ORDNANCE MEMORANDA NO 19.

INFANTRY OUTFIT.
Compliments of

BRIG. GEN. S. V. BENÉT,

CHIEF OF ORDNANCE, U. S. ARMY.
U.S. Ordnance dept.

... Proceedings of the Board of officers, convened under special orders no. 120, A. G. O., 1874, on infantry equipments, and materials and supplies necessary for efficient outfit of infantry-troops in field and garrison; with the action of the War department thereon. Washington, D. C., Govt. print. off., 1875.

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Chief of Ordnance, U.S. Army.
ORDNANCE MEMORANDA,
No. 19.

PROCEEDINGS
OF
THE BOARD OF OFFICERS
CONVENE D UNDER
SPECIAL ORDERS No. 120, A. G. O., 1874,
ON
INFANTRY-EQUIPMENTS, AND MATERIALS AND SUPPLIES NECESSARY FOR EFFICIENT OUTFIT OF INFANTRY-TROOPS IN FIELD AND GARRISON;
WITH THE
ACTION OF THE WAR DEPARTMENT THEREON.

WASHINGTON, D. C.: GOVERNMENT PRINTING OFFICE.
1875.
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Ordinance Office, War Department,
Washington, May 27, 1874.

Sir:

Since the introduction of breech-loading small-arms using metallic ammunition and of a caliber different from that in use during the late war, the subject of a proper equipment for the infantry-soldier has been made a study by this Department, and with a view to ultimate perfection in design and manufacture, and to increase the comfort and endurance of the soldier, many modifications and radical changes have been tested by the troops in the field during the last few years.

It is believed that sufficient data and experience have now been gained to justify the appointment of a board of infantry officers to which this data and the results of this experience should be submitted for consideration, with directions to recommend the adoption of an equipment best suited to troops serving as infantry, and in addition determine on such material and supplies as may seem necessary for the efficient outfit of infantry troops in the field and garrison.

If the appointment of such a Board is authorized, I have the honor to suggest that it be convened at some frontier infantry post, and that it be composed of officers who have had extended experience in the use of the experimental infantry equipments issued under the recommendations of the Board of officers convened by Special Orders 433, War Department, Adjutant-General's Office, of 1871, and that this Office be authorized to lay before the Board all reports, patterns, &c., that may be essential to a proper understanding of the subjects submitted for its consideration, and the Board to call on infantry officers for such further information as they may deem necessary.

The Board to make its report to the Chief of Ordnance.

Very respectfully, your obedient servant,

S. V. Benét,
Acting Chief of Ordnance.

The Honorable the Secretary of War.
JOURNAL OF BOARD.

Proceedings of a board of officers convened at Fort Leavenworth, Kansas, by virtue of the following order:

[Special Orders No. 120.—Extract.]

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
Washington, June 1, 1874.

14. A Board, to consist of Lieut. Col. W. R. Shafter, Twenty-fourth Infantry; Lieut. Col. A. McD. McCook, Tenth Infantry; Lieut. Col. Thomas C. English, Second Infantry; Major Alexander Chambers, Fourth Infantry; Captain M. H. Stacey, Twelfth Infantry, is appointed to meet at Fort Leavenworth, Kansas, on the 1st day of July, 1874, or as soon thereafter as practicable, to consider and report upon the subject of a proper equipment for the infantry-soldier, and to recommend the adoption of an equipment best suited to troops serving as infantry, and in addition to determine on such material and supplies as may seem necessary for the efficient outfit of infantry-troops in the field and garrison.

The Chief of Ordnance is authorized to lay before the Board all reports, patterns, &c., that may be essential to a proper understanding of the subjects submitted for its consideration, and the Board is authorized to call on infantry officers for such further information as they may deem necessary. The Board will make its report to the Chief of Ordnance.

The junior member of the Board will act as recorder.

By order of the Secretary of War:

E. D. TOWNSEND,
Adjutant-General.

FORT LEAVENWORTH, KANSAS,
July 1, 1874.

The Board met pursuant to the foregoing order.


Absent: Major Alexander Chambers, Fourth Infantry.

The Board directed the recorder to apply to the assistant adjutant-general, Department of the Missouri, for a suitable place to hold its sessions; also, for an orderly, a clerk; and then adjourned to meet to-morrow, July 2, at 10 o'clock.
FORT LEAVENWORTH, KANSAS,

July 2, 1874.

The Board met according to adjournment.


Communications were received from the Acting Chief of Ordnance, United States Army; First Lieut. George H. Palmer, Sixteenth Infantry; Capt. Thomas M. Deane, ordnance storekeeper, Watervliet Arsenal; Capt. J. A. Snyder, Third Infantry; Conrad Blattner, late sergeant Nineteenth Infantry; First Lieut. James Regan, Ninth Infantry, and ordered to be filed for future reference.

Awaiting the arrival of Major Chambers the Board adjourned to meet to-morrow at 10 o'clock.

FORT LEAVENWORTH, KANSAS,

July 3, 1874.

The Board met pursuant to adjournment.


The Board then resolved to conduct its proceedings in the following manner:

1. To have the room of meeting prepared with racks and appliances, so that all patterns of equipments submitted to the Board for examination may be at all times exposed in the room where the sessions are held.

2. The examination of all patterns of equipments submitted to the Board.

3. Reading and an examination of all reports from officers, soldiers, and citizens submitted to the Board.

4. A practical test of all the different patterns of equipment examined.

After some further preliminary business, the Board adjourned to meet on Monday, July 6, at 10 o'clock.

FORT LEAVENWORTH, KANSAS,

July 6, 1874.

The Board met pursuant to adjournment.


A telegram was received from Major Chambers, stating that he would be here to-day.

Also, a communication from Conrad Blattner, in reference to his kit. Submitted to the Board and filed.

Also, one from Capt. J. Ford Kent, Third Infantry, in reference to cartridge-boxes.

Also, one from Capt. Clifton Comly, Ordnance Department, inclosing invoices and receipts for certain articles of ordnance-stores submitted for the inspection of the Board.

Also, one from A. D. Laidley, informing the Board that he had shipped by express a model of his revolving cartridge-box.

All ordered to be filed for future reference.

The Board directed that a communication should be addressed to First Lieut. S. McKeever, Second Infantry, requesting him to furnish a cartridge-box of the same pattern as that already presented, but of a smaller size, to contain twenty cartridges.

The Board then proceeded to examine in detail the various articles of equipment furnished for inspection, a description of which is hereunto appended, and then adjourned to meet to-morrow at 10 o'clock.

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FORT LEAVENWORTH, KANSAS,

July 7, 1874.

The Board met pursuant to adjournment.* Present, all the members.

Major Chambers submitted a statement in writing, explanatory of his absence.

The Board continued the examinations begun yesterday, and then adjourned to meet to-morrow at 9 o'clock.

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FORT LEAVENWORTH, KANSAS,

July 8, 1874.

The Board met pursuant to adjournment. Present, all the members.

Lieut. George H. Palmer, Sixteenth Infantry, appeared before the Board and exhibited an improved neck-yoke valise and haversack, and gave a practical exhibition of its value as compared with others.

The Board continued the examination and discussion of the articles of equipment presented for examination, and at 3.30 p. m. adjourned to meet to-morrow morning at 9 o'clock.

2 o
FORT LEAVENWORTH, KANSAS,
July 9, 1874.

The Board met pursuant to adjournment. Present, all the members.
The examination and discussion of the articles of equipment presented for consideration was continued.
Lieutenant Palmer was again before the Board, and gave a further exhibition of his equipment, two sets of which were afterward sent to the commanding officer of Fort Leavenworth, for trial among his men.
A circular was prepared, requesting commanding officers of artillery and infantry regiments to give their views relative to the outfit of soldiers acting as infantry.
The Board, at 3.30 p. m., adjourned to meet at 9 o'clock to-morrow morning.

FORT LEAVENWORTH, KANSAS,
July 10, 1874.

The Board met pursuant to adjournment. Present, all the members.
A sample of cartridge-box was received from A. D. Laidley, and submitted to the Board. Also, a pattern knapsack-supporter, from D. C. W. Baxter; submitted to the Board; described elsewhere.
The Board then deliberated upon what should comprise an infantry soldier's equipment in the field.
A letter was addressed to the Adjutant-General of the Army, asking what was intended to be embraced by this sentence, in paragraph 14, S. O. No. 129, convening the Board: "and, in addition, to determine on such material and supplies as may seem necessary for the efficient outfit of infantry-troops in the field and garrison."
The Board, at 3.30 p. m., adjourned to meet to-morrow at 9 a. m.

FORT LEAVENWORTH, KANSAS,
July 11, 1874.

The Board met pursuant to adjournment. Present, all the members.
A communication was received from Col. N. A. Miles, Fifth Infantry, stating that he had no competent clerk available for detail for the Board; whereupon the Board adopted the following resolution:
Resolved, That application be made to the Adjutant-General United States Army for authority to hire a civilian clerk.
The Board, at 2.30 p. m., adjourned to meet on Monday, July 13, at 10 o'clock
Fort Leavenworth, Kansas,
July 13, 1874.

The Board met pursuant to adjournment. Present, all the members.
A letter was received from the Chief of Ordnance, informing the Board that an improved cartridge-box of Lieutenant McKeever had been forwarded by express.
The Board examined reports from commanding officers of infantry companies on new ordnance-equipments, and at 4.30 p. m. adjourned.

Fort Leavenworth, Kansas,
July 14, 1874.

The Board met pursuant to adjournment. Present, all the members.
The cartridge-box of Lieutenant McKeever was received and presented to the Board.
A recess was taken by the Board for an hour, to remove to the new place of meeting the Quartermaster's Department needing the building occupied for storage purposes.
Resumed the examination of reports from officers on the new ordnance-equipments.
At 3.30 p. m. the Board adjourned to meet to-morrow at 10 a. m.

Fort Leavenworth, Kansas,
July 15, 1874.

The Board met pursuant to adjournment. Present, all the members.
Resumed the examination of reports from officers on the new ordnance-equipments.
A communication was received from Lieut. James Regan, Ninth Infantry, forwarding plans and specifications for a new cartridge-belt.Filed, and a letter addressed to Lieutenant Regan, requesting him to forward a sample of his belt.
There being no facilities at Fort Leavenworth for constructing and remodeling equipments, the Board resolved to send the following telegram to the Adjutant-General of the Army:
"No facilities here for construction or elaborating plans. Board respectfully requests authority to change its place of meeting to Watervliet Arsenal, New York."
The Board, having no further business before it, adjourned to meet to-morrow at 10 a. m.

Fort Leavenworth, Kansas,
July 16, 1874.

The Board met pursuant to adjournment. Present, all the members.
After examining documents and papers, the Board, at 3.30, adjourned to meet to-morrow at 10 a. m.
FORT LEAVENWORTH, KANSAS,
July 17, 1874.

The Board met pursuant to adjournment. Present, all the members.
A communication was received from the Chief of Ordnance, forwarding a cartridge-box of Lieutenant Reilly, Ordnance Department. Also, a box of cartridge-boxes from Capt. Clifton Comly, San Antonio Arsenal. All submitted to the Board. A locker, prepared under the direction of Lieutenant-Colonel McCook, was presented to the Board and examined.

At 3 p.m. the Board adjourned to meet to-morrow at 10 a.m.

FORT LEAVENWORTH, KANSAS,
July 18, 1874.

The Board met pursuant to adjournment. Present, all the members.
A telegram was received and submitted to the Board from Maj. Thomas M. Vincent, Assistant Adjutant-General, as follows:

"Secretary of War approves request for adjournment of Board to meet at Watervliet Arsenal."

The following resolution was then adopted by the Board:

With the approval of the Secretary of War, and awaiting the receipt of information from the commanding officers of artillery and infantry regiments, called for in circular addressed to them by the Board July 9, 1874, the Board resolved to adjourn to meet again at Watervliet Arsenal, New York, August 19 proximo.

There being no further business before it, the Board adjourned to meet as above.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
August 19, 1874.

The Board met pursuant to adjournment. Present, all the members.
Communications were received from the commanding officers of the Fourth, Eleventh, Sixteenth, Seventeenth, Nineteenth, Twentieth, Twenty-first, and Twenty-fifth Infantry, which were submitted to the Board, and ordered to be filed.

Also, one from the Adjutant-General’s Office, in reply to communication from the President of the Board of July 10. Also, another from the same source, dated July 25, referring to clerk.

Also, communication from the Chief of Ordnance, forwarding reports from the field on new infantry equipments.

Also, special reports on experimental cartridge-boxes, from Capt. Theo. Schwan, Eleventh Infantry, commanding Company G.

Also, letter from Lieutenant Metcalfe, Ordnance Department, referring to his blocks.
Also, a letter from J. R. King, (formerly first sergeant Company K, Second Infantry,) forwarding a cartridge-box of his invention.

A cartridge-pouch (cavalry pattern) was received from Captain Deane, ordnance storekeeper, Watervliet Arsenal.

The Board then, at 3 p. m., adjourned to meet to-morrow at 10 a. m.

Watervliet Arsenal, West Troy, N. Y.,
August 20, 1874.

The Board met pursuant to adjournment. Present, all the members.

The Board then proceeded to read the communications received from the commanding officers of the Fourth, Eleventh, Sixteenth, Seventeenth, Nineteenth, Twentieth, Twenty-first, and Twenty-fifth Infantry, and to discuss the recommendations expressed therein.

A new intrenching-tool, prepared at the Springfield Armory, was presented for the inspection of the Board, by Colonel Hagner, U. S. A.

The Board then adjourned to meet to-morrow at 9 a. m.

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Watervliet Arsenal, West Troy, N. Y.,
August 21, 1874.

The Board met pursuant to adjournment. Present, all the members.

Some experiments were tried with a poncho shelter-tent and blanket, prepared under the direction of Lieutenant-Colonel McCook.

Several reports were read from company commanders, regarding the new infantry-equipments.

The Board then adjourned to meet to-morrow at 9 o'clock.

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Watervliet Arsenal, West Troy, N. Y.,
August 22, 1874.

The Board met pursuant to adjournment. Present, all the members.

Various experiments were tried by the Board with Palmer's and Snyder's equipments and McKeever's cartridge-boxes, after which the Board adjourned to meet on Monday morning at 9 a. m.

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Watervliet Arsenal, West Troy, N. Y.,
August 24, 1874.

The Board met pursuant to adjournment. Present, all the members.

The session of the Board was confined to a discussion of the knapsack question, and various experiments with the Palmer equipments, and then adjourned to meet to-morrow at 9 a. m.
WATERVLIET ARSENAL, WEST TROY, N. Y.,
August 26, 1874.

The Board met pursuant to adjournment. Present, all the members.
A letter was received from the Ordnance Department, informing the Board that
the report of the infantry board of the English army, of which Major-General Ayres
was president, had been forwarded; also, the pattern of the equipment they recom-
mended for adoption. Both were subsequently received and submitted to the Board
and discussed, after which the Board adjourned to meet to-morrow at 9 a. m.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
August 27, 1874.

The Board met pursuant to adjournment. Present, all the members.
A resolution was passed by the Board, requesting Col. P. V. Hagner, commanding
Waterlviert Arsenal, to have constructed three double thimble-belts, (Hazen's, No. 2,)
the loops in one to be of russet-leather, of an other plain black leather, and of the
third of plain black leather lined with linen.
The Board then adjourned to meet to-morrow morning at 9 a. m.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
August 28, 1874.

The Board met pursuant to adjournment. Present, all the members.
A resolution was passed by the Board requesting Col. P. V. Hagner, commanding
Waterlviert Arsenal, to have constructed a McKeever cartridge-box with the following
modifications: To be lined with linen, loops to which the box is attached to the belt
to be higher up, (as marked,) and a small exterior pocket, properly secured, to contain
a screw-driver.
The thimble-belts were received and discussed, after which the Board adjourned
to meet to-morrow morning at 9 o'clock.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
August 29, 1874.

The Board met pursuant to adjournment. Present, all the members.
A cartridge-box was received from Private Burbank, Nineteenth Infantry, and a
belt from Lieutenant Regan, Ninth Infantry, and submitted to the Board.
Adjourned to meet on Monday morning at 9 a. m.
WATERVLIET ARSENAL, WEST TROY, N. Y.,

August 31, 1874.

The Board met pursuant to adjournment. Present, all the members.

A communication was received from Col. D. L. Floyd-Jones, commanding Third Infantry, submitted to the Board, and ordered to be filed.

The Board experimented with the Palmer yoke, the McKeever cartridge-box, and the Hazen thimble-belt, and adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 1, 1874.

The Board met pursuant to adjournment. Present, all the members.

A communication was received from Col. W. B. Hazen, commanding Sixth Infantry, on the subject of infantry-equipments, which was submitted to the Board, and ordered to be filed.

The Board passed a resolution requesting Colonel Hagner, commanding Watervliet Arsenal, to have the following articles manufactured for the inspection of the Board:

A thimble-belt of regulation length, to contain forty rounds of cartridges, caliber .45, and of as heavy leather as the sample furnished. Also, a similar belt to the above, the thimbles and side of belt to which they are attached lined with sized canvas, and of same leather in weight as cavalry-loop; sample furnished. Also, a sample of the new ordnance-equipment, the braces to be curved on the inner line, narrow and lighter, without valise.

The Board then adjourned until 9 a. m. to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 2, 1874.

The Board met pursuant to adjournment. Present, all the members.

The Board passed a resolution requesting Colonel Hagner, commanding Watervliet Arsenal, to have made a haversack fitted with a brass buckle, and increased width of strap with metal eyelets. Also, a canteen similarly fitted.

After some further experiments with equipments, the Board adjourned to meet to-morrow at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 3, 1874.

The Board met pursuant to adjournment. Present, all the members except Colonel English, who was absent by reason of sickness.

The thimble-belts prepared the day before yesterday were presented, examined, and discussed. Also, the haversack and canteen, altered as requested yesterday. The Board then adjourned to meet to-morrow at the usual hour.
WATERVLIET ARSENAL, WEST TROY, N. Y.,
September 4, 1874.

The Board met pursuant to adjournment. Present, all the members except Colonel English, who was absent on account of sickness.

The Board, after experimenting with the ordnance brace-yoke, adjourned to meet to-morrow at 9 a. m.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
September 5, 1874.

The Board met pursuant to adjournment.
Present: Colonel Shafter, Major Chambers, and Captain Stacey.
Absent: Lieutenant-Colonel McCook, by permission of the Board, and Lieutenant-Colonel English, sick.

The Board having no especial business before it, adjourned to meet on Monday, September 7, at 9 o'clock.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
September 7, 1874.

The Board met pursuant to adjournment.
Present: Colonel Shafter, Major Chambers, and Captain Stacey.
Absent: Colonel McCook, by permission of the Board, and Colonel English, sick.
After making some experiments with equipments, the Board adjourned to meet to-morrow at 9 a. m.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
September 8, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

The session of the Board was devoted to experiments with infantry-equipments, after which it adjourned to meet to-morrow at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
September 9, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

A telegram was received from Lieut. George H. Palmer, Sixteenth Infantry, informing the Board that he had shipped by express an improved set of his equipments. After reading some reports from various officers in the field, the Board adjourned to meet again to-morrow at the usual hour.
WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 10, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

The Board unanimously resolved to apply to the Adjutant-General of the Army for an order to have Lieut. George H. Palmer, Sixteenth Infantry, report to the Board, to explain the merits of the brace-yoke and equipments invented by him. A letter was accordingly written to that effect.

Lieutenant Metcalfe, Ordnance Department, U. S. A., came before the Board to exhibit his improved cartridge-block and attachment, which was discussed, and Lieutenant Metcalfe invited to appear before the Board to-morrow and give a test of its merits.

The Board then adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 11, 1874.

The Board met pursuant to adjournment. Present, all the members.

The Board and Lieutenant Metcalfe, Ordnance Department, experimented as to rapidity of fire with his cartridge-block and attachment. For further experiment it was resolved by the Board to request the Chief of Ordnance to instruct the commanding officer of Springfield Armory to have prepared—

Two Springfield rifles, caliber .45, with Metcalfe's cartridge-block-strap attachment.

Two Springfield rifles, caliber .45, with key attachment.

Also, 1,000 of Lieutenant Metcalfe's cartridge-blocks, caliber .45, holding 8 cartridges, filled.

Also, 1,000 of Lieutenant Metcalfe's cartridge-blocks, caliber .45, holding 10 cartridges, filled. Also, two cartridge-boxes for each gun.

The Board then adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 12, 1874.

The Board met pursuant to adjournment. Present, all the members.

A letter was received from Lieutenant Palmer, stating that he had shipped an improved set of his equipments.

Pending their arrival, the Board adjourned to meet Monday morning, September 14, at 9 o'clock.
WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 14, 1874.

The Board met pursuant to adjournment. Present, all the members.

A letter was received from J. D. Vermuele, vice-president Goodyear's India-Rubber Glove Manufacturing Company, addressed to the commanding officer Watervliet Arsenal, asking information of how he could submit an infantry-equipment to the Board. The recorder was directed to inform him, and invite him to submit a sample of his equipment without delay.

The Board then proceeded to discuss the subject of a canteen-strap, and passed a resolution requesting the commanding officer Watervliet Arsenal to have prepared a canteen-strap six inches longer and one-third wider than in the sample furnished, of the same material, to fasten with a small box-buckle, eyelets to be placed in the strap for about one foot, and to be made twice as wide in the flange. Also, a buckle as above with clamp tongue, strap without eyelets, and of white webbing.

The Board then adjourned to meet again to-morrow at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 15, 1874.

The Board met pursuant to adjournment. Present, all the members.

Two sets of infantry-equipments were received from First Lieut. George H. Palmer, Sixteenth Infantry, and submitted to the Board.

Also, samples of the strap and buckles ordered yesterday.

The buckles were returned for some modifications.

The Board then adjourned.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 16, 1874.

The Board met pursuant to adjournment. Present, all the members.

Some experiments were made with the new equipments submitted by Lieutenant Palmer, and after some discussion of their relative merits over the first ones submitted by this officer, the Board adjourned until September 18, to meet at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 18, 1874.

The Board met pursuant to adjournment. Present all the members, except Lieutenant Colonel English, sick.

A resolution of the Board requesting the commanding officer Watervliet Arsenal to have made the following articles was passed:
One belt and plate, similar to the one submitted.

Two small double loops of brass wire ½ inch in diameter, to be fastened into each slot of the buckle, loops to be sufficiently large to admit of hooking into a small snap-hook.

Four sets of cartridge-loops, each to contain twenty rounds of ammunition, caliber .45. The leather for the loops should be quite as heavy as in that submitted; the outer row of loops to contain twelve rounds, and the inner eight.

This belt and plate and cartridge-loops are desired as a model to be submitted to the Chief of Ordnance if adopted by the Board.

After some experiments with the Palmer brace-yoke, the Board adjourned to meet to-morrow at 9 a. m.

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WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 19, 1874.

The Board met pursuant to adjournment. Present, all the members.

A letter was received from the Adjutant-General United States Army, stating that Lieut. G. H. Palmer, Sixteenth Infantry, being en route to New Orleans with his company, could not be ordered to report to the Board. Mr. M. V. B. White came before the Board, and exhibited a specimen of a cartridge-box invented by him, which was experimented with. The inventor took his box away to make some improvements.

The Board then adjourned to meet on Monday at 9 a. m.

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WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 21, 1874.

The Board met pursuant to adjournment. Present, all the members, except Lieutenant Colonel McCook, absent by permission of the Board.

After some experiments with cartridge-boxes, the Board adjourned until to-morrow at the usual time.

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WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 22, 1874.

The Board met pursuant to adjournment. Present, all the members.

Mr. Shylock came before the Board and exhibited an infantry-equipment, in reference to which the Board has corresponded with Mr. Vermuele.

Mr. White was also before the Board with his cartridge-box, and some experiments were tried with it for rapidity of fire, which were not satisfactory.

The Board then adjourned to meet at the usual time to-morrow.
WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 23, 1874.

The Board met pursuant to adjournment. Present, all the members.
The session of the Board was devoted to experiments with infantry-equipments.
The commanding officer Watervliet Arsenal was requested to make some changes
in the canteen and haversack straps.
The Board then adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 24, 1874.

The Board met pursuant to adjournment. Present, all the members except Colonel English, sick.
The session of the Board was devoted to experiments with infantry-equipments, and then adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 25, 1874.

The Board met pursuant to adjournment. Present, all the members.
Experiments with infantry-equipments continued.
A communication was received from Col. Kilburn Knox, asking information how to present a shelter-tent and knapsack for the inspection of the Board. Replied to, giving the required information.
The Board then adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

September 26, 1874.

The Board met pursuant to adjournment.
Present: Lieutenant-Colonel Shafter, Lieutenant-Colonel McCook, and Captain Stacey.
Absent: Lieutenant-Colonel English, by permission of the Board, and Major Chambers, sick.
The Board experimented with infantry-equipments, and then adjourned until Monday, September 28, 1874, at 9 o'clock.
WATERVIET ARSENAL, WEST TROY, N. Y.

September 28, 1874.

The Board met pursuant to adjournment. Present, all the members, except Lieutenant-Colonel English, absent by permission of the Board.

By a resolution of the Board, the commanding officer of Watervliet Arsenal was requested to have prepared for the inspection of the Board a circular canvas waterproof sack, of the following dimensions:

Length, 25 inches; circumference, 30 inches. The lower head of the bag to be circular in shape, and sewed in on each side; two straps, 3 inches long, to be sewed with buckles for the steady-straps. Two other similar straps, 4 inches apart, near the inside center, into which the straps from the back-pad will buckle. The top end of the sack to work on a leather hinge, with a strap and buckle to hold it in place. In addition, to have three loops, one on each side and one directly in rear, through which the top or upper strap will pass to hold the sack in its place.

After further experiments, the Board adjourned to meet at the usual time to-morrow.

WATERVIET ARSENAL, WEST TROY, N. Y.

September 29, 1874.

The Board met pursuant to adjournment. Present, all the members.

Experimented with infantry equipments, and then adjourned.

WATERVIET ARSENAL, WEST TROY, N. Y.

September 30, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel McCook, absent by permission of the Board.

Some experiments were tried with the Palmer brace-yoke, improved by the Board, and also with the sack ordered the day before yesterday.

Adjournd to meet at the usual hour to-morrow.

WATERVIET ARSENAL, WEST TROY, N. Y.

October 1, 1874.

The Board met pursuant to adjournment.

Present: Lieutenant-Colonel Shafter and Captain Stacey.

Absent: Lieutenant-Colonel McCook, by permission of the Board; Lieutenant-Colonel English and Major Chambers, sick.

There being no quorum, the Board adjourned.
WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 2, 1874.

The Board met pursuant to adjournment.
Present: Lieutenant-Colonel Shafter, Major Chambers, and Captain Stacey.
Absent, by permission of the Board: Lieutenant-Colonel McCook and Lieutenant-Colonel English.

A sample knapsack was received from Sergeant Patrick Boland, Company C, Nineteenth Infantry, and submitted to the Board.

After discussing it, the Board adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 3, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel McCook, absent by permission of the Board.

Adjourned to meet on Monday, October 5, at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 5, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel McCook, absent by permission of the Board.

There being no business before it, the Board adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 6, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel McCook, absent by permission of the Board.

Some experiments were tried with the haversack, and the Board adjourned.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 7, 1874.

The Board met pursuant to adjournment. Present, all the members.

The Board discussed the knapsack question, and adjourned to meet at the usual hour to-morrow.
WATERVLIET ARSENAL, WEST TROY, N. Y.,  

October 8, 1874.

The Board met pursuant to adjournment. Present, all the members.
Experiments were made with a new buckle for the haversack and canteen straps, 
suggested by Major Chambers.
Colonel McCook submitted samples of knife, fork, and spoon that should be 
furnished the soldier for field-service.
The Board then adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  

October 9, 1874.

The Board met pursuant to adjournment. Present, all the members.
Mr. A. W. Sus (29 Broadway, N. Y., room 13, P. O. box 1,116) came before the 
Board and presented a knapsack of his invention, and exhibited the merits claimed for 
it. It was discussed, and tried in various ways.
The Board then adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  

October 10, 1874.

The Board met pursuant to adjournment. Present, all the members.
The subject of the haversack was discussed, and pending the construction of a 
haversack on a plan suggested by Colonel Shafter, the Board adjourned to meet at the 
usual hour on Monday, the 12th.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  

October 12, 1874.

The Board met pursuant to adjournment.
Present: Lieutenant-Colonel Shafter, Major Chambers, and Captain Stacey.
Absent: Lieutenant-Colonel McCook and Lieutenant-Colonel English.
The articles ordered on Saturday not being ready for the inspection of the Board, 
it adjourned until to-morrow at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  

October 13, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel Shafter, absent by permission of the Board.
Lieut. C. C. MacConnell, Fifth Artillery, came before the Board and presented a cartridge-box of his invention, and gave an illustration of the merits claimed for it. The Board examined the haversack suggested by Colonel Shafter, and then adjourned to meet at the usual hour to-morrow.

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WATERVIJET ARSENAL, WEST TROY, N. Y.,

October 14, 1874.

The Board met pursuant to adjournment. Present, all the members.
The subject of the haversack was discussed.
Adjourned to meet at the usual hour to-morrow.

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WATERVIJET ARSENAL, WEST TROY, N. Y.,

October 15, 1874.

The Board met pursuant to adjournment. Present, all the members.
A communication was received from Hermann Boker & Co., stating that they intended to present samples of knives, forks, and spoons. Filed.
Adjourned to meet at the usual hour to-morrow.

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WATERVIJET ARSENAL, WEST TROY, N. Y.,

October 16, 1874.

The Board met pursuant to adjournment. Present, all the members.
A communication was received from Russell Manufacturing Company, in reference to knives, forks, and spoons. Filed.
A letter was written to James W. Schaumburg, Philadelphia, inviting him to present his infantry-equipments for the inspection of the Board.
Adjourned to meet at the usual hour to-morrow.

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WATERVIJET ARSENAL, WEST TROY, N. Y.,

October 17, 1874.

The Board met pursuant to adjournment. Present, all the members.
Mr. Johnson, representing Hermann Boker & Co., of New York, came before the Board with samples of knives, forks, and spoons, which were discussed.
The Board adjourned to meet on Monday, October 19, at the usual hour.
WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 19, 1874.

The Board met pursuant to adjournment. Present, all the members.
The discussion of infantry-equipments was continued.
Board adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 20, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel McCook, absent by permission of the Board.
Mr. Johnson, of Hermann Boker & Co., was before the Board with samples of knives, forks, and spoons.
Adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 21, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel McCook, absent by permission of the Board.
Samples of knives, forks, and spoons were received from the Meriden Cutlery Company, and from the John Russell Cutlery Company.
Adjourned to meet to-morrow at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 22, 1874.

The Board met at the usual hour, pursuant to adjournment. Present, all the members.
Pending the completion of certain work ordered in the shops, the Board adjourned to meet to-morrow at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,

October 23, 1874.

The Board met pursuant to adjournment. Present, all the members.
Lieut. Henry Metcalfe, Ordnance Department, came before the Board and presented his improved cartridge-blocks and attachment.
James W. Schaumburg sent his cartridge-supporters to the Board, all of which were submitted.
A letter was addressed to the Chief of Ordnance, requesting that the further construction of Lieutenant Metcalfe's cartridge-blocks, holding ten cartridges, might be discontinued, as those holding eight cartridges are thought to possess greater merit.
The Board then adjourned.
The Board met pursuant to adjournment. Present, all the members.
The Board experimented with Lieutenant Metcalf's cartridge-blocks and holders, and then adjourned to meet on Monday at 9 a.m.

The Board met pursuant to adjournment. Present, all the members except Captain Stacey, absent by permission of the Board.
The discussion of infantry-equipments was continued.
Adjourned to meet at the usual time to-morrow.

The Board met pursuant to adjournment. Present, all the members except Colonel Shafter and Captain Stacey, absent by permission of the Board.
The discussion of infantry-equipments was continued.
Adjourned to meet at the usual time to-morrow.

The Board met pursuant to adjournment. Present, all the members.
The discussion of infantry-equipments was continued.
Cutlery received from J. Russell Cutlery Company, Turner's Falls, Mass., and Charles Parker, Meriden, Conn., was returned, by order of the Board.
Adjourned to meet at the usual time to-morrow.
WATERVLIET ARSENAL, WEST TROY, N. Y.,  
October 30, 1874.

The Board met pursuant to adjournment. Present, all the members. 
The discussion of infantry-equipments was continued. 
Adjourned to meet at usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  
October 31, 1874.

The Board met pursuant to adjournment. Present, all the members. 
The discussion of infantry-equipments was continued. 
Board adjourned to meet Monday, November 2.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  
November 2, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, absent by permission of the Board. 
The discussion of infantry-equipments was continued. 
Board adjourned to meet to-morrow at the usual time.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  
November 3, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel Shafter and Lieutenant-Colonel English, absent by permission of the Board. 
The discussion of infantry-equipments was continued. 
Board adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,  
November 4, 1874.

The Board met pursuant to adjournment. Present, all the members except Captain Stacey, sick. 
The discussion of infantry-equipments was continued. 
Adjourned to meet at the usual time to-morrow.
WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 5, 1874

The Board met pursuant to adjournment. Present, all the members.
Mr. Sherlock came before the Board and presented another sample of his knapsack and appendages, which was experimented with by the members of the Board.
Mr. J. D. Vermuele was also before the Board, and was requested to furnish sample of India-rubber poncho.
Board adjourned to meet to-morrow at the usual time.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 6, 1874.

The Board met pursuant to adjournment. Present, all the members.
The discussion of infantry-equipments was continued and various experiments tried, after which the Board adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 7, 1874.

The Board met pursuant to adjournment. Present, all the members.
The discussion of infantry-equipments was continued.
The Board then adjourned to meet on Monday, November 9, at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 9, 1874.

The Board met pursuant to adjournment. Present, all the members.
Mr. Waters, builder of paper boats, came before the Board and presented a sample knapsack, which was submitted and discussed.
The Board adjourned to meet again to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 10, 1874.

The Board met pursuant to adjournment. Present, all the members.
The Board then proceeded to vote that the following be recommended for adoption as the proper equipment of an infantry-soldier:
2. The bayonet-scabbard as now furnished except when trowel-bayonet is carried, when the bayonet-scabbard shall be of the pattern manufactured by the Ordnance Department.

3. The cartridge-box invented by First Lieut. Samuel McKeever, Second Infantry, as modified and improved by the Board.

4. The canteen submitted by the Ordnance Department, with the improvements in strap and buckle made by the Board.

5. The haversack with adjustable strap, manufactured under directions of the Board, containing knife, fork, spoon, meat-can and plate combined, and tin cup; to be worn either over the right shoulder or attached to the brace-yoke.

6. The Palmer brace-yoke. Pending discussion on this the Board adjourned to meet at the usual hour to-morrow.

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WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 11, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel Shafter, absent by permission of the Board.

Pending the completion of some work, ordered in the shops, the Board adjourned to meet at the usual hour to-morrow.

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WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 12, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel Shafter, absent by permission of the Board.

The Palmer brace-yoke and appendages were adopted as a part of the infantry soldier's equipment.

Adjourned until to-morrow at the usual hour.

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WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 13, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenants Shafter and McCook, absent by permission of the Board.

The commanding officer of Watervliet Arsenal was requested to have manufactured a Palmer brace-yoke and appendages as modified by the Board.

Adjourned to meet at the usual time to-morrow.
WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 14, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel Shafter, absent by permission of the Board, and Lieutenant-Colonel English, sick.

Pending completion of work in shops, the Board adjourned to meet on Monday, November 16, at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 16, 1874.

The Board met pursuant to adjournment. Present, all the members.
The subject of swords for company-sergeants was discussed, and the Board decided to recommend that they be no longer carried.

It was also decided that Capt. J. W. Piper's trowel-bayonet scabbard is not suitable for adoption in the military service.

Adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 17, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

A request was made to the commanding officer of Watervliet Arsenal to have a model locker made, of the following dimensions: 10 by 10 by 22; strap-hinges for lid; chest-lock; made of pine or white-wood.

The Board decided to recommend that a box of cleaning material, similar to the sample furnished from the National Armory, Springfield, be supplied to each company, with the following modifications:

2 quart cans of anti-corrosive and lubricating oil.
1 box (holding forty ounces) scouring material, marked I.
1 box (containing sixteen ounces) polishing material for leather, marked II.
1 box (holding forty ounces) whiting.
1 chamois-skin, about two feet square.
1 wire scratch-brush.

The Board then adjourned to meet at the usual hour to-morrow.
WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 18, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

The model of the equipments having been completed, application was made to Col. P. V. Hagner, commanding Watervliet Arsenal, to detail Lieut. John Pitman, Ordnance Department, to photograph them.

Adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 19, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

Lieutenant Pitman engaged photographing models.

Adjourned to meet at the usual time to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 20, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

A telegram was received from the Chief of Ordnance, requesting the Board not to adjourn sine die until hearing from his Office, as other matters might be referred to it.

While the final report is being prepared, the Board adjourned to meet at the usual hour to-morrow.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 21, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English and Major Chambers, sick.

There being no business before the Board ready for its action, adjourned to meet on Monday morning, November 23, at the usual hour.

WATERVLIET ARSENAL, WEST TROY, N. Y.,
November 23, 1874.

The Board met pursuant to adjournment. Present, all the members except Lieutenant-Colonel English, sick.

A communication was received from the Chief of Ordnance, requesting informa-
tion as to whether it was necessary for Capt. J. W. Piper, Fifth Artillery, to appear before the Board to explain the merits of his trowel-sheath. The Board directed that it be respectfully returned, with the following indorsement:

Respectfully returned.

The following is an extract from the proceedings of the Board in regard to the trowel-sheath of Capt. J. W. Piper, Fifth Artillery:

"Not regarded as suitable for adoption in the military service." It will not, therefore, be necessary for Captain Piper to appear before the Board.

A communication was received from the Chief of Ordnance in reference to the desirability of providing, for the infantry-arm of the service, a cart similar to the one recommended for the cavalry. Pending discussion on this subject the Board adjourned to meet to-morrow at the usual hour.

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**WATERVLIET ARSENAL, WEST TROY, N. Y.,**

*November 24, 1874.*

The Board met pursuant to adjournment.

Present: Lieutenant-Colonel Shafer, Lieutenant-Colonel McCook, and Captain Stacey.

The following letter was addressed to the Chief of Ordnance:

Your communication of the 21st has been received and submitted to the Board on Infantry-Equipments. The subject of an infantry-cart has been considered and frequently discussed, but the Board are of the opinion that, while at times such a vehicle might be useful, there are so many objections that can be urged against it, that they do not recommend its introduction.

The following letter was also addressed to the Adjutant-General United States Army:

The Board on Infantry-Equipments, convened by paragraph 14, Special Orders 120, from your Office, dated Washington, June 1, 1874, having completed the duty assigned it, in accordance with a telegram from the Chief of Ordnance, dated November 18, 1874, await further instructions.

After signing a fair copy of the report to the Chief of Ordnance, the Board adjourned to meet at the call of the President.

M. H. STACEY,


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**WATERVLIET ARSENAL, WEST TROY, N. Y.,**

*December 2, 1874.*

The Board on Infantry-Equipments met at the call of the President.

Present: Lieutenant-Colonel Shafer and Captain Stacey.
The following order was submitted:

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
Washington, November 16, 1874.

[Special Orders No. 258.—Extract.]

1. The Board on Infantry-Equipments, &c., appointed by paragraph 14, Special Orders No. 120, June 1, 1874, from this Office, and now in session at Watervliet Arsenal, N. Y., having completed its duties, is dissolved.

The officers composing the Board, except the recorder, will join their proper stations.

By order of the Secretary of War:

E. D. TOWNSEND,
Adjutant-General.

In accordance with the above orders the Board adjourned sine die.

W. R. SHAFTER,
Lieut. Col. Twenty-fourth Infantry, President of the Board.

M. H. STACEY,
### LETTERS AND COMMUNICATIONS RECEIVED BY THE BOARD ON INFANTRY-EQUIPMENTS, CONVENED BY SPECIAL ORDERS No. 120, FROM ADJUTANT-GENERAL'S OFFICE, WASHINGTON, D. C., DATED JUNE 1, 1874.

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<td>No. 49</td>
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<td>Lieut. C. C. MacConnell, Fifth Artillery</td>
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<td>James W. Schaumburg, No. 272 South Fourth street, Philadelphia</td>
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<td>No. 53</td>
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<td>General Rufus Ingalls, Assistant Quartermaster-General</td>
<td>Acknowledges receipt of request of Board for blanket and shelter-tent, and states that letter has been referred to Colonel Easton, Assistant Quartermaster-General, Philadelphia.</td>
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## LETTERS AND COMMUNICATIONS RECEIVED BY THE BOARD ON INFANTRY-EQUIPMENTS, &c.—Continued.

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Note.—The foregoing letters and communications are not embraced in this report. They are on file in the Office of the Chief of Ordnance.
DESCRIPTION OF INFANTRY-EQUIPMENTS AND PARTS OF EQUIPMENT SUBMITTED TO A BOARD OF OFFICERS CONVENED BY PARAGRAPH 14, SPECIAL ORDERS 120, FROM THE ADJUTANT-GENERAL'S OFFICE, DATED JUNE 1, 1874. PREPARED BY CAPT. M. H. STACEY, TWELFTH INFANTRY, RECORDER

Infantry-equipments submitted by the Ordnance Department, from Watervliet Arsenal.

One set accouterments, buff-leather belts, pattern 1850, consisting of—
1 cartridge-box.
1 cap-pouch.
1 cartridge-box shoulder-belt.
1 waist-belt and plate.
1 bayonet-scabbard, leather, with frog attached.
1 gun-sling for musket; cal. .58.
1 N. C. O. sword shoulder-belt. (Double frog for sword and bayonet-scabbard and plate.)
1 N. C. O. waist-belt and plate.
1 N. C. O. sword, with leather scabbard.

Infantry-equipments submitted by the Ordnance Department, from Watervliet Arsenal.

One set of accouterments, grained-leather belts, pattern of 1861, consisting of—
1 cartridge-box.
1 cap-pouch.
1 waist-belt and plate, carrying cartridge-box and cap-pouch.
1 bayonet-scabbard, leather, with frog.
1 gun-sling.
1 N. C. O. waist-belt and plate, and frog for sword.

Description of infantry-equipments sent from Watervliet Arsenal, (pattern of 1872,) consisting of—

1 pair shoulder-braces, slide attachment.
1 cartridge-box, No. 1.
1 cartridge-box, No. 2.
1 waist-belt and plate.
1 valise.
1 scabbard, steel, Hoffman’s attachment.
1 pair coat-straps.
1 pair steady-straps.
1 haversack.
1 canteen, covered with petersham cloth.
1 meat-ration can, with cup-cover.
1 gun-sling, lengthened for musket, pattern 1870.
1 N. C. O. sword-frog, swivel attachment.
1 N. C. O. sword, steel scabbard, inside guard-plate reduced.

Additional experimental parts of equipment from Waterloet Arsenal, consisting of—

1 valise, black-rubber flap.
1 valise, petersham-cloth flap.
1 valise, seal-skin flap.
1 meat-ration can, 6 by 6, without cup, with hinged cover.
1 meat-ration can, 6½ by 8, with hinged cover, (proposed.)
(A) 1 enameled-cloth haversack.
(B) 1 enameled-cloth haversack, with tins.
1 knapsack, 1 haversack, 1 canteen, pattern 1860.
(C) 1 cartridge-box, cal. .58, with tins removed. Holds forty cartridges, cal. .50, in two original packages, the upper one to be emptied and then placed at bottom. Could also be fitted for cal. 45.
(D) 1 cartridge-box, cal. .58, with perforated wooden blocks for forty cartridges, cal. .50. Could be fitted for cal. 45.
1 cartridge-box, with McGinness’s pattern block for forty cartridges, cal. .50. Could be fitted for cal. 45.
1 Butler box, No. 1, curved, for nineteen cartridges.
1 Butler box, No. 2, straight, for twenty cartridges.
1 Hazen’s belt, No. 1, for forty cartridges.
1 Hazen’s belt, No. 2, for forty cartridges.
1 Dyer pouch, with sheep-skin lining, modified Cavalry Board pattern, holding forty (cal. .45) cartridges.
1 box, carrying one original package of fifty (cal. .45) cartridges, to be replaced as emptied. On campaign, two boxes may be used.

The infantry-equipments consist of carrying-braces, coat-strap, knapsack, and haversack, the whole weighing three and one-half pounds. Bags or pouches, with water-proof flaps, are used for knapsack and haversack. The haversack, which is a little smaller than the knapsack, is carried on the right side, the knapsack on the left side.

The carrying-braces consist of a back-pad and double shoulder-Straps—two straps for each shoulder.

The shoulder-Straps are attached to the back-pad by rivets, so as to be movable on their fastenings. The back-pad gives additional bearing-surface for the weight carried. Its shape enables the shoulder-Straps to be attached in such a manner as to separate them on the back and shoulders. The back-pad, in connection with the shoulder-Straps, prevents the weight carried from pulling directly downward on the shoulders, instead of which it tends to pull toward the center of the back by means of the pad supporting a portion of the weight.

Two straps are attached to the front ends of each shoulder-strap, for supporting the front corners of the bags, the waist-belt, and cartridge-boxes.

To the back-pads are fastened rings which hold the blanket-Straps. Two straps are attached to the pad, for supporting the rear corners of the bags. On these straps is a double loop, which may be moved down or up, for the purpose of drawing the bags together at the back, or to permit them to hang at the sides.

A strap looped at each end is on the blanket-Straps and passes underneath the straps supporting the bags, for the purpose of holding the blanket more firmly in place when marching at double time. At the bottom of the bags are straps with buckles, for drawing the bags together at the back and to retain them more firmly in place.

The equipment is put on by holding the shoulder-Straps in the hands, the bags in front of the body, flaps to the rear, and swinging them round to the left of the back, at the same time turning them, the left arm passing under the shoulder-strap, the right hand passing over the head, and under the right-shoulder strap; the waist-belt straps are then hooked.

Accouterments submitted by Capt. J. A. Snyder, Third Infantry.

DESCRIPTION.

Snyder's shelter-knapsack is composed of—

½ a shelter-tent; 3 sections of a tent-pole, with ferrules; 1 extra section suitable for top, center, or bottom piece; 1 bag, for clothing; 4 small tent-pins; 1 guy-rope; 1 set of straps.
By combining two knapsacks a complete tent is made.

The sections of the tent-pole are secured to the canvas by leather loops, and the sections of the pole are arranged in the loops in the shape of a square, making a sort of frame on one side. The 4 pins are secured in loops, inside of the sections of the pole.

The canvas bag or valise is very similar in construction to the new valise furnished by the Ordnance Department.

The pack, thus formed, has two straps on top, to which may be secured the overcoat, blanket, or poncho. The whole is carried on the back, well up on the shoulders, by means of a broad neck-yoke, tapering down toward the waist-belt. About half way between the shoulder and waist the piece forming the neck-yoke terminates in two straps, one going to the waist-belt and the other behind under the arms, hooking by brass loops to hooks in the knapsack. The knapsack is suspended by a ring on top to a brass hook in the neck-yoke.

_Snyder's cartridge-pouches._—Made to accompany the knapsack are Snyder's cartridge-pouches, each of which will hold about thirty rounds of Springfield-rifle ammunition, (cal. 45.)

Attached to each pouch are two leather loops, through which the waist-belt passes, and a ring by which, if desired, the weight of the cartridges can be transferred from the waist to the shoulders, by means of a light strap which accompanies the pouches.

When the knapsack is worn this object is attained by attaching to the rings the straps of the neck-yoke. The pouches are worn in front of the body, and almost on a line with the hollow of the shoulders. In this position they are convenient for use, and partly counter balance the weight of the knapsack upon the back.

_Snyder bayonet-scabbard attachment._—Snyder's bayonet-scabbard attachment consists in a leather loop through which the waist-belt passes, and which extends about two inches below the belt. In this extension a place containing a female screw is fastened, by means of which and a small brass screw the scabbard is attached to the loop.


"The knapsack is brought upon the soldier's shoulders in the regular manner. By this new system of strapping, the weight is supported from below. In fastening the small upper strap to the first hook the knapsack becomes so firmly placed on the shoulders that it cannot be forced down and made to touch the back. By connecting the higher and larger straps with the second hook the knapsack is brought higher upon the shoulders, and a constant change in the bearings of the weight can be produced, to the great relief and comfort of the soldier."
"I further produce a combination of knapsack and shelter-tent, and thereby obtain a considerable saving in weight. The soldier, when not pitching his tent, can rest upon it on the ground. The painted part being water-proof, it shelters him from dampness and ulcerous sickness, while the ends of the tent he can use for a covering and the inner pocket for his pillow. The inner pocket is to receive his wearing-apparel; the rope used for lacing is the guy-rope of the tent.

"The knapsack part is large enough to admit the folding inside of blanket, overcoat, &c., protecting them from dampness, and consequent increase in weight. The sticks for pitching the tent are added in such a way as to fold around the inner pocket, doing away with the necessity of a wooden frame.

"The whole forms a simple, neat, light, and perfect knapsack.

"I have added to the knapsack half-made water-proof, to take the place of the large India-rubber poncho, for the soldier to carry over his shoulder in a rain-storm; but it is more important to sleep upon, as the soldier is protected from the damp ground, while from above he is sheltered by the tent."

Description of a set of infantry-equipments submitted by Mr. Sherlock, of New York.

This consists of a knapsack, two haversacks, two canteens, with waist-belt and straps over the shoulder to support knapsack, &c.

Knapsack is made of rubber cloth, with light, square frame of wood to preserve its shape, 11 by 11 inches and 4 inches deep. On the sides are two little pouches containing square canteens.

Haversacks are two little sacks suspended on each side of the body under the arms, and attached to brace-yoke by hooks.

The waist-belt behind is a broad piece of leather, fitting across small of back and supporting bottom of the knapsack. The blanket is rolled and suspended to the bottom of the knapsack.

Straps to waist-belt terminate in brass hooks, adjustable to any size by means of leather keepers.

The inventor claims for this equipment—

1st. Simplicity of adjustment.

2d. Equalization of weight about the body.

3d. It dispenses with straps across the body.

4th. That it prevents pressure of straps under the arms.

5th. That it dispenses with the haversack and canteen straps across the body.

6th. The broad shield of leather behind prevents knapsack from pressing against body.

7th. That the yoke permits weight to hang plumb.
8th. Claims superiority over other devices in the mode of adjusting and regulating the hooks.

9th. Calls attention to method of carrying blanket, hinging weight low down on the back.

10th. Claims lightness and substantiability for the entire equipment.

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*Description of knapsack submitted by Sergeant Patrick Boland, Company C, Nineteenth Infantry.*

Body of knapsack made of water-proof material; (made for largest-sized men, 14½ inches square by 4 inches deep;) sides made of sole-leather to give necessary stiffness. Stay-straips passing entirely round the knapsack-box proper; side-straips to secure blanket when rolled. The shoulder-straips are secured by buckle on one, and hook and loops on the other. Blanket is carried rolled and secured to three sides of knapsack; overcoat on top.

The advantages claimed for this knapsack are, that the weight carried is more equally distributed; that it is kept close to and inside the line of gravity of the carrier, and is well up and retained close to the shoulders; it is readily slung and unslung, and can be kept more neatly and closely than those in use. Knapsacks could be made of four sizes for different-sized clothing.

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*Description of cartridge-belt and appendages submitted by First Lieut. James Regan, Ninth Infantry.*

This belt is intended to carry from thirty-five to forty cartridges, arranged so as to have five in each division. The thimbles are sewed to the belt. Between each division of five cartridges is a space of about half an inch, designed to allow the covers to project a little beyond the extreme cartridges in each division. In one of these spaces is a little oblong pocket, like a spectacle-case, for screw-driver.

In the second space, on either side of the front of the belt, is a buckle, which is riveted to the belt, and designed to fasten the cross-belts. On each side of the center division of thimbles on the back part of the belt are two other buckles, to fasten the cross-belts on behind.

To each division of five cartridges is arranged a little cover for the cartridges, to prevent them from being lost by dropping out, fastened by a small brass knob, adjusted to the center thimble of each division of cartridges.

A strap and buckle, to support bayonet-scabbard, is sewed on inside of the belt on left side. The cross-belts, similar to suspenders for trousers, attached to the waists-belt, thus taking the weight entirely from the waist. To each belt is an adjustable pad of leather, of an oval shape, fitting over the shoulders. The cross-belts are arranged to carry a blanket and a change of under-clothing.
Description of samples of cartridge-boxes referred to the Board by the Chief of Ordnance for examination.

No. 6080, (1872.)—Cartridge-box from M. Schuerin.

Description.—Made of leather; circular in shape; wooden, perforated, circular block, working on a rivet. A flap, secured by a button on the top, gives an opening from which the cartridges may be taken from the box. It may be carried either by running the waist-belt through the loops at the sides, or by shoulder-strap. Not regarded as possessing sufficient advantages for adoption in the military service.

No. 5398, (1872.)—Cartridge-box from Sergeant C. Mongers.

Description.—Made of leather; circular in shape. Has an outside pocket for screw-driver; inside, a circular perforated block of cork, revolving on a pivot; the inside of the box lined with and covered by tin slide; carried on right side by straps over the shoulder. Not regarded as possessing sufficient advantages for adoption in the military service.

No. 625, (1874.)—Two cartridge-boxes from Thompson & Son.

Description.—Made of leather; square shaped; reversible; to contain sixty rounds of ammunition; double flap—one large, one small; carried on waist-belt on two loops, which may be reversed by unbuttoning and turning a strap on the side. Not regarded as possessing sufficient advantages for adoption in the military service.

No. 6642, (1873.)—No. 1, Cartridge-box from E. J. Burbank, private of Company K, Nineteenth Infantry.

Description.—Made of leather; square shaped; double flap; wooden perforated blocks to contain each twenty rounds; places on the sides to contain tompion and screw-driver; carried on waist-belt by loops on side of box.

No. 2 very similar to above, but smaller; to hold thirty rounds; without places for tompion and screw-driver.

Neither regarded as possessing sufficient advantages for adoption in the military service.

No. 1395, (1874.)—Three cartridge-boxes from Thompson & Sons.

Description.—Made of leather; oblong shape; each to hold thirty rounds (cal. .45) ammunition in paper cells; flap secured by brass button at the bottom of the box; carried on waist-belt by loops at each end. Not regarded as possessing sufficient advantages for adoption in the military service.

No. 1339, (1874.)—Two cartridge-boxes from Maj. T. J. Treadwell.

Description.—Both made of leather; one oblong shaped, the other nearly square; to hold twenty and thirty rounds of ammunition respectively; both carried by flaps
secured by a brass button at the bottom of the box; carried on waist-belt by two loops; cartridges are carried in paper cells. Not regarded as possessing sufficient advantages for adoption in the military service.

No. 4463, (1873.)—Cartridge-box to contain Lieutenant Metcalfé's cartridge-holders.

Description.—Made of leather, nearly square, to hold thirty cartridges; flaps secured by a brass button at the bottom of the box; carried on waist-belt by loops, strengthened by a cross-strap; can be removed at will, without removing the belt. Not regarded as possessing any advantages over those now in use.

1 cartridge-box, cal. .58, (old style,) with tins removed, holds 40 cartridges; cal. .50, in two original packages; obsolete.

1 cartridge-box, cal. .58, (old style,) with perforated wood blocks, holds 40 cartridges; cal. .50; obsolete.

1 cartridge-box, cal. .58, (old style,) McGinness's pattern block for cal. .50, holds 40 cartridges; obsolete.

1 Butler's cartridge-box, No. 1, curved wooden perforated block for 19 rounds, cal. .45; flap lined with sheep-skin; secured key; revolving on pivot; carried on waist-belt by two loops. This is considered a good box, but not regarded as possessing any advantages over those now in use.

1 Butler's cartridge-box, No. 2, is similar in construction to No. 1, with the exception that it is straight. The same remarks apply to it as to the other.

1 Dyer's pouch, modified; leather; pocket lined with wool, with flap secured by button to side of pouch; carried on waist-belt; will carry 40 cartridges, cal. .45. (Cavalry-Board pattern.)

1 cartridge-box carrying an original package of 30 cartridges, cal. .45; shape, oblong; made of leather; flap buttons under box; carried on waist-belt. From ordnance department, Watervliet. Not regarded as possessing any advantages over those now in use.

1 cartridge-box from Capt. B. F. Rittenhouse, Fifth Artillery. Description: Made of leather; shape, oblong; place on side for screw-driver; will hold 30 rounds, cal. .45. Not regarded as possessing any advantages over those now in use.

Hazen's belt No. 1 is simply a black leather belt, with loops on the outside, made to carry 41 cartridges.

Hazen's belt No. 2 is a black leather belt, and upon this is fastened by leather slide two double rows of loops, containing 40 cartridges.

McKeever's cartridge-box is made of leather; square shaped; very flat; is carried on waist-belt by two leather loops. Box opens from the top, and when opened all the cartridges are exposed and convenient for use, hanging in loops one above the other. A brass bar at the bottom, riveted, holds the two sides of the box together; the top is secured by a brass button and strap. This box holds 40 cartridges.
Laidley's revolving cartridge-box; made of leather; shape, oblong; supported by waist and shoulder-belt. Box can be reversed by means of brass pivots at the ends. Holds 60 cartridges, in wooden perforated blocks. Not thought to possess sufficient advantages over those now in use to justify its adoption in the military service.

Samples A, B, C, D, E, H, K, L, M, N, P, of boxes, pouches, and belt have been submitted to the Board, and none of them are regarded as suitable for the military service.

Description of cartridge-box submitted by Lieut. C. C. MacConnell, Fifth Artillery.

This box is square shaped; made of leather; lined with tin; compartments to hold forty cartridges. There is an opening at the bottom, working by means of a spring, and by which one cartridge can be taken out at a time. The cartridges are placed in the box on top by raising a flap. The box is worn on the waist-belt. Not regarded as suitable for the military service.

Description of cartridge-holder submitted by James W. Schaumburg, of Philadelphia.

This consists of a cylindrical block, 3½ inches in diameter by 6 inches in length, perforated at both ends, to hold 36 cartridges, cal. .45. Not regarded as suitable for the military service.

Miscellaneous articles of equipment submitted to the Board for examination

Baxter's knapsack-supporter.—This consists of two pieces of ash, curved to conform to the shape of the back, fastened together at top and bottom by straps, with rings and straps to secure knapsack or blanket, carried by broad cross- straps across the shoulders and fastened to the supporter behind, and also to waist-belt. Not regarded as possessing sufficient advantages for adoption in the military service.

Box of cleaning-material from Watervliet Arsenal.—It contains—
2 1-pint cans of anti-corrosive and lubricating oil, (cosmoline-oil.)
1 box, holding 10 ounces scouring-material, marked I.
1 box, holding 4 ounces polishing-material for leather, marked II.
1 box, holding 10 ounces whiting.
1 chamois-skin, about 2 feet square.
1 wire scratch-brush.

This is said to be sufficient to last a company one year.

Conrad Blattner's cleaning-kit.—This consists of—
1 cloth-brush.
1 blacking-brush.
1 shoe-scrubbing brush.
1 brass-brush.
1 button-stick.
1 compound tin box; (contents: soap and blacking.)
1 compound tin box; (contents: tripoli, heel-ball, wax.)
1 oil-flask.
1 turpentine-flask.
1 tripoli-bottle; (contents: alcohol and tripoli.)
1 compound needle-box; (contents: needles and thread.)
1 pair of scissors.
1 thimble.
1 set reserve buttons.
1 looking-glass.
1 comb.
3 sheets of emery-paper.
Cleaning-rag and leather.
Case and tin frame, containing kit.

Description of Capt. J. W. Piper's (Fifth Artillery) trowel-bayonet scabbard.

This consists of a frame-shaped piece of steel, with a hollow space down the center to contain a triangular-shaped bayonet, twelve inches in the blade. It is not regarded as suitable for adoption in the military service.

National Armory, Springfield, Mass.,
November 19, 1874.

Sir: I have the honor to present to your attention the following specifications regarding my improved cartridge block and carrier, together with the arrangement for attaching the block upon the gun.

The cartridge-block is a wooden block, in which it is proposed that metallic cartridges shall be put up for issue at the arsenal where they are manufactured.

The carrier is a metallic hook, sliding upon the belt, in which it is proposed to carry the blocks full of cartridges; and the rifle and the blocks are so arranged that, at pleasure, they can be secured together in a very convenient position for loading. It is intended that the blocks, when exhausted, shall be thrown away; but they can, if necessary, be refilled and used many times.

The block.—This consists of a wooden block, 5 inches by 1 3/4 inches by 1 1/2 inch, bored on its edge with eight holes to receive the same number of rifle-cartridges, cal. .45. These holes are made cylindrical, and of slightly less diameter than the corre-
sponding portion of the taper cartridge which they inclose. The cartridge is thus held only by the upper edge of the hole, and does not touch the wood, except for a very short distance below the mouth of the hole. Were this all the precaution taken against its being too closely held by the wood, in the event of the latter's swelling from moisture, it might still be insufficient in case of excessive wetting. To provide against such a contingency, in my last model I have run a thin saw-cut along the open edge of the block, slitting the mouths of these holes.

This device has the following advantages:

1st. It effectually removes the block from the deleterious effects of moisture, as this split makes of the block a sort of automatic spring, spreading away from the cartridges when wet, and hugging close to them when dry. Experiments show that no perceptible difference is found in the facility with which the cartridges can be removed from the block after soaking it in water over night, or for longer periods of time.

2d. In case a cartridge should stick hard in the block from any cause—such as the wearing of the bit which makes the holes, and their consequent diminution in size, or from the collection of lubricant or dirt on the outside of the cartridge—this split affords a starting-point, from which, by giving a wrench to the cartridges, the block may be split open sufficiently to allow them to be easily withdrawn. By using the proper degree of force, the block may be thus broken entirely to pieces, in case, by freezing or other cause, the cartridges should be fastened permanently in their holes.

3d. It follows, as a consequence of the above, that the cartridges may be packed in the blocks at the arsenal of fabrication so tightly that they can never, under ordinary circumstances, accidentally fall out; and yet with a moment's preparation they can be loosened for rapid removal.

4th. It makes a fastening-point for the cutting-off string, and also indirectly facilitates the boring of the block.

The bottom of the block is rounded for convenience in handling.

On one side of the block are bedded and riveted two sheet-iron plates.

The foremost and larger of these is called the recoil-plate. It is made broad, so that, by having a large bearing against the wood in rear of it, it may not sink in when the recoil (forward) in the act of firing brings the block forcibly against the attachment on the gun. The recoil-plate is punched with two holes to reduce its weight.*

The other plate is the cam-plate.

It is principally by means of this plate that the block is fastened to the gun, by a method essentially like that employed in securing the breech-block of the Springfield rifle.

The edges of the block near these plates are hollowed out in a half-round chamfer, to avoid the unnecessary projection of the plates beyond the edge of the block.

* Experiments made this day indicate that, provided the block is to be used for but eight shots, which is the theory of its construction, the width of the recoil-plate can be reduced to ½ inch; in which case the tightening-holes could be dispensed with.
Both plates are drilled and counter-sunk for the rivets, which are common wire nails. Midway along the inside of the block is the carrier mortise, a square groove an inch wide running across the block. It is designed to steady the block when transported on the carrier.

The appurtenances of the block are the pasteboard cap, the paper label which secures the cap and indicates the contents of the package, and the string by which the label is cut preparatory to the removal of the cap. The cap is rendered water-proof by being dipped in linseed-oil and baked. The string is fastened at one end of the block, and, running around the row of cartridges, has its loose end projecting in a convenient position for grasping. When filled and capped, the upper portion of the block down to the lower edge of the label is coated over with a mixture of linseed-oil and varnish, colored with burnt umber. This protects it from wet, additionally, so as to prevent a long-continued rain from soaking the attachments of the cap. If this could happen, the cap might become detached, and possibly allow some of the cartridges it covered to be lost. But if these were put up tightly, as before described, it will be seen that even without this water-proofing the accident would be very unlikely. As it is, however, I am able to state that two blocks so prepared were arranged on a rack under a constant stream of water from a faucet, the force of which was distributed by being received on a wad of cotton-waste overlying the blocks. They were thus in a constant soak for twenty hours without suffering at all.

The block and parts are colored brown, to harmonize with the stock and to avoid showing a decided waist-line when worn in action.

The free end of the string is glued to the side of the block by the varnish, so that it can be easily rolled off, when necessary, with the thumb.

Materials.—Block—of basswood or whitewood; plates—of the cheapest sheet-iron, (No. 16 gauge;) rivets—iron-wire nails, known as “French nails;” cap—good pasteboard or strawboard; label—of rope-manila paper, printed across the grain; string—strong, tough linen string.

The gun.—The attachment on the gun is as follows:

A light iron strap sunk into the wood is connected at its rear end with the lock-plate, and consequently by the bearing of the latter against the receiver with the barrel. A tongue at its forward end passes under the lower band, by which it is kept in place.

At its forward end is formed the recoil-head, a circular undercut in which receives and matches the circular forward end of the recoil-plate.

At the proper distance in rear of this is the cam, which is essentially a piece of round wire, flattened on one side, and passing through the strap and riveted on the inside of it.

On the outer end of this cam is the thumb-piece, made so as to spring in and out of a slight indentation in the strap, in which it is held, when in place, by a slight projection on its inner surface. This flat place on the cam is parallel to the general direc-
tion of the thumb-piece, so that when the gun is horizontal and the cam open the flat place is vertical, and just far enough from the bottom of the undercut in the recoil-head to allow the passage of the shoulder of the recoil-plate on the block. It is so placed, however, as to prevent the passage of the nib.

When the cam is shut—that is, when the thumb-piece is turned parallel to the barrel—the round projecting part of the cam has entered the cam-recess. This keeps the rear end of the block from moving up or down. Its lateral motion is prevented by a lip, formed by the projection of the thumb-piece over the cam. The forward end of the block is kept in place by the projecting form of the recoil-plate, which enters the recess of the recoil-head. The block is thus securely and rigidly fastened to the strap, and the strap to the gun. The tail of the thumb-piece is enlarged, so as to afford a good bearing to the thumb, and is beveled downward and inward on its upper side. This affords security against accidental displacement, and yet allows a slight outward and downward pressure with the thumb to start it easily. The strap is made of decarbonized iron, case-hardened. Its rear end is counter-bored for a hub, hollow-milled around the front-side screw-hole in the lock-plate.

The carrier (see Plate) consists of a tempered sheet-steel hook, made in two pieces. (A later model is in a single piece.) A is the hook-strap passing through the eye a' of the back-strap B. These are also fastened together by the rivets D D, passing through the butt of the leather carrier-strap E. A passage is thus allowed for the waist-belt F. The button C serves to secure the strap E, and also by means of the inclined thumb-piece on its upper end to spring out the lip G so as to disengage it from the upper side of the cartridge-block. This lip G keeps the block from rising bodily upward, and the broad part of the hook-strap fitting into the carrier-mortise of the block keeps it from tilting endwise.

It is still further secured by the carrier-strap when buttoned down as above indicated. It will readily be seen that from the position of the lip it maintains its hold on the block to whatever extent within the limits of the elasticity of the spring it may be pressed out. The lip follows it up and brings it back to place when the disturbing pressure is removed. The security of the block is, therefore, within limits independent of the strap.

It is proposed that as many of these carriers be worn upon the belt as may be necessary, due regard being had to the size of the men and to the character of the service requiring their use.

For garrison-service, a single block worn on the right side would probably be sufficient. A large quantity could be worn at once by lapping them like shingles. An ordinary man could probably carry seven blocks, (56 cartridges,) and still have room for his bayonet-scabbard, &c.

Should an extra supply of ammunition have to be carried, it can be put in ordinary leather cartridge-boxes holding two or three blocks apiece. I have presented samples of these. The blocks are kept separate by short brass partitions in the end of
the box. They are taken out by a strap which passes under the blocks, and is fastened at the inner end to the part of the box next the body, and has the outer end hanging loose outside.

**Belt-plate.**—I desire also to call your attention to my belt-buckle, which is of the old S-hook pattern, stiffened and made distinctive by the introduction in the pattern of a letter U. The U.S. part has fastened to it a buckle-tongue, by which its position on the belt can readily be adjusted; or it can be removed entirely to put on or take off the carriers. The other end of the fastening is permanently sewed to the belt; near it is a movable leather slide, into which the free end of the belt passes when it is fastened. The S hooks downward so that the weight of the load tends to keep it in place.

There are loops for the knapsack-strap as used on the present accouterments.

This fastening should be made of bronze, cast under pressure, or of phosphorous or aluminium bronze. The former can be furnished for $12.50 per hundred, in the size which I submit. This bears a weight of 50 pounds without straightening. It could be made heavier and stronger, if desired. Any form of waist-plate could be used with the carriers, provided that one end is unnumbered so that they could be slipped on.

**Weights.**—In round numbers, the weight of either the carrier or the cartridge-block is less than that of a single cartridge.

<table>
<thead>
<tr>
<th></th>
<th>Pounds</th>
<th>Ounces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gun-attachment, about</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>One cartridge</td>
<td></td>
<td>1 1/8</td>
</tr>
<tr>
<td>Block full, &amp;c.</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Block empty</td>
<td></td>
<td>1 1/2</td>
</tr>
<tr>
<td>8 cartridges</td>
<td></td>
<td>11 1/2</td>
</tr>
<tr>
<td>6 blocks full, &amp;c.</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>7 blocks full, &amp;c.</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>1 carrier</td>
<td></td>
<td>1 1/8</td>
</tr>
<tr>
<td>6 carriers</td>
<td></td>
<td>6 3/4</td>
</tr>
<tr>
<td>7 carriers</td>
<td></td>
<td>7 1/2</td>
</tr>
<tr>
<td>1 block and carrier, filled</td>
<td>14 1/2</td>
<td></td>
</tr>
<tr>
<td>Same empty—dead weight</td>
<td>2 3/4</td>
<td></td>
</tr>
<tr>
<td>6 carriers and blocks, filled</td>
<td>5 4 1/2</td>
<td></td>
</tr>
<tr>
<td>Same empty—dead weight</td>
<td>1 1/2</td>
<td></td>
</tr>
<tr>
<td>7 carriers and blocks, filled</td>
<td>6 2 1/2</td>
<td></td>
</tr>
<tr>
<td>Same empty—dead weight</td>
<td>1 3/4</td>
<td></td>
</tr>
<tr>
<td>Belt-buckle</td>
<td></td>
<td>2 1/2</td>
</tr>
</tbody>
</table>

**Claims.**—Having described my inventions, I will state what I consider their special advantages.

First. The **cartridge-block alone**:

1. It affords by itself a good package for the cartridges. It is nearly indestructible in transportation or by wet; it keeps the cartridges from jostling together, and
thereby, as has been shown by experience, endangering their surety of fire. It also protects them from dust and sand, quite as injurious to the gun as moisture would be to the cartridge.

II. It is a convenient package in shape and size, if an extra supply of ammunition had to be carried in the men's pockets.

III. It allows the cartridge to project enough for a good, firm grip. In cold weather this might be essential.

IV. It is not costly.

Second. The block combined with the gun:

I. A considerable increase in the possible rapidity of fire, as shown by your experiments, in which eight shots were fired in twenty seconds—starting with the chamber empty.

II. The possibility of controlling this increase of rapidity by officers in charge of men so equipped. The order to "fix blocks" need no more be anticipated than that to fix bayonets. Under ordinary circumstances the men would use from the belt. With magazine-guns this rapidity is uncontrollable, as it is impossible to see whether the magazines are used or not.

III. A very marked advantage is found in firing lying down. In this position it seems probable that much of the firing of the future is to be conducted. The only portion of a man so firing which it is at all necessary to move is his right arm. If an isolated skirmisher, he need not twist or roll over to get at his back or side for ammunition, and thereby attract attention.

IV. The cartridges are immediately in front of the firer, under his eye. He sees just where they are, and how many are left him. I have frequently heard of troops engaged in intrenchments spreading, for convenience, their cartridges on the parapet in front of them. In a similar case, a man provided with the block has all this facility of manipulation, with this additional advantage: That, if obliged to change his position hurriedly, he does not have to leave his ammunition behind him, but carries it with the gun to which it belongs.

V. Pickets or other troops exposed to surprise may sleep with their belts off if they have their blocks fixed. In case of a surprise, they have but one thing to look for—the gun. There would be no more necessity of looking for the cartridge-box than if they had loaded revolvers instead of rifles, while, owing to the guns not being loaded, the liability of accident would be diminished.

VI. It protects the hand from burning on the barrel. After a few shots have been fired from the new Springfield rifle, especially on a hot day, the barrel becomes so hot that it can hardly be touched. The block, when fixed, prevents the hand from touching it if the thumb be properly laid along the stock. The Board had an opportunity of observing this feature when I first met them in September. Ordinary target-firing, without any attempt at rapidity, soon made the barrel warm.

The English war department has consequently been obliged to issue leather pads
to buckle over the barrel at the grip. This is a mere expedient, and will probably be found to get out of shape when wet, and also to hurt the hand where the buckle comes. The barrel is covered half-way up with wood by Westley Richards for this purpose. Unless fragile this is very cumbersome, and, like the pad, is there when not needed. With the cartridge-block, it is never so much needed as when it is used.

VII. The weight of the block full of cartridges when fixed on the gun diminishes materially the recoil at the moment of firing. By experiment it was found that without the block the recoil is 174 pounds; with it full it is six pounds less.

Now, as this is about the quantity by which the recoil of the cal. .45 arm exceeds that of the cal. .50, and as the recoil of the cal. .50 was often objected to by the troops, and the carbine-cartridges asked for in place of the musket-cartridge, it would seem reasonable to allow this some weight; particularly as the diminution of recoil is accomplished without the sacrifice of any of the good qualities of the ammunition by reducing the charge, as has been proposed in England, or without increasing the weight of the gun, as has also been proposed there.

VIII. The change in the gun is slight; it will not add more than forty to fifty cents to its cost, and, in combination with the form of the block, give a perfectly solid fastening, so that the block can only be unwittingly removed by destroying it.

Third. The block in combination with the carrier:

I. It is one of the least-heavy methods proposed of carrying cartridges.

II. The weight is well distributed about the person around the waist, where experience has shown it can be most easily carried.

III. When the block is exhausted it is thrown away, leaving nothing but the carrier to transport. With the ordinary cartridge-box one has to carry as much dead weight for a single cartridge as for a box full.

IV. It fits snugly to the body; does not project, as does the ordinary box.

V. The weight can be shifted on the belt to relieve the waist if fatigued.

VI. It does not interfere with the belt in its functions as a belt. The carriers can all be taken off for parade or drill.

VII. No other belt is required for escort or scouting duty than that used in garrison.

VIII. With the cap on, whether detached from the block or not, and the strap buttoned down, the cartridges cannot fall out.

IX. Owing to the slitting of the holes and the tightness with which the cartridges can consequently be packed, and also to the security with which the carrier holds the block, without using the strap the cartridges can be taken out singly, as in the loop-belt of the plains. The strap is only an accessory. Even without it and the cap, the cartridges are as safe as they are in the loop-belt. With the strap and the cap, they are perfectly secure.

X. The carrier, when empty, forms a convenient attachment for any little articles which it may be desired to carry—the tin drinking-cup, &c.
XI. Its cost is slight; it is almost imperishable, and takes but little room in store and transportation.

XII. The block can be readily placed into and removed from the carrier.

The belt-buckle is light, cheap, and ornamental. It is protected by the flap from wearing or soiling the clothing.

Directions.—To put the blocks into the carriers—

Slide all the carriers to the right side as near to the belt-plate as possible. Detach the rearmost one two or three inches to the rear. Take a block in the right hand, with the cap next the palm of the hand, and with the thumb resting in the carrier-groove. Hold the block horizontal, so that the mortise comes opposite to the body of the hook-strap of the carrier, the irons uppermost, the bottom of the block against the body. Raise the top of the block so as to roll it into place and to press out the movable portion of the hook-strap, and then slip it down into the carrier as far as it will go.

If necessary, press in the button so that the lip will cut through the paper label; button down the strap; slide the carrier to the opposite end of the belt, and continue as before with the others.

The irons are always next the body.

The cap may be detached before putting it into the carrier.

To remove the block from the carrier—

Hold the musket as at an “order” with the left hand; unbutton the strap of the block nearest to the belt-plate with the right hand, and tuck the strap between the belt and the body; place the right thumb on the upper side of the button, the fore-finger extended along the block, the other three fingers beneath it; press out the button with the thumb until the lip is clear; lift out the block with the fingers beneath it, guiding it with the fore-finger and palm of the hand.

To fix the block—

Hold the piece in the position for loading; open the cam to its full extent; insert the recoil-plate under the lip of the recoil-head as far as it will go, holding the block flat against the gun, pointing downward and forward; press the rear end downward until the nib of the back plate rests on the cam; turn up the thumb-piece of the cam.

Take off the cover by pulling on the string. If the cartridges stick tight, give them a wrench with the hand until the wood is heard to crack. In loading keep the muzzle well depressed, level with the knee. The hand should always grasp the block in firing. Take the nearest cartridges first, successively.

To remove the block—

Open the cam to its full extent; raise the rear end of the block and remove it.

The motions and fastening of the cartridge-block are like those of the breech-block of the gun. It always pivots on the forward end.

The slitting of the blocks is to allow for moisture. So prepared, wet does not affect their hold upon their contents in the slightest degree. It also serves to start them
in their holds, if they should fit tight, by wrenching the row of cartridges sideways slightly.

HENRY METCALFE,
Lieutenant of Ordnance

Capt. M. H. Stacey,
Recorder Board on Infantry-Equipments,
 Watervliet Arsenal, West Troy, N. Y.

P. S.—I estimate the cost as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block, complete</td>
<td>2½ to 3</td>
</tr>
<tr>
<td>Carrier, complete</td>
<td>8 to 10</td>
</tr>
<tr>
<td>Strap on gun</td>
<td>40 to 50</td>
</tr>
<tr>
<td>Belt-buckle of bronze</td>
<td>12½</td>
</tr>
</tbody>
</table>
REPORT.

WATERVIET ARSENAL, WEST TROY, N. Y.,
November 24, 1874.

SIR:

The Board on Infantry-Equipments, convened by paragraph 14, Special Orders No. 120, dated Adjutant-General's Office, Washington, June 1, 1874, have the honor to state that they have carefully examined the various subjects submitted for their consideration, and respectfully transmit their report.

Many different samples of knapsacks, haversacks, cartridge-boxes, belts, &c., have been presented for our inspection, and out of the number we have selected those which, in our judgment, seem best adapted for the use of troops serving as infantry.

In our decisions we have been governed by the result of our own experience with troops in a great variety of service, by the reports from officers of the Army submitted by the Chief of Ordnance, and the very able and comprehensive report on this subject by a board of officers of the British army, of which Major-General Eyre was the president.

The first object the Board had in view was to lessen the weight of the pack heretofore carried by our soldiers, without impairing their efficiency or interfering with their comfort and health; and we are of the opinion that in the brace-system and appendages, invented by First Lieut. George H. Palmer, of the Sixteenth Infantry, most, if not all, of the requirements of the service are met.

The equipment consists of carrying-braces, blanket-straps, clothing-bag, and haversack, the whole weighing about three pounds and a half.

The carrying-braces are composed of a back-pad about four inches wide at the top, six and a half inches wide at the bottom, and three and three-quarters inches from top to bottom, made of two thicknesses of stout leather sewed together. To this are riveted four straps, one at each corner, about one inch in width—two straps for each houlder—the outside strap being about one foot in length, the inner one about fifteen inches. This strap is narrowed down, passed through a brass ring, and is then doubled back, terminating in a tongueless buckle; the outer strap is passed through this buckle and is riveted to the outside of the inside shoulder-strap about three inches above the brass ring.
Two waist-belt straps of leather, five-eighths of an inch in width and twenty inches in length, are secured to the brass rings, and are attached to each side of the waist-belt plate. In addition to this are two straps riveted to the lower part of the pad one inch apart, five-eighths of an inch wide and fourteen inches long.

On the upper corners of the back-pad are two brass D rings, held by the same rivets that fasten the upper shoulder-straps, through which the blanket-straps are passed. A strap eight inches long and looped at each end is placed on the blanket-straps and passes underneath the straps attached to the lower part of the back-pad supporting the bags, for the purpose of holding the blanket more firmly in place when marching in double time.

Two straps are attached to the front rings by brass hooks for supporting the front corners of the haversack and clothing-bag.

The clothing-bag is made of stout canvas duck with India-rubber flap, cut 16\(\frac{1}{2}\) inches long by 13\(\frac{1}{2}\) inches wide, and laps backward over the canvas \(\frac{3}{4}\) of an inch. This flap has an inside pocket 12 inches deep and nearly as wide as the flap.

The main pocket of the clothing-bag is 12\(\frac{1}{2}\) inches deep in front by 11\(\frac{1}{2}\) inches wide at the bottom and 10\(\frac{1}{2}\) inches wide at the top. The top is strengthened by a border of white leather \(\frac{3}{4}\) of an inch wide extending around the bag.

The gusset is 38 inches long by 5\(\frac{1}{2}\) inches wide in middle and 4\(\frac{1}{2}\) inches at the ends, and tapers back from ends 8 inches.

It also has a pocket for extra ammunition, cut 10\(\frac{1}{2}\) inches wide by 7 inches deep, with selvage top. Also two straps fastened to the flap, and which buckle under the clothes-bag; also two buckles at the corners to attach the bag to the brace-yoke.

The haversack is made of the same material as the clothing-bag, but is a little smaller. The flap is cut 14\(\frac{3}{4}\) inches long by 13\(\frac{1}{2}\) inches wide. The front is cut 12 inches deep by 9\(\frac{1}{2}\) inches wide. It has an outside pocket for meat-can and plate combined, 9\(\frac{1}{2}\) inches wide by 10 inches deep, rounded at the bottom, with selvage top. Gusset 32\(\frac{1}{2}\) inches long by 3\(\frac{1}{2}\) inches in width in the middle and 3\(\frac{1}{2}\) inches at ends, tapers back from the ends 5 inches. Three-eighths of an inch for all seams included in these dimensions. The haversack has a buckle at each upper corner to attach it to the yoke, a buckle and strap on flap, and a strap to hold the clothing-bag and it together, to secure steadiness. The haversack belonging to this equipment has been constructed under the directions of the Board, so as to contain a knife, fork, spoon, meat-can, and plate, combined, with a tin cup attached to the strap, and may be carried over either shoulder or attached to the brace-yoke. The strap for the shoulder is much longer and broader than those now furnished, and is adjustable to the size of any man by means of a double-barred brass buckle, invented by Maj. Alex. Chambers.

The knife, fork, and spoon in the model were manufactured, according to the specifications of the Board, by Lamson, Goodenow & Co., of New York. They should be furnished by the Government, and cost only about $9 per gross.

The meat-can and plate combined consists of two oval dishes made of block-tin,
one deeper than the other, which fit together, forming a meat-ration can of the following dimensions:

Length, 8 inches; width, \(\frac{6}{4}\) inches; depth of whole can, \(\frac{1}{4}\) inches when closed; the lower dish to be 1 inch in depth; the plate \(\frac{2}{4}\) of an inch in depth.

To the deeper dish or plate is attached a light iron handle, which folds over and holds the two together. The one with the handle may be used to eat soup out of; as a frying-pan; or to warm up cold food, and many other purposes that will suggest themselves when it is used.

The Board recommend that the knife, fork, meat-can, and tin cup be furnished by the Ordnance Department and issued as other ordnance-stores.

The canteen submitted by the Ordnance Department meets with approval, and is recommended for adoption with the broad strap and the Chambers buckle, as per accompanying sample. (See Plate.)

The waist-belt and plate submitted by Col. P. V. Hagner, Ordnance Department, meets the requirements of the service, and is recommended for adoption. Sample forwarded.

When the bayonet is carried, we recommend that the scabbard shall be of steel, as is now issued.

When the trowel-bayonet is carried, the scabbard now being manufactured at this arsenal seems to be suitable.

We desire to remark in this connection that if the trowel-bayonet is substituted for the triangular bayonet throughout the Army, our soldiers will be deprived of a very efficient defensive weapon without providing them with an effective intrenching-tool. A bayonet has been found to be always more or less necessary, but in our service an intrenching-tool might not be required for use once in ten years. Would it not be better to leave the bayonet as it now is, and, when necessity requires, add to the soldier's equipment a light, effective intrenching-tool, something similar to the picket-shovels used in the Army toward the close of the late war?

The Board recommend that the sword shall no longer form a part of the equipment of company sergeants.

The Board recommend for adoption the cartridge-box invented by First Lieut Samuel McKeever, Second Infantry.

It is made of leather, is \(6\frac{3}{8}\) inches long, \(3\frac{1}{4}\) inches wide, and \(1\frac{1}{4}\) inches thick. It is carried on the waist-belt by two loops, opens from the top, the outside half working on a hinge formed by a brass rod running under the box and holding it together. The cartridges are held in webbing loops, ten in each section of the box, and are readily extracted from the box, a bellows arrangement allowing the tops of the cartridges to incline forward when the box is open. It has been improved by the addition of a brass escutcheon, and by making the bellows of russet leather, which is stronger than the kind used by Lieutenant McKeever, and is not so liable to corrode the cartridges. This box possesses all the merits of the thimble, or service, or Hazen's belt, which has
been highly recommended by many officers of the Army, with the additional advantages of protecting the cartridges from the danger of loss, or exposure to dust or moisture.

No provision has been made in this box for a screw-driver, but, when necessary to carry one, a cartridge may be taken out and the screw-driver inserted in its place.

The following are some of the merits of the Palmer brace system:

The back-pad gives additional bearing-surface for the weight carried. Its shape enables the shoulder-straps to be riveted in such a manner as to separate them on the back and shoulders. The manner of connecting the front ends of the shoulder-straps secures a bearing on each.

The double shoulder-straps have more bearing-surface and press into the shoulders less than single straps, and are readily moved from place to place on the shoulders, to give ease to the wearer. They cannot slip off the shoulders, being retained by their connection with the back-pad.

The braces adjust themselves to fit any size or form of shoulders, and enable a load to be carried without compressure of the waist or chest, or bearing down on the hips, or pulling backward of the shoulders, leaving the body, arms, and shoulders free in their movements. In other words, the weight is brought to bear vertically upon the shoulders, without deranging the equilibrium of the body, with its attending discomfort and ultimate permanent injury to vital organs.

The bags should be worn well up under the arms, the front straps being buckled a little shorter than the rear straps, but they may be worn at any height desired by letting out or taking up the straps supporting them. But one bag may be worn, (on either side,) the rear strap supporting it being buckled shorter than the front one. In an emergency both bags can be filled with rations, leaving the extra clothing in camp, thus enabling the soldier to carry six or eight days' rations.

The blanket should be folded flat, about eleven or twelve inches high and fourteen or fifteen inches wide. It would be well to wrap the poncho or shelter-tent around it. The blanket may be carried at the side, taking the place of one of the bags, the straps on the back-pad and shoulder-strap being buckled into the buckles on the blanket-strap.

One or four cartridge-boxes may be carried. The overcoat, folded, may be buckled under the flap of the haversack or clothes-bag.

The equipment is put on by holding the shoulder-straps in the hands, leaving the right-hand strap unhooked, the bags in front of the body, flaps to the rear, and swinging them round to the left on the back, at the same time turning them, the left arm passing under the shoulder-strap, the right hand passing over the head and under the right shoulder-strap; the waist-belt straps are then buckled, and the right-hand strap is hooked.
In this equipment the means are provided for carrying the following articles:

A woolen blanket, rubber poncho, (an overcoat for winter,) one pair of extra shoes and stockings, an extra shirt, extra drawers, towel, soap, comb, and brush, three (or six) days' rations, and from twenty to eighty rounds of cartridges; the maximum weight of which, including rifle, bayonet, and scabbard, forty rounds of ammunition, and three days' rations, is thirty-eight pounds; ordinarily it would be reduced to twenty or twenty-five pounds.

The poncho submitted with this equipment was especially prepared by the Goodyear India-Rubber Manufacturing Company, at the request of the Board, and we recommend that the poncho furnished be of this pattern.

It is not intended that the entire equipment should be always worn, or that all the articles should of necessity be in the clothing-bag; on the contrary, it is proposed to carry only one cartridge-box on ordinary occasions in garrison, and when in the field only such things as the nature of the duty may require.

Many officers have recommended that the knapsack, or valise, be abolished altogether, and in its place our soldiers, when in the field, should carry simply a change of underclothing rolled in their blankets and carried over the shoulder en bandolier.

There are so many objectionable features to this method that it would seem almost supererogatory to enumerate them; but in view of the prominence which has been given to this matter, the Board feel called upon to indicate the objections they have to it.

In the first place, then, the custom originated in necessity. At the opening of the spring campaigns our soldiers, heavily weighted with the old-fashioned knapsacks, with the accumulations of the winter, after the first few miles, exhausted by their packs, availed themselves of a favorable opportunity to stop by the road-side, and to take from their knapsacks a few things, which they rolled in their blankets, the ends of which they tied together, and slung over their shoulders, abandoning all other articles of clothing. Any one who will take the trouble to try this on a warm day will find himself enveloped in blankets, and although he may scarcely feel the weight on his shoulder, his breast will be oppressed, his clothing will be bound to him, and he cannot handle his piece with any degree of facility.

In garrison we recommend that each soldier be provided with a box or locker of the following dimensions, to store his full-dress uniform and extra clothing.

Dimensions of box:

Length, 24 inches.
Breadth, 12 inches \{ In the clear.
Height, 10 inches. \}

To be constructed of pine \( \frac{3}{8} \) of an inch thick, with iron hinges 10 inches in length and 1\( \frac{1}{2} \) wide, with lock and key. These boxes to be permanent fixtures of the barracks.

We recommend that a box of cleaning-material, similar in construction to the
sample furnished from the National Armory, Springfield, be supplied to each company, in the following quantities:

2 quart-cans of anti-corrosive and lubricating oil.
1 box, holding forty ounces, scouring-material, marked I.
1 box, containing sixteen ounces, polishing-material for leather, marked II.
1 box, holding forty ounces, of whiting.
2 chamois-skins about two feet square.
1 wire scratch-brush.

The Board have carefully examined and experimented with the attachment to the Springfield rifle, cal. .45, together with the belt and contrivance for carrying the loaded cartridge-blocks, invented by Lieut. Henry Metcalfe, of the Ordnance Department.

Being satisfied of its great merit, the Board recommend that a limited number of the Springfield rifles, cal. .45, to be fixed by the Chief of Ordnance, together with the belt, blocks, and holders, be prepared and issued to different regiments for trial in actual service.

A sample of the whole, together with a rifle prepared with the attachment, is here-with submitted.

The Board recommend that water-proof paper be used to cover the blocks, in order that they may be rendered impervious to the action of water.

In concluding our report, we desire to remark that we have labored diligently to arrive at a satisfactory solution of the difficult problems submitted to us, and while not claiming perfection as the result of our investigations, we feel assured that the principles involved in the equipment are correct, and it remains for practical trials in actual service to demonstrate what further improvements can be made.

We desire, also, to express our thanks to Col. P. V. Hagner, commanding Watervliet Arsenal, for valuable suggestions and assistance, and to other officers of the Army who have aided us materially by giving in detail the result of their experience.

W. R. SHAFTER,
Lieutenant-Colonel Twenty-fourth Infantry, President of Board.

A. McD. McCOOK,
Lieutenant-Colonel Tenth Infantry.

T. C. ENGLISH,
Lieutenant-Colonel Second Infantry.

ALEX. CHAMBERS,
Major Fourth Infantry.

M. H. STACEY,
Captain Twelfth Infantry, Recorder.

The Chief of Ordnance,
Washington, D C.
ORDNANCE OFFICE,
December 14, 1874.

Respectfully submitted to the Secretary of War, for approval of the recommendations of the Board.

S. V. BENÉT,
Brigadier-General, Chief of Ordnance.

Respectfully referred to the Adjutant-General, to submit to the consideration of the General of the Army.
By order of the Secretary of War:

H. T. CROSBY,
Chief Clerk.

December 19, 1874.

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
Washington, December 22, 1874.

Respectfully referred to the General of the Army, for his consideration.
By order of the Secretary of War:

E. D. TOWNSEND,
Adjutant-General.

[Third indorsement.]

HEADQUARTERS OF THE ARMY, SAINT LOUIS, MO.,
December 26, 1874.

Respectfully returned. The officers composing this Board have had a large and wide experience, and their conclusions are entitled to full weight.

Their recommendation that in all permanent barracks should be provided boxes in which to stow away the clothing of the men is good, and is approved. Instead of a common lock, I would suggest a staple and hasp, leaving each man to provide his own padlock. In practice, the keys are invariably lost. In like manner should be issued to each man, as a part of his outfit, the mess-kit herein provided for. After a first issue, he should be required to replace lost or broken parts at his own cost.

The braces, knapsack, haversack, and cartridge-box are all approved, and recommended for adoption. I agree with the Board that there is danger that in the use of the trowel-bayonet, the musket being used as a handle, will bend the barrel and seriously damage it for firing.

W. T. SHERMAN,
General.
WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
Washington, December 30, 1874.

Respectfully returned to the Secretary of War.

E. D. TOWNSEND,
Adjutant-General.

[Fourth indorsement.]

Chief Ordnance:
The report of the Board is approved, as suggested by the General of the Army, with the modifications recommended by him.

WM. W. BELKNAP,
Secretary of War.

[Fourth indorsement.]

JANUARY 4, 1875.
1. WAIST BELT AND PLATE.
2. CARRYING - BRACE.
3. CARTRIDGE BOX, OPEN.
4. CARTRIDGE BOX, CLOSED.
5. BAYONET SCABBARD.
6. TROWEL BAYONET SCABBARD.
7. CANTEEN, STRAP AND BUCKLE.
1. Clothing Bag, Open.
2. Haversack, Open.

Meat Can:
3. Plate.
4. Soup Plate.
1. CLOTHING BAG.
2. HAVERSACK, STRAP AND BUCKLE.
3. TIN CUP.
4. FORK, SPOON.
5. KNIFE AND KNIFE—SHEATH.
6. MEAT CAN, CLOSED.
FRONT VIEW.
SHOWS CARTRIDGE BOXES, ONE OPEN, ONE CLOSED.
WAIST-BELT-PLATE AND STRAPS TO PLATE FROM BRACE-YOKE

FORM
REAR VIEW.

SHOWING BACK-PAD, BLANKET-STRAPS, AND METHOD OF ATTACHING CLOTHING-BAG AND HAVERSACK.
REAR VIEW.

SHOWING BACK-PAD, BLANKET-ST PAPS, AND METHOD OF ATTACHING CLOTHING-BAG AND HAVERBACK.
REAR VIEW.
SHOWING BLANKET ROLLED, AND HAVERSACK.
LIEUT. HENRY METCALFE'S
CARTRIDGE BLOCK

Legend.
A. Body
B. Recoil plate
C. Cam plate
D. Carrier mortise
E, E. Rivets
F. Holes
G. Chamfers
H. Slit
I. Rib
J. Shoulder
K. Cam recess

STRAP ON GUN

Legend.
A. Body
B. Recoil head
C. Under cut
D. Cam
E. Thumb piece
F. Pivot on cam
G. Tongue for lower band

CARRIER

Legend.
A. Hook strap
A'. Eye of back strap
B. Back strap
C. Button
D, D. Rivets
E. Carrier strap
F. Waist belt
G. Lip on hook strap

A. FREFERENCES. PHOTOLITHOGRAPHER, WASHINGTON, D. C.
lieutenant henry metcalfe's cartridge block attachment on rifle waist-belt and plate, cartridge blocks attached to waist-belt.