

The telegraph instructor

George M. Dodge

YEAR

THE
....TELEGRAPH INSTRUCTOR....

15327

REVISED AND ENLARGED.

BY
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PREFACE.



THIS book was only undertaken after thorough search and inquiry, for something similar, in all the leading electrical and publishing houses in the country. While its preparation has required a great deal of time and labor, it is only intended that it shall be of value and interest to the student of telegraphy, and for this reason the simplest and most concise terms have been employed. Numerous volumes on telegraphy have been published, but all of these, which have come to the writer's notice, lacked simplicity and would consequently be of little value to the student unacquainted with the work.

The writer has no claims to make for the work, from a meritorious stand-point, hence his friends are at liberty to become its severest critics.

G. M. D.

I
DEDICATE
THIS BOOK
TO MY FATHER.

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THE TELEGRAPH.

The word "Telegraph," strictly defined, means "To write afar off." Webster defines it as "An apparatus, or a process, for communicating intelligence rapidly between distant points, especially by means of preconcerted visible or audible signals representing words or ideas, or by means of words and signs, transmitted by electrical action." There are numerous types of the telegraph, but the one most commonly used in this country is "The Electro-Magnetic Telegraph;" electricity producing the force or magnetism which is given to the Electro-magnet.

It is claimed that the force of electricity was discovered several hundred years before Christ, but that no attention was given it in particular for some sixteen centuries afterwards. Very little is known of its force except that it seems to travel with almost incredible rapidity and that all metallic agencies connected are charged instantaneously. Distance proves no barrier, except that it requires a stronger productive force. This book will treat strictly of "The Electro-Magnetic Telegraph;" this being used almost exclusively in both railway and commercial telegraphing.

THE STUDENT OF TELEGRAPHY,

who wishes to become a successful telegrapher, should bear in mind that the art requires close attention and study. He should give his undivided attention to every part of the work. He should familiarize himself with all of the principles involved in the production of the current, and the application of the current to both railway and commercial telegraphy. He should master every particular part of this and, then to carry the work further, he should indulge in the principles of the science as applied or connected with the more complicated apparatus of the telegraph. While it is not necessary that one, in order to secure a position as an operator, should understand all of these principles, it should be their aspiration. To this end patience and study should be diligently applied. Nothing can be gained otherwise.

There are many in the service at the present time who haven't the least knowledge concerning the mechanism of the instruments which they are constantly using, and are helpless in case of a breakage. To this class the unsuccessful operator invariably belongs.

Nothing more than an ordinary common-school education is necessary and any one with ordinary ability can become a successful telegraph

operator if they will but give it the attention which they should give to any undertaking.

AFTER EMPLOYED.

A telegraph operator should be as polite and congenial in using a wire as he would at his home. I speak more particularly of the contention for the circuit. Many operators compromise themselves with their officials by acting inconsistent in using a circuit and nothing will demonstrate an operator's *newness* more than this. Remember that others are entitled to the same wire privileges as you.

Keep the instruments well adjusted and the batteries clean and in good working order. Watch all the connecting mediums between the wires, batteries and instruments carefully. Keep all hooks clear of messages to be sent and delivered, and the office clean. Remember that the corporation which employs you is dependent in part upon your efforts and you should be solicitous in every way for their welfare.

Always be discreet. While the rules as set forth in a book of instructions issued by the officials should be observed so far as possible, there are instances where one's judgment will lead him to a little variance and few officials will

take exceptions when the motive has been toward better results.

Promotions will invariably come to those who follow these suggestions.

THE MORSE CODE.

The Morse code of signals as applied to the telegraph is used exclusively in the United States. It consists of a dot and a dash, the former being an instantaneous closing of the key, while the key is held for the latter, examples: dot (.), dash (-).

LETTERS.

a	b	c	d	e	f
.-.	-....	-...-
g	h	i	j	k	
-.-.	-.-.-	-.-	
l	m	n	o	p	q
-	-.--.-
r	s	t	u	v	
.	-	...-	...-	
w	x	y	z	&	
-.-.-	...-	...-	

NUMERALS.

1	2	3	4	5
-.-.-	...-	...--	-.-
6	7	8	9	0
.....	-.-.-	-.-.-	-.-.-	-

PUNCTUATION, ETC.

period [.] comma [,] interrogation [?]

exclamation [!] paragraph [drop a line]

THE following punctuation, etc., are not those of the Morse code, but have been compiled by Mr. Walter B. Phillips, ex-president United Press, and are in use at the present time :

colon [:] colon dash [:—]

colon quotation [: “ ”] semi-colon [;]

hyphen [-] dash [—]

beginning quotation [“ ”] ending quotation [” ”]

apostrophe [’] or quotation within a quotation
 [“ ‘ ’ ”]

beginning parenthesis [()] ending parenthesis [)]

brackets [[]] capitalized letters

italics or underline

dollars [\$] cents [¢]

decimal point [.] pound sterling [£]

shilling mark [/] pence [d]

The Continental or International code is used in European countries, while the Bain code is used but very little at the present time.

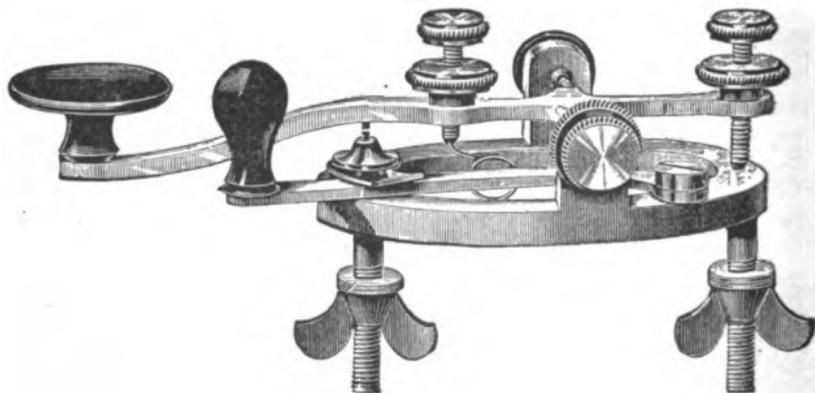
THE ELECTRIC CURRENT.

The electric current is generated through the battery or other electric producing force and, while many authorities fail to agree as to its specificness, it is easy to understand that it is the *life* of the telegraph.

INSTRUMENTS EMPLOYED.

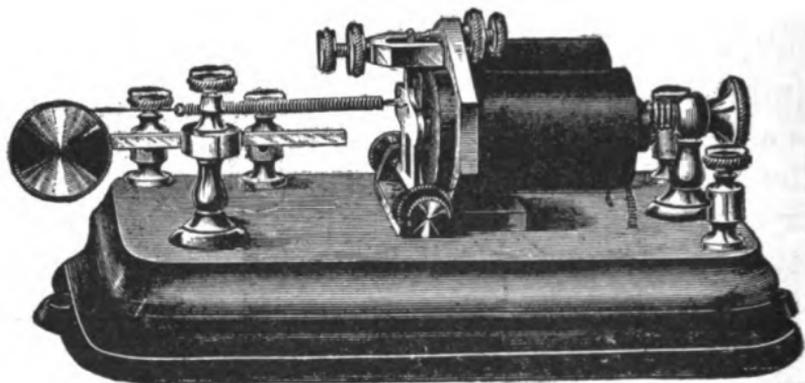
There are three instruments essential for each set: viz, the transmitting key, the relay, and the sounder.

THE KEY.

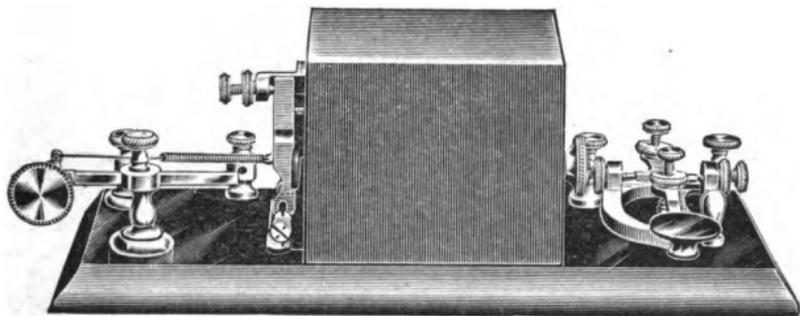


THE function of the key is to open and close the circuit and to make and break the circuit, so as to produce the dots and dashes as required in a code of signals. Strictly defined, it is a mechanical device which is manipulated by the hand for transmitting "matter" over a wire or circuit. Its principal feature is a metallic lever upon a trunnion supported by screws on the elevated sides. Beneath the base are two metallic legs which extend through the table upon which the key is placed. These legs hold the key firmly to the table and connect with the two ends of the wire. The front leg and the lip are separated from the base of the key by non-conducting material. On the top and in the center of this post is fastened a small piece of platina. Directly above this, on the under side of the lever, is another piece of platina. A spring is used so that the two platina points are insulated whenever the hand leaves the key or the circuit closer is not under the lip. The circuit closer is a metallic arm attached to the base of the key so that it can slide under the lip thus keeping the wire electrically connected while the key is not in use. The finger pieces of both the lever and circuit closer are of non-conducting material in order to prevent the operator from receiving an electrical shock.

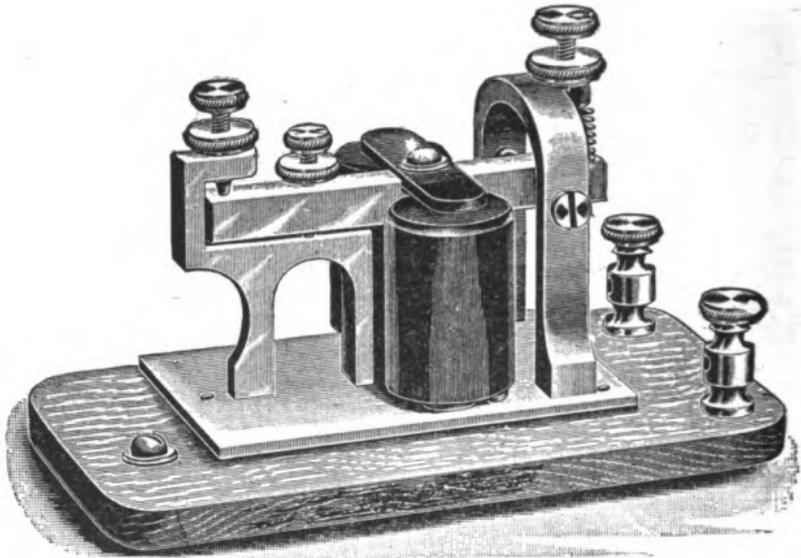
THE RELAY.



THE Relay is connected with both the main line and local circuits. Its connection with the main line circuit is entirely electrical, while with the local circuit it is both mechanical and electrical. Its chief use is for resistance. It has a bar or armature so arranged as to be free to move when acted upon by its electro-magnet, and which when moved closes the local battery circuit through the sounder, which is also connected with the relay. It has two electro-magnets, and four binding posts, two of the latter being connected with the electro-magnets, and known as the "main line binding posts," while the remaining two are the "local posts," being connected with the armature and the frame or yoke over the electro-magnets and armature.

THE BOX RELAY.

THE Box Relay is an ordinary relay, the electro-magnets of which, as will be noticed in the cut, are covered by a wooden box. Its armature is usually some larger than one upon an ordinary relay; this, together with its wooden box covering, which serves as a sounding-board, makes it desirable where a sounder cannot be conveniently used. Sounders can, however, be attached to the box relay. A box relay usually has a key upon the same base.

THE SOUNDER.

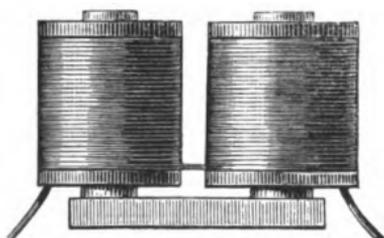
THE Sounder consists of two electro-magnets with an armature attached to a movable lever. The lever has a spring attached for the purpose of drawing the armature away from the magnets when the circuit is open and the cores in the electro-magnets de-magnetized. It is regulated by two adjustable screws, one of which checks the movement towards the magnets, while the other limits the reverse movement.

The sounder has a connection with the local circuit only. Its connections are attached to

the two local posts of the relay and the two poles of the local battery.

NOTE—Perhaps to make this latter paragraph clearer, it might be added that on a circuit of fifty instruments, should forty-nine of these detach their sounder and local battery, the remaining one would not be aware of it. It would not affect the main line circuit.

THE ELECTRO-MAGNET.



The Electro-magnet consists of a small core of iron (about the size of an ordinary lead pencil) wrapped evenly with a great many feet of fine insulated wire, all of which is covered by a vulcanized rubber cap. When the extreme ends of this wire are connected with the poles of the battery or other productive electrical force, the core of iron instantly becomes magnetic and continues so as long as the current continues. This magnetism is produced in the core by the

insulated wire which is wrapped around it. The core is magnetized by closing the circuit, or demagnetized by opening the circuit.

ADJUSTMENT OF INSTRUMENTS.

THE KEY.

THE "play" of the key should always be free, the upper platina point always striking the under one with preciseness and these should be kept free from rust or dirt. In commenting upon the "play" of the key it is not intended that either extreme should be employed. Perhaps it would be suggestive to say that the distance between these points equal the thickness of three to five pieces of ordinary writing paper. On a circuit with a light battery, or should the climatic conditions be such as to give an escape of the current on a wire, it is all the more necessary that the adjustment of this instrument be loose so that all force may be brought to bear on the platina points. The lever is held to its position by the set screws on the sides of the trunion. These latter as well as the set screw on the end of the lever together with the set screw attached to the spring are all adjustable and are provided for the adjustment of the key.

THE RELAY.

THE Relay is undoubtedly the most difficult of all ordinary telegraph instruments to adjust. It is necessary that the armature on this instrument, which has a platina point on both sides, stand perpendicularly upright and the platina point to the right set against a similar point on the set screw immediately above the electro-magnets when the circuit is closed, while the platina point to the left should set against the point of non-conducting material on the set screw to the left when the circuit is open. From one to three-sixteenths of an inch is usually suggestive for the necessary "play" of the armature between these two set screws and points. At the extreme right of the relay is attached a large adjustable turn screw to regulate the electro-magnets and to govern the distance between the lever on the armature and the electro-magnets. The electro-magnets must never be brought so close to the lever on the armature as to prevent a good contact between the platina points on the armature and the same point on the set screw immediately above the electro-magnets, neither should they be drawn so far away from the armature's lever as to prevent the magnetism in them to act upon the lever of the armature. Perhaps it would be unwise to

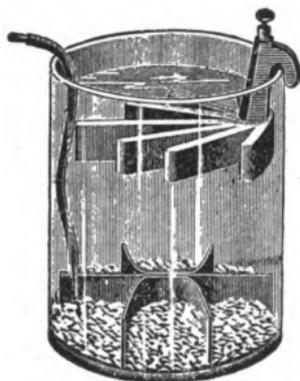
suggest a distance in this connection, but the writer has seen the adjustment in this matter from one-thirty-second up to fully three-eighths of an inch. The battery or other productive electrical force, as well as climatic conditions, will govern the adjustment of this. The spring which is regulated by a large turn screw at the extreme left of the relay also assists materially in the adjustment of the instrument. The purpose of the spring is to draw the armature away from the platina point on the set screw immediately above the electro-magnets, when the main line circuit is open and the cores in the electro-magnets de-magnetized, thereby at the same instant opening the local circuit.

THE SOUNDER.

THE adjustment of the sounder is in a sense similar to that necessary in the relay, with the exception that the distance between the lever of the armature and the electro-magnets is usually normal, the circuit attached being only local and not subject to a variance of resistance as produced by climatic or other conditions. One thickness of ordinary writing paper should "play" freely between the armature's lever and the electro-magnets. Two adjustable set screws are

provided for this purpose while two others at the side hold the armature in its proper place.

THE GRAVITY BATTERY.



IT is by the chemical action in the battery that the electric current is generated, and in practical telegraphy this is made to traverse long or short distances through the conducting medium of a metallic wire and by means of the described instruments made to give out tangible signals which, being arranged in the form of an alphabet, enables communication to be held for a long distance.

There are many types of batteries, but the *Gravity* (more specifically known as the crow-foot) as shown in the cut is almost universally used throughout the United States, for tele-

graphic purposes. During the last few years, however, dynamos are being introduced into the larger offices and are supplanting the gravity battery to some extent.

The gravity battery consists of a glass jar, a zinc and a copper. The zinc is known as the "negative" pole, while the copper is known as the "positive" pole of the battery. In arranging this battery the leaves of the copper should be spread and placed at the bottom of the jar and about one pound of blue vitrol placed around them. The zinc should be extended from the top of the jar, and the jar filled with water within one inch of the top—the zinc always being covered with the water. It will usually require from two to four days for a battery so arranged to work up its full strength. The circuit to which it is attached should be closed in order that it may do this. On the other hand, the circuit should be opened to strengthen a battery that is in use, or to *save* the battery. Heat will add strength to a battery.

CARE OF THE GRAVITY BATTERY.

On account of the zinc dissolving and the vitrol becoming decomposed it is necessary to clean a battery at intervals of from two to four months. This should be done by taking out the zinc and

copper and pouring the clean liquid into a clean vessel, while the decomposition of the zinc and vitrol should be thrown out and the jar cleaned. Then clean the zinc, by carefully scraping off the loose substance, and return it, with the copper, to the jar after putting in more vitrol. The clean liquid should then be poured into the jar, with enough water to make the battery complete as previously suggested.

No water should be allowed to remain on the outside of the jar. It is a good plan to rub a dry cloth on the outside of the jar each day. This will require but a few minutes time for a number of cells and it will enhance the appearance, as well as the results, of the battery.

THE EARTH AS A CONDUCTOR.

To complete a circuit it is necessary that the out-going poles of a battery at the one end of the line be connected with the opposite pole at the other end. For instance, on a wire between New York and Chicago there would be a series of "main line batteries" at both cities, and it is necessary that the out-going pole of each "series" be connected with the out-going pole of the other. The line wire will connect the inside poles of these batteries, while another wire, or

something to answer its purpose, must connect the outside poles of the "series." It has been found that the earth, on account of its great moisture, will serve the purpose of a returning wire, and it is used on lines of any distance for a return wire.

CONDUCTORS—NON-CONDUCTORS.

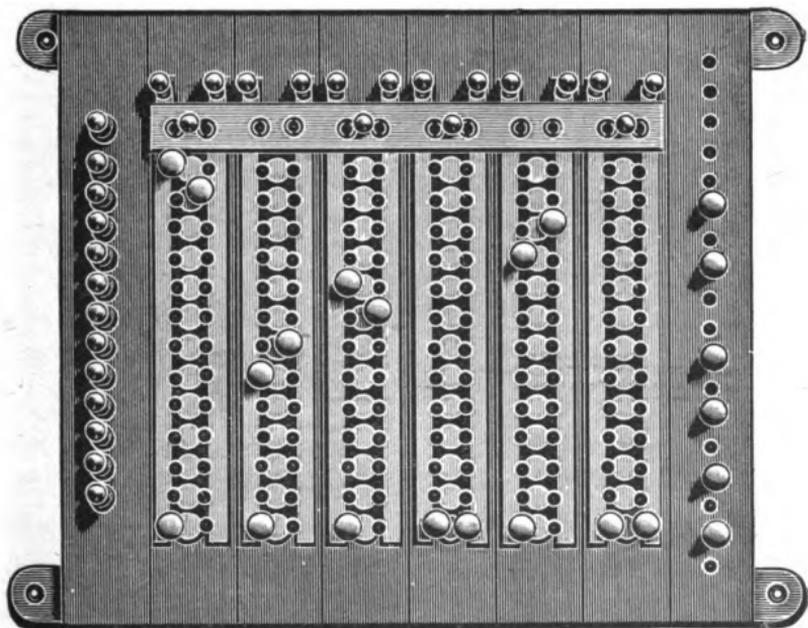
Mention is made of the use of a wire as the medium for conducting a current of electricity from one pole of a battery to any given point and thence back to the opposite pole, thus making a circuit.

Certain substances are found to conduct electricity with more or less facility (these substances are known as conductors) while through other matter no current whatever will pass. The latter class of substances are known as "non-conductors" or insulating bodies.

The principal materials used for conductors are copper, iron, brass and platina, and for insulation Gutta Percha, hard and soft rubber goods, glass, silk and cotton fibre, dry wood, bone and porcelain. In conducting currents of electricity from one point to another, as in telegraphy, it is found necessary to use non-conductors, wherever the wire is fastened for support,

in order to prevent an escape of the current. For this purpose glass is generally used for outside work and hard and soft rubber tubes where the wires pass through window casing. The copper or "office wire" is usually covered with a coating of Gutta Percha or cotton fibre. For the handles of knobs to the various instruments, which require manipulation, hard rubber is generally used.

THE SWITCH BOARD.



The switch board is used for connecting the

main line circuits or wires with the instruments. Each telegraph office is supplied with a switch board and through this any wire which is "cut in" to that office may be connected with any instrument in that office. The Western Union pin-plug switch board, as shown in the foregoing illustration, is the one most commonly used. Another type, known as the "spring-jack," as shown in the following illustration, is being used in connection with the "pin-plug" board in large and testing offices, while one wire "cut-outs" are frequently used in offices having but one wire.

On the front of the Western Union pin-plug switch board are *two perpendicular bars for each wire*. Between these bars is a row of discs, which have no connection with the perpendicular bars except when the metallic pin is inserted, but are connected horizontally with each other by a metallic strap on the rear of the board, with the exception of the bottom row. Each disc and each perpendicular bar has a semi-circular hole in its edge, so that the pin-plug inserted will connect both the horizontal straps on the back and the perpendicular bars on the front of the board. The ground wire usually has its connection with the top row of discs and this row is covered by the lightning arrester.

The latter has no connection with the perpendicular bars under it. The distance between the perpendicular bars and the lightning arrester should be equal to two thicknesses of an ordinary piece of writing paper. The function of the lightning arrester is to prevent injury from lightning to the instruments.

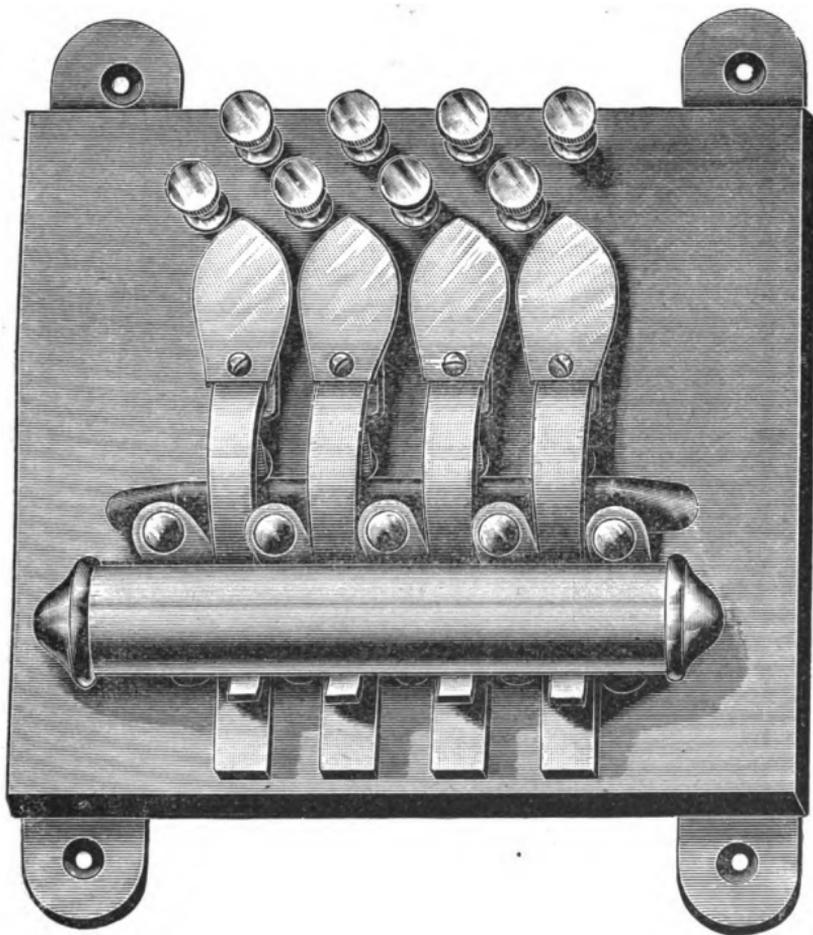
The main line wires, or the wires that come into the office from outside of the office, are connected in the top binding posts, which are a part of the perpendicular bars, while the wires leading from the instruments have their connection with the side binding posts. In connecting an instrument through the switch board it is necessary that both horizontal straps, which lead to the instruments, and both perpendicular bars, which lead to the main line, be on the same circuit and this must be done by inserting *two* pin-plugs *diagonally*.

The illustration shows a six wire board with plugs inserted as would be done in cutting in four of the wires, two of the wires—the fourth and sixth from the left of the illustration—being “cut through.”

Another valuable service which is rendered through the switch board is the cross connecting and patching of wires. This is done by arranging the pin-plugs in the required order. Fur-

ther comment on this subject, by the writer, would be valueless as it must be learned through illustrations and explanations.

NOTE.—It is always suggestive that switch boards in local offices be placed in the direction which the main line wires are run, as this will save confusion. When this is not practicable, the directions of the board for east and west wires are usually placed the same as it would appear upon a geographical map, while there is no specific rule, to the writer's knowledge, for north and south wires.

SPRING-JACK SWITCH BOARD.

The above illustration represents a four wire board; the main-line wires being connected with the top binding posts and a wedge with cord attached being inserted in the jacks, which have

spring attachments. The advantage in the use of this board is the fact that two or three instruments can be quickly and easily attached to a circuit. These boards, as stated in a previous heading, are used to a great extent in connection with the Western Union pin-plug switch board.

GROUND WIRES.

In addition to the purpose which the ground wire serves at terminal points, each "way" or intermediate telegraph office is also provided with one which is attached to the switch board. The function of this wire, at way or intermediate offices, however, is only for testing purposes and in cases of interruption of the circuit, to notify the Chief or testing operator regarding it and to receive his instructions.

It consists of a wire attached to an iron rod driven in the ground several feet, or to a gas or a water pipe, these two being preferable. Any of these should be deep enough to be free from frost, and always in contact with the moist earth.

NOTE.—If a ground wire be inserted at Indianapolis on a Chicago and Cincinnati wire it would divide the line into two independent circuits, one from Chicago to Indianapolis and one

from Indianapolis to Cincinnati, and form a common conductor for each circuit. In this case, however, there must be a main line battery at both Chicago and Cincinnati in order to produce a current on each circuit.

TRANSMITTING OR SENDING

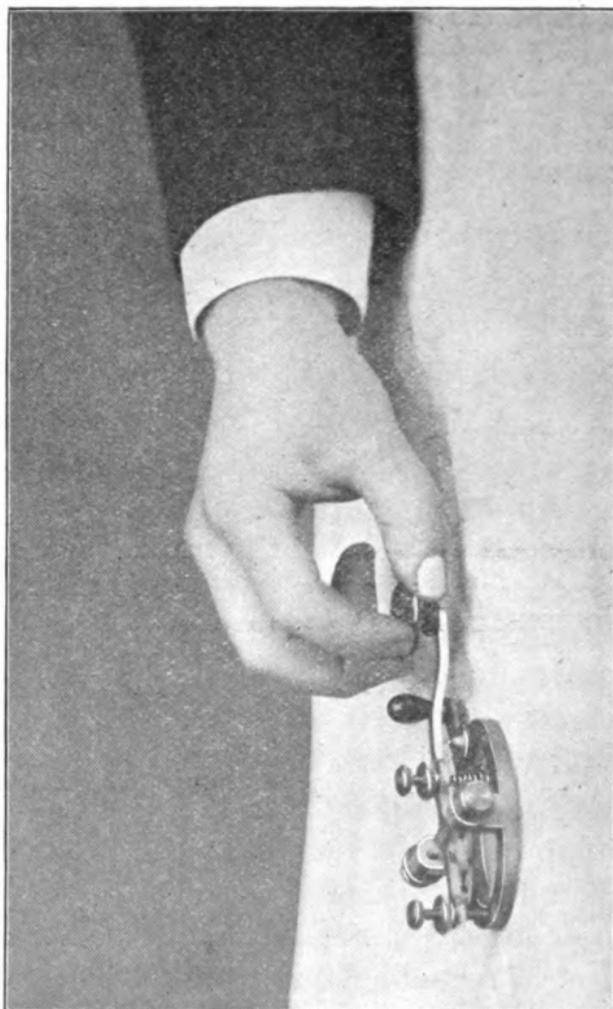
is the first requirement necessary for a beginner.

The art of transmitting or sending, in the writer's opinion, supersedes that of receiving. The student should bear in mind that accuracy *and not rapidity* is the qualification needed in sending. Speed should be attained unconsciously. Untiring efforts should be employed to master accurately letters or characters which are difficult.

Many are of the opinion that sending is easily attained, while receiving is the more difficult. The facts are to the contrary, as few who become proficient in sending fail to become equally as good in receiving. A number, however, who receive well are poor at sending. This inefficiency can usually be attributed to a failure of observing the elementary principles.

One Should Never Send Faster Than They Can Receive.

POSITION.



POSITION.

Take an easy and graceful position, always sitting erect and facing the key. Place the first and second fingers on the furthest part of the key-button with the thumb under the edge, curve the first and second fingers so as to form a quarter section of a circle, partially close the third and fourth fingers but do not allow them to touch the table. Rest the arm on the table at the elbow. The grasp of the fingers and thumb upon the key should be firm, but not rigid and should never leave the key (while sending).

MOVEMENT.

The wrist should be perfectly limber. The motion should be directly up and down, avoiding all side pressure. The movement should be from the wrist and fore-arm and not from the fingers; the fingers are used only for a leverage. The fingers, wrist and arm, however, should all move in the same direction.

The downward movement (closing the key) produces the dots and dashes, while the upward movement (opening the key) produces the breaks and spaces.

A dot (.) is made by a single, instantaneous downward stroke of the key. A dash (-) is

made by holding the key down as long as it would take to make two dots. A long dash, as used in the letter "l" or the numeral "cipher," should be made by holding the key down as long as it would take to make three and four dots respectively.

The length of a space or a break in a letter that contains the same should be equivalent to one dot, *i. e.*, the letter "o" should require the same time as the letter "s," the letters "c" or "r" the same time as the letter "h," the letters "y" "z" or "&" the same as the letter "p."

In letters that do not contain spaces or breaks the dots and dashes should follow each other closely.

The alphabet should be attained theoretically.

FIRST EXERCISE.

Learn the movement by making dots and dashes slowly, taking the dots first, making one each second, then two and three each second. Afterward undertake the dashes in the same way.

NOTE.—The great advantage in attaining the movement by making dots and dashes instead of the letters is in the fact that one's mind is taxed with nothing else, while with the letters the mind is usually concentrated upon the formation of them.

SECOND EXERCISE.

e	i	s	h	p	6
.
o	c	r	y	z	&
..

THIRD EXERCISE.

t	l	m	5	o
—	—	—	—	—
a	u	v	4	
—	—	—	—	—
n	d	b	8	
—	—	—	—	—

FOURTH EXERCISE.

f	g	j	k	q
—	—	—	—	—
w	x	l	2	3
—	—	—	—	—
7		9		
—		—		

FIFTH EXERCISE.

Period [.]	comma [,]	interrogation [?]
.....
exclamation [!]	paragraph [drop a line]	
.....	
dollars [\$]	cents [¢]	decimal point [.]
.....

SIXTH EXERCISE.

Colon [:]	colon dash [:—]
.....

colon quotation [: “]
.....semi-colon [;]
.....hyphen [-]
.....dash [—]
.....beginning quotation [“] ending quotation [”]
.....apostrophe ['] or quotation within a quotation
[“ ‘ ’ ”] beginning parenthesis [(] ending parenthesis [)]
.....brackets [[]]
.....capitalized letters
.....

italics or underline

pound sterling [£]
.....shilling mark [/]
.....pence [d].
.....**FORMATION.**

The letter j should be formed as tae, k as ta, q as ue, x as ai. The numeral 1 as we, 2 as ui, 3 as ve, 9 as tu. The period as ud, comma as aa, interrogation as tue, beginning quotation as qn, ending quotation as qj, beginning parenthesis as pn, ending parenthesis as as pj, brackets as bx, hyphen as hx, dash as dx, colon as ko, semi-colon as si, colon-dash as kx, colon-quotation as kq, capitalized letters as cx, dollar mark as sx, cents as c, decimal point as tw, italics or underline as ux, apostrophe or quotation within a

quotation as qx, pound sterling as px, shilling mark as ut, pence as d.

SEVENTH EXERCISE.

Aim, buy, care, dove, easy, farm, good, hill, ice, jot, keep, life, many, none.

EIGHTH EXERCISE.

“Every cloud has a silver lining.”

“Time and tide wait for no man.”

“A rolling stone gathers no moss.”

NINTH EXERCISE.

86, 921, 3,255, 72,400, 856,000.

The comma or a space should be employed in dividing numerals into thousands.

The abbreviations hnd, tnd, mln or myn, are frequently used in transmitting numbers containing a string of ciphers. Examples.—700 as “7 hnd;” 15,000 as “15 tnd;” 18,000,000 as “18 mln.”

NOTE.—When these abbreviations are used, however, the receiving operator will write them in numerals, the same as if they had been sent in that way.

TENTH EXERCISE.

$\frac{1}{8}$	$\frac{1}{2}$	$\frac{2}{5}$	$\frac{3}{7}$	$\frac{1}{16}$	$\frac{3}{32}$
---------------	---------------	---------------	---------------	----------------	----------------

In fractions a dot (the letter "e") represents the dividing line, hence the fraction $\frac{1}{2}$ would be transmitted 1 e 2, $\frac{3}{32}$ — 3 e 32.

ELEVENTH EXERCISE.

3.7, 32.57 $\frac{3}{4}$, \$1.12, \$18.07 $\frac{1}{2}$.

The decimal point can be transmitted by using either the decimal point character or by spelling out the word "dot."

UNIFORMITY of space is highly essential for correct sending. This is applicable to the characters in letters and between letters and words.

The writer's experience is that a great majority of beginners are inclined to put the characters in letters too closely together, thereby creating a style of "jerk sending," which is bad in the extreme. This style of sending is deceptive inasmuch as the student imagines he is attaining speed when he is in fact retarding his speed.

Due caution should be exercised in transmitting words which contain either all dot letters or a number of them together; the following words as well as a great number of similar ones should be made slowly and distinctly: Erie, error, choice, & Co., piece, price, bicycle, voice.

A decided distinction should also be made

wherever the letter "t" follows the letter "l," or *vice versa*, as in the words: alternate, altogether, altitude, or in the words: atlas, battle, title.

Whenever an error is made in sending, the interrogation mark should be used as a "break." If the error has been made on the first letter of a word, repeat the word immediately preceding it; if on any other letter, repeat only the word in which the error has been made.

The abbreviation "msk" for mistake is used in addition to the interrogation mark "?" when some other word than that which appears upon the copy has been sent.

PUNCTUATION IN TRANSMITTING

messages, train orders, etc., is somewhat different than it would appear in print. The period is seldom used except at the beginning of the body of a message or train order. The comma is invariably used to serve the purpose of the period at the end of sentences, while the comma, as it would appear in print, is omitted.

Punctuation marks are not used after abbreviations.

RECEIVING.

All of the letters and characters should be well memorized before receiving is undertaken,

and then some one who can make these accurately should send slowly and the one receiving, name each letter as sent until they are able to call them rapidly. Then *words* should be taken and these called as sent, later on *sentences* and eventually it is unnecessary for the receiver to name anything as sent, but more than one set of instruments should be used, and the receiver should "break," if he fails to get all, by opening the key and have the sending operator repeat from the last word he received. The different forms of train orders, messages, etc., should then be learned, adopting a systematic plan for the attainment of all.

COPYING.

The student should endeavor to copy *behind*, *i. e.*, to memorize from one to three words of the matter that is being sent and copy it afterwards. While many operators attain a great proficiency in this respect, it is ordinarily quite difficult for the student. Its attainment will require a great deal of practice.

All messages, particularly commercial, should be copied five words to a line, if copied with a pen or pencil; if copied upon the typewriter, ten words to a line using the space-bar three times

after the first five words of each line. This plan will prove of great assistance in verifying checks in commercial messages.

BREAKING.

Do not be ashamed to break. Do this a dozen times in one message or train order rather than make one error.

It is not necessary to sign your office call when breaking, except when two or more offices are copying.

When breaking on train orders, should you miss in the order number, say — “no;” in the address, say — “to;” in the beginning of the body of the order, say — “period (.);” in the body or text, give the last word received.

When breaking on commercial messages, should you miss in the message number, say — “no;” in the sending operator’s personal signal, say — “wo;” in the check, say — “ck;” in the name of the place from which it was sent, say — “fm;” in the state, say — “state;” in the date, say — “date;” in the name of the addressee, say — “to;” in the street number, or in the name of the party in whose care addressed, say — “comma (,);” in the beginning of the body or text, say — “period (.);” in the body or text,

give the last word received ; in the signature, say — “sig.” Should you fail to receive a message after a portion or all of it had been transmitted, or in case you make a “bull” in your copy which would necessitate its repetition, say — “g a ahr.”

PENMANSHIP.

Plain and legible hand writing is essential for a telegrapher. Ornamental styles, graceful and shaded curves are entirely unnecessary and should be avoided. Make the letter in the shortest length practicable and without curves where it is possible to retain the contour of the letter without it. It is suggestive to use what is known as the muscular movement, and the grasp upon the penholder should be only enough to control it. Do not cramp the fingers. Always cross the letter “t” and dot the letter “i.” While rapidity in writing is essential, accuracy should receive the first consideration.

CIRCUIT REGULATIONS.

Never Contend For the Circuit.

Each office has its call which will consist of not more than two letters.

Each operator will have a personal signal which will consist of one or two letters.

It is customary, in calling an office, to call continually and sign your own office call after every third call. The office called in answering will say "I I" and his office call. An exception to this can be made with larger offices when an operator is known to be at the instrument continually. In a case of this kind give the office desired one call, sign your own call and close the key.

If an instrument connected with a wire, which is usually busy, remains quiet for any great length of time, the key of the same should be opened and closed in order to ascertain if the wire is open or closed. If found to be open, insert the plug into the disc of the strap in the switch board which is connected with the ground wire, thereby ascertaining in which direction the trouble is from your office. If no circuit is obtained (after letting down the spring of the relay) cut this wire out at the bottom of the board and connect in another circuit, which is closed, with that instrument. If the experiment opens this wire also, it would indicate that the trouble was in the instrument and not in the wire. A diligent search for the trouble in this

instrument should then be made and no wire cut in on it until it is repaired.

The circuit should never be retained by leaving the key open except in extreme cases of emergency.

NOTE.—Whenever the occasion demands it a circuit can be left open, but not to exceed one minute, and whenever done, it is best to explain the reason briefly after you return to the circuit. For instance, if to deliver orders to a train, say “ex me trn;” if to wait on a customer, say “ex me counter;” if to answer the telephone, say “ex me fone;” if to talk to any one, say “ex me talk.”

Great care should be taken, especially in stormy weather, that in opening a key it does not take the circuit from others who might be using it. Owing to the fact that wires are so susceptible to climatic conditions, an office in using the circuit will occasionally be interrupted by another office, which is not adjusted, taking the circuit. In a case of this kind the one interrupted will use the signal “8,” until he believes that office to be adjusted, in an endeavor to keep the one interrupting off the circuit.

NOTE.—In extremely bad weather relays should be given a great deal of attention in the way of adjustment.

Whenever one is asked to "sine" he should give his office call, and if he is asked "wo" he will give his personal signal.

All offices hearing the "os" signal, when it is given in the nature of a call, should answer with their own call. Usually in this case they will be told to "copy" and invariably they will receive a "general message" addressed to "all agents," "all operators," or to some other particular class of employes. Each operator in giving an "O K" to a message of this nature will give his office call in addition to his personal sign.

If one's instruments fail to work properly he should ask the operator, with whom he is working, to "dot," which would be done until the one who had asked him to do this had adjusted his instruments, and breaking in he would use the signal "O K" and, if the receiving operator, name the last word he received; if the sending operator, he would use the signal "4." Faults of this nature may be with the wire or the instruments connected with it.

Whenever an operator is busy, either with a wire or elsewhere, and cannot answer a call, which is being given him on another wire, he should, if possible, take the time to answer the other wire, first opening the key of the wire which he is working and then going to the one.

which is calling him, giving the signal "25," adding his office call. He should be careful to make this signal distinct so that the one to whom he has given it will understand it and not mistake the signal for an answer to his call. If the one called does not know which office is calling him he would, before giving the signal, ask the office calling him to "sine." After finishing with the one with which he was working, he would go to the wire which had called him and call them inquiring as to what they wanted, by using the signal "5" and his office call. He would not, however, break in on the circuit to do this.

Whenever the sending operator is in doubt as to whether or not the receiving operator is copying that which he is sending, he will say at the conclusion of a message or a sentence within it, "bk u tr," or "u tr," and if the receiving operator is copying that which is being sent him he will answer by saying "i," sometimes adding his office call.

Whenever in receiving a message some one else on the circuit, who is inclined to be meddling, should break, asking the sender to repeat from a stated word, and this not being the receiver, which of course would be unknown to the sender as he would have every reason to believe that the one who broke was the operator at the

office with which he was working. In instances of this kind the receiving operator should immediately take the circuit and say "nt me" or "nt hr."

Whenever a receiving operator in repeating back a train order or message is told by the sending operator that a word is in error, he should open his key, correct the error, and repeat the copy as corrected. The receiving operator should never allow the sending operator to repeat any further than is necessary to correct an error, but should open his key as soon as the sending operator has covered the part in error. The sending operator, when correcting in this instance, should transmit the word or part in error distinctly and slowly.

WIRE SIGNALS.

The word "wire" may be used by wire chiefs for locating wire trouble, and it has preference over all other business on any circuit. Following this word the signals "grn," "stx," "corn," "govt," and "cable" are entitled to a preference on any circuit exclusive of train orders. The signals "grn" and "stx" may be used for speculative messages but in no way relate to cars of grain or stock. The signal "corn" may be used to make a correction in a message which has

been previously transmitted. The signal "govt" may be used for transmitting messages pertaining to official business of the government. The signal "cable" may be used for transmitting cablegrams.

In taking the circuit from others it should be done so far as possible between their messages. This will avoid confusion and possible errors. Offices interrupted by any circuit signal have the next right to the circuit.

NUMERICAL WIRE SIGNALS.

- 2, very important.
- 4, where shall I go ahead?
- 5, anything?
- 8, close your key and stop breaking.
- 13, understand?
- 18, what's the trouble?
- 19, train order.
- 22, busy on another wire.
- 25, busy on another wire.
- 31, train order.
- 33, answer is paid.
- 55, important.
- 73, best regards.
- 92, deliver.

NOTE.—Other numerical signals are used by different railroads for different purposes, for instance, the signal "47" upon some railroads

means "display signals;" while the signal "48" means "signals are displayed." The numerals "9" and "12" are frequently used for "correct." Other numerals are used for the different official's messages, agent's messages, etc.

ABBREVIATIONS.

Abbreviations are usually made by dropping the vowels; some, however, are quite arbitrary. They are used chiefly for wire conversations.

An abbreviation can be used in one sentence when it cannot in another. One should avoid using too many of the arbitrary ones together, for instance, "r r" for "are our," or "for our."

The letters "d," "n" or "ng" can be used for the affixes "ed," "en" or "ing."

"Art," "O K" and "I" are used for acknowledging verbal instructions, meaning the same as "yes sir" in the English language.

Abbreviations inclosed in quotations will indicate that the same could not always be understood in wire conversations, but are applicable to certain or special lines of work.

A

abandoned, abnded

about, abt

abbreviation, abbn

acknowledge, "x" (used in train orders only)

account, acct

action, actn

address, ads

afternoon, P M

agent, agt

all right, art
 always, alwas
 amount, amt
 and others, " et al"
 annulled, annld
 another, ahr (or) anr
 answer, ans
 any, ay
 anything, aytnq (or) 5
 April, Apl (or) Apr
 are, r

arrive (or) arrived, " a"
 ascertain, ascrtn
 assist (or) assistant, asst
 AssistantGeneral Freight Agent,
 A G F A
 Assistant General Passenger
 Agent, A G P A
 attention, attn
 Attorney, Atty
 August, Aug
 avenue, ave

B

"B," Block (used in block system
 only)
 back, bk
 baggage, bage
 barrel, brl (or) bbl
 battery, baty
 be, b
 become (or) became, becm
 been, bn
 before, b4
 better, btr
 between, betwn
 bill-lading, " BL"
 black, blk
 blanks, blnx

block, blk
 board, bd
 body, bdy
 book, bk (or) buk
 bought, bot
 boulevard, blvd
 bound, bnd
 break, brk
 breakman, brkmm
 building, bldg
 bushel, bu
 business, biz
 but, bt
 by, bi

C

can, cn
 cancel former order, C F O
 cannot, cnt
 cashier, cashr
 cent, ct
 charge, chg
 check, ck
 chief, chf
 circuit, ckt
 clear, clr
 coal and water, C & W
 collect, coll

collect on delivery, C O D
 combination, combn
 come (or) came, cm
 coming, cmg
 commercial, coml
 Commercial News Department,
 C N D
 commission, comsn
 company, co
 complete, comp (or) "cm"
 compliments, 73
 conductor, condr

conductor & engineer, C & E
 connection, conctn
 copy, cy
 correct, O K
 correction, "corn" (used only as
 a wire signal)

cost, insurance and freight, "C
 I F"
 could, cld
 crossing, xng

D

day, da
 day press rate, D P R
 dead head, D H.
 December, Dec
 decrease, dec
 democrat, dem
 deliver, Ø2
 delivery, dely
 delivery charges guaranteed,
 dely chgs gtd
 depart (or) departed, "d"
 Despatcher, Despr
 destroy, bust'

did, dd
 difference, dif
 dinner, dinr
 disregard former service, D F S
 district, dist
 division, div (or) divn
 don't, dnt
 double deck, D D
 doubt, dbt
 down, dwn
 dozen, doz
 duplicate, dup

east, e
 election, elec
 empty, em (or) mt
 engine, eng
 engineer, engr
 enough, enuf

E

errors and omissions excepted,
 "E & O E"
 every, evy
 excursion, excn
 excuse, ex
 express, ex
 extra, exa

favor, fvr
 February, Feb
 few, fu
 for, r
 foreign, forgn

F

forward, fwd
 free on board, F O B
 freight, frt
 from, fm (or) fr

General Baggage Agent, G B A
 General Freight Agent, G F A
 General Passenger Agent, G P A
 get, gt
 give better address, G B A

G

give some address, G S A
 go ahead, G A
 go ahead arrival, G A A
 go ahead departure, G A D
 gone, gn

good, gd
 good afternoon, P M
 good evening, G E
 good morning, G M
 good night, G N
 gossip, "guff"
 got, gt

half, hf
 has, hs
 have, hv
 hear (or) here, hr

immediately, immy
 important, impt (or) 55

January, Jan
 junction, jct (or) junc

knew, nu

laugh, ha ha
 learn, lrn
 leave, lv
 letter, ltr
 light, lite
 limited, ltd

made, md
 main, mn
 majority, maj
 make, mk
 manager, mgr
 manifest, mfst
 manifold, mfd
 manufacturer, mfr
 manufacturing, mfg

government, govt
 grain, grn
 great, grt
 ground, gnd
 ground wire, g w
 guaranteed, gtd
 guess, gs

H

high, hf
 how, hw
 how is, hws
 hundred, hnd

I

increase, inc
 instrument, instmnt

J

junior, jr

K

know, no

L

loads, lds
 local, loc
 look, luk
 loop, lup
 low, lo

M

many, mny
 March, Mar
 marked, mkd
 market, mkt
 matter, mtr
 May, Ma
 merchandise, mdse
 message, msg
 messenger, msgr

might, mite
 mile, mi
 (mill), typewriter
 million, mln (or) myn
 minute, min
 mistake, msk (or) bull

namely, viz
 near, nr
 necessary, necy
 never, nvr
 new, nu
 night, nite—(red)
 night press rate, N P R
 none between, n b

o'clock, k
 October, Oct
 of, o
 office, ofs
 O K, correct
 on time, ot
 opening, opg
 operator, opr

package, pkg
 paid, pd
 pair, pr
 passenger, pasgr
 pay, pa
 peoples, peo
 pink, (rush)

quick, qk

railroad, R R
 railway, Ry
 ready, rdy

mistaken, mskn
 Misses, Mrs
 Mister, Mr
 more, mo (or) mr
 morning, mng (or) A M
 much, mch

N

north, n
 not, nt
 nothing, ntg
 November, Nov
 now, nw
 no more, nm
 no such number, N S N
 number, no

O

opinion, opn
 order, ord
 O S, all offices take notice
 other, otr
 our, r
 "out" (of no account)
 out, ot
 owner's risk, "O R"

P

please, pls
 pound, lb
 precinct, pret
 preferred, pfd
 president, prest (or) pt
 principal, prin
 prohibition, pro

Q

quotation, qtn (or) tick

R

rebate, reb
 receipts, recs
 received, recd

receiving, recg
 red, (nite)
 refrigerator, refr
 release, "rel"
 relay, rela
 relief, rj
 repeat, rept
 report, rept

said, sd
 same, sm
 say, sa
 second, sec
 section, secn
 see, c
 see former order, C F O
 see former service, S F S
 seen, cn
 see your service, S Y S
 sending, sendg
 September, Sept
 service, svc
 several, svl
 should, shld
 siding, sdg
 sight, site
 sign, sine
 signature, sig
 signed. sined (or) sgd
 single deck, S D
 sir, sr
 slow, slo
 somehow, smhw

take, tk
 talk, tlk
 tariff, tf
 telegraph, tel
 telephone, fone (or) phone
 thanks, tnx

report delivery charges, rept
 dely chgs
 republican, repn
 right, rite
 roast, (a great number)
 round, rnd
 rush, (pink)

S

some one, sm 1
 something, smtng
 somewhat, smwt
 somewhere, smwr
 soon, sun
 south, s
 speak, spk
 special, spl
 special delivery guaranteed, spl
 dely gtd
 station, stn (or) sta
 stay, sta
 stock, stx (or) stk
 stop for breakfast, s f b
 stop for dinner, s f d
 stop for night, s f n
 stop for tea, s f t
 straight, strate
 street, st
 superintendent, supt
 supper, supr
 suppose, spose
 switch, sw
 system, sys

T

that, tt
 that is, tts (or) "i e"
 the, t
 their, tr
 them, em
 then, tn

there, tr
 they, ty
 thing, tng
 think, tnk
 this, ts
 this morning, smng (or) ts A M
 though, tho
 thought, thot
 thousand, tnd
 through, thru (or) tru
 tierce, te
 today, toda
 together, togtr

unchanged, unchg
 undelivered, undeld

versus, "vs"

was, ws
 water, wtr
 way, wa
 way bill, "W B"
 weather, wtr
 week, wk
 were, wr
 west, w
 what, wt (or) ?
 when, wn
 where, wr

tomorrow, tomw
 tonight, tonite
 took, tuk
 tough, tuf
 track, trk
 train, trn
 transfer, tfr
 Traveling Passenger Agent, T P

A
 trouble, tbl
 try, tri
 typewriter, (mill)

U

understand, 13

V

very, vy

W

while, wile
 why, wi
 who, wo
 will, wi
 with, wi
 word, wd (or) w
 work, wk
 would, wld
 write, rite
 wrote, rote

X

"x," acknowledge (used in train orders only)

Y

yard, yd
 yes, es
 yes sir, esr
 yesterday, estrda

yet, et
 you, u
 young, ung
 your, ur

EXAMPLE SENTENCES

Using Abbreviations in Railroad Telegraphy.

Q. Hw sun wi 1st 74 b rdy—How soon will 1st No. 74 be ready?

A. Sun as ty gt C & W—Soon as they get coal and water.

Q. Wr r ty gg r 9—Where are they going for No. 9?

A. SX—Wanatah (office call).

Q. Cld ty mk K A if I gv em 10 mins on 9—Could they make Hanna if I gave them 10 minutes time on No. 9?

A. Es r if 3rd 79 doesnt dela em at WS—Yes sir, if 3rd No. 79 does not delay them at Winslow.

Q. Is tt exa tr et—Is that extra there yet?

A. Cmg—Coming.

Q. Hw far off—How far off?

A. Abt 2 mi—About two miles.

Let me no wn tr rdy—Let me know when they are ready.

A. O K—All right.

Exa rdy nw—Extra ready now.

Q. Ask em if ty cn mk HN bi 55 r 8—Ask them if they can make Inwood by 7:55 for No. 8?

A. Es r ty cn—Yes sir, they can.

Q. How much work has 93 to do there yet—How much work has No. 93 to do there yet?

A. Can't say, they are down at east end of yard now.

Q. What are they doing down there?

A. Getting 2 mt gondolas to set in at WS—Getting two empty gondolas to set in at Winslow.

Let me know when they come back I'd like to get them over to SX r 38—Let me know when they come back, I would like to get them over to Wanatah for No. 38.

A. I—All right.

Q. Is 1st 76 coming—Is 1st No. 76 coming?

A. Yes sir.

Tell the conductor to set off 2 mt refrs at V to be iced—Tell the conductor to set off two empty refrigerators at Valparaiso to be iced.

A. Art—All right.

Tell them to take a full tank there, water plug is out of order at SX—Tell them to take a full tank there, water plug is out of order at Wanatah.

A. I—all right.

EXAMPLE SENTENCES

Using Abbreviations In Commercial Telegraphy.

- Q. 5 P—Have you anything for Plymouth?
A. Es r hrs a roast—Yes sir, here is a roast
(a great number).
-

- Q. Hw do u count East St L—How do you
count East St. Louis?
A. 1 w—one word.
-

- Q. Chf wnts to no wi it is so hard to raise u—
Chief wants to know why it is so hard to raise
you?
A. Local on ts string is bad Ill hv it fixed—
Local on this string (wire) is bad, I will have it
fixed.
Q. Wt ws ur last to us—What was your last
number to us?
A. 28—Our last number to you was 28.
-

- Q. Tr r no exa wds in tt sig, Civil Engr is his
title isnt it— There are no extra words in that
signature, Civil Engineer is his title, is it not?
A. Es tts rite hold it Ill get it fixed—Yes,
that is right, hold it and I will get it fixed.

Q. Hrs a combn spl 3 cys 1 city & 2 trus abt 3 hnd wds, shall I rept it—Here is a combination special, three copies, one city and two throughs, about 300 words, shall I report it?

A. Es u btr—Yes, you better.

Q. Wo—Who are you?

A. XN—(operator's personal signal).

Q. u tr—Are you at the instrument?

A. I—Yes sir.

EXAMPLE SENTENCES

Using Abbreviations in Wire Testing.

Q. 18 on 42—What is the trouble on wire No. 42?

A. No ckt—No circuit.

Q. Which wa 74 open—Which way is wire No. 74 open?

A. e—east.

Gnd 42 w & tri me tr—Ground wire No. 42 west and call me there.

Tk it off & put 42 e to 74 w & tri me—Take it (ground wire) off and put wire No. 42 east to wire No. 74 west and call me.

Tbl on 42 seems to b in ur bd luk at t conctns & c if ty r art—Trouble on wire No. 42 seems to be in your board; look at the connections and see if they are all right.

A. Tr O K—They are all right.

Straten 42 & 74 sa wn—Straighten wires No. 42 and No. 74, say when.

A. nw—now.

DEFINITIONS

Of Technical Terms Used in Railroad and Telegraphic Work.

Ballast—The road-bed or that which gives the track its support. Gravel, broken stone, etc., laid in the bed of a railroad to make it firm and solid.

Block System—A system by which the track is divided into sections of three to five miles, and trains are so run by the guidance of electric or automatic signals, that no train enters a section or block with a clear signal before the preceding train has left the block.

Bug-in-the-wire—A slang phrase frequently used when a wire is in trouble.

Bumpers—Protecting irons placed at both ends

of a car, used to assist and protect the drawbar in deadening the jar. A buffer.

Bumping Posts—Piles or large posts driven in the ground, with dead-woods attached, located at the end of a siding which has but one spur or outlet.

Cars—A vehicle adapted to the rails of a railroad.

Baggage—A car used for carrying baggage.

Barn—A large box car.

Box—A closed freight car.

Caboose—A car fitted for the use of a freight crew.

• *Coach*—A passenger car.

Combination—A car used for more than one purpose.

Express—A car used for carrying express.

Flat—A car with a platform only.

Furniture—Similar to a barn car.

Gondola—A flat car with side and end boards.

Hand—A small car propelled by hand.

Mail U. S.—A car used for carrying the United States Mail.

Pile Driver—A car used for driving piles.

Refrigerator—A box car with ice vats, used for carrying perishable freight.

Stock—A latticed box car, used for transporting stock.

NOTE.—A single deck stock car is used for transporting cattle and horses; a double deck stock car is used for transporting hogs and sheep.

Cattle Guard—A trench under a railroad track and along side a crossing (as of a public highway), intended to prevent cattle from trespassing upon the railroad's right-of-way.

Coal Dump—A small car used for dumping coal into the tenders of engines.

Coal Chutes or Docks—An elevated stand from which coal is dumped into the tenders of engines.

Cross Arms—Placed at the the top of telegraph poles with pins and insulators attached for the support of telegraph wires.

Dead Woods—Timbers placed at the ends of cars or elsewhere to give solidity and to aid in resisting jars.

Depot—A railroad station.

Disc—A circular plate in the switch-board.

Dot—As to make a number of dots consecutively on a wire in order that the operator with whom one is working may readjust his instrument.

“D” Rail—Used at interlocking railroad crossings and elsewhere for derailing trains when they fail to obey signals.

Draw-bar—An open-mouthed bar at the end of a car, which receives a coupling link and pin by which the car is drawn. It is usually provided with a spring to give elasticity to the connection between the cars of a train.

Drop Block—A signal which shows clear at the time the front end of a train has passed, but which shows danger before the rear end has passed.

Duplex—A system of telegraphy for sending two messages (one from each end) over the same wire simultaneously.

Engine—A locomotive.

Engine Cab—The apartment of the engineer and fireman.

Engine Pilot—The cowcatcher. A projection attached to the front of an engine which will clear track obstructions.

Engine Tender—A car attached to the engine for carrying a supply of fuel and water.

First Out—As applied to cars on sidings, as the first car or cars to be reached by an engine going in on a siding.

Frogs—A supporting plate having raised ribs that form continuations of the rails to guide the

flange of the wheel where one track branches from another or crosses it. One of these is always necessary with each switch.

Getting Old—As applied to telegrams, means they are being delayed.

NOTE.—Telegrams usually become “old” when they are held fifteen or more minutes.

Guard Rail—A rail placed on the inside of a main rail, at switches, on bridges, etc., as a safeguard against derailment.

Ham—(See plug).

Hot Box or Journal—Is caused by an excessive amount of friction produced by the axle revolving in the “truck” journal.

Insulators—(Non-conductors) used for the support of wires, and to prevent an escape of the electric current.

Knock Off—To quit work temporarily. Railway and telegraph construction gangs “knock off” on account of the weather.

Link—Used in a drawbar for coupling cars.

Local is Bad—As applied to a local battery, connected with an instrument, which is in poor working condition.

Markers—Used to indicate the rear of a train; flags or lanterns.

Message—A communication sent by wire.

Black—A day message. A message to be delivered immediately. All messages are “black” unless a request for a different one is made by the sender.

Cable—A cablegram. A message transmitted by a submarine cable line.

Cipher or Code—A message which insures secrecy and oftentimes economy, containing words which have no meaning without the use of a key.

City—A message addressed to the place to which it is being sent—it is *not* to be *relayed* or *transferred*.

Dead-head—A free message.

Government—A message relating to official business of the government.

Grain—A message pertaining to speculative transfers of grain or provisions on some board of trade.

Night—A “red” message. One which is sent at reduced rates, and is delivered the morning following its date.

Office—A “service” message pertaining to messages which have been sent, respecting their delivery, collection of charges, etc.

Pink—A message upon which quick service is required. A pink message, to

be relayed, is copied upon a pink blank in a relay office.

Query—A message which is sent by a newspaper correspondent to some metropolitan paper stating briefly some happening or occurrence, and enquiring the amount of matter desired by them for publication. A “query” message is copied upon a pink blank by relay offices.

Railroad—A message which pertains to railroad business.

Red—(See night message).

Service—(See office message).

Skeleton—A message without the body or text. Used for tracing lost messages.

Special—A newspaper special is news which is telegraphed to some publication, usually to a metropolitan daily paper.

Stock—A message pertaining to speculative transfers of stock or bonds upon some stock exchange.

Through—A message addressed to some place *other* than the *place* it is being sent—it is *to be relayed* or *transferred*.

Train—A message addressed to someone on a train.

Milk Stand—An elevated stand at the side of a track used for loading milk.

Ohm—The standard unit in the measure of electrical resistance.

Pins—(a) Used in a draw-bar for coupling cars.

(b) Used for the support of insulators and attached to cross arms.

Plug—A telegraph operator, who lacks ability.

Quadruplex—A system of telegraph by which four messages, two in each direction, may be sent simultaneously over the same wire.

Resonator—Used for incasing Sounders. It greatly assists the receiving operator in copying upon a typewriter.

Road-bed—(See Ballast).

Round House—A repository for engines while not in use.

S Curve—A double curve. Two curves closely together on a railroad.

Semaphores—An apparatus for giving signals by the disposition of ascillating arms and lights.

Side Track or Siding—Used for allowing one train to pass another or for the storage of cars.

Signals—“Fixed,” a semaphore or other stationary signal which is governed by a rope or chain. “Hand,” a flag or lantern swung by the arm.

NOTE.—“Home” and “distant” signals are used in connection with interlocking switches, the former being the one nearest the d-rail, while the latter is the one furthest away.

Spike—Used for fastening the rail to the tie.

Splices—Used for connecting one rail with another.

Stand Pipe—A supply pipe, connected with a reservoir, of sufficient elevation to enable the water to flow into an engine tender.

Station—A place from whence passengers and freight are received and delivered.

Stood off—As an operator who has messages to send, but who is put off until another office sends theirs.

Swing—As a wire that swings against another on a line of poles.

Switch—Movable rails, used for transferring cars from one track to another.

Cross-Over—Used to connect one main track with another, as on a double track.

Switch Board—A collection of switches (electrical) in one piece of apparatus, so arranged that a number of circuits may be connected or combined in any manner.

Switch Engine—Used for making up trains in yards, and for switching cars.

Telegram—A message sent by telegraph.

Tie—Timbers which support the track and keep it in place.

T Rail—The rail used for railroad tracks.

Time Schedule or Table—A schedule indicating the time trains are due to arrive and leave stations.

Trains—

Accommodation—A passenger train which does local work.

Dummy—(See Accommodation train).

Extra—A train which is *not* scheduled.

Freight—A train made up of freight cars.

Mixed—A train containing both passenger and freight cars.

Passenger—A train which is usually made up of passenger, mail and express cars.

Regular—A train which is scheduled.

Special—An extra train carrying railroad officials.

Train Numbers—Numbers which are applied to trains on the time schedule, in order to designate one train from another.

Train Orders—Special telegraphic orders issued from the Superintendent's office by the Train Dispatcher relating to the movement of trains.

19 Train Order—One which does not require the signature of either the Conductor or Engineer.

31 Train Order—One which does require the signature of the Conductor or Engineer or both.

Trestle—A railroad bridge resting on trestles connected together.

Trucks "Car"—A swiveling carriage, with 4 or 6 wheels, and the necessary journal boxes, springs, etc., to carry and guide one end of a car.

Turn Table—Rails resting on a movable platform, used for turning engines and cars. It is usually located at a round-house.

Velocipede—A light railroad conveyance, with three wheels, propelled by the hands and feet.

Volt—The standard unit of electro-motive force.

Water Plug or Spout—(See stand pipe).

Wire to the Air—The telegraph wire which leads out of an office on to the poles.

Y—A portion of track consisting of two diverging tracks connected by a cross track, frequently used to connect one railroad with another.

Yard—A number of side-tracks.

Yard Engine—(See switch engine).

SUGGESTIONS FOR TEACHING.

No other class of students, in the writer's opinion, are more susceptible to the teacher's interest in the work, than those in telegraphy. For this reason, if no other, it is essential that the greatest interest be taken in the student's progress. Partiality should be avoided. Especial interest should be taken in the student's "copy," and the deflection of his sending criticized. All the prescribed forms should be made clear. The success of the student will depend largely upon the interest his teacher takes in the work.

A school should have its course thorough, systematic, and complete. Accept one familiar line of railroading, the rules as adopted by the American Railway Association being preferable, and one familiar line of commercial work, either that as adopted by the Western Union or Postal Telegraph Companies, and follow these systems throughout. As a matter of fact, suggestive thoughts will frequently present themselves, which are other than those spoken of, and these should be discussed and receive proper consideration, but one system of each branch of the work should be adhered to so far as possible.

The rules as recommended by the American Railway Association are used with slight vari-

ances on nearly every railroad and its form of train orders is commonly known as the "double order system."

A plan similar to the following can be used to an advantage in teaching railroad telegraphy:

SUGGESTIVE FOR RAILROAD WORK.

Names of Officials.

Name.	Location.	Vocation.
H. J. White	Pittsburg	Gen'l Manager
M. L. Bradley	"	Gen'l Pasgr & Frt Agt
C. A. Skinner	"	Gen'l Claim Agent
M. A. Bloomhuff	"	Supt. Transportation
H. O. Murchinson	"	Auditor
C. D. Lunceford	Ft. Wayne	Superintendent
A. B. Carson	"	Supt Motive Power
M. L. Brown	"	Supt Interlocking Switches
Henry J. King	"	Train Master
M. K. Bond	"	Road Master
F. D. Smyth	"	Foreman Carpenter
B. R. Johnson	"	Foreman Car-Inspector
C. D. Riley	"	Chief Line Repairman
M. D. Booth	"	Div Opr and Chf Despr

NAMES OF AGENTS AND OTHERS.

Name.	Location.	Vocation.
C. D. Murray	Ft. Wayne	Ticket Agent
J. D. Lansing	"	Freight Agent
W. H. Byron	"	Car Inspector

B. S. Sewall	Ft. Wayne	Wire Chief
G. M. Drago	"	Train Despatcher
S. W. Winans	"	Train Despatcher
A. E. Davidson	Columbia City	Agent
C. D. Cole	"	Operator
F. C. Price	"	Lineman
O. E. Northlane	Pierceton	Agent
H. E. Sherlock	"	Operator
M. C. Kimball	Warsaw	Agent
M. H. Hubbard	"	Operator
H. B. Jones	"	Lineman
F. D. Whitney	"	Car Inspector
B. C. Fallows	"	Supervisor
A. C. White	Bourbon	Agent
B. A. Lewis	"	Operator
S. M. Boucher	Inwood	Agent
O. Marshall	"	Operator
A. B. McDonald	Plymouth	Agent
C. H. Edick	"	Operator
B. C. Huling	"	Lineman
F. M. McCoy	"	Car Inspector
A. C. Murrin	Hamlet	Agent
H. L. White	"	Operator
L. D. Custer	Hanna	Agent
C. W. Skinner	"	Operator
M. G. Whitney	Wanatah	Agent
R. E. Evans	"	Operator
C. B. Longfellow	Valparaiso	Agent

J. L. Hill	Valparaiso	Operator
G. Z. Kraus	"	Lineman
F. K. Sampson	"	Car Inspector
B. R. Mason	"	Supervisor
H. M. Deal	"	Foreman Round House

SCHEDULE.**Distance 105 Miles.**

Stations.	Telegraph Office Call.
Fort Wayne.....	H "Despatcher's Office."
Columbia City.....	G I
Pierceton.....	Q S
Warsaw.....	K S
Selby.....	S Y
Atwood.....	No Office
Etna Green.....	G R
Bourbon.....	R N
Inwood.....	H N
Plymouth.....	P
O M Tower.....	O M
Donelson.....	No Office
Grovertown.....	G W
Hamlet.....	H A
Davis.....	V S
Hanna.....	K A
Wanatah.....	S X
Winslow.....	W S
Valparaiso.....	V

In this schedule Ft. Wayne is the eastern terminus and Valparaiso the western terminus.

Train Numbers.	Conductors.	Enginemen.
1	Hill	Carlisle
2	White	Ambrosier
3	McGrath	James
4	McCoy	Fox
5	Hilliard	Stockdale
6	Jaeger	White
12	Bissell	Shreve
15	Suman	Green
21	Woodhull	Pierce
24	Mitchell	Elkins
37	Hanna	Foraker
38	Brown	Jorgenson
62	Miller	McCarthy
63	Jackson	Shrider
64	Fromouth	Ball
65	McLain	Nicol
1st 71	Austin	Muldoon
2nd 71	Henry	King
3rd 71	Kane	Wheeler
73	Beach	Nuppnau
74	Eldredge	Skinner
75	Smith	Kellim
76	Giseburt	Johnson
77	Whitehead	Williams
1st 78	Astor	Jacobs
2nd 78	Bliss	Dennis

<i>Train Numbers.</i>	<i>Conductors.</i>	<i>Enginemen.</i>
79	Maulsby	Wheelock
80	Harrison	Morton
Exa 148 East	Kinsey	Axe
Exa 176 West	Mercer	Lincoln

GENERAL INFORMATION.

Car or engine numbers will *not* indicate the number of a scheduled train. Train numbers are usually imaginary. They are in fact designated only by the time schedule.

All trains represented on the time schedule are numbered; even numbers being east-bound and odd numbers west-bound.

Number 1 up to and including 59 will represent first-class (passenger) trains; 60 up to and including 69 second-class (perishable and fast freight) trains; 70 up to and including 100 third-class (through and local freight) trains.

Extra or wild trains are inferior to all regular trains of whatever class. The term passenger, freight or extra, is *not* descriptive of the rights of trains, but is only inserted to indicate the way these classes are usually divided.

East bound (even number) trains of the same or *superior* class have the right of way over west-bound (odd number) trains of the same or *inferior* class: i. e., No. 32 has the right of way

over No. 3. No. 3 has the right of way over No. 66, No. 76 or other second or third class east-bound trains. No. 66 has the right of way over No. 65. No. 65 has the right of way over No. 84. No. 84 has the right of way over No. 97. No. 97 has the right of way over Extra 321 East.

NOTE—Extras are numbered by their engine numbers and may run “odd or even” in either direction.

The block should always be at red when an operator is on duty, except when changed to white to allow a train to pass for which there are no orders. It should be immediately returned to red as soon as the rear of the train has passed the block.

Ask for orders, if you have none, for all *except* first-class trains, when they are approaching your station. Do this by “breaking in,” if necessary, on the train wire, for instance, if No. 72 would come into the operator’s sight at Hamlet, he would take the circuit and say “H 5 r 72 H A” or “H 9 r 72 H A.” “H” represents the office call of the Despatcher, “5” anything, “r” for, “72” train number, “H A” office call of Hamlet. In the second instance “9” indicates train orders. Either of these figures “5” or “9” would be applicable except that the figure “5” could not be

used where it is also used with the "Telegraph Block System."

The Despatcher's reply would be "yes" or "no." If the former, he would add "copy," adding the number of copies he wished made in manifold, (the conductor and engineman on each section of each train addressed receiving a copy, and the operator retaining one, with all of their signatures), and immediately call one or more offices, instructing them likewise. All offices to which the order would be addressed would copy it simultaneously from the Despatcher, each taking its proper address, otherwise the copy made by all would be the same. At the conclusion of the transmission of the order, the Despatcher would likely instruct the Hamlet operator to repeat it by saying "To HA GA H."—To Hamlet, go—ahead—Despatcher's office call. Hamlet would then repeat the order, giving the conductor's and engineer's signatures with his own initials and would add in conclusion "N M r em" or "N M r 72."—Any more for them—No. 72. The Despatcher would then complete the order by giving the word "complete," the time of completion, and the Superintendent's and his own initials, and if he had no further orders, he would add "N M r em" meaning, —no more for them (72). The Hamlet operator

would then deliver the order, and in case it would not encroach upon the time of a preceding train, set the block at white, keeping it so until the rear end of the train had passed, when he would return it to its former position, red. If the Despatcher's answer had been "No" to the operator's first question, "H 5 r 72 Ha," and the operator had no orders for the train, (which he should not have had and asked this question) the block would be immediately placed at white and kept so until the rear of the train had passed it. This, of course, is with the understanding that it would not encroach upon the time of a preceding train. If we assume that the Hamlet operator had an order for this train, before it came into sight, and it had not been repeated or a "complete" received upon it, he would take the circuit at an opportune time, and say "H 31 HA,"—"31" indicating that he had an order that he wished to repeat and receive a "complete" from the Despatcher. The Despatcher would answer "I" or "G A," either meaning—go ahead, and the routine followed would be the same as formerly spoken of.

In repeating a train order, use the following form: order number, "No —," train addressed, "to —," office call, period, body of the order, Superintendent's and Train Despatcher's ini-

tials, signatures of conductors and enginemen, and conclude with your own initials. The Train Despatcher in completing an order will use the word "complete," adding the hour and minute, and the Superintendent's and his own initials.

In acknowledging a train order, give the order number, "No —," train addressed, "to —," your office call, the letter "X" and your initials.

In using the "double order system" an order is invariably addressed to a superior and inferior train and, in many instances, it is desirable that the inferior train receive its order before the same is completed and delivered to the superior train, but before the Despatcher can allow the delivery to be made to the inferior train, he must have an acknowledgment from the operator holding the order for the superior train. To illustrate, we will assume that an order is sent to No. 72 at Valparaiso and No. 71 at Wana-tah reading "No. 72 will wait at Valparaiso until —M for No. 71." As No. 72 is the superior train, an acknowledgment of the order from the operator at Valparaiso is necessary before a complete on the same can be given to the operator at Wana-tah and the order delivered to No. 71. Owing to this, a brief form of acknowledgment is used, and the letter "X" serves this purpose. Assuming the number of the order spok-

en of to be "127," the Valparaiso operator would acknowledge this by saying "127 to 72 X J L H," this done, the operator at Wanatah could repeat and receive a complete upon his order for No. 71, and, No. 71, the inferior train, could then act upon the order. There are several advantages to be obtained by using this abbreviated form of acknowledgment. If it were not for this, it would have been necessary for the Valparaiso operator to have repeated the order, thereby consuming more time which No. 71 could employ in running. More than this, it is quite possible, if not probable, that No. 71 would arrive at Valparaiso before No. 72 would be ready for departure, making it unnecessary for the Valparaiso operator to deliver the order to No. 72. In this latter event, the Valparaiso operator would say to the Train Despatcher: "No. 71 a —, order 127 to 72 out?" ("a" arrived; "out" of no account). The Despatcher would answer "es r order 127 out," which would indicate the requirements of the order had been fulfilled and that it would be useless to deliver it.

As stated in a former paragraph it is not necessary to ask for orders for first-class trains. Place the block at white, when they are sighted, unless you have orders for them, and they are not encroaching upon the time of a preceding

train, and leave it so until the rear end of the train has passed the office. If you have orders keep the red signal displayed until the orders are properly delivered.

Keep all trains running in the same direction the required time apart—no exceptions should be made to this rule. Trains running on “passenger” time should be 10 minutes apart, on “freight” time 5 minutes apart. A train running on “freight” time should not be allowed to follow a passenger train until 5 minutes after the departure of the passenger train.

In reporting trains, give the departure only unless their stay has been quite extended. Report a first-class train at the time it is passing your office by saying “Now” for them, for instance, if No. 5 was passing the Plymouth office, the operator would take the circuit “breaking in,” if necessary, and say “H nw 5 P,” meaning — Despatcher — No. 5 passing now and signing his office call. The Despatcher would reply by giving him the hour and minute as “6 42 H.” All other trains should pass the office 100 yards or more before reported and they should then be reported with the signal “O S,” for instance, in reporting the 2nd section of No. 81 out of Bourbon, the following form would be used “O S OS H RN 2nd 81 d 3 18

R N." "O S" is a signal for all offices to take notice, "H" Despatcher's office, "R N" Bourbon office, "2nd 81" train reported, "d" departed, "3 18" the time, "R N" Bourbon office. When giving the arrival, insert the letter "a," immediately before the departure, as "O S

O S H R N 2nd 81 a 2 55 d 3 18

R N." Whenever a failure to report a first-class train by the signal "Now" is made, the "O S" form will be substituted.

SUGGESTIVE FOR COMMERCIAL WORK.

Names of Officials and Others.

Name.	Location.	Vocation.
E. B. Bailey	Chicago	General Supt.
M. A. Whaley	"	District Supt.
M. C. Kellim	"	Supt. Construction
C. D. Agnew	"	Manager
A. B. Brown	"	Wire Chief
C. M. Larkin	"	Traffic Chief
C. A. Allen	"	Chief Operator
J. L. Hill	Valparaiso	Manager
G. Z. Kraus	"	Lineman
R. E. Evans	Wanatah	Manager
C. W. Skinner	Hanna	Manager
H. L. White	Hamlet	Manager
C. H. Edick	Plymouth	Manager
B. C. Huling	"	Lineman

O. Marshall	Inwood	Manager
B. A. Lewis	Bourbon	Manager
M. H. Hubbard	Warsaw	Manager
H. B. Jones	"	Lineman
H. E. Sherlock	Pierceton	Manager
C. D. Cole	Columbia City	Manager
F. C. Price	"	Lineman

Cities.	Office Call.	Nature of Office.
Chicago.....	C H.....	relay office
Valparaiso.....	V.....	relay office
Wanatah.....	S X.....	local office
Hanna.....	K A.....	local office
Hamlet.....	H A.....	local office
Plymouth.....	P.....	relay office
Inwood.....	H N.....	local office
Bourbon.....	R N.....	local office
Warsaw.....	K S.....	local office
Pierceton.....	Q S.....	local office
Columbia City.....	G I.....	relay office

We assume, in using this schedule, that Chicago represents the large relay office, Valparaiso, Plymouth and Columbia City the local relay offices, while Wanatah, Hanna, Hamlet, Inwood, Bourbon, Warsaw and Pierceton will represent the local offices. Hence, a message to be transmitted from Buffalo, New York to Inwood, Indiana would be "relayed" twice,—Chicago and Plymouth.

DUTIES OF RAILROAD EMPLOYES.

TRAIN MASTERS.

The Train Master reports to and receives his instructions from the Superintendent.

It is his duty to take charge of the movement of the traffic; exercise supervision over the men employed on the trains, see that they understand and observe the rules, and suspend them when necessary for neglect of duty; in case of detention of trains by accident or obstruction, go to the place if necessary, take general charge of clearing the road, and see that proper precautions are taken to insure the safety of trains and property.

Assistant Train Masters, in the particular duties or districts assigned them, have the same authority as the Train Master, and will act for him in his absence, as may be directed.

STATION AGENTS.

Station Agents report to and receive their instructions from the Superintendent. They must conform to the instructions issued by the Passenger, Freight and Accounting Departments, and the Treasurer.

First Class Agents are required to devote their time exclusively to the business of the Company. Second Class Agents may be per-

mitted to engage in other business when it does not interfere with the proper discharge of their duties.

The Station Agent has charge of the Company's books and papers, and the buildings, sidings and grounds at his station; and must preserve order in and about the station, and keep the buildings and grounds in proper condition.

It is his duty to attend to the sale of tickets and the receiving, delivering and forwarding of freight, and collections for the same; see that cars are properly loaded or unloaded and forwarded; keep the accounts, and make reports and remittances in the manner prescribed.

He has charge of the employes at the station and must see that they perform their duties properly; promptly report to the Superintendent any misconduct or violation of the rules, and anything that is observed that is prejudicial to the company's interest or may interfere with the safe and economical working of the road.

He must not sell tickets to persons who are not in a condition to take care of themselves, or whose conduct might endanger their lives or make them a source of annoyance to others on the train.

He must see that cars left at the station have the brakes applied and are not moved by unau-

thorized persons or shifted so as to interfere with the safety of trains.

YARD MASTERS.

Yard Masters report to and receive their instructions from the Train Master.

They have charge of the yards where trains are made up, and of the men employed, and the movement of trains and distribution of cars therein.

It is their duty to see that trainmen and engines are ready for duty at the appointed times; that trains are properly made up and leave on time; that conductors are furnished with manifests for cars leaving their station; that manifests are received for cars arriving; that doors of loaded cars are properly secured; that cars are inspected, and those needing repairs sent to the shop; that records and reports are made in accordance with instructions; and that all official notices are posted on the bulletin board.

They must be familiar with the rules of the freight service, and the duties of employes connected with freight trains; require the efficient discharge of those duties in their yards; and report all violations of the rules coming under their notice.

When signals are to be carried by trains for

following sections, the Yard Master must see that this is done.

DIVISION OPERATORS OR CHIEF TRAIN DESPATCHERS.

The Division Operator or Chief Train Despatcher reports to and receives his instructions from the Superintendent.

He is responsible for the condition and proper working of the wires and instruments, the prompt transmission of messages and the economical use of supplies.

He has charge of the operators and the telegraph repairmen on his division; will direct them with regard to their duties, and see that they understand and obey them, and are provided with the necessary signals and supplies.

TRAIN DESPATCHERS.

The Train Despatcher reports to and receives his instructions from the Superintendent.

It is his duty to issue telegraphic orders for the movement of trains, in the name of the Superintendent; see that they are transmitted and recorded in the manner prescribed; and have a record kept showing the time each train passes each telegraph office and the names of all trainmen on duty, the time the Despatcher and the Operators in his office go on and off duty, and

important incidents which occur while he is on duty.

A Despatcher, to be relieved by another, must not go off duty until so relieved, and he must explain to the Despatcher relieving him, the train orders in force, and give other information necessary for his guidance.

TELEGRAPH OPERATORS.

Telegraph Operators report to and receive their instructions from the Division Operator or Chief Train Despatcher and in his absence from the Train Despatchers. An Operator at a station must obey the instructions of the Station Agent, when they do not interfere with his duties as operator.

Operators are required to be constantly on duty during the hours assigned them, and must not leave their offices without permission. Offices are in charge of the day operators. Where two or more operators are employed during the day or night, there must be always one on duty. Where both day and night operators are employed, they must not leave their posts until relieved by each other, and those going off duty must inform those taking their places respecting unfinished business and the position of trains.

An operator must not leave his office when a train is at the station, unless required by business connected with the train.

Each operator must keep a register of the times at which trains pass his office, and such other offices as may be required; give particular attention to the adjustment of his instruments, and be ready at all times to receive train orders; in transmitting, receiving and delivering train orders conform to the prescribed rules; keep a full set of signals, in good order and ready for use, and use them in accordance with the rules; observe the rear of trains and report at once to the Despatcher and the next telegraph office, if markers or red lights are not displayed, as required by Rules No. 333 and 334.

Operators must be courteous in their intercourse with one another, and with persons transacting business at their offices, and must use no improper language over the wire. They must not take students or leave their offices in charge of other operators without permission, and must not permit employes or others to frequent their offices. They must not receive messages to be transmitted free, unless signed by, or addressed to, an officer, agent or employe, and on each message sent and received must place the date, the office call of the receiving office, the time and ini-

tials of the operators who sent and received it. They must preserve messages sent, and promptly deliver those received; and must consider all messages confidential, and not permit them to be read by any person except those to whom they are addressed, nor make their contents the subject of conversation or remark.

If the telegraph line fails at an office for an unusual length of time, the operator must test the wires and report, if possible, on which side of his office the failure is. If it is at a point which the Telegraph Repairman cannot reach promptly, the Operator must immediately notify the Track Foreman.

Operators must not contend for circuit. If an operator interrupts while another is sending except for a train order, indicated by "31" or "19," or for an important message, indicated by the usual wire signals, the operator sending will say "8," and if the request is not complied with, keep his key closed until he can proceed without interruption, and then report the case in writing.

The telegraph is not to be used for the transmission of communications which may be sent by train without detriment to the company's interests, and operators should report any such cases observed.

TELEGRAPH REPAIRMEN.

Telegraph Repairmen report to and receive their instructions from the Division Operator or Chief Train Despatcher.

It is their duty to keep the poles in proper position, and the wires connected, insulated and clear of all obstructions, and make all necessary repairs, calling on the Track Foreman for assistance when required.

They must frequently pass over the road and observe the condition of the Telegraph line and the connections at the offices, and promptly report anything observed that may interfere with the proper working of the line.

They must always be provided with a full set of tools and be ready to respond immediately to any orders they may receive, and must supply the Operators and Track Foremen with wire and insulators, and instruct them in regard to splicing the wire and making other repairs. They must report each morning the part of the road they will be on during the day.

PASSENGER CONDUCTORS.

Passenger Conductors report to and receive their instructions from the Train Master. They must conform to the instructions issued by the

Accounting and Passenger Departments and the Treasurer.

The conductor is responsible for the movement, safety and proper care of his train, and for the vigilance and conduct of the men employed thereon, and must report any misconduct or neglect of duty.

It is his duty to ascertain that passengers are provided with tickets, collect fare from those who are not, and put off, at a convenient station, any who refuse to pay fare; attend courteously to the comfort and wants of passengers, and see that his trainmen do the same; see that passengers are properly seated, and not allow them to ride on the platforms or in the baggage or mail cars, or violate, in any respect, the regulations provided for their safety, and maintain good order, and not allow drunken or disorderly persons to get on the train.

He must report for duty at the appointed time with his trainmen; assist in making up his train when necessary; see that the engine and train are supplied with full sets of signals, and ascertain that the cars have been cleaned and inspected and properly equipped, and that the brakes and other appliances are in proper order.

He must have a reliable watch and a copy of the Time Table; examine the bulletin board be-

fore, and at the end of, each trip; and compare time with the Engineman before starting, and see that he has the Time Table.

FREIGHT CONDUCTORS.

Freight Conductors report to and receive their instructions from the Train Master, and must obey the orders of Yard Masters.

The Conductor is responsible for the movement, safety and proper care of his train, and for the vigilance and conduct of the men employed thereon, and must report any misconduct or neglect of duty.

He must have a reliable watch and a Time Table; examine the bulletin board before, and at the end of, each trip; and compare time with the Engineman before starting, and see that he has the Time Table.

He must report for duty at the appointed times with his trainmen; assist in making up his train when necessary; see that the engine and train are provided with full sets of signals; see that the couplings and brakes are in good order before starting, and inspect them as frequently as opportunity permits; see that the Brakemen occupy their proper places on the train and use the brakes properly; handle freight with care, using every effort to prevent

loss or damage; keep the car doors fastened, except when loading or unloading; and not permit unauthorized persons to enter the cars or handle freight or ride upon the train.

He must not move cars on which the load is beyond their safe capacity or exceeds the authorized quantity or dimensions, or is improperly placed, and when cars are left on a siding, he must see that the brakes are put on tightly and every precaution taken to prevent them from being improperly moved.

PASSENGER BRAKEMEN.

Passenger Brakemen report to and receive their instructions from the Train Master. While on duty they are under the direction of the Conductor.

It is the duty of Brakemen to attend to the brakes; be provided with, take care of and properly display train signals; attend to the lighting, heating and ventilation of the cars; open and close the car doors, and assist the Conductor in the proper disposition of passengers, and in preventing them from riding on the platforms, or in any way violating the regulations provided for their safety; in preserving order, and in all things requisite for the prompt and safe move-

ment of the train and the comfort of the passengers.

They must report for duty at the appointed times; assist in making up their trains if necessary; give polite attention to the wants of passengers, avoiding unnecessary conversation. When necessary to pass through sleeping cars, do so quietly so as not to disturb passengers; announce at each stopping place the name of the station and the length of the stop if more than two minutes; and, when approaching the next station at which the train stops, announce distinctly its name, thus: "THE NEXT STATION IS ——," adding "FLAG STATION," when the fact requires it.

When not engaged in duty elsewhere, the Brakeman must stand at the front door of the car, ready to respond to the Engineman's signal. The post of the rear Brakeman (or Flagman) is on the last car of the train, which he must not leave except to go back to protect the train, which he must do immediately in cases in which the rules require it, without waiting for a signal or instructions to do so. The front Brakeman must in like manner protect the front of the train when the fireman cannot leave the engine. If the train should part, the Flagman must immediately stop the rear portion and send for-

ward the most reliable person he can secure to make danger signals until the front portion comes back, while he protects the rear.

BAGGAGEMEN.

Baggagemen report to and receive their instructions from the Train Master. While on duty they are under the direction of Conductors. At stations they must obey the orders of Station Masters. They must conform to the instructions issued by the Accounting and Passenger Departments.

It is their duty to receive, take care of and correctly deliver baggage carried on the trains; check baggage at stations where there are no Baggage Agents; collect, report and remit the proper charge for excess over the amount of baggage allowed each passenger; take charge of and promptly deliver letters and packages forwarded on railroad business or addressed to Officers or Agents; and attend to the lights and stoves in the baggage cars while on duty.

They must report for duty at the appointed times; handle baggage carefully; be civil and obliging to passengers, and remain in the baggage car while on duty, except when required to take the place of the front Brakeman when he has gone out to protect the train.

They must not carry letters, packages, money or other valuables not authorized by the regulations; nor receive any perquisite for the transportation of any article except such as they may be authorized to take charge of, at fixed rates for special care; and they must not permit any one to ride in the baggage car except mail agents, express agents, and news agents, in the discharge of their duties.

BAGGAGE AGENTS.

Baggage Agents report to and receive their instructions from the Superintendent. They must obey the orders of Station Agents, and conform to the instructions issued by the Passenger and Accounting Departments.

It is the duty of the Baggage Agent to receive and check baggage, and deliver it to the Baggage men of the trains; take charge of baggage put off trains at his station; handle baggage carefully; be civil and obliging to passengers, and require them to show their tickets before checking their baggage in order to avoid errors in route or destination.

He must keep a supply of the necessary checks, secure them from theft or loss, and promptly return those belonging to other stations.

ENGINEMEN.

Enginemen report to and receive their instructions from the Road Foreman of Engines. They must obey the orders of the Train Master. They must obey the orders of Station Masters and Yard Masters as to shifting and making up trains, and those of Conductors as to starting, stopping and general management of trains, unless they endanger the safety of the train or require violation of rules. When at the engine house they are under the direction of the Engine House Foreman.

The Engineman must have a reliable watch, a copy of the Time Table and a full set of signals, examine the bulletin board before starting on, and at the end of, each trip, and compare time with the conductor of his train before starting.

He must report for duty at the appointed times; see that the engine is in good working order and furnished with the necessary supplies; give checks for fuel and stores received, and assist in shifting and making up the train.

He must exercise caution and good judgment in starting and stopping the train, and in moving and coupling cars, so as to avoid disturbance to passengers and injury to persons or property; keep a constant lookout on the track for signals and obstructions; stop and inquire respecting

any signal not understood, and report any neglect of duty observed; use every precaution against fire, and not permit burning waste, hot cinders or any other thing to be thrown or dropped from the engine; clean the ash pan only at points specially designated; report the condition of the engine at the end of each trip, and assist in making repairs when called upon.

He must not leave the engine during a trip except in case of necessity, and must then leave the Fireman in charge.

FIREMEN.

Firemen report to and receive their instructions from the Road Foreman of Engines. They must obey the orders of the Train Master, and when at the engine house they are under the direction of the Engine House Foreman. When with the engine the Fireman must obey the orders of the Engineman respecting the proper use of fuel and performance of his duties.

The Fireman must report for duty at the appointed times; assist in shifting and making up the train when required; assist the Engineman in keeping a lookout on the track for signals and obstructions; take charge of the engine during the absence of the Engineman and not permit any unauthorized person to be upon it, and assist

in cleaning the engine after each trip, and in making repairs when required. He must not run an engine in the absence of the Engineman unless in some emergency he is directed to do so by the Conductor, or someone in authority. He must be familiar with the rules that apply to the protection of trains and the use of signals, which he must be prepared to use promptly, and must examine the bulletin board before starting on, and at the end of, each trip.

CAR INSPECTORS.

Car Inspectors report to and receive their instructions from the Superintendent, and must obey the orders of the Superintendent of Motive Power, or of Station Masters or Yard Masters.

It is their duty to inspect all cars passing their stations; making needed repairs, and send to the shop cars not fit for service.

They must see that cars in passenger trains are properly washed, equipped and warmed; that all the fixtures are clean and in good order and ready for use; that the load on freight cars is properly placed, and does not exceed the safe capacity, nor the authorized quantity or dimension.

When inspecting cars they must protect themselves by placing a blue signal on the end of each car or train, as per Rule No. 338.

SUPERVISORS OR ROAD MASTERS.

Supervisors report to and receive their instructions from the Engineer of Maintenance of Way.

The Supervisor has charge of the repairmen and other laborers employed on his division, and must see that they perform their duties properly; discipline them for neglect of duty; and keep account of and report their time in the manner prescribed. He is responsible for keeping the track and roadbed, bridges, culverts, telegraph line and everything pertaining to the roadway in repair.

He must frequently pass over his division; observe the condition of the track and bridges; see that the proper slopes and ditches are preserved, and that culverts and drains are kept open; note anything liable to obstruct the track, and have it removed; and do everything necessary to secure the safety of the road.

He must know that the persons under his charge understand and obey the rules and understand the use and meaning of signals; see that materials are safely kept and economically used; attend in person to the removal of slides, snow or other obstructions; in case of accident take the necessary force to the place, and use every effort to clear the road; have the standard time,

and compare with each Foreman once a week or oftener; give attention to the water supply, and report any defect or deficiency; keep an oversight of work performed by contractors or mechanics, and see they do not endanger the safety of the road; and make careful inquiry and report fully in writing, respecting any accident, or cases of personal injury to passengers, employes and others, on his division.

The Supervisor must be familiar with the instructions issued for the government of trains and trainmen, and report any neglect of duty or violations of the rules that come under his notice.

STANDARD RAILWAY RULES

As Recommended by The American Railway Association.

GENERAL RULES.

1. Employes whose duties are prescribed by these rules must provide themselves with a copy.

2. Special instructions, given by proper authority, must be observed while in force.

3. Employes are required to be conversant with, and obey the rules and special instructions. If in doubt as to their meaning they must apply to the proper authority for an explanation.

4. Employes must pass the required examinations.

5. Persons employed in any service on trains are subject to the rules.

6. Employes, while on duty, must wear the prescribed badge or uniform and be neat in appearance.

7. The use of intoxicants, while on duty, is prohibited. Their habitual use, or the frequenting of places where they are sold, is sufficient cause for dismissal.

8. The use of tobacco by employes when in or about passenger stations, or by passenger trainmen when on duty is prohibited.

9. Persons authorized to transact business at stations or on trains must be required to conduct themselves in a quiet and orderly manner, without annoyance to passengers.

10. In case of danger to the company's property employes must unite to protect it.

11. Employes must render all the assistance in their power in carrying out the rules and special instructions.

12. Any violation of the rules must be reported.

STANDARD TIME.

312. Observatory Standard Time is the only recognized standard, and will be transmitted daily from the observatory to the designated offices.

313. The Central Standard Time will be telegraphed to all points at 11 a. m. daily.

314. Certain clocks will be designated as Standard Clocks.

315. Conductors and Enginemen must not take time from any clock unless it is designated as a Standard Clock.

316. Each conductor and engineman must have a reliable watch which has been examined and certified to on a prescribed form, by a designated inspector, and must file such certificate

with the authorized official before he is allowed to go on duty. Watches must be examined and certificates renewed as required by rule.

317. Each conductor and engineman must compare his watch with the designated Standard Clock before starting on each trip, and register his name and the time he compared his watch on a prescribed form.

318. Conductors and enginemen whose duties prevent them from having access to a Standard Clock must compare their watches daily with those of conductors and enginemen who have Standard Time, and have registered as provided in Rule 317.

TIME TABLES.

319. A Time-table is the general law governing the time of all regular trains at all stations. The times given for each train on the Time-table is the schedule of such train.

320. (A) Each Time-table from the moment it takes effect supersedes the preceding Time-table and all special instructions relating thereto.

320. (B) Each Time-table, from the moment it takes effect, supersedes the preceding Time-table and all special instructions relating thereto. A train of the preceding Time-table shall, unless otherwise directed, take the time and

rights of the train of the same number on the new Time-table.

A train of the new Time-table which has no corresponding number on the preceding Time-table shall not run until it is due to start from its initial point on any division after the Time-table takes effect.

320. (C) Each Time-table, from the moment it takes effect, supersedes the preceding Time-table and all special instructions relating thereto.

A train of the preceding Time-table loses its rights, and can thereafter proceed only by special orders.

A train of the new Time-table is one which is due to start from its initial point, on any division, after the Time-table takes effect.

321. Upon the Time-table not more than two sets of figures are shown for a train at any point. When two times are shown, the earlier is the arriving time and the latter the leaving time. When one time is shown it is the leaving time unless otherwise indicated.

Regular meeting or passing points are indicated on the Time-table by figures in FULL-FACED TYPE.

Both the arriving and leaving time of a train are in FULL-FACE TYPE when both are meet-

ing or passing times, or when one or more trains are to meet or pass it between those times.

Where there are more trains than one to meet or pass a train at any point, attention is called to it by a descriptive mark.

In all cases trains are required to clear and follow as per Rules 385 to 390 inclusive.

322. On the Time-table the words "daily," "daily, except Sunday," etc., printed at the head and foot of the schedule of a train, indicate when it shall run. The following signs placed before the figures indicate:

"s"—regular stop (or the same may be designated by the different styles of type used).

"f"—stop on signal to receive or discharge passengers or freight.

"¶"—Stop for meals.

"d"—Day telegraph station only.

"n"—Day and night telegraph station.

Trains are designated by numbers and their class indicated on the Time-table.

SIGNAL RULES.**SIGNALS.**

323. All employes whose duties may require them to give signals, must provide themselves with the proper appliances, and keep them in good order and always ready for immediate use.

324. Flags of the proper color must be used by day, and lamps of the proper color by night or whenever from fog or other cause the day signals cannot be clearly seen.

325. Red signifies danger, and is a signal to stop.

326. Green signifies caution, and is a signal to go slowly.

327. White signifies safety, and is a signal to go on.

328. Green and white is a signal to be used to stop trains at flag stations for passengers or freight.

329. Blue is a signal to be placed on a car or an engine to forbid its being moved.

330. A torpedo, placed on the top of the rail, is a signal to be used in addition to the regular signals.

The explosion of one torpedo is a signal to stop immediately; the explosion of two torpe-

does not more than 200 feet apart is a signal to reduce speed immediately, and look out for a danger signal.

331. A fusee is a signal which may be used in addition to the torpedoes or other signals.

332. A flag or lamp swung across the track, a hat or any object waved violently by any person on the track, signifies danger, and is a signal to stop.

TRAIN SIGNALS.

333. A train, while running, must display two green flags by day and two green lights by night, one on each side of the rear of the train, as markers, to indicate the rear of the train. Yard engines will not display markers.

334. A train running after sunset, or when obscured by fog or other cause, must display the headlight in front, and two or more red lights in the rear. Yard engines must display two green lights instead of red, except when provided with a headlight on both front and rear.

335. Each car on a passenger train while running must be in communication with the engine by a bell-cord or an equivalent appliance.

336. Two green flags by day and night and, in addition, two green lights by night, displayed in the places provided for that purpose on the front of an engine, denote that the train is fol-

lowed by another train, running on the same schedule and entitled to the same time-table rights as the train carrying the signals.

337. Two white flags by day and night and, in addition, two white lights by night, displayed in the places provided for that purpose on the front of an engine, denote that the train is an extra. These signals must be displayed by all extra trains, but not by yard engines.

338. A blue flag by day and a blue light by night, placed on or at the end of a car, engine or train, denote that workmen are at work under or about the car, engine or train. The car, engine or train, thus protected must not be coupled to or moved until the blue signal is removed by the person who placed it.

When a car, engine or train is protected by a blue signal, other cars must not be placed in front of it, so the blue signal will be obscured, without first notifying the workman, that he may protect himself.

WHISTLE SIGNALS.

339. One long blast of the whistle (thus, —) is the signal for approaching stations, railroad crossings and junctions.

340. One short blast of the whistle (thus, —) is the signal to apply the brakes—stop.

341. Two long blasts of the whistle (thus, — —) is the signal to throw off the brakes.

342. Two short blasts of the whistle (thus, — —) is an answer to any signal, except "train parted."

343. Three long blasts of the whistle (thus, — — —), to be repeated until answered as provided in Rule No. 362, is a signal that the train has parted.

344. Three short blasts of the whistle (thus, — — —), when the train is standing (to be repeated until answered, as provided in Rule No. 361), is a signal that the train will back.

345. Four long blasts of the whistle (thus, — — — —) is the signal to call in a flagman from the west or south.

Four long followed by one short blast of the whistle (thus, — — — — —) is the signal to call in a flagman from the east or north.

346. Four short blasts of the whistle (thus, — — — —) is the engineman's call for signals, from switch tenders, watchmen, trainmen and others.

347. Five short blasts of the whistle (thus, — — — — —) is a signal to the flagman to go back and protect the rear of train.

348. One long followed by two short blasts of the whistle (thus, — — —) is a signal to be

given by trains when displaying signals for a following train, to call the attention of trains to the signals displayed.

349. Two long, followed by two short blasts of the whistle (thus, — — — —) is the signal for approaching road crossings at grade.

350. A succession of short blasts of the whistle is an alarm for persons or cattle on the track, and calls the attention of trainmen to danger ahead.

BELL-CORD SIGNALS.

351. One tap of the signal-bell, when the train is standing, is the signal to start.

352. Two taps of the signal-bell, when the train is running, is the signal to stop at once.

353. Two taps of the signal-bell, when the train is standing, is the signal to call in the flagman.

354. Three taps of the signal-bell, when the train is running, is the signal to stop at the next station.

355. Three taps of the signal-bell, when the train is standing, is the signal to back the train.

356. Four taps of the signal-bell, when the train is running, is the signal to reduce speed.

357. When one tap of the signal-bell is heard, while a train is running, the engineman must

immediately ascertain if the train has parted, and, if so, be governed by Rule No. 403.

358. Signals of the same number of sounds shall have the same significance when given by other appliances than bell-cords and signal-bells.

LAMP SIGNALS.

359. A lamp swung across the track is the signal to stop.

360. A lamp raised and lowered vertically is the signal to move ahead.

361. A lamp swung vertically in a circle across the track, when the train is standing, is the signal to move back.

362. A lamp swung vertically in a circle at arm's length across the track, when the train is running, is the signal that the train has parted.

363. A flag, or the hand, moved in any of the directions given above, will indicate the same signal as given by a lamp.

FIXED SIGNALS.

364. Fixed signals are placed at junctions, railroad crossings, stations and other points as required. Special instructions will be issued indicating their position and use.

RULES GOVERNING THE USE OF SIGNALS.

365. A signal imperfectly displayed, or the absence of a signal at a place where a signal is usually shown, must be regarded as a danger signal, and the fact reported to the superintendent.

366. The unnecessary use of either the whistle or bell is prohibited. They will be used only when required by rule or law, or when necessary to prevent accident.

367. (Omitted.)

368. When a danger signal (except a fixed signal) is displayed to stop a train, it must be acknowledged as provided in Rule No. 342.

369. The engine-bell must be rung before an engine is moved.

370. The engine-bell must be rung for a quarter of a mile before reaching every public road crossing at grade, and until it is passed; and the whistle must be sounded at all whistling posts.

371. When two or more engines are coupled to the head of a train, the leading engine only shall display the signals as provided in Rules Nos. 336 and 337.

372. One flag or light displayed as provided in Rules 336 and 337 will be regarded the same as if two were displayed; but conductors

and enginemen will be held responsible for the proper display of all train signals.

373. When a train is being pushed by an engine (except when shifting and making up trains in yards) a white light must be displayed on the front of the leading car at night, or when the train is obscured by fog or other cause.

374. When a train turns out to meet or be passed by another train the red lights must be removed and green displayed as soon as the track is clear, but the red must again be displayed before returning to its own track.

Head-lights on engines, when on side tracks, must be covered as soon as the track is clear and the train has stopped, and also when standing at the end of double track.

375. The combined green and white signal is to be used to stop a train only at the flag stations designated by the schedule of that train. When it is necessary to stop a train at a point that is not a flag station for that train, a red signal must be used.

376. White signals must be used by watchmen at public road and street crossings to prevent persons and teams from crossing when trains are approaching. Danger signals must be used only when necessary to stop trains.

377. (Omitted.) 378. (Omitted.)

TRAIN RULES.

Classification of Trains.

379. Whenever the word train is used it must be understood to include an engine in service with or without cars, equipped with signals as provided in Rules 333 and 334. Regular trains are those represented on the time table, and may consist of one or more sections. All sections of a train, except the last, must display signals as provided in Rule No. 336. Extra trains are those *not* represented on the time table.

380. All regular trains are classified on the time table with regard to their priority of right to the track; trains of the first class being superior to those of the second and all succeeding classes, and trains of the second class being superior to those of the third and all succeeding classes; and so on indefinitely.

381. Extra trains may be distinguished as:

Passenger extra.

Freight extra.

Work train extra.

382. All extra trains are of inferior class to all regular trains of whatever class.

MOVEMENT OF TRAINS.

383. A train of inferior class must, in all cases, keep out of the way of a train of superior class.

384. On a single track, all trains in one direction, specified on the time table, have the absolute right of track over trains of the same or inferior class running in the opposite direction.

385. When trains of the same class meet on single track, the train not having the right of track must take the siding and be clear of the main track before the leaving time of the opposing train; but such train must not pass the switch to back in on a siding until after the arrival of the opposing train, unless otherwise directed by special instructions. When necessary to back in on the siding, before passing the switch, a flagman must be sent out in the direction of the opposing train, as per Rule No. 399.

386. When a train of inferior class meets a train of superior class on single track, the train of inferior class must take the siding and clear the train of superior class five minutes. A train of inferior class must keep ten minutes off the time of a train of superior class following it.

387. A train must not leave a station to follow a passenger train until five minutes after the departure of such passenger train, unless some form of block signal is used.

388. Passenger trains following each other must keep not less than ten minutes apart, unless some form of block signal is used.

389. Freight trains following each other must keep not less than five minutes apart.

390. A train must not leave a station expecting to meet or to be passed at the next station by a train having the right of track, unless it has ample time to reach such station, and clear the track as per Rule Nos. 385 and 386.

391. A train not having right of track must be entirely clear of the main track by the time it is required by rule to clear an opposing train or a train running in the same direction; failing to do so, it must be immediately protected, as provided in Rule No. 399.

392. Except at meeting or passing points, as provided in Rules 385 to 391, inclusive, a train must not arrive at a station in advance of its schedule arriving time, when shown.

A train must not leave a station in advance of its scheduled leaving time.

393. All trains must stop at schedule meeting or passing points on single track, if the train to be met or passed is of the same class, unless the switches are plainly seen to be right and the track clear. The point at which a train should

stop is the switch used by the train to be met or passed in going on the siding.

When the expected train of the same class is not found at the scheduled meeting or passing point, the train having right of track must approach all sidings prepared to stop, until the expected train is met or passed.

394. All trains must approach the end of double track, junctions, railroad crossings at grade, and drawbridges, prepared to stop, and must not proceed until the switches or signals are seen to be right, or the track is plainly seen to be clear. Where required by law, all trains must stop.

395. A train must not leave its initial station or any division, or a junction, or pass from double to single track, until it is ascertained that all trains due, which have the right of track over it, have arrived or left.

396. (Omitted.)

397. (Omitted.)

398. When it is necessary for the flagman to go back to protect the rear of his train, the next brakeman must immediately take the flagman's position on the train, and remain there until relieved by the flagman; and on passenger trains the baggage master must take the place of the front brakeman whenever necessary.

399. When a train stops or is delayed under circumstances in which it may be overtaken by a following train, the flagman must go back immediately with danger signals à sufficient distance to insure full protection. When recalled he may return to his train, first placing two torpedoes on the rail when the conditions require it.

The front of the train must be protected in the same way, when necessary, by the fireman.

400. (Omitted.)

401. (Omitted.)

402. When it is necessary for a train on a double track to cross over to the opposite track, a flagman must be sent out with danger signals, as provided in Rule No. 399.

403. If a train should part while in motion, trainmen must use great care to prevent the detached parts from coming into collision. Enginemen must give the signal as provided in Rule No. 343, and keep the front part of the train in motion until the detached portion is stopped.

The front portion will have the right to go back, regardless of all trains, to recover the detached portion, first sending a flagman with danger signals six hundred yards in the direction in which the train is to be backed, and running with great caution, at a speed not exceeding four miles per hour. On single track all the

precautions required by the rules must also be taken to protect the train against opposing trains. The detached portion must not be moved or passed around until the front portion comes back. This rule applies to trains of every class. When it is known that the detached portion has been stopped, and the whole occurrence is in plain view, no curves or other obstructions intervening, so that signals can be seen from both portions of the train the conductor and engineman may arrange for the recoupling, using the greatest caution.

404. When a train is being pushed by an engine (except when shifting and making up trains in yards) a flagman must be stationed in a conspicuous position on the front of the leading car, to immediately signal the engineman in case of danger.

405. A train starting from its initial station on each division, or leaving a junction, when a train of the same class running in the same direction is over-due, will proceed on its own time and rights, and the overdue train will run as provided in Rule 388 or 389.

406. A train which is delayed, and falls back on the time of another train of the same class, does not thereby lose its rights.

407. Regular trains twelve hours or more behind their schedule time, however, lose all their rights.

408. A train overtaking another train of the same or superior class disabled so that it cannot move, will pass it, and, if necessary to enable it to proceed, will take the rights and orders of the disabled train, and proceed to the first open telegraph office, where it will report to the Superintendent. The disabled train will take the rights and orders of the last train passing it, with which it exchanged rights or orders, and proceed until the first open telegraph office is reached.

409. All messages or orders respecting the movement of trains or the condition of track or bridges must be in writing.

410. Trains must not display signals for a following train without orders from the Superintendent or other authority designated by the Superintendent.

411. Extra trains must not be run on single track without an order from the Superintendent.

412. When signals displayed for a following train on single track are taken down at any point before the following train arrives, the conductor must inform the Superintendent promptly by telegraph, and also the operator or switch

tender; and the latter, unless there is some other provision for the purpose, must notify all opposing trains of the same or inferior class leaving that point before the train arrives for which signals were displayed.

If signals are taken down at a point where there is no operator, switch tender, or other provision for the purpose, the conductor must notify all opposing trains of the same or inferior class until he reaches the next telegraph office, when he must inform the Superintendent; and the operator, unless there is some other provision for the purpose, must notify all opposing trains of the same or inferior class until directed otherwise by the Superintendent.

If the train for which signals were displayed leaves the main line at a point where there is no operator, switch tender, or other provision for the purpose, a flagman must be left to notify opposing trains that it has arrived.

413. Work trains will be run as extras under special orders, and will be assigned working limits.

414. Great care must be used by the engine-men and trainmen of a train approaching a station where any train is receiving or discharging passengers.

415. Enginemen should observe trains run-

ning on the opposite track and, if running too closely together, call attention to the fact.

416. (Omitted.)

417. Conductors will be held responsible for the proper adjustment of the switches used by them and their trainmen, except where switch tenders are stationed.

Whoever opens a switch shall remain at it until it is closed, unless relieved by some other competent employe.

When there is more than one train to use a switch, it must not be left open unless one of the trainmen of the following train is at the switch and takes charge of it.

418. (Omitted.)

419. A train must not start without a signal from its conductor.

420. Conductors and enginemen will be held equally responsible for the violation of any of the rules governing the safety of their trains, and they must take every precaution for the protection of their trains, even if not provided for by the rules.

421. In all cases of doubt or uncertainty take the safe course and run no risks.

RULES FOR MOVEMENT OF TRAINS BY TELEGRAPHIC ORDERS,

As Recommended by the American Railway Association.

450. Special orders, directing movements varying from or additional to the time-table, will be issued by the authority and over the signature of the Superintendent. They are not to be used for movements that can be provided for by rule or time-table. They must not contain information or instructions not essentially a part of them.

They must be brief and clear, and the prescribed forms must be used when applicable; and there must be no erasures, alterations or interlineations.

451. Each order must be given in the same words to all persons or trains directly affected by it, so that each shall have a duplicate of what is given to the others.

452. Orders will be numbered consecutively for each day issued, beginning with No. 1 at midnight.

453. Orders must be addressed to those who are to execute them, naming the place at which each is to receive his copy. They must be addressed to the conductor and engineman. A

copy for each person addressed must be supplied by the operator.

454. Each order must be written in full in a book provided for the purpose at the Superintendent's office; and with it must be recorded the names of trainmen and others who have signed for the order; the time and signals, showing when and from what offices the order and responses were transmitted, and the train despatcher's initials. These records must be made at once on the original copy, and not afterward, from memory or memoranda.

455. The terms "superior right" and "inferior right" in these rules, refer to the rights of the train under the time-table and train rules, and not to rights under special rules.

456. When an order is to be transmitted, the signal "31" (as provided in Rule 459), or the signal "19" (as provided in Rule 461), meaning "train order," will be given to each office addressed, followed by the word "copy," and a figure indicating the number of copies to be made, if more or less than three—thus, "31 copy 5," or "19 copy 5."

457. An order to be sent to two or more offices must be transmitted simultaneously to as many as practicable. The several addresses must be in the order of the superiority of rights

of trains, and each office will take only its proper address. When not sent simultaneously to all, the order must be sent first for the train having the superior right of track.

458. Operators receiving orders must write them out in manifold during transmission and make the requisite number of copies at one writing, or trace others from one of the copies first made.

459. When an order has been transmitted, preceded by the signal "31," operators receiving it must (unless otherwise directed) repeat it back at once from the manifold copy, and in the succession in which their several offices have been addressed. Each operator repeating must observe whether the others repeat correctly. After the order has been repeated correctly by the operators required at the time to repeat it, the response "O K," authorized by the train dispatcher, will be sent, simultaneously to as many as practicable, naming each office. Each operator must write this on the order, with the time, and then reply, "i i O K," with his office signal.

Those to whom the order is addressed, except enginemen, must then sign their names to the copy of the order to be retained by the operator, and he will send their signatures to the Superintendent. The response "complete," with the

superintendent's initials, will then be given, when authorized by the train despatcher. Each operator receiving this response will then write on each copy the word "complete;" the time; and his last name in full; and will then deliver a copy to each person included in the address, except enginemen, and each must read his copy aloud to the operator.

The copy for each engineman must be delivered to him personally by ——, and the engineman must read it aloud to ——, and understand it before acting upon it.

460. For an order preceded by the signal "31," "complete" must not be given to the order for delivery to a train of inferior right until "O K" has been given to and acknowledged by the operator who receives the order for the train of superior right. Whenever practicable, the signature of the conductor of the train of superior right must be taken to the order and "complete" given before the train of inferior right is allowed to act on it.

After "O K" has been given and acknowledged and before "complete" has been given, the order must be treated as a holding order for the train addressed, but must not be otherwise acted on until "complete" has been given.

If the line fails before an office has received

and acknowledged "O K" to an order preceded by the signal "31" the order at that office is of no effect, and must be there treated as if it had not been sent.

461. When an order has been transmitted, preceded by the signal "19," operators receiving it must (unless otherwise directed) repeat it back at once from the manifold copy, and in the succession in which the several offices have been addressed. Each operator repeating must observe whether the others repeat correctly. After the order has been repeated correctly, the response "complete," with the superintendent's initials, will be given, when authorized by the train despatcher. Each operator receiving this response must write on each copy the word "complete," the time, and his last name in full, and reply "i i complete" with his office signal, and will personally deliver the order to the persons addressed without taking their signatures.

462. For an order preceded by the signal "19," "complete" must be given and acknowledged for the train of superior right before it is given for the train of inferior right.

If the line fails before an office has received and acknowledged the "complete" to an order, preceded by the signal "19," the order at that

office is of no effect, and must be treated as if it had not been sent.

463. The order, the "O K" and the "complete" must each, in transmitting, be preceded by "31" or "19," as the case may be, and the number of the order, thus "31 No. 10," or "19 No. 10." In transmitting the signature of a conductor it must be preceded by "31," the number of the order, and the train number, thus, "31 No. 10, Train No. 5." After each transmission and response the sending operator must give his office signal.

464. The operator who receives and delivers an order must preserve the lowest copy. On this must appear the signatures of those who sign for the order, and on it he must record the time when he receives it; the responses; the time when they are received; his own name; the date and the train number, for which places are provided in the blanks. These copies must be sent to the superintendent.

465. (Omitted.)

466. (Omitted.)

467. For orders delivered at the superintendent's office the requirements as to record and delivery will be the same as at other points.

468. Orders to persons in charge of work requiring the use of track in yards or at other

points, authorizing such use when trains are late, must be delivered in the same way as to conductors of trains.

469. An order to be delivered to a train at a point not a telegraph station, or while the office is closed, must be addressed to

“C and E, No. — (at ———), care of ———,” and forwarded and delivered by the conductor or other person in whose care it is addressed. “Complete” will be given upon the signature of the person by whom the order is to be delivered, who must be supplied with copies for the conductor and engineman addressed, and a copy upon which he shall take their signatures. This copy he must deliver to the first operator accessible, who must preserve it, and at once advise the train despatcher of its having been delivered and received.

Orders so delivered to a train must be compared by those receiving them with the copy held by the person delivering and acted on as if “complete” had been given in the ordinary way.

Orders must not be sent in the manner herein provided to trains the rights of which are thereby restricted.

470. When a train is named in an order, all its sections are included, unless particular sections are specified, and each section included must have copies addressed and delivered to it.

471. Meeting orders must not be sent for delivery to trains at the meeting point if it can be avoided. When it cannot be avoided, special precaution must be taken by the train despatchers and operators to insure safety.

There should be, if possible, at least one telegraph office between those at which opposing trains receive meeting orders.

An operator must not acknowledge the receipt of an order for a train that is at his station, the engine of which has passed his train order signal, until he has personally notified the conductor and engineman that he has orders for them.

Orders should not be sent an unnecessarily long time before delivery, or to points unnecessarily distant from where they are to be executed. No orders (except those affecting the train at that point) should be delivered to a freight train at a station where it has much work, until after the work is done.

472. A train, or any section of a train, must be governed strictly by the terms of orders addressed to it and must not assume rights not conferred by such orders. In all other respects it must be governed by the train rules and time tables.

473. Orders once in effect continue so until fulfilled, superseded or annulled.

Where more than one movement is included in an order, any part of the order specifying a particular movement may be superseded.

Orders held by or issued for a regular train are annulled when such train has lost its rights, as provided by Rules 320 and 407, and other trains will be governed accordingly.

474 (A). A fixed signal must be used at each train order office, which shall display red at all times when there is an operator on duty, except when changed to white to allow a train to pass after getting orders, or for which there are no orders.

When red is displayed, all trains must come to a full stop, and not proceed as long as red is displayed. The signal must be returned to red as soon as a train has passed. It must only be fastened at white when no operator is on duty. This signal must also display red to hold trains running in the same direction the required time apart. Operators must be prepared with other signals to use promptly if the fixed signal should fail to work properly. If the signal is not displayed at a night office, trains which have not been previously notified must stop and inquire

the cause, and report the facts to the superintendent from the next open telegraph office.

When a semaphore is used, the arm means red when horizontal and white when in an inclined position.

474 (B). A fixed signal must be used at each train order office, which shall display red when trains are to be stopped for orders. When there are no orders the signal must display white.

When an operator receives the signal "31," or "19," he must immediately display red, and then reply "red displayed." The signal must not be changed to white until the object for which red is displayed is accomplished.

While red is displayed, all trains must come to a full stop and any train thus stopped must not proceed without receiving an order addressed to such train, or a clearance card on a specified form stating over the operator's signature that he has no orders for it. Operators must be prepared with other signals to use promptly if the fixed signal should fail to work properly. If the signal is not displayed at a night office, trains which have not been previously notified must stop and inquire the cause, and report the facts to the superintendent from the next open telegraph office.

When a semaphore is used, the arm means red when horizontal, and white when in an inclined position.

475. Operators will promptly record and report to the train despatcher the time of departure of all trains and the direction in which extra trains are moving. They will record the time of arrival of trains and report it when so directed.

476. Regular trains will be designated in orders by their schedule numbers, as "No. 10," or "2d No. 10," adding engine numbers if desired; extra trains by engine number, as "extra 798;" and all other numbers by figures. The direction of the movement of extras will be added when necessary, as "east" or "west." Time will be stated in figures only.

477. The following signs and abbreviations may be used:

Initials for superintendent's signature.

Initials for train despatcher's signature.

Such office and other signals as are arranged by the superintendent.

C & E—For conductor and engineman.

O K—As provided in these rules.

Min—For minutes.

Junc—For junction.

Frt—For freight.

No—For number.

Eng—For engine.

Opr—For operator.

9—To clear the line for train orders, and for operators to ask for train orders.

31 or 19—For train orders as provided in the rules.

The usual abbreviations for the names of the months and stations.

TRAIN ORDERS.**DOUBLE-ORDER SYSTEM.**

Order No. 1.

To c & e 12 S X.

To c & e 9 K S.

No 12 Eng 48 will meet and pass No 9 Eng 228 at Bourbon instead of Inwood.

C. D. L.

G. M. D.

We assume in this order that Inwood is the regular meeting point for these trains, but owing to No. 9 being behind time, they will meet at Bourbon on the date of this order.

Order No 2 (a).

To c & e 9 K S.

To c & e 2nd & 3rd 72 P.

To c & e Exa 421 East Ha.

No 9 Eng 228 will wait at Bourbon until six ten 610 P M at Inwood until six twenty 620 P M for 2nd & 3rd No 72 Eng 334 & 429 and Exa 421 East.

C. D. L.

G. M. D.

Order No 2 (b).

To c & e 9 K S.

To c & e 2nd & 3rd 72 P.

To c & e Exa 421 East Ha.

2nd & 3rd No 72 Engs 334 & 429 and Exa 421 East can have until six ten 610 P M to run to Bourbon and until six twenty 620 P M to run to Inwood for No 9 Eng 228.

C. D. L.

G. M. D.

In this order the three inferior trains, 2nd & 3rd No. 72, and extra east engine 421, are given a privilege, not granted on the time schedule, to run to either of these stations within a stated time as against a superior train. The two forms (a) and (b) are identically the same in meaning; the only difference being in the phraseology.

Order No 3 (a).

To c & e 4th 72 V.

To c & e 95 K A.

No 95 Eng 219 has right of track against 4th No 72 Eng 273 Hanna to Winslow.

C. D. L.

G. M. D.

Order No 3 (b).

To c & e 4th 72 V.

To c & e 95 K A.

No 95 Eng 219 will run to Winslow regardless of 4th No 72 Eng 273.

C. D. L.

G. M. D.

In this order No 95, the inferior train, becomes the superior one between the points designated. The two forms (a) and (b) are the same in meaning.

Order No 4 (a).

To c & e 22 V.

To c & e 94 & 1st 75 K A.

To c & e 2nd 75 & 77 P.

To c & e Exa 331 West H N.

No 22 Eng 307 will run one 1 hour and five 5 mins late Valpo to Hamlet Xng and fifty-five 55 mins late Hamlet Xng to Bourbon.

C. D. L.

G. M. D.

Order No 4 (b).

To c & e 22-V.

To c & e 94 & 1st 75 K A.

To c & e 2nd 75 & 77 P.

To c & e Exa 331 West H N.

Nos 94 Eng 391, 75 Engs 296 & 302, 77 Eng 549 and Exa 331 West may use one hour and five mins time on No 22 Eng 307 between Valpo & Hamlet Xng and fifty-five mins between Hamlet Xng and Bourbon.

C. D. L.

G. M. D.

In this order, forms (a) and (b), inferior trains, to which this order has been addressed, may add one hour and five minutes between Valparaiso and Hamlet Crossing, and fifty-five minutes between Hamlet Crossing and Bourbon, to the schedule time of No 22, and employ this additional time in running to other than regular meeting points to meet her.

Order No 5 (a).

To c & e 93 S X.

To c & e all frts west P.

No 66 due to leave Valpo Saturday May 20th is annulled between Valpo and Warsaw.

C. D. L.

G. M. D.

Order No 5 (b).

To c & e 93 S X.

To c & e all frts west P.

No 66 due to leave Valpo this date Saturday
May 20th is abandoned.

C. D. L.

G. M. D.

This order would be addressed to trains inferior to No. 66. Either form (a) or (b) will explain its meaning.

Order No 6.

To c & e 3rd & 4th 76 V.

Eng 217 will take down signals and run as 4th; Eng 393 will carry signals and run as 3rd No 76 east of Hanna. Eng 217 will take siding and be passed by Eng 393 at Hanna.

C. D. L.

G. M. D.

In this order, the former third section becomes the fourth section, and the former fourth section becomes the third section east of Hanna.

Order No 7.

To Eng 77 V.

Eng 77 will run extra from Valpo to Davis.

C. D. L.

G. M. D.

This order permits engine 77 to run as an extra between the points named, keeping out of the way of all regular trains.

Order No 8.

To c & e 4th 72 W S.

To c & e 95 S X.

Order number three 3 is annulled. No 95 Eng 219 will side track and wait at Wanatah for 4th No 72 Eng 273.

C. D. L.

G. M. D.

This order countermands the unused portion of order number three, and requires No. 95 to side track and wait at Wanatah for fourth No. 72.

NOTES.

Train dispatchers in transmitting train orders will give the order number, the different addresses, the body, the superintendent's initials, and their own initials.

Operators in repeating a train order will give the order number, the train or trains addressed, their office call, the body, the superintendent's initials, the conductor's and engineer's signatures, and their own initials.

Operators, in acknowledging a train order, will give the order number, the train or trains addressed, their office call, the letter "X," and their initials.

No order can be delivered until a "complete," given by the train dispatcher, has been received for it.

BLOCK SIGNALING.

DEFINITIONS.

1. **Block**—A length of track of defined limits, the use of which by trains is controlled by block signals.

2. **Block Station**—An office from which block signals are operated.

3. **Block Signal**—A fixed signal controlling the use of a block.

4. **Home Block Signal**—A fixed signal at the entrance of a block to control trains in entering and using said block.

5. **Distant Block Signal**—A fixed signal of distinctive character used in connection with a home block signal to regulate the approach thereto.

6. **Advance Block Signal**—A fixed signal placed in advance of a home block signal to provide a supplemental block between the home block signal and the advance block signal.

7. **Block System**—A series of consecutive blocks controlled by block signals.

8. **Telegraph Block System**—One in which the signals are operated manually upon telegraphic information.

9. **Controlled Manual Block System**—One in which the signals are operated manually, and by

its construction requiring the co-operation of the signalmen at both ends of the block to display a clear signal.

10. Automatic Block System—One in which the signals are operated by electric, pneumatic or other agency actuated by a train, or by certain conditions affecting the use of a block.

TELEGRAPH BLOCK SIGNALS.

The section of track between two block stations is termed a "block."

Trains running by block signal rules are to be governed absolutely by the fixed signals at block stations, and will not observe Rules Nos. 387, 388 and 389.

The block signals are absolute or permissive. For the absolute block they will display red or white; for the permissive block, red, green or white.

Red indicates that the block is not clear, and means STOP. White indicates that the block is clear, and is permission to proceed. Green indicates that there are one or more trains on the block, and is permission to proceed with this knowledge.

Where a semaphore arm is used, a horizontal position means the same as red; vertical, or

nearly so, the same as white; and inclined midway between these positions, the same as green.

Night signals must be displayed from one hour before sunset until one hour after sunrise, and when from fog or other cause day signals cannot be clearly seen.

The signal must always display red, excepting when changed to white or green to permit a train to pass. As soon as the markers of a train have passed the signal, and not before, it must be returned to red. When displaying white or green, the signal must be held by the hand and not fastened.

No train must pass a block station while red is displayed, excepting under the circumstances herein provided for.

A train approaching a block station must so run that it can be stopped before the engine passes the signal, if the signal to proceed is not displayed.

A train must not be backed after stopping at a block station. If from any cause the engine shall have passed the signal without the signal to proceed having been displayed, the conductor will personally direct the engineman to proceed, after the proper signal is displayed.

In the absence of any signal at a block station, trains must stop and ascertain the cause.

If a train arrives at a block station where the operator is absent or where the signal is not working and orders cannot be obtained, the train shall proceed as if green were displayed and be governed by the time schedule. If there is an operator on duty and he cannot get orders for the train, he must give it written notice of the reason for the proper signal not being displayed.

If the telegraph line fails after a train enters a block, and the block cannot be ascertained to be clear for an approaching train, such train shall be stopped by red and notified by the operator in writing. Green shall then be displayed for the train to proceed. Where the absolute block is used it shall proceed, after getting such notice, as if green were displayed.

When a train approaches a block station, white will be displayed, if there is no train upon the block ahead.

Where the absolute block is used, red must continue to be displayed after a train has entered a block, until it has cleared it.

Where the permissive block is used, red must continue to be displayed after a passenger train has entered a block, until it has cleared it. After any other than a passenger train has entered a block, and has not cleared it, green must

be displayed for any following train approaching. If the following train is a passenger train, it must first be stopped by red and notified that there is a train ahead, unless the latter has had time to reach a crossing or siding on the block.

When a train is required to cross over to the opposite track between block stations, the conductor before crossing over must so notify the operator at the block station to be last passed. This operator must notify the operator at the next block station in the direction in which the train is moving, who must display green for any train approaching on the opposite track, until informed that the train that was to cross over has reached one of the block stations. The train must not enter the block until the conductor is informed that the operator at the next block station has been so notified, and Rule No. 402 must be observed.

At starting and junction points trains must not enter on the main track until the signal to proceed is given. This signal must not be given until the train has been protected on any track it is to enter upon or cross. Such protection must be by notice to the block stations in the proper directions and by the use of signals as required by the rules or by fixed distant signals.

Operators must promptly report to the next

block stations in each direction the movement of trains passing their stations. A train must not be reported as having passed until the rear end has passed at least 100 yards beyond the block signal.

When a passenger train is stopped by the block signal at a station where it receives or discharges passengers, it may run to the platform, and, if the block signal cannot be seen by the engineman, the conductor will, after the proper signal is displayed, personally direct him to proceed.

If a train passing a block station has no markers displayed, the operator must notify the operator at the next block station ahead, who must signal the train as per Rule No. 362 and the train must be governed accordingly. Notice must also be given to the block station in the rear, and the intermediate block in that direction must not be considered clear until information is received from the conductor that he has all his train.

An operator having orders for a train will frequently display a red, or train order signal, in addition to the block signal.

Operators will be governed by the following telegraph signals :

“5.” Is the track clear?

“No. 1.” Track is not clear—hold the train.

“O K 35.” Track is clear—let train come on.

The rules relating to block signals do not relieve trainmen from observing all rules in regard to the protection of their trains.

BLOCK SIGNAL EXAMINATION.

QUESTIONS WITH ANSWERS.

1. Q. What is a block station? A. A telegraph station with all the necessary signals for blocking trains.

2. Q. What is a block? A. The distance between two block stations.

3. Q. What is a positive block? A. A block where there is only one train allowed at a time.

4. Q. What is a cautionary or permissive block? A. A block where two trains are allowed by the use of a cautionary card or signal.

5. Q. Are block signals for any other purpose than blocking trains? A. They may be used for stopping trains for orders.

6. Q. What rules besides block signal rules applies to them? A. Train order rules.

7. Q. What is a block signal? A. A semaphore where arms govern by day, and red, green and white lights by night.

8. Q. Which arm and light of the block sig-

nal governs trains approaching such signal? A. The right arm and the light facing the train.

9. Q. What does the horizontal position of the arm or red light signify? A. Danger.

10. Q. What does the diagonal position of the arm or green light signify? A. Caution; another train is in the block.

11. Q. What does the vertical position of the arm or the white light signify? A. Clear; no train in the block.

12. Q. When a clear signal is given how far does it indicate that block is clear? A. To outer approaching switch at block station ahead.

13. Q. What switch is meant by the outer approaching switch of a block station ahead? A. The one farthest out from that station.

14. Q. At what position must signals always be kept except when changed to permit a train to pass? A. Horizontal or danger.

15. Q. While you have train orders on hand, at what position must block signals be left? A. Horizontal or danger.

16. Q. What must be done before issuing clearance cards to trains to which you have delivered orders? A. Ascertain if the block is clear and then issue clearance card.

17. Q. If you have no orders for a train, which is approaching, and block ahead is clear,

when should you give clear signal to that train?

A. As early as possible in order that they will not reduce speed.

18. Q. When is the proper time to report a train clear of a block? A. One hundred yards past the block station.

19. Q. When is the proper time to replace danger signals after a train has passed? A. Immediately after the markers have passed the block station.

20. Q. How are you to know when an entire train has passed your station? A. By the markers.

21. Q. What are the markers? A. Red lights by night and green flags by day.

22. Q. If a train passes with no markers displayed what would you infer, and what action would you take? A. Notify block stations on each side and report to train despatcher that train had parted.

23. Q. If you are notified by next block station in either direction that a train which has entered block has parted what would you do? A. Give "train parted" signal to engineer as front portion approached.

24. What is a "train parted" signal? A. A lamp or flag swung vertically at arm's length across the track.

25. Q. For what purpose is a cautionary block signal or card used? A. To allow a train to enter a block which is not clear.

26. (Omitted.)

27. (Omitted.)

28. Q. Suppose that two or more sections of a train were to meet an opposing train at your station; would you give the opposing train a clear signal before all the sections had passed and all orders on hand had been completed and delivered or cancelled or while there was another train in the block? A. No.

29. Q. What record of movements of trains is to be kept and at what time must the record commence? A. A record of train movements should be kept on a train register sheet and should be commenced at midnight daily.

30. (Omitted.)

31. (Omitted.)

32. Q. How are trains to be reported? A. To offices in both advance and rear.

33. Q. What does signal B signify? A. Block.

34. Q. What must be done with regard to an approaching train if a train from an opposite direction upon single track has entered the block? A. Leave danger signal displayed to hold approaching train.

35. Q. What should be done upon the approach of a train? A. If block is clear, and if you hold no orders for the train, display white or clear signal allowing it to proceed.

36. Q. What would be done in case you could not raise next block station to get him to block trains and you could not raise train despatcher for instructions? A. Issue a caution card stating the facts of the case. The train could then proceed only as in accordance with the time schedule.

37. Q. Under what conditions may a train be permitted to enter a block before a preceding train has cleared that block? A. Under a cautionary signal or card.

38. Q. How must your signals be displayed when trains are to meet at your station? A. They should be held at danger until one train is clear on the side track.

39. Q. What must be done in case a train is to use a cross-over switch or enter the opposite or wrong-going track? A. The conductor must notify the operator, at the block station to be last passed, of his intentions, which operator will notify the operator in the block station in advance, who will use the danger or cautionary signals for all opposing trains until informed

that the train which crossed over has reached his or another block station on the right track.

40. Q. If a train enters a siding at your station to be met and passed by another train what must you know before reporting the block clear?

A. That the markers on the rear of the train are clear on siding and that the switch is closed.

41. Q. If it should be necessary to stop a train while it is passing your station for which you have given a clear or caution signal which signal would you use. A. The danger signal, also hand signal.

42. Q. After an engine or a train has once passed your office and you are offered an order for that train, or you are ordered to block it, what would you do? A. Refuse it by stating the circumstances and then endeavor to stop the train.

43. Q. What must be done before closing a block signal station? A. Get relief from the train despatcher and notify the offices on each side.

44. Q. When such offices are closed what must be done with the signals? A. Leave them at white.

45. Q. What must be done when an office is reopened? A. Report to the train despatcher for duty and notify the stations on each side.

46. Q. What must be done before allowing first train to pass? A. Ascertain if block is clear.

47. Q. When should hand signals be used? A. Any time when the proper indications cannot be given by the fixed signal.

SINGLE-ORDER SYSTEM.

NOTE.—These rules will cover what is known as the “Single-order System.” They differ to some extent from those recommended by the American Railway Association and are used by comparatively few railroads. Indeed the railroad from which these rules were taken has now adopted the “Double-order System,” or those recommended by the American association. For the matter of that ninety or more per cent of the American railroads use the rules as recommended by the American Railway Association.

INSTRUCTIONS FOR MOVING TRAINS BY TELEGRAPH.

The train despatcher on duty will have full power to run any engine or train by telegraph he may think proper, but they must be run in accordance with the following instructions: The general manager and superintendent are the only persons authorized to move trains by special order, and but one person on the same circuit will be permitted to do so at the same time.

A train order board or a red flag by day, or a red light by night will be used at stations to hold trains for telegraphic orders. A locality once fixed upon for displaying this signal must not be changed without good reason, and when changed extra caution must be observed and trainmen promptly notified. Agents must keep these signals always in order and ready for immediate use.

When a train is stopped by a red signal at a telegraph station for anything but train orders, a clearance order must be handed to the conductors to indicate that the signal was not displayed for telegraph orders.

When the above signal is shown, approaching trains will in all cases be brought to a full stop, and conductors will go to the telegraph office in person to receive and respond to such orders as

may be awaiting them. Two copies of the order for which said signal is put up must be delivered by the operator to the conductor of every train arriving at any station while the red signal is out, one copy of which order must be delivered by each conductor to his engineer in person. To avoid delay to passenger trains, agents should have copies of these orders ready on their arrival. That there may be no doubt as to right of track, conductors and engineers must each receive and read such copy before going ahead. Operators must not fail to take in the signal at once, after the departure of the train for which it was shown.

When an operator receives an order to hold a train, and before giving "48" (signal displayed) to despatcher's "47" (display signals) he must first put out the red signal, and then reply that such train is held. He will be very careful to observe that the signal is not disturbed or hidden, and will promptly notify all other trains that the signal is not for them. This red signal must not be relied upon exclusively to hold trains. Operators must watch closely for the expected train, using all the necessary means to stop it. In case the train, or any part of it has already passed the telegraph office, although still at the station, operator's "48" must not be

sent back until the train has been stopped and the conductor has reported at the telegraph office.

Alterations, interlineations and erasures, must not appear on orders delivered to trainmen. Should it be necessary to make any change in the first copy, the despatcher must repeat the entire order, and a new copy be made by the receiving operator.

All orders for the movement of trains should be addressed to the conductor and engineer, and written by the receiving operator on manifold paper, so arranged that three impressions can be taken.

The conductor addressed should read the order carefully, and, if understood, should sign it; it will then be repeated back over the conductor's signature to the despatcher giving it, who will, if the order is correctly understood, reply "9" (correct), which must be indorsed over the proper signature upon the order countersigned by the receiving operator and the exact time of receiving the "9" given. Two impressions of the order, when properly indorsed, will be given to the conductor, who will retain one and give the other to the engineer in person. The other impression will be kept by the operator on a proper file.

Freight conductors will in all cases hand orders they receive to rear brakeman, passenger conductors to head brakeman, and passenger engineers to the fireman to be read. Engineers of freight trains will hand orders received to the fireman and head brakeman for reading.

An engineman in charge of a light or special engine has the same responsibilities as the conductor of a special train, and will be governed by the same rules.

Should the line, from any cause, fail to work before the operator has received the "9" he will not deliver such order.

Conductors must not leave a station, when directed to run by special orders, without having the same in writing in their possession, properly signed and indorsed "9."

All orders and messages relative to the movement of trains must be written in full and no abbreviations used, except the telegraph abbreviations—

"13"—(How do you understand this?)

"3"—(I understand I am to)

"9"—(Correct.)

Promptness on the part of trainmen and operators, in the transmission of, and response to, telegraph orders, is of the utmost importance in enabling trains to be moved with regularity, and

save detentions; and all concerned must bear in mind that frequently a few minutes unnecessary loss of time at a station results in some hours delay in accomplishing the whole trip, hence the importance of all dispatch possible, consistent with the safety of trains.

The safety of LIFE and PROPERTY imperatively demands that every person in any manner connected with the movement of trains by special order, should use the utmost care and watchfulness, and that all rules regarding the same should be strictly observed. Orders should be made plain and explicit, and if not fully understood by the conductors and engine-men addressed, an explanation should be required before taking the order. After the reception of an order, IT MUST BE OBEYED FULLY and to the letter. Verbal orders must not be taken.

All special orders for movement of trains must be given in following forms, excepting orders in regard to obstructed track or other matters which cannot be expressed in said forms, when the despatcher will use such wording as may be necessary to cover the case.

FORM A.

An order for an operator to hold two trains for a definite meeting point: Hold No. 1 (one), en-

gine....and No. 2 (two), engine....for each other.

FORM B.

An order for an operator to hold an expected train for orders: Hold No. 14 (fourteen), enginefor orders.

Both the despatcher transmitting and the operator receiving must be sure that the train has not passed the station before giving and accepting this order.

FORM C.

An order for an operator to hold one train until a certain time for another train: Hold No. 2 (two), engine....until 5:20 (five twenty), P. M. for No. 13 (thirteen), engine.... Hold No. 13 (thirteen), for No. 2 (two).

FORM D.

An order to a conductor to make a definite meeting point: Meet No. 13 (thirteen), engineat....

FORM E.

An order giving one train the right to the road against another to a certain point until a given time: You have until 5:20 (five twenty), P. M. to run to.....for No. 5 (five), engine....

Upon this order, the train addressed may run to the point designated in the order, providing it

has ample time to arrive there, by its average rate of running, and be clear on side track strictly at or before the time specified.

FORM F.

Special or extra train running order: Run tospecial or extra.

Upon this order the train or engine named will run to the point designated, keeping out of the way of all regular and flagged trains.

FORM G.

An order for a train not to pass a given point unless a certain train has arrived there: Do not passuntil 5:20 (five twenty), P. M., unless No. 1 (one), engineis there.

Upon this order, the train addressed will not leave the station designated until five minutes after the time specified, unless the train named in the order has arrived there.

FORM H.

An order for a train not to pass a certain point without getting orders there: Do not passwithout getting orders there.

This form of order must not be given until after a holding order has been placed at the station where said train is to get orders.

FORM I.

An order for a regular train to run ahead of time: Run extra ahead of time to.....

Under no circumstances must a train be given a time order on another train that is running ahead of time.

FORM J.

When second or third class trains run ahead of first class trains by special order, first class trains will receive orders on the following form:

Run....minutes behind schedule time fromto.....

Upon this order the first class train will run not less than five minutes more behind its schedule time, than the time specified in the order.

FORM K.

The following form of order will be given the second or third class trains:

Use....minutes on the time of train No..., engine....to run from.....to.....

Upon this order the second or third class train can use the time of the first class train, as indicated in the order, to make the designated or any intermediate station ahead of the first class train, but not ahead of its own schedule time. Following sections of second or third

class, extra or special trains and light engines must each obtain orders as above.

Despatchers may use form "E" in running a second or third class, extra or special train and light engine against a passenger train, but must first place an order at the point to which he gives the second or third class, extra or special train and light engine a time order, as per form "C."

FORM L.

An order giving a work train the right to work extra and on the time of freight trains, under the protection of red signals: Work extra to-day until . . . P. M. between and under signals against freight trains.

Upon this order the work train must be protected under red signals against all regular freight trains, as provided by rule.

Despatchers must give all freight trains orders before allowing them to enter upon the limits of a work train, as per form "M."

Despatcher in running an extra train upon the limits of a work train must first give orders to the work train to flag against them, as per form "N," and afterwards notify the extra train upon the following form :

FORM M.

Look out for work train No. . . . , engine ,
between and

Upon this order any train or light engine must run carefully between stations designated, flagging around curves, as provided by rule.

FORM N.

An order for a work train to flag against an extra train: Flag against No. . . . , engine , left at P. M.

Upon this order the work train must be protected under red signals.

FORM O.

An order for a train to carry red signals to a given point for a train following:

To conductor and engineer 1st section No. . . .

Carry red signals for second section No. . . . , engine , from to

Upon this order the train carrying the red signals must register at all terminal points, stating for what train and engine carried.

In giving a receipt to a conductor of a train carrying a red signal, at a point where such signal is taken down, the following form would in each case be used:

To conductor and engineer

I will display signals holding all trains until

the arrival of second section of No. . . . , engine
 Operator.

No light engine must be allowed to follow a passenger train on a red signal.

FORM P.

An order giving a train the right to follow another train that is carrying red signals:

To conductor and engineer 2nd section No. . .

No. . . . , engine carries red signals for you from to

Upon this order the train addressed will follow the train carrying the red signals between stations designated, as per rule, scrutinizing closely all register books to see that the train mentioned in the order is carrying the signals. If the signals are not registered, report at once to the train despatcher and get orders before proceeding.

Despatcher will use forms "J" and "K" in running any train between a train carrying red signals and the train following, stating in the order, number of train and engine running in between the signals.

Despatcher in changing a positive meeting order to a train will use

FORM Q.

Meet No. . . . , engine at instead of

When a train despatcher gives orders to an operator at any station to hold one train for another, and it is subsequently necessary to give either of the trains so held running orders at said station, the order to meet the opposing train mentioned in the holding order, should be repeated, for example:

Operator, Hanna: Hold No. 13, engine. . . . and No. 14, engine. . . . , for each other.

No. 13 arrives at Hanna, and wants orders against No. 2 to Winslow. Order must be given in the following form: Meet No. 14, engine. . . . , at Hanna. You have until. . . . to run to Winslow for No. 2 (two).

Engineers and conductors will always look out for telegraph signals on approaching telegraph stations, and the swinging of a flag or a light, must in all cases, be regarded as a signal to stop.

The absence of a signal at a point where one is usually displayed is to be taken as denoting danger.

In giving orders to a passenger train, which affect the rights of another passenger train, or to a freight train, which affect the rights of a passenger train, the train despatcher will send orders to the train which has the right to the road, and get the conductor's understanding of the order before giving to another train an order to run upon its time. In giving orders to

freight trains against other freight trains, despatchers will, so far as practicable, get understanding from conductor of train having right to the road, before running any train against it, but in case such understanding cannot be had without delay, despatcher may depend upon operators and the red signal to hold such freight train at meeting point.

Whenever an order is given by telegraph for a freight train to run ahead of a passenger train on a passenger train's time, the order must state how much of the passenger train's time the freight train can use, as per Forms "J" and "K;" conductors and engineers of both the passenger and freight trains interested in this order must each have a copy of the same, and so handle their respective trains as to avoid the possibility of a collision. This order should be given to the passenger train first, if practicable; but the red signal must be displayed at or before reaching the station where the freight train receives such orders, for the passenger train to receive corresponding orders.

Freight trains must not pass other freight trains of the same class bound in the same direction, except by order of train despatcher, unless it becomes necessary to do so, at a non-telegraph station, in which case the conductor of

train arriving first at next telegraph station will then report to the train despatcher, and obtain orders to proceed. When an extra freight train is running, by special order, in advance, and upon the time of a regular freight train, the conductor and engineer will see that all trains and stations which are met and passed are notified that they are running as an extra train.

Orders from the train despatcher must always be obtained before an extra engine, with or without a train, is started in company with a regular train, and the fact must always be expressly understood by all the men upon trains running in company.

When a train is directed by a despatcher to carry a flag for a following train or engine, the following train or engine must, before starting, obtain orders from the despatcher to follow.

Conductors of working trains, when they lay up for the night, will send by telegraph to train despatcher, memorandum of where they left their train, and the working limits they will require for the following day. Such memorandum will be posted in a conspicuous place for the information of all concerned.

Conductors of working trains will not leave for their work until orders have been received from train despatcher, and they have ascertained

that all trains then due have passed, or get orders against them.

Conductors running at night will report in person at every night telegraph office for orders, except at stations where their trains are started. This rule does not excuse the operator from showing all proper signals to stop trains, nor for neglect in the prompt delivery of messages, but is an additional safeguard.

Should a train, having right to road, be ordered not to leave a station until a specified time, unless another train has arrived, the train thus held must, if the expected train does not get there, wait the usual five minutes for safety before proceeding.

Should a train be held by another train between telegraph stations, the conductor of the train thus held may require the first train passing him, bound in the same direction, to flag him to the next telegraph station, on his arrival at which he must report to train despatcher for orders. Except as above, signals must not be carried for extra trains, unless by direction of proper authority. At night, when trains are flagged, as above, conductor and engineer of leading train will understand by words "Next telegraph station" that the flag is to be carried

to the next telegraph station where there is a night operator on duty.

When an engine or train has an order to run, or is run looking out for another train or engine, it must be carefully flagged around curves.

When a train has orders to run regardless of a specified train, it gives the train under such orders no right over any other train. An order given by telegraph must be understood to apply only to the train or trains mentioned in the order, and to no other.

When a slow train moving in advance of a fast train by special order, from any cause becomes unable to make running time, the conductor, as soon as he discovers such to be the case, will drop a flagman to warn the train following, and put his train upon the first siding he reaches, there remaining until he has received orders to proceed, or until he can go ahead in accordance with the rights of his own train. This rule, however, can be annulled at the option of the train despatcher.

When an order is given by telegraph for two or more trains to meet at a telegraph station, the train despatcher must first order the red signal displayed at such meeting point by the operator, and receive assurance from him that the signal has been displayed before giving orders to either

train. In ordering one train held for another, the despatcher will order each train held for the other.

When an extra or special train or engine has received orders to run as an extra or special train, no order must be given an extra or special train or engine running in the opposite direction, on same division, unless the red signal shall have been first displayed at the point where these trains are expecting to meet.

When broken rails are reported, the train despatcher must order red signal displayed each side of break, and not withdraw it until notice has been received from competent authority that the rail has been replaced. This must be entered on train despatcher's relief same as train orders.

Should any one using the time table have any doubts as to its meaning, it is his duty to apply at the superintendent's office for the proper explanation.

RAILROAD TELEGRAMS.

Railroad telegrams or messages are those which are sent and received by officials, agents and other employes connected with a railroad company, and pertain strictly to the business of that company. They are sent free of charge and no record is kept of them. *Checks* are omitted and *Deadhead franks* or *passes* are not used to secure their transmission. They are concise and brief and whenever practicable the initials or last name *only* of the sender and addressee are used.

EXAMPLES.

NOTE.—Characters enclosed in parentheses () are sent by the sending operator but are not copied by the receiving operator; while those enclosed in brackets [] are written by the receiving operator, but are not sent by the sending operator.

Received Copies.

(a)

(Hr) KS MH [WR] (fm) Warsaw 22 [3 02 PM]
(to) C D L

(H)

(.) 2nd 71 set off P R R 71218 at Warsaw
loaded with H H Goods for St. Paul on account
of broken drawbar

(sig)

Henry

(b)

(Hr) H WR [MH] (fm) Wayne 22 [3 35 PM]

(to) F D W

(KS)

(.) 2nd 71 set off P R R 71218 at Warsaw account broken drawbar, please repair and report when ready

(sig)

H J K

(c)

(Hr) KS MH [WR] (fm) Warsaw 22 [6 11 PM]

(to) H J K

(H)

(.) P R R 71218 now ready to go.

(sig)

Whitney

(d)

(Hr) H WR [MH] (fm) Wayne 22 [6 30 PM]

(to) Maulsby Condr 79

(KS)

(.) Pick up P R R 71218 at Warsaw loaded forgn via Chgo

(sig)

H J K

THE four preceding messages relate to a car of house-hold goods which has been set off by a through freight train on account of a broken drawbar.

The letters "Hr" is a signal invariably given before commencing any message. "KS" represents the sending office call in messages (a) and (c). "H" represents the sending office call in messages (b) and (d). "MH" represents the sending operator's personal signal in messages (a) and (c), and the receiving operator's personal signal in messages (b) and (d). "WR" represents the sending operator's personal signal in messages (b) and (d), and the receiving operator's personal signal in messages (a) and (c). "FM"—from. "To"—the address. "H" the office call of the station addressed in messages (a) and (c), and "KS" the office call of the station addressed in messages (b) and (d). "(.) the period"—the beginning of the body of the message. "sig"—signature.

The time sent, the call of the office sent to, and the sending and receiving operator's personal signals should be written in a conspicuous place on each message sent. Example (as on the sending copy of message "a") H 3 02 P MH WR.

THE COMMERCIAL TELEGRAPH.

Commercial telegraph companies are those used by the public for the transaction of their business by telegraph.

The Western Union and Postal Telegraph companies are the two largest commercial companies in this country. There are but few others and these are of but little note.

The Western Union has its wires strung alongside nearly every railroad, while the Postal company uses the public highways to a great extent for this purpose.

COMMERCIAL TELEGRAPH RULES,

As Used by the Western Union and Postal Telegraph Companies.

GENERAL INSTRUCTIONS.

Telegraph offices on lines owned or operated by other than these companies will be indicated by one star, example:

* Channing, Texas.

Places to which messages are delivered by special messenger, stage coach, etc., will be indicated by two stars:

* * East Pittsburg, Kansas.

Destinations to which messages are delivered by telephone from the most convenient telegraph offices are indicated by three stars:

* * * Wellsville, Utah.

RATES.

Rates on commercial messages are computed by the use of a tariff book in connection with the special, square and state rate sheets. Opposite each "this line" office in the tariff book will be found the "square number" for that office; if the number is not shown on the "square rate sheet," use the state rate, unless a special rate is given on the "special rate sheet." Always use the cheapest rate. Rates quoted on the "special rate sheet" are invariably the cheapest.

EXAMPLES:—To find the rate from Valparaiso, Indiana to Velpen, Indiana we find the square number in tariff book of Velpen, Indiana to be 328. As this number does not appear on the Valparaiso square rate sheet, the state rate which is 35 & 2 would be used. If we assume that this number had been found, but in a column of higher rates than the state rate, the state rate would be used on account of its being cheaper. If, however, the number had been found in a column of lower rates than the state

rate, the square rate would be used owing to its being cheaper.

To find the rate from Valparaiso, Ind. to St. Louis, Mo. we find the square number in tariff book of St. Louis to be 390. As no such number is to be found on square rate sheet, we must ordinarily accept the state rate which is 50 & 3. St. Louis, however, is shown upon Valparaiso's special rate sheet at 25 & 2; this being the cheapest rate, it would be used.

NOTE.—The terms 25 & 2 and 50 & 3 mean that the charge for the first ten or less words of a message is 25 or 50 cents, and 2 or 3 cents for each additional word above ten.

To find the rate to Red Oak, Missouri, which is an "other line office," we would add the rate as shown in the tariff book from the transfer point to this company's rate to that point. The transfer point in this instance is Pierce City and the rate shown from there to Red Oak is 25 & 0. Adding the rate from Valparaiso to Pierce City, which is 50 & 3, to the rate of 25 & 0, the through rate would be 75 & 3—75 cents for a message of ten or less words and 3 cents for each additional word above ten.

NIGHT MESSAGES.

Night messages are sent at reduced rates and will be accepted as in accordance with Rule 15.

The rates for night messages are shown upon the square and state rate sheet.

PRESS DISPATCHES AND NEWSPAPER SPECIALS.

All newspaper or press dispatches filed for immediate transmission between 6 A. M. and 6 P. M. will be sent at day press rates, and those filed between 6 P. M. and 6 A. M. will be sent at night press rates.

The minimum rate for newspaper matter sent at night press rates is one-quarter cent per word and the maximum rate one and three-quarter cents per word.

The minimum rate for newspaper matter sent at day press rates is one-half cent per word, and the maximum rate three and one-half cents per word. The exact rates are shown in tables in the tariff book.

No press special containing cipher or code words will be accepted at the reduced rate.

Amounts in figures in newspaper specials or messages should be counted according to the least number of words in which they may or can be expressed. Examples :

999 three words—(Nine ninety nine.)

1000 one word—(Thousand.)

23½ three words—(Twenty three half.)

15½ two words—(Fifteen half.)

9,961,000 six words—(Nine million nine sixty one thousand.)

9,960,000 five words—(Nine million nine sixty thousand.)

The abbreviations "D P R" or "N P R" should be inserted and transmitted immediately after the check of each newspaper special or message.

Messages relating strictly to newspaper specials may be accepted at press rates.

Newspaper specials are invariably sent collect, and such communications may be accepted without a deposit or guarantee by the sender when credentials are known to be held by him.

No employe of the telegraph company will be allowed to act as correspondent without permission from the superintendent.

GOVERNMENT MESSAGES.

All messages offered for transmission at government rates should be indorsed "official business" by the sender.

The address and signature of a government message are included in the check and charged for.

Rates for these messages are given in the tariff book.

CLASSIFIED RULES.

NOTE.—It will be observed that reference is frequently made in the following rules to the receiving clerk, delivery clerk, manager, etc. These different positions are filled by different ones at the larger offices, while the operator alone serves in all of these capacities at the smaller offices.

RECEIVING DEPARTMENT.

RULE 1.**Messages to be on Message Forms.**

Each message for transmission will be written upon the form provided by the company for that purpose, or will be attached to such form by the sender, or by the person presenting the message as the sender's agent, so as to leave the printed heading in full view above the message.

RULE 2.**Messages to be Timed, Etc. by Receiving Clerks.**

Each message will be timed by the receiving clerk, who will see that the month and day are correctly noted thereon; he will also carefully read each message before accepting it, and, when necessary, will make it plain by marginal notation before it is sent to the operator.

REMARKS: The receiving clerk should give any aid or explanation necessary to enable the sender to prepare his message so that errors or delays may be avoided.

No change should be made in any message by an employe of the company, but misspelled or abbreviated words may be courteously referred to the sender for correction. If the sender declines to make the correction, the message will be accepted as written.

The importance of the address cannot be overestimated. When the address given seems insufficient, a better one should be requested.

If a message be offered without a signature, the sender's attention should be called to the omission, and if the sender then decline to sign the message, the receiving clerk will write in the place of the signature the words "*Not Signed.*"

RULE 3.

Words to be Counted and Charged For.

In a prepaid message the undermentioned words will be counted and charged for, viz.:

All words in an extra date. (See Rule 8.)

All extra words in an address.

NOTE: In the address of a message to one person, or a firm, or to "Mr. and Mrs. _____," there are no extra words; but in the address of a message to either of two or more persons in the same place or town, as "John Smith, 80 Wall street, N. Y., or James Brown, 197 Broadway, N. Y.," there are eight extra words, viz, "or James Brown, 197 Broadway, N. Y.," which will be included in the count and charged for.

All words, figures and letters (as per Rule 4) in the body of a message.

All signatures, when there are more than one, except the last.

All words in excess of two, in a title after the last or the only signature.

NOTE: In a signature such as "Mr. and Mrs. ———," or "John Smith and family," or "Henry Jackson, Vice-President," there are no extra words, but in a signature such as "James Brown, First Vice-President and Secretary," there are two extra words, viz., "and secretary," which will be included in the count and charged for.

All words after the signature which are not title words; and, in the check, the words "Deliver and report charges," "Delivery charges guaranteed," "Report delivery," and "Repeat back." (See Rules 6 and 7.)

In a collect message this rule will apply, except that the word "collect" in the check will be counted but not charged for.

When a message bears two or more addresses and delivery is to be made to each address, it will be charged for as two or more messages, as the case may be.

NOTE: A message addressed, for example, to "W. Brown, 197 Broadway, and B. Wells, 60 Exchange Place, N. Y.," will be charged for as two messages. The additional address will not be considered as extra words.

RULE 4.**Words to be Counted and Charged For.—Continued.**

In counting a message as directed in Rule 3, dictionary words, initial letters, surnames of persons, names of cities, towns, villages, states or territories, or names of the Canadian provinces, will be counted and charged for each as one word. The abbreviations for the names of cities, towns, villages, states, territories and provinces will be counted and charged for the same as if written in full. Abbreviations of weights and measures in common use will be counted each as a word.

In names of countries or counties all the words will be counted and charged for.

To prevent liability to error, numbers and amounts should be written in words, and when not so written, the receiving clerk will request that it be done. If the customer refuse to write the amounts in words, the message will be accepted as written, and the figures counted as indicated in the following paragraph:

Figures, decimal points and bars of division, and letters (except the pronounceable groups covered by the sixth paragraph of this rule) will be counted—each separately—as one word.

In ordinal numbers the affixes st., d., nd., rd. and th. will each be counted as one word.

All pronounceable groups of letters, when such groups are not combinations of dictionary words, will be counted each group as one word. When such groups are made up of improper combinations of dictionary words, each dictionary word so used will be counted as one word.

REMARKS: The following examples will illustrate the application of this rule:

Van Dorne.....	1 word
McGregor.....	1 word
O'Connor.....	1 word
DeWitt.....	1 word
Brown, Jr.....	2 words
New York (or N. Y.).....	1 word
New York State.....	2 words
Nova Scotia (or N. S.).....	1 word
St. Louis.....	1 word
East St. Louis.....	1 word
North Carolina.....	1 word
Queen Anne County.....	3 words
New Mexico.....	1 word
District of Columbia (or D. C.).....	1 word
North America.....	2 words
44.42.....	5 words
42B618.....	6 words
74½..	5 words
No. 185 22nd St	8 words
10 000 000.....	8 words
Ten millions.....	2 words
3d (or 3rd).....	2 words
10th.....	3 words
Lbs ..	1 word

Cwt.....	1 word
All right or alright.....	2 words

EXCEPTIONS.

A. M.....	1 word
P. M.	1 word
F. O. B. (or fob).....	1 word
C. O. D. (or cod).....	1 word
C. I. F. or C. F. I. (or cif or cfi)...	1 word
O K.....	1 word
C. A. F. (or caf).....	1 word
Per cent.....	1 word

RULE 5.

Checks of Messages.

The receiving clerk's check upon a paid or collect message will be made in accordance with the following examples:

REMARKS: The check of a ten-word message to a "this" line office will be, for example,

"10 paid 25,"—or,

"11 collect."

The check of a ten-word message to an "other" line office will be, for example,

"10 paid 25 and 30 via Chicago,"—or,

"11 collect 25 via Chicago."

The check of a ten-word message for special delivery from a "this" line office when the delivery charges are known will be, for example,

"10 paid 25 and 100 delivery,"—or,

"11 collect 25."

NOTE.—Offices connecting with "other" lines will note that in these checks the amount which

indicates the "this" line tolls appears in the check before the amount for "other" lines. In checking messages received from "one," "two" or "three" star stations this arrangement of the tolls should be preserved by inserting the "this" line tolls immediately after the word paid or collect.

If the delivery charge be unknown the check will be, for example,

"13 paid 31 report delivery charges,"—or,
"11 collect."

If the delivery charge from an "other" line office be, for example—50 cents, and the "this" line and "other" line rates each 25 cents, the check will be,

"10 paid 25 and 75 via Chicago,"—or,
"11 collect 25 via Chicago."

(The 75 includes the "other" line tolls and 50 cents for delivery.)

(See Rule 25 for D. H. message checks.)

RULE 6.

Request to Report Delivery.

If the sender of a message request a notice of its delivery, the receiving clerk will insert in the check the words "report delivery." (See Rule 47.)

Repeated Messages.

If the sender request a repetition of his message, the receiving clerk will insert in the check the words "repeat back," and will charge a half

rate for the repetition, in addition to the rate for the message. (See Rule 37.)

In such instances the words "report delivery" or "repeat back," as the case may be, will be included in the count and charged for.

RULE 7.

Special Delivery.

A message to be specially delivered beyond the free delivery limits of the terminal office, and for which the delivery charge is not given in the tariff book, will be accepted upon the payment or guarantee of an amount sufficient to cover the message tolls and the probable cost of delivery. The words "deliver and report charges," when the charges are to be paid by the sender, or the words "delivery charges guaranteed," when they are to be paid by the addressee, will be inserted in the check of such message, and will be counted and charged for. (See Rules 13 and 52.)

RULE 8.

Extra Dates.

Whenever a message which has come over the line of a telephone or any other telegraph company is offered at a place not indicated by the tariff book of this company as the proper place for such message to reach this company's lines;

or whenever a message is received at any office by mail to be forwarded by telegraph; or in case a person, having received a message, request the same to be forwarded to another place; or if a person leave town before the arrival of an expected message, and it be forwarded to him — in each of these instances the name of the place where the message originated and the date will be counted and charged for as a part of the message. For example, if the following message should pass over the line of another telegraph or telephone company from Buffalo to Boston, or through the mail, or be received by any other person than the addressee by telegraph or mail, or should arrive by “this” line after the addressee had left town, and a request be made that it be forwarded to Fall River, it will be sent as follows:

Buffalo, N. Y., Oct. 24

via Boston, Oct. 24

John Brown, Fall River, Mass.

Meet me next Monday, at ten o'clock in the forenoon. H. Smith.

Check 15 paid, 5 extra words.

Thus adding in and charging for, as part of the message the five words, “Buffalo, N. Y., Oct. 24.”

There would be no charge or count, however, of the extra words spoken of in the foregoing

message, if Buffalo, N. Y., was shown in the tariff book to be a "one," "two" or "three" star station.

Forwarded Messages.

When a message, which is to be forwarded, is a "received collect" message the forwarding office will check it so that the tariff from that office to destination shall appear in the check as "this" line tolls, and the tariff from the originating office to the forwarding office as "other" line tolls.

REMARKS: Suppose the tariff from Buffalo to Boston to be 35 and 2, and from Boston to Fall River 25 and 2, and a ten-word message (as per the foregoing example) has been sent "collect" by Buffalo to Boston, which the latter office is to forward to Fall River; Boston should check the message (counting five extra words): "16 collect 35 and 35." The "35" (tariff from Boston to Fall River) represents the "this" line tolls for fifteen words, and the "35" (tariff from Buffalo to Boston) represents the "other" line tolls for ten words.

RULE 9.

Messages Offered During Interruption of Lines.

If a message be offered when communication is known to be interrupted, it will be accepted only if the sender choose to leave it for transmission when communication is restored. Upon

such a message write the words, "subject to delay," and request the sender to affix thereto his signature or initials.

RULE 10.

No Promises as to Transmission or Delivery.

Employes are particularly cautioned against making any promise to customers respecting the transmission or delivery of a message.

RULE 11.

Sender's Address to be Taken.

The address of the sender of a message, unless it be well known, will be requested and recorded.

RULE 12.

Messages to be Prepaid.

All messages will be prepaid, except free messages and those covered by Rules 13 and 47.

RULE 13.

Collect Messages.

An answer to a prepaid message, or a message for which payment for transmission, or for special delivery is guaranteed by a responsible party, may be accepted "collect."

Guarantee Deposits.

When a deposit has been made to guarantee payment for transmission, or for special deliv-

ery, the deposit will be returned after three days, if no notice of failure to collect the charges has been received. But if a notice of failure to collect be received, the amount due to the company will be deducted from the deposit, and the remainder will be returned. (See Rules 52 and 58.)

RULE 14.

Insured Messages.

For an insured message the receiving clerk will observe the condition in relation to such a message contained in the printed heading of Form 2.

RULE 15.

Night Messages.

A night message will be written upon a night message form, and will be accepted only between the hour of opening and midnight. An office closing before midnight will not accept a night message that cannot be started before the closing hour. In case of an interruption of the lines, which it is believed will prevent the transmission of a night message before the following morning, such message will not be accepted.

RULE 16.**Profane or Obscene Messages.**

A message containing profane or obscene language will not be accepted for transmission over the wires of this company.

RULE 17.**Franks.**

Franks are issued to persons who are entitled to send messages free or at half rates, and are of four classes, viz.:

- Business franks.
- Half-rate franks.
- Complimentary (stamp) franks.
- Directors' franks.

RULE 18.**Acceptance of Franked Messages.**

A message offered for transmission under a frank will be carefully scrutinized before acceptance, so that any improper or fraudulent use of the frank may be prevented; but the message will not be refused unless the evidence is clear that its free transmission is not authorized by the frank.

RULE 19.**Franked Messages to "Other" Line Offices.**

A message to an "other" line office, offered for transmission under a frank, will be accepted

upon payment—by the sender—of the “other” line tolls, and provided that the place of transfer is within the territorial limits indicated on the frank.

RULE 20.

Messages Beyond Limits of Franks.

A message to a “this” line office beyond the territorial limits of a frank will be paid for from the place of origin to destination.

RULE 21.

Franks Not Good for Cable Messages.

No frank issued by this company entitles its holder to transmit cable messages free over any portion of this company’s lines.

RULE 22.

Railroad Messages.

A message of an officer or agent of a railroad company with which this company has a contract, when on the business of such railroad company, may be sent free, without a frank, between stations on such road; but when such a message is offered at or for a place beyond or off such road, it will not be sent free unless covered by a frank.

RULE 23.**Service Messages.**

Service messages between the employes of the company will be limited to matters of an urgent nature. The mails will be used in all cases when the service will not suffer by delay.

Service messages will not be sent free for the information of customers, nor to correct their errors.

RULE 24.**Personal Messages of Employes.**

Personal messages of employes of an urgent social or domestic character may be sent free upon the written approval of the manager or superintendent.

RULE 25.**Free and Half-rate Message Checks.**

The receiving clerk's check of a free message will show the reason for its acceptance without payment of tolls.

A half-rate frank message will be checked as a full-rate message.

REMARKS: The following are examples of free message checks:

“10 D. H. Frank No. —.”

“10 D. H. Employe.”

“10 D. H. Answer to D. H.”

“10 D. H. Frank No.—, and paid 25 via Chicago.”

“10 D. H. Frank No.—, and D. H. Frank No.—,” (when free over both “this” line and “other” lines.)

OPERATING DEPARTMENT.

RULE 26.

Office Calls.

An operator, when calling an office, will sign his own office call at short intervals, and will also sign it in answering calls.

RULE 27.

Sending Operator to Decide Route, Etc.

The sending operator will decide as to the proper route for the transmission of a message and as to the count of words. He will also number each message to the office to which he sends it, and will write after the number the call of that office. No operator will refuse to receive any message offered by an operator at another office.

The sending operator will regulate the transmission of a message to suit the ability of the receiving operator.

RULE 28.**Order of Transmission.**

In sending a message, the operator will observe the following order of transmission :

- 1.—The number of the message.
- 2.—The office call.
- 3.—The operator's personal signal.
- 4.—The check of the message.
- 5.—The place from and the date of the message.
- 6.—The address of the message.
- 7.—The body and signature of the message.

RULE 29.**Transmission of Checks.**

All the figures and words in the check of a message will be transmitted, except :

- 1.—The amount of tolls, in case of a prepaid message to a "this" line office.
- 2.—The reason why free, in case of a free message.

RULE 30.**Time, Etc., on Sent Messages.**

The sending operator will write upon each message sent the number of the message, the receiving office's office call, the time of sending, and his own and the receiving operator's personal signals.

Acknowledgment of Receipt.

No message will be regarded as transmitted until acknowledged by the usual signal; but if a number of messages be sent in succession, the acknowledgment of the last may be regarded as the acknowledgment of all.

RULE 31.**When Messages Cannot be Promptly Transmitted.**

When for any reason an operator cannot transmit a message promptly, he will note the cause of the delay upon the back of the message, and will report the facts to the manager or chief operator.

RULE 32.**Order in Which Messages are to be Received.**

In receiving a message the operator will write his personal signal in the space headed "Received by," he will write the name of his office immediately after and on the same line with the words "Received at," and the time of reception also on the same line or immediately over the check. The acknowledgment of receipt will be made by transmitting the signal "O K" and the receiving operator's personal signal and office call.

RULE 33.**Verification of Checks, Etc.**

The receiving operator will count the words, verify the check, and otherwise satisfy himself that a message is correct, before allowing it to leave his hands.

RULE 34.**Messages to More than one Address.**

When a message is addressed, for example, to "A or B," for delivery to either, it will be transmitted as a single message. When a message is addressed, for example, to "A and B," or to several persons, for delivery to each of them, the manner of its transmission will be determined by the manager or chief operator of the sending office, so as to use the facilities at his command to the best advantage. (See Rule 3, Remarks, and Rule 48.)

RULE 35.**Night Messages to be Sent as far as possible on Day of Date.**

An office which is not kept open all night will, before closing, transmit its "night" messages to their destination or to the nearest repeating office. A repeating or a press report office will forward "night" messages to their destination, or as near thereto as practicable, during the

night. If any night messages are left over until the next morning, they will be transmitted before new business.

RULE 36.

Duplicate Transmission.

If, to correct an error in a message, or for any other reason, a second transmission becomes necessary, the sending operator will begin the second transmission with the word "Duplicate," which word the receiving operator will write conspicuously on the form above the message.

RULE 37.

Transmission of Repeated Messages.

Special care will be observed in sending and receiving a message requiring repetition, which should, of course, be from point of origin to destination. At the office of origin, and at each repeating office, an operator, upon receiving back a repeated message, will carefully compare it with his copy, underlining or checking each word, and if the repetition be found to be correct, he will write on the back of the message the words: "Repeated back O K," with his personal signal and the personal signal of the operator who repeated back the message. (See Rule 6.)

RULE 38.**Transmission of Insured Messages.**

An insured message will be preceded in transmission by the word "Insured," and will be repeated back from office to office. The receiving operator will carefully copy such message, and if it is to be forwarded on another circuit, he will take it to, and transmit it over, such circuit and have it repeated back to him. The same course will be pursued in each repeating office through which such message may pass.

RULE 39.**Operator's Signals.**

No operator will change his personal signal without the consent of the manager, nor will any two operators in the same office use the same signal.

RULE 40.**Contention for Circuit.**

Contention for circuit is positively prohibited.

RULE 41.**Number Reports.**

At each office, before closing, the operators will examine the number sheets, exchange number reports of the day's business with other offices, and immediately correct any errors discovered.

Inspection of Messages for Evidence of Transmission.

At each office it will be made the duty of some employe to scrutinize, before filing for record, all "sent" messages, to see that they bear the proper indication of transmission.

RULE 42.**Wire Tests.**

The manager of a testing office, or a chief operator, where one is employed, will make early morning tests of the wires, and see that the necessary orders to linemen are given and acted upon without delay. He will make every effort to have the circuits ready for business at the opening hour.

Directions to Linemen.

In giving directions to linemen, care will be taken to definitely locate the trouble, and to state its nature as accurately as possible.

The word "wire" will be recognized as giving the right of circuit at all times for testing purposes.

Office Diary.

A manager of a principal office will keep a daily record of all interruptions and incidents which occur in the working of the lines.

RULE 43.**Ground Wire.**

The ground wire at intermediate offices will be used only in the event of an interruption of the circuit, and then only to notify the chief or testing operator concerning the interruption, and to receive his instructions.

RULE 44.**Care of Batteries.**

Each manager will see that his main and local batteries are kept in good condition, and that each cell is thoroughly insulated, so as to prevent any escape of the current. The floors and fixtures of the battery room will be kept scrupulously clean and dry.

RULE 45.**Instruments to be Cut Out at Night.**

Before closing an office temporarily, or for the night, its instruments will be cut out, care being taken that the circuit through the switch or cut-off is complete.

DELIVERY DEPARTMENT.

RULE 46.**Messages to be Copied, Etc.**

Each message for delivery will be copied and inclosed in the proper envelope, which will be carefully sealed and fully and plainly addressed.

Amount of Tolls to be Written on Envelopes.

When tolls are to be collected, the amount in words will be written in ink upon the envelope, and also upon the messenger's delivery sheet.

RULE 47.**Sending Office's Instructions as to Delivery.**

Instructions from the sending office in regard to the delivery of a message will be carefully observed. A request to "report delivery" (see Rule 6) will be answered by a collect message addressed to the sender of the original message, stating the time of delivery, or, if not delivered, the reason why.

RULE 48.**Messages Addressed to More than One Person.**

When a message addressed, for example, to "A or B" is received, it will be delivered to either one or the other of the addressees. (See Rule 3, Remarks, and Rule 34.)

RULE 49.**Messages Requiring Answers.**

When a message requires an answer, the word "answer" will be plainly written on the envelope, and the messenger will be instructed to make diligent efforts to obtain such answer. Should he fail to obtain it, he will report the reason to the delivery clerk. Messengers will, in all cases, be supplied with the proper blanks on which answers can be written.

RULE 50.**Free Delivery Limits.**

Messages will be delivered free within a radius of one-half mile from the office in any city or town of less than 5,000 inhabitants, and within a radius of one mile from the office in any city or town of 5,000 or more inhabitants. Beyond these limits only the actual cost of the delivery service will be collected; the manager will, however, see that such cost is as reasonable as possible.

RULE 51.**Special Delivery.**

If the services of a special messenger be required, and the special delivery charges have not been provided for, the sending office will be promptly notified by telegraph of the cost of de-

livery, and that office will endeavor to collect the charges from the sender, who, if he pay or guarantee the delivery charges, will also pay for the message ordering special delivery or guarantee the collection of the tolls thereon. If the sending office be unable to collect, or if a reply from the sending office to the notice be not promptly received, a copy of the message will be mailed to the addressee, and if another copy be afterward delivered, the word "Duplicate" will be plainly written across its face.

RULE 52.

In Case of Failure to Collect Delivery Charges.

When special delivery charges which have been guaranteed (see Rules 7 and 51) cannot be collected by the office making the delivery, the sending office will be immediately notified by a service message of the failure to collect and of the amount of the charges.

RULE 53.

Messages Not to be Delivered to Unauthorized Persons.

A message must not be left with a janitor or porter of a building for delivery by him, nor be slipped under a door, nor left in a letter box, unless the addressee has filed with the manager a written request for such delivery; nor will a

messenger allow any unauthorized person to know to whom a message is addressed.

RULE 54.

Messengers to Obtain Receipts.

A messenger will obtain a receipt on the proper form for each message delivered, which receipt will include the name of the person to whom delivery is made and the time of delivery. A messenger will in no case receipt for an addressee.

RULE 55.

Notice to Addressees of Undelivered Messages.

When a message cannot be delivered because the addressee's place of business or residence is closed, or because no authorized person can be found to receive the message, the messenger will leave a notice at the place of address, to the effect that a message for the addressee is at the office of the company awaiting delivery. The undelivered message will then be returned to the office, with the reason of the non-delivery indorsed upon the envelope, and will be delivered as early thereafter as possible.

RULE 56.

Non-Delivery in Case of Wrong Addresses, Etc.

When a message cannot be delivered because of wrong or inadequate address, or because the

addressee is not known, a record of the facts will be made upon the envelope of the undelivered message, and the sending office will be promptly notified by telegraph of the non-delivery; the service message giving such notice will contain the address of the message as received, and the reason for the failure to deliver. On receipt of the telegraph notice, above referred to, sending office will compare addresses, and will correct by telegraph any error that may be found. If no error appear, notice will be given to sender of the message, who, if he desire to change the address, must either send a new message, or pay for the service message necessary to change the address of the original.

Pending the correspondence as to "better address," the receiving office will put a copy of the message, addressed as first received, in the post office.

RULE 57.

Messages Delivered "Subject to Correction."

If a manager believe that an error has been made in the transmission of a message to his office, and the correction cannot be quickly made, he will deliver the message with the words "delivered subject to correction" indorsed thereon. He will then take immediate steps to secure a correct copy, which will be indorsed

“corrected copy,” and will be promptly delivered. If no error be found, a notice to that effect will be delivered.

RULE 58.

Delivery of a Collect Message Without Payment.

If the addressee of a collect message refuse to pay for the same, the message will, nevertheless, be tendered to him and—*unless the message be an answer to a free or to a paid message*—notice of the failure to collect will be at once given to the sending office by service message and by mail, in order that tolls may be obtained from the sender of the message. (See Rule 13.)

RULE 59.

Delivery of Night Messages, and Delivery of Night Messages When Called For.

A night message will not, unless called for, be delivered until the morning of the next business day after its date; but, when called for, it may be delivered on the day of its date, upon payment of full day rates in the case of a collect message, and the difference between the night and day rates in the case of a paid message. The additional amount collected will be accounted for as “sundry receipts.”

RULE 60.**Delivery of Insured Messages.**

When an insured message is received at an office from which it is to be delivered, it will be the duty of the manager, or of the person in charge, to satisfy himself that prompt and correct delivery is made.

RULE 61.**Messenger's Book to be Examined.**

The manager or delivery clerk will examine the delivery sheets or books of messengers on their return from each service, and at the close of the day, to see that faithful delivery has been made, and that all proper notifications have been given.

ACCOUNTS, REPORTS AND REMITTANCES.

RULE 62.**Classification of Offices.**

For the purpose of accounts and reports, offices will be classified as follows :

“First class,” those whose messages number over one thousand per month.

“Second class,” those whose messages number over two hundred, but not over one thousand per month.

“Third class,” those whose messages number less than two hundred per month.

RULE 63.

Classification Not to be Changed.

An office of one class will not change the method of keeping its accounts to the method of another class, without the consent of the superintendent.

RULE 64. (Omitted.)

RULE 65. (Omitted.)

RULE 66. (Omitted.)

RULE 67. (Omitted.)

RULE 68.

Sunday's Messages.

Sunday's messages will be entered as a part of the previous Saturday's business, except when the first day of the month falls on Sunday, in which case Sunday's messages will be entered as a part of the business of the following Monday.

RULE 69.

Checks Not to be Changed.

A paid or collect message will be entered as originally checked and transmitted.

RULE 70. (Omitted.)

RULE 71. (Omitted.)

RULE 72.**Uncollected, Guaranteed, "Half-Rate" and Free Messages.**

Before filing away the day's business the un-dermentioned messages will be taken out and held to be sent in with the monthly reports:

Copies of messages "received collect" for which payment has not been obtained, together with the telegraphic notices relating thereto re-quired by Rule 58.

The original messages "sent collect" which have been reported by delivery offices as uncol-lectible.

The original messages "sent paid" *by*, and copies of those "received collect" *for*, the hold-ers of half-rate franks, on which less than full tolls have been paid.

The originals of all *sent* messages (except ser-vice and local railroad messages, *i. e.*, messages between two stations, both located on the same railroad) which have been transmitted free.

RULE 73.**Filing Messages.**

All messages not required for other purposes (see Rule 72) will be filed and properly labeled by days and months. Each month's messages will be retained for a period of six months, at the end of which time, unless otherwise ordered,

they will be destroyed or sent to the superintendent with the monthly reports.

RULE 74.

Monthly Reports.

Immediately after the close of the month, offices not otherwise instructed by the superintendent will make out the required reports. These reports with their inclosures will be sent to the superintendent by offices of the third class within three days after the close of the month, by offices of the second class within five days, and by offices of the first class within seven days.

RULE 75.

“Paid ‘Other’ Lines.”

The amounts entered in the column headed “Paid other lines,” on the account current, will be made up of the amount paid to “other” lines, the amount paid for “special delivery,” and the “other” line tolls on forwarded messages. The total of the amounts in this column will be entered under “Schedule of ordinary disbursements,” opposite the item “Paid other lines.”

RULE 76.

“Received for Guaranteed Messages.”

Under “Sundry receipts,” on the account current, opposite the item, “Received for guaran-

teed messages," will be entered the amount received for the payment of messages which other offices have reported "uncollectible." The originals of such messages will be sent in with the report; and upon those for which no tolls have been collected will be indorsed the reason why no collection has been made.

RULE 77.

"Refunded and Uncollectible."

The amount opposite the item "Refunded and uncollectible," on the account current, will be made up of the amount refunded for errors, etc., the total amount of the refunds on "half-rate frank" messages and the amount of tolls on uncollectible messages received from other offices.

All messages included under the head of "Refunded and uncollectible" will be sent in with the report, as vouchers for the unpaid tolls. Each uncollected message will be accompanied by the service message referred to in Rule 58.

RULE 78.

Check Reports.

A check report is required from *every* office. The names of this company's offices to which messages have been sent, or from which messages have been received during the month, will be entered on this report in the order indicated

by the note in the heading of the form, and opposite each name will be entered the amounts as indicated by the headings on the form. The totals of the columns under the heading "This office receives" must agree with the totals on the account current under the heading "Telegraph receipts;" and the total of the column headed "For other lines," under "This office checks," must agree with the total of the "Paid other lines" column and with the item "Paid other lines" under the heading "Schedule of ordinary disbursements."

RULE 79.

Free Message Reports.

On the form provided will be made a check report of free messages and a statement of messages which have been sent free for any railroad, transportation, express or other company, or for any individual, showing the number of messages sent for each company or individual, and the amount of tariff at full day rates therefor as if paid for. The original messages will show the place of origin, be checked with the number of words, *the amount of tariff at full day rates*, and *the reason sent free*, and will be sent with the report to the superintendent.

RULE 80.**Vouchers, How Made Out, Numbered, Etc.**

A voucher will be rendered for every expenditure.

Each voucher will be written and signed in ink, made out in such manner as to clearly and fully explain itself, and numbered to correspond with the entry on the account current.

The amount of the expenditure will be written in the receipt in words.

No voucher bearing erasures or alterations of figures or amounts will be accepted.

Each voucher will be signed by the person to whom payment is made.

If a voucher be signed by any other than the person to whom payment is due, it will be accompanied by a written order from such person giving authority for the payment and signature.

Signature by "his mark" will be witnessed by some person other than the one making payment.

RULE 81.**Service Vouchers.**

A service voucher will state the full name of the person paid, the kind of service and where rendered, the dates between which the service was performed, and the rate per day, week or

month. When the payment is for a part of a month, the number of days as well as the dates will be given, and the time will be computed according to the number of week days in the month.

RULE 82.

Error Sheet.

Each manager will give prompt attention to error sheets, and will answer inquiries respecting them with full and clear explanations.

RULE 83.

Balances Due Company.

Every office balance due the company will be remitted to the treasurer at the close of each month, unless otherwise specially ordered by him.

Remittances, Etc.

A remittance to the treasurer will be made either through the mail in the form of draft on New York, or, where bank drafts cannot be obtained at less expense, by express company's money order.

If neither bank draft nor express money can be obtained, post office money orders should be forwarded.

RULE 84.**Bank Deposits.**

When an employe deposits funds of the company in a bank, the deposit will be made either to his credit in his official name, or to the credit of the company in its corporate name. In this latter case the funds will be subject to checks by the treasurer only.

Deposits will be made in banks designated by the treasurer.

MISCELLANEOUS.

RULE 85.**Manager's Jurisdiction.**

Each manager will exercise jurisdiction over the property, employes and business of his office; and, unless otherwise ordered, such jurisdiction will extend to branch offices, if there are any, in the same city or town.

RULE 86.**Care of Property.**

Each manager will be held to a strict accountability for the property of the company in his possession or under his control; and he will hold employes under his direction responsible

for the careful use and preservation of such property.

Property Not to be Sold.

No article belonging to the company will be sold or transferred without authority from the superintendent.

RULE 87.

Expenditures for Office Fittings, Etc.

No expenditures for office fittings, alterations or furniture will be made without authority from the superintendent.

RULE 88.

Surplus Material.

Old copper, zinc, waste paper and other old or surplus materials of value will be carefully preserved and, at regular intervals, reported to the superintendent.

RULE 89.

Instruments, etc., Sent to Supply Department.

When instruments or other articles are sent to the supply department by order of the superintendent, they will be accompanied by a copy of such order, and by a letter from the manager stating what disposition is to be made of them.

RULE 90.**Requisitions.**

Requisitions for supplies will be made once in three months for each office having over fifteen cells of battery, and once in six months for other offices. Such requisitions will be forwarded to the superintendent at least one month before the beginning of the period for which the supplies are needed.

RULE 91.**No Admittance to Operating Rooms, Etc.**

A manager will refuse to admit to the operating room and private offices of the company any person not an employe under his own direction, except when permission to enter has been given by a superintendent or other officer of the company.

RULE 92.**Privacy of Messages and Records.**

Messages, books, press reports and other papers of the company will be guarded with the greatest care and held in the strictest privacy. Employes are expressly forbidden to disclose any information in regard to the contents of a message, or the name of the sender or addressee thereof.

RULE 93.**Forms to be used only for Designated Purposes.**

The printed forms of the company will be used only for the purposes for which they are designed. Under no circumstances will forms for received messages or message envelopes be given to the public, except in the usual delivery of messages.

RULE 94.**Change of Managers.**

If a manager vacate his office before the close of a month, he will make up his accounts to date, and will pay over to his successor all funds in his possession. The retiring manager will send to his superintendent a report of such settlement with a receipt of his successor for money paid and property delivered.

RULE 95.**Applications for Copies of Messages.**

When a sender or addressee of a message applies for a copy of such message, he may, if known or properly identified, be allowed to see the message and make a copy thereof; but under no circumstances will a received message form or a message envelope be furnished him.

Employes will not certify to the correctness of

any message or copy thereof, nor furnish a copy, except as per Rule 96, nor will they show any message to any person other than the sender or addressee thereof, except by authority from an executive officer of the company.

RULE 96.

Correction of Errors.

If, after the delivery of a message, the addressee claim that an error has been made by the company, and the error be not apparent to the manager, the manager may, by service message to the sending office, (which message must be paid for), ask for a duplicate, and if an error be thereby disclosed, a copy indorsed "Corrected copy" will be delivered, and the tolls paid for the service message refunded. If no error be disclosed, a notice to that effect will be delivered.

RULE 97.

Refunds.

Whenever satisfactory evidence is furnished to a manager that a message has failed to accomplish its object by reason of imperfect service on the part of the company, he may refund to the sender the tolls paid for the message. The receipt given for the refunded tolls, together with the message and an explanatory memoran-

dum, will be sent in with the report on the account current.

RULE 98.

Complaints.

Upon receipt of a complaint, which cannot be satisfied under Rule 97, the manager will promptly forward it to his superintendent with a clear statement of the case. If the complaint be founded upon a message, the original message or copy as delivered will be forwarded with the statement.

Employees will not furnish information relating to complaints under investigation, except under instruction from a superintendent or other officer of the company.

Patient and courteous attention will be given to any person complaining of the service.

RULE 99.

Summons or Other Legal Process.

Immediately upon the service of any summons or other legal process in any legal proceeding affecting the company, the employe upon whom such service is made will report the fact by telegraph to the superintendent, stating briefly the nature of the process, and the day and hour when it was served. He will then

transmit to the superintendent, by first mail, a copy of the paper or process so served, with a statement of such facts relating to the matter as are within his knowledge. The original papers will be retained, subject to instructions.

RULE 100.

Court Orders for the Production of Messages.

Whenever a manager or other employe is subpoenaed on the part of the *sender* or *addressee* of a message to produce it before a court or other legal tribunal, he will comply with the subpoena, and afterward return the message to the files; but whenever a manager or other employe is subpoenaed on the part of any person other than the sender or addressee to produce a message, or testify in relation thereto before a court or other legal tribunal, he will take the message into court, and then submit to the judge that he ought not to produce it or testify in relation thereto, and that he cannot do so, unless a rule or order of the court be entered requiring it, for the reason that telegraphic messages are of a confidential nature, and that the communication is claimed to be privileged. If such order be made and entered, it will be obeyed, and the clerk of the court will then be requested to furnish a copy of the order, which, together with

the subpoena, will be filed with the message to which it relates.

NOTE.—A subpoena, to be regular and valid, must describe the desired messages by such specific reference to the names, dates, or subject-matter concerned as will enable such messages to be readily found and identified in the files; but a subpoena which only calls in general terms for such messages as may be found after a search through the files [for example: “All messages passing between John Smith and Richard Brown between the 1st day of July and the 5th day of August, etc.”] is irregular and unlawful, as being in the nature of a search warrant, and not founded upon messages known to have existed.

It is the policy of the company to contest subpoenas of this latter character, especially where the production of the messages concerned is likely to create public scandal or political excitement. On receipt of subpoenas of this class, managers will bring the same to the attention of their superintendent, stating particularly the language of that part of the subpoena which calls for the messages.

COMMERCIAL TELEGRAMS.

Commercial telegrams, or messages, are those which are sent and received by the public, through commercial telegraph companies. They should be accepted and transmitted as in accordance with the rules of the commercial companies. Accuracy, neatness, promptness and discretion should be employed in their transmission and reception; particularly more so than with any other class of messages. Errors, which seemingly are but trifling, often lead commercial telegraph companies into costly litigation, hence, it is important that every employe use the greatest care and judgment.

Both the sending and receiving operators should bear in mind that they share the responsibility of the correct transmission of a message. The receiving operator should always call the sending operator's attention to any part of a message which he thinks might be in error. A wrong state, or date, are common mistakes for the sending operator to make, and his attention should always be called to this, when they are apparent in the opinion of the receiving operator.

EXAMPLES.

(Chicago's received copy.)

(a)

(Hr city No) 27 Vo HW "HX" (ck) 10 paid

(fm) Valparaiso Ind July 12

(to) C L Brown & Co,

1321 Wabash Ave,

Chicago

(.) Have you shipped our order of July eighth,
wire answer

(sig) Martin & Wheeler

"2:28 PM"

The foregoing message answered.

(Valparaiso's received copy.)

(b)

(Hr city No) 43 CH HX "HW" (ck) 10 collect
an ans

(fm) Chicago July 12

(to) Martin & Wheeler

Valparaiso Ind

(.) Your order was shipped yesterday, should
reach you tomorrow

(sig) C L Brown & Co

"3:49 PM"

(Chicago's received or relayed copy.)

(c)

(Hr tru No) 28 VO HW "HX" (ck) 12 paid

(fm) Valparaiso Ind July 12

(to) A L Carter,

721—3rd St,

Des Moines Iowa

(.) Abbie died this morning Funeral Friday
two PM. May we expect you

(sig) H L Merrill

"2:47 PM"

(Chicago's received or relayed copy.)

(d)

(Hr tru No) 29 VO HW "HX" (ck) 13 paid 3
ex w Dely chgs gtd

(fm) Valparaiso Ind July 12

(to) M A Thomas,

5 miles west,

Pekin Ill

(.) Abner quite sick, not dangerous but Nellie
should come, answer

(sig) M E Butler

"2:49 PM"

(Warsaw's received copy.)

(e)

(Hr city) VO HW "MH" (ck) 7 DH
(fm) Valparaiso Ind July 12¹
(to) C B Wright,

On train 28 Penna Road,
Warsaw Ind

(.) I will meet you at Huntington tomorrow
(sig) A C Randall
"3:07 PM"

(Chicago's received or relayed copy.)

(f)

(Hr tru Pink No) 30 VO HW "HX" (ck) 21
paid Govt

(fm) Valparaiso Ind July 12
(to) M C Baker,

District Inspector,
804 Randolph Bldg,
Cleveland Ohio

(.) Meet me Great Northern Hotel Chicago
Saturday forenoon

(sig) Hinshaw
"3:34 PM"

(Chicago's received or relayed copy.)

(g)

(Hr tru No) 31 VO HW "HX" (ck) 10 collect
(fm) Valparaiso Ind July 12
(to) Merritt Kniman,

Kankakee Ill

(.) Your wife sick wants you to come home
answer

(sig) Buckner & Rodney
"4:06 PM"

(Chicago's received copy.)

(h)

(Hr city No) 32 VO HW "HX" (ck) 10 paid
2 ex w Report dely
(fm) Valparaiso Ind July 12
(to) A B White,

Meat Inspector Arbuckle & Co,

Try 3210 Wabash Ave and Flat C 492

Ashley Ave, Chicago

(.) Send Hinsdale here first train in morning
answer

(sig) Whitman & Co,
Gen'l Agents
"4:07 PM"

(Chicago's received or relayed copy.)

(i)

(Hr tru No) 33 VO HW "HX" (ck) 10 paid 3
ex w

(fm) Valparaiso Ind July 12

(to) A B Gleason,

Winamac Ind

(.) Forging anatomy cambric muslin August
delivery tempest

(sig) J G Graves,
Agent White Star Line
"4:53 PM"

(Chicago's received or relayed copy.)

(j)

(Hr tru red No) 34 VO HW "HX" (ck) 12
paid Nite

(fm) Valparaiso Ind July 12

(to) Hammelgarn & Co,

12th & Lincoln Sts,

Pittsburg Penna

(.) Offer two cars number two red seventy one
and half fob Valparaiso

(sig) B L Jordan & Co
"5:08 PM"

(Chicago's received or relayed copy.)

(k)

(Hr tru No) 35 VO HW "HX" (ck) 10 collect

(fm) Valparaiso Ind July 12

(to) B L Whitaker,

Milford Hotel,

Milwaukee Wis

(.) Mr. Doras wires he cannot be in Chicago
Saturday

(sig) H W Thompson

"6:33 PM"

(Chicago's received copy.)

(1)

(Hr city No) 36 VO HW "HX" (ck) 8 paid

(fm) Lee, White Co, Ind, via Valparaiso Ind
July 12

(to) Milton Sons and Co,

Randolph St,

Chicago

(.) Shipped fifteen cases eggs by express this
afternoon

(sig) John L Barnes

"6:44 PM"

(Chicago's received copy.)

(m)

(Hr city No) 37 VO HW "HX" (ck) 9 paid

(fm) Valparaiso Ind July 12

(to) H B Bluffton & Co,

629 South Reed St,

Chicago

(.) Sell ten May wheat opening stop half cent
advance

(sig) Hill
"7:03 PM"

PRESS MESSAGE.

(Chicago's received or relayed copy.)

(n)

(Hr tru pink No) 38 VO HW "HX" (ck) 12
collect N P R

(fm) Valparaiso Ind July 12

(to) Herald,

Cincinnati Ohio

(.) Judge McMillan renders decision on Ma-
son race track tonight, how much

(sig) Hastings
"7:06 PM"

PRESS SPECIAL

(Chicago's received or relayed copy.)

(o)

(Hr tru No) 39 VO HW "HX" (ck) 63 collect
N P R

(fm) Valparaiso Ind July 12

(to) Leader,

St Louis Mo

(.) A terrific rain and wind storm passed through the north end of this county this morning destroying a great deal of property. Roofs were blown off a number of small buildings and numerous trees were uprooted. A barn belonging to James Sampson was struck by lightning, killing three horses and burning several tons of hay stored therein.

Filed 7:35 PM

(sig) Hastings
"7:49 PM"

CABLE MESSAGE.

(Chicago's received or relayed copy.)

(p)

(Hr cable cable No) 40 VO HW "HX" 5 words

(fm) Valparaiso Ind July 12

(to) Murdent

London

(.) Whittaker arrived

(sig) Hennig
"7:59 PM"

(Chicago's received or relayed copy.)

(q)

(Hr tru No) 41 VO HW "HX" (ck) 14 paid

(fm) Valparaiso Ind July 12

(to) Haste & McNal Harvesting Co,

Kansas City Mo

(.) Express quick one P 6 two V 4 two X 3 one
b 8

(sig) McDonald & Co

"8:07 PM"

(Chicago's received or relayed copy.)

(r)

(Hr tru No) 42 VO HW "HX" (ck) 8 paid

(fm) Valparaiso Ind July 12

(to) John Mildred,

Hastings Neb

(.) Harris quite ill, cant some of you come

(sig) Jennie

"8:52 PM"

NOTES AND EXPLANATIONS**Of the Foregoing Messages.**

Valparaiso represents the sending office and Chicago the receiving office, in all of the example messages, excepting messages (b) and (e); with the former, Valparaiso is the receiving office and Chicago the sending office, while with message (e) Warsaw is the receiving office.

All combinations of letters and characters enclosed in parentheses () are sent by the sending operator, but are not copied by the receiving operator, while those enclosed in quotations " " are written by the receiving operator but are not sent by the sending operator.

"Hr" or "ahr" is a signal invariably used at the beginning of each message. "Tru" indicates that the message is to be relayed; it is for some place else than the office to which it is being sent. "City" indicates that the message is for some one at the destination to which it is being sent. Offices having considerable business with each other number each message as sent, hence all of the example messages are numbered except message (e), which it is assumed is being sent to an office with which the sending office, Valparaiso, has but little business. "HW" is the sending operator's personal signal in all example messages, except message (b), in which

instance he is the receiving operator. "HX" is the receiving operator's personal signal in all of the example messages, except (b) and (e); he is the sending operator in message (b). "Ck" indicates the check. "Fm" the point of origin. "To" the address. "The period (.)" the beginning of the body of the message. "Sig" the signature.

The time that a message is received should be placed immediately under the signature in a typewritten message, or on the same line with the check or immediately above it on a message written with a pen.

All of the example messages excepting (e), (f), (j), (n), (o), and (p) are the usual day or black messages. Message (e) is a dead-head or free message; (f) is a government message, which has priority over other business, and is sent at reduced rates; (j) is a night or red message, being sent at reduced rates; (n) is a press message, frequently called a "query;" (o) is a press special, and like a press message is sent at press or reduced rates; (p) is a cable message, which can only be sent prepaid.

Messages (i) and (q) are cipher or code messages, the meaning of which is entirely unknown to the telegraph operators handling them. Keys

or codes, however, which are held by the sender and addressee explain the meaning of them.

Message (q) is a difficult message to transmit and receive; the characters in the body or text will explain the reason for this. The sending operator should send slowly, accurately, and break and resend the combination characters "P 6," "V 4," "X 3," and "b 8," as he would proceed with the message: For instance, after transmitting "P 6," he should break himself and add "tts t ltr p and fig 6;" and do likewise with the other characters.

NOTE.—A receiving operator should not "OK" a cable or code message until he has repeated the body or text to the sending operator. This should be done notwithstanding the requirements of the rule for repetition.

Copies of messages sent should always be "timed" in the following form: example message (a)—"27 CH 2:28 P HW HX." "27" is the number of the message to Chicago office on that day; "CH" is the call of the Chicago office to which it is being sent; "2:28 P" the time; "HW" the personal signal of the sending operator, and "HX" the personal signal of the receiving operator.

Transmit uncommon or misspelled words slowly using the "break" signal after transmitting, adding abbreviations, "tts it," or "tts cy,"

and then repeat them. Examples: "impignorate — interrogation mark — tts it — impignorate," "imedately — interrogation mark — tts cy — imedately."

NOTE.—While the rules of commercial companies state plainly that all messages should be sent as written, it is frequently suggestive for the sending operator to transmit correctly any misspelled word, so long as he is sure that it will not change the meaning of a message. This suggestion would not be applicable in any way to cipher or code messages, or those written in any foreign language.

Whenever, in transmitting, the receiving operator "breaks," and says *go ahead* some word which does not appear in the sending operator's copy, the sending operator will say "nt in it," "nt tr," or "wrs tt." It would be evident in this instance that the receiving operator had made a "bull," and he would then ask the sending operator to go ahead from some other previous word he had received.

Transmit a duplicate message by sending the word "duplicate" immediately after the signal "hr," also immediately after the check. The receiving operator should write this word in large letters in one or two conspicuous places upon his copy.

The receiving operator should always be certain of the accuracy of a check and the completeness of a message, before allowing the sending operator to continue on another message.

FORWARDED MESSAGES.

See Rule 8, Commercial Rules.

CHECKS.

The check of a message represents the number of words to be counted and charged for, except in the case of a collect message, one word is added in the check to assist in indicating that the tolls of the message are to be collected. The extra word, however, in the latter instance would not be charged for.

DISCREPANCIES IN CHECKS.

We will assume for example in the transmission of message (a) that either Valparaiso (the sending office) failed to send the 9th word "wire," or Chicago (the receiving office) failed to copy it. In this instance, Chicago would at the conclusion of the message say "9 w," meaning that he had but 9 words. Valparaiso would then review the message and, finding that there were 10 words, would say "10 paid," and then "letter it," by giving the first letter of each word

in the body or text, as in the following way: "period h y s o o o j e w a." Chicago would then say "ga eighth" which is the word immediately before "wire." By the addition of the missing word "wire," the error would be discovered.

Now, in case that message (d) addressed to M. A. Thomas, 5 miles west, Pekin, Ill., should have passed the receiving and sending operators at Chicago, with an error in the check unnoticed, for instance, the three extra words missing, and the operator at Pekin, Ill., discovered it at the time he received it, he would call the Chicago sending operator's attention to it by saying "10 w no exa;" the Chicago operator would then review the message and, finding that to be the case, would say "bk hold it, I wi get it fixed." The Chicago operator would then take it to the Valparaiso wire and tell Valparaiso to get his No. 29 when he would add "10 w no exa." Valparaiso would then immediately discover the error and repeat the extra words to Chicago, who, after inserting them, would return to the Pekin, Ill., wire and straighten the check with that office.

SERVICE MESSAGES.**Abbreviations Used.**

- N S N—No such number.
 G B A—Give better address.
 G S A—Give some address.
 S F S—See former service.
 S Y S—See your service.
 D F S—Disregard former service.
 92—Deliver.
 Deld (or) 92d—Delivered.
 Undeld—Undelivered.
 Dely—Delivery.
 Dely chgs gtd—Delivery charges guaranteed.
 Report dely chgs—Report delivery charges.
 Spl dely—Special delivery.
 Sgd (or) Sined—Signed.

FORM USED IN TRANSMITTING.

(Chicago's received or relay copy.)

(Hr tru No) 43 VO HW "HX" svc [or] ofs
 (to) Michigan City Ind.

(.) G S A or cant 92 yours date James A
 White sined Hickman

(sig) Valparaiso Ind July 12

"9:13 p m"

CUSTOMARY FORMS USED.

NOTE:—These forms of service messages apply to messages found following Commercial Telegrams, page 229.

Assuming in message (c) that A. L. Carter, the addressee, was unknown at 721—3rd St., Des Moines, Iowa, would prepare and send to the sending office, Valparaiso, the following message:

“Valparaiso Ind

A L Carter unknown at 721—3rd St G B A or
cant 92 yours date sined Merrill

Des Moines Iowa July 12.”

Valparaiso upon the receipt of this message would compare the address as given in the service with the one on the sender's copy, and if found to be correct, would notify the sender, H. L. Merrill, of the fact. If the address as given in the service message from Des Moines had been 751—3rd St or some other number or street than the correct one, Valparaiso would wire the Des Moines office as follows:

“Des Moines Iowa

Ours date A L Carter sined Merrill is addressed to 721—3rd St not 751; we repeat 721 S
Y S and advise

Valparaiso Ind July 12”

Des Moines upon the receipt of this message would immediately try 721 and if the addressee, A. L. Carter, was found at that address, would immediately wire Valparaiso of the fact in the following way:

“Valparaiso Ind

D F S, Have 92d O K yours date A L Carter
sined Merrill

Des Moines Iowa July 12”

Assuming in message (d) that the addressee, M. A. Thomas, refused to pay for the delivery on his message, which was \$1.50, Pekin, Ill. would wire the following message to Valparaiso, Ind.:

“Valparaiso Ind

We check you one fifty other lines dely on
yours date M A Thomas sined Butler, payment
refused

Pekin Ills July 12”

Assuming in message (e) that C. B. Wright, the addressee, could not be found on train as addressed, and the conductor refused to accept message, Warsaw, Ind. would wire Valparaiso, Ind. in the following way:

“Valparaiso Ind

Could not find C B Wright on train 28 Penna road and Condr refused to accept your D H date sined Randall

Warsaw Ind July 12”

NOTE.—Whenever the check in a message is something else than “black or day,” the fact should be mentioned as in service messages relating to messages (e), (f) and (j).

Assuming in message (f), that M. C. Baker, the addressee, had closed his office for the day, before the telegraph messenger arrived, and his residence was unknown, Cleveland would send the following to Valparaiso:

“Valparaiso Ind

Cant 92 till A M your govt date M C Baker 804 Randolph Bldg sined Hinshaw, office closed for night and residence unknown

Cleveland Ohio July 12”

Assuming in message (g) that Merritt Kniman, the addressee, could not be found, Kankakee, Ill. would send the following message to Valparaiso, Ind.:

“Valparaiso Ind

G S A or collect there yours date Merritt Kniman sined Buckner & Rodney

Kankakee Ill July 12”

Assuming in message (g) that Merritt Kniman, the addressee, refused to pay tolls on message, Kankakee, Ill. would service Valparaiso, Indiana in the following way :

“Valparaiso Ind

Merritt Kniman refused payment on yours
date sined Buckner & Rodney, collect there
Kankakee Ill July 12”

In message (h) Chicago, the receiving office, would act as requested in the check, and as in accordance with Rules 6 and 47 commercial rules, sending a message to the senders similar to the following :

Chicago July 12

Whitman & Co,

Gen'l Agents,

Valparaiso Ind.

Delivered your message to A B White four
forty PM.

C D Agnew,

Check 11 collect.

Manager.

Assuming in message (i) that A B Gleason, the addressee, believed there was an error in his message, Winamac, Ind., the receiving office, would send the following to Valparaiso, Ind.:

“Valparaiso Ind

Duplicate quick yours date A B Gleason sined Graves (adding ‘message not understood’ if desired)

Winamac Ind July 12”

Assuming in message (j) that Hammelgarn & Co., the addressees, had moved from 12th and Lincoln Sts., and their present address was unknown, Pittsburg, Pa., would wire the following to Valparaiso, Ind.:

“Valparaiso Ind

Hammelgarn & Co have moved from 12th & Lincoln Sts present address unknown G B A or cant 92 your red 12th sined Jordan & Co

Pittsburg Pa July 13”

Assuming in message (k) that B L Whittaker, the addressee, had left town a short while before message was received, Milwaukee would wire the following service to Valparaiso:

“Valparaiso Ind

B L Whittaker had left city before yours date sined Thompson was recd collect there

Milwaukee Wis July 12”

If we assume in message (k) that Mr. Whittaker, the addressee, left word for his telegrams to be forwarded to him to the Clifton House Chi-

cago, the message as sent from Milwaukee to Chicago would be in the following form :

Check 14 collect 31c & 25c 4 ex w

(Fm) Valparaiso Ind 12, via Milwaukee Wis
July 12

(to) B L Whittaker,
Clifton House,
Chicago

(.) Mr. Doras wires he cannot be in Chicago
Saturday

(sig) H W Thompson

NOTES.—*Valparaiso Ind 12* in the above would be the four extra words. The 31c given in the check represents the tolls from Milwaukee to Chicago and the 25c tolls from Valparaiso to Milwaukee.

Assuming that the destination in message (1) had been "bulled" in transmission and sent to St. Louis, Mo., instead of Chicago; St. Louis after being unable to find the addressees, Milton Sons & Co., on Randolph St. in that city, would send the following message to Valparaiso:

"Valparaiso Ind

Cant find Milton Sons & Co on Randolph St
G B A or cant 92 yours date from Lee White Co
sined Barnes

St Louis Mo July 12"

Valparaiso would then inspect their copy, and if the destination as shown in their copy, was St. Louis, would advise Lee, White Co., of the fact, who would likely discover the error and inform Valparaiso of the fact. Valparaiso would then re-send the message to Chicago, and advise St. Louis of the error in the following way:

“St Louis Mo

File but do not ck ours date Milton Sons & Co sined Barnes, should have been Chgo, we resend to Chgo

Valparaiso Ind July 12”

Assuming in message (m) that no such number as 629 could be found on South Reed St., Chicago, the receiving office, would send the following message to Valparaiso:

“Valparaiso Ind

N S N as 629 on South Reed St and H B Bluffton & Co unknown at 629 North Reed St G B A or cant 92 yours date sined Hill

Chicago Ill July 12”

Assuming in message (r) that John Mildred, the addressee, lived three miles in country at Hastings, Nebr. Hastings would send the following message to Valparaiso:

“Valparaiso Ind

John Mildred lives 3 miles out do you guaran-
tee one dollar dely on yours 12th sined Jennie
Hastings Neb July 13”

PRIVATE OR LEASED WIRES.

Private wires are invariably leased from Commercial telegraph companies by large mercantile, brokerage, and other concerns which find it to their advantage and profit instead of conducting their business through the regular channels of commercial companies. Metropolitan newspapers are also great lessees of wires.

Private or leased wires usually require expert telegraph operators.

PRIVATE WIRE MESSAGES.

The transmission of messages upon private or leased wires is similar in the sense that they require brevity, speed and accuracy.

FORMS.**TRAIN ORDER.****(Form 19.)**

The Northwestern Indiana Railroad Co.

Telegraphic Train Order. No.

Supt's Office, Fort Wayne, Ind., 190

19

For to of

19

Received M

Made at M. Rec'd by Opr.

**CONDUCTOR AND ENGINEMAN MUST EACH HAVE A
COPY OF THIS ORDER.**

TRAIN ORDER.

(Form 31.)

The Northwestern Indiana Railroad Co.

TELEGRAPHIC TRAIN ORDER No.

NOTE—"X response" here

Supt's Office, Ft. Wayne, Ind., 190

FORM

31

For to of

FORM

31

Time Received..... M Given at..... M.

Conductor.	Engineman.	Train.	Made	At	Received by

CONDUCTOR AND ENGINEMAN MUST EACH HAVE A COPY OF THIS ORDER.

CLEARANCE CARD.

THE NORTHWESTERN INDIANA RAILROAD COMPANY. CLEARANCE CARD.

..... Station..... 190

Conductor and Engineman No......

I have no orders for your train.

Signal is out for.....

.....
OPERATOR.

This does not interfere with or countermand any order you may have received.
Conductors and Enginemen **MUST SEE** that the number of **THEIR TRAIN** is entered in the above form correctly.

Conductor and Engineman must each have a copy.

RAILROAD MESSAGE.

258

THE TELEGRAPH INSTRUCTOR.

TELEGRAM		The Northwestern Indiana R. R. Co.		Form 3.
Filed at..... M		This form will be used for both sending and receiving messages.		
Office Call	Sent by	Received by	FROM	Time
To				

COMMERCIAL MESSAGE.

THE NORTHWESTERN INDIANA TELEGRAPH COMPANY.

This Company TRANSMITS and DELIVERS messages only on conditions limiting its liability, which have been assented to by the sender of the following message.

Errors can be guarded against only by repeating a message back to the sending station for comparison, and the Company will not hold itself liable for errors or delays in transmission or delivery of UNREPEATED MESSAGES, beyond the amount of tolls paid thereon, nor in any case where the claim is not presented in writing within sixty days after the message is filed with the Company for transmission.

This is an UNREPEATED MESSAGE, and is delivered by request of the sender, under the conditions named above.

GEO. M. DODGE, President.

S. W. WILDER, Gen. Manager.

NUMBER	SENT BY	RECEIVED BY	CHECK
--------	---------	-------------	-------

RECEIVED at **190**

Dated

To

THE TELEGRAPH INSTRUCTOR.

PRIVATE WIRE MESSAGE.

NORTHWESTERN INDIANA COMMISSION COMPANY.

PRIVATE WIRE.

.....190.....

260 THE TELEGRAPH INSTRUCTOR.

GRAIN, PROVISION AND STOCK QUOTATION ABBREVIATIONS.

The following abbreviations are used for quoting the different options and commodities by wire, hence if $70\frac{1}{2}$ cents was being bid for September wheat, the wire quotation would read "w u $70\frac{1}{2}$ b;" if sellers at that price—"w u $70\frac{1}{2}$ a;" if the previous quotation had been more than $\frac{1}{8}$ cent different upon an ordinary market, the letters "n b" would follow the quotation, as "w u $70\frac{1}{2}$ b n b."

GRAINS AND PROVISIONS.

W—Wheat.

P—Pork.

C—Corn.

L—Lard.

O—Oats.

S R (or) R—Short Ribs.

OPTION MONTHS.

F—January.

N—July.

G—February.

Q—August.

H—March.

U—September.

J—April.

V—October.

K—May.

X—November.

M—June.

Z—December.

WORDS AND PHRASES.

N—Nominal.

N B—None between.

A, S, (or) Ax—Asked (or) sellers.

B—Bid or buyers.

Pr (or) Pfd—Preferred.

PROMINENT STOCKS.

A—Atchison, Topeka & Santa Fe R R.

AB—N. Y. Air Brake Co.

AC—American Telegraph & Cable Co.

ACL—American Coal.

ACO—American Cotton Oil Co.

AD—American District Telegraph Co.

AE—Adams Express.

AM—American Express.

AMS—American Spirits Mfg Co. (Whisky).

ASW—American Steel & Wire Co.

AMT (or) AT—American Tobacco Co.

B (or) BRT—Brooklyn Rapid Transit Co.

BC—Burlington, Cedar Rapids & Northern R. R.

BE—Brooklyn Elevated R. R.

BG—Bay State Gas.

BIS—National Biscuit Co.

BL—Boston & N. Y. Air Line R. R.

BO—Baltimore & Ohio R. R.

BSW—Baltimore & Ohio Southwestern Ry.

BU—Brooklyn Union Gas Co.

CA—Canadian Pacific Railway.

- CC—Cleveland, Cin., Chic. & St. L. R. R.
CEI—Chicago & Eastern Illinois R. R.
CEN—N. Y. Central & Hudson River R. R.
CFI—Colorado Fuel & Iron Co.
CGC—Consumers Gas Co. of Chicago.
CGL—Chicago Gas Light & Coke Co.
CHD—Cincinnati, Hamilton & Dayton R. R.
CI—Chicago, Indianapolis & Louisville R. R.
CIN—Cin., Indianapolis, St. L. & Chic. R. R.
CLW—Cleveland, Lorain & Wheeling Ry.
CM—Colorado Midland.
CO—Chesapeake & Ohio Railway.
CP—Central Pacific R. R.
D—Denver & Rio Grande Railway.
DH—Delaware & Hudson Canal Co.
DI—Duluth & Iron Range R. R.
DL—Delaware, Lackawanna & Western R. R.
DS—Duluth, South Shore & Atlantic R. R.
E—Erie R. R.
EJ—Elgin, Joliet & Eastern Ry.
EW—Lake Erie & Western R. R.
E & P—Erie & Pittsburg R. R.
FS—Federal Steel Co.
FX—Federal Steel Co.—pfd.
FW—Pittsburg, Fort W. & Chic. R. R.
Gas (or) G—Consolidated Gas Co.
GW—Chicago & Great Western Railway.
GE—General Electric Co.

- JC (or) J—Central R. R. of New Jersey.
KC—Toledo, St. Louis & Kansas City R. R.
KG—Kansas City, Pitts. & Gulf R. R.
L & N—Louisville & Nashville R. R.
LS—Lake Shore & Michigan Southern R. R.
Man (or) M—Manhattan Railway Consolidated.
MC—Michigan Central R. R.
MK & T (or) K—Missouri, Kansas & Texas R. R.
MO—Mobile & Ohio R. R.
MR—Metropolitan Street Railway.
MST—Minneapolis & St. Louis R. R.
MU—Mutual Union Telegraph Co.
MX—American Malting Co.
MXC—Mexican Central Railway.
M & B—Mobile & Birmingham R. R.
N & W—Norfolk & Western Ry.
NP—Northern Pacific R. R.
NW—Chicago & Northwestern R. R.
NWT—Northwestern Tel. Co.
O & M—Ohio & Mississippi Railway.
OM—Chicago, St. P., Minneapolis & Omaha Ry.
OS—Ohio Southern R. R.
PM—Pacific Mail Steamship Co.
PA—Pennsylvania R. R.
PD—Peoria, Decatur & Evansville R. R.
PO—People's Gas Light & Coke Co.
PST—Pitts., Cin., Chicago & St. L. R. R.
PTC—Postal Telegraph-Cable Co.

- PU—Pullman Palace Car Co.
PW—Pittsburg & Western R. R.
Q—Chicago, Burlington & Quincy R. R.
RG—Philadelphia & Reading R. R.
RGS—Rio Grande Southern Railway.
RGW—Rio Grande Western Railway.
RI—Chicago, Rock Island & Pac. Railway.
RU—United States Rubber Co.
S (or) Sug—American Sugar Refining Co.
SP—Southern Pacific Co.
SR—Southern Railway.
ST—Chicago, Milwaukee & St. Paul R. R.
Tex (or) T—Texas & Pacific Railway.
TC—Texas Central R. R.
TCI—Tennessee Coal, Iron & R. R. Co.
TLT—Texas Pacific Land Trust.
TPC—Texas & Pacific Coal Co.
TPW—Toledo, Peoria & Western R. R.
TY—Toledo & Ohio Central Railway.
UP—Union Pacific Railway.
UX—United States Express.
W—Western Union Telegraph Co.
WA—Wabash R. R. Co.
WF—Wells-Fargo Express.
WGS—Western Gas Co.
WIS—Wisconsin Central Co.
WL—Wheeling & Lake Erie Railway.

WS—West Shore R. R.

WX—Westinghouse Electric & Mfg. Co.

TYPEWRITING.

It is essential that the typewriting student should follow the suggestions as given under this heading. Failure to do so will invariably prove a great barrier for the attainment of speed and accuracy.

POSITION AT THE MACHINE.

Assume an upright, easy position directly in front of the machine, with the forearm on a level with the keyboard, using the arms and fingers in the manipulation of the machine.

Strike the keys quickly and with uniform force, with proper fingers as per the following instructions, taking great care not to strike two keys at the same time. It is also of importance to early form the habit of striking a very light blow in printing periods, commas, or other small marks.

DOUBLE KEY-BOARD.**Smith-Premier Typewriter.****EXTRA CHARACTERS.**

For the numerals, one and naught, use the lower case "1" and capital "O," respectively.

The exclamation point is made by holding down the space bar and striking the apostrophe and period keys.

The character indicating cents can be made by striking "c" with the " / " over same.

Feet and inches can be designated by the apostrophe (') and quotation (") marks.

Fractions are made by striking the numerator, then the oblique dash, then the denominator. Examples: $\frac{1}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, etc.

KEYBOARD.

SMITH PREMIER TYPEWRITER.

WORD EXERCISES.

The figures above the words in the following word exercises indicate the first, second and third fingers, respectively, and five the thumb. They should be practiced with care, and exactly as given on the following pages, paying strict attention to the proper fingering.

DIAGRAM OF KEYBOARD.

FOR LEFT HAND.			FOR RIGHT HAND.		
3	2	1	1	2	3
" Q	W E	R T	Y U	I O	P F
& A	S D	F G	H J	K L	: \$
2. Z	X C	V B	N M	? —	- 6
3 q	w e	r t	y u	i o	p 7
4 a	s d	f g	h j	k l	; 8
5 z	x c	v b	n m	, .	' 9
/ (<hr/>) %	

SMITH PREMIER TYPEWRITER.

RULES FOR FINGERING.

The keyboard is divided perpendicularly exactly through the center (see diagram of keyboard); each half is divided again into three distinct columns for the first, second and third fingers, respectively, of each hand; the keys on the left-hand side to be manipulated with the left hand, and those on the right-hand side with the right hand; the space-bar to be struck with the thumb of either hand.

Left.	Right.	Left.	Right.	Left.	Right.	Left.
3 3 2 2 1 1 5	1 1 2 2 3 3 5	3 3 2 2 1 1 5	1 1 2 2 3 3 5	3 3 2 2 1 1 5	1 1 2 2 3 3 5	3 3 2 2 1 1
"QWERT	YNIOP#	&ASFDG	HJKL:\$	2ZXCVB	NM?—6	3qwert
Right.	Left.	Right.	Left.	Right.	Left.	Right.
1 1 2 2 3 3 5	3 3 2 2 1 1 5	1 1 2 2 3 3 5	3 3 2 2 1 1 5	1 1 2 2 3 3 5	1 1 5 1 1	
yuioP7	4asdfg	hijkl;8	5zxcvb	nm,.'9	/()%	
3 1 2 2 2 1 5	1 1 2 1 2 2 5	1 1 2 3 3 1 5	2 1 1 1 2 2 5	1 3 5	3 1 2 2 2 1 5	1 1 2 1 2 2
ABCDEF	GHIJKL	MNOPQR	STUVWX	YZ	abcdef	ghijkl
1 1 2 3 3 1 5	2 1 1 1 2 2 5	1 3 5	2 3 3 3 3 3 5	3 3 3 5	3 3 3 3 3 3 5	2 2 1 1 1 1
mnoPqr	stuvwx	yz	123456	789	"&#:-	—?%)/

31 31 31 32 31 311 321 311 312 312 312 311 322 322 331 322 322 312 321 322 322
ah an am as at any act art Ave are age aft all add apt axe ask ago aim awe awl

3 231 3122 3222 32312 32312 31321 1322 1312 1322 1322 1323 1322 1231 1231 1231
away able also adage aware again back babe bale bake bade basket bean bear boat

1231 1212 1232 1312 12111 11111 11222 13222 12312 13112 12112 123121 132111 231121
boar bind bias bank being bring broke basis blank banjo bound bearer basing cannot

22 1321 231121 212211 221322 231311 222322 2333123 2332132 2313131 222321 2211321
comp'y canter credit compel canary clique capable capital caravan clipper contain

22 13321 2213322 2212312 2213121 2223332211 223312132 2222131122 223122221 2223222211
compact compass concave conquer disappoint disapproval discharged depression displeasing

223122231221 22212131221 222321311322 22233312132 222333221122 22213121 2123112
depreciation destination disadvantage disapproval disappointed elevator enlarge

2232122 2221311 21112121 22111211 222212212212 22122122 2111122111 212131221
elastic elegant effusion edifying election eers edgewise eighteenth eucharist

222211232 2112222121 221231221 1322 1321 1321 1322 1322 1312 1321 1312 1311 1321
electoral efficiency education fail fain fair fake fall fane fast fate fawn fear

1221 1222 1223 1221 1231 1131 1121 13122 122221 121222 1212121 1313122 12222 11231
fear feel fill felt flat fray fret fable frozen future fibered fanatic guess great

11312 11323 11322 12231 11222 11212 112112 1321231 111132122 1132131221 1232232
grand grasp grace gleam guide grind ground gainsay gymnastic graduation glacial

1322311 1123222 1232122 13 12 132 131 111 121 121 121 131 1322 1321 1321 1321
gallant grizzled Glasgow ha he had hay hum hen her hit hat hack hail hair half

131121 131121 133321 112111 122221 121312 1333312 1311311 222 222 21 21 21 22 213
hammer harbor happen height hidden homage hazzard haggard ice ide if it in is imp

2222 2112 2223 21222 212122 21223 2121 21312 21333111 21121221 21112221 21312
idol into idea index induce India inch image inapathy interest infusion image

213322212 21212232 131 121 121 132 131 121 131 121 131 131 1322 1322 1322
impassive ironclad jab joy jig jaw jay jet jar jot jag jam Jack jade jail

1321212 1312221 1311211 1232212 13112211 13112222 12211112 21212 21222 232221
jasmine javelin jarring jealous jangling jaundice jointure knife knoll Kaiser

231232 221122 221222 221121 2311222 231233 21332 22131 22112 2311222 2212121
Kansas kettle kindle kitten kirmess kanaka kraal koran kings katydid kitchen

2122212 23113122 22213322 2231 2232 2233 23122 23121 22222 23122 23322 23112
Khedive kangaroo kidnapped leaf leak leap label labor ladle lance lapse large

23222 23121 23121 23112 23121 23111 22311 22322 22321 22312 22132 11 13
lasso latch later lathe Latin laugh learn lease least leave legal my ma

132 131 133 131 131 121 122 1322 1322 1322 1321 12221 1222312 13133212
mad mat map man may men mid mace maid mail main midst mediate magazine

13112312 13321123 131231211 1312312312 12 131 131 121 121 133 123 122 1332
marriage mazourka mandatory manipulate no nab nag not nor nap nip new nape

1322 1231 1312 1231 1312 13232 13132 133222 12112 13331 131311 12131212
nail near name neat nave Naiad naval Naples Negro nappy natant negative

1221121 21 23 21 21 232 231 212 211 221 2311 2121 2321 2332 2121 2121
neither or ox on of oak oar one our own oath omit open opal over oyer

22231 21121 23122 21221 21131 21121 23212 211221 332 331 332 331 3333 3312
ocean often optic order organ other ozone object pad pan paw pay papa page

3322 3321 3312 3322 3322 3321 33111 32331 321222 32211 3231231 3232 3222
pace pack park pard pail pain party poppy period peony popular peak peak

331111 3222 3 21 321 3123 3131 3123 31311 31322 31322 3132 1 31311 31321 313121
pantry pick Pompey quip quay quiz quaff quail quake qualm quart quash quaver

312121 31211 1 3122222 31321221 3132211 3131122 31212211 131 133 132 1322 1322
quiver quorum quibble quadron qualify quarrel quotient rag rap raw race rack

1311 1322 1321 1312 1322 1313 1312 123221 121312 122222 1322311 13 1 3311
raft rail rain rave rake ramp rand reason rebate recoil radiant rampart

1222212 1222121 1222 112 233 232 231 2312 2312 2321 2312 2322 2312
recline recover redound sap sad say same sand sash save sack safe

2322 23331 2321 23122 23211 23221 22322 22323 2312321 2312212 2311311
said sappy salt sable saint saxon scale scalp sarcasm sardine Sabbath

23121221 12 133 112 131 123 123 1332 1322 1131 1121 1122 1121 1232 1122122
sanction to tap the tar top tip tape talk that they this them toad trouble

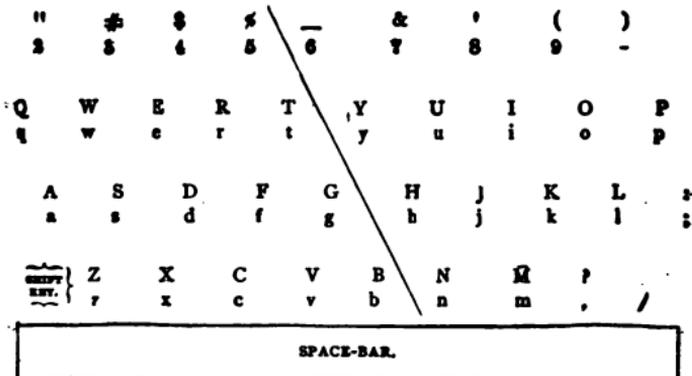
SINGLE KEY-BOARD, REMINGTON TYPEWRITER.

HOW TO FINGER THE KEYS.

Confine each hand so far as possible to its own side of the keyboard. Use three fingers of each hand, touching each key with the finger nearest it. Strike the space bar with the thumb.

The above gives briefly all instructions necessary to enable anyone to acquire a speed double that of an expert penman. For those, however, who desire to acquire the highest speed, it is important that an absolutely correct system of fingering be adopted and practiced. Those who play the pianoforte will require less practice than others.

NOTE.—The instructions here given presuppose a knowledge on the part of the pupil of how to place the paper, return the carriage, shift the cylinder, etc., all of which can be learned from the book of directions accompanying the machine.



The exact location of each letter on the keyboard should be so thoroughly memorized that the finger can be placed upon any of them without the least hesitation, and if necessary with the eyes closed. Especially should those who aim at the attainment of speed not neglect this injunction.

The above diagram shows a line drawn diagonally through the keyboard, all letters to the right of which are made by the first three fingers of the right hand; those to the left of the line with the first three fingers of the left hand.

In writing capital letters and some of the marks of punctuation, it is necessary to depress the key marked "Upper Case" with the first or second finger of the left hand; the right hand is then used to manipulate the keys either to the right or left of the dividing line.

FINGER EXERCISES.

For the benefit of students who desire to acquire correct fingering, we print a number of selected words with the proper fingering indicated by figures as explained in the following:

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