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WAR DEPARTMENT TECHNICAL MANUAL

FUMIGATION
AND
BATH COMPANY

WAR DEPARTMENT • 21 OCTOBER 1944

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BATH COMPANY



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• 21 OCTOBER 1944

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BY ORDER OF THE SECRETARY OF WAR:

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The Adjutant General.*

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CHAPTER 1

GENERAL

1. Mission of Company

a. The quartermaster fumigation and bath company's mission in the field and at permanent installations is twofold:

(1) To kill lice and other parasites which transmit serious diseases such as typhus, relapsing fever, and trench fever.

(2) To improve morale by removing annoying parasites and by promoting cleanliness.

b. In performing its mission the fumigation and bath company—

(1) Delouses and bathes troops.

(2) Delouses clothing and equipment.

(3) Directs the issue of clean clothing to troops.

(4) Collects and hauls or ships discarded clothing to salvage repair installations.

c. With slight variations, procedures and equipment used at ports of embarkation, ports of debarkation, and other permanent installations are identical with those used in the field. Detailed procedures described in this manual are given from the standpoint of the company operating in the field. Whenever they differ from those used at permanent installations or whenever there is a difference in operating equipment or supplies, these differences are pointed out in the appropriate places in this manual. Although fumigation chambers and mobile water-heating units will be supplied by other manufacturers also, the scope of this manual will be limited to one type of chamber and one type of water unit: the Lane chamber and the Orr and Sembower heater. (See TM 10-1616.) All other models of both units are similar in construction and operation.

2. Operation of Company

a. Normally the fumigation and bath company is broken down in the field into its two component platoons, each operating separately.

b. However, the company is designed so that it may operate in conjunction either with mobile laundry elements of equal processing capacity or with both a laundry company and a salvage repair company. When operating in con-

junction with laundry elements only, the combination may provide individual service for troops, fumigating, washing, and returning garments and equipment to the original wearers or users. A mobile salvage repair installation, on the other hand, normally processes battlefield salvage only. The fumigation and bath company may also operate as a component of a quartermaster battalion.

c. Under conditions which do not permit the operation of the bath unit, the fumigation facilities of the company can still be used to disinfest troops.

d. A fumigation and bath company can be expected to serve approximately 3,600 troops during an operating day of 12 hours. This figure is derived from an estimated platoon capacity of 150 troops per hour.

3. Organization of Company

a. The quartermaster fumigation and bath company is organized with the personnel and equipment shown in T/O & E 10-257.

b. The company is composed of—

(1) Company headquarters.

(2) Two platoons, each composed of—

(a) Platoon headquarters.

(b) Operating section.

(c) Supply section.

4. Operating Equipment

a. FUMIGATION CHAMBERS.

(1) *General.* Each platoon's operating equipment includes three fumigation chambers, each of 330 cubic feet capacity. These are used to delouse clothing, blankets, shelter halves, and other similar items.

(2) *Mobile units.* All mobile fumigation chambers are prefabricated, usually of tongue-and-groove construction. They can quickly be assembled or knocked down. They are ideal, therefore, for use in the field. They can be carried by truck to the fumigation site, assembled, and put in operation; and, upon termination of assignment to one area, may be knocked down and carried to another. Most field cham-

bers to date are operated by a 1½-horsepower gasoline engine. This engine, located outside the chamber, is connected to the blower, or fan, by a drive shaft extending through the rear wall. The clothes to be fumigated are placed on three rows of shelves constructed of removable wooden bars which are supported by cleats attached to the side walls.

(3) *Permanent installations.* At ports of embarkation, ports of debarkation, and at other permanent installations, the chambers, prefabricated or otherwise, are operated by electric motors, mostly A-C, 110-volt, 60-cycle, single-phase. Motors are inside the chambers and are operated by switches on the outside of the rear walls. Instead of the removable bars of the mobile units, each chamber is equipped with two sets (three each) of rack push trucks with straight and swivel wheels. These trucks, loaded with clothing to be fumigated, are pushed up a portable metal ramp which leads into the chamber. Where the knock-down type chamber is used and it is intended that the installation will not be moved, the seams should be welded or otherwise permanently sealed. This will strengthen the cabinet and prevent the escape of gas. Sufficient extra sections of exhaust pipe must be used to carry the exhausted gas to the outside of the building.

b. *BATH UNIT.* The usual bath unit consists of a water heater, a gasoline-driven pump to draw the water from a nearby stream or other source, and a shower frame which supports 24 shower heads. All this equipment is assembled on a two-wheel trailer which has a hinged towing frame. The heater is provided with a gasoline engine which operates the oil-burner blower and the pumping system. In addition to the permanently installed turbine type, 60-gallon-per-minute main water pump, the equipment includes an auxiliary pump which is used as a booster. (See par. 37b.)

c. *TENTAGE.* Each platoon has at its disposal large storage tents, each 13 feet high, 20 feet, 5 inches long, and 17 feet, 10 inches wide. Additional tents may be issued to each platoon if they are authorized by the theater commander. These tents are used as undressing, spraying, storage, and dressing stations for the troops who are deloused by the fumigation and bath

company. Not provided for in the Table of Equipment, canvas for the construction of walkways from station to station on the fumigation and bath circuit, must be drawn from salvage sources.

d. *TRUCKS.* Each platoon has 2½-ton cargo trucks which are used to haul operating equipment and supplies and, when the platoon is on location, may be used to transport unserviceable and soiled clothing and equipment to salvage repair installations and clean replacement items from supply sources. These trucks are provided in addition to the trucks located in company headquarters.

e. *OTHER OPERATING EQUIPMENT.* Other operating equipment includes barracks bags, canvas valuables bags, and numbered metal tags. The barracks bags are readily obtainable from salvage sources and the valuables bags and numbered tags are authorized in T/O & E 10-257. The barracks bags, valuables bags, and metal tags are to identify the clothing and valuables of each man processed by the fumigation and bath company. (See par. 40.)

5. Operating Supplies

a. *GENERAL.* Operating supplies, including methyl bromide, gasoline, fuel oil, delousing spray, soap, paper towels, canvas (walks), and calcium hypochlorite (for foot baths) may be obtained through regular supply channels.

b. *METHYL BROMIDE GAS.* (1) *General.* Methyl bromide is a colorless, odorless, volatile liquid with a specific gravity of 1.732 and a boiling point of 40.1° F. at standard atmospheric conditions. It is, therefore, a gas at ordinary temperatures and ordinary atmospheric pressure. It is 3.4 times as heavy as air. Methyl bromide is canned as a liquid under pressure, in 1-pound cans for use in the field. It is also packed in 150-pound cylinders and in 400-pound bilge barrels for use at permanent installations. It volatilizes readily, becoming a gas at normal temperatures as soon as the can is punctured.

(2) *Properties.* Methyl bromide is a well-known chemical. Its use as a fumigant, however, is relatively recent. Because of its gaseous state, its use is usually limited to tight inclosures. It has been adopted as a fumigant

because of the following properties:

(a) It is effective against lice and all other forms of insect life.

(b) It kills lice and their eggs in a short exposure time.

(c) It has unusual properties of penetration.

(d) It is effective at much lower temperatures than most fumigants.

(e) Unlike live steam, which is commonly used for disinfesting clothing, it does not shrink fabrics.

(f) Its effectiveness is not decreased by the presence of moisture, unless there is sufficient moisture to form a film of water which prevents penetration. Damp clothing can be deloused successfully, but if the clothing is so wet that water can be wrung out, the results are not satisfactory.

(3) *Handling.* Methyl bromide is a toxic substance, harmful to all animal life, and should be handled with care, particularly in hot climates. Personnel should be instructed to exercise particular care in opening shipping containers. They should be cautioned not to drop or bang the containers since this will dent the cans, thereby weakening them. If a can is punctured, the methyl bromide will escape with considerable force, possibly injuring personnel. Although momentary exposure to the gas is not likely to be harmful, liquid methyl bromide can cause severe burns.

(4) *Storage.* Methyl bromide cans should be stored in a well-ventilated place. Care should be taken to provide ample ventilation and to protect the cans from the sun's rays. Cans should be placed on a platform constructed so that air may circulate between the platform and the ground. A tarpaulin or other complete covering should be placed over the platform and should be elevated at least 2 feet above the top layer of cans in order to allow ventilation. (See fig. 9.)

(5) *Toxic concentration.* The toxic effects of methyl bromide are cumulative. Repeated exposures to comparatively low concentrations can cause as much harm as a single intense exposure. When exposures are irregular and at intervals of several days, the toxic effects can be readily thrown off by the body. Continued exposure to low concentrations, on the

other hand, may cause paralysis from which complete recovery is possible if the victim is removed from the environment of the gas. High concentrations may cause lung irritations which sometimes develops into pneumonia.

(6) *Protective measures.* (a) *General.* Methyl bromide can be employed as a fumigant with complete safety if reasonable precautionary measures are taken. Seams in the gas chambers should be well calked to prevent leaks. The chambers should be in the downwind section of the operations area so that fumes may not be blown into troops being processed or operating personnel of the fumigation and bath company. Frequent tests should be made with the halide leak detector ((d) below) to determine whether a dangerous amount of gas is escaping from the chamber.

(b) *Calking.* See paragraph 37.

(c) *Gas masks.* Twelve oil-vapor, M-1 canisters are provided each fumigation and bath company for use by fumigation chamber operators and for other personnel who work near the chambers. These canisters are substituted for those with which the service mask is equipped. The service mask canister does *not* protect against methyl bromide.

(d) *Halide leak detector.*

1. This device operates on the principle that the fumes of any halide (such as bromide) will produce a colored flame when directed across red-hot copper. Therefore, the lamp is essentially an alcohol torch and a copper ring. A metal sampler tube, attached to the lamp, sucks in the air which is to be tested. The suction is created by the action of the flame. When the sampling tube is placed in air containing methyl bromide, the normally colorless flame will become green or blue, depending upon the concentration of the gas.
2. It is necessary to clean the sampler tube and the screen beneath the copper ring after each using. Otherwise, the lint and dust sucked in by the sampler tube will accumulate in the throat of

the lamp or on the screen causing the lamp to heat improperly and, perhaps, to burn with a green flame. If the flame is weak, or if it spreads around the metal cone, there is some interference with the air flow in the burner. If the flame is strong and direct through the center of the cone, the flame will be colorless and the cone will rapidly turn red-hot. This indicates correct operation.

3. The following table gives the approximate methyl bromide concentration associated with color intensity in the flame:

<i>Parts of methyl bromide per million parts of air</i>	<i>Flame color</i>
0.....	Almost invisible.
40.....	Rather faint green.

100.....	Moderate green.
130.....	Strong green; slightly blue at edges.
180.....	Strong green; rather blue.
360.....	Strong blue-green.
800.....	Strong blue.

4. The following table indicates the lethal concentration of methyl bromide for man and other warm-blooded animals:

	<i>Parts per million</i>
Kills most animals in short time..	20,000-40,000
Dangerous to life in 30-60 minutes	2,000-4,000
Maximum concentration tolerated for 60 minutes without serious disturbance	1,000
Maximum concentration for pro- longed exposure (8 hours)....	30

CHAPTER 2

DUTIES OF PERSONNEL

Section I. COMPANY OFFICERS

6. Company Commander

As the leader of a quartermaster fumigation and bath company, the company commander should be a model for his men in all things military and personal. He is responsible for—

a. ADMINISTRATION. The company commander supervises the administration of the company. To this end, he delegates many of the routine responsibilities, particularly the paper work, to his junior officers and non-commissioned officers.

b. TECHNICAL SUPERVISION. He is responsible for the efficient operation of the two fumigation and bath platoons under his command, and for the care and preservation of equipment and supplies.

c. PERSONNEL TRAINING. The company commander should devote his major attention to the training of personnel in fumigation and bath procedure, and should strive constantly to increase the efficiency and speed of operation. Anticipating needs for the replacement of keymen, he should train an understudy for each of the cadre members.

d. SECURITY. The company commander should instruct his men in the use of weapons and camouflage. He should formulate tactical plans for emergency evacuations and should train his men in the execution of these plans. He should also instruct them in demolition methods to be employed if enemy action forces them to abandon property.

e. MORALE. The company commander should strive to provide for his men all the comforts and privileges consistent with discipline. While quick to censure sloppy work, he should be equally quick to commend diligence and initiative. He should show by his actions that he is personally concerned with the welfare of his troops. The successful commander will insist that his men be properly fed, clothed, and sheltered, and that opportunities be afforded them for recreational activities.

7. Platoon Leaders

The platoon leaders should have the potential capabilities of a company commander. Each exercises direct supervision over the training of all platoon personnel and is responsible to the company commander for the efficient operation of his platoon. The platoon leader must familiarize himself not only with administrative details, but also must acquire sufficient technical knowledge to enable him to exercise intelligent supervision over fumigation and bath operations. He is responsible for the maintenance of the equipment assigned to his platoon and for keeping on hand an adequate stock of operating supplies. When the platoon is detached from the parent company for independent operations in the field, the duties of the platoon leader are essentially those of a company commander. When the company commander is absent, one of the platoon leaders should be placed in command.

Section II. CADRE

8. General

a. The cadre is a skeleton organization of enlisted men around which the fumigation and bath company is built. Ideally, each of the cadre members will be thoroughly trained before joining the company, and will be qualified both to perform his specific duties and to aid in training other members of the company. The company commander should lose no time in examining each of the cadre members to determine his adequacy for the job to which he has been assigned. The commander should begin immediately to train replacements for cadre members who are incapable or inefficient.

b. Each member of the cadre should have—

- (1) Technical training and experience in his specialized task.
- (2) Ability to train men for specialized tasks.
- (3) Thorough training in basic military subjects.

c. The allocation of operating personnel and the duties specified for each in the remainder of this section are recommendations only. Field conditions are in a constant state of flux and, for this reason, an elastic organization is essential. Resort to improvisation is frequently necessary. In training, however, fumigation and bath personnel should be instructed to perform the duties herein assigned to them, and because personnel must be rotated within the company to new job assignments at periodic intervals, every man should have a thorough knowledge of the duties of two or three other members of the organization.

9. Superintendent

a. The superintendent supervises the technical operations of the company. His duties correspond to those of the production manager of an industrial plant. He advises the company commander in all technical matters and instructs the fumigation foremen and assistant foremen in operational procedure. He should have a thorough knowledge of the operation of all machinery and should be able to supervise the assembly and repair of equipment. He must understand the supply needs of the operating platoons and be able to supervise the procurement of operating supplies. His chief task is to train foremen and technicians; in accomplishing this purpose he should spend as much time as possible in the field with the operating platoons.

b. Under the direction of the company commander, it is the superintendent's responsibility to select proper operating sites for the installation. He must take into consideration such matters as the availability of water, camouflage, road nets, and company bivouac areas. At each new operating site, he will specify operating procedures to be followed, and will instruct key personnel, such as the fumigation foremen, accordingly.

10. First Sergeant

The first sergeant is the company commander's executive assistant. He supervises the preparation of company personnel rosters, the morning report, the sick books, and other routine records. As the company commander's right-hand man, he relieves him of routine

administrative duties. He transmits the commander's orders to the enlisted personnel and keeps the commander informed of the progress and morale of the troops. He interviews each man seeking an audience with the commander to determine whether the problem is sufficiently important to warrant the commander's attention. In many cases the first sergeant will be able to solve the problem himself, thus permitting the commander to devote his time to other duties. The first sergeant should exercise judgment and tact, and should guard against "protecting" the company commander to the extent that his men will believe him unapproachable and unsympathetic toward their problems. In the field, the first sergeant may be called upon to establish liaison between the company commander and the separated platoons. If all commissioned officers become battle casualties, he assumes command of the company. (For administrative duties of the first sergeant, see also TM 12-250.)

11. Fumigation Foremen

a. Fumigation operations of each platoon are supervised by a fumigation foreman who is responsible for the efficient and safe operation of the fumigation chambers and bath unit. He receives technical instructions from the superintendent and transmits these instructions to the operating personnel. It is imperative that he thoroughly understand the duties of both the superintendent and the first sergeant, since the platoon often functions as an independent unit in the field. Under such circumstances he takes charge of technical operations of the platoon and serves as administrative assistant to the platoon commander.

b. During operating periods, it is the fumigation foreman's responsibility to see that all phases of processing are properly executed. He must constantly check the several stations to see that each individual is handling his specific assignment correctly. He should keep records of the number of men processed and maintain operating schedules. He will prepare reports as required by the superintendent.

12. Mess Sergeant

The mess sergeant is responsible for the efficient operation of the company mess. Food is

procured, stored, prepared, and served by the mess personnel under his supervision. He continually makes inspections of the mess hall or kitchen area and storage areas and insists that adequate and tasty food be prepared and served under sanitary conditions. He also arranges for the sanitary disposal of garbage. When the company operates in the field as two separate platoons, it may become necessary for the mess sergeant to set up a separate mess for each platoon. In the field the platoons may, when convenient, be attached to other organizations for messing. Under such circumstances, the mess sergeant is assigned to other duties. The mess sergeant should be thoroughly familiar with all manuals pertaining to procurement, storage, preparation, and serving of food.

13. Company Operating Supply Sergeant

The operating supply sergeant is responsible for procuring and transporting replacement clothing for the men being processed, and for procuring and transporting all operating supplies, including gasoline, fuel oil, methyl bromide, delousing spray, soap, and paper towels. He must estimate daily requirements and requisition supplies sufficiently far in advance that they will be available when needed. He should be able to keep a running inventory of supplies and to prepare operations reports when required. Supply records may be kept on Stock Record Card (WD, QMC Form No. 424). The operating supply sergeant is assisted by a staff of four stock clerks and two stock control clerks in company headquarters. This team is responsible for the maintenance of stocks at adequate levels and for issue to the supply sections of operating platoons.

14. Company Supply Sergeant

This noncommissioned officer is responsible for procuring, storing, and issuing all equipment and supplies except subsistence and operating supplies. He makes frequent inventories and keeps the prescribed records of issues of individual clothing and equipment. If so directed by the company commander, he posts the company property book and keeps the necessary records for post property. When a change of location is ordered he is responsible for the loading and movement of equipment and sup-

plies. (See TM 12-250 for a complete resume of the supply sergeant's duties.)

15. Assistant Fumigation Foreman

These noncommissioned officers, in the operating section of each platoon, operate the fumigation chambers of the platoon under the supervision of the fumigation foreman. They direct the loading and unloading of clothing into and from the chambers, the injection of the fumigant into the chambers, and the exhausting of contaminated air from the chambers. They should insist that all safety precautions are observed: that operating personnel wear gas masks, that chamber seams be tightly calked, and that frequent tests be made to determine whether methyl bromide is escaping in dangerous quantities. Each assistant foreman has fumigation chamber operators under him. (See paragraph 27.)

16. Platoon Operating Supply Sergeants

The supply section of each platoon is headed by an operating supply sergeant who is assisted by an operating supply corporal, stock clerks, and stock-control clerks. This team is responsible for the issue of operating supplies to the personnel of the operating section for the issue of clean clothing to the troops processed by the platoon. It is also responsible for collecting the old clothes and for transporting them to a salvage repair installation or dump. The platoon operating supply sergeant keeps an inventory of supplies and informs the company operating supply sergeant of operating needs.

17. Operating Supply Corporals

These men, in the supply section of each platoon, work under the direction of the platoon operating supply sergeants. They direct the issue of clean clothing and the collection of old clothing for transportation to salvage channels. They also direct the issue of operating supplies to the personnel of the operating section.

18. Company Clerk

The company clerk prepares pay rolls, rosters, and reports under the supervision of the first sergeant. He should have some knowledge of company administration and should be an experienced typist. He may be required to spend

a majority of his time at a personnel center in which case an alternate clerk may be designated to supervise the company orderly room. In any event, a substitute clerk should be trained to replace the regular clerk, should the latter's services be lost to the company.

19. Cooks

Cooks are in the cadre; they should have been trained before reporting for duty. When the platoons are operating independently in the field, separate messes may be established, with a cook assigned to each mess. The trainees include a cook's helper who will be assigned to the larger mess, that is, the mess which serves company headquarters in addition to one platoon. Kitchen equipment provided for the company will be divided as equitably as possible between the two platoons. When the fumigation and bath company is attached to another organization for messing, kitchen personnel will transfer to the messing organization. The cooks should be thoroughly familiar with all manuals pertaining to procurement, storage, preparation, and serving of food.

20. Engineers

Each platoon is allotted an engineer, who works under the direct supervision of the fumigation foreman. He helps the assistant fumigation foreman in setting up the equipment at each new operating site. He should be thoroughly familiar with the duties of the assistant fumigation foreman since periodically he may be called upon to assume responsibility for operating the fumigation chambers. He may be required to work in this capacity when the company is operating two shifts or when it is felt that, as a health precaution, the assistant fumigation foreman should be relieved from duty at the fumigation station. He has direct charge of the water heater and shower unit. He must assume full responsibility for the operation of the boiler, and see that it is employed in full conformity with the manufacturer's instructions. He must make the necessary lubrication and maintenance inspections, and will direct the making of all repairs for the water heating and shower unit. He directs the fireman who is actually engaged in operating the boiler.

21. Firemen

A fireman is assigned to each platoon. He works under the direct supervision of the platoon engineer. He must be familiar with oil burners and their component parts, such as jets, blowers, electrodes, and the electrical system in general. He must be able to blow down, clean, and otherwise keep the fire-tube stationary boiler in good operating condition. He must have full knowledge of the purpose and the mechanics of the various safety devices installed on the water-heating unit. It is his responsibility to see that proper shower temperature is maintained. He must be able to make minor repairs which may occasionally be required by the water-heating unit. He has the responsibility for its proper lubrication, and for the maintenance of adequate levels of gasoline for the gasoline engine and oil for the oil burner.

22. Automobile Mechanic

This technician services and maintains the trucks and other organic motor equipment. Although he uses company headquarters as his base of operations, he is subject to call by the operating platoons. He does not make third- and fourth-echelon repairs. He should, however, be sufficiently trained in such repair work to enable him to locate the source of vehicle failure and to call for proper parts and repairs from ordnance repair shops. He performs second-echelon maintenance only when other facilities for this work are not available. The mechanic may make prescribed technical inspections of company vehicles. He must study and understand the Technical Manuals and other War Department instructions pertaining to the equipment issued to the unit. (See FM 21-6, List of Publications for Training.)

23. General Mechanics

Each platoon has a general mechanic. He works under the direct supervision of the fumigation foreman. He is the platoon's troubleshooter and general handy man. He must be able to use the simple tools of several trades. He must be able to do simple plumbing and install electrical wiring. During processing, his station is generally between the shower units and the fumigation chambers. As far as possible, he should effect necessary repairs with-

out interfering with the normal processing operation of the platoon.

24. Processors

Each platoon is assigned processors who operate under the supervision of the fumigation foreman. The noncommissioned officer is part of the company cadre, and trains the others in processing operations. This includes performing such functions as receiving, guiding, checking, recording, and accomplishing routine administrative work incidental to the processing of troops through the fumigation and bath unit. The work performed by individual processors may vary according to the type of set-up used, and according to whether clothing is being issued. Laborers and basics may be detailed to assist in processing wherever necessary. The following allocation of duties is suggested where a six-station, U-type processing line is employed:

a. **FIRST STATION.** Two processors are located at the undressing station. The first issues valuables bags, and tags with corresponding numbers, as well as laundry net bags with one whale pin each. The second processor instructs each man being processed as to where he is to go, and what he is expected to do.

b. **THIRD STATION.** One processor is used. He issues soap and towels, and sees that each man uses the footbath before going to the showers.

c. **FOURTH STATION.** Three processors are used. The first is located on the outside of the station and makes certain that no one evades the medical inspection. The other two processors assist in spraying the troops, and shaving them when that is found necessary.

d. **FIFTH STATION.** One processor is used. He issues disinfested clothing, and collects used towels. He also supervises preparation of laundry net bags for reuse.

e. **SIXTH STATION.** One processor is used, assisted by two basics. He issues valuables bags, and collects empty bags and pins. This processor likewise supervises the carrying of full valuables bags from the first station to the sixth station, and the return of the empty bags and corresponding tags to the first station.

Section III. TRAINEES

25. General

Both the company officers and cadre members are charged with the responsibility for training the troops who report to the newly activated company direct from the reception centers. These men will vary in ability and background. Each must first be placed in the job for which he is best suited, and then trained to do the job with maximum efficiency and speed. The program should include not only training for the immediate job but also training which will prepare each man for more responsible duties. Thus reserves are built up to replace keymen who later may be called into the cadre of newly activated companies or who for other reasons may be lost to the company. Duties of the stock clerks and stock-control clerks (pars. 13 and 16), the assistant cook (par. 19), and the processors (par. 24) are discussed in the indicated paragraphs.

26. Truck Drivers

These men operate the trucks assigned to company headquarters and the trucks assigned to each platoon. Unless they have had considerable prior experience as drivers of commercial heavy trucks or have received training at Army specialists' schools, the men assigned to the trucks should be given thorough training in the operation and first-echelon maintenance of these vehicles. Furthermore, they must be familiar with the War Department publications pertaining to the equipment which they operate. (See FM 21-6, List of Publications for Training.)

27. Fumigation Chamber Operators

(see par. 15)

Fumigation chamber operators are assigned to each platoon, and work under the direction of the assistant fumigation foreman. These operators must be thoroughly instructed in the properties of methyl bromide gas. The functions of an operator are—

- a. Sets up fumigation chamber.
- b. Operates puncturing mechanism to inject the fumigant.
- c. Operates engines which drive the blowers.
- d. Regulates the intake and exhaust valves.

- e. Follows prescribed time cycles.
- f. Checks for possible leaks in the chambers with the halide leak detector.
- g. Calks any leaks found in the chambers.
- h. Maintains constant flow of clothing through chambers.
- i. Observes that men assigned as loaders follow all safety precautions.

28. Armorer

Maintains and repairs company weapons.

29. Bugler

Drives one of the trucks assigned to company headquarters, in addition to performing his duties as a bugler.

30. Carpenter

Does all necessary carpenter construction,

and repairs, including the rough work on camouflage forms. A considerable part of this man's work consists of making repairs to the fumigation chambers and fabricating rough, wooden articles such as duck boards and water troughs and drains.

31. Laborers

Laborers are assigned to each platoon for the necessary fatigue details and for use wherever they are needed during the operation of the units.

32. Basics

Basics are assigned to each platoon for general duties, including guard and local security details. In addition, it may be necessary to use them to a limited degree during operations.

CHAPTER 3

TRAINING

33. Objective

a. Although the mission of the quartermaster fumigation and bath company is necessarily a technical one, the company commander should understand that the personnel are soldiers as well as technicians. In fact, the emphasis should be placed on physical fitness, adequate defense measures, and military discipline.

b. Responsibility for the accomplishment of the training program rests first with the commanding officer and, secondly, with the junior officers and members of the cadre. By building up within the cadre an enthusiastic interest in the training program, the commanding officer can assure its success. Accordingly, he should first acquaint himself thoroughly with the capabilities of the cadre members and assign each of them specific duties in training the company personnel.

34. Training Program

a. The degree of training and the nature of the training received by the personnel prior to their assignment to the company will vary greatly. Accordingly, the commanding officer should make a detailed inventory of the training each man has had and then devise a plan which will overcome individual deficiencies. The commanding officer should prepare a chart on which will be listed the names of the company personnel and the various phases of the training program. The subjects each man has completed can be checked off opposite his name. This will prevent unnecessary duplication of certain phases of the program and will permit

each man to concentrate his energies on the training in which he is deficient.

b. The company should take advantage of every opportunity to disinfest troops and clothing at the station or during bivouac for the purpose of obtaining additional training. These repeated operations should increase both efficiency and speed, and are invaluable in preparing personnel for their eventual duty in the theater of operations. Commissioned and non-commissioned officers must closely supervise the operations until they are satisfied that every man understands his assigned tasks and performs them properly.

c. Field training should be conducted under conditions simulating as closely as possible actual conditions in the combat zone. The company should be given ample opportunities to improvise equipment to replace that destroyed by enemy action. Thorough training also should be given in discipline, local security, defense methods, camouflage, reorganization of the unit after attack, the construction of field fortifications, and the movement of equipment and personnel.

35. Teaching Methods

It is recommended that all officers and non-commissioned officers who train company personnel thoroughly familiarize themselves with FM 21-5, Military Training, TM 21-250, Army Instruction, TM 12-250, Administration, and with directives which prescribe the training to be given.

CHAPTER 4 OPERATIONS IN FIELD

Section I. PRELIMINARY PREPARATIONS

36. Location

a. GENERAL. Quartermaster fumigation and bath platoons will usually operate in the rest

areas at the rear of the combat zone. In selecting a site, the platoon commander should take into consideration these factors:

PROCEDURE DIAGRAM QM FUMIGATION AND BATH CO.

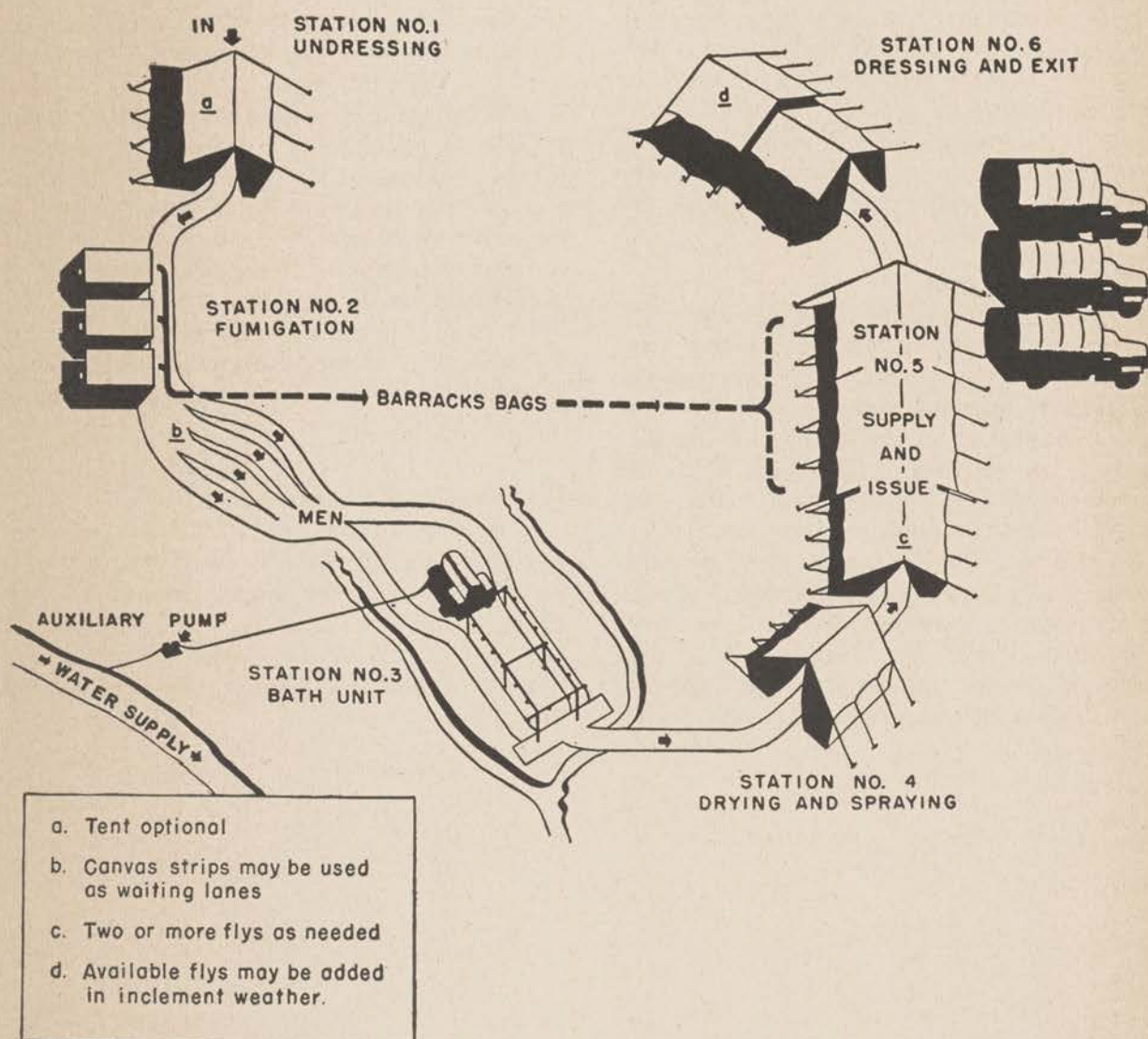


Figure 1. Procedure diagram Quartermaster fumigation and bath company.

(1) Proximity to an adequate supply of clean water.

(2) Accessibility to the road net to permit transportation of equipment and troops to and from the fumigation and bath area.

(3) Accessibility to supply installations and salvage installations and dumps.

(4) Overhead concealment for security, and some degree of protection from enemy forces.

(5) Well-drained ground, from which the used bath water may be diverted to a point downstream from the place where fresh water is obtained.

(6) Level terrain, which will permit the fumigation chambers to be leveled with a minimum amount of labor.

b. LAY-OUT. The size and shape of the avail-

able area and the nature of the terrain will dictate the plan to be followed in laying out the operating section of the platoon. An area 150 by 200 feet is ideal. The six stations used in the processing operations may be in a straight line or, probably better, in some variation of the "U" type plan illustrated in figure 1.

37. Setting Up Equipment

a. FUMIGATION CHAMBERS (fig. 2) (1) *General* (a) There are several different types of fumigation chambers currently in use. Although basically quite similar, each one differs from the others in minor respects. War Department Technical Manuals are issued with the different types of chambers, and will be followed implicitly. They describe in detail the manner

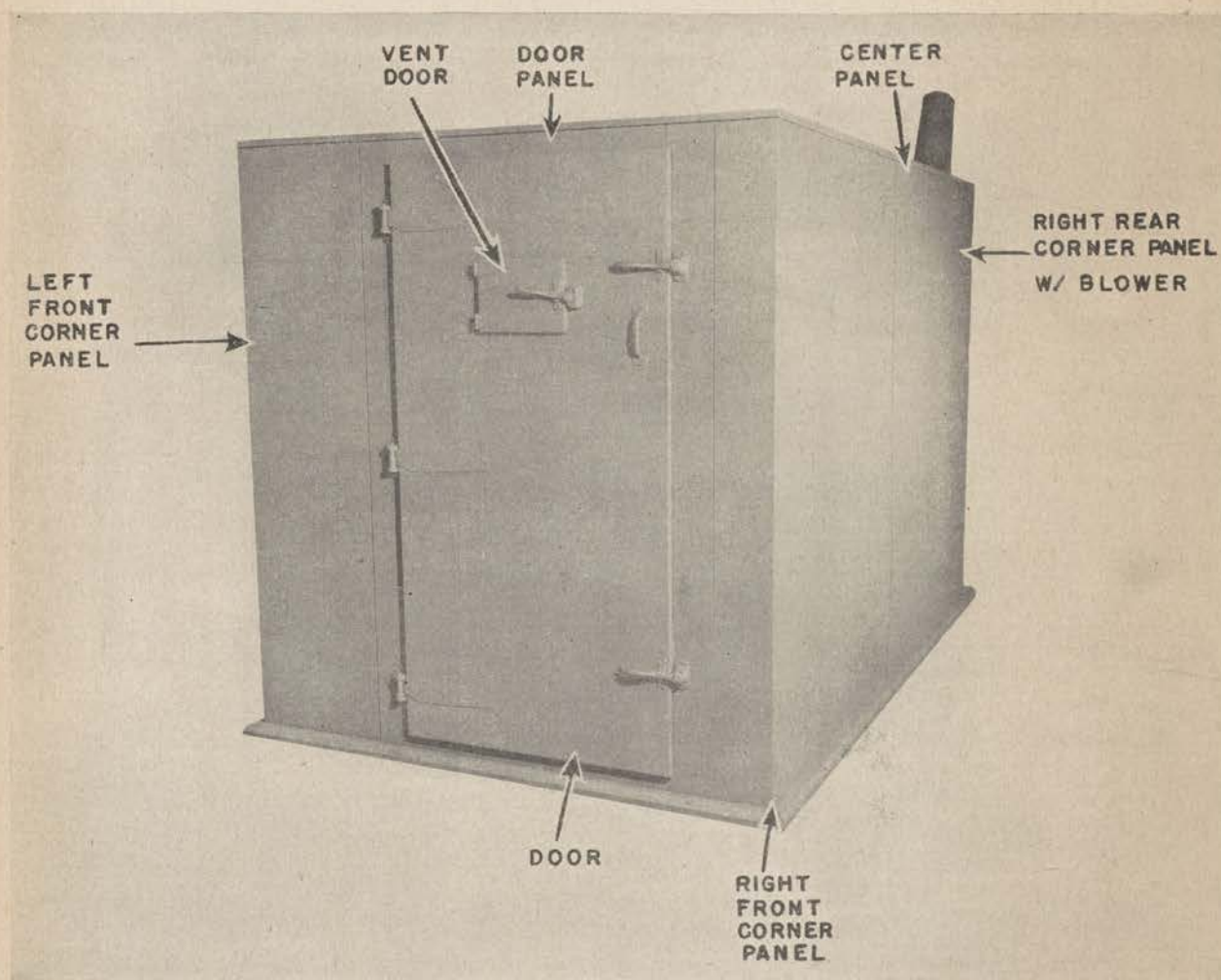


Figure 2. Front view, Lane model, fumigation chamber, showing refrigerator type door and small intake ventilation door.

in which each particular type of unit should be erected and operated. The erection instructions (2) and (3) below) are applicable specifically to the Lane model fumigation chamber.

(b) The fumigation chambers should be erected on level ground, or a leveled surface, to prevent strain on the fumigation chamber seams, which might result in leakage of the toxic gas. As the panels are assembled the joints should be calked with the calking compound provided by the manufacturer. (**Caution:** Do not use mastic.) Place the compound where the contact between panels occurs, draw the panels together almost to their final location, then calk the slot, preferably on the inside of the chamber. Now draw the panel to its final position.

(2) *Erection procedure.* (a) Lay the floor panel, inserting wedges under the panel if necessary to level it. A carpenter's level should be used to make certain that the floor is absolutely level.

(b) Set the corner panel with the blower attached in the rear-right panel, after first calking the inner part of the groove at the point of contact.

(c) Set the rear panel and side panel adjacent to the corner panel just erected, calking in the groove as in (b) above. Draw up almost to the finished position by working the turnbuckles. Now apply calking to the joint and draw up tightly. See that the tops of all panels are at an even height.

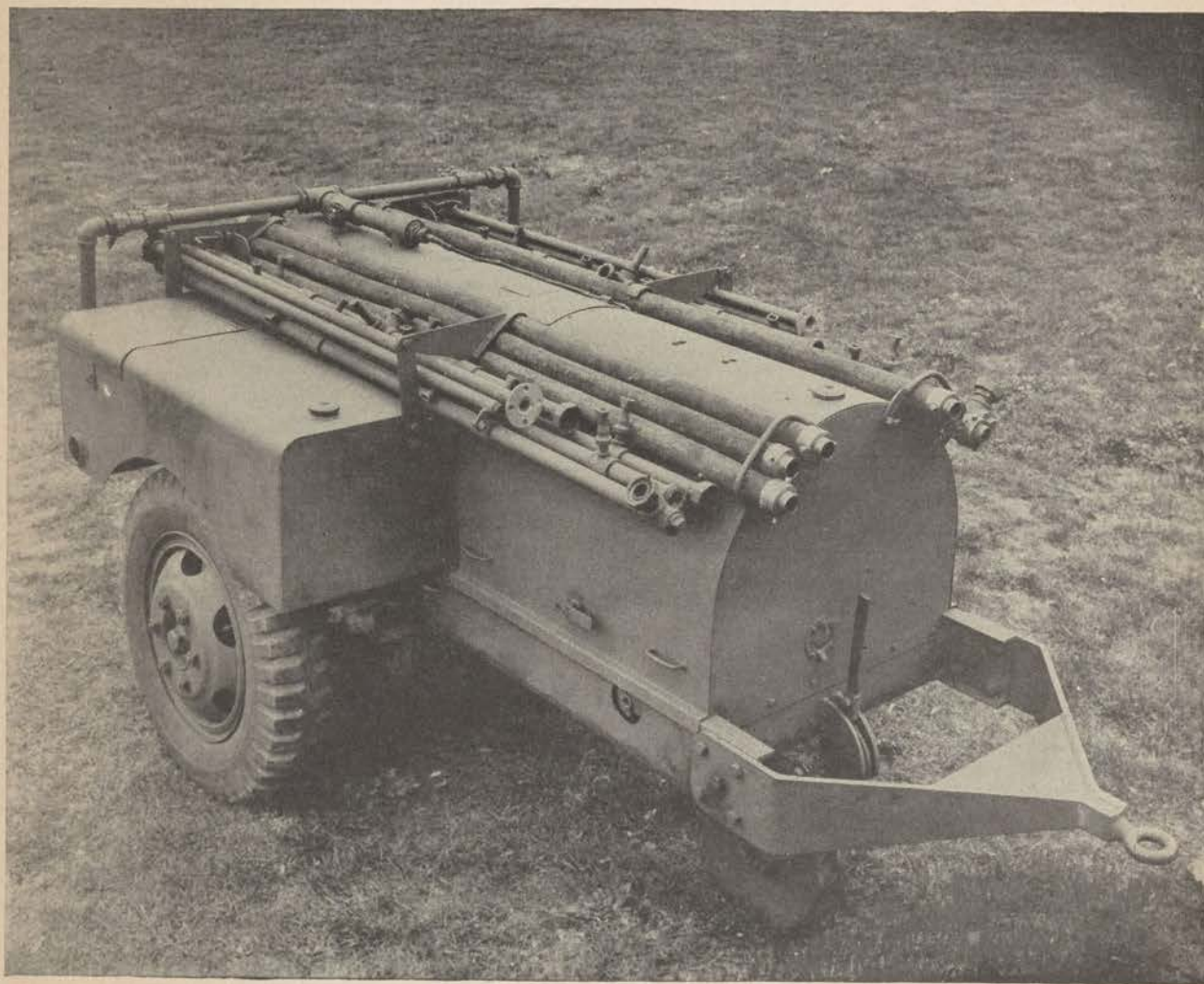


Figure 3. Bath trailer, complete with disassembled shower unit.

(d) Apply calking and erect the two adjacent corner panels as in (c) above.

(e) Apply calking and erect the remaining side panel and the door frame panel.

(f) Apply calking and erect the remaining corner panel.

(g) Place the roof panel on side panels. Calk and draw them together. Secure by drawing up the nuts on the angle iron bolts.

(h) Now secure the wall to the floor panel by tightening up the nuts on the angle iron bolts as in (g) above.

(i) Attach metal exhaust housing (door on the side) to the outside of the rear-corner panel by clamping with slide-washers on wing-nutted bolts on the panel. Attach the additional lengths of exhaust duct.

(3) *Knock-down procedure.* To disconnect the chamber, follow the erection procedure, in reverse.

b. BATH UNIT. (1) Consistent with security, the bath trailer (fig. 3) should be placed as near as possible to the water source and on the crest of a sloping area which will afford satisfactory drainage. Sufficient hose is provided to carry the water a distance of 200 feet. The auxiliary (booster) pump is used to pump the water to the bath trailer when the bath trailer pump is more than 15 feet above the surface of the lake or stream. The bath trailer pump can operate without the auxiliary pump for heights of less than fifteen feet. Space is provided on the trailer for storing the booster pump while in transit.

(2) In inserting the hose intake into the water, place it in such a position that it will not suck mud or gravel from the stream bed. A recommended method is illustrated in figure 4. Here the intake is lowered into a pail, thus preventing contact with the stream bed. The hose is secured by tying it to a log which extends from the bank.

(3) Clear water may not always be available. For information on removing sediment from water, see TM 5-295, Water Purification.

(4) The shower frame is now assembled at the rear of the trailer by putting together the lengths of pipe. The fixed section of pipe attached to the boiler serves as one support and the frame is further supported by the detach-

able legs in the center and at the end. (See fig. 5.)

(5) Strips of canvas should be placed beneath the shower frame to prevent the area from becoming muddy when the showers are in operation.

(6) A ditch, approximately 1 foot wide and 1 foot deep should be dug around the shower area to carry the used water to a point down stream.

(7) Foot baths of calcium hypochlorite should be placed both at the entrance to the shower area and at the exit. This solution is prepared by adding $\frac{1}{3}$ of an ounce of grade A (70 percent) calcium hypochlorite, or $\frac{2}{3}$ of an ounce of chlorinated lime (35 percent), to each 10 gallons of water.

c. TENTS. (1) Tents are pitched at points designated by the company or platoon commander. (See fig. 1.)

(2) A canvas strip approximately 1 yard wide should be laid down from the undressing area through stations 3 (showers), 4 (drying and spraying), 5 (supply and issue), and 6 (dressing and exit). This will serve to keep the troops in line and will protect their feet. It is also suggested that a similar canvas 4 lanes wide be provided between station 2 and station 3 which, in addition to affording protection for bare feet, will serve to keep troops awaiting showers in orderly lines.

Section II. DELOUSING CLOTHING AND EQUIPMENT

38. General

The efficiency and speed with which a fumigation and bath platoon performs its mission will depend upon the degree of planning and training which has preceded the start of operations. This planning includes careful selection of a site as explained in paragraph 36a and the proper installation of equipment (par. 37). As has been pointed out, the installation plan will vary in accordance with the available site. Depending on the arrangement, of course, the installation will normally require an area approximately 150 feet by 200 feet. Troops and their equipment pass through the six stations on the fumigation and bath chain. The entire operation, including the delousing of troops and

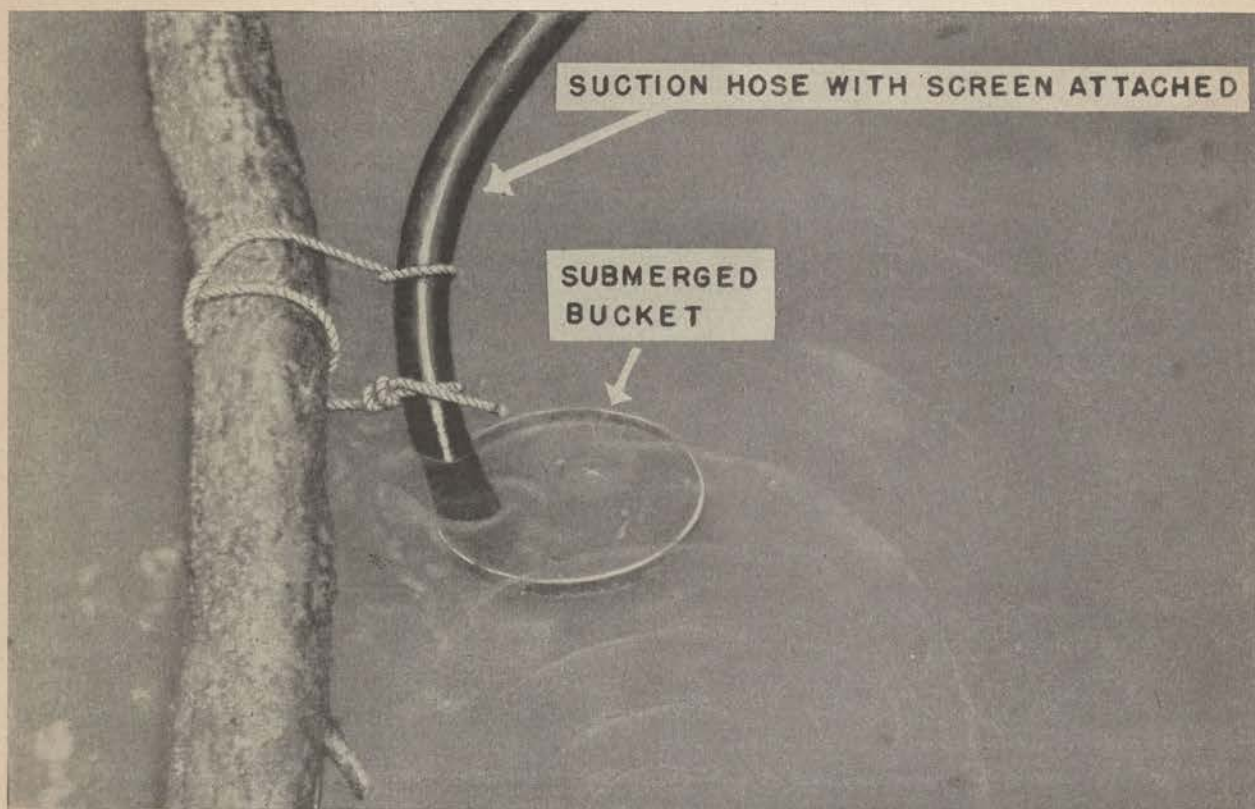


Figure 4. Hose intake screen is placed inside of submerged bucket to prevent mud and leaves from clogging screen.

clothing and the issue of clean clothing can be completed in slightly more than 1 hour's time. To accomplish this, every member of the platoon must be thoroughly trained in the performance of his specific task. All supplies must be in their proper places, in readiness for use by operating personnel and for issue to troops. Wearing apparel must be correctly stocked according to sizes to assure speedy issue.

39. Assembly Area

Troops to be deloused assemble in an area adjacent to the undressing tent (station No. 1). They bring with them their blankets, shelter halves, and other equipment, and their clothing. The men are sent into the undressing tent in small groups.

40. Undressing Station

a. As each man files into the undressing tent (station No. 1) he is issued a barracks bag (obtained from salvage), a valuables bag, and a tag, all bearing the same number. Each soldier—

(1) Places the tag around his neck.

(2) Puts all clothing and equipment, including that which he wore into the tent, into the barracks bag. Blankets, shelter half, leather goods, shoes, and helmet may all be safely fumigated. Care should be taken to pack the bag loosely in order to permit the louse-killing gas fumes to penetrate thoroughly.

(3) Puts such personal property as watch and wallet into his valuables bag. This he also places in the barracks bag, preferably inside

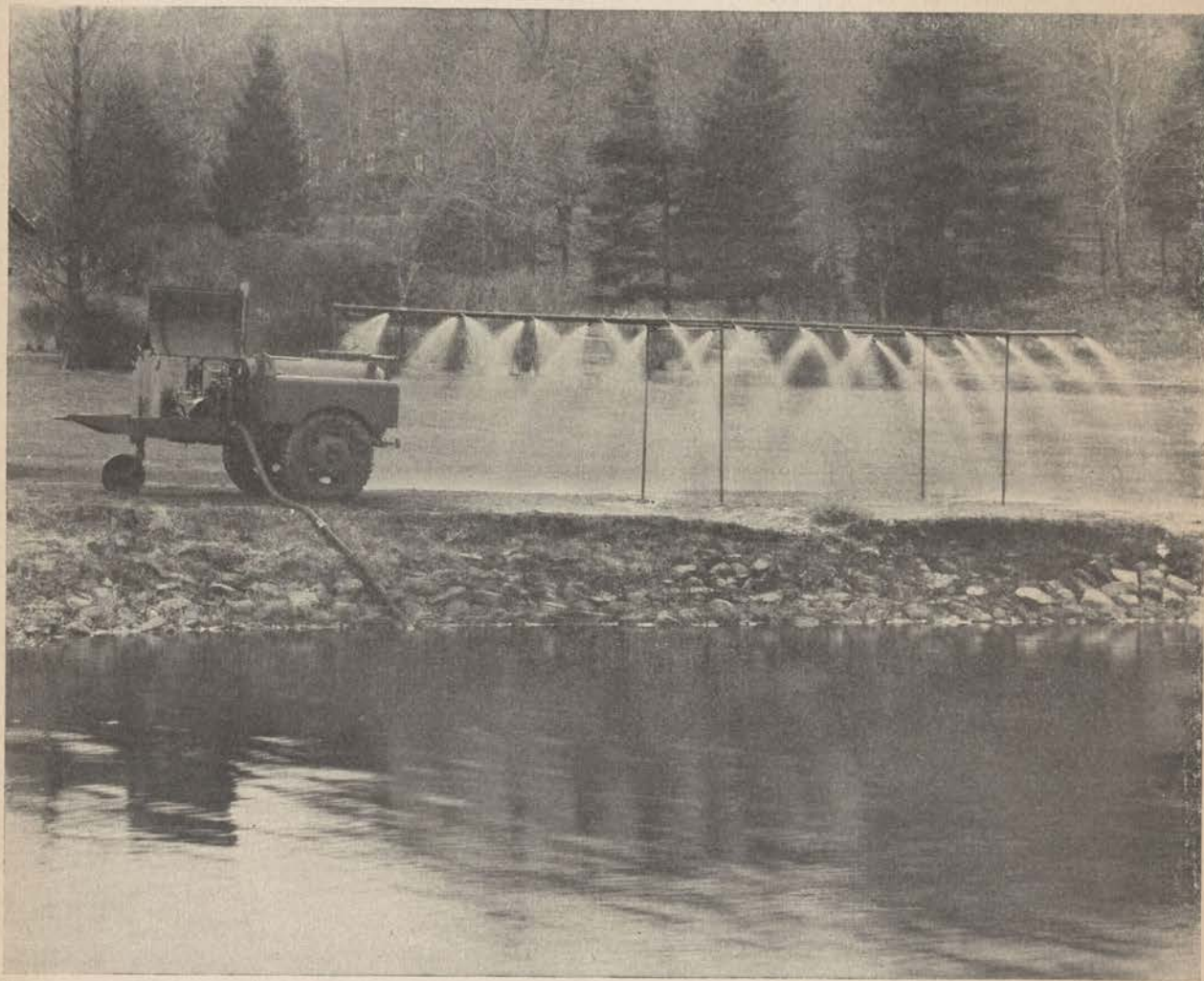


Figure 5. Bath trailer operation. Since the trailer is close to the water, auxiliary pump is not needed.

his helmet, especially if the articles are breakable.

b. Two processors operate the undressing station with the assistance of one other soldier. They issue the tags and numbered bags, supervise the packing of the bags, and direct the troops to the fumigation chambers.

c. As the first troops leave the undressing station, other troops enter the tent and begin undressing. Thus there is a continuous flow from the assembly area into the undressing tent and from the undressing tent to the fumigation chambers.

41. Fumigation Chambers

a. As each soldier files past the fumigation chambers (station No. 2) he surrenders his barracks bag to an attendant.

b. The bags are loaded in the rear of the chamber on three shelves constructed of horizontal removable poles. (After this chamber is filled, the other two chambers are then filled in like manner.) The wooden shelving poles are placed at regular intervals across the width of the chamber, and are supported by wooden

cleats attached to the side walls. (See fig. 6.) The shelf poles are added from the rear forward as the barracks bags are received. Care should be taken to pack the bags with sufficient space between them to permit complete circulation of the gas-laden air. Ordinarily each chamber should accommodate from 50 to 65 bags; the loading will require about 10 minutes.

c. Now the operator starts the gas engine.

d. Attendants close—

- (1) The entrance door.
- (2) The ventilation intake door.
- (3) The ventilation exhaust door.

e. A can of methyl bromide gas is placed on the applicator which is attached to the outside rear wall. The applicator is a device which tightens a metal band around the can, forcing it against the sharp point of the puncturing pin in the center of the flexible tube. The point punctures the can, allowing the methyl bromide gas to escape through the tube into the chamber. The amount of methyl bromide and the time for exposure are to be adjusted according to temperatures as indicated in the following table:

Standard chambers (330 cu. ft. capacity)	Other chambers	Time exposed to full concentration	Temperature in degrees Fahrenheit
3 lb	9 lb/1,000 cu. ft.	½ hr	60° or over
4 lb	12 lb/1,000 cu. ft.	½ hr	— 9° to 59°

In case of a shortage of methyl bromide, the following data should be used:

Standard chambers (330 cu. ft. capacity)	Other chambers	Time exposed to full concentration	Temperature in degrees Fahrenheit
3 lb	9 lb/1,000 cu. ft.	1 hr	50° to 59°
3 lb	9 lb/1,000 cu. ft.	1½ hr	40° to 49°
3 lb	9 lb/1,000 cu. ft.	2 hr	— 9° to 39°

f. Each can is maintained in this position for a sufficient length of time to assure complete injection of the contents, usually 3 minutes. The gas enters a duct at the rear of the chamber where it is forced upward by a motor-driven fan. It escapes into the chamber through a hole in the duct, circulates through the cabinet, and then, after completing its circuit, is

sucked up again into the duct. The gas continues to circulate in this fashion throughout the fumigation period.

g. As soon as the last can of methyl bromide is punctured, the timer is started. It is set for the proper fumigation interval (usually 30 minutes but varying with the temperature and the

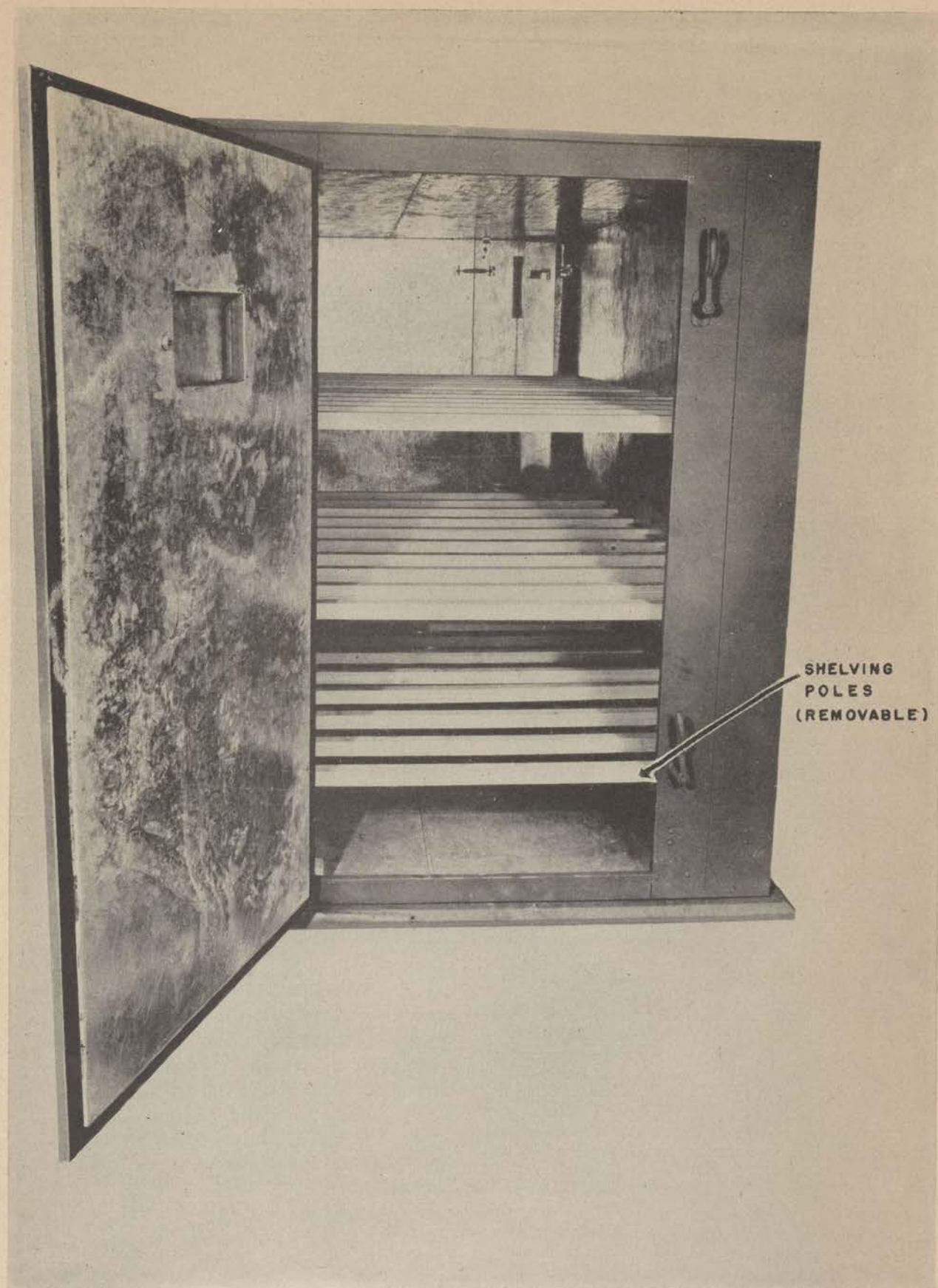


Figure 6. Fumigation chamber interior, showing shelving poles installed.

size of the charge of methyl bromide). When the mechanical timer signals the end of the exposure period—

(1) The ventilation exhaust door is opened; the gas then escapes from the chamber through the overhead exhaust pipe.

(2) Simultaneously with the opening of the exhaust door, the ventilation intake door is opened.

(3) The fan exhausts for 5 minutes.

(4) At the end of 5 minutes the large front door is opened a crack and allowed to remain so while the fan exhausts for an additional 5 minutes. This should remove all gas from the vault.

h. The barracks bags are now removed from the vault and transported to the dressing station.

i. The following men, comprising a well-drilled team, operate the battery of three fumigation chambers. The assistant fumigation foreman directs activities, the operator keeps the engine in operation and injects the methyl bromide, and three fumigation assistants, aided by two laborers, load and unload the vaults and operate the halide leak detectors. (See par. 5b(6).) After the cycle has been completely set in motion, under average temperatures, the chambers may be loaded and unloaded in rotation, one chamber every 10 minutes. In other words, one complete processing cycle can be accomplished in approximately 1 hour.

j. Because of the toxicity of methyl bromide, and particularly because of its cumulative effect, it is desirable to rotate the personnel of the operating section from day to day. This means, of course, that each man must understand thoroughly and be able to perform all of the processing jobs.

42. Fumigation of Organizational Equipment

After the wearing apparel and personal equipment of the troops have been fumigated, other clothing and equipment of the organization being served may then be processed. Serviceable items are returned to the organization. Unserviceable articles are delivered to a salvage repair installation by the organization served.

Section III. DELOUSING TROOPS

43. Bath

a. After leaving their barracks bags at the

fumigation chambers, the nude troops proceed to the showers (station No. 3) in groups of 24, 12 filing down one side of the shower frame and 12 down the other side. The 3 leading men in each file move under the 6 shower heads in the rear section of the frame, leaving the 9 shower heads on each side for the remaining 18 men. Before entering and upon leaving the showers, each man steps into a calcium hypochlorite foot bath which combats athlete's foot and other fungus diseases. Each man is given a bar of soap. The men remain under the showers for a period of about 7½ minutes during which time they thoroughly wash their heads and cleanse their bodies.

b. The men in charge of the bath unit are: the engineer who operates the boiler (see the pertinent Technical Manual for operating instructions), the fireman who assists the engineer and who is specifically trained to operate and service the fire unit, and a processor who acts as shower foreman. This processor is responsible for ushering the men under the showers, for distributing soap, and for timing the bathing operation.

44. Drying and Spraying

a. As the men move from the showers to the drying station, each man receives a large paper towel with which he dries himself, being particularly careful to dry thoroughly the head and other hairy parts. If towels are not available, excess water is removed from the hair by squeezing it out and whipping or fluffing the hair with the hands.

b. Processors apply a delousing spray to the head and all hairy areas: under the armpits, and to the pubic and anal areas. If the chest hair is abundant, spray is applied to this area also. Processors should be careful not to apply the fluid to hairless areas since the spray has a slightly irritating effect. The hand sprayers should be manipulated slowly so as to cause the spray to settle on the hair, and not be diffused into the air. For best results in spraying the head, the operator should stand on an 18-inch platform while the person being sprayed turns about slowly. When his eyebrows are being sprayed, the subject should close his eyes and cover them with his fingers, horizontally placed.

c. After they have been sprayed, the men are inspected by a medical officer for evidences of infectious or contagious diseases. The medical officer will generally have to be furnished by the organization being served and the organization also should make provision for a barber to cut hair when ordered by the medical officer.

d. The drying and spraying station is manned by three processors, one who directs operations and two who spray.

Section IV. CLEAN CLOTHING

45. Issue of Clothing

a. From the drying and spraying station the troops move to the supply tent (station No. 5) where they receive a clean uniform, clean undergarments, and socks.

b. The clean clothes are issued by a supply team of one sergeant, one corporal, two stock clerks, and a basic. They carefully stock the clothes according to sizes.

c. From the supply tent the troops enter a long corridor where they pick up their barracks bags, which during the processing have been brought over from the fumigation station.

46. Dressing and Exit

a. They carry their barracks bags and clean clothing to the dressing and exit tent (station No. 6). Here they remove their leather goods, helmet, valuables, shelter tent and blanket from the barracks bags. After dressing they leave the tent, taking any equipment with them, but leaving those articles of clothing for which they have received replacements.

b. If for any reason clean clothes cannot be provided, the troops put on the clothes they were wearing when they entered the fumigation and bath area. Although these clothes are neither clean nor sterile, they are free of lice and other insects.

c. The dressing station is manned by two processors and one basic who direct the dressing, load the soiled clothes on the cargo trucks, and return the barracks bags, valuables bags, and numbered tags to the undressing tent (station No. 1).

47. Procurement of Clean Clothes

Clean clothes for issue to troops processed by

the fumigation and bath company are obtained from normal supply sources. They are transported from the supply installation by trucks of the organization being processed, or by motor pool trucks, or by fumigation and bath trucks, depending on which of the following three plans is adopted:

a. PLAN I. The supply sergeant of the unit to be processed obtains from each man his clothing sizes. From these data he tabulates the number of garments of each of the varying sizes which will be needed to supply one clean change of clothing to each member of the unit. He then presents the requisition to the appropriate supply installation, obtains the desired garments, and transports them in trucks of his own unit to the fumigation and bath area. The clean garments should be delivered on the morning of the day his unit is to be processed in order that they may be stocked in the supply tent according to sizes. When the garments are issued, the supply sergeant of the unit being processed works with the supply section of the fumigation and bath company. Whenever practicable, plan I should be followed in preference to plan II or plan III.

b. PLAN II. This is identical to plan I except that the supply sergeant of the unit to be processed calls on a motor pool to transport the clean garments from the supply installation to the fumigation area. This plan is followed when the unit does not have sufficient transportation facilities of its own.

c. PLAN III. If other arrangements are not possible, the operating supply sergeant of the fumigation and bath company will be responsible for transporting the clean garments from the supply installation. In this case the supply sergeant of the unit to be processed should notify the fumigation and bath company, at least 24 hours in advance, as to the number and sizes of garments which will be required, otherwise the articles will be issued per standard tariffs.

48. Disposition of Soiled Clothes

Soiled clothes are taken by truck to a salvage repair installation. The trucks are provided by the unit being processed, a motor pool, or by the fumigation and bath company, as described in paragraph 47.

Section V. BAG METHOD

49. General

a. There will be times in the field when it will be impossible to set up the fumigation chambers, or when it will not be feasible to

do so. Under such circumstances, the fumigation and bath platoon can use the impervious bag (bag, delousing, specification QM 27B208) for fumigating clothing and equipment. These bags have an inner pocket for a methyl bromide ampule (specification QM 51M888). When

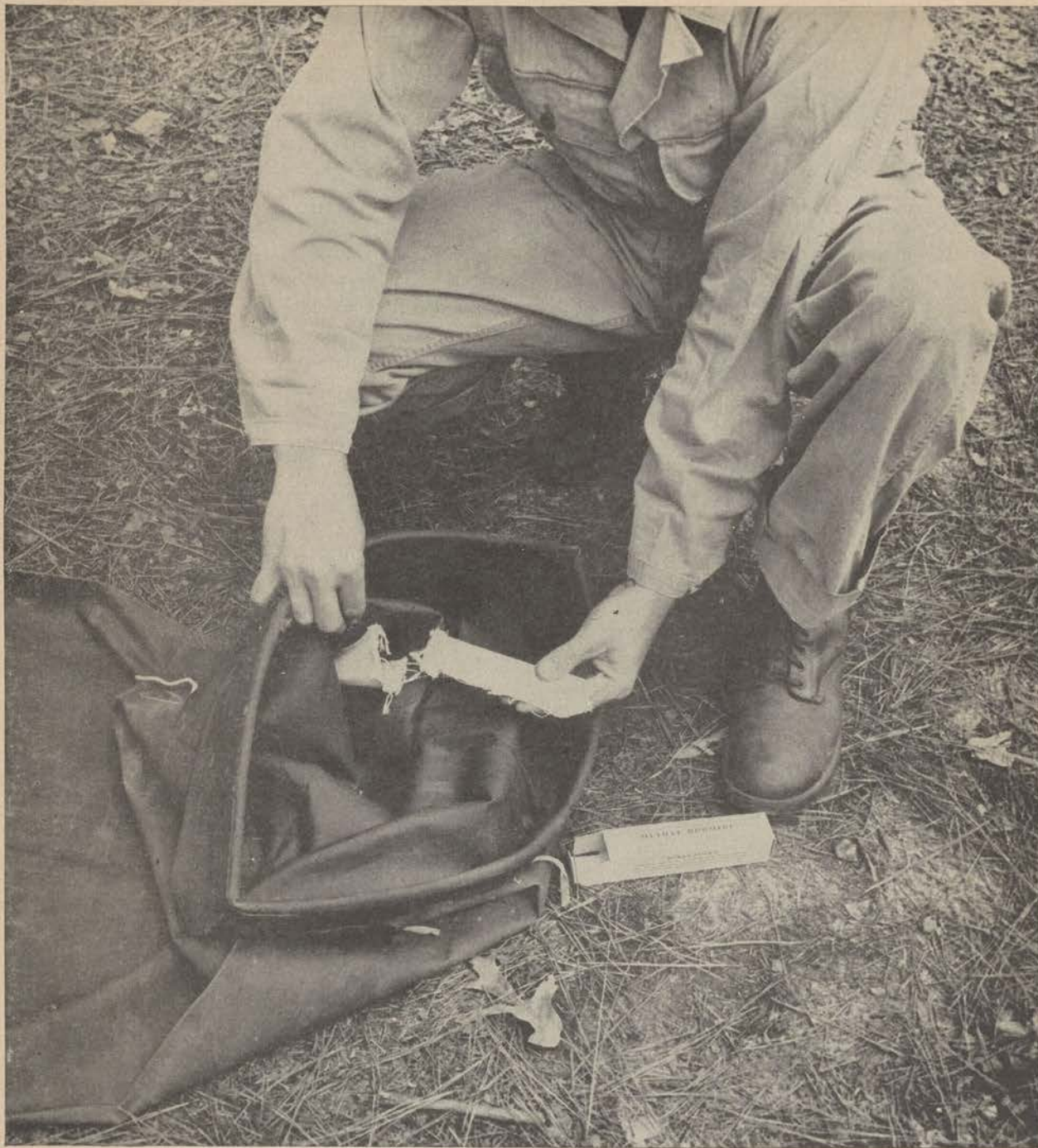


Figure 7. Inserting methyl bromide ampule in impervious fumigating bag prior to disinfesting clothing.

the folded end is tied shut the bags are gas-tight.

b. These bags may be used in conjunction with the shower unit or may be used independently if shower facilities are not available. They are particularly valuable for delousing the clothing and equipment of small detachments of men.

c. The bag method should be used out-of-doors only or in a structure without side walls.

d. The time schedule for bag fumigation differs from that of the fumigation chambers. It is as follows:

<i>Hours exposed to one ampule of methyl bromide</i>	<i>Temperature in degrees Fahrenheit</i>
$\frac{3}{4}$	60 or over
$1\frac{1}{4}$	50 to 60
$1\frac{3}{4}$	40 to 49
$2\frac{1}{4}$	— 9 to 39

50. Procedure

The procedure for bag fumigation is as follows:

a. A numbered impervious bag, and a correspondingly numbered valuables bag and identification tag, are issued each man at station 1. The numbers may be marked on the impervious

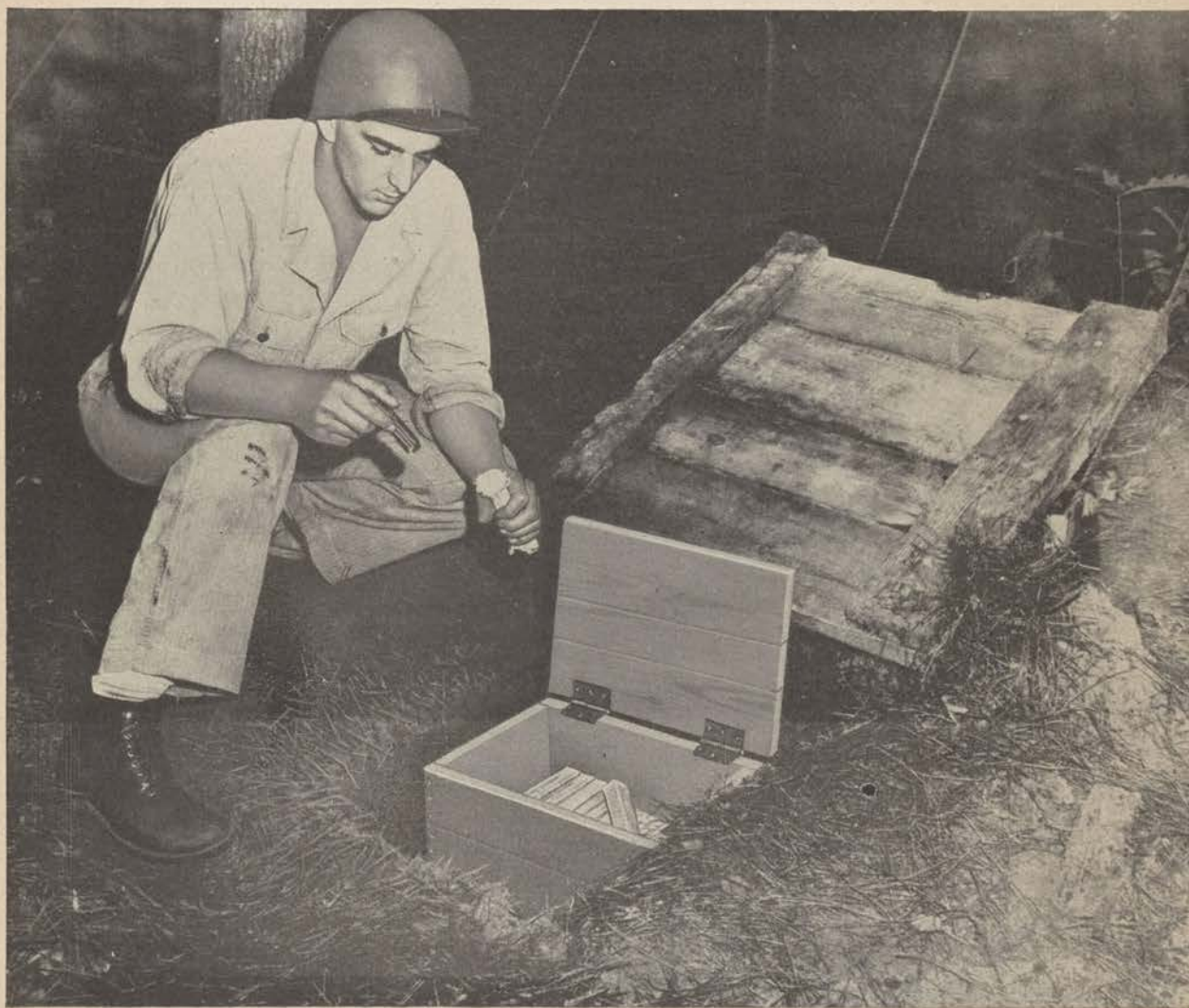


Figure 8. Underground storage of methyl bromide ampules. Heavy wooden cover is used to protect from sun and weather.

bags in chalk or, if permanent numbering is desired, may be painted on the bags.

b. The clothing and equipment to be deloused are placed inside the impervious bag, together with the valuables bag containing the individ-

ual's watch, wallet, and other valuables. (In some cases, one impervious bag may be used to serve two or more men, depending on the amount of clothing and equipment each is having processed.)



Figure 9. Field storage of methyl bromide in cans. Canvas shelter protects cans from sun and weather.

c. The soldier or attendant carries the bag to a designated area near the dressing station and places it on the ground. It is suggested that rows be marked out showing where the bags are to be placed. This will keep them in order and will facilitate processing.

d. An operator then inserts an ampule of methyl bromide into the inner pocket of each bag (fig. 7) and then closes and tightly ties it.

e. Meanwhile the men being processed proceed to the showers and then to the spraying station as described in section III.

f. After the bags have been securely tied, processors pass along the rows and break the ampules of methyl bromide. Probably the best method is for the processor, after locating the ampule with his fingers, to strike the narrow tip of the tube with a stone or other solid object. (It is suggested that a rubber patch vulcanized on each bag over the ampule pocket will serve the double purpose of helping the processor locate the ampule and of protecting the bag.) If the processor breaks the ampule by stepping on it, he should be careful not to injure the fabric of the bag by grinding it underfoot.

g. The bag is then left on its side for the required fumigation period (par. 49d) after which it is opened by the owner and the contents emptied onto the ground. Care should be taken to stand to windward in order to escape the gas fumes.

h. After a 5-minute airing, the clothes may be worn. If facilities are available for the issue of clean clothing, such clothing will be issued as outlined in paragraph 45.

51. Storage of Methyl Bromide Ampules

As indicated above, methyl bromide for bag fumigation is packed in 20 cc. ampules which should be carefully protected from excessive heat. It is suggested that the ampules may be safely stored underground. As shown in figure 8, a special box may be constructed for this purpose. If the weather is sufficiently cool the ampules may be stored in a rack similar to that recommended for can storage. (See fig. 9 and par. 5b (4).)

Section VI. COLD WEATHER PROCEDURES

52. General

a. In cold climates, and during the winter months in temperate climates when it would be injurious to the health of troops to process them in the open air, shelter must be provided. The company commander or platoon commander should select the best available building or buildings. They should be of adequate size and sufficiently close to a satisfactory supply of water. If no buildings are available, it will be necessary to set the tents up close together and thus keep the entire operation (with the exception of chamber fumigation) sheltered from the elements. The fumigation chambers must not be set up indoors since without very careful control and elaborate extra equipment indoor chambers are extremely dangerous.

b. COLD WEATHER PRECAUTIONS. During cold weather, special attention should be given to the thorough draining of water from all units and assemblies involved in the water-supply and heating systems. In freezing weather water should be drained from the boiler and shower assembly each time operations are suspended. All sections of hose should be disconnected and suspended in such a manner as to permit their complete drainage. The auxiliary pump, if used, and the main pump should be drained and checked to see that all parts are completely free from water and moisture. If these simple steps are followed, no other precautionary measures are necessary.

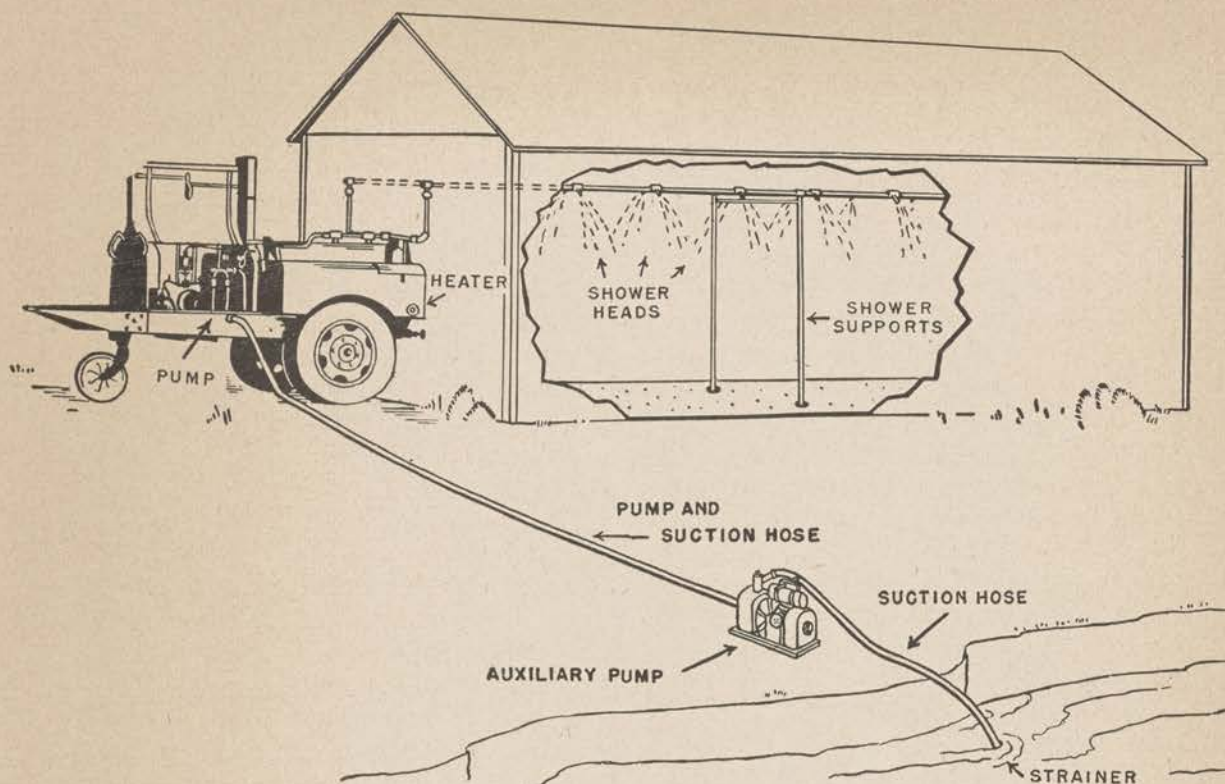
53. Procedure, Using Buildings

a. When troops are processed within a building, the procedure will correspond to the outdoors procedure (secs. II, III, and IV, ch. 4), with modifications consistent with the amount and the arrangement of floor space. The bath trailer should be backed against the outside wall at the point where the showers will be erected inside. The two foremost frame sections which are to be attached to the fixed section on the trailer can be passed through the side of the building. If windows are conveniently located, the pipes may be inserted through them. If not, it will be necessary to make two holes through the wall, of sufficient size to permit the passage of the pipes. (See

fig. 10.) After the frame has been erected, holes should be drilled in the floor of the shower area for drainage, or other means of water run-off provided.

b. The troops to be deloused should undress at a point close to the showers, and place their

garments and equipment in the barracks bag which will be carried by attendants to the fumigation chambers. The troops will then step under the showers and will pass through each station on the fumigation and bath chain as outlined in sections II, III, and IV, chapter 4.



SUGGESTED METHOD FOR INDOOR INSTALLATION OF SHOWERS

Figure 10. Suggested method for indoor installation of showers.

54. Procedure, Using Tents

a. If a building or buildings of adequate size are not available, it will be necessary to use tents. Four tents (or as many as are necessary and can be obtained) should be placed end to end, thus providing a continuous passageway for the troops being processed. The tents can be heated with tent stoves which, together with the heat from the showers, should keep the temperature comfortably high.

b. In order to conserve space within the enclosure the bath trailer should be located outside the tent, at right angles to the shower frame inside. In order to accomplish this, it will be

necessary to use two or more of the hose sections to couple the shower frame to the trailer. Furthermore, it will be necessary to improvise supports for the end of the shower frame which normally is supported by the trailer. A ditch should be dug around the shower area for drainage purposes. (See par. 37.)

c. The troops being processed remove their clothes and place their garments and equipment in the barracks bags which are carried by attendants to the fumigation chambers outside. The troops then proceed to the showers and to each of the stations on the fumigation and bath line as outlined in sections II, III, and IV, chapter 4.

Section VII. FIELD EXPEDIENTS

55. General

Even though enemy action or difficulties of terrain make it impossible to get fumigation or bath equipment to the vicinity of the troops who need to be deloused, the fumigation and bath company must continue to accomplish its mission. The performance of the task under adverse conditions will require ingenuity in the improvisation of delousing and bathing equipment.

56. Serbian Barrel

a. This improvised sterilizer can be constructed of materials readily available in the theater of operations. It consists principally of a metal barrel, can, or fuel drum placed over a single or cross type trench in which a wood fire has been built. Water is poured into the drum to a depth of from 8 to 10 inches and bricks or pieces of 2-by 4-inch wood placed on the bottom of the container (edgewise), providing a 4-inch clearance on which the smaller inner container is set. The inner container must be of a size which, when set in the outer container, and properly centered, will allow not less than 1-inch clearance between the wall of the containers and also between the top of the inner container and the lid. A short piece of pipe is assembled by an elbow to a second piece of pipe which is long enough to extend several inches above the lid when placed in position in the inner container. The grating or slats used in the inner container to keep the clothes off the bottom, providing an exhaust steam pocket, is placed on bricks or pieces of wood 2 by 4 inches laid flat, or 2 inches off the bottom. The lid is made from any scrap lumber, with a folded salvaged blanket tacked to the under side, and a hole for the exhaust pipe provided. Blocks of stone or wood can be used to hold down the lid to assure building up some steam pressure.

b. The clothes are packed into the inner container. The lid is placed securely with

ample weights to hold it tight enough so that a definite steam pressure is built up, thus forcing the steam downward through the clothes where the exhaust pipe provides a release for the steam pressure.

c. The clothes are kept in the steam pressure for 45 minutes and then removed fully sterilized. (See fig. 11.)

57. Improvised Showers

a. MULTIPLE SHOWERS. A metal drum or wooden barrel placed in a tree or on a platform at least 7 feet from the ground, together with a length of pipe, can be converted into a makeshift shower system. An outlet pipe, to which a valve is attached, carries the water from the bottom of the drum to the length of pipe which serves as a shower line. Holes may be drilled in this pipe at about 2-foot intervals from which the water showers down in cone-shaped cascades. The valve regulates the flow of water from the drum. Formation of a bucket brigade may be necessary to carry water from the source of supply to the drum.

b. PERFORATED DRUM. If a pipe line is not available the drum or barrel can be perforated to provide a shower. The disadvantage, of course, is that this arrangement provides a shower for only one man at a time.

c. LISTER BAG. A lister bag may be used in similar fashion. Tubes of any desired length may be hung from the faucets and improvised shower nozzles attached to the ends of the tubes. These makeshift nozzles can be fashioned from small cans which have been perforated.

d. DRAINAGE. The shower area can be drained by digging a ditch from the showers to a nearby creek or river. Boards can be placed across the ditch for the men to stand on while bathing. If there is no nearby stream into which the used water can drain, the drainage ditch should empty into a hole dug in the ground. The hole should be approximately 6 feet long, 6 feet wide, and 6 feet deep.

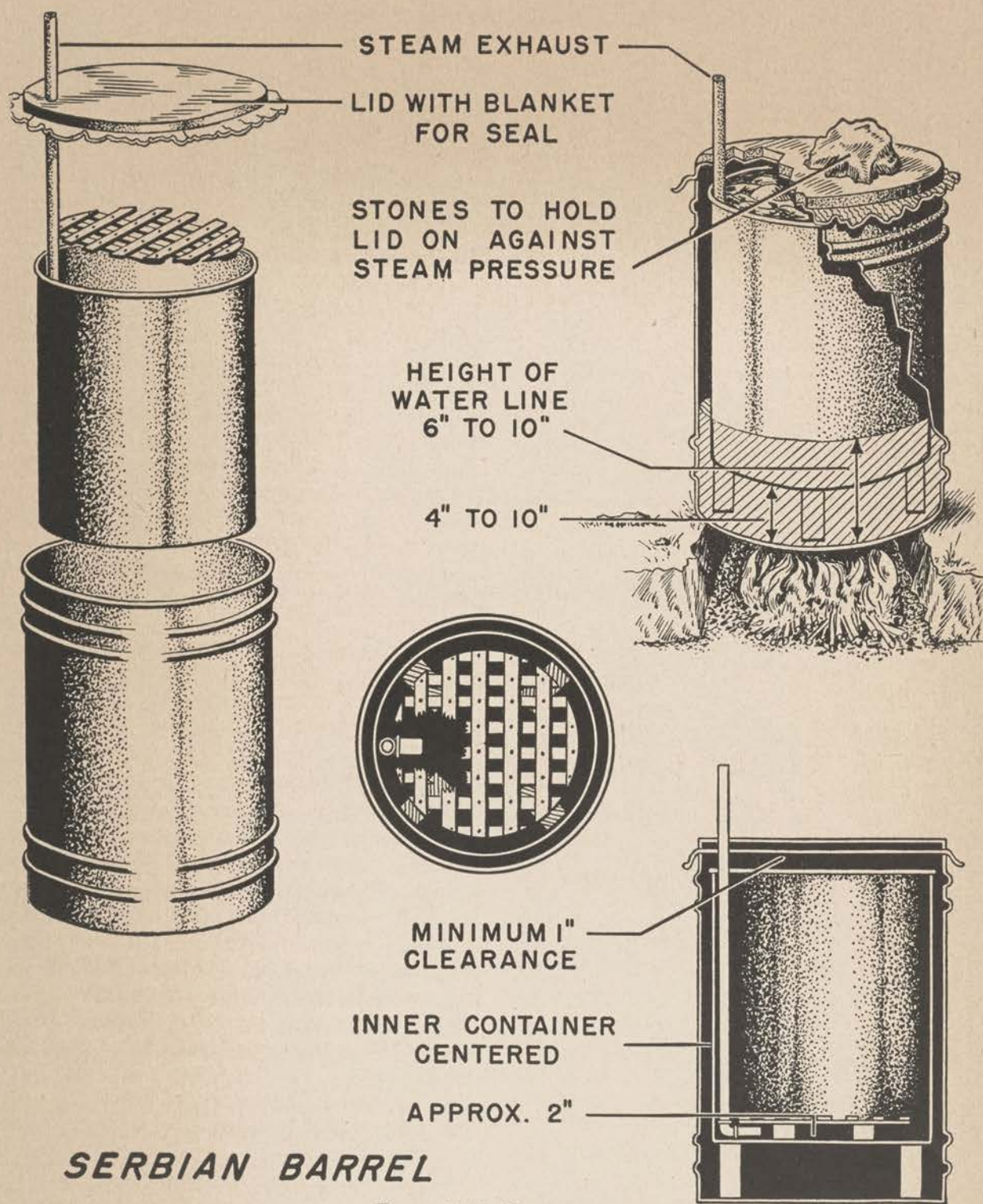


Figure 11. Serbian barrel.

APPENDIX

UNIT PROPERTY AND SUPPLY

Army Regulations, War Department circulars, Tables of Allowances, Tables of Equipment, and other War Department publications are subject to revision from time to time; reference contained herein must therefore be checked frequently to be sure that supply procedure is in accordance with the latest War Department instructions.

1. Initial Issue

a. CLOTHING AND EQUIPAGE. (1) As soon as a newly activated unit has received its full complement of enlisted men, a check should be made to determine the items of clothing and equipment each enlisted man has in his possession.

(2) Cadre and other enlisted men received from other than a reception center should have in their possession the following:

(*a. Clothing.* Articles of clothing, authorized for issue as shown in the appropriate column of T/E 21.

(*b. Equipment.* Articles listed in AR 615-40; a gas mask; either a bag, canvas, field, with strap, carrying or a haversack with pack carrier; and a belt, cartridge, magazine, pistol or revolver, as prescribed by appropriate tables.

(3) Enlisted men received direct from reception centers should have in their possession the following:

(*a. Clothing.* Articles of clothing authorized for issue at reception centers as prescribed in AR 615-40, except overshoes, arctic.

(*b. Equipment.* Articles listed in AR 615-40.

(4) Any shortages, disclosed by the check, which have occurred because of carelessness on the part of the enlisted man to whom the property was issued must be covered by a statement of charges or a report of survey. In addition to replacing such shortages, sufficient quantities of clothing and equipment will be requisitioned to equip each individual enlisted man in accordance with the prescribed allowances set forth in T/E 21, or the appropriate T/O & E for the unit. All articles which have become

excess to authorized allowances due to change in status of the enlisted men (as from mounted to dismounted or assignment of occupational specialist designation) will be turned in immediately to the station supply officer.

b. UNIT PROPERTY. Unit property, as distinguished from individual clothing and equipment, will be issued automatically upon the activation of a unit. This automatic issue will include all items of individual and organizational equipment other than that issued to the enlisted men in accordance with AR 615-40, and T/E 21. Delivery of controlled items, such as vehicles, however, may be delayed since such property is shipped in accordance with priority schedules established by higher authority. As soon as the initial issue of this property is received, the unit commander will check the items received with the applicable T/O & E to determine whether all items authorized have been received. Any shortages in property billed to the unit will immediately be called to the attention of the station supply officer.

2. Marking of Equipment

a. UNIT PROPERTY. Equipment of units which are part of regiments, separate battalions, or similar units will be marked with the figures representing the regiment, separate battalion, or similar unit followed by the letter or letters representing the designation of the company or similar unit. Property in administrative units smaller than a battalion will be marked with letters representing the designation of the unit as prescribed by AR 850-5, as amended.

b. INDIVIDUAL CLOTHING. Unit commanders will make frequent inspections to determine that clothing is marked, on the inside, with the individual's last name, first name, middle initial, and his full Army serial number. Exclusive of items excepted by the provisions of AR 850-5, as amended, individual equipment will be marked in the same manner as clothing.

3. Replacement and Replenishment

After the unit has been activated, the unit commander will obtain replacement or replenishment of supplies and equipment used, lost, destroyed, or damaged in the following manner according to the class of property:

a. EXPENDABLE ITEMS. Depending upon the items, expendable supplies may be replenished by whichever of the following methods is applicable:

(1) By requisition for supplies issued on an allowance basis.

(2) By requisition for expendable parts, tools, and any other item of a similar nature. A certificate to the effect that the supplies are required to complete an authorized set will be placed on the requisition.

(3) By requisition for repair materials. A certificate to the effect that the material requested will replace supplies that have been used in the repair of Government property will be placed on the requisition.

(4) The transactions contemplated in (1), (2), and (3) above do not require an entry in the company property book, since these items are dropped from accountability upon issue.

b. NONEXPENDABLE ITEMS. Replacement of nonexpendable T/E 21 items worn out through fair wear and tear is secured, by whichever of the following methods is applicable, in accordance with the provisions of AR 35-6540.

(1) By requisition for supplies, to be dropped by a certificate, on a quarterly allowance basis.

(2) By direct exchange of unserviceable articles or component parts by use of WD, AGO Form No. 447, Property Turn-in Slip.

(3) The transactions contemplated in (1) and (2) above will not require an entry in the property records of the unit unless full replacement of the items requisitioned is not made.

c. Replacement of nonexpendable T/E 21 items lost, damaged, destroyed, or worn out through other than fair wear and tear, will be made immediately by submission of a requisition to cover the item or items. A statement of charges or report of survey will be processed.

d. NONEXPENDABLE POST, CAMP, AND STATION PROPERTY (T/A 20). In general, replacement of post, camp, and station property will be

obtained as in *b* and *c* above. Requisitions for tableware and kitchen utensils when signed by the unit commander, however, will constitute a certificate to the effect that the requisition has been edited to determine that all of the articles are authorized for issue to his unit, are necessary, and that when issued will not result in an excess of such articles over authorized allowances.

e. CLOTHING AND EQUIPAGE. Clothing and equipage worn out through fair wear and tear will be replaced by use of Exchange Order Form ExO-1, as prescribed by AR 615-40, or a Property Turn-in Slip (WD, AGO Form No. 447). Clothing and equipage lost, damaged, destroyed, or worn out by other than fair wear and tear will be replaced by requisition for the items. Processing of statement of charges or report of survey will not delay replacement issue of the items.

f. Statements of charges or reports of survey will not be used as replacement documents for items listed thereon.

4. Requisitions

a. SUBMISSION. Requisitions for all property and supplies will be submitted on WD, AGO Form No. 446, Property Issue Slip. Requisitions, however, may be submitted on improvised forms, by informal memoranda, or orally. In the case of oral requisitions, the organization supply officer or station supply officer will be required to acknowledge receipt of the oral request in writing. In normal situations, however, requisitions will be submitted in writing.

b. Separate requisitions will be prepared for supplies drawn from each service, such as Engineer, Ordnance, Quartermaster, Signal, etc.

c. Exchange Order Form ExO-1 will be used when articles of clothing and equipage, except shoes, listed in AR 30-3000, worn out through fair wear and tear, are replaced by actual exchange of items as prescribed in AR 615-40. Exchange Order forms will not be used to replace losses other than those specifically stated herein.

5. Property Records

a. COMPANY PROPERTY BOOK. In accordance with the simplified accounting procedures au-

thorized by current War Department publications, each unit or similar organization is required to maintain a Company Property Book on WD, QMC Form No. 424 (Stock Record Card), altered as necessary, or any similar modified form. The Company Property Book will reflect at all times the quantities of each item—

(1) Of authorized allowances of equipment prescribed for the unit except items of individual clothing and individual equipment issued under the provisions of AR 35-6560. The latter will be entered on the appropriate individual clothing and equipment records.

(2) Actually on hand and in serviceable condition.

(3) Not on hand for which the unit commander has in his possession validated requisitions. Validated requisitions are not required for original issues of items of authorized allowances of equipment.

(4) On hand in excess of authorized allowances for which the unit commander will have in his possession proper authority.

b. SUPPORTING PAPERS. Reports of survey, statements of charges, validated requisitions, shipping documents, tallies and inventories relating directly to the property will be arranged in chronological order, numbered serially, fastened in a manila folder, and filed with the company property book.

c. INDIVIDUAL CLOTHING AND EQUIPMENT RECORD (WD, AGO FORM No. 32). This form will be maintained for each enlisted man of the unit, to indicate that property which has been issued for the individual's use. *This property is not recorded in the company property book.* Following is listed those items which will be recorded on this form:

(1) Items of individual clothing and equipment prescribed by T/E 21, and/or the individual equipment listed in the appropriate T/O & E, except bag, canvas, field, od, M-1936, and blankets, wool, od, which are recorded on WD, AGO Form No. 33.

(2) Gas masks.

(3) All additional items of individual clothing and equipment in excess of T/E 21, which are expressly authorized in writing by competent authority.

d. INDIVIDUAL EQUIPMENT RECORD (WD, AGO FORM No. 33). This form will be maintained

to indicate at all times the property which has been issued to each enlisted man of the unit. Property listed on this form may or not be recorded in the company property book, depending upon the type of property. Following is listed those items which will be recorded on this form:

(1) Such items of equipment as are prescribed by the applicable arm or service, or T/O & E, issued to enlisted men for specific purposes, such as intrenching tools, small arms, compasses, etc. (recorded in company property book).

(2) Bag, canvas, field, od, M-1936, and blankets, wool, od (not recorded in company property book).

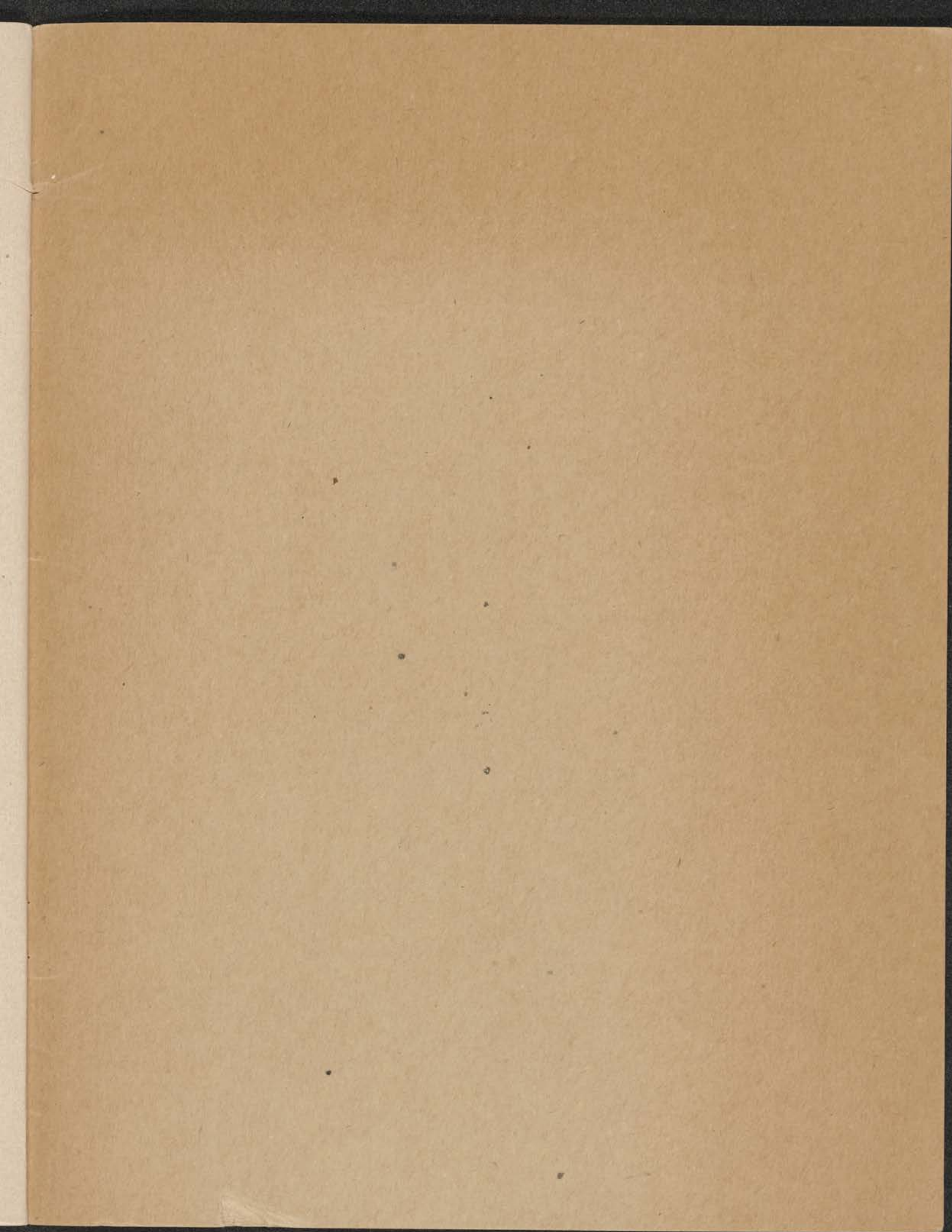
(3) Post, camp, and station property (not recorded in company property book).

(4) Organizational clothing, part III, T/E 21, and/or the appropriate T/O & E (recorded in company property book).

e. MEMORANDUM RECEIPTS (WD, QMC FORM No. 487 AND WD, AGO FORM No. 446). The appropriate supply officer will issue to unit or organization commanders, on memorandum receipt, articles of station property. This property will not be taken into the field without prior authority of the War Department. The unit commander will be required to receipt for this type of property and must in turn exact receipts for any property of this type loaned by him to other officers or units. This does not apply to articles issued by the unit commander to the individual enlisted men within his own unit since such issues are recorded on WD, AGO Form No. 33 of the individual concerned.

6. Simplified Property Accounting Procedure

Company officers who are charged with the responsibility for unit supply and property records will familiarize themselves with the accounting procedures for T/A and T/E equipment used by units or similar organizations. The procedures are designed primarily to relieve tactical units of the burden of formal property accounting, but are prescribed for non-tactical units provided with T/A and T/E property as far as is practical. *An understanding of these procedures is necessary in unit supply.*



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