor a detail of soldiers to have 500 knapsacks of the ordinary model transformed into the superb rigid variety.

A short time after, the War Department definitely adopted the model.

Remarks upon this Origin. This curious anecdote suggests the following reflections:

1. The rigid sack was conceived by a young recruit, not by an old soldier with field service who had carried a load in campaign.
2. It was created for a review, that is, to be worn empty. What seduced the colonel was the fine regular shape and the well-aligned sides of this case.

This Knapsack is a Parade Sack. It was by no means experience with a sack in the field that caused the adoption of this form, but the desire to obtain a regular appearance

of the soldier with the knapsack on. Undoubtedly, the appearance of the rigid sack of the Restoration, with the overcoat rolled up into a perfect cylinder of the exact width of the upper board, gave the soldier a prinked up appearance that pleased the eye of the commander enamored of parade, of rigid alignments even through the men's shoulders, and perfect uniformity.

But for field service, this sack was an error. We shall have no trouble in demonstrating this fact a little farther on. Invented in 1812, the new knapsack was scarcely tried in campaign under the Empire, except in 1813, when those of the soldiers who used it loudly complained of it, regretting the old flexible lumbar sack. At Waterloo, the knapsacks of the foot-soldiers were still of the old model.

During the long years of peace that followed the collapse of the First Empire, the Restoration adopted the mischief-making rigid sack of hide with the hair on and gave it great height and width.

Equipment of the Foot-Soldier in 1832 (Combatant). Here is the equipment of the infantry soldier of the line in 1832:

Rigid knapsack, with wooden frame, surmounted by the overcoat rolled up into a cylinder of the exact width of the sack and wrapped in a cloth holder striped white and blue.

The foot-soldier of this period no longer carried the short sabre; but we shall see it reappear presently. As under the First Empire, he wore no waist-belt. A belt of white buff passing from left to right supported the cartridge-box, which was still of large dimensions. The cartridge-box was fastened by a little leather flap to the back button of the coat.

At the level of the right hip, the bayonet's scabbard-holder was sewed to the belt that held the cartridge box.

In 1837, the short sabre reappeared. The uniform of the light infantry shows the reappearance of the famous cross-belts. As we have said, they lasted a century.[1]

At this period, the bayonet scabbard was worn on the right and thrown back behind by the oblique form of the frog (sword-belt). The bayonet therefore made a counterpart to the sword carried on the left by the shoulder-belt, the blade having become straight with the hilt of threaded copper.

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[1]From their inception. (Ed.)

Equipment of the Carbineers in 1840. In 1840, the uniform of the carbineers of the light infantry presented some rather curious peculiarities in equipment.

The soldier carried, suspended from the neck by a narrow thong, a large pouch for cartridges made of coarse blue canvas. He was furnished with a waist-belt, which at last made its reappearance after a long eclipse, since it did not exist at all under the Empire. This waist-belt supported, on the right side of the man, the bayonet in a vertical position, and on the left side the straight sword.

The Transformation of the Cartridge-Box. The abolition of the cartridge box was one of the results of the African campaigns. This voluminous cartridge-box, furnished with a wooden form making a hard shell, had its raison d' être for paper cartridges, but it had the disadvantage of being cumbersome.

Here is how it was transformed into a flexible cartridge carrier:

African soldiers, lacking wood, bethought themselves of tearing up the wood of their cartridge-boxes, which had been kept quite dry by its leather envelope, and they made of it an auto-da-fe. "The generals who approached the cheerful flames did not suspect," said General Thomas, from whom we borrow the anecdote, "with what kind of wood they were warming themselves."

The Cartridge-Box. Having become flexible, the cartridge-box was doubled over and its two parts placed symmetrically on the waist belt, on each side of the plate.

The Camp-Sack. Unfortunately, the experience of the African campaigns did not bring about a modification of the rigid sack; but they led to changes in the soldier's load which are interesting to relate. Each soldier was furnished with a sack called "camp-sack" (sac de campement), the uses of which were multifarious, but which in bivouac served as a sleeping bag. It is interesting to recall that the old knapsack of 1751 was also employed as bedding. This avoided making the soldier carry a covering constituting a dead weight.

At the time of Constantine's first expedition, the soldiers were compelled to undergo terrible nights in bivouac in the rain, mud, and snow, and tormented by a glacial wind. Such wretchedness led the French soldiers to exercise ingeniously their inventive powers and initiative.

The Shelter-Tent. A few men conceived the idea of ripping up the camp-sack and pitching the piece of cloth thus obtained

on the windward side with the aid of string and improvised pegs in order to protect themselves from the rain. Then they thought of uniting these rectangular pieces of cloth by means of several buttons so as to form a little tent.

During the campaign of 1840, some generals were struck by this unpretentious invention. Marshal Valee and the Duc d'Orléans, who was then commanding a division, examined the various models of improvised tents and adopted the best, that of the light infantry.

Thus the sack shelter-tent became regulation along with the small pegs and the large jointed poles. "This ingenious and simple invention," said General Thomas, "saved the lives of thousands of men."

The Camp Blanket. The camp blanket, carried in the knapsack, was adopted under almost identical circumstances. Each soldier was at first furnished with an extremely heavy blanket. A few men ventured to divide it exactly in two. They were punished, but it was recognized that the idea was good. It was adopted and the half-blanket roll on the knapsack became regulation by the same token as the shelter-tent.

The African Soldier Carried a Crushing Load. With his spare articles, his half blanket, his four days' rations, often increased to six or eight days', his 60 cartridges, together with a fagot of wood, the African soldier became a pack animal. No wonder that in the Algerian combats, though they were not of long duration, the soldiers were often oblighed to place their knapsacks on the ground. From this was derived the tradition of the zouaves to march to the assault without knapsack.

Here is what Marshal Bugeaud wrote in 1836 on the subject of the load carried by the African troops:

"Our young soldiers have shown a great willingness to fight, but they have, on the other hand, withstood the fatigues very badly. Muskets, knapsacks, canteens, and pots have been thrown away in great numbers. It was really barbarous -- I had almost said a crime of high treason against the nation -- so to load them down with eight days' rations, sixty cartridges, shirts, shoes, pots, etc. Many succumbed under such a weight, and the strongest had to be marched with such slowness that it became impossible to attempt those rapid movements which alone can bring success."

VII. THE CRIMEAN AND ITALIAN WARS.

The Load is Much Too Heavy. The load during the Crimean campaign remained that of the African one, infinitely too heavy; and Marshal Saint-Arnaud criticised this excess with the same severity as Marshal Bugeaud had judged the African load.

"We have in France," said he, "The cruel, inhuman, absurd, brutal, and to the last degree intolerable mania of loading down foot-soldiers more than mules!"

It would be difficult to gather together a collection of more severe but unfortunately just adjectives.

Thus, at the Battle of the Alma, which was terminated at four o'clock in the afternoon by the retreat of the Russians, the latter were not pursued. For one reason, the English were hungry, and these soldiers have never been able to fight on an empty stomach. For another, the French, as the Russians themselves had formerly done at Austerlitz, had placed their knapsacks at the foot of the elevations and it was necessary to return for them.

The French Soldier in Italy Was Crushed to Earth by his Knapsack. In Italy, the unfortunate foot-soldier of the French army did not march and fight under more favorable conditions. From the Tessin to the Chiese, the infantry did not cover more than 16 or 19 miles a day. This extreme slowness was due in part to the fatigue occasioned by a prostrating heat, but according to von Moltke to two other causes:

First, to the difficulty of providing for a large army;
Second, to the enormous load imposed upon the foot-soldier.

The Austrian Soldier had his Load Lightened. By contrast, in the Austrian army, at the time of the marches which preceded the Battle of Solferino, Emperor Francis Joseph ordered the knapsacks placed on the wagons following the columns. These sacks were then unloaded in the fortress of Peschiera. The soldiers did without them very easily, but they carried on their persons instead a cloth sack hung from the shoulder and containing along with the most indispensable articles the rations and cartridges.

VIII. THE WAR OF SECESSION; THE RUSSIANS IN 1877; THE GERMAN ARMY IN 1870-1871; THE FRENCH ARMY IN 1870.

The American Knapsack at the Beginning of the War of Secession. At the beginning of the War of Secession, the American soldiers carried a heavy knapsack and a load amounting to more than 44 pounds; but, as practical people, they soon rid themselves of it, keeping only a woolen blanket rolled up in a piece of oil cloth and carried slung over the shoulder.

"At the beginning of each campaign," wrote General Rufus-Ingols, "I saw thrown away on the roads a great number of knapsacks and articles of clothing. In an account of the Chancellorsville expedition, I reported that the number of knapsacks thrown away by the men reached at least twenty-five per cent of the whole."

The Load was Lightened by the Abolition of the Knapsack. As a result, in the year 1863, according to General de Chanal, the principle of ridding the soldier completely of the knapsack for a campaign of short duration was adopted. In his blanket roll, passed over the left shoulder and under the right arm, the American soldier carried three days' bread, two days' cooked rations, and a few small articles of clothing. Thus equipped, he carried only 17.5 pounds of load.

Another American commander, General Sherman, and after him General Sheridan, basing their statements upon the experience of this war, declared themselves in favor of the complete abolition of the knapsack, whatever the duration of the campaign, and of the adoption of a blanket roll containing these articles: a pair of trousers, a pair of drawers, a shirt, and socks.

Portable Tools. The American soldier was furnished with portable tools, among others the ax, the American tool par excellence; but he manifested, at the beginning of the war, an extreme repugnance to handling the shovel and pick. His idea was that this kind of work was requiring fatigue duty of him for which he was not enlisted. However, with the help of necessity he soon became a past master in small field works, among others the construction of improvised shelters, in which he made marvelous use of the settler's ax. When he had no shovel, he made use of the tin cup suspended at the side of his gourd.

The Russians In 1877.

In 1877, the Russian soldiers preferred to rid themselves of the knapsack and to carry their small articles in a haversack.

Load Carried in the Haversack. Thus, the infantry of the Guard left the knapsacks at Plevna and carried only the indispensable articles in the haversacks. The cloth for the shelter-tent, which had always been in use in the Russian army, was carried in a roll hung from the shoulder.

Portable Tools. We know that one of the lessons of this war was the admitted necessity of supplying the infantry with a portable tool. The Turkish troops, an improvised militia, were always digging up the earth. The Russians, on the contrary, many a time regretted the lack of tools. We are familiar with the accounts according to which the Russians at Plevna scraped up the soil with their bayonets and transported the earth with their cups, their utensils, and even with their hands (Skobeleff).

During this time, their allies, the Roumanians, were congratulating themselves every day on the services rendered by the portable Linnemann shovels, with which their infantry troops were provided.

The German Army In 1870-1871.

On the subject of the German army and the load carried by its infantry in 1866 and 1870, we shall cite the curious opinion of a Prussian officer formulated in a practical study of the impedimenta of the infantry.

"In the campaigns of 1866 and 1870," he said, "I learned from experience that the soldier would rather be deprived of his knapsack for whole weeks, as happened to the Prussian Guard in 1870, than to carry it on the march. Now, what is found in the soldier's knapsack after a few days' campaigning, especially after the first fights? A shirt, a memo book, the ammunition boxes. Many German troops, in the march on Paris, joyously dispensed with their knapsacks. I, subscribe, therefore, to the complete abolition of the knapsack.

"The soldier can slip his shirt and his memo book into his overcoat roll, and his ammunition into his wallet."

This opinion is interesting to note, for it reaches the same conclusions, from the experience of two European campaigns, that were formed by the American generals, and related above, as a consequence of the War of Secession.

The idea of the abolition of the knapsack is therefore not chimerical, and it is seen that it does not date from yesterday.

The French Army In 1870 And Following Years.

Until 1870, the knapsack of the French infantry was a covering of hide with the hair on, which made it impermeable to water.

In the course of the Franco-Prussian war, for want of usable skins, a number of knapsacks were made of cloth coated with resin. This model was retained up to our own day except for modifications which have been far from ameliorating the detestable conditions of the foot-soldier's burden.

The knapsack, the dimensions of which were at first as follows: height 12 inches, width 13 inches, thickness 5 inches, was shortened in 1893 and its height reduced to 11 inches by the abolition of the interior cartridge-box.

IX. THE JAPANESE ARMY -- THE MANCHURIAN CAMPAIGN.

Utility and Advantage of this Study.

If it is interesting to study in detail the field equipment and load of the Japanese foot-soldier, it is not only because their use has received the consecration of a great war and of a long campaign, but also because every one of their details had been prearranged with a minuteness altogether remarkable.

The Knapsack.

Exterior Load of the Knapsack. The knapsack looks on the outside like the old sack of the French army, covered over as it is with hide with the hair on the outside and with an interior framework of light wood. The hide covering is lined with coarse canvas cloth.

Its dimensions are as follows: width 11 inches, height 10 inches, depth 4 inches. (Our French knapsack, model 1893, has the same height, but a greater width, 13 inches).

Content of the Knapsack. The regulation winter content in the Manchurian army was as follows:

1 pair of woolen socks,
1 pair of woolen gloves,
1 pair of cotton socks,
1 pair of woolen mesh drawers,
1 jersey,
1 shirt of coarse cotton cloth.

In summer, each man was furnished with a green mosquito net to protect him from the bites of these insects.

Provisions of the Knapsack. The provisions of the sack consisted of:

6 small bags of 3.75 oz. each containing preserved rice,
1 small bag of .66 oz. of sugar,
1 small bag of .45 oz. of tea,
1 kit (trousse),
1 scoop,
2 tin boxes for grease,
2 boxes of preserved meat (6.5 oz. each),
1 box of rifle lubricant,
1 brush per man.

The flap pocket of the knapsack contained:

The memo book with its cover,
The spare rifle parts, including a striker, a movable bolt head, an extractor, and a spring.

The Exterior Load. The exterior load consisted of:

1. A red blanket in the shape of a horse-shoe on the knapsack (weight, 4.6 pounds).

2. In front of this blanket, a black cloth cloak rolled to the width of the sack.

3. Against the cloak, the shelter-tent and the tent pegs.

4. On the right and left of the knapsack, the spare shoes.

One foot-soldier out of two carried the tool on the left side of the sack; the two shoes were then carried together on the right side.

5. Behind the sack, an individual saucepan of aluminum covered with a khaki colored varnish.

The knapsack was carried by two black leather shoulder-straps, which, at the height of the arm pits, were fastened by a button to two other slings. One terminated in a flat brass hook secured to the under edge of the waist-belt. The other sling passed under the man's arm and was buckled to the lower part of the knapsack.

The weight of the complete load, with the heaviest winter packing, reached 31 pounds.

The Haversack. The khaki canvas haversack was supported by means of a claw hooked on the upper edge of the waist belt on the inside.

A double pocket contained:

1 aluminum cup,
1 biscuit of 6.75 oz.,
1 box of pills, a compound of quinine and creosote,
Cartridges and supplementary rations,
1 piece of soap,
1 brush,
1 pipe, tobacco,
1 box of ointment for frost bites.

The first-aid kit was carried in a little special pocket in the jacket.

The aluminum water bottle, varnished outside khaki color, was carried slung from the shoulder in the same manner as the haversack from left to right.

The Cartridge Boxes. The cartridge receptacles included:

Two little cartridge-boxes in front, each containing 30 cartridges in clips of five.

A large cartridge-box behind holding 60 cartridges and, besides, a screw driver, a cleaner, and a little oiler.

Beside these 120 cartridges, the soldier carried 80 either in the knapsack or in the pockets of the haversack. The normal supply of the man therefore amounted to 200 cartridges.

Shelter-Tent. The shelter tent, a square piece of cloth 60 inches on the side, was used during the march as a rain coat. Moreover, by assembling 24 pieces end to end, a circular shelter of large dimensions was obtained.

Cold Meal. A meal all prepared to be eaten on the march was carried separately in two little wicker baskets fitting one within the other and contained in a twine net. They were suspended from the man's neck or from some part of the equipment. One of the baskets contained the cooked and prepared rice ration, the other, the tsukemonos (vegetables preserved in pickle and served as seasoning for the rice).

The total weight of the foot-soldier's load reached 50 pounds.

If the weight of the rifle, 8 pounds, be added, we see that each man carried about 57 pounds including 200 cartridges. That is a considerable weight, but we shall see that this road load was not the load for combat.

The Lightened Pack. For combat, the Japanese conceived a complete system of lightened packing.

This lightening was obtained by leaving off the knapsack. It was replaced by a long case of khaki-colored cotton cloth lined

with white cloth, weighing about 1 pound. It was carried slung from the shoulder from right to left with the ends secured together over the man's breast.

The cartridges, the rations, and the indispensable articles, which were relatively rather numerous owing to the habits of neatness of the Japanese, were slipped in this cover loose.

The intrenching tool, with its cotton cloth sheath, was suspended from the waist belt, and the cloak, rolled up in the shelter-tent, was carried slung from the shoulder from left to right.

Supplementary Ammunition. Thus rid of the weight and encumbrance of his knapsack, the soldier was able to receive a supplement of ammunition during combat. Thus, at the Battle of Mukden, at the moment when it assumed the phase of a definite pursuit of the Russians, each man of the 12th Infantry Division received 500 and even 600 cartridges. As a result, during the whole course of the battle, which lasted thirteen days, this corps did not have to concern itself with the resupply of ammunition from the rear.

Even lightened in this manner, the foot-soldier may remain for a long time deprived of his knapsack without the least inconvenience, as has been definitely proved by experience.

Care in the Composition of the Pack. One can only admire the minute care with which the Japanese soldier was armed, provisioned, and equipped. It will be sufficient for us to remark especially among others the following innovations:

1. The transport of spare parts for the rifle and accessories for the arms, complete.

2. The light baskets containing a prepared meal.

3. Lastly and especially, the use of the cotton cloth case which permitted the lightened pack that seems to have been the normal pack for the battlefield.

Pack of a Japanese Non-commissioned Officer. Beside this official description of the Japanese field service load, it has appeared interesting to us to place another made by a Russian war correspondent concerning the pack of a Japanese non-commissioned officer killed on the battlefield:

"When we had undone the slings of the knapsack, we were struck with the order and care with which the pack was made up. In the inside, everything was admirably arranged. The classing was with taste and method, each thing exactly in its place. How neat appeared those little cloth bags for rice and peas! How artfully was the little salt-box wrapped in Japanese paper! With what careful symmetry were the little blue socks put together, those Japanese socks that resemble our European mittens because the great toe is separated from the rest! We found there, besides, two cartridge packets rolled up in paper, a little box containing lubricant for the rifle, a shell furnished with pomade for the mustache, a metal receptacle of American origin containing roast meat, a box of preserves, a little cloth bag containing spare parts for the rifle, a pretty little case in which were found various pharmaceutical powders, an oblong metal box full of family letters. On top of these letters (remember that we are speaking of a non-commissioned officer), a map of Central Manchuria on the scale of 20 versts to the inch. In another corner of the sack a pewter spoon, a tooth brush, a comb, and divers things necessary for the care and taking apart of the weapon and the polishing of the articles. Everything was of bright appearance and seemed to have come directly from the store, so exquisite was the neatness."

Another Russian war correspondent gives us the following details, written during the first months of the war, of the load carried by the Japanese soldier:

"During the march, the load of the foot-soldier was reduced to a minimum; that is, the man carried only his rifle, his cartridges, his provisions, and compressed rice.

"In the knapsack of all the Japanese killed, wounded, or taken prisoner, was found a small supply of preserved meat and bread. Moreover, each soldier had a green net of fine mesh, a sort of light bow-weel with a brass hoop, which he stretched out like an accordeon and in which he placed his head before going to sleep. He was therefore able to rest without being bothered by the flies and martyred by the odious and formidable swarms of mosquitoes which are one of the plagues of the Manchurian plains."

X. CONCLUSIONS

What conclusions shall we draw from the long foregoing exposition, particularly as to the foot-soldier's pack; what lessons shall we learn from the history of this subject from the remotest times to the present?

To begin with, we shall remark that although the old white cross-belts have been much decried, because in addition to being too visible they compressed the soldier's chest, we have nevertheless returned to them in part with the sling of the water-bottle and the banderole of the haversack, which support weights that are nearly always unequal.

It is to be remembered that the rigid knapsack, close to the shoulders, was invented by a young soldier on a parade day. The conclusion forced upon us is that it should have remained a parade sack, intented to be carried almost empty, and never should have become a field sack. Because of the unavoidable necessities that modern war imposes, the pack of the French foot-soldier, so far as it is useful for our day, appears obsolete, archaic, and ingrained by routine. It answers not at all to the exigencies of war. It is illogical and very incommodious as well as heavy and cumbersone. Finally, what seems to us extremely serious is that the pernicious thing places the foot-soldier afflicted with it under circumstances unfavorable for facing the very harsh conditions of modern combat. Crushed down by the weight, the man is able only imperfectly to stand the painful fatigue of the marches preceeding action on the battlefield and to apply himself to the varied and exceedingly severe gymnastics required. Stifled by the system of fastening the very high-placed knapsack, the soldier can fire neither rapidly nor for a long time, especially in the lying position which has become the normal one. The aims badly and is incapable of swifly leaping ahead.

The usefulness of a considerable supply of cartridges was peremptorily demonstrated by the Manchurian war. Carrying this ammunition would be an impossibility for us under the present state of the regulation load.

More than ever, the utilization of the terrain by infantry has become an indispensable element to its movement forward. Now, only an infantry with judiciously lightened load will be able to face in good condition the necessities of every kind which can present themselves; to effect long marches under any circumstances

without abnormal loss of numbers; to be alert, active, mobile enough to creep, crawl, dig shelters, flatten themselves out on the ground and to advance while hugging the ground, at the same time preserving their physical, and consequently the necessary moral forces for good fire action and for the final assault that causes the rout of the adversary. "The foot-soldier must be wed to the dust if he doesn't want to bite it!"

We should not forget that the Japanese soldier, at the time of the great battles in Manchuria, carried a lightened pack for combat, with abundant supply of ammunition and provisions. We believe that if the Japanese infantry, marvelously mobile and flexible, has given us admirable lessons in the utilization of the terrain; if it has succeeded in making formidable frontal assaults, it would not have realized these exploits if it had been heavily loaded down.

We know that the vital question of the foot-soldier's load is the object of very serious study in all European armies. France has not remained behind; and it is certain that, in the near future, a happy solution will endow our infantry with articles of clothing and equipment constituting the war uniform par excellence, one which, answering to the actual needs of modern combat and not to the vain and deceptive exigencies of parade in times of peace, will permit us to exploit to the extreme limit, for the defense of our country, the remarkable physical and moral qualities of our incomparable foot-soldiers.