Signal Communication Equipment and Methods within the Infantry of Foreign Armies (exclusive of tanks)

Andrew J. Adams, 1st Lieutenant, Infantry

TABLE OF COMMENTS

BIBLIOGRAPHY

Abbreviations	Text
Infantry	"Infantry in Battle" by Colonel George C. Marshall. Publisher: The Infantry Journal Inc. Washington, D. C., 1934. This volume treats of the tactics of small units as illustrated by examples from the World War.
Troop	Military Attache Report No. 7765. Author: 1st Lt. Joe R. Sherr, Tokyo, 9 May 1935. Troop attachment report.
Attachment	Military Attache Report No. 9210. Author: Captain Merritt B. Booth, Tokyo, 27 January 1938. Troop attachment report. (Library Classification: UB 261 .J2)
No. 7344	Military Attache Report No. 7344. Author: Captain Moses W. Pettigrew, Tokyo, 8 June 1934. Subject of report, Infantry-Artillery Cooperation.
Sodur	Military Attache Report No. 9350. Riga, Latvia. A translation of an article in the 7 October 1935 issue of the Estonian military journal, "Sodur". It was based upon a Russian official publication, "The Signal Service" by F. Adamon S. Krasnoshchekov and V. Ryabov and it is used in the Red Army Schools.
Diagram	Pencil Diagram from G-2 Section, General Staff, Washington. Source as noted on Diagram, General Staff Handbook, 1937.
No. 23,803-W	Military Attache Report No. 23,803-W. Author: Lt. Colonel Sumner Waite, Paris, 20 October 1937. Subject of the report, Armament and Equipment--Organizational. Radio Communication
Report	Report on French Tactical Doctrine, Organization and Material. This report is based on observations made while at the Ecole Superieure de Guerre (1935-1937) by Major Ralph C. Smith, Infantry, 10 August 1937.
No. 30,803	Military Attache Report No. 30,803. Author: Major P. S. Evans, Rome, 30 June 1931. Subject of report, Italian Army Signal Communication.

I. INFANTRY COMMUNICATIONS

1. INTRODUCTION.--It is a well known fact that adequate and continuous communications are indispensable to the successful military leader. It has been said that "so long as anyone, including the commander, can walk, crawl or roll an infantry unit is not out of communica-

BIBLIOGRAPHY

Abbreviations	Text
No. 11,435	Military Attache Report No. 11,435. Author: Major W. T. Shipp, Rome, 9 April 1929. Subject of report, the Organization, Armament and Equipment of the Infantry. (War)
No. 16,316	Military Attache Report No. 16316. Author: Colonel G. H. Paine, Rome, 17 November 1937. Subject of report, Armament and Equipment--Organizational. Standard. Signal Lamps--Italian Engineer Equipment.
No. 15,964	Military Attache Report No. 15,964. Author: Major Norman T. Tiske, Rome, 22 April 1937. Subject of report, Armament and Equipment, Army--Organizational. Standard Engineer Equipment.
No. 14,822	Military Attache Report No. 14,822. Author: Captain T. N. Hartness, Berlin, 17 August 1936. Subject of report, The German Infantry Regiment. (Library Classification: UB 261 G 3)
No. 14,476	Military Attache Report No. 14,476. Author: Captain James C. Crokett, Berlin, 22 January 1936. Subject of report, Short Wave Radio Telephone.
No. 14,771	Military Attache Report No. 14,771. Author: Captain James C. Crokett, Berlin, 3 July 1936. Subject of report, The German Infantry Battalion.
Signal	"Signal Training (All Arms)." Publisher: His Majesty's Stationery Office, London, 1932. An official training publication of the British Army published by command of the Army Council, 31 December 1932.

set quickly and easily they were careless in the treatment of such equipment. On several different occasions it was noted that, in field use of the set, batteries were connected incorrectly, the antenna was attached to live wet trees without any form of insulation. Japanese officers and non-commissioned officers were usually standing about but made no attempt to correct the men for the errors noted above.

The Japanese soldier, coming as he does from different parts of a country whose many different dialects make it difficult for soldiers to understand each other in ordinary conversation, cannot efficiently operate a telephone or switchboard. It is therefore easily understood why the Japanese stress line and wireless telegraph and why, except in air-ground communication, the radio telephone is not used. (2)

The issue of signal equipment to organizations is extremely limited and in general the equipment in the hands of troops is of World War vintage. In general, only pilot models of the latest equipment are constructed. These models are used at the Communication School for experimentation and instruction. The students at the Communication School are made familiar with the equipment and they in turn pass on the information when they return to their organizations. (3)

3. RADIO AND TELEPHONE.--In 1935 the lowest tactical radio net was the army net which communicated directly with each infantry division, the cavalry division and the airplanes in the net. There were two types of nets, directed and free, exactly like our own nets. The radio set used was mounted on a truck, battery operated and had

(2) Troop, pp. 5, 8, 9.
(3) Troop, pp. 9, 17.

a wave length of from 200 to 1000 meters.

In 1935 the Japanese Communication School was experimenting with a new type light weight short wave radio set for universal use. One man was supposed to be able to carry the entire set except for the storage batteries. It is not known whether or not this set proved satisfactory. (4)

The telegraph equipment is the standard Morse unit, except that a reversible key and an ordinary sounder is used.

The telephone is an excellent instrument, well built, compact and convenient. There are two types, one with a bell, the other with a buzzer; otherwise they are alike. Electrically, the bell type is very similar to our EE4 telephone. The transmitter has a scoop type mouth piece which folds back for carrying purposes; when in use it is almost impossible not to speak directly into the transmitter. This is necessary in order to overcome the language handicap. The telephone fits into a carrying case which is worn permanently by the operator. The actual telephone box fits into the case and is easily removed for use. (5)

Most telephone lines are laid directly between the using parties, however, there are two types of switchboards available, one a 40 drop board for general headquarters use and one a 12 drop board intended for use in the army forward switching central. It is planned to have girls operate the 40 line boards in time of war as well as in time of peace. (6)

Wire is laid from a two man reel carried on the shoulders on a ladder like apparatus having a simple hand

---

(4) Troop, p. 24.
(5) Troop, pp. 16, 18.
(6) Troop, pp. 18, 19.

[illegible] [illegible] attachment for recovering wire. It is carried along like a sedan chair. The wire is pulled in by hand and rewound on the reel. (7)

The repeating coil is very similar to that used in the United States Army, however, it is not believed that lines are ordinarily simplexed. (8)

4. <u>ORGANIZATION AND METHODS</u>.--In peace time infantry regiments there is no communication platoon organized as such. For certain periods of training a communication platoon is organized. The personnel is made up of men normally on duty as clerks and orderlies and men detailed on special duty from the regular companies. The platoon is commanded by the assistant regimental adjutant and consists of six squads of eight men each. These squads are wire squads, each carrying two telephones and accessory equipment. One squad constitutes a panel squad, the other two squads are believed to be radio and pigeon squads, but they were not observed functioning as such. When not undergoing training the platoon is disbanded and its equipment stored with that of the regimental gun company. (9)

In war time organizations the Division Communication Platoon supplies each infantry brigade with a communication platoon. This platoon has radio, wire, panel, dog, pigeon and runner sections and it also has personnel trained to handle hand flag signals, the heliograph and the blinker lights. This platoon, using such agencies as the situation requires, keeps contact with the higher headquarters, the headquarters of infantry regiments, the attached artillery, cavalry, tanks, engineers et cetera. (10)

---

(7) Troop, p. 20
(8) Troop, p. 27
(9) Attachment, p. 8
(10) Attachment, p. 58

The infantry regiment has a communication platoon consisting of a runner section, a wire section with six telephones and a panel section. On special occasions part of the brigade signal section is attached to the regimental communication platoon. This is particularly true of the radio section. (11) The communication personnel of all echelons from the company on up are equipped with small reading lamps which are attached to headbands. The batteries for these lamps are connected by long leads and are carried in the pocket. (12)

Artillery maintains contact with the infantry by wire, semaphone, pyrotechnic signal, runner and dogs. (13)

Infantry battalions maintain contact by means of a runner command system, an example of which follows. This example could apply equally well to a regimental, battalion or company commander. The commander after properly making an estimate of the situation and then a decision will suddenly call out loudly, "I will give an order," whereupon specially trained men, called communication men, from subordinate units, promptly gather around the commander. The order is given and each communication man takes down such portions of the order as apply to his organization. After receiving the order the communication man reads the order back to the command sergeant of the headquarters giving the order. If the communication man is free to select his own method of transmitting the order to his immediate commander. In the case of basic orders, the man usually goes personally to his commander to transmit the order. In this event he

---

(11) Attachment, pp. 29, 30
(12) Attachment, p. 30
(13) No. 7344, p. 3

leaves a substitute to act for him at the higher headquarters during his absence. Short messages may be sent by runner or the communication man may personally contact his commander by telephone and transmit the message. (14)

The Japanese system is for open and mobile warfare and is highly efficient under those circumstances. It is not designed for heavy communication loads. It will carry the tactical load but it will not carry a great deal more. (15)

III. RUSSIA

5. PRINCIPLES.--The mission of the signal service is based on the tactical principles of the Red Army. As long as command is exercised through signal communication, it must function accurately and continually and it must be flexible.

Signal communication in the Red Army is organized along the following lines:

a. Communication with subordinates is established by the commander from top to bottom; communication in depth enables the commander to receive information from the front and to issue orders to subordinates.

b. Communication with neighboring units is established from right to left.

c. Communication between special arms and infantry is established by the special arms. An exception is that liaison with tank units attached to a major unit is established by the major unit on order of its commander. (16)

6. BASIC ELEMENTS.--The basic elements of signal communication in the Red Army are as follows:

---

(14) Attachment, pp. 48, 49.
(15) Attachment, p. 49.
(16) Sodur, p. 2.

a. Axis of signal communication

Along the axis of signal communication there is communication by several means in the direction of the movement of the command post of the senior commander.

b. Signal direction

Communication established by several means in the direction of movement of the command post of the junior commander is called "signal direction." Occasionally over certain terrain the signal direction of some units may coincide with the axis of signal communication of the higher unit.

c. Loops

Loops are lines carried by signal direction (subordinate) commanders from signal directions, i.e., axis of subordinate units, to the signal axis in the area of the command post of the senior commander.

d. Command posts

Command posts are the localities from which the commander exercises command. A command post consists of an operation group (staff), a signal group (the central station of the telegraph and telephone), radio station, pigeon station, an information center (message center), an observation post of the commander and the rear service groups (supply and administration). (17)

7. DEFENSIVE COMBAT.--In the defense, as in other forms of combat, the Russians take into account the modern development of technique. It is therefore required that wire communication from the depth (rear) be established in plenty of time to the command posts of reserves in the several directions. Wire lines and communication centers should be camouflaged and so located as to be out of range of hostile tank and artillery fire and chemical bombs.

In order to prevent listening to telephone conversations all wire lines in a regimental sector (depth up to 2200 yards) are metallic circuits and cryptography is

(17) Sodur, pp. 2, 3.

used. (18)

The telephone being the principal means of communication is divided before the beginning of the combat into two parts, namely, interior communication, i.e., communication between elements of the command post proper, and combat communication, i.e., communication between the subordinate and neighboring units.

In the interior communication system the central station has two switchboards, one for twelve lines, the other for six lines. Telephone communication is established with the following elements: 1. The main observation post of the regimental commander, 2. the regimental auxiliary observation post, 3. the message center, 4. the radio station, 5. the combat staff and 6. the administrative staff. (19)

In the combat communication system wire lines are run from the command post of the regimental commander to the command posts of the battalion commander, to the neighboring regiment on the left and to various rear service units. Telephone lines from the regimental command post to the battalion command post are habitually laid through the battalion reserve. This enables the regiment and battalion to have continuous telephone service even though the battalion is driven from its main defensive position. In this connection it should likewise be noted that wire from a division command post is laid through the command post of the regimental reserve. (20)

In the battalion, liaison is maintained with the advance guard on the service of security by telephone, dismounted messengers, visual signalling and messenger

(18) Sodur, p. 3
(19) Sodur, p. 3
(20) Sodur, p. 3

dogs. Liaison with company commanders, neighboring observation posts, the ammunition dump and the first aid station is maintained by means of messengers and messenger dogs. Liaison with the command post of the artillery commander supporting the battalion (if it is located separately) is maintained by means of telephone, radio and visual signalling. Liaison is maintained with the command post of the regiment by means of telephone, radio, mounted messengers, cyclists and visual signalling. (21)

8. OFFENSIVE COMBAT.--In the offense, interior communication between command posts is the same as that outlined for the defensive combat.

Combat communication, on the other hand, is based on the axis of signal communication. If a regiment is attacking in the first echelon of a division, the regimental command post, during the time the regiment occupies the line of departure, is located in the direction of the main effort at a distance of about 1600 to 2200 yards from the nearest line of resistance. In the event of success the command post advances only after capture of the nearest objective of the battalion. In other words it advances only an average distance of 2600 to 3300 yards. Afterwards the command post advances by bounds of about 3300 yards in the direction of the main effort. Special attention is paid to the establishment of signal communication in the direction of the main effort where the command post of the regiment is advancing by bounds. In this direction the signal officer should establish wire communication by at least two telephone lines, one of which leads to the battalion or battalions operating there and the other to the next command post of the regimental commander. It is further recommended that if there

(21) Sodur, p. 3.

is enough wire, a special "combat line" be laid in the direction of the movement of the command post. In the same direction a telephone line is also laid from the command post of the division commander to the next command post of the regimental commander.

While on the line of departure, an attacking regiment maintains communication by means of telephone, mounted messengers and cyclists; during combat it maintains communication by means of radio, telephone, messengers and visual signalling. (22)

In the battalion the principal means of signal communication on the line of departure is by messenger and the telephone, which connects with company commanders and neighboring units. Telephone communication through the battalion switchboard is established with the ammunition dump, first aid station, battalion observation post and supporting artillery observation post. During an attack and in the depth of the hostile position, communication is established by means of radio, telephone, visual signals, messenger dogs and messenger.

As a rule liaison is established in each direction by at least two means of communication. In the regiments, particular attention is paid to communication in the direction of the advance of the main effort. (23)

IV. FRANCE

9. ORGANIZATION AND EQUIPMENT, REGIMENTAL COMMUNICATION PLATOON.--The communication platoon of the French infantry regiment consists of one officer, one warrant officer and fifty-five enlisted men. The platoon is

(22) Soour, p. 4
(23) Soour, p. 5

organized as follows:

a. Command echelon

1. Personnel: 1 lieutenant
1 warrant officer

b. Telephone section

1. Personnel: 1 sergeant
4 corporals
20 privates

2. Equipment: 17 miles wire
7 switchboards (4 drop)
11 telephones
4 Fuller phones (telegraph)

c. Radio section

1. Personnel: 1 sergeant
2 corporals
12 privates

2. Equipment: 3 radios, ER17
1 radio, R11
1 radio, ER12

d. Signal and pigeon section

1. Personnel: 1 sergeant
1 corporal
6 privates

2. Equipment: 4 signal lamp sets
mobile pigeon loft
as supplied

e. Messenger section

1. Personnel: 4 motorcyclists
2 cyclists

2. Equipment: 4 motorcycles
2 bicycles (24)

10. ORGANIZATION AND EQUIPMENT, BATTALION COMMUNICATION SECTION.--The communication section of the French infantry battalion consists of one warrant officer and twenty-nine enlisted men. The section is organized as follows:

a. Command echelon

1. Personnel: 1 warrant officer

b. Telephone section

(24) Diagram, p. 1.

b. Personnel: 1 corporal
5 privates

2. Equipment: 1½ miles wire
1 switchboard (4 drop)
2 telephones

c. Radio section

1. Personnel: 1 corporal
12 privates

2. Equipment: 1 radio, ER17
1 radio, R11
2 radio telephones, ER40

d. Signal and pigeon section

1. Personnel: 4 privates

2. Equipment: 1 signal lamp set
pigeons as issued

e. Messenger section

1. Personnel: 1 motorcyclist
7 cyclists
4 runners

2. Equipment: 1 motorcycle
7 bicycles (25)

11. GENERAL.--The regimental weapons company, the battalion weapons company and the rifle company each have a sergeant as chief of signal service. The rifle and battalion weapons company each have one cyclist and five runners and no other organic signal equipment. The regimental weapons company has one motorcyclist, one cyclist and four runners and no other organic signal equipment. (26)

The ER12 radio set works in the division net and has a range of nine to twelve miles. The ER17 radio set works in the regimental net and has a range of approximately six miles. The ER40 radio telephone is used between battalion and company with only two sets in a net. It ordinarily has a range of approximately 1100 yards, however, it has operated satisfactorily up to 5000 yards. It has a wave length of from 5.30 to 6.30 meters and it

(25) Diagram, p. 1
(26) Diagram, p. 1

is very difficult for goniometric stations to pick up. It has three tubes, weighs approximately twenty-four pounds and can be broken down into two loads of twelve pounds each for carrying purposes.

Although messages sent by this radio may be picked up, the French believe that the information will be useless to the enemy by the time he is able to understand the messages intercepted.

The R11 is a receiver only and has a range of approximately thirty miles. It is used to receive messages from airplanes. (27) (28)

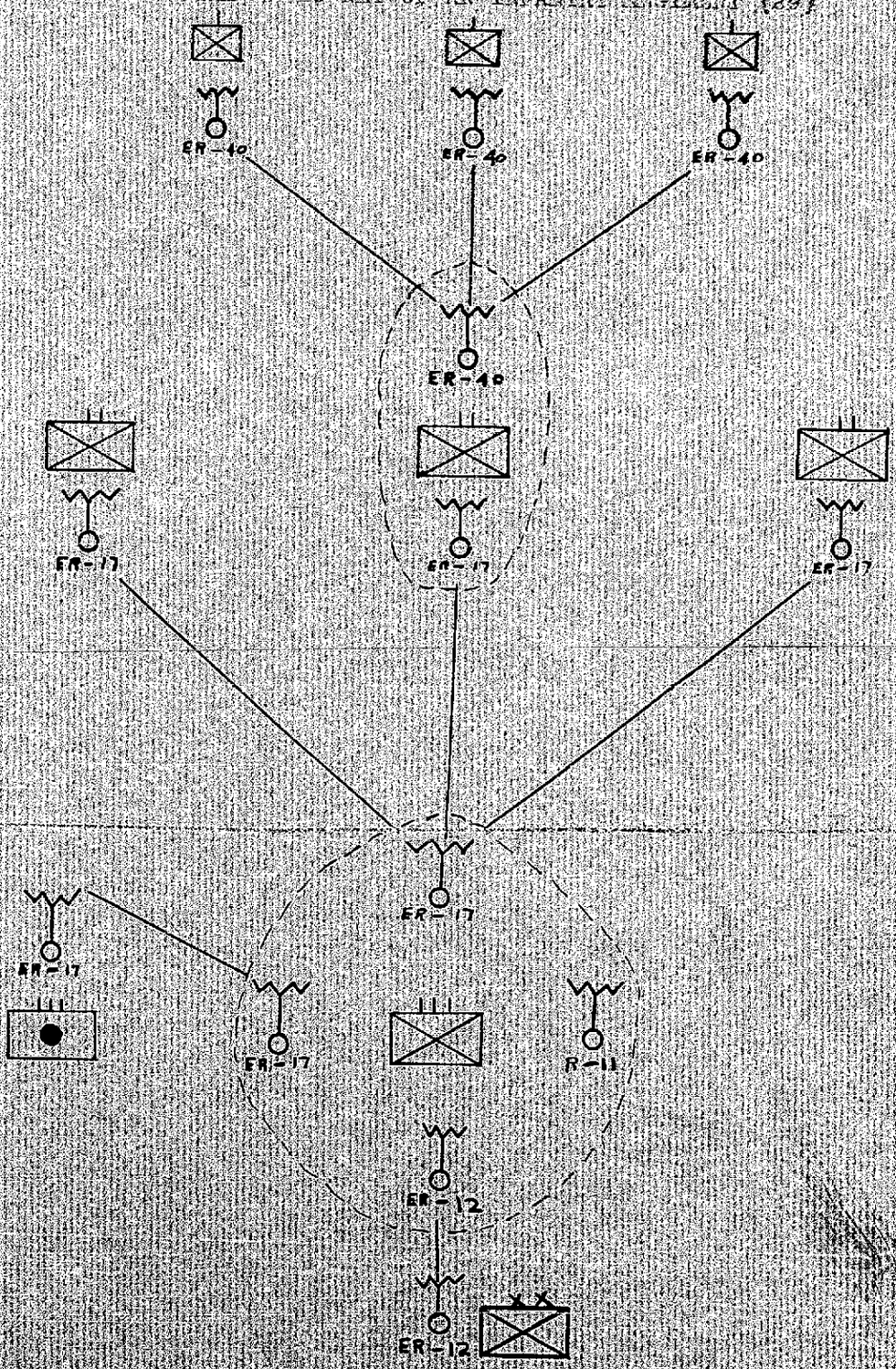
12. SCHEMATIC DIAGRAM OF THE RADIO NET OF AN INFANTRY REGIMENT.--On the following page is shown a schematic diagram of the radio communication within a French infantry regiment.

(27) No. 23,803, Incl. No. 1
(28) Report, pp. 13, 14

A SCHEMATIC DIAGRAM

OF

THE RADIO NET OF AN INFANTRY REGIMENT (29)



(29) No. 138,908-W, Incl. No. 1

V. ITALY

13. GENERAL.--In Italy as in some other European countries the signal corps is not a separate branch of the army but is a part of the Engineer Corps. The signalling engineers furnish communication down to and partly including the infantry regiment. At the infantry regimental headquarters the engineer signal detachment and the infantry communication detachment form a composite section; the detachments work to the rear and to the front respectively.

Forward of the regiment, communication is chiefly by telephone, visual signalling and runners. On certain occasions a radio detachment is attached. It is planned to furnish infantry regiments and battalions with small radio sets to be operated by the infantry. It is not known whether or not these sets have been issued at the present time. (30)

14. ORGANIZATION AND EQUIPMENT OF INFANTRY UNITS.--The organization and equipment of communication units within the infantry brigade, regiment and battalion are as shown on the following chart. (31)

PERSONNEL	UNITS		
	BRIGADE	Regt.	Bn.
Communication officers	1	1	
Telephone men		19	13
Line men		4	3
Signal men	4	17	13
Panel men	2	2	2
Pioneers	2	2	2
Messengers	16	16	7
Cyclists	6	7	3
TOTAL	31	68	43

(30) No. 30,803, p. 3
(31) No. 12,435, pp. 2-5

EQUIPMENT	UNIT		
	Brigade	Regt.	Bn.
Telephone switchboards		1	
Telephones		8	6
Signal lamps	2	6	2
Signal flags	2	2	4
Air communication sets	1	1	1
Mobile pigeon loft	2	2	2

Infantry telephone stations have one kilometer (1100 yards) of wire each. It is presumed that this means one kilometer of wire per telephone. (32)

In addition to the radio set already mentioned for possible use within the infantry, the Italians have a radio set known as the RF3A built especially for and issued to Alpine divisions. The set is carried on pack animals. It has a key range of fifty to sixty miles and a voice range of approximately thirty miles in mountainous country. (33)

Photo telegraph and photo telephone sets have been developed to supplement the radio. They work on the principle of sending and receiving by means of light rays and infra-red rays. Unless the enemy is in the direct path of the beam with the proper equipment the message cannot be intercepted. By means of a relay device a hook-up between the photo telephone and the ordinary telephone system can be made. It is not known if these instruments are issued to infantry organizations. (34)

The signal lamp issued for use in the infantry is a 45 mm. type using two dry cell batteries. It has a daytime range of about 2200 yards and a nighttime range of about 11,000 yards. It weighs approximately twenty-

(32) No. 11,445 pp. 5, 6
(33) No. 15,964 p. 6
(34) No. 15,964 p. 3

two pounds and is operated by one man. (35)

15. TRAINING.--Regular army non-commissioned officers of the telegraph and radio companies of the engineer regiments and of the communication platoons of line regiments receive special training in the corps area communication schools. Upon completion of the school they are used as instructors in their own units.

The pre-military training in Italy includes training for certain selected youths in Morse code, telegraph and radio. Upon completion of this training the young men receive certificates of proficiency. When drafted into the army they are assigned to communication units as required. (36)

VI. ENGLAND

16. EQUIPMENT.--The British Army has signal communication equipment very much similar to that in the United States Army. It is not known just what equipment is issued to the infantry. Assuming that the equipment is issued on a basis similar to that in the United States Infantry we would find the following types of equipment in an infantry organization:

a. Flags for semaphore Morse signaling

b. Lamps for both short and long range

c. Switchboards (7 and 10 drop instruments)

d. Telephones (instruments similar to our EE4)

e. Wire (one type having a talking range up to 4 miles and another having a talking range up to 5 miles. It is stranded and insulated in a manner similar to that of the W-110)

f. Wire laying equipment similar to that in the United States Army

(35) No. 16,315, p. 3

(36) No. 16,315, pp. 3, 4

g. Radios (similar to those in use in the United States Army) (37)

17. ORGANIZATION AND METHOD.--An extract from a recent British training manual states that in the infantry, "for purposes of command and in order to exercise control over an inter-communication system, it is necessary to have a simple organization for signallers and orderlies."

"As the detailed tasks and distribution of personnel are bound to vary according to the tactical situation it is not advisable to adopt any rigid detailed organization into numerous sub-sections, as this is almost certain to break down when applied in practice." "The signallers and orderlies will be detailed to their work as or when the signal plan is made; there should be no permanent distribution to sub-units, since such a plan is wasteful except during continuous operations." "Companies provide their own internal means of inter-communication by the use of orderlies and semaphore." (38)

In an assumed tactical situation, where a battalion is taking part in an attack on a wide front, the British training manual offers, " a suggested distribution and organization of the battalion signallers and orderlies which might be adopted" if the required personnel is available. (39) The suggested organization consists of four different parties or groups as shown below.--

a. At battalion headquarters

1. Group "A" (active personnel in the command post)

1 sergeant
1 clerk
1 check

(37) Signal, pp. 21, 43, 81, 90, 96, 97.
(38) Signal, pp. 246, 247.
(39) Signal, p. 248.

3 signallers (2 of which are earmarked to work to Company "C", the reserve company)

5 orderlies

2. Group "B" (forward echelon ready for forward displacement of command post)

1 corporal
1 clerk
1 check
6 signallers
4 orderlies

3. Group "C" (reserve)

3 signallers

4. Radio detachment from brigade

5. Signal transportation

b. Not at battalion headquarters

1. Group "D" is distributed as follows:

4 signallers to Company "B"
2 signallers to Company "A"
2 signallers to machine gun platoon
2 signallers to Company "C" (40)

The specific duties of the personnel listed above are not known. Other assumed tactical situations are given for which signal communication organizations are suggested. Generally it is assumed that one officer and forty-two enlisted men are sufficient for the purpose of signal communication within the infantry battalion. (41)

VII. GERMANY

18. REGIMENTAL ORGANIZATION.--The combat staff of the German infantry regiment consists of the regimental commander, the adjutant who is a combined S-1 and S-3, the ordanz officer who among other things is the intelligence officer, and the signal officer. The necessary signal personnel, clerks and chauffeurs are also present. (42)

---

(40) Signal, p. 250
(41) Signal, pp. 252; 256; 258
(42) No. 14,822, p. 5

The signal platoon of the German infantry regiment consists of one officer and forty-two enlisted men. The platoon is organized as follows:

1 platoon leader, regimental signal officer

1 horse holder

1 platoon sergeant

8 men, two light wire teams of one leader and three men each

10 men, two light telephone teams of one leader and four men each

2 men, messenger dog section (recently eliminated)

5 men, one leader and two signal teams of two men each (recently eliminated)

10 men, two radio telephone teams of one leader and four men each

1 non-commissioned officer, supply sergeant and repairman

4 men, wagon drivers (43)

19. REGIMENTAL EQUIPMENT.--The signal platoon is equipped with the following transportation:

12 horses: 1 for platoon leader
1 for orderly
8 for signal wagons
2 for kitchen

5 wagons: 2 for telephone equipment
1 for radio telephone equipment
1 for signal lamp, switchboards and extra wire
1 for field kitchen, rations for headquarters and staff

2 carts: Both are rubber tired, hand drawn, wire laying devices very similar to our RL16

8 bicycles: 1 for platoon sergeant
1 for supply sergeant
6 for messengers

It is believed that at the present time most infantry regiments have been motorized and that the signal platoon is equipped with trucks and motor cars. Definite information to that effect is not available. (44)

(43) No. 14,822, p. 6
(44) No. 14,822, pp. 9, 10, 11

The light wire team consisting of one leader and three men is equipped as follows:

3 spools light wire, each spool carrying 550 yards, a total of 2½ miles per team

2 grounds for single wire lines, i.e., for ground return circuits

3 earphones for telephones, enabling two people to listen to telephone conversations at one time

2 pair leather gloves

1 small hand crank on which a spool of wire may be placed either for laying or for recovery

In addition to the above named equipment the team carries such incidental tools as cutters, tape, climbers et cetera. (45)

Each light telephone team consisting of one leader and four men carries the following equipment:

1 switchboard, 10 drop

5 field telephones

2 grounds for ground return circuits

2 pair leather gloves

1 lever winding mechanism upon which a roll of heavy wire is carried. It is carried on the shoulders by means of straps and is used to lay and recover wire

1 small hand crank apparatus for laying and recovering light wire

8 spools of light wire, each spool carrying 550 yards, a total of 2½ miles

7 spools of heavy wire with 1100 yards on each spool, a total of 4.4 miles

In addition to the above such incidental tools as wire cutters, poles, climbers, tape et cetera are carried by the light telephone squad. (46)

The radio telephone team consisting of one leader

(45) No. 14,822, pp. 11, 12, 13
(46) No. 14,822, pp. 11, 14, 15

and four men has the following equipment:

2 radio telephones calibrated to the same wave length

2 headsets for each radio enabling two persons to hear the radio message at the same time (47)

The radio telephone is carried on the back of a man as a pack. It is a short wave crystal set operating on an eight to nine meter wave length. The antenna is of the fish pole variety and is attached to the top of the set by means of a universal joint which permits the pole to stand or to be laid in any direction. It has been reported that by using two short low wire antennae the set can be adjusted and screened so as to send and receive in only one direction. The set has an operating radius of about three miles. The pack consists of two separate boxes joined together and it may be carried on the back in a manner similar to that of our SCR195. The total weight of the pack set is forty-one pounds. (48)

20. BATTALION ORGANIZATION AND EQUIPMENT.--The battalion signal platoon consists of one officer and thirty-two enlisted men organized as follows:

1 officer, platoon commander (mounted on a horse)

1 sergeant, 2d. in command (mounted on a bicycle)

2 men, signal messengers (1 mounted on a bicycle)

12 men, 4 telephone teams of 3 men each

6 men, 2 pack telephone teams of 3 men each

8 men, 2 radio telephone teams

2 men, drivers, 1 for signal caisson, 1 for wagon

1 man, driver for signal wagon

The battalion signal platoon is equipped with 1.8 miles of heavy telephone wire, 9.6 miles of field wire, one switchboard, ten field telephones and two radio tele-

(47) No. 14,220, p. 16.
(48) No. 14,470, pp. 3, 8.

phones. (49)

In general it may be said that the light telephone wire is normally employed for distances up to 4000 yards. The heavy wire is used for long distances and for better service at all distances. Both the light and heavy wire can be laid either in single strands or double strands, and both the heavy and light wire can be laid as fast as a man can walk. (50)

21. DUTIES OF A COMMUNICATION OFFICER.--The duties of a signal platoon commander may be summed up as follows:

a. To report to his commander as to the best use of signal means

b. To give directions for the ordered employment of signal means

c. To insure the continuity of communications in the event that the staff position or location changes (He will often be sent to make advance inspections and installations of the new command post)

d. To assign signal troops to the reserve (This is particularly true in the battalion, since the company has very few means of communication)

e. To insure that contact is maintained with supporting or cooperating arms and with observation posts

f. To suggest to the commander or adjutant the most adequate means of conveying orders or messages

g. To report immediately disturbances in the signal net and to take steps for their removal

h. To supervise conversation discipline on the telephone and radio telephone and to supervise the coding and decoding of messages

i. To keep his platoon informed of the situation

j. To assist and when necessary to substitute for the adjutant (51)

(49) No. 14,822, p. 16
(50) No. 14,822, p. 16
(51) No. 14,771.3, p. 16

22. ADEQUACY OF THE GERMAN SYSTEM.--The German signal communication system is built around the wire system. The telephone is considered the most dependable and the most rapid means of communication. All other means available are used to augment the telephone and to insure that the will of the commander will be transmitted and executed.

With the telephone and its greater reliability, the radio and its rapidity of installation, visual signals for lateral and rearward communication plus messengers of all types, the commander has a flexible and mobile communication service which will provide the necessary means of transmission.

Based upon their experience in the World War, where many operations bogged down due to lack of communication, the German Army now stresses adequate communication for all echelons. They work upon the theory that it is better to lay five times too many lines than one too few. (52)

VIII. GENERAL COMMENT

23. CONCLUSION.--In conclusion it may be said that each army has provided itself with the necessary means of communication in battle. Since each nation has its own particular problem or problems to solve it cannot be said that any one system is superior to another. Each army must consider, among other things, the personal characteristics of its soldiers, the methods of its most likely opponent, the type of warfare most likely to be used and the industrial, technical and natural resources of the nation.

(52) No. 14,822, p. 19

In Germany, France, Italy and Russia we find flexible, well equipped, highly mobile communication units. These nations contemplate fast moving, open warfare against each other and similar opponents. Japan has its own particular system and although it is similar to that of other countries it is modified to meet the characteristics and peculiarities of its own people and its own problems. In England we find a highly flexible system which can presumably be adapted to any situation whether fighting against the well trained, well equipped armies of Europe or against untrained, ill equipped savage tribes in some far corner of its vast empire.

In any event and in any country, the successful army must have a sound system of communication for "without effective communications, the efforts of infantry in battle will be aimless and uncoordinated." (53)

(53) Infantry, p. 183