

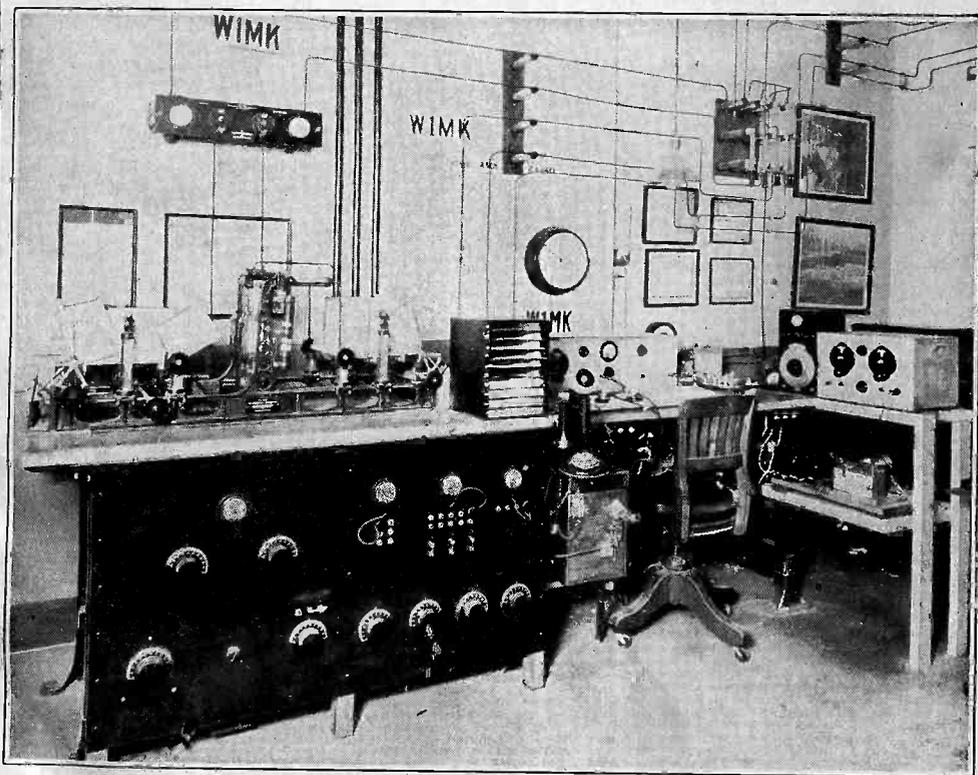
OPERATING AN AMATEUR RADIO STATION

Including the Information on the
A. R. R. L. Field Organization

BY THE

COMMUNICATIONS
DEPARTMENT

1934



HEADQUARTERS STATION W1MK

The American Radio Relay League, West Hartford, Connecticut



OPERATING AN AMATEUR RADIO STATION



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League organization will benefit you only as you take part in it by your radio activity and contacts with your fellow amateurs, your Director, S.C.M., and Headquarters. The world is at your fingertips as you grasp key or microphone. But the value of amateur radio to you in new friendships, a widened circle of acquaintances, improved operating ability, technical education, and enjoyment is just what you yourself make it. Success in communication increases with proficiency and operating experience. Strive to improve; let us set definite objectives for ourselves, operate with definite purpose and cooperate fully toward every constructive end.

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Communications Manager.

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CALLING AND SIGNING PRACTICE

1. The calling station shall make the call by transmitting not more than three times the call signal of the station called and the word DE, followed by its own call signal sent not more than three times thus: VE9AL VE9AL VE9AL DE W1MK W1MK W1MK. In amateur practice this procedure may be expanded somewhat as may be necessary to establish communication. The call signal of the calling station *must* be inserted at frequent intervals for identification purposes. Repeating the call signal of the called station five times and signing not more than twice (this repeated not more than five times) has proved excellent practice in connection with break-in operation (the receiver being kept tuned to the frequency of the called station). The use of a break-in system is highly recommended to save time and reduce unnecessary interference to a minimum.

Stations desiring communication, without, however, knowing the names of the operating stations within range, may use the signal of inquiry, CQ, in place of the call signal of the station called in the calling formula. The A.R. R.L. method of using the *general inquiry* call (CQ) is that of calling three times, signing three times, and repeating three times. CQ is not to be used when testing or when the sender is not expecting or looking for an answer. After a CQ, the dial should be covered thoroughly for two or three minutes looking for replies.

The *directional* CQ: To reduce the number of useless answers and lessen needless QRM, every CQ call shall be made informative when possible. Stations desiring communication shall follow each three-times-sent CQ by an indication of direction, district, state, continent, country or the like. Stations desiring communication with amateur stations in a particular country shall include the official prefix letters designating that country after each CQ. To differentiate domestic from foreign calls in which the directional CQ is used, the city, state, point of the compass, etc., is mentioned only after the third CQ just before the word DE and the thrice-repeated station call. The prefixes (Sec. III) may be used to identify a particular country. Examples follow. A United States station looking for any Canadian amateur station calls: CQ VE CQ VE CQ VE DE W1MK W1MK W1MK. A western station with traffic for the east coast when looking for an intermediate relay station calls: CQ CQ CQ EAST DE W6CIS W6CIS W6CIS. A station with messages for points in Massachusetts calls: CQ CQ CQ MASS DE W3QP W3QP W3QP.

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4. If a station sends test signals to adjust the transmitter or at the request of another station to permit the latter to adjust its receiving apparatus, the signals must be composed of a series of V's in which the call signal of the transmitting station shall appear at frequent intervals.

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BREAK-IN

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GETTING FILLS

Sometimes parts of a message are not received correctly. In that case the interrogation (- - - - -) is used between the last word received correctly and the first word received after the interruption. There is seldom any excuse for repeating the whole message to get a few lost words. The good operator will ask for what fills he needs, separating the different sections of the message having missed words by using the break signal (- - - - -) or a couple of dots (. . .) between parts. Note the appropriate abbreviations for getting fills (?AA, ?AB, ?BN, ?ADR, etc., see International Abbreviations, page 7 this book) and use them in preference to all other methods.

Accuracy is of first importance. Then *speed* in transmission and handling of radiograms must be considered. Very often, transmission at moderate speeds moves traffic more quickly than fast sending. A great deal depends on the proficiency and good judgment of the two operators concerned. Fast sending is helpful only when two fast operators work together.

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WORD LIST FOR ACCURATE TRANSMISSION

When sending messages containing radio calls or initials likely to be confused and where errors must be avoided, the calls or initials should be thrown into short code words:

A—ABLE	J—JIG	S—SAIL
B—BOY	K—KING	T—TARE
C—CAST	L—LOVE	U—UNIT
D—DOG	M—MIKE	V—VICE
E—EASY	N—NAN	W—WATCH
F—FOX	O—OBOE	X—X-RAY
G—GEORGE	P—PUP	Y—YOKE
H—HAVE	Q—QUACK	Z—ZED
I—ITEM	R—ROT	

Example: *WIBC* is sent as *WATCH ONE BOY CAST GEORGE*.

A somewhat different list can be obtained from the local Western Union telegraph office and posted beside the telephone to use when telephoning messages containing initials and difficult words. Such code words prevent errors due to phonetic similarity. All voice operated stations should use such a standard list where helpful in identifying call signals or unfamiliar expressions. Here is the Western Union word-list.

A—ADAMS	J—JOHN	S—SUGAR
B—BOSTON	K—KING	T—THOMAS
C—CHICAGO	L—LINCOLN	U—UNION
D—DENVER	M—MARY	V—VICTOR
E—EDWARD	N—NEW YORK	W—WILLIAM
F—FRANK	O—OCEAN	X—X-RAY
G—GEORGE	P—PETER	Y—YOUNG
H—HENRY	Q—QUEEN	Z—ZERO
I—IDA	R—ROBERT	

'PHONE PROCEDURE

Amateur radiophone stations should use the international radiotelephone procedure which is part of the supplementary regulations to the International Radiotelegraph Convention.

For spelling call signals, service abbreviations and words, such lists as just given should be used.

At the start of communication the calling formula is spoken twice by both the station called and the calling station. After contact is established it is spoken once only.

Examples of 'phone procedure in accordance with the International Radiotelegraph Convention:

W5QL calls: "Hello W3JZ Philadelphia, hello W3JZ Philadelphia, W5QL Oklahoma City calling, W5QL Oklahoma City calling, message for you, message for you, come in please."

In handling traffic by voice, messages are repeated twice for accuracy, using the word list to spell names and prevent misunderstandings. The receiving station must repeat the message back *in addition*. Only when the sender confirms the repetition as correct can the message be regarded as handled.

RELAY PROCEDURE

Messages shall be relayed to the station nearest the location of the addressee and over the greatest distance permitting reliable communication. Messages that are not complete in every respect shall not be accepted for relay. The city and station of origin, the number, date, address, text and signature constitute a complete message.

No abbreviations shall be substituted for the words in the text of a message. Delivering stations must be careful to insure that no confusing abbreviations are written into delivered messages.

Sending "words twice" is a practise to avoid. Use it only when expressly called for by the receiving operator when receiving conditions are poor. "QSZ" is the signal used when this is necessary.

Messages shall be transmitted as many as three times at the request of the receiving operator. Failing to make a complete copy after three attempts, the receiving operator shall cancel the message (QTA).

It is a simple matter to record the date and time of receiving and transmitting a message if a calendar and clock are kept handy in the station. If these data and the calls of the stations concerned are placed *right on the message blank itself*, there is never any question about the routing that cannot be answered by reference to the message file.

SCHEDULES

Traffic handling work can be advantageously carried on by arranging and keeping schedules. By arranging schedules using an accurate frequency meter and clock it has been proven many times that a maximum amount of busi-

ness can be moved in a minimum of time and effort. The Communications Department urges every brass-pounder to write letters to reliable and regular stations heard asking if some schedules cannot be kept a few times a week especially for traffic-handling. With a reliable schedule in operation it is possible to advertise the fact that messages for certain points can be put through with speed, accuracy and reliability. The traffic problem will take care of itself if you will arrange and keep a schedule in each direction from your station regularly a few times a week. Don't forget that Headquarters is interested in your results too.

THE GENERAL TRAFFIC HOUR

The daily period, 6:30-8:00 p.m. (your local time) has been designated the "General Traffic Hour." All Official Relay Station appointees have been requested to keep this period, working general with all amateurs. Trunk Line Station appointees are likewise requested to work general during this period. In this manner operators who are unable to maintain regular schedules or whose operating time is limited may get on the air from 6:30-8:00 p.m. and clear their traffic through O.R.S. and T.L.S., who keep schedules on established traffic routes. Make use of this period so that delivery of traffic and dependability of service may be improved. Give your traffic to stations signing "ORS" or "TLS" "CQ TFC" is the general call for the "traffic hour." Directional CQs will also be found useful during this period.

UNDERWRITERS RULES

The intent of these regulations is to minimize life and fire hazard. Also in certain sections of the country, insurance policies definitely state that no transmitters may be located on insured property without this first having been inspected by the Underwriting Bureau inspector and a suitable rider attached to the policy.

Antenna Construction: Antenna and counterpoise wires shall be kept well away from trolley feeders, and light and power wires of over 600 volts to avoid contact with such circuits. Where proximity is unavoidable construction must be extra strong and durable to avoid sag and maintain clearance. No. 14 B & S may be used for up to 100 watts. Minimum for greater power is No. 12 B & S, while maximum need not exceed No. 7 B & S for soft drawn copper. All lead-ins must be copper or bronze not smaller than No. 14. Splices in ant. or c.p. span shall be soldered unless approved splicing devices are used.

Lightning protection: Adequate protection in the form of an arrester or ground switch shall be provided. The grounding conductor shall be at least as large as the lead-in, and in no case smaller than No. 14 B & S copper, bronze, or copper-clad steel. The ground wire need *not* have insulating covering or be mounted on insulators. It shall run in as straight a line as possible to a good permanent ground suitable for the purpose. The conductor shall be protected where exposed to mechanical injury. Where an OPERATING ground is used it shall be copper strip not less than 3/8" by 1/32" thick (copper, bronze or cu-clad steel) with girth at least 3/4 inch, such as a No. 2 B & S wire, and shall be firmly secured throughout its length. It shall be bonded to a good permanent ground—preference to water piping where available. Other permissible grounds, grounded steel frames of buildings, or other grounded metal work in the building, and artificial devices such as driven pipes, rods, plates, cones, etc. Gas piping shall *not* be used.

Lead-ins: The creepage and air gap distance shall be not less than three inches from inflammable surfaces, and lead-ins shall be supported on suitable insulators. A tube slanting upwards toward the inside, or a bushing of non-absorptive insulating material shall be used in such a way as to maintain creepage and air gap distances not less than 3 inches. Fragile insulators shall be protected where exposed to mechanical injury. A drilled window pane may be used in place of a bushing provided creepage distance is maintained.

Wiring: Under the following conditions wiring may be grouped in the same conduit, armored cable, electrical metallic tubing, metal raceway, pull box, junction box, or cabinet. (1) Power supply wires are introduced solely for supplying power to the equipment to which the other wires are connected. (2) Wires other than power supply wires that run in conduit, armored cable, electrical metallic tubing, metal raceway, pull box, junction box, or cabinet with power supply wires are insulated individually or collectively in groups, by insulation at least equivalent to that on the power supply wires—or the two sets of wires are separated by a lead sheath or other continuous

EMERGENCY COMMUNICATION WORK

BEFORE EMERGENCIES

Be ready, with really portable sets, and emergency power supply.

Overhaul and test periodically.

Give local officials and agencies your address; explain the availability of amateur radio facilities through your station in emergencies.

IN EMERGENCY

CHECK station operating facilities; offer your services to all who may be able to use them; inform A.R.R.L. an emergency exists, if possible.

QRR is the official A.R.R.L. "land SOS," a distress call for emergency use only . . . for use only by a station asking assistance.

THE KEY STATION in an emergency zone is the first and the supreme authority for priority and traffic routing in the early stages of emergency relief communications.

PRIORITY must be given messages in the general public interest (relief plans, re food, medicine necessities). Press reports and personal assurance messages can then be handled if practicable.

CO-OPERATION is required of all amateurs. Don't clutter the air with useless CQs. The majority of amateurs must listen in; QRX; avoid QRMing. Be ready to help; operate as intelligently as possible; co-operate by staying off the air while vital first information and relief measures are handled, if stations able to help as well as your station are on the job. (CQ STORM AREA is nothing but "more QRM.")

AFTER EMERGENCIES

REPORT to A.R.R.L. as soon as possible and as fully as possible so amateur radio can receive full credit. Amateur radio communication in 33 major disasters since 1919 has won glowing public tribute. Maintain this record.

II—Q CODE AND OTHER ABBREVIATIONS

READABILITY AND AUDIBILITY

Readability is indicated by sending a figure (1 to 5) after the appropriate Q signal, to show progressive signal strength. QSA means, "The strength of your signals is. . . ."

The scale:

- 1—Hardly perceptible; unreadable.
- 2—Weak; readable now and then.
- 3—Fairly good; readable; but with difficulty.
- 4—Good; readable.
- 5—Very good; perfectly readable.

The R-system of indicating *audibility* is widely used by amateurs to supplement a report on the more important consideration of *readability*. The readability, indicated by the above scale, may be handicapped by local interference (QRM), atmospherics (QRN), receiver background, or a noisy operating room to such an extent that the signals are uncopyable, even though strong. The report on audibility is one concerned entirely with the *strength of the signal* without regard to other sounds in the 'phones or room.

- R1—Faint signals, just audible.
- R2—Weak signals, barely audible.
- R3—Weak signals, copiable (in absence of any difficulty).
- R4—Fair signals, readable.
- R5—Moderately strong signals.
- R6—Strong signals.
- R7—Good strong signals (such as copiable through interference).
- R8—Very strong signals; can be heard several feet from phones.
- R9—Extremely strong signals.

SOME HAM ABBREVIATIONS

ABT	About
AGN	Again
AMP	Ampere
ANI	Any
AUSSIE	Australian amateur
BCL	Broadcast listener
BD	Bad
BI	By
BKG	Breaking
BN	Been, all between
BPL	Brass Pounders' League

metallic covering. (3) Terminals of these groups shall be spaced at least as much as the space between power supply terminals of opposite polarities, and means provided to guard connecting other conductors to power supply terminals. * * * Where conduit is used to hold secondary and primary conductors, these conductors, including insulation, shall not exceed 40% of the cross sectional area of the conduit. * * *

Life hazard: The transmitter shall be enclosed in metal frame, grill, or separated from the operating space by a barrier or other equivalent means, all metal parts of which are grounded effectively. (This rule is new and confusing to some. So-called bread-board transmitters may still be used, if and when isolated from the operating position.) It is recommended, but not mandatory that any circuit, in excess of 150 volts have no parts exposed to direct contact.

A-1 OPERATOR CLUB

This club has been organized to promote and encourage a high calibre of operating in the amateur bands. To become a member, one must be nominated by at least two operators who already "belong." In choosing operators for the "A-1 Operator Club" the following points are considered by members. (1) General keying. Well formed characters and good spacing will be considered before "speed." Similarly, good voice operating technique, clearness, brevity, co-operation with other operators, careful choice of words, etc., may be used as criteria in nominating 'phone operators. (Special extra credit may be given for use of standard word-lists in identifying calls and unusual expressions.) (2) Procedure. Use of correct procedure is a natural qualification. This applies to both general operating and message handling. (Procedure as recommended by A.R.R.L. herein and in the *Handbook* is a good standard.) Long CQs, unnecessary testing, long calls without signing, too much repetition when not requested, and all other such poor practice, are grounds for disqualification. (3) Copying ability. This to be judged by proficiency in copying through QRM, QRN and other difficulties, and accuracy of copy, as well as by ability to copy at fast speeds. (4) Judgment and courtesy. The "CUL 73" type operator can never make the grade. An operator should be courteous and willing to consider the other fellow's viewpoint. He should QRS or QSZ, without "crabbing" when requested. He should embrace every opportunity to assist beginners, and to help them along through some of the more trying experiences of operating. He should never knowingly QRM another station, but should co-operate as much as possible with stations working on his frequency. He should not decry "lid" operating but should assist the newer operators and offer friendly, courteous advice as to how they might improve their operation. The matter of "good notes," "sharp" signals, lack of frequency "wabbulation," good quality (phone), use of sound technical arrangement and proper adjustment, while not directly points of operating ability, are certainly concerned directly with *courtesy and judgment* and as such these things must be weighed under (4).

We suggest to A-1 operators, in considering candidates for nomination to the "club" that each of the four qualifications of paragraph two be carefully considered, each counting a possible 25 points (of 100 total). No operator nominated should have a rating of less than 15 on any qualification, and the total must be 80 or over to warrant a recommendation for a particular operator.

Regarding *disqualification*. After an operator has been nominated if exception shall be taken, or complaint made of faults in his operating work, copy of such complaint shall be sent to him in order that he may profit from constructive suggestions, or explain the circumstances. In the event of a sufficient number of objections to a nomination or lacking a satisfactory explanation, the call may be added to a "disqualified" list or record at Headquarters.

From time to time supplements to the membership roster of the A-1 Operator Club appear in *QST*. The A-1 Operator club should include in its ranks every good amateur operator who follows standard practice after he gets on the air, and after gaining experience contacts hams who are already members. Aim to become a fine operator, and also an "A-1" operator.

O.B.S. SERVICE

The latest official and special broadcasts are sent simultaneously on two frequency bands from Headquarters Radio Station WIMK twice nightly (except Wednesday and Saturday) at 8.30 p.m. and 10.30 p.m. or midnight—see most recent edition of the Handbook for 3.5 and 7 mc. frequencies and O.B.S. schedule.

BUG	Vibroplex key
CANS	Phones
CK	Check
CKT	Circuit
CL-CLD	Closing station; call; called
CONGRATS	Congratulations
CRD	Card
CUD	Could
CUL	See you later
CW	Continuous wave
DL-DLVD	Delivered
DLY	Delivery
DX	Distance
FB	Fine business, excellent
FM	From
FONES	Telephones
FR	For
FREQ	Frequency
GB	Good-bye
GBA	Give better address
GE	Good evening
GG	Going
GM	Good morning
GN	Gone, good night
GND	Ground
GR	Group, check
HAM	Amateur, brass-pounder
HI	Laughter, high
HR	Here, hear
HRD	Heard
HV	Have
LID	"Lid," a poor operator
LTR	Later, letter
MA	Milliampere
MG	Motor-generator
MILS	Milliamperes
MO	Master oscillator
ND	Nothing doing
NIL	Nothing
NM	No more
NR	Number, near
NSA	No such address
OB	Old Boy, Official Broadcast
OM	Old man
OO	Official Observer
OPN	Operation
OP-OPR	Operator
ORS	Official Relay Station
OT	Oscillation transformer, old timer, old top
OW	Old woman
PSE	Please
PUNK	Poor operator
R	Are, all right, O.K.
RAC	Rectified alternating current
RCD	Received
RCVR	Receiver
RI	Radio Inspector
RM	Route Manager
SA	Say
SCM	Section Communications Manager
SED	Said
SEZ	Says
SIG-SG	Signature
SIGS	Signals
SINE	Sign, personal initials, signature
SKED	Schedule
TC	Thermo couple
TKS-TNX	Thanks
TNG	Thing
TMW	Tomorrow
TT	That
U	You
UR	Your, you're
URS	Yours
VT	Vacuum tube
VY	Very
WD	Would, word
WDS	Words
WKG	Worked
WKG	Working
WL	Will
WT	What, wait, watt
WUD	Would
WV-WL	Wave, wavelength
WX	Weather
XMTR	Transmitter
YF	Wife
YL	Young lady
YR	Your
ZEDDER	New Zealander
73	Best regards
88	Love and kisses

"Q" CODE

Given below are a number of Q signals whose meanings *most often* need to be expressed with brevity and clearness in amateur work. (Q abbreviations take the form of questions only when each is sent followed by a question mark.)

QAV	Are you calling me? I am calling....
QRA	What is the name of your station? The name of my station is
QRB	How far approximately are you from my station? The approximate distance between our stations is nautical miles (or kilometres).
QRG	Will you indicate my exact frequency in kilocycles? Your frequency iskc.
QRH	Does my frequency vary? Your frequency varies.
QRI	Is my note good? Your note varies.
QRJ	Are you receiving me badly? Are my signals weak? I cannot receive you. Your signals are too weak.
QRK	Are you receiving me well? Are my signals good? I receive you well. Your signals are good.
QRL	Are you busy? I am busy (or busy with....)
QRM	Are you being interfered with? I am interfered with.
QRN	Are you troubled by atmospherics? I am being troubled by atmospherics.
QRO	Must I increase power? Increase power.
QRP	Must I decrease power? Decrease power.
QRQ	Must I send faster? Send faster (.... words per min.).
QRS	Must I send more slowly? Send more slowly (.... w.p.m.).
QRT	Must I stop sending? Stop sending.
QRU	Have you anything for me? I have nothing for you.
QRV	Are you ready? I am ready.
QRW	Must I advise....that you are calling him? Please advise....that I am calling him.
QRX	Must I wait? When will you call me again? Wait until I have finished with..... I will call you immediately (or at....).
QRZ	By whom am I being called? You are being called by.....
QSA	What is the strength of my signals (1 to 5)? The strength of your signals is.... (1 to 5).
QSB	Does the strength of my signals vary? The strength of your signals varies.
QSD	Is my keying correct? Are my signals distinct? Your keying is incorrect; your signals are bad.
QSG	Shall I send.... telegrams (or one) at a time? Send telegrams at a time.
QSH	Must I send one telegram at a time, repeating it twice? Transmit one telegram at a time, repeating it twice.
QSK	Shall I continue with the transmission of all my traffic? I can hear you through my signals. Continue: I will interrupt you if necessary.
QSL	Can you give me acknowledgment of receipt? I give you acknowledgment of receipt.
QSM	Shall I repeat the last telegram I sent you? Repeat the last telegram you sent me.
QSN	Can you receive me now? Must I continue to listen? I cannot receive you now. Continue to listen.
QSO	Can you communicate with....directly (or through)? I can communicate with....directly (or through....).
QSP	Will you relay to....? I will relay to....
QSQ	Must I send each word or group once only? Send each word or group once only.
QSV	Shall I send a series of VVV....? Send a series of VVV.
QSW	Will you send on kcs? etc. I will send on kcs, etc.
QSX	Will you listen for....(call sign) on....kcs? I am listening for....on....kcs.
QSY	Must I change to....kilocycles without changing the type of wave? Change to....kc. without changing type of wave.
QSZ	Must I send each word or group twice? Send each word or group twice.
QTA	Must I cancel nr.... as if it had not been sent? Cancel nr....as if it had not been sent.
QTB	Do you agree with my number of words? I do not agree with your number of words; I will repeat the first letter of each word and the first figure of each number.
QTC	How many telegrams have you to send? I have.... telegrams for you or for....

QTH What is your position (location)? My location is... (by lat. and longitude or any other indication).
QTR What is the exact time? The time is.....
CQ is now specified—for all "general" calls having no special or emergency significance. It should be noted that **QST** and **QRR** are now unassigned in the official international list.

Special abbreviations adopted by the A.R.R.L.:
QST General call preceding a message addressed to all amateurs and A.R.R.L. Members. This is in effect "CQ ARRL."
QRR Official A.R.R.L. "land SOS." A distress call for emergency use only.

STANDARD INTERNATIONAL ABBREVIATIONS

Some of the standard abbreviations prescribed by the Madrid Convention for all services follow:

- C Yes
- N No
- W Word(s)
- AA All after (used after a question mark to request a repetition)
- AB All before (similarly)
- AL All that has just been sent (similarly)
- BN All between (similarly)
- BQ Announcement of reply to a request for rectification
- CL I am closing my station
- CS Call signal (to be used to ask repetition of a call signal)
- GA Go ahead (or resume sending)
- JM If I may send make a series of dashes. To stop my transmission make a series of dots
- MN Minute(s) (to indicate duration of a wait)
- NW I resume transmission
- OK We are in agreement
- RQ Announcement of a request for rectification
- UA Do you agree
- WA Word after (to be used after a question mark to request a repetition)
- WB Word before (similarly)
- ADR Address (similarly)
- PBL Preamble (similarly)
- SIG Signature (similarly)
- TXT Text (similarly)
- XS Atmospheric
- YS See your service advice
- ABV Use abbreviations
- CFM Confirm or I confirm
- ITP The punctuation counts
- MSG Prefix to radio telegram
- REF Refer to or referring to
- RPT Repeat or I repeat (to be used to ask or to give repetition of such traffic as is indicated after the abbreviation)
- SVC Prefix to service message
- TFC Traffic
- P Indicator of private telegram in the mobile service (to be used as a prefix)
- NIL I have nothing for you

XXX XXX XXX DE . . . , urgent signal indicating message to follow regarding safety of mobile station or persons in sight therefrom (PAN is similarly used by aircraft); **TTT TTT DE** . . . , safety signal sent before meteorological warning messages and those concerning safety of navigation; **SOS SOS DE** . . . , distress signal sent only by mobile stations in grave danger when requesting assistance (MAYDAY is the radiophone distress call similarly used).

III—INTERNATIONAL PREFIXES

A complete list of the prefixes assigned to different countries by the I.R.C. will help in identifying the nationality of all calls heard on the air. Nations are obliged to select some letter or letters from their assignment to use as a prefix to amateur calls. The prefixes used by stations within the jurisdiction of the United States and Canada, are as follows:

- W United States (continental)
- K4 Porto Rico (attached to U. S. 4th district)
- K4 Virgin Islands (attached to U. S. 4th district)
- K6 Hawaii (attached to U. S. 6th district)
- K7 Alaska (attached to U. S. 7th district)
- KA Philippine Islands (licensed by Philippine Government, 1st, 3d, 7th, 8th, and 9th Philippine districts)
- VE Canada

The procedure used by an Alaskan amateur in calling a station in the continental United States may be made most clear by an example, **W7TX W7TX W7TX DE K7AER K7AER K7AER AR**. Note that the prefix **W** or **K** is always part of the call signal itself.

A full list of countries follows with information from the international table of allocation of call signals from the Madrid Convention to help in identifying all calls.

- CAA-CEZ Chile CE
- CFA-CKZ Canada [VE]
- CLA-CMZ Cuba [CM]
- CNA-CNZ Morocco [F]
- COA-COZ Cuba [CM]
- CPA-CPZ Bolivia CP
- CQA-CRZ Portuguese colonies:
 - Cape Verde Islands CR4
 - Portuguese Guinea CR5
 - Angola CR6
 - Mozambique CR7
 - Portuguese India CR8
 - Macao CR9
 - Timor CR10
- CSA-CUZ Portugal:
 - Portugal proper CT1
 - Azores Islands CT2
 - Madeira Islands CT3
- CVA-CXZ Uruguay CX
- CYA-CZZ Canada [VE]
- D Germany D
- EAA-EHZ Spain EA
- EIA-EIZ Irish Free State EI
- ELA-ELZ Liberia EL
- EPA-EQZ Persia EP
- ESA-ESZ Estonia ES
- ETA-ETZ Ethiopia (Abyssinia) ET
- EZA-EZZ Territory of the Saar EZ
- F France:
 - France, Algeria, Martinique, Morocco and Tahiti F3, F8
 - Tunis F4
 - French Indo-China F1
- G United Kingdom:
 - Great Britain except Ireland G
 - Northern Ireland GI
- HAA-HAZ Hungary HA
- HBA-HBZ Switzerland HB
- HCA-HCZ Ecuador HC
- HHA-HHZ Haiti HH
- HIA-HIZ Dominican Republic HI
- HJA-HKZ Colombia HJ-HK
- HPA-HPZ Republic of Panama HP
- HRA-HRZ Honduras HR
- HSA-HSZ Siam HS
- HVA-HVZ Vatican City HV
- HZA-HZZ Hedjaz HZ
- I Italy and colonies I
- J Japan J
- K United States of America:
 - Continental United States ... [W]
 - Philippine Islands KA
 - Porto Rico and Virgin Islands K4
 - Canal Zone K5
 - Territory of Hawaii, Guam, Samoa K6
 - Territory of Alaska K7
- LAA-LNZ Norway LA
- LOA-LWZ Argentina LU
- LXA-LXZ Luxembourg LX
- LYA-LYZ Lithuania LY
- LZA-LZZ Bulgaria LZ
- M Great Britain [G]
- N United States of America [W]
- OAA-OCZ Peru OA
- OEA-OEZ Austria OE
- OFA-OHZ Finland OH
- OKA-OKZ Czechoslovakia OK
- ONA-OTZ Belgium ON
- OUA-OZZ Denmark OZ
- PAA-PIZ Netherlands PA
- PJA-PJZ Curacao PJ
- PKA-POZ Dutch East Indies PK
- PPA-PYZ Brazil PY
- PZA-PZZ Surinam PZ
- R Union of Soviet Socialist Republics (AU-EU)
- SAA-SMZ Sweden SM
- SOA-SRZ Poland SP
- STA-SUZ Egypt ST
- SVA-SZZ Greece SV
- TAA-TCZ Turkey TA
- TFA-TFZ Iceland TF
- TGA-TGZ Guatemala TG
- TIA-TIZ Costa Rica TI

TKA-TKZ	France and colonies and protectorates	[F]
U	Union of Soviet Socialist Republics	(AU-EU) ²
VAA-VGZ	Canada	VE
VHA-VMZ	Australia	VK
VOA-VOZ	Newfoundland	VO
VPA-VSZ	British colonies and protectorates:	
	Bahamas	VP1
	British Honduras, Trinidad	VP4
	Jamaica	VP5
	Barbados	VP6
	Bermuda	VP9
	Fanning Island	VQ1
	Northern Rhodesia	VQ2
	Tanganyika	VQ3
	Kenya Colony	VQ4
	Uganda	VQ5
	British Guiana	VR
	Malaya (Straits Settlements)	VS1-2-3
	Hongkong	VS6
	Ceylon	VS7
VTA-VWZ	British India	VU
W	United States of America:	
	Continental United States	W
	(For others, see under K)	
XAA-XFZ	Mexico	X ³
XGA-XUZ	China	XT-XU ⁴
XYA-XZZ	British India	[VU]
YAA-YAZ	Afghanistan	YA
YBA-YHZ	Dutch East Indies	[PK]
YIA-YIZ	Iraq	YI
YJA-YJZ	New Hebrides	YJ
YLA-YLZ	Latvia	YL
YMA-YMZ	Danzig	YM
YNA-YNZ	Nicaragua	YN
YOA-YRZ	Roumania	(CV) ²
YSA-YSZ	El Salvador	YS
YTA-YUZ	Jugo-Slavia	(UN) ²
YVA-YWZ	Venezuela	YV
ZAA-ZAZ	Albania	ZA
ZBA-ZJZ	British colonies and protectorates:	
	Transjordan	ZC1
	Palestine	ZC6
	Nigeria	ZD
	Southern Rhodesia	ZE1
ZKA-ZMZ	New Zealand:	
	Cook Islands	ZK
	New Zealand proper	ZL
	British Samoa	ZM
ZPA-ZPZ	Paraguay	ZP
ZSA-ZUZ	Union of South Africa	ZS-ZT-ZU

¹ A number of Moroccan amateurs use the unofficial prefix CN, although the French government has decreed that F8 must be used by licensed stations.

² Changes in the Table of Distribution of Call Signs made at the Madrid convention, and incorporated in this list, will cause changes in the prefixes used by amateurs of several countries. At the time of going to press no official information concerning these changes, which have not in all cases been ratified by the governments concerned, is available. For this reason, the old prefixes used under the Washington convention are shown.

³ Improperly assigned by Mexico; it should have two letters to distinguish it from China.

⁴ Few Chinese amateurs, on the contrary, use the X- prefix; most of them still use AC, an heritage from the old I.A.R.U. intermediates.

IV—MESSAGES

Station owners may originate traffic of any kind going to any part of the United States, Hawaii, Porto Rico, Alaska, or the Philippines. Canadian messages may be handled under certain restrictions. Important traffic in emergencies or messages from expeditions for delivery in Canada must be put on a land wire by the U. S. amateur station handling. *International regulations prohibit the handling of third party messages to the majority of foreign countries.* Messages relating to experiments and personal remarks of such unimportance that recourse to the public telegraph service would be out of the question may be handled; but third party messages only under special arrangements between U. S. A. and other governments, and only to the extent agreed upon by the contracting governments. *Domestically, within the U.S.A. and possessions, any kind of traffic may be handled as long as no form of compensation is accepted for the operation of an amateur station.*

"Handling" a message always includes the transmission and receipt of radio acknowledgement (QSL) of same, and entry of date, time and station call on the traffic, as handled, for purposes of record. All messages should be handled in standard A.R.R.L. form.

Messages may be accepted from friends or acquaintances for sending by amateur radio. Such messages should be put in as complete form as possible before transmitting them. *Incomplete messages should not be accepted.* As messages are often relayed through several stations before arriving at their destination, no abbreviations should be used in the text as mistakes are bound to happen when the text is shortened in this manner. To people not acquainted with radio abbreviations, messages written in shortened form are meaningless. Delivering stations must be careful to see that messages are written out fully.

Above all, the operator will never make changes or alterations in the texts or other portions of messages passing through his hands. However slight or however desirable such changes may seem, the changing of a message without proper authority or without the knowledge of the originator of the message may be considered the "unpardonable sin." The proper thing to do of course is to notify the party filing the message or the originating station of your observations, secure permission from the proper source for making the change by sending a "service message" or other means. If the case seems urgent, the traffic should not be delayed but should be delivered or forwarded with appropriate notation or service accompanying it.

Several radiograms may be transmitted in series with the consent of the station which is to receive them. As a general rule, long radiograms shall be transmitted in sections of approximately fifty words each, ending with -----(?) meaning, "Have you received the message correctly thus far?"

A file of messages handled shall be kept, this file subject to call by the Section Manager at any time at his discretion. Only messages which can be produced shall be counted in the monthly reports, and these under the A.R.R.L. provisions for message-counting.

Messages may be worded in clear language or in secret language. Secret language may be either code or cipher language. A plain language message gives an intelligible meaning in one of the languages authorized for international telegraph work. Each word in a plain-language message has its regular dictionary meaning.

WORD COUNT

All ordinary messages are plain-language messages. Every 15 characters or fraction thereof counts as one word. Groups of 5 numerals (or less) also count as one word. (A fraction bar (DN) counts as one character.)

Examples (plain language):			
Compensated	1 word	713/4	1 word
Unconstitutional	2 words	2543/4	2 words
X-Ray	2 words	2961	1 word
(the hyphen is not transmitted)		85772	1 word
		715592	2 words

MESSAGE FORM

Every message shall contain the following component parts in the order given:

- | | |
|-----------------------|----------------------|
| (a) City of origin | (e) Check (optional) |
| (b) Station of origin | (f) Address |
| (c) Number | (g) Text |
| (d) Date | (h) Signature |

(a) The "city of origin" refers to the name of the city in which the message was filed. If a message is filed at the League Headquarters station by someone in Hartford the preamble reads, "Hr msg fm Hartford Conn W1MK Nr 103 etc." If a message comes in by mail from Wiscasset, Maine, the following procedure is adopted to avoid confusion and the preamble runs like this: "Hr msg fm Wiscasset Maine via Hartford Conn W1MK Nr 204, etc."

(b) The "station of origin" refers to the call of the station at which the message was filed and this should always be included so that a "service" message may be sent back to the originating station if something interferes with the prompt handling of delivery of a message. In the examples of preambles given just above, W1MK is the station of origin.

(c) Every transmitted message shall bear a "number." Beginning on the first day of each calendar year, each transmitting station shall establish a new series of numbers beginning at Nr. 1. Keep a sheet with a consecutive list of numbers handy, file the messages without numbers; and when you send the messages assign the numbers to them and scratch off the number from the number sheet. Such a system will keep things straight and be convenient for reference to messages originated.

COUNTING MESSAGES

The original number supplied each message at the originating station shall be transmitted by each station handling the message. Intermediate relaying stations shall neither change numbers nor supply new ones to messages. If a message is filed at W1MK May 5, and given Nr. 256, this same number is to be used by all stations handling this message. The number and date becomes a part of the city-and-station-of-origin identification for the purpose of tracing. The message started from W1MK reads, "Hr msg fm Hartford Conn W1MK Nr 256 May 5." No matter what station handles this message, the city and station of origin, the number and the date remain exactly the same as in the original and should reach the addressee in that form. Only at stations where a message originates or is filed can a number be assigned to a message.

(d) Every message shall bear a "date" and this date shall be transmitted by every station handling the message.

(e) The "check" denotes the sum of the number of words in the address, text and signature of a message. In the address, the names of cities, states, counties or other divisions of territory each count as one word, regardless of the number of letters they contain. The words street, avenue, and so on, count as one word separately from the name of the street, avenue, etc.

In "plain language" messages, words are counted for every fifteen characters or fraction thereof. Names of cities in the address count always as one word. In the text, unless written and sent as one word, they count as more than one word. NEW YORK counts as "one" in the address but as "two" in the body of the message. COD, SS, ARRL and such expressions count five letters to a word wherever they appear. When there are several consecutive groups, each group must of course be sent and counted separately to indicate separate words. Radio calls: W7NZ counts as one word in the address but as four words when it appears in the body or signature of a message. Mixed letter and figure combinations are counted as a word to each character. Five figures or fraction thereof, in a group, count as "one" word. PHONE CHARTER 328-5 counts as "three" in the check.

The use of a check on amateur messages is optional. Very important messages should be checked carefully to insure accuracy. Use the cable-count check.

(f) The "address" refers to the name, street and number, city, and state to which a message is being sent. A "sufficiently complete" address should always be given to insure delivery. The address is followed by - - - - and precedes the text.

(g) The "text" consists of the words in the body of the message. It follows the address and is set off from the signature by another - - - - -.

(h) The "signature" is usually the name of the person sending the message. When no signature is given it is customary to include the word "no sig" at the end of the message to avoid confusion.

Here is an example of standard amateur message form and cable count check, used on all radiograms:

Hr msg fm Provo Utah W6DPJ nr 283 May 18 ck 43
To Robert Lloyd W8CFR

175 Allegheny Ave
Emsworth Pa - - - - -
REQUESTED BY BANE W6WB THAT YOU COMMUNICATE WITH AMIS W9CET REGARDING COAST TO COAST RELAY CHAIN AMIS IS ORGANIZING STOP HOPE YOU CAN TAKE PART - - - - -
CUTLER R MILLER

THE SERVICE MESSAGE

A service message is a message sent by one station to another relating to the "service" conditions present in message handling. It may refer to non-deliveries, delayed transmission, or to any phase of message-handling activity.

The prefix "svc" in place of the usual "msg" shows the class of the message and indicates a station-to-station message. Service messages should be handled with the same care and speed that is given other messages.

Whenever a message is received which has insufficient address for delivery and no information can be obtained from the telephone book and the city directory, a service message should be written and sent to the station of origin asking for a better address. It is improper to abbreviate words in the texts of regular messages. However, it is quite desirable and correct to use abbreviations in these "station-to-station" or "svc" messages, relating to traffic work. Such abbreviations as the following might be used in a service message: UR, your; NR, number; SIG, signed; HR, here; UNDDL, undelivered; PSE, please; GBA, give better address.

A message received in person, by telephone, telegraph, or mail which is filed at your station and transmitted by radio in proper form counts as one message originated. A message received by radio and delivered in person, by telephone, telegraph, or mail, counts as one message delivered. A message received by radio and sent forward by radio counts as two messages relayed, one when received and again one when sent forward. All messages counted must be handled within a 48 hour (maximum) delay period to count with but one exception. Messages for all continents except North America may be held one-half the length of time it would take them to reach their destination by mail if necessary to eliminate needless local passing about of long distance traffic. A "service" message counts the same as any other type of message. The message total shall be the sum of the messages originated, delivered and relayed. Each station's message file and log shall be used to determine the report submitted by that particular station. Messages with identical texts (so-called rubber stamp messages) shall count only for each time the complete text, preamble and signature are sent by radio, except in the case of deliveries, count one for each delivery regardless of whether the transmission is complete for each or whether identical portions of messages are sent in "book" form. (See latest edition Handbook for examples of counting.)

TRUNK LINES

A.R.R.L. Trunk Lines are organized each active radio season to assist in organized traffic movements East-West and North-South by definite scheduled routes. Get in touch with your Route Manager if interested.

V—A.R.R.L. FIELD ORGANIZATION

A.R.R.L. TERRITORIAL DIVISIONS

For the purpose of organization, the A.R.R.L. divides the United States and Canada into divisions as follows. These Divisions are further sub-divided into "Sections" for operating purposes.

ATLANTIC DIVISION: Delaware, District of Columbia, Maryland, Pennsylvania, that section of New Jersey within the Third Federal Inspection District, and that section of New York within the Eighth Federal Inspection District.

CENTRAL DIVISION: Illinois, Indiana, Kentucky, Michigan, Ohio and Wisconsin.

DAKOTA DIVISION: Minnesota, North Dakota and South Dakota.

DELTA DIVISION: Arkansas, Louisiana, Mississippi and Tennessee.

HUDSON DIVISION: The entire Second Federal Inspection District, including certain counties of New Jersey and New York States.

MIDWEST DIVISION: Iowa, Kansas, Missouri and Nebraska.

NEW ENGLAND DIVISION: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

NORTHWESTERN DIVISION: Idaho, Montana, Oregon, Washington and the Territory of Alaska.

PACIFIC DIVISION: Arizona, California, Nevada, Philippine Islands and the Territory of Hawaii.

ROANOKE DIVISION: North Carolina, Virginia and West Virginia.

ROCKY MOUNTAIN DIVISION: Colorado, Utah and Wyoming.

SOUTHEASTERN DIVISION: Alabama, Florida, Georgia, South Carolina and the Island of Porto Rico, the Republic of Cuba and the Isle of Pines.

WEST GULF DIVISION: New Mexico, Oklahoma and Texas.

MARITIME DIVISION: Newfoundland, Labrador, and the Provinces of New Brunswick, Nova Scotia, and Prince Edward Island.

ONTARIO DIVISION: Province of Ontario.

QUEBEC DIVISION: Province of Quebec.

VANALTA DIVISION: Provinces of Alberta and British Columbia and Yukon Territory.

PRAIRIE DIVISION: Provinces of Manitoba and Saskatchewan and the Northwest Territories.

Each Division elects its Director to represent it on the A.R.R.L. Board of Directors. The Board determines the policies of the League which are carried out by paid officers acting according to the instructions of the Board. When the Board is not in session, the five officers of the League, constituting an Executive Committee, can act for the Board, under certain restrictions, of course.

These A.R.R.L. Divisions are subdivided into Sections of operating territory. Section officials are elected by the membership in a way similar to the Directors (by mail ballot). Each Director and the Communications Manager at League Headquarters decide the proper sectionalizing of each Division. The field officials for the different Sections are listed on page 5 while the names and addresses of the Directors are printed on page 6 of each *QST*. *If you do not already do so, you are cordially invited to send a monthly report of your activities to your Section Manager.*

The Constitution and By-Laws of the A.R.R.L. (copies available from Headquarters) explains in detail the procedure followed in nominating and electing Directors and Section Communications Managers. When vacancies are announced nominating petitions are solicited from the members of the Division or Section where the vacancy exists. Ten members must agree and approve a nomination for Director, while at least five A.R.R.L. members must sign a petition for nomination of a S.C.M. before it is valid. If but a single candidate is nominated the by-laws provide that this candidate shall be declared elected for a two-year term of office. The organization plan covering all departments of League management, stating conditions for membership in the A.R.R.L., the policy of A.R.R.L. in affiliating radio societies and defining A.R.R.L. conventions, etc., is fully set forth in the Constitution and By-Laws.

A.R.R.L. OFFICIALS AND APPOINTMENTS

SECTION COMMUNICATIONS MANAGER

1. The Section Manager shall appoint Route Managers, Official Observers, Official Broadcasting Stations, Official Relay Stations, Official Phone Stations, and individuals and/or stations for specific work in accordance with the qualifications and rules for such appointments. He shall likewise make cancellations of appointments whenever necessary.

Appointees shall have full authority within the section over the activities indicated by their titles. They will report and be responsible to the Section Communications Manager for their work. With the consent of the Communications Manager the Section Manager may, if necessary, designate a competent League member to act for him in a particular matter in any part of his territory. He shall be careful to instruct such an appointee properly in the duties he is to execute while acting for the S.C.M.

2. His territorial limitations are determined by the Division Director (or C.G.M.) and the Communications Manager.

3. The Section Manager is responsible to the Communications Manager at League Headquarters for maintenance of records of all his appointments, and cancellations of such appointments either for violations of the regulations under which these are issued, or for violations of the F.R.C.'s amateur regulations. The Form 4 (appointment) and Form 4C (cancellation) cards provided, must be sent to Headquarters so that A.R.R.L. mailing lists and records may be kept exactly in accordance with those of the S.C.M. office. Annual endorsement of O.R.S. and O.P.S. certificates (and S.C.M. notification-to-Headquarters by Form 4) is required to keep these appointments in effect.

4. The Section Manager is responsible for the co-operation of active station-owners in A.R.R.L. activities, contests, traffic work, etc. and is authorized to devise and develop special plans in the furtherance of Section interest and esprit de corps.

5. The Section Manager is the Section executive. His leadership must take into consideration the proper distribution of basic and key appointments to those best qualified in the different cities and in each radio club in the Section. Such problems as the geographical distribution and coverage of stations (OBS) sending addressed information to members, the distribution of appointments in the different frequency bands for effective Section activities require careful study. The S.C.M. must in his decisions try to grant recognition to the best qualified operators and stations, and endeavor to insure A.R.R.L. representation and activity in each amateur group.

6. The S.C.M. may appoint *only League members* to any A.R.R.L. office. He must see that each O.R.S. and O.P.S. has the proper qualifications, as indicated by actual operating radio tests and/or station inspection made by him or under his direction. The S.C.M. shall also conduct investigations of radio organizations and interference cases whenever such cases are referred to him by Headquarters or the Division Director. It is his duty to demonstrate Section leadership and coordinate all types of amateur operating work to make his Section as effective and active as possible.

7. The S.C.M. may requisition necessary Communications Department supplies provided for making appointments and supervising the work in his section. He may render an itemized postage expense account at intervals for reimbursement. Section Managers are entitled to wear the distinctive A.R.R.L. pin with red background, similar in other respects to the regular black-and-gold A.R.R.L. membership pin.

8. The S.C.M. shall render a monthly report or activity summary to Headquarters. It shall be made up from all reports from all active stations, whether members or not, and include comprehensive information on each appointee. Reports shall be mailed to Headquarters by S.C.M.s on or before the 20th for the reporting month (16th to 15th inclusive) in the mainland U. S. A. and Canada. Reports shall be condensed, leaving out any "negative" information, not mentioning inactivity or non-reporting. Traffic figures shall be separately listed at the end of the report. The body of the report will cover all general amateur activity, experimenting, 'phone, DX, traffic, and other station news. When possible, the S.C.M. shall send in his report typewritten and double-spaced.

THE ROUTE MANAGER

Each Route Manager shall have a station actively on the air maintaining good local contacts, lining up stations and routes for traffic handling. While the S.C.M. is the administrative executive of the Section, the R.M. has the king-pin traffic station. Each R.M. is nucleus of a communications "net" which he organizes himself, dropping inactive stations as it becomes necessary and adding live stations to keep the Section on the map in traffic handling. The R.M. attempts to cover all the larger towns and cities as well as possible to encourage and improve local traffic work.

The Route Manager lines up traffic routes between different parts of his Section. He also keeps posted on schedules already in operation within the Section, on the between-Section schedules and those kept with foreign points by stations within his jurisdiction (which is determined by the S.C.M.). The R.M. reports to the S.C.M. monthly (at the same time the O.R.S. report) including in his report a complete list of all routes and schedules known to him brought just as up-to-date as possible and covering the specific activity of routes and schedules for traffic-handling for which he is responsible to the S.C.M. in full in his report. Route Managers may wear the League emblem with the distinctive deep-green background.

THE OFFICIAL OBSERVER

Each Official Observer shall have an accurately calibrated monitor or frequency meter. This equipment shall be used for checking stations beyond the limits of amateur bands against calibrations from the A.R.R.L. standard frequency station transmissions, and checks from government or commercial "marker" stations of known frequency operating adjacent to our own amateur channels. Observers shall be supplied with notification postal card forms and with report blanks on which the stations logged off-frequency and notified shall be reported to A.R.R.L. Headquarters (through the office of the S.C.M.) just as rapidly as the blanks are filled out. While observers work directly under their Section Managers, their observations shall include *all* amateur stations in the U. S. or Canada or wherever there are representatives of the A.R.R.L. field organization. On logging a station the notification form shall be completed and mailed in each case when the station logged is found to be operating with an amateur call signal outside the confines of the amateur bands. Not more than two notification forms shall be sent to one such station by one observer, but observers should continue logging and reporting cases of flagrant violation to Headquarters so that the matter may be followed up definitely to check operation on extra-legal frequencies. A duplicate of the reporting form may be kept by observers to enable them to check on stations continuing off frequency after having received friendly notification. Observers shall also get in touch with stations by radio when possible. From time to time the attention of appointees in the A.R.R.L. observing system will have their attention called to particular situations and particular bands requiring their special attention and at other times their work may be distributed on different frequencies as time permits and conditions seem to warrant. Observers when possible shall report harmonic or parasitic radiations and other operation of commercial or government telegraph services or broadcasting stations causing interference in the amateur bands, these being reported direct to the S.C.M. or Headquarters as promptly as possible so that suitable remedial action may be taken.

The notification service to amateurs is designed as a friendly move to protect amateur privileges from official government restrictions which might be provoked by careless or intentional disregard of regulations by individuals who might thus jeopardize the enjoyment of all amateurs.

While primarily confining their duties to frequency checking as just outlined, observers also embrace the opportunity to report flagrant violations of good amateur practice, including improper procedure, poor spacing, "a.c." notes, etc.; all to the end that the effectiveness of stations may be improved, and high standards of amateur operating maintained.

THE OFFICIAL BROADCASTING STATION

Each Official Broadcasting Station appointee receives information on timely subjects from Headquarters each week or at the other intervals to be put on the air at various scheduled times during the week following receipt of the information. Section Managers shall give preference to stations having available considerable amounts of power, or stations whose operators are especially qualified to give good service in view of the geographical location, the frequency bands in use, or the timely choice of schedules or frequency with which schedules can be kept. Consideration shall also be given to the ability of such stations, especially at great distances from Headquarters to copy the information in advance of its receipt by mail as sent by Headquarters station WIMK.

Applicants for this appointment must submit their qualifications to the Section Manager with the proposed dates, times and frequencies for transmission of the broadcasts. In deciding on the times of transmission schedules preference should be given to those times when the largest number of amateurs are listening, that is, the hours between 6 p.m., and midnight. Section Managers are instructed to cancel the appointments of stations not adhering to the schedules agreed upon, and the appointments of stations not returning information on current or revised schedules when periodic surveys of the broadcasting system are made.

BASIC A.R.R.L. APPOINTMENTS

Whatever your qualifications, we suggest that you get into the game and cooperate with your Section Manager by sending him a monthly report of the particular work you are doing. In some department of the A.R.R.L.'s field organization there is a place for every active amateur who has a station. The Communications Department organization exists to increase individual enjoyment in amateur radio work, and we extend a cordial invitation to every amateur to participate fully in the activities, and to apply to the S.C.M. for O.R.S. or O.P.S. appointment as soon as sufficiently experienced in ham work.

Both Official Relay Station and Official Phone Station appointees receive an appointment certificate to be displayed in the station, a quarterly bulletin from Headquarters, and Form 1 reporting cards on which to turn in the monthly reports to the Section Communications Manager.

Appointment certificates (O.R.S. and/or O.P.S.) must be returned to Section Managers annually for proper endorsement to keep these in effect more than one year. Any applicant who fails to qualify may again apply for appointment after three months have elapsed. In making application, forms indicating knowledge of recommended procedure must be filed with the S.C.M. on blanks available from each S.C.M. office. New applicants must communicate *by radio* with a Section official and receive approval of this official or his representative. Operators with personal responsibility and high standards of operating are recognized as O.R.S. and O.P.S., and appointed to these important basic posts in A.R.R.L. organization because they have the qualifications. As a result of operating appointments carefully supervised and given only to active men with demonstrated ability in technical and operating matters, the present effective field organization, in successful operation for many years is maintained.

It is the duty of Official Relay Station and Official Phone Station appointees (a) to report activities monthly to the S.C.M., whether or not a special reporting form is available; (b) to keep stations always on the air, i.e. in readiness for operation and in actual service; (c) to follow A.R.R.L. operating practices; (d) to take part in the activities of the League whenever possible; (e) to hold message files three months ready for any call by the S.C.M. or licensing authority. *Reports are due on the 16th of each month for mainland United States stations.*

O.R.S. and O.P.S. appointments are not transferable from one station-owner to another. When an appointee

moves they may be transferred from one Section to another by arrangement with the S.C.M.s concerned who notify Hq. of cancellation and re-appointment. Appointments may be cancelled by S.C.M.s whenever three consecutive reports are missed, and evidence of regular work and reports for three months must be submitted before such a station may be reinstated. "Earned reinstatements" made be made within one year without filing new application papers. After this the filing of new application papers is desirable, and discretionary with the Section Manager.

THE OFFICIAL PHONE STATION APPOINTMENT

This appointment is for every qualified ham who normally uses his "mike" more than his key in his amateur station, and who takes a pride in the manner of signal he puts on the air, and aims to have his station really accomplish worthwhile communication work. Official Phone Station appointees must endeavor to live up to the Amateur's Code of good fraternalism and operating equality. The appointment gives phone operators the advantages of organization for systematic cooperation in emergencies, quarterly bulletin news, and operating tests. O.P.S. appointment does *not* stress traffic handling by voice, but aids phone operating enjoyment by helping to formulate good voice operating practices, not overlooking the emergency organization aspect. The operating standards established make voice work more enjoyable and systematic.

1. O.P.S. use circuit precautions that avoid frequency modulation and overmodulation, and employ indicators in their transmitters to detect maladjustments.

2. O.P.S. cooperate with each other, and with all amateurs, regardless of power, or frequency. No "monopolization" of a frequency channel by an individual operator is permissible, excepting such a situation is demanded by emergency conditions at a station in an isolated area.

3. Major adjustment of transmitters is completed outside of heavy operating hours. (There should be no needless music playing under the guise of legitimate testing. This increases QRM and constitutes an exhibition of selfishness. Such tests should be performed using dummy antennas, and radiating antennas connected only for bona fide voice communication.)

4. O.P.S. endeavor at all times to make the operation of their stations an example to be looked up to by other amateurs; they will stand ready to assist other amateurs in observing frequency bands, in complying with F.R.C. regulations, in adopting and furthering common sense, effective, voice operating procedure as formulated and codified by the group of O.P.S. for the benefit of all, and the furtherance of radiotelephone work.

All operators who use voice should use the suggestions codified to improve operating conditions in the phone bands. Official Phone Station appointment differs from O.R.S. appointment in that the operators are *not appointed specifically to handle traffic*. Of course when traffic is handled these stations observe the same high standards of responsible operating work; they will therefore at all times cooperate with S.C.M.s and R.M.s by prompt dispatch or delivery of any traffic that may be sent via the phone bands. Stations holding O.P.S. appointment will, of course, insist on complete addresses, and give city of origin and number each message carefully in accordance with A.R.R.L. procedure.

The application for O.P.S. appointment does not require a 15-w.p.m. code speed such as prescribed in the test for O.R.S. applicants. Applicants must have had at least one year of amateur operating experience. A description of the station for which appointment is sought must be given the S.C.M.. If the arrangement meets modern technique, if the operating experience is adequate, and if the adjustment of the station checked by inspection, or test over the air, is also approved, the A.R.R.L.-O.P.S. appointment may be granted by the S.C.M. and Headquarters so notified at the same time the appointee receives his certificate. The station signal, and its operation too, must meet satisfactory standards. Appointments may be cancelled for inactivity, or failure to meet prescribed qualifications (like all other A.R.R.L. appointments) to make the O.P.S. appointment really stand for something worth while to all voice-operated amateur stations.

A Phone Route Manager, or Phone Activities Manager, may assist the S.C.M. in necessary station inspection or test over-the-air for O.P.S. applicants.

This appointment is for every live-wire operator of a first class phone, working any phone band. Like all other C.D. appointments, one makes application to the Section Communications Manager for O.P.S. appointment, and receives the necessary application forms. A certificate of appointment is issued by the S.C.M. if and when an ap-

pointment is granted. Appointments are issued good for one year, but must be kept in effect by activity and annual endorsement by the S.C.M.

If you have a year or more of radiotelephone operating experience behind you, and a well adjusted voice station of modern technique on the air, this is a cordial invitation to you to get in touch with your Section Manager. Tell him you are interested in the Official Phone Station appointment; ask him for application forms.

THE OFFICIAL RELAY STATION APPOINTMENT

Every radio telegraphing amateur interested in traffic work and worthwhile operating organization activities who can meet the qualifications is eligible for appointment of his station as A.R.R.L. Official Relay Station. Brass-pounders handle traffic because they enjoy such work. There is fun in efficient operation; pride in accomplishing something; opportunity to demonstrate operating proficiency at the same time this is maintained and increased. The potential value of the operator who handles traffic to his community and country is enhanced by his ability, and the readiness of his station and schedules to function in the community interest in case of emergency. Operators with good signals and personal responsibility toward the communications they handle, seek and hold Official Relay Station appointment. Traffic-awareness is often the sign by which mature and experienced amateurs may be distinguished from newcomers to the ranks of hamdon.

1. O.R.S. must be able to transmit and receive at least 15 words per minute.

2. O.R.S. cooperate with each other, and with all amateurs. They must make their stations and operating an example to other amateurs. They must follow standard A.R.R.L. operating practices (use proper message form, flash signals, misc. abbreviations, etc. as set forth herein).

3. Appointees must keep a transmitter and receiver in operative condition at all times. Consistent activity is required to keep appointments in effect and must be demonstrated by regular reports to the S.C.M.

4. O.R.S. must display a high degree of interest in relay traffic activities, nets, schedules, trunk lines, and such.

O.R.S. are the "minute men" of amateur radio—always organized, reporting, active, and holding their equipment in tip-top condition ready for instant service on any communicating problem, large or small. Official Relay Stations are, as the name implies, stations that can be depended on absolutely to see a hard job through. They are ready for every opportunity of service to the public or amateur radio that may come their way, whether a special emergency, test, experiment, or just in the line of ordinary operation. They deliver and relay promptly all traffic that comes their way. O.R.S. appointment is highly significant since it puts the station owner in a special position as respects the opportunities of service. The appointment certificate also has come to be known as the badge that shows an amateur station has "arrived" in the dependable class.

O.R.S. appointees are entitled to wear the distinctive blue A.R.R.L. pin which is similar to the regular membership pin except that it has a blue instead of a black background.

To secure an appointment as Official Relay Station is quite a simple matter if you have the qualifications and a little experience. After building the station, gaining some code speed, and reporting your activities to the S.C.M. as suggested, ask the S.C.M. to furnish you with an application for appointment as Official Relay Station. The S.C.M. will be glad to send you the necessary forms to be filled out and returned to him, and to give you advice on the application as may be necessary. But you must be willing to accept a certain amount of "personal responsibility" in regard to regular reporting each month, and absolute reliability in forwarding and delivering a number of messages regularly through your station. The appointment is one made with advantage to yourself. Fill out an application form as soon as you can qualify!

AN INVITATION

Any A.R.R.L. member who has a station and operator's license and wants to "do things" with his equipment will find it easy and very much worth while to earn an appointment in the Communications Department organization. As has been explained, knowledge and use of certain fundamentals of operating procedure are prerequisite to appointment to the important basic posts in our field organization. Study procedure. Put into practice the things that you read. Originate and relay some traffic **regularly**. Keep a few schedules with other amateurs. Report all your activities on time (the 16th) each month to your S.C.M. whose address is given on page 5, any

QST, to prove your qualifications and interest. Regardless of whether you have yet applied for appointment, a postal to the S.C.M. will give him information to use in his report for QST and boost the standing of your station and Section.

"Being active" in amateur work should not mean sacrificing all the varied interests we have as individuals. A few hours daily spent in *planned* radio work, a postal to our S.C.M. once each month about our activities, and including traffic handled, gives us credit for all we attempt, contact with and news from fellow hams through QST, and adds the touch that makes the difference between organized ham radio and merely haphazard unchronicled work. All reports summed up, make the record for Section and Division. There are many kinds of amateur work; each has its benefits and its leaders. Friendships, DX, technical knowledge, proficiency in construction, ability to operate or communicate, all are important. Interest in a special phase of amateur work is all right if moderation is observed.

The well balanced amateur will not only know how to handle a message, but will have extended the principles of neatness and efficiency to his other station activities. The complete amateur station includes attention to traffic matters as part of its regular routine; it is one essential in building a reputation for "reliability" in amateur work. Communication (general) involves an exchange of thoughts. "Traffic" is merely the exchange of thoughts for ourselves or others using messages as a simple medium to get the thought "exact and concise." The development of systematic habits of work is beneficial and may extend to fields other than amateur radio with profit also. To get full value from amateur organization work you must take part in such work.

Do you get the quarterly bulletins with timely data and special information at other intervals direct from Headquarters, when expeditions, communication tests, co-operations with air corps maneuvers or different government agencies are scheduled? Have you accepted the challenge A.R.R.L. appointment and service offers every active amateur station? Do you *belong*? When the A.R.R.L. is called upon to help in different types of communication work we always turn to the records and files of information on S.C.M. appointees *first* and from our "exclusive" mailing list pick the men for the job. The key stations in one locality, in several Sections, or in the whole of North America (as the scope of the specific undertaking may require) may be reached quickly by bulletin or letter. A most effective amateur organization is ready to go into action at a moment's notice. Opportunities may occur at infrequent intervals or come in quick succession as in recent years. *Are you or would you like to get in on these vital and exceedingly interesting undertakings?* This is an invitation to all qualified member-stations. Get on the air and boost the right sort of activities and operation in your Section. Show your S.C.M. that you mean business. Line up today for the communication work of tomorrow. Accept our invitation *now* if your station is consistent and can qualify.

VI—RADIO COMMUNICATION LAWS

The Radio Act of 1927 provides for the licensing of radio operators by the Secretary of Commerce. Operators' licenses may be suspended by the Secretary of Commerce for a period of not more than two years upon satisfactory proof that the licensee (a) has violated any provision of any Act or treaty (or regulations made under such Act or treaty) binding on the United States which the Secretary of Commerce or the Commission is authorized by this Act to administer; or . . . (d) has transmitted superfluous radio communications or signals or radio communications containing profane or obscene words or language; or (e) has wilfully or maliciously interfered with any other radio communications or signals.

No person, firm, company or corporation within the jurisdiction of the United States shall knowingly utter or transmit, or cause to be uttered or transmitted, any false or fraudulent signals of distress, or communication relating thereto.

All persons who may have knowledge of the text or simply of the existence of radio telegrams, or of any information whatever, obtained by means of the radio service, shall be bound to maintain and insure the secrecy of correspondence.

No person receiving or assisting in receiving any radio communication shall divulge or publish the contents, substance, purport, effect, or meaning thereof except through authorized channels of transmission or reception to any person other than the addressee, his agent, or attorney, or to telephone, telegraph, cable or radio station employed or authorized to forward such radio communication to its destination, or to proper accounting or distributing officers

of the various communicating centers over which the radio communication may be passed, or to the master of a ship under whom he is serving, . . . ; and no person not being authorized by the sender shall intercept any message and divulge or publish the contents, substance, purpose, effect or meaning of such intercepted message to any person; and no person not being entitled thereto shall receive or assist in receiving any radio communication and use the same or any information contained therein for his own benefit or for the benefit of another not entitled thereto:

Provided, That this section shall not apply to the receiving, divulging, publishing, or utilizing the contents of any radio communication broadcasted or transmitted by amateurs or others for the use of the general public or relating to ships in distress.

A penalty of \$500 fine for each and every offense is stipulated (in addition to other penalties provided by law) for conviction of a violation of any provision of the Radio Act or regulations made under that Act or of the provisions of treaties ratified and adhered to by the United States.

FEDERAL RADIO COMMISSION

Rules and Regulations Governing Amateur Radio Stations

1. Each application for an instrument of authorization shall be made in writing on the appropriate form prescribed by the Commission for the purpose. Separate application shall be filed for each instrument of authorization. The required forms except as provided in paragraph 408 for amateur applicants, may be obtained from the Commission or from the office of any inspector. For a list of such offices and related geographical districts, see paragraph 30.

2. Each application for amateur facilities shall be filed in accordance with the following instructions:

(1) Applications for amateur station and or operators' licenses from applicants residing within 125 miles of Washington, D. C., a radio district office of the Commission, or an examining city (see par. 30): One copy to the Inspector-in-Charge of the Radio District in which the applicant resides.

(2) Applications for amateur station and or operators' licenses from applicants residing more than 125 miles from Washington, D. C., a radio district office of the Commission, or an examining city (see par. 30): One copy direct to the Federal Radio Commission, Washington, D. C., in accordance with the instructions specifically set forth on the application form.

14. Each application for new license, where a construction permit is not prerequisite thereto, shall be filed at least 60 days prior to the contemplated operation of the station.

16. Unless otherwise directed by the Commission, each application for renewal of license shall be filed at least 60 days prior to the expiration date of the license sought to be renewed.

20. The transfer of a radio station license, or the rights granted thereunder, without consent of the Commission shall be sufficient ground for the revocation of such license or denial of any application for its renewal. Amateur station licenses and call signals are not transferable.

22. The Commission may grant special authority to the licensee of an existing station authorizing the operation of such station for a limited time in a manner, to an extent, or for a service other or beyond that authorized in the license.

24. Any licensee receiving official notice of a violation of Federal laws, the Commission's rules and regulations, or the terms and conditions of a license, shall within three days from such receipt send a written reply direct to the Federal Radio Commission at Washington, D. C. The answer to each notice shall be complete in itself and shall not be abbreviated by reference to other communications or answers to other notices. If the notice relates to some violation that may be due to the physical or electrical characteristics of the transmitting apparatus, the answer shall state fully what steps, if any, are taken to prevent future violations, and if any new apparatus is to be installed, the date such apparatus was ordered, the name of the manufacturer, and promised date of delivery.

26. If the notice of violation relates to some lack of attention or improper operation of the transmitter, the name and license number of the operator in charge shall be given.

27. All station licenses will be issued so as to expire at the hour of 3 a.m., eastern standard time.

(e) The licenses for amateur stations will be issued for a normal license period of three years from the date of expiration of old license or the date of granting a new license or modification of a license.

28. In so far as practicable, call signals of radio stations will be designated in alphabetical order from groups available for assignment, depending upon the class of station to be licensed. Because of the large number of amateur stations, calls will be assigned thereto in regular order and requests for particular calls will not be considered.

29. Call signals of stations will be deleted in each of the following cases:

(a) Where an existing instrument of authorization has expired and no application for renewal or extension thereof has been filed.

(b) Where a license has been revoked.

(c) Where a license is surrendered or cancelled.

(d) Other cause, such as death, loss of citizenship, or adjudged insanity of the station licensee. Such occurrences coming to notice should be reported to the Commission, preferably accompanied by the station license for cancellation, if available.

30 (a) The following is a list of the cities where examinations will be held for radio operators' licenses in addition to Washington, D.C., and the radio district offices of the Commission. Other cities may also be designated from time to time for the purpose of conducting commercial operators' examinations only: (See pars. 2, 404, and 408.)

Schenectady, N. Y.	St. Louis, Mo.
Winston-Salem, N. C.	Pittsburgh, Pa.
Nashville, Tenn.	Cleveland, Ohio
San Antonio, Tex.	Cincinnati, Ohio
Oklahoma City, Okla.	Columbus, Ohio
Des Moines, Iowa	

188. The term "station" means all of the radio-transmitting apparatus used at a particular location for one class of service and operated under a single instrument of authorization. In the case of every station other than broadcast, the location of the station shall be considered as that of the radiating antenna.

192. The term "portable station" means a station so constructed that it may conveniently be moved about from place to place for communication and that is in fact so moved about from time to time, but not used while in motion.

(a) The term "portable-mobile station" means a station so constructed that it may conveniently be moved from one mobile unit to another for communication, and that is, in fact, so moved about from time to time and ordinarily used while in motion.

204. Allocations of bands of frequencies to services, such as mobile, fixed, broadcast, amateur, etc., are set forth in Article 5 of the General Regulations annexed to the International Radiotelegraph Convention and in the North American Radio Agreement. These allocations will be adhered to in all assignments to stations capable of causing international interference.

207. Licensees shall use radio transmitters, the emissions of which do not cause interference, outside the authorized band, that is detrimental to traffic and programs of other authorized stations.

210. Radio communications or signals relating to ships or aircraft in distress shall be given absolute priority. Upon notice from any station, Government or commercial, all other transmission shall cease on such frequencies and for such time as may, in any way, interfere with the reception of distress signals or related traffic.

213. One or more licensed operators, of grade specified by these regulations, shall be on duty at the place where the transmitting apparatus of each station is located and whenever it is being operated; provided, however, that for a station licensed for service other than broadcasting, if remote control is used, the Commission may modify the foregoing requirement upon proper application and showing being made so that such operator or operators may be on duty at the control station in lieu of the place where the transmitting apparatus is located. Such modification shall be subject to the following conditions:

(a) The transmitter shall be capable of operation and shall be operated in accordance with the terms of the station license.

(b) The transmitter shall be monitored from the control station with apparatus that will permit placing the trans-

mitter in an inoperative condition in the event there is a deviation from the terms of the license, in which case the radiation of the transmitter shall be suspended immediately until corrective measures are effectively applied to place the transmitter in proper condition for operation in accordance with the terms of the station license.

(c) The transmitter shall be so located or housed that it is not accessible to other than duly authorized persons.

214. The person manipulating the transmitting key of a manually operated radiotelegraph mobile or amateur transmitting station shall be a regularly licensed operator. The licenses of other stations operated under the constant supervision of duly licensed operators may permit any person or persons, whether licensed or not, to transmit by voice or otherwise, in accordance with the types of emission specified by the respective licenses.

* * *

220. Licenses of stations other than broadcast stations are authorized to carry on such routine tests as may be required for the proper maintenance of the stations, provided, however, that these tests shall be so conducted as not to cause interference with the service of other stations.

221. The original of each station license, except amateur, portable and portable-mobile stations shall be posted by the licensee in a conspicuous place in the room in which the transmitter is located. In the case of amateur, portable, and portable-mobile stations the original license, or a photostat copy thereof, shall be similarly posted or kept in the personal possession of the operator on duty.

(a) The original license of each station operator, except amateur and aircraft radio station operators, and operators of portable and portable-mobile stations, shall be posted in a conspicuous place in the room occupied by such operator while on duty. In the case of an amateur or aircraft radio operator, and operators of portable or portable-mobile stations, the original operator's license shall be similarly posted or kept in his personal possession and available for inspection at all times while the operator is on duty.

(b) When an operator's license cannot be posted because it has been mailed to an office of the Federal Radio Commission for endorsement or other change, such operator may continue to operate stations in accordance with the class of license held, for a period not to exceed sixty days, but in no case beyond the date of expiration of the license.

* * *

361. The term "amateur service" means a radio service carried on by amateur stations.

362. The term "amateur station" means a station used by an "amateur," that is, a duly authorized person interested in radio technique solely with a personal aim and without pecuniary interest.

364. The term "amateur radio operator" means a person holding a valid license issued by the Federal Radio Commission who is authorized under the regulations to operate amateur radio stations.

365. The term "amateur radiocommunication" means radiocommunication between amateur radio stations solely with a personal aim and without pecuniary interest.

366. An amateur station license may be issued only to a licensed amateur radio operator who has made a satisfactory showing of ownership or control of proper transmitting apparatus; provided, however, that in the case of a military or naval reserve radio station located in approved public quarters and established for training purposes, but not operated by the United States Government, a station license may be issued to the person in charge of such station who may not possess an amateur operator's license.

(a) An amateur operator's license may be granted to a person who does not desire an amateur station license, provided such applicant waives his right to apply for an amateur station license for ninety days subsequent to the date of application for operator's license.

367. Amateur radio station licenses shall not be issued to corporations, associations, or other organizations; provided, however, that in the case of a bona fide amateur radio society, a station license may be issued to a licensed amateur radio operator as trustee for such society.

368. Licenses for amateur mobile stations and portable-mobile stations will not be granted, except for portable-mobile stations located aboard aircraft (see pars. 384 and 387) and capable of operating in the band of frequencies 56,000-60,000 kilocycles and 400,000-401,000 kilocycles only.

370. Amateur stations shall be used only for amateur service, except that in emergencies or for testing purposes they may be used also for communication with commercial or Government radio stations. In addition, amateur stations may communicate with any mobile radio station which is licensed by the Commission to communicate with amateur stations, and with stations of expeditions which

may also be authorized to communicate with amateur stations.

371. Amateur stations shall not be used for broadcasting any form of entertainment.

372. Amateur stations may be used for the transmission of music for test purposes of short duration in connection with the development of experimental radiotelephone equipment.

373. Amateur radio stations shall not be used to transmit or receive messages for hire, nor for communication for material compensation, direct or indirect, paid or promised.

374. The following bands of frequencies are allocated exclusively for use by amateur stations:

1,715 to 2,000 kc.	28,000 to 30,000 kc.
3 500 to 4,000 "	56,000 to 60,000 "
7,000 to 7,300 "	400,000 to 401,000 "
14,000 to 14,400 "	

375. All bands of frequencies so assigned may be used for radiotelegraphy, type A-1 emission. Type A-2 emission may be used in the following bands of frequencies only:

28 000 to 30,000 kc.
56,000 to 60,000 "
400,000 to 401,000 "

376. The following bands of frequencies are allocated for use by amateur stations using radiotelephony, type A-3 emission:

1,800 to 2,000 kc.	56,000 to 60,000 kc.
28,000 to 28,500 "	400,000 to 401,000 "

377. Provided the stations shall be operated by a person who holds an amateur operator's license endorsed for class A privileges, an amateur radio station may use radiotelephony, type A-3 emission, in the following additional bands of frequencies:

3,900 to 4,000 kc.	14,150 to 14,250 kc.
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378. The following bands of frequencies are allocated for use by amateur stations for television, facsimile, and picture transmission:

1,715 to 2,000 kilocycles
56,000 to 60,000 kilocycles

379. Transmissions by an amateur station may be on any frequency within an amateur band above assigned.

380. An amateur radio station shall not be located upon premises controlled by an alien.

381. The frequency of the waves emitted by amateur radio stations shall be as constant and as free from harmonics as the state of the art permits. For this purpose, amateur transmitters shall employ circuits loosely coupled to the radiating system or devices that will produce equivalent effects to minimize keying impacts and harmonics. Conductive coupling to the radiating antenna, even though loose, is not permitted, but this restriction does not prohibit the use of transmission-line feeder systems.

382. Licensees of amateur stations using frequencies below 14,400 kilocycles, shall use adequately filtered direct-current power supply for the transmitting equipment, to minimize frequency modulation and to prevent the emission of broad signals.

383. Licensees of amateur stations are authorized to use a maximum power input of one kilowatt to the plate circuit of the final amplifier stage of an oscillator-amplifier transmitter or to the plate circuit of an oscillator transmitter.

384. An operator of an amateur station shall transmit its assigned call at least once during each fifteen minutes of operation and at the end of each transmission. In addition, an operator of an amateur portable radiotelegraph station shall transmit immediately after the call of the station, the Break Sign (BT) followed by the number of the amateur call area in which the portable amateur station is operating; as for example:

Example 1. Portable amateur station operating in the third amateur call area calls a fixed amateur station: W1ABC W1ABC W1ABC DE W2DEF W2DEF W2DEF BT3 BT3 BT3 K

Example 2. Fixed amateur station answers the portable amateur station: W2DEF W2DEF W2DEF DE W1ABC W1ABC W1ABC K

Example 3. Portable amateur station calls a portable amateur station: W3GHI W3GHI W3GHI DE W4JLK W4JLK W4JLK BT4 BT4 BT4 K

If telephony is used the call sign of the station shall be followed by an announcement of the amateur call area in which the portable station is operating.

385. In the event that the operation of an amateur radio station causes general interference to the reception of broadcast programs with receivers of modern design, that amateur station shall not operate during the hours from 8 o'clock p. m. to 10:30 p. m., local time, and on Sundays from 10:30 a. m. until 1 p. m., local time, upon such frequency or frequencies as cause such interference.

386. Each licensee of an amateur station shall keep an

accurate log of station operation, in which shall be recorded

- (a) The date and time of each transmission.
- (b) The name of the person manipulating the transmitting apparatus of a radiotelegraph transmitter or the name of the person operating a transmitter of any other type with statement as to nature of transmission.
- (c) The station called.
- (d) The input power to the oscillator, or to the final amplifier stage where an oscillator-amplifier transmitter is employed.
- (e) The frequency band used.
- (f) The location of each transmission by a portable station.

This information shall be made available upon request by authorized Government representatives.

387. The licensee of an amateur station may operate a portable amateur station, or a portable-mobile station located aboard an aircraft in accordance with Rule 368, provided advance notice of all locations in which the station will be operated is given to the Inspector-in-Charge of the district in which the station is to be operated. Such notices shall be made by letter or other means prior to any operation contemplated and shall state the station call, name of licensee, the dates of proposed operation and the approximate locations, as by city, town or county. An amateur station operating under this rule shall not be operated during any period exceeding 30 days without giving further notice to the Inspector-in-Charge of the radio inspection district in which the station will be operated.

* * *

400. A amateur station may be operated only by a person who holds a valid amateur operator's license, and then only to the extent provided for by the class of privileges for which the operator's license is endorsed.

401. Amateur operators' licenses are valid only for the operation of licensed amateur stations, provided, however, any person holding a valid radio operator's license of any class may operate stations in the experimental service as licensed, and operating on, frequencies above 30,000 cycles!

402. Amateur station licenses and/or amateur operator licenses may, upon proper application, be modified or renewed provided: (1) the applicant has used his station to communicate by radio with at least three other amateur stations during the three-month period prior to the date of submitting the application, or (2) in the case of an applicant possessing only an operator's license, that he has similarly communicated with amateur stations during the same period. Proof of such communication must be included in the application by stating the call letters of the stations with which communication was carried on and the time and date of each communication. Lacking such proof, the applicant will be ineligible for a license for a period of ninety days.

403. There shall be but one main class of amateur operator's license to be known as "amateur class" but each such license shall be limited in scope by the signature of the examining officer opposite the particular class or classes of privileges which apply, as follows:

Class A. Unlimited privileges.

Class B. Unlimited radiotelegraph privileges. Limited in the operation of radiotelephone amateur stations to the following bands of frequencies: 1800 to 2000 kilocycles; 28,000 to 28,500 kilocycles; 56,000 to 60,000 kilocycles; 140,000 to 401,000 kilocycles.

Class C. Same as Class B privileges, except that the Commission may require the licensee to appear at an examining point for a supervisory written examination and practical code test during the license term. Failing to appear for examination when directed to do so, or failing to pass the supervisory examination, the license held will be cancelled and the holder thereof will not be issued another license of the Class C privileges.

404. The scope of examinations for amateur operators' licenses shall be based on the class of privileges the applicant desires, as follows:

Class A. To be eligible for examination for the Class A amateur operator's privileges, the applicant must have been a licensed amateur operator for at least one year and must personally appear at one of the Commission's examining offices, and take the supervisory written examination and code test. (See Rules 2 (2) a, 30 and 408.) Examinations will be conducted at Washington, D.C., on Thursday of each week, and at each radio district office of the Commission on the days designated by the Inspector-in-Charge of such offices. In addition, examinations will be held quarterly in the examining cities listed in Rule 30 on the days to be designated by the Inspector-in-Charge of the radio district in which the examining city is situated. The examination will include the following:

- (a) Applicant's ability to send and receive in plain lan-

guage messages in the Continental Morse Code (5 characters to the word) at a speed of not less than 10 words per minute.

- (b) Technical knowledge of amateur radio apparatus, both telegraph and telephone.

- (c) Knowledge of the provisions of the Radio Act of 1927 as amended, subsequent acts, treaties, and rules and regulations of the Federal Radio Commission, affecting amateur licensees.

Class B. The requirements for Class B amateur operator's privileges are similar to those for the Class A, except that no experience is required and the questions on radio-telephone apparatus are not so comprehensive in scope.

Class C. The requirements for Class C amateur operator's privileges shall be the same as for the Class B except the examination will be given by mail. To be eligible for this class of privileges, an applicant must reside more than 125 miles (airline) from Washington D.C., a radio district office of the Commission, or an examining city. (See pars. 2 h (2), 30, and 408.)

405. An applicant for any class of amateur operator's privileges who has held a radiotelephone second class operator's license or higher, or an equivalent commercial grade license, or who has been accorded unlimited amateur radiotelephone privileges, within five years of the date of application may only be required to submit additional proof as to code ability and/or knowledge of the laws, treaties, and regulations affecting amateur licensees.

406. An applicant for the Class B or C amateur operator's privileges who has held a radiotelegraph third class operator's license or higher, or an equivalent commercial grade license, or who has held an amateur extra first class license within five years of the date of application may be accorded a license by passing an examination in laws, treaties, and regulations affecting amateur licensees.

407. An applicant for the Class C amateur operator's privileges must have his application signed in the presence of a notary public by a licensed radiotelegraph operator other than an amateur operator possessing only the third class privileges or former temporary amateur class license, attesting to the applicant's ability to send and receive messages in plain language in the Continental Morse Code (5 characters to the word) at a speed of not less than ten words per minute. The code certification may be omitted if the applicant can show proof of code ability in accordance with the preceding rule.

408. Forms for amateur station and/or operator license shall be obtained by calling or writing to the Inspector-in-Charge of the radio inspection district in which the applicant resides. Upon completion of the forms they shall be sent back to the same office where the final arrangements will be made for the examination: *Provided*, however, in the case of applicants for the Class C amateur operator's privileges, the forms and examination papers when completed shall be mailed direct to the Federal Radio Commission, Washington, D.C.

409. The percentage that must be obtained as a passing mark in each examination is 75 out of a possible 100. No credit will be given in the grading of papers for experience or knowledge of the code. If an applicant answers only the questions relating to laws, treaties, and regulations by reason of his right to omit other subjects because of having held a recognized class of license, a percentage of 75 out of a possible 100 must be obtained on the questions answered.

410. An amateur station license shall be issued so as to run concurrently with the amateur operator's license and both licenses shall run for three years from the date of issuance. If either the station license or the operator's license is modified during the license term, both licenses shall be reissued for the full three-year term, provided, however, if an operator's license is modified only with respect to the class of operator's privileges, the old license may be endorsed in which case the expiration date will not change.

411. No applicant who fails to qualify for an operator's license will be reexamined within ninety days from the date of the previous examination.

412. Any attempt to obtain an operator's license by fraudulent means or by attempting to impersonate another, or copying or divulging questions used in examinations, will constitute a violation of the regulations for which the licensee may suffer suspension of license or debarment from further examination for a period not exceeding two years at the discretion of the licensing authority.

413. Any licensee applying for a duplicate license to replace an original which has been lost, mutilated, or destroyed, shall submit an affidavit to the Commission attesting to the facts regarding the manner in which the original was lost. Duplicates will be issued in exact conformity with the original, and will be marked "duplicate" on the face of the license.

mitter in an inoperative condition in the event there is a deviation from the terms of the license, in which case the radiation of the transmitter shall be suspended immediately until corrective measures are effectively applied to place the transmitter in proper condition for operation in accordance with the terms of the station license.

(c) The transmitter shall be so located or housed that it is not accessible to other than duly authorized persons.

214. The person manipulating the transmitting key of a manually operated radiotelegraph mobile or amateur transmitting station shall be a regularly licensed operator. The licenses of other stations operated under the constant supervision of duly licensed operators may permit any person or persons, whether licensed or not, to transmit by voice or otherwise, in accordance with the types of emission specified by the respective licenses.

* * *

220. Licenses of stations other than broadcast stations are authorized to carry on such routine tests as may be required for the proper maintenance of the stations, provided, however, that these tests shall be so conducted as not to cause interference with the service of other stations.

221. The original of each station license, except amateur, portable and portable-mobile stations shall be posted by the licensee in a conspicuous place in the room in which the transmitter is located. In the case of amateur, portable, and portable-mobile stations the original license, or a photostat copy thereof, shall be similarly posted or kept in the personal possession of the operator on duty.

(a) The original license of each station operator, except amateur and aircraft radio station operators, and operators of portable and portable-mobile stations, shall be posted in a conspicuous place in the room occupied by such operator while on duty. In the case of an amateur or aircraft radio operator, and operators of portable or portable-mobile stations, the original operator's license shall be similarly posted or kept in his personal possession and available for inspection at all times while the operator is on duty.

(b) When an operator's license cannot be posted because it has been mailed to an office of the Federal Radio Commission for endorsement or other change, such operator may continue to operate stations in accordance with the class of license held, for a period not to exceed sixty days, but in no case beyond the date of expiration of the license.

* * *

361. The term "amateur service" means a radio service carried on by amateur stations.

362. The term "amateur station" means a station used by an "amateur," that is, a duly authorized person interested in radio technique solely with a personal aim and without pecuniary interest.

364. The term "amateur radio operator" means a person holding a valid license issued by the Federal Radio Commission who is authorized under the regulations to operate amateur radio stations.

365. The term "amateur radiocommunication" means radiocommunication between amateur radio stations solely with a personal aim and without pecuniary interest.

366. An amateur station license may be issued only to a licensed amateur radio operator who has made a satisfactory showing of ownership or control of proper transmitting apparatus; provided, however, that in the case of a military or naval reserve radio station located in approved public quarters and established for training purposes, but not operated by the United States Government, a station license may be issued to the person in charge of such station who may not possess an amateur operator's license.

(a) An amateur operator's license may be granted to a person who does not desire an amateur station license, provided such applicant waives his right to apply for an amateur station license for ninety days subsequent to the date of application for operator's license.

367. Amateur radio station licenses shall not be issued to corporations, associations, or other organizations; provided, however, that in the case of a bona fide amateur radio society, a station license may be issued to a licensed amateur radio operator as trustee for such society.

368. Licenses for amateur mobile stations and portable-mobile stations will not be granted, except for portable-mobile stations located aboard aircraft (see pars. 384 and 387) and capable of operating in the band of frequencies 56,000-60,000 kilocycles and 400,000-401,000 kilocycles only.

370. Amateur stations shall be used only for amateur service, except that in emergencies or for testing purposes they may be used also for communication with commercial or Government radio stations. In addition, amateur stations may communicate with any mobile radio station which is licensed by the Commission to communicate with amateur stations, and with stations of expeditions which

may also be authorized to communicate with amateur stations.

371. Amateur stations shall not be used for broadcasting any form of entertainment.

372. Amateur stations may be used for the transmission of music for test purposes of short duration in connection with the development of experimental radiotelephone equipment.

373. Amateur radio stations shall not be used to transmit or receive messages for hire, nor for communication for material compensation, direct or indirect, paid or promised.

374. The following bands of frequencies are allocated exclusively for use by amateur stations:

1,715 to 2,000 kc.	28,000 to 30,000 kc.
3,500 to 4,000 "	56,000 to 60,000 "
7,000 to 7,300 "	400,000 to 401,000 "
14,000 to 14,400 "	

375. All bands of frequencies so assigned may be used for radiotelegraphy, type A-1 emission. Type A-2 emission may be used in the following bands of frequencies only:

28,000 to 30,000 kc.
56,000 to 60,000 "
400,000 to 401,000 "

376. The following bands of frequencies are allocated for use by amateur stations using radiotelephony, type A-3 emission:

1,800 to 2,000 kc.	56,000 to 60,000 kc.
28,000 to 28,500 "	400,000 to 401,000 "

377. Provided the stations shall be operated by a person who holds an amateur operator's license endorsed for class A privileges, an amateur radio station may use radiotelephony, type A-3 emission, in the following additional bands of frequencies:

3,900 to 4,000 kc.	14,150 to 14,250 kc.
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378. The following bands of frequencies are allocated for use by amateur stations for television, facsimile, and picture transmission:

1,715 to 2,000 kilocycles
56,000 to 60,000 kilocycles

379. Transmissions by an amateur station may be on any frequency within an amateur band above assigned.

380. An amateur radio station shall not be located upon premises controlled by an alien.

381. The frequency of the waves emitted by amateur radio stations shall be as constant and as free from harmonics as the state of the art permits. For this purpose, amateur transmitters shall employ circuits loosely coupled to the radiating system or devices that will produce equivalent effects to minimize keying impacts and harmonics. Conductive coupling to the radiating antenna, even though loose, is not permitted, but this restriction does not prohibit the use of transmission-line feeder systems.

382. Licensees of amateur stations using frequencies below 14,400 kilocycles, shall use adequately filtered direct-current power supply for the transmitting equipment, to minimize frequency modulation and to prevent the emission of broad signals.

383. Licensees of amateur stations are authorized to use a maximum power input of one kilowatt to the plate circuit of the final amplifier stage of an oscillator-amplifier transmitter or to the plate circuit of an oscillator transmitter.

384. An operator of an amateur station shall transmit its assigned call at least once during each fifteen minutes of operation and at the end of each transmission. In addition, an operator of an amateur portable radiotelegraph station shall transmit immediately after the call of the station, the Break Sign (BT) followed by the number of the amateur call area in which the portable amateur station is operating; as for example:

Example 1. Portable amateur station operating in the third amateur call area calls a fixed amateur station: W1ABC W1ABC W1ABC DE W2DEF W2DEF W2DEF BT3 BT3 BT3 K

Example 2. Fixed amateur station answers the portable amateur station: W2DEF W2DEF W2DEF DE W1ABC W1ABC W1ABC K

Example 3. Portable amateur station calls a portable amateur station: W3GHI W3GHI W3GHI DE W4JLK W4JLK W4JLK BT4 BT4 BT4 K

If telephony is used the call sign of the station shall be followed by an announcement of the amateur call area in which the portable station is operating.

385. In the event that the operation of an amateur radio station causes general interference to the reception of broadcast programs with receivers of modern design, that amateur station shall not operate during the hours from 8 o'clock p.m. to 10:30 p.m., local time, and on Sundays from 10:30 a.m. until 1 p.m., local time, upon such frequency or frequencies as cause such interference.

386. Each licensee of an amateur station shall keep an

accurate log of station operation, in which shall be recorded:

- (a) The date and time of each transmission.
- (b) The name of the person manipulating the transmitting key of a radiotelegraph transmitter or the name of the person operating a transmitter of any other type with statement as to nature of transmission.
- (c) The station called.
- (d) The input power to the oscillator, or to the final amplifier stage where an oscillator-amplifier transmitter is employed.
- (e) The frequency band used.
- (f) The location of each transmission by a portable station.

This information shall be made available upon request by authorized Government representatives.

387. The licensee of an amateur station may operate a portable amateur station, or a portable-mobile station located aboard an aircraft in accordance with Rule 368, provided advance notice of all locations in which the station will be operated is given to the Inspector-in-Charge of the district in which the station is to be operated. Such notices shall be made by letter or other means prior to any operation contemplated and shall state the station call, name of licensee, the dates of proposed operation and the approximate locations, as by city, town or county. An amateur station operating under this rule shall not be operated during any period exceeding 30 days without giving further notice to the Inspector-in-Charge of the radio inspection district in which the station will be operated.

* * *

400. An amateur station may be operated only by a person holding a valid amateur operator's license, and then only to the extent provided for by the class of privileges for which the operator's license is endorsed.

401. Amateur operators' licenses are valid only for the operation of licensed amateur stations, provided, however, any person holding a valid radio operator's license of any class may operate stations in the experimental service licensed for, and operating on, frequencies above 30,000 kilocycles.

402. Amateur station licenses and/or amateur operator licenses may, upon proper application, be modified or renewed provided: (1) the applicant has used his station to communicate by radio with at least three other amateur stations during the three-month period prior to the date of submitting the application, or (2) in the case of an applicant possessing only an operator's license, that he has similarly communicated with amateur stations during the same period. Proof of such communication must be included in the application by stating the call letters of the stations with which communication was carried on and the time and date of each communication. Lacking such proof, the applicant will be ineligible for a license for a period of ninety days.

403. There shall be but one main class of amateur operator's license to be known as "amateur class" but each such license shall be limited in scope by the signature of the examining officer opposite the particular class or classes of privileges which apply, as follows:

Class A. Unlimited privileges.

Class B. Unlimited radiotelegraph privileges. Limited in the operation of radiotelephone amateur stations to the following bands of frequencies: 1800 to 2000 kilocycles; 28,000 to 28,500 kilocycles; 56,000 to 60,000 kilocycles; 400,000 to 401,000 kilocycles.

Class C. Same as Class B privileges, except that the Commission may require the licensee to appear at an examining point for a supervisory written examination and practical code test during the license term. Failing to appear for examination when directed to do so, or failing to pass the supervisory examination, the license held will be cancelled and the holder thereof will not be issued another license of the Class C privileges.

404. The scope of examinations for amateur operators' licenses shall be based on the class of privileges the applicant desires, as follows:

Class A. To be eligible for examination for the Class A amateur operator's privileges, the applicant must have been a licensed amateur operator for at least one year and must personally appear at one of the Commission's examining offices, and take the supervisory written examination and code test. (See Rules 2 (2) a, 30 and 408.) Examinations will be conducted at Washington, D.C., on Thursday of each week, and at each radio district office of the Commission on the days designated by the Inspector-in-Charge of such offices. In addition, examinations will be held quarterly in the examining cities listed in Rule 30 on the dates to be designated by the Inspector-in-Charge of the radio district in which the examining city is situated. The examination will include the following:

- (a) Applicant's ability to send and receive in plain lan-

guage messages in the Continental Morse Code (5 characters to the word) at a speed of not less than 10 words per minute.

- (b) Technical knowledge of amateur radio apparatus, both telegraph and telephone.

- (c) Knowledge of the provisions of the Radio Act of 1927 as amended, subsequent acts, treaties, and rules and regulations of the Federal Radio Commission, affecting amateur licensees.

Class B. The requirements for Class B amateur operator's privileges are similar to those for the Class A, except that no experience is required and the questions on radio-telephone apparatus are not so comprehensive in scope.

Class C. The requirements for Class C amateur operator's privileges shall be the same as for the Class B except the examination will be given by mail. To be eligible for this class of privileges, an applicant must reside more than 125 miles (airline) from Washington D.C., a radio district office of the Commission, or an examining city. (See pars. 2 h (2), 30, and 408.)

406. An applicant for any class of amateur operator's privileges who has held a radiotelephone second class operator's license or higher, or an equivalent commercial grade license, or who has been accorded unlimited amateur radiotelephone privileges, within five years of the date of application may only be required to submit additional proof as to code ability and/or knowledge of the laws, treaties, and regulations affecting amateur licensees.

406. An applicant for the Class B or C amateur operator's privileges who has held a radiotelegraph third class operator's license or higher, or an equivalent commercial grade license, or who has held an amateur extra first class license within five years of the date of application may be accorded a license by passing an examination in laws, treaties, and regulations affecting amateur licensees.

407. An applicant for the Class C amateur operator's privileges must have his application signed in the presence of a notary public by a licensed radiotelegraph operator other than an amateur operator possessing only the third class privileges or former temporary amateur class license, attesting to the applicant's ability to send and receive messages in plain language in the Continental Morse Code (5 characters to the word) at a speed of not less than ten words per minute. The code certification may be omitted if the applicant can show proof of code ability in accordance with the preceding rule.

408. Forms for amateur station and/or operator license shall be obtained by calling or writing to the Inspector-in-Charge of the radio inspection district in which the applicant resides. Upon completion of the forms they shall be sent back to the same office where the final arrangements will be made for the examination: *Provided*, however, in the case of applicants for the Class C amateur operator's privileges, the forms and examination papers when completed shall be mailed direct to the Federal Radio Commission, Washington, D.C.

409. The percentage that must be obtained as a passing mark in each examination is 75 out of a possible 100. No credit will be given in the grading of papers for experience or knowledge of the code. If an applicant answers only the questions relating to laws, treaties, and regulations by reason of his right to omit other subjects because of having held a recognized class of license, a percentage of 75 out of a possible 100 must be obtained on the questions answered.

410. An amateur station license shall be issued so as to run concurrently with the amateur operator's license and both licenses shall run for three years from the date of issuance. If either the station license or the operator's license is modified during the license term, both licenses shall be reissued for the full three-year term, provided, however, if an operator's license is modified only with respect to the class of operator's privileges, the old license may be endorsed in which case the expiration date will not change.

411. No applicant who fails to qualify for an operator's license will be reexamined within ninety days from the date of the previous examination.

412. Any attempt to obtain an operator's license by fraudulent means or by attempting to impersonate another, or copying or divulging questions used in examinations, will constitute a violation of the regulations for which the licensee may suffer suspension of license or debarment from further examination for a period not exceeding two years at the discretion of the licensing authority.

413. Any licensee applying for a duplicate license to replace an original which has been lost, mutilated, or destroyed, shall submit an affidavit to the Commission attesting to the facts regarding the manner in which the original was lost. Duplicates will be issued in exact conformity with the original, and will be marked "duplicate" on the face of the license.

mitter in an inoperative condition in the event there is a deviation from the terms of the license, in which case the radiation of the transmitter shall be suspended immediately until corrective measures are effectively applied to place the transmitter in proper condition for operation in accordance with the terms of the station license.

(c) The transmitter shall be so located or housed that it is not accessible to other than duly authorized persons.

214. The person manipulating the transmitting key of a manually operated radiotelegraph mobile or amateur transmitting station shall be a regularly licensed operator. The licenses of other stations operated under the constant supervision of duly licensed operators may permit any person or persons, whether licensed or not, to transmit by voice or otherwise, in accordance with the types of emission specified by the respective licenses.

* * *

220. Licenses of stations other than broadcast stations are authorized to carry on such routine tests as may be required for the proper maintenance of the stations, provided, however, that these tests shall be so conducted as not to cause interference with the service of other stations.

221. The original of each station license, except amateur, portable and portable-mobile stations shall be posted by the licensee in a conspicuous place in the room in which the transmitter is located. In the case of amateur, portable, and portable-mobile stations the original license, or a photostat copy thereof, shall be similarly posted or kept in the personal possession of the operator on duty.

(a) The original license of each station operator, except amateur and aircraft radio station operators, and operators of portable and portable-mobile stations, shall be posted in a conspicuous place in the room occupied by such operator while on duty. In the case of an amateur or aircraft radio operator, and operators of portable or portable-mobile stations, the original operator's license shall be similarly posted or kept in his personal possession and available for inspection at all times while the operator is on duty.

(b) When an operator's license cannot be posted because it has been mailed to an office of the Federal Radio Commission for endorsement or other change, such operator may continue to operate stations in accordance with the class of license held, for a period not to exceed sixty days, but in no case beyond the date of expiration of the license.

* * *

361. The term "amateur service" means a radio service carried on by amateur stations.

362. The term "amateur station" means a station used by an "amateur," that is, a duly authorized person interested in radio technique solely with a personal aim and without pecuniary interest.

364. The term "amateur radio operator" means a person holding a valid license issued by the Federal Radio Commission who is authorized under the regulations to operate amateur radio stations.

365. The term "amateur radiocommunication" means radiocommunication between amateur radio stations solely with a personal aim and without pecuniary interest.

366. An amateur station license may be issued only to a licensed amateur radio operator who has made a satisfactory showing of ownership or control of proper transmitting apparatus; provided, however, that in the case of a military or naval reserve radio station located in approved public quarters and established for training purposes, but not operated by the United States Government, a station license may be issued to the person in charge of such station who may not possess an amateur operator's license.

(a) An amateur operator's license may be granted to a person who does not desire an amateur station license, provided such applicant waives his right to apply for an amateur station license for ninety days subsequent to the date of application for operator's license.

367. Amateur radio station licenses shall not be issued to corporations, associations, or other organizations; provided, however, that in the case of a bona fide amateur radio society, a station license may be issued to a licensed amateur radio operator as trustee for such society.

368. Licenses for amateur mobile stations and portable-mobile stations will not be granted, except for portable-mobile stations located aboard aircraft (see pars. 384 and 387) and capable of operating in the band of frequencies 56,000-60,000 kilocycles and 400,000-401,000 kilocycles only.

370. Amateur stations shall be used only for amateur service, except that in emergencies or for testing purposes they may be used also for communication with commercial or Government radio stations. In addition, amateur stations may communicate with any mobile radio station which is licensed by the Commission to communicate with amateur stations, and with stations of expeditions which

may also be authorized to communicate with amateur stations.

371. Amateur stations shall not be used for broadcasting any form of entertainment.

372. Amateur stations may be used for the transmission of music for test purposes of short duration in connection with the development of experimental radiotelephone equipment.

373. Amateur radio stations shall not be used to transmit or receive messages for hire, nor for communication for material compensation, direct or indirect, paid or promised.

374. The following bands of frequencies are allocated exclusively for use by amateur stations:

1,715 to 2,000 kc.	28,000 to 30,000 kc.
3,500 to 4,000 "	56,000 to 60,000 "
7,000 to 7,300 "	400,000 to 401,000 "
14,000 to 14,400 "	

375. All bands of frequencies so assigned may be used for radiotelegraphy, type A-1 emission. Type A-2 emission may be used in the following bands of frequencies only:

28,000 to 30,000 kc.
56,000 to 60,000 "
400,000 to 401,000 "

376. The following bands of frequencies are allocated for use by amateur stations using radiotelephony, type A-3 emission:

1,800 to 2,000 kc.	56,000 to 60,000 kc.
28,000 to 28,500 "	400,000 to 401,000 "

377. Provided the stations shall be operated by a person who holds an amateur operator's license endorsed for class A privileges, an amateur radio station may use radiotelephony, type A-3 emission, in the following additional bands of frequencies:

3,900 to 4,000 kc.	14,150 to 14,250 kc.
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378. The following bands of frequencies are allocated for use by amateur stations for television, facsimile, and picture transmission:

1,715 to 2,000 kilocycles
56,000 to 60,000 kilocycles

379. Transmissions by an amateur station may be on any frequency within an amateur band above assigned.

380. An amateur radio station shall not be located upon premises controlled by an alien.

381. The frequency of the waves emitted by amateur radio stations shall be as constant and as free from harmonics as the state of the art permits. For this purpose, amateur transmitters shall employ circuits loosely coupled to the radiating system or devices that will produce equivalent effects to minimize keying impacts and harmonics. Conductive coupling to the radiating antenna, even though loose, is not permitted, but this restriction does not prohibit the use of transmission-line feeder systems.

382. Licensees of amateur stations using frequencies below 14,400 kilocycles, shall use adequately filtered direct-current power supply for the transmitting equipment, to minimize frequency modulation and to prevent the emission of broad signals.

383. Licensees of amateur stations are authorized to use a maximum power input of one kilowatt to the plate circuit of the final amplifier stage of an oscillator-amplifier transmitter or to the plate circuit of an oscillator transmitter.

384. An operator of an amateur station shall transmit its assigned call at least once during each fifteen minutes of operation and at the end of each transmission. In addition, an operator of an amateur portable radiotelegraph station shall transmit immediately after the call of the station, the Break Sign (BT) followed by the number of the amateur call area in which the portable amateur station is operating; as for example:

Example 1. Portable amateur station operating in the third amateur call area calls a fixed amateur station: WIABC WIABC WIABC DE W2DEF W2DEF W2DEF BT3 BT3 BT3 K

Example 2. Fixed amateur station answers the portable amateur station: W2DEF W2DEF W2DEF DE WIABC WIABC WIABC K

Example 3. Portable amateur station calls a portable amateur station: W3GHI W3GHI W3GHI DE W4JLK W4JLK W4JLK BT4 BT4 BT4 K

If telephony is used the call sign of the station shall be followed by an announcement of the amateur call area in which the portable station is operating.

385. In the event that the operation of an amateur radio station causes general interference to the reception of broadcast programs with receivers of modern design, that amateur station shall not operate during the hours from 8 o'clock p.m. to 10:30 p.m., local time, and on Sundays from 10:30 a.m. until 1 p.m., local time, upon such frequency or frequencies as cause such interference.

386. Each licensee of an amateur station shall keep an

accurate log of station operation, in which shall be recorded:

- (a) The date and time of each transmission.
- (b) The name of the person manipulating the transmitting key of a radiotelegraph transmitter or the name of the person operating a transmitter of any other type with statement as to nature of transmission.
- (c) The station called.
- (d) The input power to the oscillator, or to the final amplifier stage where an oscillator-amplifier transmitter is employed.
- (e) The frequency band used.
- (f) The location of each transmission by a portable station.

This information shall be made available upon request by authorized Government representatives.

387. The licensee of an amateur station may operate a portable amateur station, or a portable-mobile station located aboard an aircraft in accordance with Rule 368, provided advance notice of all locations in which the station will be operated is given to the Inspector-in-Charge of the district in which the station is to be operated. Such notices shall be made by letter or other means prior to any operation contemplated and shall state the station call, name of licensee, the dates of proposed operation and the approximate locations, as by city, town or county. An amateur station operating under this rule shall not be operated during any period exceeding 30 days without giving further notice to the Inspector-in-Charge of the radio inspection district in which the station will be operated.

* * *

400. An amateur station may be operated only by a person holding a valid amateur operator's license, and then only to the extent provided for by the class of privileges for which the operator's license is endorsed.

401. Amateur operators' licenses are valid only for the operation of licensed amateur stations, provided, however, any person holding a valid radio operator's license of any class may operate stations in the experimental service licensed for, and operating on, frequencies above 30,000 kilocycles.

402. Amateur station licenses and/or amateur operator licenses may, upon proper application, be modified or renewed provided: (1) the applicant has used his station to communicate by radio with at least three other amateur stations during the three-month period prior to the date of submitting the application, or (2) in the case of an applicant possessing only an operator's license, that he has similarly communicated with amateur stations during the same period. Proof of such communication must be included in the application by stating the call letters of the stations with which communication was carried on and the time and date of each communication. Lacking such proof, the applicant will be ineligible for a license for a period of ninety days.

403. There shall be but one main class of amateur operator's license to be known as "amateur class" but each such license shall be limited in scope by the signature of the examining officer opposite the particular class or classes of privileges which apply, as follows:

Class A. Unlimited privileges.

Class B. Unlimited radiotelegraph privileges. Limited in the operation of radiotelephone amateur stations to the following bands of frequencies: 1800 to 2000 kilocycles; 28,000 to 28,500 kilocycles; 56,000 to 60,000 kilocycles; 400,000 to 401,000 kilocycles.

Class C. Same as Class B privileges, except that the Commission may require the licensee to appear at an examining point for a supervisory written examination and practical code test during the license term. Failing to appear for examination when directed to do so, or failing to pass the supervisory examination, the license held will be cancelled and the holder thereof will not be issued another license of the Class C privileges.

404. The scope of examinations for amateur operators' licenses shall be based on the class of privileges the applicant desires, as follows:

Class A. To be eligible for examination for the Class A amateur operator's privileges, the applicant must have been a licensed amateur operator for at least one year and must personally appear at one of the Commission's examining offices, and take the supervisory written examination and code test. (See Rules 2 (2) a, 30 and 408.) Examinations will be conducted at Washington, D.C., on Thursday of each week, and at each radio district office of the Commission on the days designated by the Inspector-in-Charge of such offices. In addition, examinations will be held quarterly in the examining cities listed in Rule 30 on the dates to be designated by the Inspector-in-Charge of the radio district in which the examining city is situated. The examination will include the following:

- (a) Applicant's ability to send and receive in plain lan-

guage messages in the Continental Morse Code (5 characters to the word) at a speed of not less than 10 words per minute.

- (b) Technical knowledge of amateur radio apparatus, both telegraph and telephone.

- (c) Knowledge of the provisions of the Radio Act of 1927 as amended, subsequent acts, treaties, and rules and regulations of the Federal Radio Commission, affecting amateur licensees.

Class B. The requirements for Class B amateur operator's privileges are similar to those for the Class A, except that no experience is required and the questions on radio-telephone apparatus are not so comprehensive in scope.

Class C. The requirements for Class C amateur operator's privileges shall be the same as for the Class B except the examination will be given by mail. To be eligible for this class of privileges, an applicant must reside more than 125 miles (airline) from Washington D.C., a radio district office of the Commission, or an examining city. (See pars. 2 h (2), 30, and 408.)

405. An applicant for any class of amateur operator's privileges who has held a radiotelephone second class operator's license or higher, or an equivalent commercial grade license, or who has been accorded unlimited amateur radiotelephone privileges, within five years of the date of application may only be required to submit additional proof as to code ability and/or knowledge of the laws, treaties, and regulations affecting amateur licensees.

406. An applicant for the Class B or C amateur operator's privileges who has held a radiotelegraph third class operator's license or higher, or an equivalent commercial grade license, or who has held an amateur extra first class license within five years of the date of application may be accorded a license by passing an examination in laws, treaties, and regulations affecting amateur licensees.

407. An applicant for the Class C amateur operator's privileges must have his application signed in the presence of a notary public by a licensed radiotelegraph operator other than an amateur operator possessing only the third class privileges or former temporary amateur class license, attesting to the applicant's ability to send and receive messages in plain language in the Continental Morse Code (5 characters to the word) at a speed of not less than ten words per minute. The code certification may be omitted if the applicant can show proof of code ability in accordance with the preceding rule.

408. Forms for amateur station and/or operator license shall be obtained by calling or writing to the Inspector-in-Charge of the radio inspection district in which the applicant resides. Upon completion of the forms they shall be sent back to the same office where the final arrangements will be made for the examination: *Provided*, however, in the case of applicants for the Class C amateur operator's privileges, the forms and examination papers when completed shall be mailed direct to the Federal Radio Commission, Washington, D.C.

409. The percentage that must be obtained as a passing mark in each examination is 75 out of a possible 100. No credit will be given in the grading of papers for experience or knowledge of the code. If an applicant answers only the questions relating to laws, treaties, and regulations by reason of his right to omit other subjects because of having held a recognized class of license, a percentage of 75 out of a possible 100 must be obtained on the questions answered.

410. An amateur station license shall be issued so as to run concurrently with the amateur operator's license and both licenses shall run for three years from the date of issuance. If either the station license or the operator's license is modified during the license term, both licenses shall be reissued for the full three-year term, provided, however, if an operator's license is modified only with respect to the class of operator's privileges, the old license may be endorsed in which case the expiration date will not change.

411. No applicant who fails to qualify for an operator's license will be reexamined within ninety days from the date of the previous examination.

412. Any attempt to obtain an operator's license by fraudulent means or by attempting to impersonate another, or copying or divulging questions used in examinations, will constitute a violation of the regulations for which the licensee may suffer suspension of license or debarment from further examination for a period not exceeding two years at the discretion of the licensing authority.

413. Any licensee applying for a duplicate license to replace an original which has been lost, mutilated, or destroyed, shall submit an affidavit to the Commission attesting to the facts regarding the manner in which the original was lost. Duplicates will be issued in exact conformity with the original, and will be marked "duplicate" on the face of the license.

414. Licenses are not valid until the oath of secrecy has been executed and the signature of the licensee affixed thereto.

415. All examinations, including the code test, must be written in longhand by the applicant.

AMATEUR HELPS AVAILABLE FROM A.R.R.L. HEADQUARTERS

The License Manual—Before you can operate an amateur transmitter, you must have a government license and an officially assigned call. These cost nothing—but you must be able to pass the examination. The License Manual tells how to do that. In addition to a large amount of general information, it contains 198 typical questions and answers such as are asked in the government examinations. If you know the answers to the questions in this book, you can pass the examination without trouble. The License Manual costs 25c, postpaid anywhere.

The Radio Amateur Call Book Magazine containing United States, Canadian, and foreign amateur call lists (revised quarterly) may be obtained for \$1.10 (foreign \$1.20) from A.R.R.L., 38 LaSalle Road, West Hartford, Conn. This publication is most up-to-date and lists many high frequency commercial stations in addition to the world-wide list of amateur calls.

Hints and Kinks—An amateur must be resourceful and a good thinker. He must be able to make a small amount of money do a great deal for him. This book is a compilation of hundreds of good ideas which amateurs have found helpful. Hints and Kinks costs 50c, postpaid.

The Radio Amateurs' Handbook published by the A.R.R.L. \$1.00 postpaid (buckram binding \$2.00) is perhaps the best single source of all kinds of information needed in constructing and operating a short wave sending and receiving station. It is full of information helpful to the new member and the experienced brass-pounder alike in

installing and operating radio equipment at amateur stations. A whole chapter on "operating" gives with examples the information that we would like to get into this pamphlet if it were possible to include it. The *Handbook* is an illustrated book of over 200 pages, answering every conceivable question about amateur radio whether it refers to the history of the amateur, how a tube oscillates, how to build coils and condensers to cover certain frequency bands or how to go about learning the code and breaking into the game.

How to Become a Radio Amateur contains in some thirty pages condensed essential information necessary to code learning, getting licenses, and building the first simple but effective low-cost station. This publication is available from A.R.R.L. postpaid for 25c.

QST—For years (and thereby the oldest radio magazine) *QST* has been the bible of Amateur Radio. It faithfully reports each month the rapid development which makes Amateur Radio so intriguing. Edited in the sole interest of the members of the American Radio Relay League, who are its owners, *QST* treats of equipment and practices and construction and design, and the romance which is part of Amateur Radio, in a direct and analytical style which has made *QST* famous all over the world. It is essential to the well-being of any radio amateur. *QST* goes to every member of the American Radio Relay League. Membership costs \$2.50 per year in the United States and Possessions, and Canada. All other countries \$3.00 per year.

* * *

The F.R.C. regulations require that a complete and accurate log be kept. As a convenience to members a carefully designed station logbook may be obtained from A.R.R.L. Headquarters (40c each or three logs for \$1.00). Also official A.R.R.L. message blanks are provided (35c for a pad of 100 or three pads for \$1.00). A.R.R.L. emblems (pin or button type) are \$1.00 postpaid.

For A.R.R.L. members who hold amateur licenses, who are interested in Communications Department operating work (explained, Sec. V this book), here is an application blank which may be filled out for appointment as either Official Relay Station (for telegraphing members) or Official Phone Station (for voice operated member-stations). Copy this, or cut and fill it out, and send it direct to your Section Communications Manager (address on page 5 of *QST*) or to A.R.R.L. Headquarters, 38 LaSalle Road, West Hartford, Conn. for routing to the proper S.C.M. for attention if you are interested.

The Communications Department field organization includes only the United States and its territories, and Canada, Newfoundland, Labrador, Cuba, the Isle of Pines, and the Philippine Islands. Foreign applications, that is, those from outside these areas cannot be handled.

APPLICATION FOR APPOINTMENT AS OFFICIAL STATION

To: Section Communications Manager Section, A.R.R.L.
 Name Call
 Street and Number Date
 City State County
 Transmitting frequencies specified on my license from kilocycles
 to kilocycles. Actual frequency in use kilocycles.
 My membership in the A.R.R.L. expires month year

In making application for appointment as Official Relay Station, I agree:

..... to obey the radio communication laws of the country under which my station is licensed, particularly with respect to the regulations governing quiet hours and frequencies.

..... to send monthly reports of station activities to the Section Communications Manager under whose jurisdiction this station comes.

..... to handle messages in accordance with good operating procedure, delivering messages within forty-eight (48) hours when possible, mailing to destination whenever impossible to relay to the next station in line within a 48-hour period.

..... to participate in every A.R.R.L. communication activity to the best of my ability, always trying to live up to those ideals set forth in "The Amateur's Code."

I understand that this appointment requires annual endorsement, and also may be suspended or cancelled at the discretion of the Section Communications Manager for violation of the agreement set forth above. Please send detailed forms to submit to my S.C.M. in connection with this application.

In making application for appointment as Official Phone Station, I agree:

..... to obey the radio communication laws of the country under which my station is licensed, particularly with respect to the regulations governing quiet hours and frequencies.

..... to send monthly reports of station activities to the Section Communications Manager under whose jurisdiction this station comes; to use such operating procedure as may be adopted by the O.P.S. group; to test outside busy operating hours.

..... to handle such messages as may come to me, as accurately, promptly and reliably as possible.

..... to participate in all amateur communication activities to the best of my ability, always trying to live up to those ideals set forth in "The Amateur's Code."

..... to use circuits and adjustments that avoid frequency modulation and over modulation by proper transmitter adjustment (accomplished by use of proper indicating devices) to avoid unnecessary interference.

Signed