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# Post Office Engineering Department

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## TECHNICAL PAMPHLETS FOR WORKMEN

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### *Subject*

## Standard List of Terms and Definitions used in Telegraphy and Telephony

ENGINEER-IN-CHIEF'S OFFICE

1931

By permission of the British Standards Institution from British Standard Specification No. 204, "Terms and Definitions used in connexion with Telegraphs and Telephones," official copies of which can be obtained from the Publications Department, British Standards Institution, 28, Victoria Street, S.W.1, price 2s. 2d. post free.]

1936

## LIST OF Technical Pamphlets for Workmen

### GROUP A.

1. Magnetism and Electricity.
2. Primary Batteries.
3. Technical Terms.
4. Test Boards.
5. Protective Fittings.
6. Measuring and Testing Instruments.
7. Sensitivity of Apparatus.
8. Standard List of Terms and Definitions used in Telegraphy and Telephony. (*Not on sale.*)
9. Standard Graphical Symbols for Telegraphy, Telephony and Radio Communication. (*Not on sale.*)

### GROUP B.

1. Elementary Principles of Telegraphy and Systems up to Morse Duplex.
2. Telegraph Concentrators.
3. Wheatstone System. Morse Keyboard Perforators.
4. Quadruplex, Quadruplex Repeated Circuits and Telegraph Repeaters, Simplex and Duplex.
5. Hughes Type-printing Telegraph.
6. Baudot Multiplex Type-printing System.
7. Western Electric Duplex Multiplex, Murray Duplex Multiplex. Siemens and Halske Automatic Type-printing System.
8. Fire Alarm Systems.

### GROUP C.

1. Wireless Transmission and Reception.
2. Interference with Reception of Broadcasting.

### GROUP D.

1. Elementary Principles of Telephony.
2. Telephone Transmission. "Loading." Telephone Repeaters and Thermionic Valves
3. Principles of Telephone Exchange Signalling.
4. Magneto Exchanges—Non-Multiple Type.
5. Magneto Exchanges—Multiple Type.
6. C.B.S. No. 1 Exchanges—Non-Multiple Type.
7. C.B.S. Exchanges—Multiple Type.
8. C.B. Exchanges—No. 9 Type.
9. C.B. Exchanges—No. 10 Type.
10. C.B. Exchanges—No. 12 Type.
11. C.B. Exchanges—22 volts.
12. C.B. Exchanges—40 volts.
13. Trunk Telephone Exchanges.
14. Maintenance of Manual Telephone Exchanges.
15. Telephone Testing Equipment.
16. Routine Testing for Manual Telephone Exchanges.
17. Internal Cabling and Wiring.
18. Distribution Cases, M.D.F. and I.D.F.
19. Cord Repairs.

(Continued on page iii of Cover.)

## **CORRECTION SLIP TABLE.**

The month and year of issue is printed at the end of each amendment in the Correction Slips, and the number of the slip in which any particular amendment is issued can, therefore, be traced from the date. In the case of short corrections made in manuscript, the date of issue of the slip should be noted against the correction.

The Summary portions of the Correction Slips should be completed and affixed below in numerical order.

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**CORRECTION SLIP TABLE (contd.)**

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The Summary portions of the Correction Slips should be completed and affixed below in numerical order.

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**FOR OFFICIAL USE.****STANDARD LIST OF TERMS AND DEFINITIONS  
USED IN TELEGRAPHY AND TELEPHONY.**

(A8)

This pamphlet is a reprint of the British Standard Institution's Publication No. 204—1930 entitled "British Standard List of Terms and Definitions used in connexion with Telegraphs and Telephones." These terms and definitions have been adopted by the Post Office for use throughout the British Post Office Telegraph and Telephone services and the standard nomenclature in accordance with the definitions contained in this pamphlet must be used in all official correspondence, instructions, circulars, specifications, drawings, diagrams, etc.

**CONTENTS.**

	PAGE
Sub-Section 91. Offices, Exchanges and Stations ..	3
„ 92. Systems .. .. .	5
„ 93. Circuits and Transmission .. ..	8
„ 94. Calling Devices and Calling Systems	15
„ 95. Transmitters, Receivers, Relays and Repeaters .. .. .	16
„ 96. Switching Devices .. .. .	18
„ 97. Lines and Line Equipment .. ..	22
„ 98. Trunking Terms .. .. .	23
„ 99. Miscellaneous Terms .. .. .	27
Alphabetical Index .. .. .	32
Correction Slip Table.	

### EXPLANATION OF TYPE USED.

The preferred term, *i.e.*, the term recommended for general use, is shown in heavy type, thus .. **Trunk Circuit.**

Synonyms of the term are shown in light capitals, thus .. .. (LONG-DISTANCE LINE)

Abbreviations are shown in italics, thus .. .. .. .. *P.B.X.*

### NUMBERING.

The Section is divided into Sub-Sections numbered 91, 92, etc.

The definitions in each Sub-Section bear the number of the Sub-Section followed by two figures representing their position in that Sub-Section: *e.g.*, No. 9107 indicates that the definition is the 7th in Sub-Section 91, which is the first Sub-Section of Section 9.

**BRITISH STANDARD LIST OF TERMS AND DEFINITIONS  
USED IN CONNECTION WITH TELEGRAPHS AND  
TELEPHONES.**

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**SUB-SECTION 91.**

**OFFICES, EXCHANGES AND STATIONS.**

- 9101 **Public Call Office** (PAY STATION, U.S.A.)—A subscriber's station available for the use of the public on payment of a fee, which may be deposited in a coin box or paid to an attendant.
- 9102 **Exchange** (CENTRAL OFFICE, U.S.A.)—A switching centre for inter-connecting the lines which terminate therein.
- 9103 **Main Exchange**—An exchange which has satellite or sub-exchanges dependent upon it for their principal traffic outlets.
- 9104 **Manual Exchange**—An exchange operating on a manual telephone system.
- 9105 **Automatic Exchange**—An exchange operating on an automatic telephone system.
- 9106 **Semi-Automatic Exchange**—An exchange operating on semi-automatic telephone system.
- 9107 **Rural Automatic Exchange**—An automatic exchange with no manual positions, which is designed for the service of small communities such as occur in rural areas.
- 9108 **Local Exchange** (LOCAL CENTRAL OFFICE, U.S.A.)—An exchange in which subscribers' lines terminate.
- 9109 **Trunk Exchange**—An exchange essentially devoted to the termination and working of trunk circuits. In Great Britain the term is restricted to exchanges in which the traffic is recorded and is completed when the trunk circuit is free.
- 9110 **Toll Exchange**—In Great Britain an exchange essentially devoted to the termination and working of trunk circuits, the traffic over which is completed on demand.
- 9111 **Sub-Exchange**—A manual exchange which is dependent on a main exchange for its principal traffic outlets.
- 9112 **Private Exchange** (P.X.)—An exchange which serves a business or other organization and is not connected to a public exchange.
- 9113 **Private Automatic Exchange** (P.A.X.)—A private exchange operating on an automatic basis.



- 9114 **Private Manual Exchange** (*P.M.X.*)—A private exchange operating on a manual basis.
- 9115 **Private Branch Exchange** (*P.B.X.*)—An exchange which is usually installed on the premises of a subscriber and which is connected to a public exchange.
- 9116 **Private Automatic Branch Exchange** (*P.A.B.X.*)—A private branch exchange operating on an automatic basis.
- 9117 **Private Manual Branch Exchange** (*P.M.B.X.*)—A private branch exchange operating on a manual basis.
- 9118 **Satellite Exchange**—An automatic exchange in which the lifting of the receiver by a calling subscriber takes possession of an out-going junction to a main automatic exchange.
- 9119 **Full Satellite Exchange**—A satellite exchange which is dependent upon a main automatic exchange for the routing of the whole of its originating traffic.
- 9120 **Discriminating Satellite Exchange**—A satellite exchange which is dependent upon a main automatic exchange for the routing of a portion only of its originating traffic.
- 9121 **Hypothetical Exchange**—A projected exchange for which numbers are assigned to subscribers, but the subscribers' lines are temporarily connected to some other existing exchange.
- 9122 **Multi-Exchange System** (*MULTI-OFFICE EXCHANGE, U.S.A.*)—A group of associated local exchanges.
- 9123 **Exchange Area**—The district served by one exchange.
- 9124 **Subscriber's Set** (*SUBSET, U.S.A.*)—An assembly of apparatus designed for originating and receiving telephone calls in conjunction with an exchange.
- 9125 **Subscriber's Station** (*SUBSTATION, U.S.A.*)—A subscriber's set installed and connected to a public telephone system.
- 9126 **Subscriber's Main Station**—A subscriber's station which is used for originating calls and on which incoming calls from the exchange or from an extension station are answered.
- 9127 **Subscriber's Extension Station**—A subsidiary station which has access to the exchange for outgoing calls with or without the intervention of a main station. Incoming calls are received through the intervention of the main station.
- 9128 **Apparatus Room**—In an automatic exchange. The room which contains the actual switching apparatus of the exchange.  
In a manual exchange. The room containing the I.D.F., relays and similar equipment.
- 9129 **Operating Room**—In a manual or automatic exchange. A room in which the operators' positions are situated.

- 9130 **Instrument Room**—A room in which telegraph apparatus is installed and operated.
- 9131 **Calling Subscriber** (*Calling Sub.*)—The subscriber who originates a telephone call.
- 9132 **Called Subscriber** (*Called sub.*)—The subscriber required by the calling subscriber.

## SUB-SECTION 92.

### SYSTEMS.

- 9201 **Single-Needle System**—A telegraph system in which Morse signals are indicated by the deflection of a vertical needle to left and right.
- 9202 **Single-Current System**—A telegraph system in which signals are transmitted by means of uni-directional currents.
- 9203 **Double-Current System**—A telegraph system in which signals are transmitted by reversing a current that is normally on the line during transmission.
- 9204 **Wheatstone Automatic System**—A high-speed double current Morse system in which the signals are transmitted mechanically and recorded automatically.
- 9205 **Simplex System**—A telegraph system in which the circuit is arranged for operation in one direction at one time.
- 9206 **Multiple-Way System**—A telegraph system in which two or more messages are sent over the same wire simultaneously either (1) where each way has whole-time connexion to the line, or (2) by allocation of the exclusive use of the line wire to each way in rapid succession.
- 9207 **Duplex System**—A multiple-way system in which the circuit is arranged for simultaneous operation in opposite directions over a single circuit.
- 9208 **Bridge Duplex System**—A duplex system in which the neutrality of the receiving apparatus at each end to the currents sent from that end is secured by a balance of potentials on the Wheatstone Bridge principle. Received currents actuate apparatus placed between the equipotential points of the bridge.
- 9209 **Differential Duplex System**—A duplex system in which the sent currents divide through two sections of the receiving apparatus at the home end in opposite directions so as to balance their effects, whereas the currents received at the distant end pass mainly through the two sections in the same direction, and operate the apparatus.
- 9210 **Quadruplex System**—A Morse code multiple-way system in which the circuit is arranged for the simultaneous transmission of two messages in each direction over a single circuit.

- 9211 **Multiplex System**—A multiple-way system of sending two or more messages over the same wire simultaneously by the allocation of the exclusive use of the line wire in rapid succession.
- 9212 **Printing Multiplex System**—A multiplex system which provides for printing the messages other than by means of Morse code. It is described according to the number of ways prefixed by the name of the particular type of apparatus used, *e.g.*,

<b>Baudot Double</b>	..	..	..	2-way.
„ <b>Triple</b>	..	..	..	3-way.
„ <b>Quadruple</b>	..	..	..	4-way.
„ <b>Quintuple</b>	..	..	..	5-way.
„ <b>Sextuple</b>	..	..	..	6-way.

If the duplex principle is applied, the word is added, *e.g.*, Baudot Sextuple Duplex.

- 9213 **Director System**—A system of step-by-step automatic telephony for use in large multi-exchange area which permits the trunking between exchanges in the area to be independent of the subscribers' numbers. In this system the subscriber's number includes letters or figures which constitute the "code" for the exchange to which he is connected. This code, together with the remaining or numerical portion of the called subscriber's number, when dialled is received and stored on apparatus termed the director.

The director translates the code into one or more trains of impulses which are made effective on code selectors to connect the caller to the required exchange. The numerical portion is not translated, but is transmitted to selectors called numerical selectors and final selectors.

- 9214 **Manual Telephone System**—A telephone system in which the calling subscriber's order is given to an operator who completes the call directly by hand, either with or without the assistance of one or more other operators.
- 9215 **Automatic Telephone System (MACHINE-SWITCHING TELEPHONE SYSTEM)**—A telephone system in which the calling subscriber is enabled, without the aid of an operator, to complete a call through remotely controlled selectors.
- 9216 **Step-by-Step Automatic System**—A system in which the individual selectors are actuated step-by-step by their own driving mechanism operated by impulses controlling electro-magnetic ratchet and pawl devices.
- 9217 **Semi-Automatic Telephone System**—A telephone system in which the calling subscriber's order is given to an operator who completes the call through remotely controlled selectors.

- 9218 **Straightforward Junction Working**—A method of working a group of junctions between two exchanges in which any junction taken up by the operator at the outgoing end is connected by automatic means to the B operator's telephone circuit so that particulars of the call may be passed.
- 9219 **Call Indicator Working**—A method whereby calls are passed to a manual exchange by dialling or equivalent means and the number required is displayed (by illuminated numbers or other means) in front of the operator at that manual exchange.
- 9220 **Coded Call Indicator Working**—Call indicator working is said to be "coded" when the step-by-step impulses are stored in and subsequently discharged in coded form from a coder or its equivalent.
- 9221 **Non-Coded Call Indicator Working**—Call indicator working is said to be "non-coded" when the display apparatus is actuated directly by counted impulses.
- 9222 **Electrophone**—A telephone system in which speech and music at public performances, etc., can be heard on specially equipped subscribers' line circuits.
- 9223 **C.B.** (*Ab'n. for Central Battery*)—In telephony. A system in which the whole of the energy for signalling and speaking is drawn from a power installation at the exchange.  
In telegraphy. A system in which the signalling power is located at a Central Office.
- 9224 **C.B.S.** (*Ab'n. for Central Battery Signalling*)—In telephony. A system in which the energy for signalling only is drawn from a power installation at the exchange.
- 9225 **L.B.** (*Ab'n. for Local Battery*)—In telephony. A system in which the energy for speaking is drawn from a battery located at the subscriber's instrument.
- 9226 **Magneto System**—In telephony. A local battery system in which the energy for signalling is derived from a generator located at the subscriber's instrument.
- 9227 **Tandem Working**—A method adopted in a multi-exchange area whereby the originating exchange routes the call via one or more intermediate exchanges.
- 9228 **Automatic Tandem Working**—A method of tandem working in which automatic means are employed at the intermediate exchange. The calling and/or the called exchange may be either automatic or manual.

- 9229 **Semi-Automatic Tandem Working**—A method of tandem working in which semi-automatic means are employed at the intermediate exchange. The calling exchange is manual and the called exchange may be either automatic or manual.
- 9230 **Carrier Wave Telegraphy**—Also known as carrier current telegraphy. A system of telegraphic signalling using carrier waves guided by an electrical circuit. The carrier waves may be of audio or ultra-audio frequency.
- 9231 **Carrier Wave Telephony**—Also known as carrier current telephony. A system of speech transmission using carrier waves of ultra-audio frequency guided by an electrical circuit.
- 9232 **Facsimile Telegraphy Picture Telegraphy**—A system for the transmission of still pictures, printed matter, etc., over an electrical circuit.

### SUB-SECTION 93.

#### CIRCUITS AND TRANSMISSION.

- 9301 **Circuit**—A path in which an electric current may flow. Strictly speaking a circuit is a complete circulating path, but the term is commonly employed to designate (a) a specific part of a complete path and (b) an aggregation of paths.
- 9302 **Earth Return Circuit** (GROUND RETURN, *U.S.A.*)—A circuit which has a conductor (or two or more in parallel) between two points and which is completed through the earth by connexions to the earth at these two points.
- 9303 **Metallic Circuit**—A circuit in which the fundamental portion is composed of metallic conductors without utilising the earth as a return circuit.
- 9304 **Two-Wire Circuit**—A metallic circuit formed by two adjacent conductors insulated from each other. They may be either twisted together or parallel to each other.
- 9305 **Superposed Circuit**—An additional circuit obtained from a two-wire circuit or circuits in such a manner that the service over the additional circuit can be given simultaneously with the services over the other circuits and without interference with the latter.
- 9306 **Phantom Circuit** (*Ab'n. for Metallic Phantom Circuit*)—A superposed circuit having two sides, each of which consists of the two conductors of a two-wire circuit in parallel.
- 9307 **Double Phantom Circuit**—A superposed circuit having two sides, each of which consists of the four conductors of the two sides of a phantom circuit in parallel.

- 9308 **Quadruple Phantom Circuit**—A superposed circuit having two sides, each of which consists of the eight conductors of the two sides of a double phantom circuit in parallel.
- 9309 **Octuple Phantom Circuit**—A superposed circuit having two sides, each of which consists of the sixteen conductors of the two sides of a Quadruple phantom circuit in parallel.
- 9310 **Side Circuit**—A two-wire circuit forming one side of a phantom circuit.
- 9311 **Composited Circuit**—A circuit in which are obtained simultaneously either one telegraph and one telephone channel from one line-wire and earth, or two earth-return telegraph channels and one telephone channel from two line-wires; segregation being effected by means of inductive coils and condensers.
- 9312 **Impulse Circuit**—In automatic telephony. A circuit through which impulses for controlling selectors are transmitted.
- 9313 **Open Circuit System**—In telegraphy. A system in which there is no current flowing in the circuit unless a signal is being sent.
- 9314 **Closed Circuit System**—In telegraphy. A system in which current flows continuously in the circuit and in which the current is subject to control by any station for signalling purposes.
- 9315 **Direct Circuit**—In telegraphy. A circuit in which the currents transmitted operate the distant signalling instrument without the intervention of a relay.
- 9316 **Divided Circuit**—In telegraphy. A circuit on which one or more message channels are terminated at some point other than the terminal station of the circuit.
- 9317 **Trunk Circuit (LONG DISTANCE LINE, U.S.A.)**—A telephone circuit providing communication between two multi-exchange systems, such communication involving the payment of a sum exceeding two unit fees. These circuits may be connected either to trunk positions, calls being reversed when the circuit is free; or to local or toll positions, calls being completed on demand.
- 9318 **Local Junction Circuit**—A circuit directly connecting two exchanges, communication between the subscribers on which involves the payment of one unit fee only.
- 9319 **Fee Junction Circuit**—A circuit directly connecting two exchanges, communication between the subscribers on which involves the payment of two unit fees.
- 9320 **Trunk Record Circuit**—A circuit over which subscribers' circuits are extended to positions provided for the recording of particulars of trunk calls which will be completed later at a trunk position.

- 9321 **Trunk Junction Circuit**—A circuit which is connected at the outgoing end to trunk positions (*see* Trunk Circuit) and is used exclusively for extending long distance calls to local exchanges.
- 9322 **Order-Wire Circuit**—A circuit over which junction connections are ordered either by manual or mechanical means.
- 9323 **Split Order-Wire Circuit**—A circuit consisting of two or more order-wire circuits allocated to one B operator.
- 9324 **Transfer Circuit**—A circuit between two operators' positions in an exchange.
- 9325 **Phonogram Circuit**—A circuit between a local, toll or trunk exchange and a telegraph office, over which telegrams are received from and/or dictated to subscribers and other telegraph offices by telephone.
- 9326 **Telephone-Telegram Circuit**—A circuit between two telegraph offices over which telegrams are passed by telephone.
- 9330 **Neper**—The neper is a unit used in the comparison of the magnitudes of powers, voltages or currents at two different points in a network of lines or apparatus.

If two powers are concerned the number of nepers expressing their relative magnitude is half the natural logarithm of the ratio of the powers.

If two voltages or two currents are concerned the number of nepers expressing their relative magnitude is the natural logarithm of the ratio of the voltages or currents. (It is implied that the impedances with which the respective voltages or currents are associated are identical or that the necessary corrections are made.)

(See also Bel. 1 neper = 0.8686 bel.)

- 9331 **Decineper** (*dn*)—One-tenth of one neper.
- 9332 **Bel**—The bel is a unit used in the comparison of the magnitudes of powers, voltages or currents at two different points in a network of lines or apparatus.

If two powers are concerned the number of bels expressing their relative magnitude is the logarithm to the base 10 of the ratio of the powers.

If two voltages or two currents are concerned the number of bels expressing their relative magnitude is twice the logarithm to the base 10 of the ratio of the voltages or currents. (It is implied that the impedances with which the respective voltages or currents are associated are identical or that the necessary corrections are made.)

- 9333 **Decibel** (*db*)—One-tenth of one bel.

- 9334 **Master Telephone Transmission Reference System**—A high quality and stable telephone transmission system provided with means for calibrating its transmitting, attenuating and receiving components in terms of absolute units; and provided with distorting electrical networks enabling the system to simulate the quality of commercial telephone systems with a view to facilitating voice and ear comparisons between commercial systems and the reference system. The reference system for Europe is housed in Paris, at the Conservatoire des Arts et Métiers and is identical with the reference system held at the Bell Telephone Laboratory Incorporated, New York.
- 9335 **Attenuation**—The decrease in magnitude of the transmitted power, voltage or current due to a line or apparatus. Quantitatively, the attenuation, which may be negative, is expressed in nepers or bels by comparing the magnitude of the received with that of the sent power, voltage or current (see Neper, Bel).
- 9336 **Attenuation Constant**—(a) The attenuation constant of a uniform line of infinite length at a specific frequency is defined as the attenuation between points separated by unit length.  
 (b) The attenuation constant of a line of periodic recurrent structure is defined as the attenuation at a specific frequency between corresponding points divided by the length of line separating these points.  
 (c) In a network of periodic recurrent structure the attenuation constant is conveniently expressed as the attenuation per section: that is, the attenuation measured between successive corresponding points.
- 9337 **Artificial Line**—In general, a network of resistances and/or capacities and/or inductances simulating some or all of the characteristics of a telephone or telegraph line. Attenuator and Balancing Network are particular cases of an artificial line.
- 9338 **Attenuator** (*U.S.A. Pad*)—An artificial line which usually consists of pure resistance elements, and is used solely for the purpose of introducing attenuation.
- 9339 **Balancing Network or Balance** (IN TELEGRAPHY "DUPLEX BALANCE")—A network of resistance and/or capacity and/or inductance which simulates the impedance characteristics of a line.
- 9340 **Characteristic Impedance**—The limiting value towards which the impedance of a line tends as its length is indefinitely increased.  
 In lines of periodic recurrent structure, the characteristic impedance must be referred to a definite point in the structure.  
 For example, in a coil-loaded line, the characteristic impedance is usually referred to the middle point of the section between two successive loading coils.



9341 **Cross-Talk**—Overhearing between telephone circuits.

(1) Quantitatively it is the ratio at the frequency specified which the cross-talk current at the near or far end of the disturbed circuit bears to the current entering the disturbing circuit, taking into account the impedance difference which may exist between the two circuits concerned. This ratio is usually expressed in millionths ; one millionth is referred to as one cross-talk unit.

(2) The attenuation which would be measured, at the frequency specified between that terminal of the disturbing circuit at which the disturbing tone is entering and the near end or far end of the circuit upon which the cross-talk is observed. This attenuation may be expressed either in bels or nepers.

9342 **Cut-off Frequency** (*Cut-off*)—Also called natural frequency. This term applies only to lines or networks bearing a periodic recurrent structure and is a definite frequency calculated from the constants of the circuit, neglecting dissipation, *i.e.*, resistance and leakance. It is that frequency at which the attenuation of the structure ceases to be zero and the characteristic impedance becomes purely reactive.

In practice owing to dissipation, the attenuation is never actually zero, and rises rapidly in the neighbourhood of the cut-off frequency.

9343 **Distortion**—The change in shape of a transmitted wave which occurs between any two points of a transmission system.

9344 **Phase Distortion**—The distortion due to unequal transmission times obtaining at different frequencies. In the steady state this is not harmful.

9345 **Transient Phenomena**—(Sometimes loosely referred to as "Phase distortion.") An application or change of a voltage at the sending end of a line gives rise to an infinite number of different frequencies. The transient phenomena are the phenomena manifested between the time of arrival of the fastest travelling frequency and the establishment of the steady state.

9346 **Attenuation Equaliser or Compensator**—A network, usually comprising resistance, inductance and capacity, which is designed to compensate for the variation with frequency of the attenuation of the line with which it is associated.

9347 **Phase Equaliser or Compensator**—A network, usually comprising resistance, inductance and capacity, which is designed to compensate for the variation with frequency of the phase of the current or voltage in the line with which it is associated.

- 9348 **Echo**—In telephony. The return by reflection of speech currents to the speaker or apparent repetition to the listener.
- 9349 **Filter** (*Ab'n for Frequency Filter*)—An electrical network so designed that the ratio of received current to sent current is as nearly as possible unity over a certain range of frequencies and negligibly low at other frequencies.
- 9350 **Low Pass Filter**—A filter so designed that the ratio of received current to sent current is as nearly as possible unity below a certain frequency and negligibly low above that frequency.
- 9351 **High Pass Filter**—A filter so designed that the ratio of received current to sent current is as nearly as possible unity above a certain frequency and negligibly low below that frequency.
- 9352 **Band Pass Filter**—A filter so designed that the ratio of received current to sent current is as nearly as possible unity over a certain range of frequency and negligibly low above and below that range.
- 9353 **Band Rejection Filter**—A filter so designed that the ratio of received current to sent current is as nearly as possible unity above and below a certain range of frequency and negligibly low over that range.
- 9354 **Propagation Constant**—The vectorial sum of the attenuation constant and the wave length constant at a specific frequency. The propagation constant is a vector expression the change in magnitude (attenuation constant) and phase (wave length constant) per unit length of a transmission line.
- 9355 **Singing Point**—(1) of a two-wire repeater.  
 A measurement of the stability of a repeater against oscillation and harmful effect on articulation due to back coupling brought about by inexact balance between the balancing network and line.  
 It therefore partially determines the maximum gain obtainable from a two-wire repeater.  
 (2) of a line.  
 In the case of a long line, the attenuation corresponding to the ratio of the power transmitted to the line at some specified frequency and the power returned to the sending end by reflection from irregularities. The term "Singing Point" has a number of other meanings including the loss corresponding to the reflection coefficient when, for example, two lines are joined together.
- 9356 **Standard Cable**—An arbitrary uniform line in terms of which the attenuation of a line or network may be specified.

9356— The standard cable used in Great Britain for telephone measurements is characterised by the following constants:—

		<i>Per loop mile.</i>	
<i>Resistance</i>	.. .. .	..	88 <i>ohms.</i>
<i>Capacity</i>	.. .. .	..	·054 $\mu F$
<i>Inductance</i>	.. .. .	..	·001 <i>henry</i>
<i>Leakance</i>	.. .. .	..	1 $\mu mho$

This standard is now obsolescent.

9357 **Reference Equivalent**—The reference equivalent of a telephone transmission system is the number of decibels as indicated by the Master Telephone Transmission Reference System (q.v.) when that system is adjusted to give the same volume of sound at the output of the receiver as that of the system considered, the acoustic pressure on the diaphragm of the transmitter being the same in both cases. This equivalent may also be expressed in nepers.

9358 **Transmission Level (*Level*)**—A measure of the ratio of the power at any point in a transmission line to the transmitted power or to a standard reference power. Transmission levels are expressed in decibels or nepers.

9359 **Wavelength Constant**—(a) The wavelength constant of a uniform line of infinite length at a specific frequency is defined as the change of phase, expressed in radians, of the current or voltage between points separated by unit length.

(b) The wavelength constant of a line of periodic recurrent structure is defined as the change in phase of the current or voltage between successive corresponding points divided by the length of the line separating these points.

(c) In a network of periodic recurrent structure the wavelength constant is conveniently expressed as the phase change per section, that is the phase change measured between successive corresponding points.

9360 **Repeater Gain**—The increase in magnitude of the transmitted power, voltage or current due to transmission through a telephone repeater. Quantitatively, the gain is expressed in nepers or bels by comparing the magnitude of the received power, voltage or current with that transmitted. (See Neper, Bel.)

9361 **Non-Linear Distortion Factor**—A measure of distortion due to non-linear transmission or response of a line or piece of apparatus. When a pure tone or combination of pure tones is subjected to non-linear distortion, derived components appear having frequencies corresponding with the multiples of, and the sums and differences of multiples of, the parent frequencies; so causing roughness and harshness in the received tone. The ratio of the total power in these derived components to the total power in the parent tones is called the "non-linear distortion factor." The German term "Klirrfaktor" is equivalent to Non-linear Distortion Factor.

**SUB-SECTION 94.****CALLING DEVICES AND CALLING SYSTEMS.**

- 9401 **Magneto Bell**—An electric bell operated by alternating current.
- 9402 **Trembler Bell**—An electric bell operated by direct current made intermittent by the operation of the bell.
- 9403 **Night Alarm (NIGHT BELL)**—An electric bell for use at night or during slack periods.
- 9404 **Calculagraph**—A machine intended to measure and record lapse of time for a telephone call.
- 9405 **Chronopher**—A switching instrument which transmits automatically over selected telegraph and other circuits standard time signals from an observatory.
- 9406 **Calling Device**—A device used in automatic telephony for controlling automatic switches for the purpose of establishing a connection.
- 9407 **Keysender (Sender)**—A group of apparatus which, when operated by the depression of digit keys, controls the operations of automatic apparatus. Its object is to facilitate speedy operation.
- 9408 **Digit Key Strip**—A strip of keys which, when associated with a keysender, forms a calling device.
- 9409 **Dial**—A calling device arranged in the form of a rotatable disc.
- 9410 **Impulse Machine**—In automatic telephony. A machine for sending impulses.
- 9411 **Dialling**—In automatic telephony. The act of applying impulses to a circuit by means of a dial.
- 9412 **Simplex Dialling**—A system of dialling over both conductors of a telephone circuit in parallel, using earth return.
- 9413 **Duplex Dialling**—A system of dialling over both conductors of a telephone circuit using a separate impulsing contact and battery with earth return on each conductor, the batteries being at opposite ends of the line.
- 9414 **Calling-Subscriber Release (Calling-sub. Release)**—A method of release whereby all the switches in a connexion are released by the replacing of his receiver by the calling subscriber.
- 9415 **First-Subscriber Release (First-sub. Release)**—A method of release whereby some or all of the switches in a connexion are released by the first subscriber to replace his receiver.
- 9416 **Last-Subscriber Release (Last-sub. Release)**—A method of release whereby all the switches in a connexion are held until both subscribers replace their receivers.

- 9417 **Manual Hold**—A method of working from an automatic subscriber to a manual position in which, after the operator has plugged in, the connexion is held by the operator.
- 9418 **Manual Ringing**—Ringing which is started and stopped by the operation of a key.
- 9419 **Power Ringing**—Ringing which is produced by alternating current from a generator driven otherwise than by hand.
- 9420 **Interrupted Ringing**—Power ringing which is periodically and automatically interrupted.
- 9421 **Machine Ringing**—Interrupted ringing applied to a circuit, the circuit being closed by a key, relay, or other switching device and opened by the operation of a relay actuated by the reply of the called subscriber.
- 9422 **Keyless Ringing**—Machine ringing which is effected by the insertion of the plug of the incoming junction or the calling cord into the jack of the called subscriber's line.
- 9423 **Harmonic Selective Signalling**—Signalling a number of stations on one circuit by means of alternating or pulsating currents of different frequencies: each individual station being tuned to one frequency only. A calling station can call any selected station independently of the others by employing the frequency particular to the selected station.
- 9424 **Pilot Signal**—An automatically operated supervisory signal, *e.g.*, Pilot lamp or Pilot fuse, which indicates a change from normal in one or more circuits, signals or other devices forming part of the group with which it is associated.
- 9425 **Superposed Ringing Current**—A ringing current consisting of a direct current superposed on an interrupted alternating current.

### SUB-SECTION 95.

#### TRANSMITTERS, RECEIVERS, RELAYS AND REPEATERS.

- 9501 **Distributor**—In telegraphy. A rotating device which distributes line-connexion in quick succession to the different message channels of a multiplex system.
- 9502 **Phonic Wheel**—A toothed iron wheel driven electromagnetically from a vibrating reed or fork.
- 9503 **Sounder**—A telegraph receiving instrument in which morse signals are translated into sound signals determined by intervals between two diverse sounds.

- 9504 **Transmitter**—In telegraphy. A mechanical device for sending electrical signals over a telegraph circuit.  
In telephony. An electro-mechanical device designed to convert sound waves or vibrations into electrical waves or vibrations for transmission over a telephone or other circuit.
- 9505 **Receiver**—In telephony. An electro-mechanical device designed to convert electrical waves or vibrations into audible sound waves.
- 9506 **Microphone**—In telephony. A transmitter designed to have its electrical resistance directly and materially altered by slight differences in mechanical pressure such as are caused by sound waves or vibrations. The term is now generally used as a synonym for Telephone Transmitter.
- 9507 **Microtelephone**—A rigid combination of telephone transmitter and receiver in a form convenient for holding simultaneously to mouth and ear.
- 9508 **Induction Coil**—In telephony. A transformer, usually with an open magnetic circuit, suitable for developing voltages in its secondary coil which vary in polarity and strength with the rise and fall of a unidirectional current in the primary coil.
- 9509 **Relay**—An electrically operated device for opening and closing circuits.
- 9510 **Non-Polarised Relay**—A relay, the operation of which depends upon the magnitude of the current flowing in the controlling circuit irrespective of the direction of the current.
- 9511 **Polarised Relay**—A relay, the operation of which depends upon the direction as well as upon the magnitude of the current in the controlling circuit.
- 9512 **Neutral Relay**—A polarised relay so arranged that it operates in one direction or another from a normal neutral position according to the direction of the current in the controlling circuit.
- 9513 **Shunt Field Relay**—A relay with two windings and a closed magnetic circuit. Normally the direction of the current in the windings confines the magnetic flux to the closed magnetic circuit, but when the current is reversed in one winding the flux is caused to take a shunt path which effects the operation of the relay.
- 9514 **Two-Step Relay**—A relay with two groups of contact springs, one group of which is operated by an initial small magnetic flux and both groups by a subsequent greater magnetic flux. The first group is said to be "x" operated. (See also x-operation.)

- 9515 **Relay-Set**—An assembly of relays, with or without associated condensers and/or coils mounted on a single plate and wired to a plug.
- 9516 **Repeater**—A device whereby currents received over one circuit are automatically repeated in another circuit or circuits, generally in an amplified form.
- 9517 **Telephonic Repeater**—A repeater for currents of telephonic frequency and magnitude.
- 9518 **Impulse Repeater**—In automatic telephony. A repeater used for repeating impulses from one line circuit into another.
- 9519 **Repeating Coil**—A special form of transformer used in telephone practice; ordinarily of unity ratio.
- 9520 **Retardation Coil**—A coil designed to offer a high impedance to currents of voice frequency.

### SUB-SECTION 96.

#### SWITCHING DEVICES.

- 9601 **Jack**—In telephony. A device used generally for terminating the permanent wiring of a circuit, access to which is obtained by the insertion into the jack of a plug usually connected to a cord.
- 9602 **Test Jack**—A jack interposed in a circuit to facilitate routine testing and the localization of faults.
- 9603 **Break Jack**—A jack arranged to break the normal circuit when a plug is inserted.
- 9604 **Branching Jack**—A jack without break contacts.
- 9605 **Plug**—In telephony. A device usually connected to the conductors of a flexible cord and used to make connexion with a jack.
- 9606 **Selector Plug**—A plug associated with a selector for the purpose of making through a jack connexions with the permanent wiring on the selector rack.
- 9607 **Gravity Switch (SWITCH-HOOK)**—A gravity operated device for opening and closing contacts in telephone circuits, and usually associated with the support for the subscriber's receiver or microtelephone.
- 9608 **Key**—In telephony. A manually operated device in which the contact members are flexed and not pivoted; used for opening and/or closing circuits.
- 9609 **Switchboard**—In an exchange. The means provided for the inter-connexion of the lines terminating therein.
- 9610 **Manual Switchboard**—A switchboard on which inter-connexion is performed by hand.

- 9611 **Auto-Manual Switchboard**—A manual switchboard for handling the junction and trunk traffic, enquiries, etc., in an automatic exchange.
- 9612 **Switchboard Section (SWITCH SECTION)**—A unit, one or more of which constitutes a switchboard.
- 9613 **Position (*Ab'n. for Operator's Position*)**—Such part of a switchboard as is normally controlled by one operator.
- 9614 **A-Position**—A position on which calls from subscriber's circuits are received.
- 9615 **B-Position**—A position on which calls over junction or trunk circuits from other exchanges are received, the calls being completed on demand.
- 9616 **Trunk Position**—A position on which calls over trunk circuits to and from other exchanges are handled, the records relative to outgoing calls being received from a trunk record or A-position and the calls being completed when the circuit is free.
- 9617 **Call Indicator Position**—A B-position which is equipped for call indicator working.
- 9618 **Keysending B-Position**—A B-position equipped with digit keys for the purpose of making calls direct to an automatic exchange.
- 9619 **Keysending B-Position with Cords**—A keysending B-position provided also with cords for the purpose of effecting through connexions.
- 9620 **Trunk Record Position**—A position to which subscribers' circuits are extended in order that particulars may be recorded of calls which are to be completed later over a trunk circuit.
- 9621 **Filter Record Position**—A position at which records are kept of the calls to and from busy subscribers' lines in order to be able to demonstrate the necessity for additional lines.
- 9622 **Keysending A-Position**—An A-position equipped with digit keys for the purpose of making calls direct to an automatic exchange.
- 9623 **Special Control Position**—A trunk position used during the busy hours only, the calls being handled at A-positions at times when a "no delay" service can be given.
- 9624 **Monitor's Position**—A position at which enquiries and complaints from subscribers and operators are handled.
- 9625 **Testing Position**—A position at which the operating staff makes preliminary tests of lines reported faulty.
- 9626 **Phonogram Position**—A position at which telegrams are received from and dictated to subscribers and telegraph offices by telephone.



- 9627 **Multiple**—(a) Noun. A circuit accessible at a number of points to any one of which connexion can be made. An aggregation of such points is sometimes called a multiple.  
(b) Verb. To render a circuit accessible at a number of points.
- 9628 **Selector**—An automatic switching device serving to select a particular contact or contacts by impulse and/or hunting and/or finding action.
- 9629 **Uniselector**—A selector having unidirectional motion.
- 9630 **Numerical Selector**—In automatic telephone systems using an alphabetical code as a portion of the subscriber's number, those group selectors which are controlled by the numerical portion of the number dialled.
- 9631 **Final Selector**—A selector which establishes connexion with the called subscriber's line.
- 9632 **Test Final Selector**—A final selector provided for the use of the Test Clerk.
- 9633 **Trunk Offering Final Selector**—A final selector giving access to engaged subscribers for the purpose of offering trunk calls.
- 9634 **Group Selector**—A selector which selects a group of trunks by impulse action and subsequently selects an idle trunk in the group by hunting action.
- 9635 **Code Selector**—A selector provided in an originating exchange for the finding of outgoing junctions to other exchanges or of first numerical selectors at the originating exchange in accordance with a translated code as used in a director system.
- 9636 **Access Selector**—A selector which gives access successively to various switches for a specific purpose such as routine testing.
- 9637 **A-Digit Selector**—In a director system using a 3-digit code a selector which is operated by the first digit of the exchange code and then connects the calling line to the BC-digit selector of a free director.
- 9638 **BC-Digit Selector**—In a director system, a selector which is operated by the second and third digits of the exchange code.
- 9639 **Test Selector**—A selector by means of which connexion is established between the test desk and a test final selector. The test selector may respond to either one or two trains of impulses according to the size of the exchange system.
- 9640 **Trunk Offering Selector**—A selector by means of which connexion is established between an operator's position and a trunk offering final selector. The trunk offering selector may respond to either one or two trains of impulses according to the size of the exchange system.

- 9641 **Tandem Selector**—A selector provided at an automatic exchange for receiving junction traffic from another exchange and passing it forward.
- 9642 **Digit Absorbing Selector**—A selector which is so arranged that the wipers return to normal after one or more digits but remain in an operated position for the subsequent digit.
- 9643 **Discriminating Selector**—A digit absorbing selector in which the digit absorbing feature is used to discriminate between calls to be completed locally and calls to be routed to some other exchange.
- 9644 **Repeating Selector**—A selector, the main function of which is to act as a group selector; but which, after the first digit has been received, serves to repeat all succeeding impulses.
- 9645 **P.B.X. Final Selector** (*Ab'n for Private Branch Exchange Final Selector*)—A selector which, in addition to the standard operation of a final selector, selects an idle private branch exchange line by hunting action.
- 9646 **Finder**—A selector which connects one line or link to any one of a group of lines or links. The selection is by finding action.
- 9647 **Hunter**—A selector which connects one line or link to any one of a group of lines or links. The selection is by hunting action.
- 9648 **Allotter**—A selector used in conjunction with a group of finders to determine the order in which the finders shall operate.
- 9649 **Sequence Switch**—A switch for making a number of electrical contacts in a definite order.
- 9650 **Director**—In a director system. The apparatus which receives and retransmits the called subscriber's number, translating the code portion.
- 9651 **Coder**—In call indicator working. An apparatus for storing groups of step-by-step impulses at an automatic exchange and discharging groups of current impulses which are designed in such a way that the time needed to transmit them to a manual exchange when a position is available is a minimum. The groups so discharged are said to be "coded."
- 9652 **Display Panel**—In call indicator working. The apparatus on a call indicator position on which the number required is displayed by illuminated numbers or other means in front of the operator.
- 9653 **Routiner**—In automatic telephony. An equipment for testing apparatus or circuits automatically.

- 9654 **Wiper**—That portion of the moving member of a selector or other similar device which engages with the contacts of a bank.
- 9655 **Bank**—In automatic telephony. An assemblage of fixed contacts with which a wiper engages. Banks are usually multiplied.
- 9701 **Jumper Wire** (*Jumper*)—In telephony. A length of wire used in a cross-connexion field for the purpose of re-arrangement of permanent circuit connexions.
- 9702 **Line**—The portion of a circuit that is external to the premises housing the apparatus.
- 9703 **Subscriber's Line**—The line between a subscriber's station and an exchange.
- 9704 **Direct Line** (**INDIVIDUAL LINE, U.S.A.**)—A subscriber's line upon which only one subscriber's station is connected to an exchange. It may, if required, have one or more extension stations.
- 9705 **Party Line**—A subscriber's line upon which two or more subscribers' stations are connected.
- 9706 **Tie Line**—A line between two private branch exchanges.
- 9707 **Loaded Line**—A line in which the normal inductive reactance has been altered for the purpose of increasing the transmission efficiency.
- 9708 **Coil Loading**—The addition to a circuit of inductance by means of coils connected at intervals along the conductors to neutralise the effects of electrostatic capacity.
- 9709 **Continuous Loading**—The addition to a circuit of inductance by means of a continuous wrapping along the conductors to neutralise the effects of electrostatic capacity.
- 9710 **Positive Wire**—In automatic telephony, that wire of a circuit within an exchange which, when it is free, is connected to the positive pole of the battery.
- 9711 **Negative Wire**—In automatic telephony, that wire of a circuit within an exchange which, when it is free, is connected to the negative pole of the battery.
- 9712 **A-Side**—The double-current message channels of a quadruplex telegraph circuit.
- 9713 **B-Side**—The single-current message channels of a quadruplex telegraph circuit.
- 9714 **A-Wire and B-Wire**—In telephony. The two wires of a telephone line. Generally the A-wire is connected to the T-wire inside the exchange and the B-wire to the R-wire.
- 9715 **S-Wire**—The internal wire of a telephone circuit which is associated with the sleeve contact of a plug or with a corresponding point.

- 9716 **R-Wire** (RING WIRE)—The internal wire of a telephone exchange circuit which is associated with the ring contact of a plug, or with a corresponding point.
- 9717 **P-Wire** (PRIVATE)—The wire which controls the guarding, holding and normally the releasing of automatic switches.
- 9718 **T-Wire** (TIP WIRE)—The internal wire of a telephone exchange circuit which is associated with the tip contact of a plug, or with a corresponding point.
- 9719 **Release Wire**—A wire sometimes provided in an automatic system solely for controlling the release of switches. (See also P-wire.)
- 9720 **Twin Cable** (LOOP CABLE)—A cable containing a number of pairs, each pair formed by twisting two insulated conductors together.
- 9721 **Multiple Twin Cable**—A cable containing a number of two-pair cores, each two-pair core consisting of two twisted pairs twisted together.
- 9722 **Quad Cable** (STAR QUAD CABLE)—A cable containing a number of quads, each quad formed by twisting together four insulated conductors about a common axis.
- 9723 **Pilot Wire**—In telegraphy or telephony. A wire in a multi-wire cable reserved for the purpose of detecting any deterioration in the insulation of the cable.

### SUB-SECTION 98.

#### TRUNKING TERMS.

- 9801 **Trunking**—(a) In telephony. That branch of the subject that is concerned with the provision and arrangement of such plant as is needed to carry the traffic with the specified "grade of service" (q.v.).
- (b) In automatic telephony. The inter-connexion between the various ranks of switches, designed to handle the traffic in the most suitable manner from the points of view of economy of plant, flexibility, and ease of tracing calls.
- 9802 **Telephone Traffic** (*Traffic*)—The aggregate of telephone calls passing over a group of circuits or trunks, having regard to their duration as well as their number. (See Traffic Flow, and Traffic Unit.)
- 9803 **Traffic Flow**—The average number of calls in progress simultaneously.
- 9804 **Busy Hour**—The hour during which the originating traffic of an exchange or the traffic over a group of trunks is greatest.

NOTE.—In Great Britain, in order to simplify traffic measurement, the busy hour is always one commencing at the hour or half-hour, and is the busiest of such hours.

9805 **Traffic Unit** (*T. U.*)—The unit of traffic flow—a unit employed in estimating the amount of switching equipment required in automatic exchanges to carry the traffic.

In any given volume of traffic, the traffic flow for specified period is said to be unity when the average number of simultaneous calls during the period is unity. The specified period is the busy hour unless otherwise stated. The traffic flow (in traffic units) for a period can therefore be shown to be the number of calls originated during the period multiplied by the average holding time of a call, holding time being expressed in terms of the period.

A Traffic Unit, is therefore, equivalent to the traffic flow in one circuit continuously occupied.

9806 **Holding Time**—The total time during which a selector or circuit is engaged in connexion with a telephone call.

9807 **Operating Time**—That portion of the holding time of a call which is occupied in establishing communication between the two subscribers and in subsequently severing the connexion.

9808 **Conversation Time**—That portion of the duration of a call utilised by subscribers for conversation.

9809 **Occupancy**—The traffic flow on a single selector or circuit. The maximum occupancy is unity.

9810 **Grade of Service**—A measure of the service given in an exchange from the point of view of sufficiency of plant. In practice it is expressed as the proportion of calls which are allowed to fail during the busy hour, owing to the limitation, for economic reasons, of the amount of switching plant.

9811 **Overall Grade of Service**—The grade of service with respect to the whole exchange system.

9812 **Traffic Capacity**—The traffic flow which a given group of circuits will carry for a prescribed grade of service.

9813 **Trunk Link**—A connecting circuit between selectors of different rank in an automatic exchange network, or between one rank of selectors and a manual position.

In U.S.A. the term "Trunk" has also the significance of the British term "Junction Circuit."

9814 **Availability**—In automatic telephony. The number of trunks to which a selector has access on any route. Thus in a 24 point unselector the availability is 24.

9815 **Full Availability**—In a trunking scheme. The condition under which a selector has access to the whole of the trunks on a given route.

- 9816 **Limited Availability**—In a trunking scheme. The condition under which a selector has access to a limited number only of the trunks on a given route. The availability is usually limited by the number of outlets per level in the hunting selector.
- 9817 **Bank of Selectors**—In automatic telephony. The selectors which provide for any one stage of call selection.
- 9818 **Selector Shelf (SELECTOR PANEL)**—In automatic telephony. A group of switches whose bank-to-bank cabling is connected as a single unit to cable terminal strips.
- 9819 **Level Multiple**—In automatic telephony. The multiples which, taken together, carry the traffic outgoing from a given level.
- 9820 **Straight Banks**—Banks multiplied together in such a way that on successive selectors the out-going trunks in the level multiple are tested in the same order starting from the same trunk as each selector.
- 9821 **Slipped Banks**—Banks multiplied together in such a way that on successive selectors the out-going trunks in the level multiple are tested in the same cyclic order but starting from a different trunk at each selector.
- 9822 **Interconnecting**—Any method of connecting together level multiples when the availability is limited so that the sets of trunks available from different shelves are partially common to one another. Grading is one form of interconnecting.
- 9823 **Grading**—In automatic telephony.  
 (a) The method of connecting level multiples together so that a group of selectors is given access to individual trunks on the early choices, but on the later choices shares access to trunks with other groups.  
 (b) An arrangement of trunks connected to the banks of selectors by the method of grading.
- 9824 **Grading Group (Group)**—The portion of a level multiple which is the unit in the formation of a grading. A group may consist of the multiple circuits from one shelf or from a number of shelves teed together.
- 9825 **“N-Group, X-Contact Grading”**—A grading built up of N groups, each group having an availability of X, e.g., a 12-group, 10-contact grading.
- 9826 **Individual Trunk**—A trunk which serves only one group of a grading.
- 9827 **Common Trunk**—A trunk common to all groups of a grading.
- 9828 **Partial Common**—A trunk common to more than one but not to all groups of a grading.

- 9829 **Symmetrical Grading**—A grading in the formation of which all groups are treated alike.
- 9830 **Unsymmetrical Grading**—A grading in the formation of which all groups are not treated alike, the disparity usually consisting in allotting a larger number of individual trunks to the groups having the larger traffic.
- 9831 **Tandem Selection**—A method of trunking in which two uniselectors operate in tandem so that the maximum possible number of trunks over which selection can take place is the product of the availabilities of the two uniselectors.
- 9832 **Group Control (BACKWARD BUSYING)**—In tandem selection, the busying of a trunk outgoing from the first rank of uniselectors when the uniselector of the second rank on which it terminates has no free outlets.
- 9833 **Trunk Distribution Frame**—A distribution frame on which the trunking between successive ranks of selectors is effected.
- 9834 **Terminal Assembly**—In automatic telephony. A structure forming part of a selector rack and used for terminating the selector bank cables and, in the absence of a trunk distribution frame, for effecting the trunking to the next rank of selectors.
- 9835 **Trunk Frame Terminal Assembly**—A terminal assembly with a cross-connexion field on which trunking to a subsequent rank of selectors is effected.
- 9836 **Uniselector Distribution Frame**—A distribution frame by means of which the number of uniselectors having a common multiple may be varied in order to provide for variations in the originating traffic.
- 9837 **Traffic Diagram**—A diagram showing all the traffic routes in an exchange with the amount of traffic carried by each route.  
Other information may also be shown such as the number of trunks and the traffic capacities of the routes.
- 9838 **Trunking Diagram**—A diagram showing the whole or a portion of the trunking arrangements of an automatic exchange.
- 9839 **Traffic Meter**—In an automatic exchange. A meter for recording specific traffic data.
- 9840 **Congestion Call Meter**—A traffic meter so connected as to record the number of calls carried by the last choice trunk of a grading.
- 9841 **Congestion Traffic-Unit Meter**—A traffic meter the readings of which are proportional to the traffic flow over the last choice trunk of a grading.

- 9842 **Overflow Meter**—A traffic meter which records the number of calls which fail to find a free trunk in any group of trunks.
- 9843 **Analysis Meters**—A group of traffic meters which are provided in order to analyse the overflows in a grading; that is, to determine the number of overflows occurring in each group or other segregated portion of the grading.
- 9844 **Call-Counting Meter**—A traffic meter which records the number of calls carried by a trunk or group of trunks.
- 9845 **Director Meter**—A call-counting meter which records the number of calls carried by a director.
- 9846 **Subscriber's Meter**—A device for recording the number of effective originating calls on a subscriber's line.
- 9847 **Position Meter**—A meter provided for measuring the number of calls handled at an operator's position. A position meter may be operated manually or automatically. When manually operated the position meter is sometimes known as a peg count meter.

### SUB-SECTION 99.

#### MISCELLANEOUS TERMS.

- 9901 **Free**—The disengaged condition of a circuit or apparatus.
- 9902 **Cadence**—In telegraphy. A signal for the operator of a Baudot or similar telegraph keyboard as to when to depress a signal-group of keys.
- 9903 **Correction**—A system by which rotating instruments at the two ends of a synchronous telegraph circuit are kept in phase or unison.
- 9904 **Five-Unit Code**—In telegraphy. A code of signals in which all letters or other signals are of equal duration and are each produced by five equal impulses.
- 9905 **Phase Relationship**—In Multiplex telegraphy. The degree of, or divergence from, synchronism between the distributor brushes at the two stations of the circuit.
- 9906 **Impulse**—A brief change of current produced in a circuit.
- 9907 **Make Impulse**—An impulse in which the change consists in starting a current.
- 9908 **Break Impulse**—An impulse in which the change consists in interrupting a current.
- 9909 **Impulse Frequency**—The number of impulses per second in a train or group of regularly recurring impulses.



- 9910 **Impulse Period**—The time between the corresponding points of two successive impulses in a train or group of regularly recurring impulses.
- 9911 **Impulse Ratio**—The ratio of duration of an impulse to its impulse period.
- 9912 **Battery Dialling**—A system of dialling which employs break impulses in an earth return circuit having the impulsing battery at the dial end. (See also Loop Dialling.)
- 9913 **Loop Dialling**—A system of dialling which makes use of break impulses in a loop circuit. (See also Battery Dialling.)
- 9914 **Phonogram**—A telegram received from or dictated to subscribers by telephone.
- 9915 **Coding**—In coded call indicator working. The act of transforming counted impulses into the coded form. (See Coder.)
- 9916 **X-Operation**—The advance operation of a group of relay contacts. This may be effected as in a two-step relay (q.v.) by a double motion of the armature, and/or by the relative adjustment of the various groups of contacts.
- 9917 **Minimum Pause**—An interval introduced into the operation of a dial in order to give the selectors time to complete their hunting.
- 9918 **Unguarded Interval**—A period (usually a fractional part of a second) within which selection of an outlet can be made and connexion follow, resulting in irregular operation through no fault in the circuit or selecting apparatus or agency, but because the occurrence of such period is inherent in the apparatus.
- 9919 **Ancillary**—A qualifying term applied to a jack, lamp, etc., used for providing subsidiary answering points in order to facilitate team working of operators.
- 9920 **Howler**—In telephony. An apparatus by means of which a loud tone is produced for the purpose of attracting the attention of a subscriber when the receiver has not been correctly replaced.
- 9921 **Busy**—The condition of a line or of a piece of apparatus when it is in use.
- 9922 **Busy Tone**—An intermittent audible signal indicating to the calling subscriber that the required circuit or the intermediate apparatus used in setting up the connexion is busy.
- 9923 **Dialling Tone**—In automatic telephony. An audible signal indicating to the calling subscriber that dialling should proceed.

- 9924 **N.U. Tone** (*Ab'n for Number-unobtainable Tone*. In automatic telephony. An audible signal indicating to the calling subscriber that the called subscriber's line is temporarily or permanently out of service, or that some irregular operation has occurred on the part of himself or of the apparatus.
- 9925 **Ringling Tone** (AUDIBLE RINGING SIGNAL)—An audible signal indicating to the calling subscriber that the connexion has been made and that the called subscriber is being rung.
- 9926 **Reverting Call**—A telephone call between two stations on the same party line.
- 9927 **Mixed Service**—Service on a private branch exchange switchboard where some lines are given private exchange service only.
- 9928 **Side Tone**—The reproduction in a speaker's telephone receiver of sounds transmitted by his transmitter.
- 9929 **Finding Action**—The automatic operation of a selector or similar device in moving the wipers to their position of contact with a calling line connected to its bank.
- 9930 **Hunting Action**—The automatic operation of a selector or similar device in moving the wipers to their position of contact with a free outlet.
- 9931 **Impulse Action**—The operation of a selector or other similar device in finding, by means of electrical impulses, a called line or group of links or lines. Impulse action is predetermined by a calling device.
- 9932 **Homing Action**—In automatic telephony. The automatic operation of a uniselector in returning the wipers to their normal or "home" position, when the uniselector has been released.
- 9933 **Outgoing**—A term used to indicate the direction of traffic in a circuit. Thus an outgoing junction at an exchange is a junction carrying traffic from that exchange to another exchange. Similarly in an automatic selector the outgoing path is the path by which traffic leaves the selector.
- 9934 **Incoming**—A term used to indicate the direction of traffic in a circuit. Thus an incoming junction in an exchange is a junction carrying traffic to that exchange from another exchange. Similarly in an automatic selector the incoming path is the path by which traffic enters the selector.
- 9935 **Bothway**—A term applied to circuits which are used for carrying traffic in either direction as required.
- 9936 **Plugging-up**—A process of transferring a faulty line from its normal switching equipment to fault locating equipment.

- 9937 **Level**—The rows of contacts of a selector bank which are selected by impulse or hunting action and along which the wipers are moved by impulse and/or hunting and/or finding action.
- 9938 **Distribution Frame**—A structure for terminating and connecting together in any desired order two or more sets of wires.
- 9939 **Main Distribution Frame (M.D.F.)**—A distribution frame for the internal wires and the external wires of an exchange. Generally the external wires are arranged in cable numerical order and the internal wires in subscriber's number order.
- 9940 **Intermediate Distribution Frame (I.D.F.)**—A distribution frame intermediate between the main distribution frame and the switching apparatus. In manual exchanges one set of terminals comprise subscribers' and junction lines in the respective numerical order and one set of terminals the calling and answering equipments. In automatic exchanges the sets of terminals are used for terminating junction lines, and various apparatus such as auto-auto relay sets.
- 9941 **Combined Distribution Frame (C.D.F.)**—A distribution frame combining the functions of a main distribution frame and an intermediate distribution frame usually employed in small exchanges or repeater stations.
- 9942 **Apparatus Rack**—A structure or framework for mounting selectors, relays and other apparatus in a working and accessible position.
- 9943 **Special Apparatus Rack (S.A.R.)**—An apparatus rack for accommodating miscellaneous items of apparatus which are not sufficiently numerous to necessitate an individual rack for each class of item.
- 9944 **Subscriber's Line and Final Selector Unit**—An apparatus rack accommodating the subscriber's exchange and equipments, usually 100; and the final selectors associated with a block of subscribers' numbers, usually also 100. The groups of lines and numbers are not necessarily identical.
- 9945 **Cross-Connexion Field (JUMPER FIELD)**—The space on a distribution frame for accommodating the jumper wires.
- 9946 **Translation Field**—A series of terminal strips by means of which the digits forming the code portion of the called subscriber's number are translated to other digits; as used on a director, keysender or other system requiring translation.
- 9947 **Feeder Fuse Panel**—A panel accommodating fuses associated with feeder power cables serving groups of distribution fuse panels.

- 9948 **Distribution Fuse Panel**—A panel accommodating small capacity fuses, usually alarm type, serving individual units of apparatus.
- 9949 **Heat Coil**—A device designed to protect apparatus against damage from external currents which, although dangerous to the electrical circuit, are not sufficient to act upon a lightning protector or fuse on the same circuit.
- 9950 **Protector**—A device designed to protect apparatus against damage from lightning and other high voltage discharges.
- 9951 **Skinner**—The length of insulated wire between a laced cable form and the connecting point.
- 9952 **Twin Contacts** Duplicate contact points used on contact springs.
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## ALPHABETICAL INDEX.

Term.	No.	Term.	No.
A-digit selector .. ..	9637	Backward busying .. ..	9832
A-position .. ..	9614	Balance .. ..	9339
—, keysending .. ..	9622	—, duplex .. ..	9339
A-side .. ..	9712	Balancing network .. ..	9339
A-wire .. ..	9714	Band pass filter .. ..	9352
Access selector .. ..	9636	— rejection filter .. ..	9353
Action, finding .. ..	9929	Bank .. ..	9655
—, homing .. ..	9932	Banks, slipped .. ..	9281
—, hunting .. ..	9930	—, straight .. ..	9820
—, impulse .. ..	9931	Battery dialling .. ..	9912
Alarm, night .. ..	9403	— signalling, central .. ..	9224
Allotter .. ..	9648	Battery, central .. ..	9223
Analysis meters .. ..	9843	—, local .. ..	9225
Ancillary .. ..	9919	Baudot double .. ..	9212
Apparatus rack .. ..	9942	— quadruple .. ..	9212
— rack, special .. ..	9943	— quintuple .. ..	9212
— room .. ..	9128	— sextuple .. ..	9212
Area, exchange .. ..	9123	— triple .. ..	9212
Artificial line .. ..	9337	Bel .. ..	9332
Assembly, terminal .. ..	9834	Bell, magneto .. ..	9401
—, trunk frame terminal .. ..	9835	—, night .. ..	9403
Attenuation .. ..	9335	—, trembler .. ..	9402
— compensator .. ..	9346	Bothway .. ..	9935
— constant .. ..	9336	Branch exchange, private .. ..	9115
— equaliser .. ..	9346	— exchange, private auto-	
Attenuator .. ..	9338	— matic .. ..	9116
Audible ringing signal .. ..	9925	— exchange, private	
Automatic branch exchange,		— manual .. ..	9117
— private .. ..	9116	Branching jack .. ..	9604
— exchange .. ..	9105	Break impulse .. ..	9908
— exchange, private .. ..	9113	— jack .. ..	9603
— exchange, rural .. ..	9107	Bridge duplex system .. ..	9208
— system, step-by-step .. ..	9216	Busy .. ..	9921
— system, Wheatstone .. ..	9204	— hour .. ..	9804
— tandem working .. ..	9228	— tone .. ..	9922
— telephone system .. ..	9215	Busying, backward .. ..	9832
Auto-manual switchboard .. ..	9611	<b>C.B.</b> .. ..	9223
Availability .. ..	9814	C.B.S. .. ..	9224
—, full .. ..	9815	C.D.F. .. ..	9941
—, limited .. ..	9816	Cable, loop .. ..	9720
<b>B-position</b> .. ..	9615	—, multiple twin .. ..	9721
—, keysending .. ..	9618	—, quad .. ..	9722
— with cords, keysending .. ..	9619	—, standard .. ..	9356
<b>B-side</b> .. ..	9713	—, star quad .. ..	9722
<b>B-wire</b> .. ..	9714	—, twin .. ..	9720
<b>BC-digit selector</b> .. ..	9638	Cadence .. ..	9902
		Calculagraph .. ..	9404

Term.	No.	Term.	No.
Call indicator position ..	9617	Closed circuit system ..	9314
— indicator working ..	9219	Code selector ..	9635
— indicator working, coded .. ..	9220	Code, five-unit ..	9904
— indicator, working non- coded .. ..	9221	Coded call indicator work- ing .. ..	9220
— meter, congestion ..	9840	Coder .. ..	9651
— office, public ..	9101	Coding .. ..	9915
Call, reverting ..	9926	Coil loading ..	9708
Call-counting meter ..	9844	Coil, heat ..	9949
Called subscriber ..	9132	—, induction ..	9508
Calling device ..	9406	—, repeating ..	9519
— subscriber ..	9131	—, retardation ..	9520
Calling-subscriber release ..	9414	Combined distribution frame	9941
Capacity, traffic ..	9812	Common trunk ..	9827
Carrier current telegraphy	9230	Common, partial ..	9828
— current telephony ..	9231	Compensator, attenuation ..	9346
— wave telegraphy ..	9230	—, phase ..	9347
— wave telephony ..	9231	Composited circuit ..	9311
Central battery ..	9223	Congestion call meter ..	9840
— battery signalling ..	9224	— traffic-unit meter ..	9841
— office ..	9102	Constant, attenuation ..	9336
— office, local ..	9108	—, propagation ..	9354
Characteristic impedance ..	9340	—, wavelength ..	9359
Chronopher ..	9405	Contacts, twin ..	9952
Circuit system, closed ..	9314	Continuous loading ..	9709
— system, open ..	9313	Control position, special ..	9623
Circuit ..	9301	Control, group ..	9832
—, composited ..	9311	Conversation time ..	9808
—, direct ..	9315	Correction ..	9903
—, divided ..	9316	Cross-connection field ..	9945
—, double phantom ..	9307	Cross-talk ..	9341
—, earth return ..	9302	Current, superposed ringing	9425
—, fee junction ..	9319	Cut-off ..	9342
—, impulse ..	9312	— frequency ..	9342
—, local junction ..	9318		
—, metallic ..	9303	<b>Db</b> .. ..	9333
—, metallic phantom ..	9306	Dn .. ..	9331
—, octuple phantom ..	9309	Decibel ..	9333
—, order-wire ..	9322	Decineper ..	9331
—, phantom ..	9306	Device, calling ..	9406
—, phonogram ..	9325	Diagram, traffic ..	9837
—, quadruple phantom ..	9308	—, trunking ..	9838
—, side ..	9310	Dial ..	9409
—, split order-wire ..	9323	Dialling ..	9411
—, superposed ..	9305	— tone ..	9923
—, telephone-telegram ..	9326	Dialling, battery ..	9912
—, transfer ..	9324	—, duplex ..	9413
—, trunk ..	9317	—, loop ..	9913
—, trunk junction ..	9321	—, simplex ..	9412
—, trunk record ..	9320		
—, two-wire ..	9304		

Term.	No.	Term.	No.
Differential duplex system..	9209	Exchange, private auto-	
Digit absorbing selector ..	9642	matic .. ..	9113
key strip .. ..	9408	private automatic	
Direct circuit .. ..	9315	branch .. ..	9116
line .. ..	9704	private branch ..	9115
Director .. ..	9650	private manual ..	9114
meter .. ..	9845	private manual branch	9117
system .. ..	9213	rural automatic ..	9107
Discriminating satellite ex-		satellite .. ..	9118
change .. ..	9120	semi-automatic ..	9106
selector .. ..	9643	sub- .. ..	9111
Display panel .. ..	9652	toll .. ..	9110
Distortion .. ..	9343	trunk .. ..	9109
factor, non-linear ..	9361	Extension station, sub-	
Distortion, phase .. ..	9344	scriber's .. ..	9127
Distribution frame .. ..	9938		
frame, combined ..	9941	Facsimile telegraphy ..	9232
frame, intermediate ..	9940	Fee junction circuit ..	9319
frame, main .. ..	9939	Feeder fuse panel .. ..	9947
frame, trunk .. ..	9833	Field relay, shunt .. ..	9513
frame, uniselectors ..	9836	Field, cross-connection	9945
fuse panel .. ..	9948	jumper .. ..	9945
Distributor .. ..	9501	translation .. ..	9946
Divided circuit .. ..	9316	Filter .. ..	9349
Double-current system ..	9203	record position ..	9621
Double phantom circuit ..	9307	Filter, band pass .. ..	9352
Double, Baudot .. ..	9212	band rejection ..	9353
Duplex balance .. ..	9339	frequency .. ..	9349
dialling .. ..	9413	high pass .. ..	9351
system .. ..	9207	low pass .. ..	9350
system, bridge .. ..	9208	Final selector .. ..	9631
system, differential ..	9209	selector, P.B.X. ..	9645
		selector, private branch	
Earth return circuits ..	9302	exchange .. ..	9645
Echo .. ..	9348	selector, test .. ..	9632
Electrophone .. ..	9222	selector, trunk offering	9633
Equaliser, attenuation ..	9346	selector unit, subscri-	
phase .. ..	9347	ber's line and ..	9944
Equivalent, reference ..	9357	Finder .. ..	9646
Exchange .. ..	9102	Finding Action .. ..	9929
area .. ..	9123	First-subscriber release ..	9415
Exchange, automatic .. ..	9105	Five-unit code .. ..	9904
discriminating		Flow, traffic .. ..	9803
satellite .. ..	9120	Frame terminal assembly,	
full satellite .. ..	9119	trunk .. ..	9835
hypothetical .. ..	9121	Frame, combined, distribu-	
local .. ..	9108	tion, .. ..	9941
main .. ..	9103	distribution .. ..	9938
manual .. ..	9104	Frame, intermediate distri-	
multi-office .. ..	9122	bution .. ..	9940
private .. ..	9112		

Term.	No.	Term.	No.
Frame, main distribution ..	9939	Impulse circuit .. ..	9312
—, trunk distribution ..	9833	— frequency .. ..	9909
—, unselector distribu-		— machine .. ..	9410
tion .. ..	9836	— period .. ..	9910
Free .. ..	9901	— ratio .. ..	9911
Frequency Filter .. ..	9349	— repeater .. ..	9518
Frequency, cut-off .. ..	9342	Impulse, break .. ..	9908
—, impulse .. ..	9909	—, make .. ..	9907
—, natural .. ..	9342	Incoming .. ..	9934
Full availability .. ..	9815	Indicator position, call	9617
— satellite exchange ..	9119	— working, call .. ..	9219
Fuse panel, distribution ..	9948	— working, coded call ..	9220
— panel, feeder .. ..	9947	— working, non-coded call	9221
		Individual line .. ..	9704
<b>Gain, repeater</b> .. ..	9360	— trunk .. ..	9826
Grade of service .. ..	9810	Induction coil .. ..	9508
— of service, overall ..	9811	Instrument room .. ..	9130
Grading .. ..	9823	Interconnecting .. ..	9822
— group .. ..	9824	Intermediate distribution	
Grading, "N-group X con-		frame .. ..	9940
tact" .. ..	9825	Interrupted ringing ..	9420
—, symmetrical .. ..	9829	Interval, unguarded ..	9918
—, unsymmetrical .. ..	9830		
Gravity switch .. ..	9607	<b>Jack</b> .. ..	9601
Ground return .. ..	9302	—, branching .. ..	9604
Group .. ..	9824	—, break .. ..	9603
— control .. ..	9832	—, test .. ..	9602
— selector .. ..	9634	Jumper .. ..	9701
—, grading .. ..	9824	— field .. ..	9945
		— wire .. ..	9701
<b>Harmonic selective signalling</b>	9423	Junction circuit, fee ..	9319
Heat coil .. ..	9949	— circuit, local .. ..	9318
High pass filter .. ..	9351	— circuit, trunk .. ..	9321
Hold, manual .. ..	9417	— working, straight-	
Holding time .. ..	9806	forward .. ..	9218
Homing action .. ..	9932	<b>Key</b> .. ..	9608
Hour, busy .. ..	9804	— strip, digit .. ..	9408
Howler .. ..	9920	Keyless ringing .. ..	9422
Hunter .. ..	9647	Keysender .. ..	9407
Hunting action .. ..	9930	Keysending A-position ..	9622
Hypothetical exchange ..	9121	— B-position .. ..	9618
		— B-position with cords	9619
<b>I.D.F.</b> .. ..	9940	<b>L.B.</b> .. ..	9225
Impedance, characteristic ..	9340	Last-subscriber release ..	9416
Impulse .. ..	9906	Level .. ..	9358
— action .. ..	9931	Level .. ..	9937



<b>Term.</b>	<b>No.</b>	<b>Term.</b>	<b>No.</b>
Level multiple .. ..	9819	Meter, congestion call ..	9840
Level, transmission .. ..	9358	—, congestion traffic-unit	9841
Limited availability .. ..	9816	—, director .. ..	9845
Line .. ..	9702	—, overflow .. ..	9842
— and final selector unit,		—, position .. ..	9847
subscriber's .. ..	9944	—, subscriber's .. ..	9846
—, artificial .. ..	9337	—, traffic .. ..	9839
—, direct .. ..	9704	Meters, analysis .. ..	9843
—, individual .. ..	9704	Microphone .. ..	9506
—, loaded .. ..	9707	Microtelephone .. ..	9507
—, long distance .. ..	9317	Minimum pause .. ..	9917
—, party .. ..	9705	Mixed service .. ..	9927
—, subscriber's .. ..	9703	Monitor's position .. ..	9624
—, tie .. ..	9706	Multi-exchange system .. ..	9122
Link .. ..	9813	Multi-office exchange .. ..	9122
Loaded line .. ..	9707	Multiple .. ..	9627
Loading, coil .. ..	9708	— twin cable .. ..	9721
—, continuous .. ..	9709	Multiple-way system .. ..	9206
Local battery .. ..	9225	Multiple, level .. ..	9819
— central office .. ..	9108	Multiplex system .. ..	9211
— exchange .. ..	9108	— system, printing .. ..	9212
— junction circuit .. ..	9318		
Long distance line .. ..	9317	<b>N, U, tone .. ..</b>	<b>9924</b>
Loop cable .. ..	9720	“ N-group, X-contact ”	
— dialling .. ..	9913	grading .. ..	9825
Low pass filter .. ..	9350	Natural frequency .. ..	9342
		Negative wire .. ..	9711
<b>M.D.F. .. ..</b>	<b>9939</b>	Neper .. ..	9330
Machine ringing .. ..	9421	Network, balancing .. ..	9339
Machine, impulse .. ..	9410	Neutral relay .. ..	9512
Machine-switching telephone		Night alarm .. ..	9403
system .. ..	9215	— bell .. ..	9403
Magneto bell .. ..	9401	Non-coded call indicator	
— system .. ..	9226	working .. ..	9221
Main distribution frame .. ..	9939	Non-linear distortion factor	9361
— exchange .. ..	9103	Non-polarised relay .. ..	9510
— station, subscriber's .. ..	9126	Number-unobtainable tone	9924
Make impulse .. ..	9907	Numerical selector .. ..	9630
Manual branch exchange,			
private .. ..	9117	<b>Occupancy .. ..</b>	<b>9809</b>
— exchange .. ..	9104	Octuple phantom circuit .. ..	9309
— exchange, private .. ..	9114	Offering final selector, trunk	9633
— hold .. ..	9417	— selector, trunk .. ..	9640
— ringing .. ..	9418	Office, central .. ..	9102
— switchboard .. ..	9610	—, local central .. ..	9108
— telephone system .. ..	9214	—, public call .. ..	9101
Master telephone transmis-			
sion reference system .. ..	9334		
Metallic circuit .. ..	9306		
— phantom circuit .. ..	9306		
Meter, call-counting .. ..	9844		

Term.	No.	Term.	No.
Open circuit system .. ..	9313	Position, A- .. ..	9614
Operating room .. ..	9129	—, B- .. ..	9615
— time .. ..	9807	—, call indicator .. ..	9617
Operation, X- .. ..	9916	—, filter record .. ..	9621
Operator's position .. ..	9613	—, keysending A- .. ..	9622
Order-wire circuit .. ..	9322	—, keysending B- .. ..	9618
Outgoing .. ..	9933	—, monitor's .. ..	9624
Overall grade of service .. ..	9811	—, operator's .. ..	9613
Overflow meter .. ..	9842	—, phonogram .. ..	9626
		—, special control .. ..	9623
		—, testing .. ..	9625
		—, trunk .. ..	9616
		—, trunk record .. ..	9620
<b>P.A.B.X.</b> .. ..	9116	Positive wire .. ..	9710
P.A.X. .. ..	9113	Power ringing .. ..	9419
P.B.X. .. ..	9115	Printing multiplex system .. ..	9212
— final selector .. ..	9645	Private .. ..	9717
P.M.B.X. .. ..	9117	— automatic branch ex- change .. ..	9116
P.M.X. .. ..	9114	— automatic exchange .. ..	9113
P.X. .. ..	9112	— branch exchange .. ..	9115
P-wire .. ..	9717	— branch exchange final selector .. ..	9645
Pad .. ..	9338	— exchange .. ..	9112
Panel, display .. ..	9652	— manual branch ex- change .. ..	9117
Partial common .. ..	9828	— manual exchange .. ..	9114
Party line .. ..	9705	Propagation constant .. ..	9354
Pause, minimum .. ..	9917	Protector .. ..	9950
Pay station .. ..	9101	Public call office .. ..	9101
Period, impulse .. ..	9910		
Phantom circuit .. ..	9306	<b>Quad cable</b> .. ..	9722
— circuit, double .. ..	9307	— cable, star .. ..	9722
— circuit, metallic .. ..	9306	Quadruple phantom circuit .. ..	9308
— circuit, octuple .. ..	9309	—, Baudot .. ..	9212
— circuit, quadruple .. ..	9308	Quadruplex system .. ..	9210
Phase compensator .. ..	9347	Quintuple, Baudot .. ..	9212
— distortion .. ..	9344		
— equaliser .. ..	9347	<b>R-wire</b> .. ..	9716
— relationship .. ..	9905	Rack, apparatus .. ..	9942
Phenomena, transient .. ..	9345	—, special apparatus .. ..	9943
Phonic wheel .. ..	9502	Rank of selectors .. ..	9817
Phonogram .. ..	9914	Ratio, impulse .. ..	9911
— circuit .. ..	9325	Receiver .. ..	9505
— position .. ..	9626	Record circuit, trunk .. ..	9320
Picture telegraphy .. ..	9232	— position, filter .. ..	9621
Pilot signal .. ..	9424	— position, trunk .. ..	9620
— wire .. ..	9723		
Plug .. ..	9605		
—, selector .. ..	9606		
Plugging-up .. ..	9936		
Polarised relay .. ..	9511		
Position .. ..	9613		
— meter .. ..	9847		
— with cords, keysending .. ..	9619		
B- .. ..	9619		

Term.	No.	Term.	No.
Reference equivalent ..	9357	Selector .. ..	9628
— system, master tele-		— panel .. ..	9818
phone transmission ..	9334	— plug .. ..	9606
Relationship, phase ..	9905	— shelf .. ..	9818
Relay .. ..	9509	— unit, subscriber's line	
—, neutral .. ..	9512	and final .. ..	9944
—, non-polarised .. ..	9510	Selector, A-digit .. ..	9637
—, polarised .. ..	9511	—, access .. ..	9636
—, shunt field .. ..	9513	—, BC-digit .. ..	9638
—, two-step .. ..	9514	—, code .. ..	9635
Relay set .. ..	9515	—, digit absorbing .. ..	9642
Release wire .. ..	9719	—, discriminating .. ..	9643
Release, calling-subscriber	9414	—, final .. ..	9631
—, first-subscriber .. ..	9415	—, group .. ..	9634
—, last-subscriber .. ..	9416	—, numerical .. ..	9630
Repeater .. ..	9516	—, P.B.X. final .. ..	9645
— gain .. ..	9360	—, private branch ex-	
—, impulse .. ..	9518	change final .. ..	9645
—, telephonic .. ..	9517	—, repeating .. ..	9644
Repeating coil .. ..	9519	—, tandem .. ..	9641
— selector .. ..	9644	—, test .. ..	9639
Retardation coil .. ..	9520	—, test final .. ..	9632
Return circuit, earth .. ..	9302	—, trunk offering .. ..	9640
Return, ground .. ..	9302	—, trunk offering final .. ..	9633
Reverting call .. ..	9926	—, uni- .. ..	9629
Ring wire .. ..	9716	Selectors, rank of .. ..	9817
Ring current, superposed	9425	Semi-automatic exchange .. ..	9106
— signal, audible .. ..	9925	— tandem working .. ..	9229
— tone .. ..	9925	— telephone system .. ..	9217
Ring, interrupted .. ..	9420	Sender .. ..	9407
—, keyless .. ..	9422	Sequence switch .. ..	9649
—, machine .. ..	9421	Service, grade of .. ..	9810
—, manual .. ..	9418	—, mixed .. ..	9927
—, power .. ..	9419	—, overall grade of .. ..	9811
Room, apparatus .. ..	9128	Set, subscriber's .. ..	9124
—, instrument .. ..	9130	Sextuple, Baudot .. ..	9212
—, operating .. ..	9129	Shelf, selector .. ..	9818
Routiner .. ..	9653	Shunt field relay .. ..	9513
Rural automatic exchange ..	9107	Side circuit .. ..	9310
		— tone .. ..	9928
<b>S.A.R.</b> .. ..	9943	Side, A- .. ..	9712
S-wire .. ..	9715	—, B- .. ..	9713
Satellite exchange .. ..	9118	Signal, audible ringing .. ..	9925
— exchange, discriminat-		—, pilot .. ..	9424
ing .. ..	9120	Signalling, central battery	9224
— exchange, full .. ..	9119	—, harmonic selective .. ..	9423
Section, switch .. ..	9612	Simplex dialling .. ..	9412
—, switchboard .. ..	9612	— system .. ..	9205
Selection, tandem .. ..	9831	Singing point .. ..	9355
Selective signalling, harmonic	9423	Single-current system .. ..	9202
		Single-needle system .. ..	9201
		Skinner .. ..	9951

Term.	No.	Term.	No.
Slipped banks .. ..	9821	System, manual telephone..	9214
Sounder .. ..	9503	—, master telephone	
Special apparatus rack .. ..	9943	transmission reference ..	9334
— control position .. ..	9623	—, multi-exchange .. ..	9122
Split order-wire circuit .. ..	9323	—, multipleway .. ..	9206
Standard cable .. ..	9356	—, multiplex .. ..	9211
Star quad cable .. ..	9722	—, open circuit .. ..	9313
Station, pay .. ..	9101	—, printing multiplex .. ..	9212
—, subscribers' .. ..	9125	—, quadruplex .. ..	9210
—, subscriber's extension	9127	—, semi-automatic tele-	
—, subscriber's main .. ..	9126	phone .. ..	9217
Step-by-step automatic		—, simplex .. ..	9205
system .. ..	9216	—, single-current.. ..	9202
Straight banks .. ..	9820	—, single-needle .. ..	9201
Straightforward junction		—, step-by-step automatic	9216
working .. ..	9218	—, Wheatstone automatic	9204
Strip, digit key .. ..	9408		
Sub-exchange .. ..	9111	<b>T.U.</b> .. ..	9805
Subscriber, called .. ..	9132	T-wire .. ..	9718
Subscriber, calling .. ..	9131	Tandem selection .. ..	9831
Subscriber's extension		— selector .. ..	9641
station .. ..	9127	— working .. ..	9227
— line .. ..	9703	— working, automatic ..	9228
— line and final selector		— working, semi-auto-	
unit .. ..	9944	matic .. ..	9229
— main station .. ..	9126	Telegraphy, carrier current	9230
— meter .. ..	9846	—, carrier wave .. ..	9230
— set .. ..	9124	—, facsimile .. ..	9232
— station .. ..	9125	—, picture .. ..	9232
Subset .. ..	9124	Telephone system, auto-	
Substation .. ..	9125	matic .. ..	9215
Superposed circuit .. ..	9305	— system, machine	
— ringing current .. ..	9425	switching .. ..	9215
Switch section .. ..	9612	— system, manual .. ..	9214
Switch, gravity .. ..	9607	— system, semi-auto-	
—, sequence .. ..	9649	matic .. ..	9217
Switch-hook .. ..	9607	— traffic .. ..	9802
Switchboard .. ..	9609	— transmission reference	
— section .. ..	9612	system, master .. ..	9334
Switchboard, auto-manual..	9611	Telephone-telegram circuit	9326
—, manual .. ..	9610	Telephonic repeater .. ..	9517
Symmetrical grading .. ..	9829	Telephony, carrier current	9231
System, automatic telephone	9215	—, carrier wave .. ..	9231
—, bridge duplex .. ..	9208	Terminal assembly .. ..	9834
—, closed circuit .. ..	9314	— assembly, trunk frame	9835
—, differential duplex .. ..	9209	Test final selector .. ..	9632
—, director .. ..	9213	— jack .. ..	9602
—, double-current .. ..	9203	— selector .. ..	9639
System, duplex .. ..	9207	Testing position .. ..	9625
—, machine-switching			
telephone .. ..	9215		
—, magneto .. ..	9226		

	Term.	No.		Term.	No.
Tie line	.. ..	9706	Two-step relay	.. ..	9514
Time, conversation	.. ..	9808	Two-wire circuit	.. ..	9304
—, holding	.. ..	9806			
—, operating	.. ..	9807			
Tip wire	.. ..	9718			
Toll exchange	.. ..	9110	Unguarded interval		9918
Tone, busy	.. ..	9922	Unselector	.. ..	9629
—, dialling	.. ..	9923	— distribution frame	.. ..	9836
—, N.U.	.. ..	9924	Unit, subscriber's line and		
—, number-unobtainable		9924	final selector	.. ..	9944
—, ringing	.. ..	9925	Unsymmetrical grading	.. ..	9830
—, side	.. ..	9928			
Traffic	.. ..	9802			
— capacity	.. ..	9812			
— diagram	.. ..	9837	Wavelength constant	.. ..	9359
— flow	.. ..	9803	Wheatstone automatic		
— meter	.. ..	9839	system	.. ..	9204
— unit	.. ..	9805	Wiper	.. ..	9654
Traffic, telephone	.. ..	9802	Wire, A-	.. ..	9714
Traffic-unit, meter, conges-			—, B-	.. ..	9714
tion	.. ..	9841	—, jumper	.. ..	9701
Transfer circuit	.. ..	9324	—, negative	.. ..	9711
Transient phenomena	.. ..	9345	—, P-	.. ..	9717
Translation field	.. ..	9946	—, pilot	.. ..	9723
Transmission level	.. ..	9358	—, positive	.. ..	9710
Transmitter	.. ..	9504	—, R-	.. ..	9716
Trembler bell	.. ..	9402	—, release	.. ..	9719
Trunk	.. ..	9813	—, ring	.. ..	9716
Trunk circuit	.. ..	9317	—, S-	.. ..	9715
— distribution frame	.. ..	9833	—, T-	.. ..	9718
— exchange	.. ..	9109	—, tip	.. ..	9718
— frame terminal assembly		9835	Working, automatic tandem		9228
— junction circuit	.. ..	9321	—, call indicator	.. ..	9219
— offering final selector	.. ..	9633	—, coded call indicator	.. ..	9220
— offering selector	.. ..	9640	—, non-coded call indica-		
— position	.. ..	9616	tor	.. ..	9221
— record circuit	.. ..	9320	—, semi-automatic tan-		
— record position	.. ..	9620	dem	.. ..	9229
Trunk, common	.. ..	9827	—, straightforward junc-		
—, individual	.. ..	9826	tion	.. ..	9218
Trunking	.. ..	9801	—, tandem	.. ..	9227
— diagram	.. ..	9838			
Twin cable	.. ..	9720	X-operation	.. ..	9916
— cable, multiple	.. ..	9721			
— contacts	.. ..	9952			

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# LIST OF Technical Pamphlets for Workmen

(Continued.)

## GROUP D—cont.

20. Superposed Circuits. Transformers. Bridging Coils and Retardation Coils.
21. Call Offices.
22. Units, Amplifying. (*Not on sale.*)

## GROUP E.

1. Automatic Telephony: Step-by-Step Systems.
2. Automatic Telephony: Coder Call Indicator (C.C.I.) Working.
3. Automatic Telephony: Keysending "B" positions.

## GROUP F.

1. Subscribers' Apparatus. Common Battery System.
2. Subscribers' Apparatus, C.B.S., Part I—C.B.S. No. 1 System.
3. Subscribers' Apparatus. Magneto.
4. Private Branch Exchanges—Common Battery System.
5. Private Branch Exchange—C.B. Multiple, No. 9.
6. Private Branch Exchanges—Magneto.
7. House Telephone Systems.
8. Wiring of Subscribers' Premises.

## GROUP G.

1. Maintenance of Secondary Cells.
2. Power Plant for Telegraph and Telephone Purposes.
3. Maintenance of Power Plant for Telegraph and Telephone Purposes.
4. Telegraph Battery Power Distribution Boards.

## GROUP H.

1. Open Line Construction, Part I.
2. Open Line Construction, Part II.
3. Open Line Maintenance.
4. Underground Construction, Part I—Conduits.
5. Underground Construction, Part II—Cables.
6. Underground Maintenance.
7. Cable Balancing.
8. Power Circuit Guarding.
9. Electrolytic Action on Cable Sheaths, etc.
10. Constants of Conductors used for Telegraph and Telephone Purposes.

## GROUP I.

1. Submarine Cables.

## GROUP K.

1. Electric Lighting.
2. Lifts.
3. Heating Systems.
4. Pneumatic Tube Systems.
5. Gas and Petrol Engines.