

It is likely that an odd case of the disease among British troops would not be recognized. Few people having seen the disease, and it having been looked upon as more or less extinct, the idea of typhus would not always occur to the puzzled diagnostician.

After all, we have perhaps in this case an example of a new disease—unknown to medicine.

Abstract.

THE RUSSIAN MANUAL OF PHYSICAL TRAINING.

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THE existing instructions for the gymnastic training of troops (*Nastavleniye dlya obucheniya voisk gimnastikye*) are contained in the form of a manual published in 1910.

It is laid down in the general instructions that the aim of this training is to develop the physical strength of the soldier in all respects, to prepare him for military training, to train him to sustain the fatigues of fighting and marching, and to skilfully overcome obstacles met in war.

The training is to be carried out daily during the winter period for the whole term of service in all branches; in the summer period, when the troops have plenty of other physical work to do, the daily physical training is carried out when possible.

The duration of the daily lesson should be from half an hour to an hour.

The direction of physical training is the duty of company, squadron, or battery commanders. Junior officers are appointed to train parties and detachments, and should be well able to instruct. Non-commissioned officers, who work as instructors under the direction of officers, should be prepared and able to take the place of the latter on occasion.

The training should take place at suitable times, in order to avoid distress, not immediately after hard exercise or work of other kinds, or when the men are hungry, or less than two hours¹ after a meal.

For gymnastic work either blouses or coats are worn, with waistbelts loosely buckled. Cravats and caps may be discarded. Apparently the men work in the ordinary breeches and long boots.

Ventilation and freedom from dust are matters to which attention is to be paid; the work is to be as much as possible in the open air.

¹ One hour is the period mentioned in our Manual.

Stress is laid on the value of music in physical training. Ten pages of the manual are occupied with suitable music, vocal and instrumental.

As regards medical supervision, it is mentioned that on the recruits joining their units a medical inspection is held, at which company, squadron, or battery commanders, with their junior officers, are present. The medical officer then issues his instructions regarding any men to be kept under special observation. A medical inspection is also made every year with the object of ascertaining the extent of progress in physical fitness. The results of this inspection are entered in the book in which the results of all medical inspections are recorded.

The manual contains a section dealing with elementary anatomy and physiology on much the same lines as the corresponding section in our own manual. The figures illustrating the letterpress are apparently copied from those in our book.

The illustrations showing the manner in which various exercises should be performed are reproductions of photographs.

The gymnastic course consists of:—

- (1) Free exercises and exercises with rifles or rods.
- (2) Exercises with apparatus.
- (3) Walking and running exercises.
- (4) Field gymnastics.
- (5) Group displays, sports and games, throwing spears and weights, &c.

The free exercises are either "simple" or "complex." The former are of much the same general nature as those laid down in our manual, though they differ from these in detail, and in some cases as regards obvious special intention. The "complex" exercises (which are practically combinations of simple exercises) are for later training, and are not taught until the soldier has fully mastered the simple exercises, as will be seen hereafter when the exercises contained in the successive tables are mentioned. The complex exercises are contrived specially for the cultivation of muscular control and co-ordination.

The exercises with rifles or rods are largely similar to, though more varied than, the old physical drill with arms which is now in disfavour with our authorities.

The apparatus of the gymnasium described in the manual consists of the spring-board, jumping standard, beam, inclined ladder, parallel bars, pommel horse, horizontal bar, mats, mattresses, leaping poles and rods. It is obvious that, in addition, poles and ropes for climbing are in use.

The spring-board is about 28 in. square: the raised edge is not more than $3\frac{1}{2}$ in. in height from the ground.

The jumping standard consists of two uprights with cross footpieces (peg-holes $1\frac{3}{4}$ in. apart) and a thin cord weighted at each end, with a central flag attached.

The beam rests either on two adjustable standards or on the wall and one trestle support: its length is not less than 9 ft. 4 in.

The ladder is inclined at an angle of about 25° from the vertical: the distance between rungs is $7\frac{7}{8}$ in., and the breadth of the ladder $24\frac{1}{2}$ in.

The parallel bars are adjustable as regards height. Much work is done on these.

The horse (on four legs) has two iron loop handles (pommel and cantle); these are removable so that the apparatus serves either as a pommel horse or plain horse. The wooden body is bound round with bass or seaweed and covered with leather or canvas. The handles are bound with yarn and leather. The length of the body is from $73\frac{1}{2}$ to $80\frac{1}{2}$ in., the variation being in what is termed the neck; the width diminishes from "croup" to "neck." The length of the legs may be adjusted.

The horizontal bar is of steel (which may be covered with veneer) of $1\frac{1}{2}$ in. diameter. The height is adjustable.

The leaping-pole is of strong wood, about 10 ft. 6 in. in length; the thickness is $1\frac{3}{4}$ in. at the lower end, nearly $\frac{1}{2}$ in. less at the upper end. The lower end is shod with iron and has a short spike.

The rod (for use instead of a rifle) is usually of iron, 42 in. in length and weighs from 4.5 to 6.3 lb. A wooden rod, weighted at the ends with lead, may be used.

Walking exercises are carried out either at the ordinary infantry quick step or at the "accelerated" pace (150 paces per minute). Running exercises are carried out at the double or at an accelerated pace.

The length of the running pace is from 35 in. to 42 in., according to stature and load carried; the number of paces per minute is from 160 to 175.

EXAMPLE OF TIME-TABLE FOR WALKING AND RUNNING.

Week	Walk	NUMBER OF MINUTES					Walk
		Run	Walk	Run	Walk	Run	
1st	Without equipment Two minutes' free walking to rouse breathing	1	3	1	3	1	Three minutes' free walking while breathing returns to normal
2nd		1	3	1	3	1	
3rd		2	3	1	3	1	
4th		2	3	2	3	1	
5th		2	3	2	3	2	
6th		3	3	2	3	2	
7th		3	3	3	3	2	
8th		3	3	3	3	3	
9th		4	3	3	3	3	
10th		4	3	4	3	3	
11th		4	3	4	3	4	
12th		4	3	4	3	4	
13th		1	3	1	3	1	
14th		2	3	1	3	1	
15th		2	3	2	3	1	
16th		2	3	2	3	1	

Men are trained to run individually at first, and later in squads; they begin their training without equipment or arms and wear the fatigue blouse: they are later trained to run under the full load of a soldier, first in complete uniform, then with rifles but without ammunition, then also carrying ammunition, and finally in full marching order.

At the ordinary double, rifles are carried at the slope, slung, or at the trail; at the accelerated running pace, at the trail or slope. Only the infantry undergo full gymnastic training in the art of getting over ground.

To commence with, men do not run for more than a minute, the periods of running being gradually lengthened by half minutes up to four minutes. Then they run in uniform without arms and on level ground, and later with arms, on uneven as well as on level ground. Then, when the men can do the four minutes' run with arms without any distress, the further training in running in marching order commences, first for one minute at a time, gradually increasing the period up to two minutes.

For the "accelerated" running exercises no normal standard is laid down; the individual is taught simply to develop his natural powers in this respect. It is recommended that men should (as part of their regulated training) run races against each other for distances up to 200 paces, beginning their training in this respect with sprints of not more than 50 paces, then running 100 to 150 and finally 200 paces. For accelerated running in marching order from 100 to 150 paces is a sufficient distance. Not more than ten men run in each race; they start at 2 paces interval. Exercises are practised "to re-establish breathing and circulation." In these exercises the men are taught to take slow, deep inspirations, the ribs being well raised without drawing in the stomach; inspiration is through the nose, expiration through the mouth. These breathing exercises, though described in the section (of the manual) dealing with training in running, are also practised in the middle and at the end of each lesson in gymnastics, also after any specially hard work.

There are three breathing exercises, one of which is to be practised during the lesson in running; in each exercise the arms are raised with a deep inspiration and lowered with expiration.

During marching (especially at the double) and at all physical exercise, men are taught to breathe through the nose deeply and at a not too frequent rate.

The general gymnastic course is arranged in twelve tables, of which the first six are for young soldiers, the next four for men of more service, and the last two for good gymnasts, for competitions, and as a model for formulating complicated exercises.

Instruction in Table I. is imparted to the young soldier for his first month; succeeding tables represent instruction in successive fortnights, so that the young soldier has been instructed in the first six tables by the time he is posted to the ranks for general duty after four months' preliminary training. With two months' preliminary training before

posting the young soldier should have gone through the first three tables.

Infantry, cavalry and artillery go through all twelve tables, comprising all exercises specially laid down for each arm.

Engineers and non-combatants need only do the first six tables, repeating these throughout their service.

Certain exercises with apparatus specially mentioned in the tables are not obligatory for all branches.

Combatant soldiers of infantry, cavalry and artillery units go through Tables VII to X in the second winter of their training (in the cavalry, soldiers of the "junior term of service" go through Tables VII and VIII before the autumn inspection).

In subsequent years of service the exercises of the previous year are repeated.

Table I.—Simple free exercises (Nos. 1 to 27) for neck, arms, trunk and legs. Parallel bars, pommel horse.

Table II.—Simple free exercises (Nos. 28 to 40). Parallel bars, pommel horse. High jump (standing jump from both feet, pace and jump).

Table III.—Simple free exercises (Nos. 41 to 50). Parallel bars, pommel horse, horizontal bar. High jump (with a run, off either foot and both feet).

Table IV.—Complex free exercises (Nos. 51 to 61). Parallel bars, pommel horse, horizontal bar. Long jump.

Table V.—Complex free exercises (Nos. 52 to 66) Rifle exercises. Parallel bars, horizontal bars, plain horse (infantry and engineers do not work with the last). High jumps with run (42 in.), long jump with run (70 in.), downward jump (56 in.).

Table VI.—Rifle exercises. Parallel bars; beam (not for cavalry); pole, rope and ladder climbing. High jump (45.5 in.), long jump (up to 9 ft. 4 in.) downward jump (7 ft. from sitting position, 4 ft. 10 in. from standing position).

Table VII.—Complex free exercises (Nos. 87 to 93). Rifle exercises. Parallel bars; pommel horse; plain horse (not for infantry); horizontal bar. High pole jump (4 ft.).

Table VIII.—Complex free exercises (Nos. 105 to 108). Rifle exercises. Parallel bars; pommel horse; plain horse (not for infantry); horizontal bar. Long pole jump.

Table IX.—Complex free exercises (Nos. 116 to 120). Rifle exercises. Parallel bars; pommel horse; plain horse (not for infantry); horizontal bar.

Table X.—Complex free exercises (Nos. 126 to 130). Rifle exercises. Parallel bars; pommel horse; plain horse (not for infantry); horizontal bar.

Table XI.—Complex free exercises (Nos. 136 to 139). Rifle exercises. Parallel bars, pommel horse, horizontal bar.

Table XII.—Complex free exercises (Nos. 149 to 152). Rifle exercises. Parallel bars, pommel horse, horizontal bar.

All exercises in Tables XI and XII are of a competitive nature.

The course of "field gymnastics" (obligatory only for infantry) presents several features of interest and may therefore be considered at length.

The section of the manual dealing with this subject is illustrated with diagrams showing plans and sections of obstacles. It contains full instructions as to how to construct the obstacles.

I.—GENERAL INSTRUCTIONS.

The aim of field gymnastics is to teach the soldier to overcome natural and artificial obstacles. These may be overcome in one of two ways, either by leaping or scrambling.

Leaping includes long jumping, high jumping, and downward jumping.

Scrambling includes getting up and down slopes, crawling and the surmounting of perpendicular obstacles (fences, walls) by using the hands and feet.

The special apparatus of field gymnastics includes :—

- (1) Ditches and trenches.
- (2) Fences (wooden).
- (3) Declivities and ascents (artificial mounds or banks and fortifications).
- (4) Earth and stone walls.

In addition, it is useful to learn to negotiate such obstacles as troops may on occasion encounter on the march, such as :—

- (1) Mountain streams (by jumping from rock to rock).
- (2) Marshy ground (by making use of small hillocks).
- (3) Barriers (posts and rails).
- (4) Breaks in bridges, or ditches, across which a beam has been thrown, &c.

For instruction in field gymnastics, in a place where the ground is cut up (where there are ditches, fences, hillocks and ravines) there may be no necessity to construct special artificial obstacles, but local conditions may necessitate the construction of all obstacles, or the natural obstacles existing in any place convenient for construction may be supplemented by artificial obstacles; or the necessary omission of certain obstacles may be compensated for by suitable instruction.

Artificial obstacles are made of a breadth not greater than $23\frac{1}{3}$ ft. This allows three men to take the obstacle at the same time. To send over at the same time a greater number militates against proper instruction being given to individuals (during preliminary instruction) at the various obstacles.

Distances between obstacles in the course more or less conform to

suitable lengths of preparatory run, varying between 7 ft. and 84 ft.; the total length of the course is from 350 to 400 paces.

The men, who have been previously trained in marching and running, are taught to gradually acquire proficiency in getting over the obstacle course. At first the course is taken at a walk or the slowest running pace which is suitable. In later training the course is run at speed, first by three men at a time, then by groups of a squad or more. Finally the men run the course at speed in marching order.

In group work the men are taught to avoid hindering each other, and on the contrary, to help each other as much as possible, without individual "showing off" or superfluous activity.

Twelve types of artificial obstacles are laid down by regulation. As a model arrangement, the obstacles are disposed in a course, from 350 to 400 paces in length, at such distances one from another that the men under instruction may be able to determine beforehand how best to take each succeeding obstacle according to their individual powers, and to develop or modify speed accordingly, with due regard to the conditions laid down as to the manner in which an obstacle is to be taken.

II.—CONSTRUCTION OF ARTIFICIAL OBSTACLES.

No. 1.—Ditches.

(a) *Ditch for Long Jump*.—This is of three widths; its depth is at the straight take-off side 2 ft. 4 in., and gradually diminishes to the landing side, where the slope of the cutting gradually merges with the ground level, and where at distances, from the take-off of about 8 ft. 2 in., 9 ft. 9 in., and 11 ft. 8 in. respectively, sand beds are laid down extending into the level ground. This obstacle is contrived for jumps of from 8 ft. 2 in. to 16 ft. 4 in. (to the farther limit of the sand at the broadest part of the ditch). Obstacles No. 1a and No. 3a, are intended to represent the elements of field fortification.

(b) *Zigzags*.—This obstacle consists of three parallel zigzag trenches, representing communication ways. The turf removed is stowed, with earth, on both sides of each trench, forming low embankments rather less than 9 in. high (as measured from the ground level). The width of a trench is about 47 in., and the interval between trenches $38\frac{1}{2}$ in. The length of the trenches measured in a straight line is $38\frac{1}{2}$ ft. There are two angular bends (to left and right) in each trench, so that the changes of direction in passing along the trench are, roughly, quarter left, quarter right, quarter left.

Men run along these trenches, crouching so that they cannot be seen from a flank.

(c) *For Crawling*.—This obstacle consists of three straight parallel trenches: depth about 30 in., length about $32\frac{3}{4}$ ft., width about 47 in., interval between trenches $38\frac{1}{2}$ in. Boards, on sleepers, are laid at the bottom of a ditch to prevent soiling of clothing.

No. 2.—Wooden Fence (wall).

This obstacle is constructed of upright beams and of planks laid edgewise one above another horizontally. The uprights are so arranged that the fence is divided into three sections, about 9 ft. 9 in., 8 ft. 2 in., and 7 ft. 5 in. high respectively. The uppermost planks may be taken off to lower the height of the obstacle during instruction.

The fence is surmounted with a jump and grasp of the hands, or climbed with the aid of one or two men.

No. 3.—Banks.

(a) "*Glacis*."—The height of this bank is about 5 ft. A steep face meets a face of easy slope forming an embankment about 12 ft. thick (as measured on the ground level), less than one-twelfth of the base lies under the steep face. Men jump or climb up the steep face and run or scramble down the other.

The bank is made of turf laid horizontally, except where the easy slope and flanks are faced. The steep face may be revetted with wattling, &c.

(b) *Bank for Running Up (or Crawling Up) and Jumping Down.*—This bank may be regarded as the "*glacis*" reversed. It is built in three contiguous sections, respectively about $8\frac{1}{2}$ ft., 7 ft., and 5 ft. high. The thickness at base is the same in all sections, about $19\frac{1}{2}$ ft.

Men run or crawl up the easy slope and jump down the steep face. In order to diminish jar on landing a small ditch is cut and filled in first with brushwood (or pine, or other twigs), then with a layer of turf and finally with sawdust.

No. 4.—Earth Rampart.

This is in reality a wall built of turf in three contiguous sections, respectively about $3\frac{1}{4}$ ft., 3 ft. and $2\frac{1}{2}$ ft. high, with a small ditch, nearly 20 in. in depth and width, on the far side. It is cleared with a running jump. The thickness of the wall is about $2\frac{1}{2}$ ft. at base and 2 ft. at top.

No. 5.—"Stones."

This obstacle represents stepping stones or rocks in a stream. Square ($19\frac{1}{4}$ in. \times $19\frac{1}{4}$ in.) pieces of plank, $1\frac{1}{2}$ in. thick, fastened on sleepers, are commonly used in lieu of stones. To obviate slipping the upper surface of the square board may be covered with pitched roofing material, or coated with pitchy or resinous composition, and be grooved crosswise. The "*stones*" may be made of cemented brickwork.

In each of three series (nearly 33 ft. long) are seven of these "*stones*"; their arrangement and the distances between them may be varied, provided that the stones of a series are not arranged in a straight line or at

equal distances. This obstacle serves to train men to vary the direction of movement at a rapid pace and to apply variety of method in jumping, using double leaps twice in succession off the same foot, or (ordinarily) passing along taking off from the left and right foot alternately.

In the explanatory figure (plan) the changes of direction in one series are shown as being, in succession, half-left, straight on, half-right, half-left, straight on, half-right.

No. 6.—“Marsh Hillocks.”

These are made of large sods of turf and are rectangular mounds about 23 in. high, 19 in. broad and 16 in. high. To avoid injury to the feet, only the lowest stratum of turf is staked down. The obstacle consists of three series of hillocks in parallel straight lines; in each series are three hillocks; the top of the first is sloped backwards. The hillocks of a series are 6 ft. 5 in. apart, and at the same distance beyond the last is a sand bed also 6 ft. 5 in. across. The men leap from hillock to hillock and into the sand, going “free.”

No. 7.—Bar or Barrier.

This is an obstacle of the nature of posts and rails, simply “posts and rail” in two-thirds of its breadth, but having a second and higher rail in the remaining portion. The long or lower rail runs the whole breadth, 49 in. above the ground; the short or upper rail extending over one-third of the length of the lower rail is 7 ft. 10½ in. above the ground. There are two long and two short uprights or posts.

This obstacle is surmounted by vaulting or by grasping the top bar with one hand or both hands and leaping through between the upper and lower bar.

No. 8.—Horizontal Planks.

This obstacle is for practice in balancing, and consists of three parallel horizontal planks. Each is a kind of bridge formed of a plank about 3½ in. thick (and apparently from 7 to 9 in. wide), laid flat on and fastened at the edges to five uprights. The length of the plank is a little over 29 ft., it is 2½ ft. above the ground. As an aid to mounting the plank, a step of turf about 16 in. high is placed at the near end of the plank.

Men pass along these bridges going “free” with knees bent.

No. 9.—Field Fortifications.

A fortification is constructed according to existing instructions, and the rushing of this with a cheer constitutes the finish of the obstacle course.

MODEL FOR ARRANGEMENT OF OBSTACLES IN A COURSE.

Wooden fence (No. 2).	" Glacis " (No. 3a).
" Stones " (No. 5).	Trenches (for crawling) (No. 1c).
" Zigzags " (No. 1b).	Bank for running (or crawling) up and jumping down (No. 3b).
Earth wall (No. 4).	" Marsh hillocks " (No. 6).
Horizontal planks (No. 8).	" Barrier " (No. 7).
Ditch (for long jump) (No. 1a).	Field fortification (No. 9).

Distance between Nos. 2 and 5	...	...	49 ft.
" " " 5 " 1b	...	...	7 "
" " " 1b " 4	...	...	47 "
" " " 4 " 8	...	...	33 "
" " " 8 " 1a	...	...	49 "
" " " 1a " 3a	...	...	51 "
" " " 3a " 1c	...	...	26 "
" " " 1c " 3b	...	...	33 "
" " " 3b " 6	...	...	33 "
" " " 6 " 7	...	...	49 "
" " " 7 " 9	...	...	84 "

The display performances consist of "groups" without apparatus (there are two kinds of groups), and of "pyramids" with parallel bars and with vaulting horse.

A list of games and sports recommended is given. Among the former is included football, among the latter are walking on stilts and snowshoes, racing on the flat and over obstacles, three-legged and hobble races. The method of conducting the tug-of-war is described, as is also a game, in which the sides compete in a kind of relay race, and the sports of spear throwing, putting and throwing the shot and throwing the hammer.

The spear is about 11 ft. 8 in. long and weighs from 2·8 lb. to 4·5 lb. ; the shaft is of cane (or light wood), the thick end bearing a pointed head of metal.

The ordinary shot weighs from 9 lb. to 13·5 lb. It is put with a run up of three paces ; a put of from 21 ft. to 24½ ft. is expected. For practice in hand grenade throwing from a stand and height (as out of fortifications, buildings, &c.), a shot weighing from 4½ lb. to 9 lb. is used ; this is thrown without a run by either a shoulder or a back throw.

The hammer shaft is about 21 in. long, the hammer head weighs from 1·8 lb. to 2·7 lb. The hammer is thrown with a one-hand grasp, with a shoulder or a back throw, and with or without a run. Satisfactory throws are 105 ft. with a run, or 35 ft. from a lying position. Throwing the hammer is intended as practice for work with hand grenades, and stress is laid on the necessity for throwing correctly, so that the hammer falls with the handle vertical, because it is only by this kind of throw that the charge of the grenade is exploded.

A general perusal of this book inclines one to the opinion that the Russian system of physical training is very thorough, moreover that, though every precaution is ordered to be taken to bring the men on gradually, it is on the whole more severe than our own, especially in the exercises with apparatus. One would suppose that the Russian authorities were not as convinced as our own as to the efficiency of free exercises. What is specially admirable in the Russian system is the variety of the free exercises as tending to diminish boredom in the men under instruction, and the large number of "practical" exercises which link physical training with more special forms of military training. A system of physical training in which these points are emphasized is, however, likely to prove complicated in practice.

But in comparing the Russian system with our own we should remember that the Russian authorities are not legislating for the immature lad, that the regiments practically receive all their recruits on a settled date in each year (there is nothing in Russia corresponding to our depots) and that the large majority of these recruits are of a hardy "backwoods" type. Under these conditions it should be possible to train hard and get good results.

Lectures.

THE SANITARY ORGANIZATION OF THE IMPERIAL AND INDIAN ARMIES, WITH SANITARY LESSONS FROM AN ORIENTAL CAMPAIGN.¹

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"It is disease, not the field of action, which digs the graves of armies."—*McCulloch's Malaria, dated 1827.*

FREDERICK THE GREAT once said that "God fought on the side of the strongest battalions," and it has also been asserted that "it is disease and not the field of action which digs the graves of armies." The keeping of his battalions as strong as possible must ever be an all-important question for the Commander in the field, and, as it can be shown by military history, it is microbes more than bullets that the soldier has to dread. The study of the means of preventing disease in war—i.e., sanitary organization is, therefore, a matter of more than passing interest to every one interested in the welfare of armies.

¹ A lecture delivered to the officers and non-commissioned officers of the First Division of the Indian Army. (Received for publication on May 30, 1911.—ED.)