

Great care was taken not to force the needle into the anterior chamber.

Following the operation, the eye in each case showed a slight reaction which subsided in about a week. In the course of a few weeks, the blackening became more uniform so that the ultimate results were superior to those immediately obtained. These results were far superior to those of any tattooing operations I have seen, and owing to the large amount of pigment injected and its depth in the tissues, there is every reason to believe that the improvement will be permanent.

DILUTING FLUID FOR COUNTING BLOOD CORPUSCLES

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The need of a good diluting fluid for the purpose of counting blood corpuscles has often been impressed on me while working in the laboratory and in hospitals. Those mentioned in textbooks have many drawbacks. Some form a precipitate on standing; others while remaining clear do not permit of the addition of staining solutions so that the white corpuscles may be differentiated from the red corpuscles while making the count; still others destroy the red corpuscles if the diluted blood is permitted to remain in the counting pipet for some hours.

With the object in view of securing a fluid which will do away with the objections mentioned, I have done some work along this line and have obtained what I believe to be an ideal diluting fluid. This fluid permits of the simultaneous counting of white and red corpuscles; it keeps indefinitely without precipitating; it retains the normal shape of the corpuscles, and the diluted blood kept in the diluting pipet for over a week was as perfect as when first drawn. The formula is as follows:

Sodium chlorid	0.85 gm.
Sodium citrate	2.00 gm.
Azure II	0.001 gm.
Formaldehyd solution, U. S. P.	3 drops

Distilled water enough to make 100 c.c.

The sodium salts are dissolved in the water, the formaldehyd solution is added, the azure is added, and it is shaken well. It may be kept in any kind of a bottle.

The technic of using it is the same as with Toison's, Hayem's, or any other fluid. The findings are computed according to the degree of dilution.

FRACTURE OF ISCHIUM

ALBERT FRANKLIN TYLER, B.Sc., M.D., OMAHA

Fracture of the ischium is so rare that the following case is worthy of attention. The history of the accident as given by the patient is interesting.

W. S., a robust man, said that two days previously he had fallen in such a manner that he landed on the buttocks in the sitting position. A half buried brick protruded from the ground so that the force of the fall drove the brick against the right buttock. He tried to rise to his feet, and as he assumed the standing position there was a loud snap and he fell to the ground a second time. Thereafter he was unable to use the leg, and suffered intense pain when any effort was made to do so.

The man lay on the left side with the right leg flexed at the knee. Any attempt to extend the leg produced pain in the right buttock. Pressure over the region of the tuberosity of the ischium elicited severe pain.

Roentgen examination revealed a fracture through both rami of the ischium, the anterior being at about the junction of the ischium and pubic bone, the posterior extending through the acetabulum.

The patient was kept in bed on the left side with the right leg flexed at the knee. Recovery has been slow, but is good as far as function is concerned.

It would seem that when the patient's buttock struck the brick, only a partial fracture occurred, which was completed by the muscle strain incident to rising to the erect position.

Military Medicine and Surgery

PITCHING AND STRIKING THE UNITED STATES ARMY FIELD HOSPITAL

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The ability to pitch or strike its field hospital in a very short time is a necessary accomplishment for every field hospital company. Speed in these two

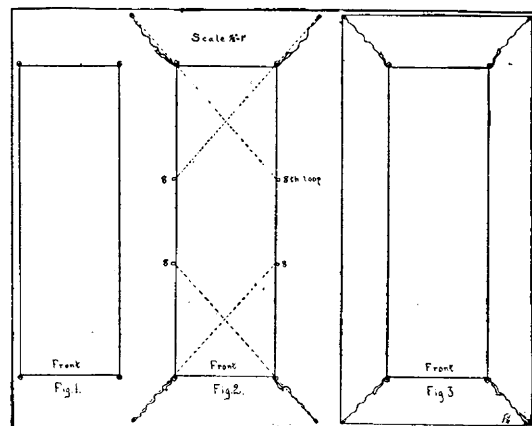


Fig. 1.—Pitching tentage, first step: Tent pinned to the ground by its four corners. Always draw wall taut and then slacken 4 inches before driving the corner pin.

Fig. 2.—Second step: The four corner guy pins added, and ropes placed over them.

Fig. 3.—Third step: Storm guys stretched for alining guy pins.

operations will often spell success in the evacuation of the wounded in time of war. As every civilian physician who joins a field hospital company will be

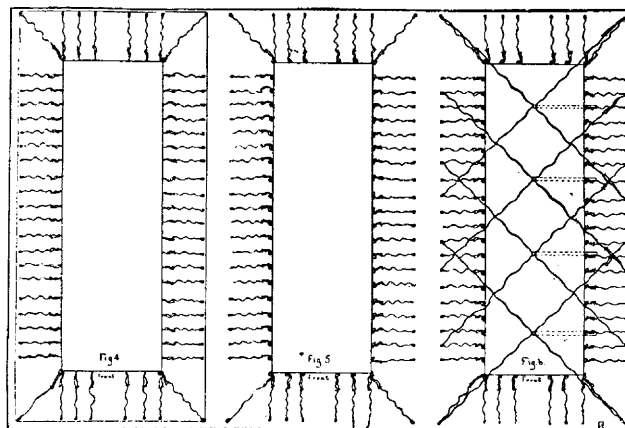


Fig. 4.—Pitching tentage, fourth step: Guy pins driven inside of ropes, opposite wall loops, and guy ropes, fully slackened, placed over pins.

Fig. 5.—Fifth step: Wall pins driven through wall loops on Sides 1, 2 and 3, and at (not through) wall loops on Side 4; wall loops removed at LECWP and LRCWP.

Fig. 6.—Sixth step: Uprights placed, hoods and storm guys adjusted; men creep under tent, raise, and then adjust uprights and ropes. Storm guy, a long rope over tent.

confronted with these necessary procedures, their anatomy will be presented in detail. The first essential is to learn how to pitch, strike and fold army tentage.

PITCHING

The field hospital company is divided into tent pitching squads, each of eight men and an NCO. Each

squad is divided into four minor squads of two men each, numbered Minor Squad 1, Minor Squad 2, Minor Squad 3 and Minor Squad 4. The four sides of a tent are numbered 1, 2, 3 and 4, Side 1 being the front side, and the others, 2, 3 and 4, numbered as the hands of a clock travel, that is, No. 2 to the right, No. 3 to the rear and No. 4 to the left. Each minor squad pitches and strikes on the side of its number, as Minor Squad 1 on Side 1, etc.

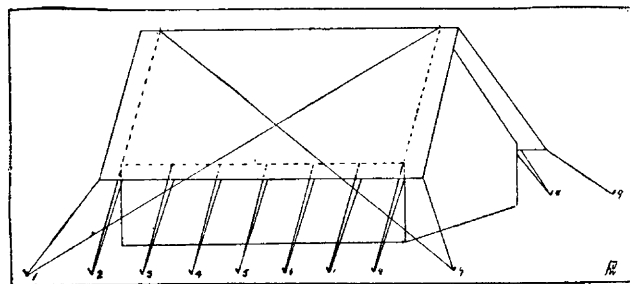


Fig. 7.—View of hospital tent and fly: Ropes go to pins as indicated; 1 and 9 are 8 feet from the corner wall pin; 2 and 8 are 2 feet from 1 and 9; corner guys of tent are on 2 and 8.

ABBREVIATIONS

RFCWP, right front corner wall pin
LFCWP, left front corner wall pin
RRCWP, right rear corner wall pin
LRCWP, left rear corner wall pin
NCO, noncommissioned officer

(a) The tents are unrolled. Squad 1 drives RFCWP, places RFCW loop over RFCWP, and ties the front door with a wall pin through the proper wall loop. (The proper wall loop is found as follows: For hospital and wall tents the two wall loops at the ends of the sod-cloth (the canvas apron below the walls) are used, one being slipped through the other and a wall pin being thrust through the free one. For ward

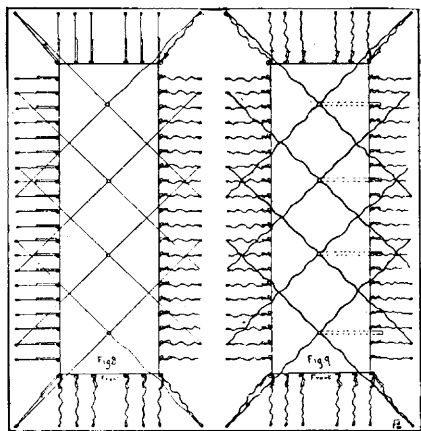


Fig. 8.—Striking Tentage, first step: Loosen guy ropes on Sides 1 and 4. (Do not remove from pins. Loosen on Side 4 only if no guy ropes on Side 1.) Also remove wall loops on Side 4, including corners.
Fig. 9.—Second step: At command "down," men carry bases of uprights through Side 4, then remove all pins except R and LRCWP for pyramidal tents or RF and RRCWP for all other tents.

and pyramidal tents, the wall loop at the end of the sod-cloth is slipped through the loop where a rope is tied to the end of the door, and the wall pin is thrust through the wall loop. The rear door, if there is one, is tied in the same manner.) At once Squad 4 places LFCW loop over LFCWP, and drives the pin after the NCO aligns on the other tents. Squad 2 places

RRCW loop over RRCWP, and drives the pin. Squad 3 places LRCW loop over LRCWP, and drives the pin. The tent is now pinned to the ground by its four corners (Fig. 1).

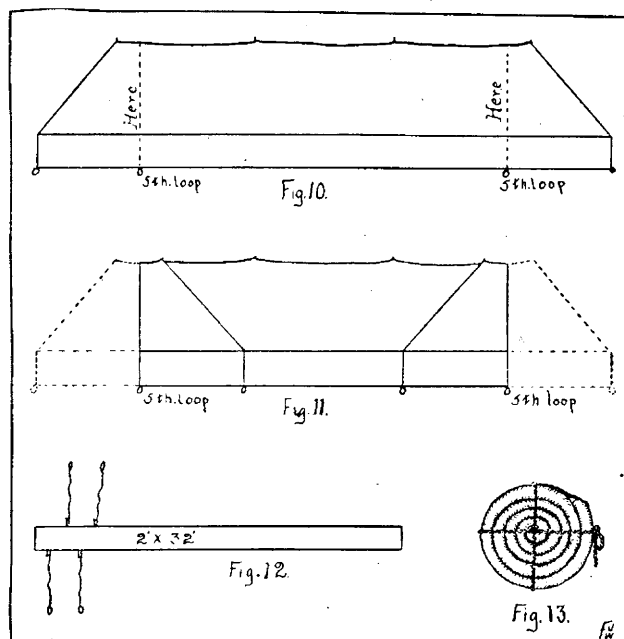


Fig. 10.—Folding, first step: Draw tent away from tent site until taut on two corner pins. Fold ends to lines marked "here."

Fig. 11.—Second step: Place all guy ropes and hoods on tent near apex. Fold from apex in 2 feet folds until in a long, slender rectangle about 2 by 30 feet.

Fig. 12.—Third step: Roll tightly from one end and tie at other with four guy ropes around circumference.

Fig. 13.—Fourth step: Tie this drum shaped package in a manta, if there is one.

(b) Each squad now drives its corner guy, using a guy pin, which is exactly 2 feet long, as a measuring stick. The guy pin is driven, for square or approximately square tents, in a line diagonal with the opposite corner. For the ward tent, which is a long tent,

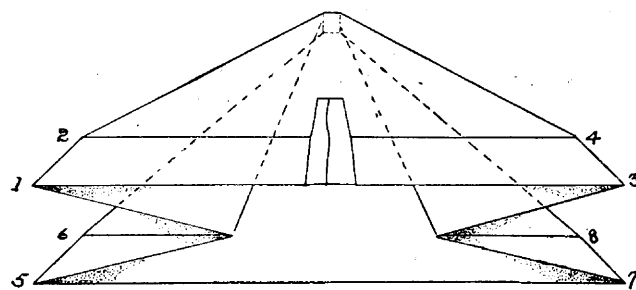


Fig. 14.—Folding pyramidal tent: Draw tent taut on two corner wall pins. Carry 1-2 over to 7-8. Return and cover 5-6, smoothing out folds. Now carry 3-4 to 5-6, return and cover 7-8, smoothing door and any folds. This makes the tent bellows-shaped. All this time the metal square at the apex is held taut and perpendicular on the ground. Now place hood in apex square and fold from top to bottom in apex-square-width folds. Then fold from each end and tie with two interior guys, fully slackened.

the diagonal crosses the tent at the eighth wall pin on the opposite side instead of at the corner (Fig. 2). The distance of the corner guy pin from the corner wall pin is as follows: 6 feet for the small wall tent and the small pyramidal tent; 7 feet for the pyramidal tent; 8 feet for the wall and the hospital tents, and 11 feet for the ward tent.

(c) Four wall pins and four guy pins are now in the ground for each tent. At once storm guy ropes

(braces) or hood guy ropes are stretched between the corner guy pins on every side where guy pins are to be inserted (Fig. 3). These mark the line for the guy pin sites. Just inside this rope a guy pin is driven to match every wall loop seen on the tent. All guy ropes, fully slackened, are placed over these pins in proper order (Fig. 4). Now, for the pyramidal tents, all wall

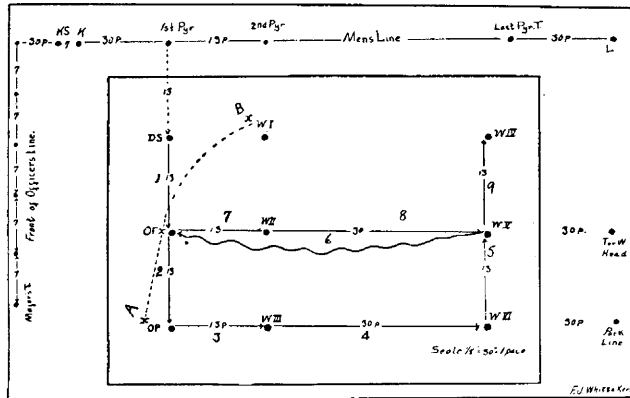


Fig. 15.—Laying out the hospital site: As soon as the officer has traveled over the route 1, 2, 3, 4, 5, 6, 7, 8, 9, the king pin sites for the hospital are located; the numbers 7, 13 and 30 refer to the number of paces; x, x, x , on the line $A-B$, the positions taken by the orderly; the dots, right front corner wall pins.

pins are driven through the wall loops, the bottom tent wall edge being first made perfectly straight. For all other tents on Side 4, wall pins are driven at wall loop site instead of through it, so that uprights can be inserted from Side 4. Also wall loops are removed from LFCWP and RLCWP for the same reason (Fig. 5).

(d) Now the upright or uprights, and the ridge, hood and storm guys, if there are any, are inserted (Fig. 6). (The upright for pyramidal tents is inserted from the front door; uprights for all other rectangular tents from Side 4.) For all tents the front upright, hood, apex ring or square is numbered 1; the second, 2; the next 3, and the rear one 4, if there are so many.

(e) *Raising the Tent.*—For pyramidal tents: Each No. 1 of the four minor squads goes to his corner guy, and all No. 2's enter the tent and at command "Raise"

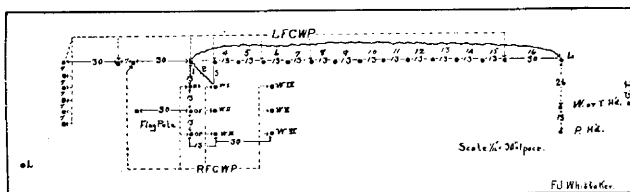


Fig. 16.—As soon as the officer has paced and meandered over the route 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, markers for officers, men's and kitchen tentage are in the ground. The numbers 7, 13 and 30 refer to the number of paces between pins; $RFCWP$, right front corner wall pin; $LFCWP$, left front corner wall pin; O , right or left front corner wall pin as shown above; A , men's and patients' latrines; B , wagon or truck park; C , picket line.

by the NCO, raise the tripod and the wooden upright. The NCO at the door alines the upright. He directs the proper No. 1 to tighten. When he says "All tighten," all 1's and 2's tighten all guys and hood ropes on their respective sides. For hospital or wall tents: Minor squads 1 and 2 go to the front upright, and No. 1 of Minor Squad 1 places the apex of the upright on his right knee and adjusts the necessary parts. Minor Squads 3 and 4 do the same at the rear upright,

No. 1 of Squad 3 assuming a left knee position. At the command "Raise" by the NCO, the tent is raised by the eight men. (Bases of uprights must always remain on the ground in the raising.) The same procedure is followed with the ward tent, except that Minor Squad 1 and No. 1 of Squad 2 raise Upright 1, No. 2 of Minor Squad 2 raises Upright 2, No. 2 of Minor Squad 3 raises Upright 3, and Minor Squad 4 and No. 1 of Minor Squad 3 raise Upright 4.

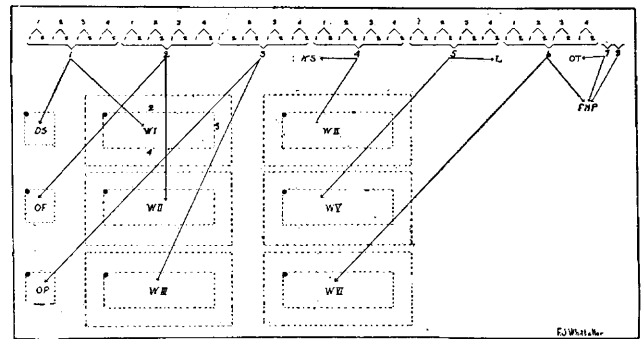


Fig. 17.—With an animal-drawn field hospital, the men form in line in the company street before pitching the field hospital.

(f) As soon as the tent is raised, the uprights are alined, all guys and other ropes are tightened, and all axes, extra pins and debris placed at the right front corner of the six ward tents (inside the ropes, axes chopped into ground in line, pins and debris in orderly piles). Figure 7 shows the method of placing tent, fly and storm guy ropes for the hospital tent.

STRIKING

Only four men strike a tent, as each squad usually strikes two tents. Minor Squads 1 and 2 strike their

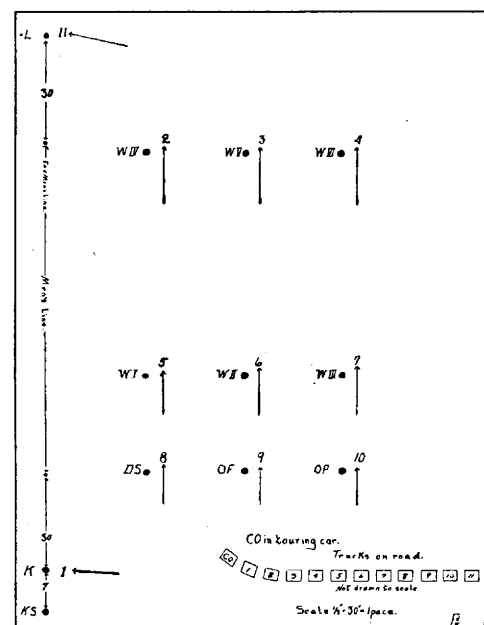


Fig. 18.—Route and stopping point of trucks: Each truck stops at the point on the hospital site where its number is placed. When unloaded, it goes at once to its proper place in the truck park, 7 feet apart. At truck park all drivers "eyes right" on office and Wards 2 and 5 markers for alinement.

tent nearest the front of the hospital; Minor Squads 3 and 4 the tent toward the rear. First step: The guy

ropes only on Sides 1 and 4 are loosened. (They are not taken off of the guy pins.) All wall loops are removed from the wall pins on Side 4 only (Fig. 8). Second step: The men go at once to the uprights (if

pins left in the ground. Pyramidal tents are folded bellows-shaped (Fig. 14), and are folded from the apex the width of the metal square until all folded. Then they are folded from each end and tied with two

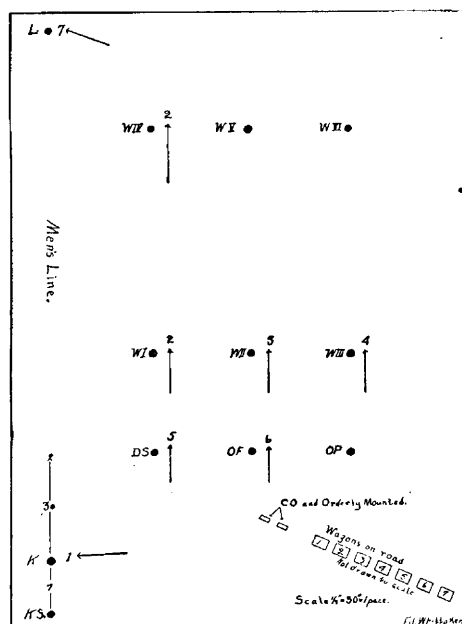


Fig. 19.—Route and stopping point of wagons: Each wagon stops at the point on the hospital site where its number is placed. When unloaded it goes at once to its proper place in the wagon park, 7 feet apart. At wagon park all drivers "eyes right" on office, and Wards 2 and 5 markers for alinement.

there are two uprights, two men per upright; if four, one man per upright, in order of squad number from front to rear) and at the command "Down" by the man at the front upright, the bases of all uprights are removed through Side 4 (for pyramidal tents, through

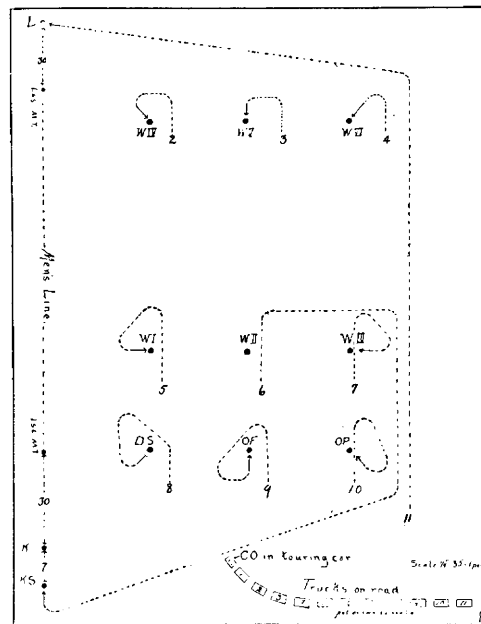


Fig. 20.—Pitching and striking at night. The commanding officer and orderly drive ahead of the column and place lighted lanterns at the marker site. Each truck stops at a lighted lantern as indicated in Figure 18. When unloaded it wheels and points headlights in direction of arrow. This gives a well illuminated field for pitching. These positions are assumed in striking also.

If the hospital is animal drawn the lanterns are placed as indicated, but the wagons stop as shown in Figure 19. The additional lanterns belonging to the field hospital are now lighted and placed wherever needed.

center guy ropes, fully slackened. Hospital or wall tents are folded in end triangles until the tent is rec-

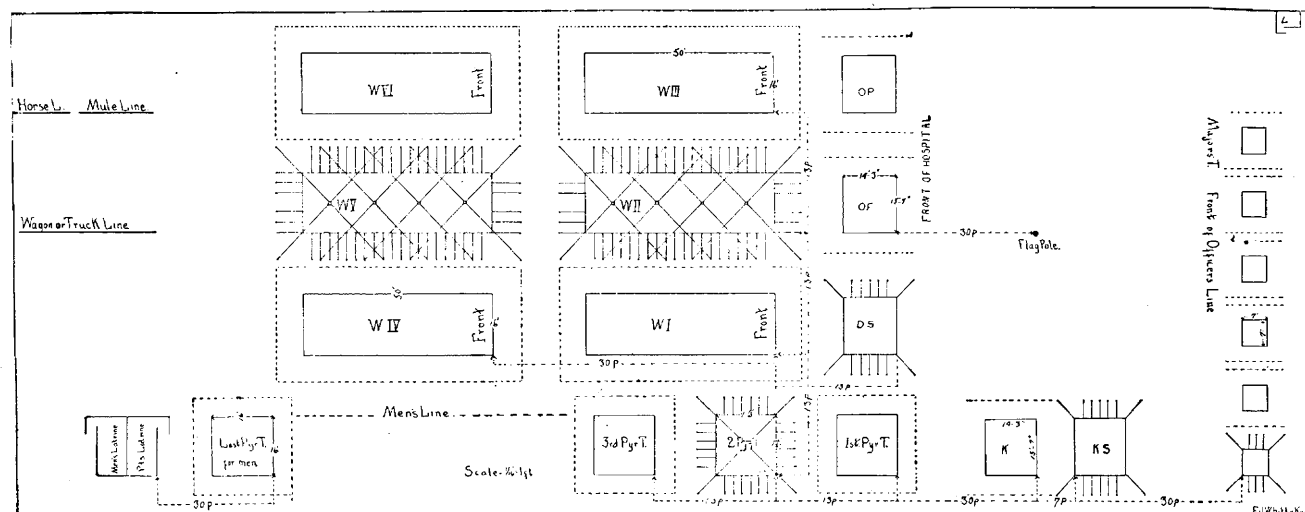


Fig. 21.—Ground plan of a field hospital.

the front door; also wall loops on Side 4 need not be removed; Fig. 9).

FOLDING

All pins except RFCWP and RRCWP for all tents except pyramidal are removed. For pyramidal tents, all are removed except RRCWP and LRCWP. The tent is pulled away from its site until taut on the two

tangular. They are folded from the apex in 2 foot folds until entirely folded. They are folded from each end and tied with two center guys, fully slackened. (If a fly is present, it is folded and the tent placed on it before final folding and tying. This ties both into one package.) With ward tents, the front of the tent, one panel beyond the first apex ring, is folded to the

fifth loop (Fig. 10). The same is done at the rear (Fig. 11). Now eight storm guys and four hoods are added. Now from apex it is folded in 2 foot folds until entirely folded (Fig. 12). Rolling is begun at one end, and four guy ropes are left out, fully slackened, two on each side, at the other end for tying. This gives a drum-shape package easily handled, with only the wall outside (Fig. 13). Now it is tied in a cover or manta, if there is one.

LAYING OUT THE HOSPITAL

As soon as the officer has traveled over the route 1, 2, 3, 4, 5, 6, 7, 8, 9 (Fig. 15), the sites for the store tent, office, operating tent and six ward tents are located. If pyramidal tents for the men are to be pitched, sites are marked as in Figure 16. If shelter tents, when he is ready to leave Ward 4 marker, the officer continues outward for 13 paces and places a marker to orient the rear end of the men's line. This marker is in line with Wards 4, 5 and 6 markers. He then goes to the stores marker, moves outward for 13 paces, and places a marker in line with stores, office and OP tent markers to mark the head of the men's line. At this marker he right angles to the left for 30 paces and places a marker for RFCWP of the

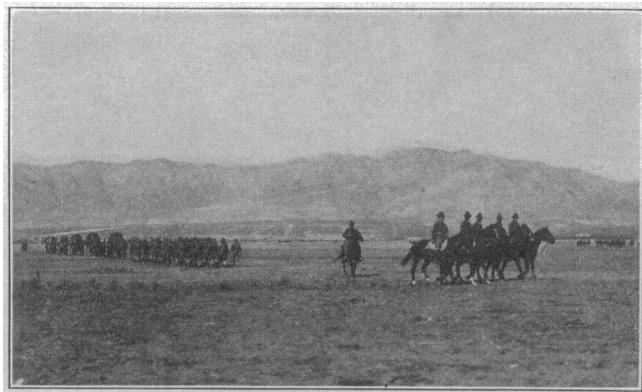


Fig. 22.—An animal-drawn field hospital on the march.

kitchen. This marker is in line with the front and the rear men's markers. At 7 paces farther in the same line, he places a marker for the LFCWP of the kitchen store tent. He then continues in the same line for 30 paces, and places a marker for the LFCWP of the junior officer's tent. He right angles to the left, goes 7 paces, and places a marker for the LFCWP of the next officer's tent, 7 paces more for the LFCWP of the next officer's tent, and so on until a marker for the major's tent is placed.

Route of Orderly (A-B, Fig. 15).—The orderly starts at OP tent by assisting the officer in turning a right angle and waving him into position at Ward 3. He then goes to a point in front of the office marker and alines the officer for Ward 2 marker. He then goes to a point near the site for Ward 1 marker and places a marker in the ground alined on Wards 2 and 3. The officer at Ward 4 also alines the orderly's marker on Ward 4 and stores, which locates the site of Ward 1 marker.

Waving into Position.—The waver extends both arms sideward, looking at the "marker or pin setter." "M or PS" moves the marker or the pin to the right or to the left as the right or the left arm of the waver moves up and down. Both arms of the waver quickly lowered means "position is correct."

Provisional Pin.—When the officer first reaches Ward 5 he places a marker slanting directly backward as a "sighting" or provisional marker. Its distance from Ward 6 marker is correct, but its distance from Ward 2 marker is uncertain. The orderly at the office



Fig. 23.—Raising the hospital tentage.

waves the officer into position at Ward 2 by sighting on a slanting marker, and the officer "ties in" this marker (places it in proper position perfectly upright) after pacing "8" (distance between Ward 2 and 5 markers) in the route of the officer.

TO FORM COMPANY ON LINE FOR PITCHING HOSPITAL

The company approaches in column of fours at double time with the leading element facing directly down CF line. The commands "On right into line," and "March" are given as the first set of fours reaches the head of the men's line, and "Company, Halt" as soon as on CF line; "Front," as soon as the company is in proper line 13 paces from hospital site; next, "Count Twos"; then "Count MS by fours" (this means count minor squads 1, 2, 3, 4; 1, 2, 3, 4; 1, 2, 3, 4, and so on, each No. 2 counting). Then the command "Count TP Squads." (Each No. 2 of each fourth minor squad counts numerically as 1, 2, 3, 4, 5, 6, etc.). As soon as this count is completed, the men rush to

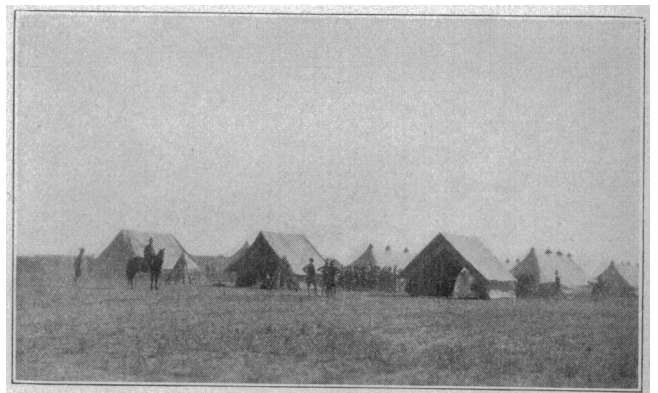


Fig. 24.—The hospital complete, ready to accommodate 216 bed patients.

the wagons, unload and pitch the hospital. For the motorized field hospital, proper squads are already on trucks at the proper tent pitching sites. As soon as they have unloaded the trucks they rush to the men's line, unsling packs, return to tent sites, and begin pitching.

ABBREVIATIONS

MS, minor squad	OP, operating tent
CF, company front	FHP, field hospital property
TPS, tent pitching squad	MS by fours, minor squads
L, latrine	by fours
DS, dispensary and stores tent	TP Squads, tent pitching squads
OF, office tent	

LOADS OF WAGONS

Wagon 1 carries same as Truck 1. (Cooks and KP ride wherever convenient.)
 Wagon 2 carries 6 Ward tents (no poles or pins).
 Wagon 3 carries 3 HT—all poles, pins, axes.
 Wagon 4 carries Bedding.
 Wagon 5 carries Bedding, Disp. Office and other FHP.
 Wagon 6 carries OP equip. and FHP.
 Wagon 7 carries L and forage.

SQUAD DUTY

Each squad always unloads, pitches, strikes and loads tentage and equipment as follows:

Sq. 1 = DS and W 1	Sq. 5 = L and W 5
Sq. 2 = OF and W 2	Sq. 6 = W 6 and places FHP
Sq. 3 = OP and W 3	Sq. 7 = Places FHP and pitches OT
Sq. 4 = KS and W 4	Sq. 8 = Places FHP

Cooks and KP pitch the kitchen fly, put up a stove, dig a garbage pit, and prepare a meal.

All police the camp site before leaving. The hospital should be laid out before the arrival of trucks or wagons in order to avoid delay.

PITCHING AND STRIKING A FIELD HOSPITAL

Time begins when wagons or trucks are 50 feet from the hospital site (the ground plan is given in Figure 21). If the equipment is animal drawn, the men double time to the men's line, remove packs, rush to the proper

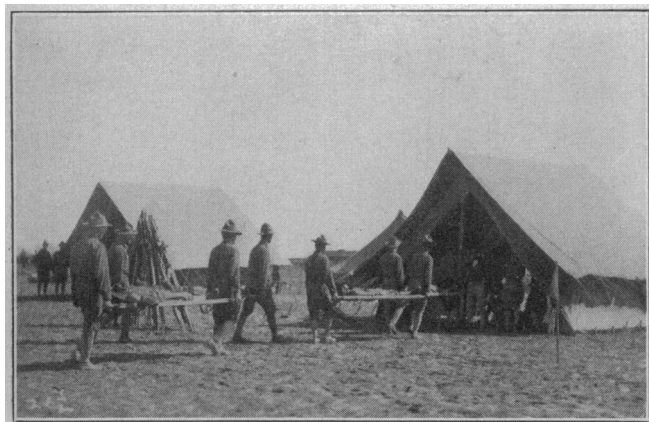


Fig. 25.—Admitting patients to the hospital.

Two cooks and two kitchen police riding on Truck 1 pitch the kitchen fly.

ROUTINE

When an order to pitch hospital is received, an officer with an orderly seeks a suitable site and lays out the hospital as in Figure 15. If this order occurs at night, the procedure is outlined in Figure 20. Later the officers' line is added as in Figure 16. When trucks or wagons arrive, they go to sites as shown in Figures 18 or 19. Tentage is pitched as in the large ground plan.

ABBREVIATIONS

K, kitchen	SQ, squad
KS, kitchen stores	KP, kitchen police
OT, officers' tentage	DS, dispensary and store tent
W, ward	L, latrine tentage
OF, office tent	HT, hospital tent
OP, operating tent	
FHP, field hospital property	

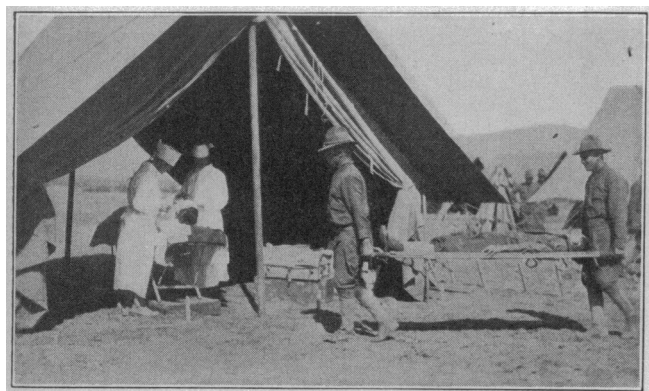


Fig. 26.—A view of the operating tent.

LOADS OF TRUCKS

Truck 1 carries K. fly; KS; OT; KS tent; cooks and KP.
 Truck 2 carries W 4 complete; FHP; Sq. 4.
 Truck 3 carries W 5 complete; FHP; Sq. 5.
 Truck 4 carries W 6 complete; FHP; Sq. 6.
 Truck 5 carries W 1 complete; DS; FHP; Sq. 1.
 Truck 6 carries W 2 complete; OF; FHP; Sq. 2.
 Truck 7 carries W 3 complete; OP; FHP; Sq. 3.
 Truck 8 carries Disp. equip.; FHP; Sq. 7.
 Truck 9 carries Office equip.; FHP; Sq. 8.
 Truck 10 carries Oper. tent equip.; FHP; any extra men.
 Truck 11 carries FHP; L; gas; oil; water; any extra men.

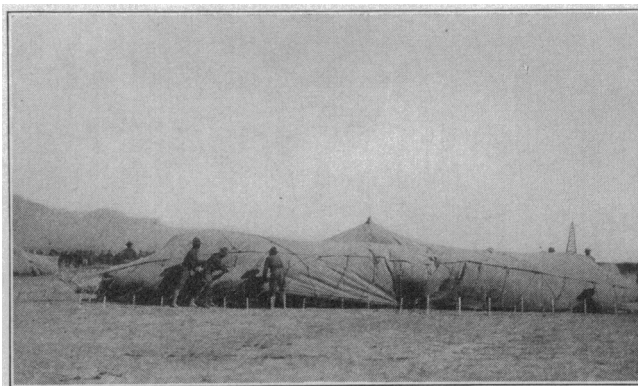


Fig. 27.—Striking the huge ward tent; each field hospital has six of these.

wagons (Fig. 17), unload, and pitch tents as indicated under "routine." If the equipment is motorized, when the trucks stop at the tent sites the men jump off, unload the trucks, rush to the men's line, remove equipment, rush back to the tentage sites, and pitch the proper tents. Time ends when every detail previously announced by the commanding officer is completed. (At first drills, only tent pitching is done. Later, latrine, wagon or truck park, kitchen, equipping one ward, office, operating tent, picket line, if there is one, are added. Finally, the hospital complete in every detail is required.)

Striking.—Men form in line in the company street. The whistle blows. Time begins. The men rush to work. Time ends when the equipment is properly loaded, and men and vehicles are 50 feet beyond the hospital site. (The site, of course, is to be policed perfectly.)

FOR SPEED IN PITCHING AND STRIKING HOSPITAL

All details should be so arranged that no commands are needed at the hospital site. With a well trained company no voices are heard during pitching or striking. If time is taken, a whistle blast starts and ends each operation.

Although it has taken many words and illustrations to present the details of pitching and striking a field hospital, a trained field hospital company has pitched its field hospital, ready for work, in less than fifteen minutes. Also it has struck the hospital and been en route to some other field of endeavor in six minutes.

MEDICOMILITARY CONSIDERATIONS OF THE MODERN MILITARY BULLET

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FORT STANTON, N. M.

The modern military bullet is small of caliber, of comparatively light weight and is propelled at very high velocity by dense smokeless powder. It is sharp pointed and is cylindro-ogival in shape. The bullet consists, in most cases, of a central core of lead with an extremely hard jacket of nickel composition. The French bullet, however, is of solid copper.

From the short, heavy, large-calibered bullet of lead, propelled at low velocity by black powder, the military

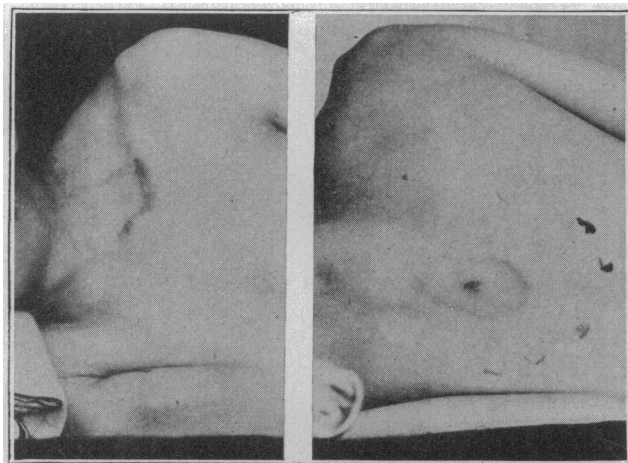


Fig. 1.—Simple perforation with minimum tissue injury. Result of a sniper's bullet at long range.

bullet has changed, through many gradations, to a long, light-weight, small-calibered jacketed bullet, propelled at very high velocity, with flat trajectory, by smokeless powder and with a striking force of tremendous energy.

It was originally believed that a bullet of this type, if it did not strike a vital part, would cause a simple perforating wound which would heal quickly and cleanly. Practical experience has shown that the modern military bullet commonly causes wounds of an extensive and mutilating character, especially at moderate ranges and on striking bone. This destructive action is popularly known as the "explosive effect," and indeed a penetrating bullet in the act of leaving the body may literally tear away the flesh or leave a mushroom-like mass of tissue at its point of exit.

As an instrument of death and as a means of producing wounds of a severe and disabling character, the modern bullet is very effective. It is at long ranges that the simple perforating effect is most often noted.

The German S bullet (*Spitzgeschoss*) weighs 154 grains and is propelled by approximately 50 grains of dense smokeless powder. The jacket is of ferronickel. The lead core is not completely covered by the jacket

but is exposed at the base of the bullet. The English bullet is similar in construction, with a jacket of cupronickel and an aluminum cone or so-called "jockey" at the point of the lead core. It is longer and heavier than the S bullet and weighs 174 grains. The French bullet is of solid copper, and is longer and heavier

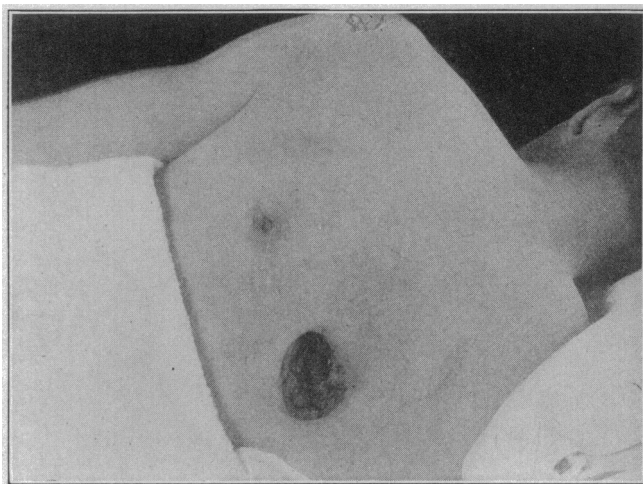


Fig. 2.—Explosive wound of exit in muscles of the back, produced by a bullet at range of less than 500 yards.

than either the German or the English bullet, its weight being 197 grains. The 1906 United States government model Springfield cartridge has a bullet weighing 150 grains, with a lead core and a jacket of cupronickel.

The German cartridge is the most powerful in use among the belligerents at the present time. The bullet leaves the muzzle of the rifle with a velocity of 2,915 feet per second and has at the muzzle a striking energy of 3,018 foot-pounds, or two and one-half times that of the old 45-70 U. S. Springfield cartridge used in late Civil War days. The 1906 Springfield cartridge most nearly approaches this tremendous force, having an initial velocity of 2,700 foot-seconds and a muzzle energy of 2,445 foot-pounds. The velocity, and consequently the striking power of these high power bullets, rapidly falls after traversing the first few hundred



Fig. 3.—Extensive tissue destruction produced by a high energy, penetrating bullet striking the ulna and causing comminution. Range less than 500 yards. A roentgenogram of this wound is shown in Figure 4.

yards, so that at 500 yards the velocity of the German bullet is 1,714 foot-seconds and its striking energy but 1,001 foot-pounds, only one third of its muzzle energy, while the Springfield bullet is traveling at the rate of 1,668 foot-seconds and has only 932 foot-pounds energy. At 1,000 yards the velocity and energy of each is 1,068, 382 and 1,047, 370, respectively.

The velocity and striking force of these two bullets decreases much more rapidly, relatively, than is the