

**SECOND ANNUAL REPORT**  
**OF THE**  
**Federal Communications**  
**Commission**

**FOR THE**  
**FISCAL YEAR ENDED JUNE 30**

**1936**



**UNITED STATES**  
**GOVERNMENT PRINTING OFFICE**  
**WASHINGTON : 1936**

# FEDERAL COMMUNICATIONS COMMISSION

**ANNING S. PRALL, *Chairman.***  
**IRVIN STEWART, *Vice Chairman.***  
**GEORGE HENRY PAYNE.**  
**EUGENE O. SYKES.**  
**THAD H. BROWN.**  
**PAUL A. WALKER.**  
**NORMAN S. CASE.**  
**JOHN B. REYNOLDS, *Acting Secretary.***

## FEDERAL COMMUNICATIONS COMMISSIONERS—1934-36

Name	State from which appointed	Period of service
Eugene O. Sykes.....	Mississippi.....	July 11, 1934-
Thad H. Brown.....	Ohio.....	July 11, 1934-
Paul A. Walker.....	Oklahoma.....	July 11, 1934-
Norman S. Case.....	Rhode Island.....	July 11, 1934-
Irvin Stewart.....	Texas.....	July 11, 1934-
George Henry Payne.....	New York.....	July 11, 1934-
Hampson Gary.....	Texas.....	July 11, 1934-Jan. 1, 1935.
Anning S. Prall.....	New York.....	Jan. 17, 1935-

### PRINCIPAL OFFICE

Washington, D. C.

### DISTRICT OFFICES

Atlanta, Ga.  
 Baltimore, Md.  
 Boston, Mass.  
 Buffalo, N. Y.  
 Chicago, Ill.  
 Dallas, Tex.  
 Denver, Colo.

Detroit, Mich.  
 Galveston, Tex.  
 Honolulu, Hawaii  
 Kansas City, Mo.  
 Los Angeles, Calif.  
 Miami, Fla.  
 New Orleans, La.

New York, N. Y.  
 Norfolk, Va.  
 Philadelphia, Pa.  
 Portland, Oreg.  
 St. Paul, Minn.  
 San Francisco, Calif.  
 Seattle, Wash.

### CENTRAL MONITORING STATION

Grand Island, Nebr.

### OTHER MONITORING STATIONS

Baltimore, Md.  
 Great Lakes, Ill.

Portland, Oreg.  
 Hingham, Mass.

San Pedro, Calif.  
 Marietta, Ga.

# CONTENTS

	Page
<b>Report of the Secretary</b> .....	2
Commission sessions and actions.....	2
Docket Section.....	2
License and Records Section.....	4
Appropriation account.....	9
International radio accounting.....	10
Supplies and printing.....	11
Mail and files.....	11
<b>Report of the Examining Department</b> .....	13
Organization.....	13
Examiners' hearings and reports.....	13
Hearings before examiners, fiscal year 1936.....	13
<b>Report of the Law Department</b> .....	14
Introduction.....	14
The General Counsel's office.....	14
Divisions of the Law Department.....	14
Amendments to the Communications Act of 1934.....	14
Rules and regulations of the Commission.....	15
Volume I, Federal Communications Commission Reports.....	15
Applications.....	16
Tariff regulation.....	18
Complaints and investigations under title III of the act.....	18
Complaints and investigations under title II of the act.....	21
Classification of telephone companies.....	23
Depreciation.....	23
Hearings.....	24
Reports and decisions of the Commission.....	28
Litigation.....	28
Special telephone investigation.....	31
<b>Report of the Engineering Department</b> .....	32
General.....	32
Telegraph Section.....	36
Telephone Section.....	51
Broadcast Section.....	57
International Section.....	68
Field Section.....	69
Technical Information Section.....	72
<b>Report of the Accounting, Statistical, and Tariff Department</b> .....	74
Organization, functions.....	74
Classification Section.....	74
Field Section.....	77
Statistical Section.....	78
Tariff Section.....	81
<b>Appendix A. Statistics concerning carriers and controlling companies</b> .....	85
Annual reports.....	85
Monthly reports.....	104
Intercorporate relations of carriers.....	118
<b>Index</b> .....	129

# SECOND ANNUAL REPORT OF THE FEDERAL COMMUNICATIONS COMMISSION

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## LETTER OF TRANSMITTAL

WASHINGTON, *January 5, 1937.*

*To the Congress of the United States:*

Herewith is submitted the second annual report of the Federal Communications Commission covering the fiscal year ended June 30, 1936.

On June 30, 1936, the term of Commissioner George Henry Payne expired. Effective July 1, 1936, he was reappointed for a term of 7 years.

At the close of business on June 30, 1936, the Commission's staff was composed of 366 employees at the seat of government and 122 employees in the field service.

The secretary of the Commission, Mr. Herbert L. Pettey, who had served since April 1, 1933, resigned on April 30, 1936. His successor has not been selected, but since May 1, 1936, Mr. John B. Reynolds has been acting secretary.

An amendment to paragraph (f) of section 4 of the Communications Act of 1934, was approved on January 22, 1936, authorizing the Commission to appoint a chief accountant at an annual salary not to exceed \$9,000, and not more than three assistants to the chief accountant, without regard to the civil-service laws or the Classification Act of 1923, as amended.

An act was approved on June 5, 1936, repealing section 302 of the Communications Act of 1934, which section provided for the division of the United States into five zones. It further amended subsection (b) of section 307 of the Communications Act of 1934, so as to authorize the Commission to make equitable distribution of radio facilities among the several States and communities so as to eliminate the necessity for the equal distribution of radio facilities, both reception and transmission, among the zones and States within the zones according to population. Hence quota units are no longer necessary.

There were no major changes in the organization of the Commission during the past fiscal year. However, for the purpose of better administration and to effect further economies, an additional field office of 10 accountants was established in New York City.

On December 18 the Commission approved a complete new set of rules of practice and procedure promulgated pursuant to the Communications Act of 1934, superseding those promulgated pursuant to the Radio Act of 1927, as amended.

ANNING S. PRALL, *Chairman.*

# REPORT OF THE SECRETARY

JOHN B. REYNOLDS, *Acting Secretary*

The Secretary, under the administrative direction of the Commission, is charged with the direct responsibility for the propriety and efficacy of its administrative policies and for the successful conduct of its organization; plans, assigns, directs, and assumes full responsibility for administrative matters as delegated by the Commission; supervises and directs the installation of office systems, methods, policies, and procedure; correlates and coordinates the various activities of the Commission and acts as the responsible officer in connection with the business transactions and operations of the Commission; directs the preparation of estimates and serves as Budget Officer for the Commission before the Bureau of Budget and various congressional appropriations committees; prepares reports and recommendations to the Commission relative to the requirements of and changes in personnel; attends all Commission meetings and acts as consultant to the Commissioners in matters relating to governmental procedure and requirements, and performs such other duties as directed by the Commission.

## COMMISSION SESSIONS AND ACTIONS

In addition to public sessions for the hearing of oral arguments in docket cases, and for other purposes, the Commission and its divisions held 191 sessions during the fiscal year. Record of these sessions is maintained in the minutes, which show each application or other matter approved or designated for hearing, disposition after hearings before Commission examiners or following oral arguments, and various other actions.

The numbers of radio applications received, licenses and other authorizations issued, and the effects in numbers of stations of various classes, will follow in a report by the License and Records Section. The hearings before examiners are the subject of report by the Chief Examiner and other aspects are covered at length in the reports of the General Counsel, Chief Engineer, and Chief Accountant.

## DOCKET SECTION

Many applications and other matters coming before the Commission require hearings as provided by the Communications Act. The records of the Docket Section show the cases designated for hearing and related matters as follows:

By Commission en banc:

Matters designated for hearing	207
Petitions and motions handled	9
Decisions adopted after hearing	3
Arguments held before Commission en banc	1
Hearings held before Commission en banc	3

## By Broadcast Division:

Applications designated for hearing.....	605
Petitions and motions handled.....	492
Applications dismissed.....	132
Applications denied as in default for failure to file appearance.....	27
Applications reconsidered and granted without hearing.....	38
Cases on which preliminary orders were written <sup>1</sup> .....	245
Statements of fact and grounds for decisions published <sup>1</sup> .....	120
Cases on which oral arguments were held before Broadcast Division.....	132
Cases heard before Broadcast Division.....	24

## By Telegraph Division:

Matters designated for hearing.....	236
Petitions and motions handled.....	16
Applications dismissed.....	9
Applications denied as in default.....	8
Applications reconsidered and granted without hearing.....	26
Cases on which preliminary orders were written <sup>1</sup> .....	43
Statements of fact and grounds for decision published <sup>1</sup> .....	6
Reports adopted.....	4

## By Telephone Division:

Matters designated for hearing.....	36
Petitions and motions handled.....	4
Applications dismissed.....	2
Cases on which preliminary orders were written.....	1
Reports adopted.....	1

<sup>1</sup>The difference between number of preliminary orders written and statements of fact published is due to cases combined for the statements, cases dismissed at request of applicants or failures to appear at hearings.

# LICENSE AND RECORDS SECTION

WM. P. MASSING, *Chief of Section*

The organization and functions of the License and Records Section remained unchanged. This Section is composed of three principal units, Broadcast, Commercial, and Amateur.

There were received 47,912 applications for radio, telephone, and telegraph facilities and 34,590 authorizations were issued, exclusive of thousands of licenses issued to radio operators, professional and amateur.

The following table shows the number of new radio stations authorized during the past year, the number deleted, and the total number of stations as of June 30, 1936.

TABLE I.—*New radio stations authorized during the year, stations deleted, and total at close of the year*

Nature of service and class of station	New stations authorized	Stations deleted	Total number of stations June 30, 1936
Agriculture: Point-to-point telegraph.....	0	2	7
Amateur: Amateur.....	7,471	11,032	46,850
Aviation:			
Aeronautical.....	73	19	247
Aeronautical point-to-point.....	14	3	107
Airport.....	11	15	23
Aircraft.....	246	134	471
Marker beacon.....	2	1	4
Broadcast: Broadcast.....	38	5	656
Emergency:			
Marine fire.....	0	0	2
Police, municipal.....	54	5	243
Police, State.....	49	6	101
Special emergency.....	24	11	57
Experimental:			
General experimental.....	743	142	1,450
Special experimental.....	106	106	126
Experimental relay broadcasting.....	0	0	12
Experimental visual broadcasting.....	1	1	21
Experimental broadcast.....	0	0	4
Fixed public:			
Point-to-point telegraph.....	54	11	420
Point-to-point telephone.....	29	2	138
Fixed public press: Point-to-point telegraph.....	1	3	75
Geophysical: Geophysical.....	49	1	179
Marine relay: Marine relay.....	1	1	42
Mobile press: Mobile press.....	0	0	5
Public coastal:			
Coastal telegraph.....	7	10	107
Coastal telephone.....	2	1	3
Coastal harbor.....	12	7	42
Private coastal:			
Coastal telegraph.....	0	0	3
Coastal harbor.....	0	0	2
Ships: Ship.....	188	129	2,020
Temporary:			
Broadcast pick-up.....	30	5	59
Motion picture.....	3	0	4
<b>Total.....</b>	<b>9,208</b>	<b>11,652</b>	<b>53,480</b>

<sup>1</sup> Total eliminations — offset considerably by delayed renewals, etc.

## BROADCAST

TABLE II.—Applications received and authorizations issued during the past 6 years

	Fiscal year 1931	Fiscal year 1932	Fiscal year 1933	Fiscal year 1934	Fiscal year 1935	Fiscal year 1936
Applications received.....	3,784	2,519	2,193	2,590	3,652	3,567
Authorizations issued.....	3,233	2,534	2,446	2,503	3,434	3,407

Applications received and instruments of authority issued comprised construction permits, licenses, modifications of construction permits and licenses, consent to voluntary assignments of construction permits and licenses, extension of licenses, installation of automatic frequency control equipment, special authorizations, emergency authorizations, consent to transfer control of corporations, and permits to locate, maintain, or use studio or apparatus for production of programs to be transmitted or delivered to foreign radio stations.

In addition to the applications shown in table II, there were received 1,905 informal applications, which consisted of requests for (1) extension of equipment and program test periods; (2) operation for a limited period in a manner not authorized in the station's license or by regulations; (3) departure from hours of operation as licensed; and (4) partial or entire suspension of operation of a station. There were issued 776 informal authorizations consisting of letters, telegrams, and approved deviations from time-sharing agreements.

Thirty-eight new broadcast stations were authorized (see table III) and five broadcast stations were deleted (see table IV).

TABLE III.—New stations authorized (total, 38)

Call letters	Applicant and location	Frequency	Power	Hours of operation
		<i>Kilocycles</i>	<i>Watts</i>	
KANS.....	Charles C. Theis, Wichita, Kans.....	1,210	100	Unlimited.
KBIX.....	Oklahoma Press Publishing Co., Muskogee, Okla.....	1,500	100	Do.
KBST.....	Big Spring Herald Broadcasting Company, Big Spring, Tex.....	1,500	100	Do.
KDNC.....	Democrat-News Co., Inc., Lewistown, Mont.....	1,200	100	Do.
KEUB.....	Eastern Utah Broadcasting Co. (Sam G. Weiss), Price, Utah.....	1,420	100	Do.
KHBC.....	Honolulu Broadcasting Co., Ltd., Hilo, Hawaii.....	1,420	100	Do.
KNEL.....	G. L. Burns, Brady, Tex.....	1,500	100	Daytime.
KNET.....	John Calvin Welch, Wm. M. Keller, and Bonner Frizzell, d/b as Palestine Broadcasting Association, Palestine, Tex.....	1,420	100	Do.
KOVC.....	George B. Bairay, Valley City, N. Dak.....	1,500	100	Unlimited.
KPDN.....	Pampa Daily News, Inc., Pampa, Tex.....	1,310	100	Daytime.
KPLT.....	The North Texas Broadcasting Co., Paris, Tex.....	1,500	100	Do.
KRBC.....	Reporter Publishing Company, Inc., Abilene, Tex.....	1,420	100	Unlimited.
KRLH.....	Clarence Scharbauer, Midland, Tex.....	1,420	100	Daytime.
KRNR.....	Southern Oregon Publishing Co., Roseburg, Oreg.....	1,500	100	Do.
KRRV.....	Red River Valley Broadcasting Corp., Sherman, Tex.....	1,310	100	Do.
KUTA.....	Jack Powers, Frank C. Carman, David G. Smith and Grant Wrathall, d/b as Utah Broadcasting Company, Salt Lake City, Utah.....	1,500	100	Unlimited.
KVCV.....	Golden Empire Broadcasting Co., Redding, Calif.....	1,200	100	Do.
WAPO.....	W. A. Patterson, Chattanooga, Tenn.....	1,420	100	Daytime.
WAYX.....	E. F. & S. F. Sapp, d/b as Waycross Broadcasting Co., Waycross, Ga.....	1,200	100	Unlimited.
WBLY.....	Herbert Lee Blye, Lima, Ohio.....	1,210	100	Daytime.
WBNY.....	Roy L. Albertson, Buffalo, N. Y.....	1,370	100 250-LS	All hours except those WSVS operates.



TABLE III.—*New stations authorized (total, 38)—Continued*

Call letters	Applicant and location	Fre-	Power	Hours of operation
		quency		
		<i>Kilocycles</i>	<i>Watts</i>	
WDWS.....	Champaign News Gazette, Champaign, Ill.....	1,370	100	Daytime.
WEOA.....	Evansville on the Air, Inc., Evansville, Ind.....	1,370	100	Unlimited.
WFOY.....	Fountain of Youth Properties, Inc., St. Augustine, Fla.	1,210	100	Do.
WGRC.....	Northside Broadcasting Corp., New Albany, Ind.....	1,370	250	Daytime.
WHBB.....	Dr. Wm. J. Reynolds and W. J. Reynolds, Jr., Selma, Ala.	1,500	100	Do.
WHLB.....	Head of The Lakes Broadcasting Company, Virginia, Minn.	1,370	100	Unlimited.
WJBR.....	J. B. Roberts, Gastonia, N. C.....	1,420	100	Do.
WJNO.....	Hazlewood, Inc., West Palm Beach, Fla.....	1,200	100	Do.
WJRD.....	James R. Doss, Jr., Tuscaloosa, Ala.....	1,200	100	Daytime.
WLAK.....	Lake Region Broadcasting Co., Lakeland, Fla.....	1,310	100	Unlimited.
WLMU.....	Lincoln Memorial University, Middlesboro, Ky.....	1,210	100	Do.
WMIN.....	Edward Hoffman, St. Paul, Minn.....	1,370	100	Do.
WNLC.....	Thames Broadcasting Corporation, New London, Conn.	1,500	100	Daytime.
WSAY.....	Brown Radio Service & Laboratory (Gordon P. Brown, owner), Rochester, N. Y.	1,210	100	Do.
WSPG.....	Portland Broadcasting System, Inc., Portland, Maine.	640	500	Limited.
WSPR.....	Quincy A. Brackett, Lewis B. Breed, Edmund A. Laport, co-partners, d/b as Connecticut Valley Broadcasting Company, Springfield, Mass.	1,140	500	Limited, KVOO, WAPI
WTHT.....	The Hartford Times, Inc., Hartford, Conn.....	1,200	100	Daytime.

TABLE IV.—*Stations deleted (total 5)*

Call letters	Licensee and location	Date of deletion
KPJM.....	M. B. Scott and Edward C. Sturm, d/b as Scott and Sturm, Prescott, Ariz. (Application for renewal of license denied. Decision Oct. 1, 1935, effective Nov. 26, 1935.)	Dec. 16, 1935
WBHS.....	Virail V. Evans, Huntsville, Ala. (Application for renewal of license dismissed with prejudice Nov. 19, 1935.)	Nov. 19, 1935
WCAC.....	Connecticut State College, Storrs, Conn. (Station voluntarily surrendered its license.) (Effective Apr. 30, 1936.) (Approved Apr. 24, 1936.)	Apr. 30, 1936
WOS.....	State of Missouri, Missouri State Highway Patrol, Jefferson City, Mo. (Station voluntarily released its hours of operation to station KFRU, effective Mar. 27, 1936.)	Mar. 27, 1936
WRBX.....	Richmond Development Corporation, Roanoke, Va. (Station voluntarily released its hours of operation to station WHIS, effective Sept. 23, 1935.) (Approved Sept. 17, 1935.)	Sept. 23, 1935

Three complete lists of radio broadcast stations authorized by the Commission, arranged (1) alphabetically by call letter, (2) alphabetically by State and city, and (3) numerically by frequency, were compiled and prepared for distribution to the general public, with monthly supplements. There were also published from time to time, for distribution to the general public, lists of relay broadcasting stations, visual broadcasting stations, and experimental broadcasting stations.

## COMMERCIAL

TABLE V.—*Applications received and authorizations issued during the past 6 years*

	Fiscal year					
	1931	1932	1933	1934	1935	1936
Applications received.....	6,246	5,515	6,837	8,139	8,221	9,751
Authorizations issued.....	5,395	6,053	6,617	7,336	7,772	8,427

Applications and authorizations shown in the above table comprise construction permits, modifications of construction permits, licenses, modifications of licenses, renewals of licenses, assignments of construction permits and licenses, and temporary authorizations.

There were also received 27 applications for additional telegraph-wire facilities and 15 applications for additional telephone-wire facilities. The Commission granted 19 applications for additional telegraph-wire facilities and 15 applications for additional telephone-wire facilities.

As of June 30, 1936, there were 2,020 ship stations licensed aboard vessels of United States registry, 1,962 of which are licensed to use radiotelegraph equipment; and 58, radiotelephone equipment. One hundred and eighty-nine of these vessels operate on the Great Lakes. Approximately 329 are compulsorily equipped with radiotelegraph apparatus, and the remainder are voluntarily equipped.

Approximately 1,839 vessels have been authorized for regular maritime service, communicating with other ships and coastal telegraph stations. Fifty-eight have been authorized to communicate on a designated frequency with specified public coastal harbor telephone stations, as compared with 26 at the end of the previous fiscal year; and 98 have been granted authority to operate on the general frequency of 2,738 kilocycles for communication between ship harbor stations, either telephone or telegraph, as compared with 53 at the end of the previous fiscal year. There are three municipal fireboats authorized to operate on a specified frequency and 95 vessels operating on specific frequencies allocated for Alaskan waters, as compared with 58 at the end of the previous fiscal year. Twenty-two vessels, yachts operating outside of general traffic lanes and vessels on special scientific expeditions, were granted special authority to communicate with amateur stations.

A complete revision of telephone and telegraph application forms was made in collaboration with the Legal and Engineering Departments.

The Radio Service Bulletin, containing in tabular form a complete record of all new assignments of radio facilities, changes and deletions relative to all classes of radio stations, except amateur, in the United States and its possessions, was issued semimonthly. This bulletin is primarily for notifications to the Bureau of the International Telecommunication Union at Bern, Switzerland.

There were also prepared for distribution to the general public the following lists of radio stations: Municipal police, State police, coastal stations, point-to-point telegraph stations, airport stations, aeronautical and aeronautical point-to-point stations, and experimental stations.

#### AMATEUR

Amateur radio licensing continued without radical change in nature or numbers. Related regulations were amended in detail for improved operation and regulation. One change rendered licenses more available to applicants unable to appear for operator examination at customary points due to physical disability or to locations in military service and C. C. C. camps. Applications for amateur radio privileges continued to exceed greatly all other classes combined.

*Amateur radio applications*

## Receipts:

Pending, July 1, 1935.....	1,479
Received during the fiscal year.....	32,647
<b>Total</b> .....	<b>34,126</b>

## Disposals:

Approved.....	21,946
Returned to applicants.....	5,851
Referred to other Federal agencies, etc.....	519
Failed required examinations.....	5,093
<b>Total</b> .....	<b>33,409</b>
Pending, close of June 30, 1936.....	717

Ordinarily applications for both operator and station licenses were submitted on a joint application form and the two applications counted as one. On the other hand, a much smaller number of returned and referred applications were received and counted a second time. Roughly, half of the applications were for renewals of expiring licenses or modifications for changed locations, while half involved examinations for operator licenses or changes in class of operating privileges.

*Amateur examinations*

Nature	Number	Passed	Failed	Percent failed
Code tests.....	11,164	8,637	2,477	22
Written tests:				
Class A envelope <sup>1</sup> .....	2,528	2,008	520	21
Class B envelope <sup>1</sup> .....	6,478	4,982	1,496	23
Class C envelope.....	2,093	1,626	467	22
Abridged (rules 405-406).....	761	574	177	24
<b>Total</b> .....	<b>11,850</b>	<b>9,190</b>	<b>2,660</b>	<b>22</b>

<sup>1</sup> In 222 instances the examination included both A and B envelopes.

The operator and station licenses actually issued are separately counted, including reissues for the purpose of bringing together on joint-card form the amateur's operator and station licenses formerly issued as separate documents at different times and for different periods. All issues exceeded 100 per day.

*Amateur radio authorizations*

## Station licenses:

New.....	7,471
Renewals.....	2,487
Modifications and reissues.....	9,473
<b>Total</b> .....	<b>19,431</b>

Operator licenses.....	19,215
Operator-license endorsements.....	1,828
Duplicates of lost or destroyed licenses.....	496
<b>Total</b> .....	<b>21,539</b>
<b>Total</b> .....	<b>40,970</b>

The licenses of 23 amateur operators were suspended or withheld, in nearly all cases for a period of 6 months, while 104 were debarred from examination, usually for like period. In much larger numbers, licenses were deleted from the records following expiration, or surplus issues canceled, but renewals and other issues caused a net increase in the total number valid of record.

*Amateur station licenses valid of record*

Valid at close of fiscal year 1935.....	45,561
Plus:	
Expired but not deleted June 30, 1935.....	4,850
New issues, fiscal year 1936.....	7,471
	12,321
Total.....	57,882
Less eliminations, fiscal year 1936:	
Cancelations.....	364
Deletions.....	7,968
Expirations (renewal yet possible).....	2,700
	11,032
Total.....	11,032
Valid of record close of June 30, 1936.....	46,850

The Commission's amateur license holders, distributed throughout the States, Territories, and possessions from Maine to Samoa and Alaska to Puerto Rico, comprise probably three-fourths of the radio amateurs of the world.

### RADIO OPERATORS, PROFESSIONAL CLASSES

There is maintained a central record of licenses of various professional classes required to qualify radio operators for service at any of the numerous kinds of transmitting stations maintained by commercial interests. To permit quick service in connection with sea, air, and land stations, the licensing in such cases is to a large extent decentralized, with 22 offices of issue, including Washington. Examinations, failures, license issues, renewals, endorsements, etc., are reported for posting on the one complete record.

During the fiscal year 13,950 such reports were received for record. A large number of the licenses were of radiotelephone third class, for which the requirements are relatively simple, authorizing the radiotelephone operators on aircraft and most of the shift operators at police transmitters.

Attempts to obtain licenses improperly or other infractions led to a dozen instances of withholding license issues temporarily or suspensions of 6 or 12 months.

### APPROPRIATION ACCOUNT

For the fiscal year ended June 30, 1936, there was appropriated \$1,500,000, plus \$25,000 for printing and binding, which amounts are accounted for as follows:

01 Personal services.....	\$975,849.57
01 Personal services.....	301,042.89
02 Supplies and materials.....	29,126.40

0236 Gasoline and oil.....	\$2,411.41
04 Storage and care of vehicles.....	3,468.62
05 Communication service.....	14,311.33
06 Travel expenses.....	53,011.01
0610 Carfare.....	672.68
07 Transportation of things.....	1,103.45
082 Stenographic reporting.....	3,903.24
10 Heat, light, power, and water.....	4,003.44
11 Rents.....	12,163.32
12 Repairs and alterations.....	8,366.64
13 Special and miscellaneous.....	699.43
30 Equipment.....	72,986.94
Total obligations.....	1,483,120.37
Estimated savings.....	16,879.63
Total.....	1,500,000.00

## PRINTING AND BINDING

02 Printed forms and letterheads.....	\$9,522
08 Printing and binding.....	13,502
Total.....	23,024
Estimated savings.....	976
Total.....	24,000
Transferred to 1937 appropriation.....	1,000
Total.....	25,000

## INTERNATIONAL RADIO ACCOUNTING

In accordance with governing provisions of international agreement, the Commission collects from American shipowners and radio companies tolls covering radiotelegraph messages transmitted from American ships to foreign coastal stations, pays foreign administrations amounts due and collects from them tolls due American companies on messages transmitted to American ships from foreign coastal stations. In addition, accounts are received for messages originating in the United States and addressed to vessels of any nationality via radio.

The accounts set up by the foreign administrations in gold francs (4.9249 times the value of a French franc) are converted into United States currency, responsibility for the charges ascertained and the accounts billed to the various American companies. When collections have been effected, the money is temporarily deposited in a special account with the Treasurer of the United States, where it remains until drafts or checks are to be drawn covering payment of accounts to be settled with the foreign administrations concerned. These are drawn in whatever currency the creditor administration demands.

Special efforts are made to keep the accounts moving, holding them only long enough to permit collection of the charges due. The cash handled represents collections only; no appropriation account is involved. The speed with which the accounts may be settled depends on the completion of collections from American companies; no single account may be disbursed until all charges are collected. The work during the fiscal year may be summarized as follows:

Number of accounts received.....	860
Number of accounts paid.....	1, 118
Collections effected from American companies.....	\$41, 890. 12
Disbursements made to foreign administrations.....	\$41, 152. 27

### SUPPLIES AND PRINTING

A Section of Supplies and Printing was reorganized during the fiscal year to meet increasing needs. A great variety of articles and services are needed for the Commission and its offices, including special technical equipment.

The special investigation conducted pursuant to Public Joint Resolution No. 8 required numerous commodities, publications, and specially printed forms.

A uniform procedure in requisitioning was established and a list of blank forms issued for increased efficiency in the handling of requisitions and the elimination of considerable correspondence.

### MAIL AND FILES

All available records concerning regulation of telephone and telegraph by the Interstate Commerce Commission or the Post Office Department, prior to the enactment of the Communications Act, have been transferred to the Commission so that a complete history of Federal regulation of these industries might be in its files. The entire files were rearranged to serve more efficiently.

Correspondence was sent and received during the fiscal year as follows:

Outgoing pieces.....	347, 207
Incoming pieces.....	267, 205
Total.....	<u>614, 412</u>

# REPORT OF EXAMINING DEPARTMENT

DAVIS G. ARNOLD, *Chief Examiner*

## ORGANIZATION

The Examining Department is organized with a Chief Examiner, an assistant Chief Examiner, and six other examiners. The principal functions of the Department are to conduct hearings, formal and informal, on applications, petitions, and complaints filed with the Commission, when the Commission so directs; and to conduct hearings and investigations instituted by the Commission on its own motion concerning rates, rules, regulations, services, and practices of carriers subject to the Communications Act of 1934, as directed by the Commission.

In addition to its hearing and regular examining work performed during the year, the Department cooperated actively with the other departments of the Commission, particularly in the preparation of rules of practice and procedure, which were adopted and published by the Commission during the fiscal year, and in the preparation of opinions in certain cases previously heard and reported by members of the staff.

## EXAMINERS' HEARINGS AND REPORTS

Hearings in 491 formal docket cases were conducted by the Chief Examiner and other examiners of the staff during the fiscal year. Reports were submitted to the Commission on 67 cases carried over from the fiscal year 1935, and on 257 cases heard during the fiscal year 1936. Final reports on a large group of related cases were near completion when the fiscal year ended.

An indication of the volume and scope of the work handled may be had from the following schedule, tabulating the cases assigned by the Commission and the three divisions of the Commission (Broadcast, Telegraph, and Telephone) for hearings before examiners.

<i>Hearings before examiners, fiscal year 1936</i>	<i>Number of cases</i>
Applications of individuals, under sec. 212 of the act, for authority to hold positions in more than 1 carrier.....	169
<b>BROADCAST</b>	
Applications for construction permits for new stations.....	146
Applications from station licensees for construction permits to increase facilities.....	52
Applications for construction permits for changes in locations.....	8
Applications for modification of station licenses.....	29
Applications for renewal of station licenses.....	15
Applications for consent to assignment of station license.....	2
Applications for consent to transfer of station control.....	3
Application for construction permit for experimental visual broadcast station.....	1

REPORT OF THE FEDERAL COMMUNICATIONS COMMISSION 13

TELEGRAPH

*Number  
of cases*

Applications from licensees for licenses to use additional frequencies-----	6
Hearings to investigate circumstances relating to operation of certain telegraph stations-----	3
Hearings upon orders of suspension of licenses directed to radio amateur operators-----	2
Applications for renewal of station licenses-----	33
Application for modification of license-----	1
Hearing upon complaint against carrier alleging unjust and unreasonable discriminations, and request for order directing carrier to provide a special classification and special rates-----	1

TELEPHONE

Hearings in proceedings to determine whether respondents should be classified as connecting carriers under sec. 2 (b) (2) of the Communications Act of 1934-----	14
Hearing upon petition for consent to consolidation of telephone communications systems-----	1
Hearings upon applications for renewal of licenses for radio-telephone stations-----	4
Hearing upon application for construction permit for radio-telephone station-----	1



# REPORT OF THE LAW DEPARTMENT

HAMPSON GARY, *General Counsel*<sup>1</sup>

## INTRODUCTION

Since the last annual report, the General Counsel secured, July 24, 1935, the approval of the Commission for a reorganization of the Law Department into three divisions such as those established by order no. 1 of the Commission, promulgated pursuant to the Communications Act of 1934, viz, (1) Broadcast, (2) Telegraph, (3) Telephone.

## THE GENERAL COUNSEL'S OFFICE

The General Counsel maintains supervision over and has responsibility for the work of all divisions of the Law Department, and, in addition thereto, takes direct charge of and responsibility for all matters pertaining to the Commission as a whole which include all three divisions thereof. Under him are 3 Assistants General Counsel and 27 attorneys as provided for by section 4 (f), of the Communications Act of 1934 (48 Stat. 1066).

## DIVISIONS OF THE LAW DEPARTMENT

The Broadcast Division of the Law Department has charge of all legal matters pertaining to the licensing of radio-broadcasting stations and the regulation of radio broadcasting in the United States under the Communications Act of 1934.

The Telegraph Division of the Law Department has charge of all legal matters pertaining to the licensing of radiotelegraph and special classes of stations, the licensing of radio operators and the regulation of interstate and foreign communications by telegraph originating or received in the United States whether by wire, wireless, or cable under the Communications Act of 1934.

The Telephone Division of the Law Department has charge of all matters pertaining to the licensing of radiotelephone stations as well as the regulation of interstate and foreign communications by telephone originating or received in the United States, whether by wire, wireless, or cable under the Communications Act of 1934.

## AMENDMENTS TO THE COMMUNICATIONS ACT OF 1934

During the past fiscal year the Communications Act of 1934 was amended in several respects. Section 4 (f) of the act was amended so as to provide for the appointment of a chief accountant and not more than three assistants. Section 302 of the act, which provided for the division of the United States into five zones, was repealed.

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<sup>1</sup> Appointed General Counsel July 3, 1935.

Section 307 (b) of the act was amended so as to eliminate the necessity for the establishment of quota units in the distribution of radio broadcasting facilities throughout the United States.

The Law Department undertook the preparation and compilation of an index to the Communications Act of 1934, as amended, and secured authorization from the Commission to have the act, as amended, and an index to same, printed in pamphlet form.

From time to time as bills for the purpose of amending the act are introduced in Congress, they are sent by chairmen of committees of the Senate and the House to this Commission for review and comment. The Commission refers such matters to a legislative committee composed of three of its members, which frequently requires memoranda from the Law Department concerning the legality and constitutionality of various proposals.

### RULES AND REGULATIONS OF THE COMMISSION

The Communications Act of 1934, which became law June 19, 1934, provides for a continuance of such rules and regulations of the Interstate Commerce Commission as applied to the administration of the regulation of telephone and telegraph, existing rules and regulations of the Federal Radio Commission, and such rules or regulations of the Postmaster General as relate to communications, until such time as the Federal Communications Commission should adopt other or different rules.

During the period covered by this report, the Law Department had primary responsibility for the drafting of Rules of Practice and Procedure for the Commission. These were completed and adopted by the Commission December 18, 1935. Thereafter, the Law Department undertook the preparation and compilation of a comprehensive index to said Rules of Practice and Procedure and secured authorization from the Commission to have both rules and index printed in loose-leaf pamphlet form for convenient use of the personnel of the Commission and of members of the public having business before it.

In addition to the general revision of the Rules of Practice and Procedure as stated, the Commission has amended certain of its existing technical regulations. It has appointed a standing committee on rules composed of a member of each department of the Commission and the Secretary, with the General Counsel as chairman. It is the duty of this committee to draft regulations from time to time for the consideration of the Commission. A general revision of its technical rules is contemplated by the Commission, and some of the ground work in this behalf was done in the last fiscal year.

### VOLUME I. FEDERAL COMMUNICATIONS COMMISSION REPORTS

Section 4 (m) of the Communications Act of 1934 provides that the Commission shall publish its reports and decisions in such form and manner as may be best adapted for public information and use.

Pursuant to this requirement, the Commission, during the last fiscal year, instituted the practice of publishing each year in one or more volumes, as may be necessary, its reports, statements of fact and grounds for decisions, and orders. The Law Department had pri-

mary responsibility for the correlation and preparation of the material constituting volume I, covering a period from July 11, 1934, when the Commission came into being, to and including June 30, 1935. In this connection, the Law Department prepared, also, headnotes to all final reports, statements of fact and grounds for decisions and orders, a comprehensive index-digest of the same, and superintended generally the publishing of this volume by the Government Printing Office.

## APPLICATIONS

### RADIO LICENSING

The term "radio licensing" includes broadcast stations, radiotelegraph stations, radiotelephone stations, and special classes of stations.

Formerly, all applications relating to the licensing of radio stations and operators were handled by one division of the Law Department, regardless of the class or character of authorization requested. With the reorganization of the Law Department as hereinbefore described, applications were handled by that division of the Law Department to which is assigned primary responsibility for legal matters pertaining to a particular service. In all, the Law Department handled approximately 10,000 applications. These included applications for construction permits for new stations, and modifications of construction permits, applications for licenses covering authorized construction, informal and special authority applications, applications for renewals of licenses, applications for assignments of licenses and for transfers of stock control of licensee corporations, amended applications of various kinds, and miscellaneous applications.

Besides preparation and review of numerous forms of applications, and of licenses for various types of authorization issued by the Commission, the Radio Applications Section of each division of the Law Department is required to examine and review each application received by the Commission and prepare an opinion in writing for the Commission concerning the legal sufficiency thereof, to be submitted to the appropriate division as a basis for final action. In connection with these applications, it is necessary for this section of each division to recommend action to the appropriate division of the Commission upon petitions, motions, and other pleadings filed by applicants and others interested.

In cases which the Law Department recommends to be set for hearing before the Commission, a division thereof, a member, director, or examiner, this section of each division of the Law Department prepares bills of particulars upon which the cases are to be heard, and prepares legal opinions and recommendations on a variety of questions looking to administrative action by the Commission with respect to the licensing of radio stations of all classes.

### FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY

Applications filed for certificates of public convenience and necessity, or to supplement facilities, are reviewed and examined by the Law Department in the same manner as are radio licensing applications.

## FOR AUTHORITY TO CONSTRUCT NEW LINES, ETC.

Section 214 of the act provides that no carrier subject to the Communications Act of 1934 shall undertake the construction of a new line or of an extension of any line, or shall acquire or operate any line, or extension thereof, or shall engage in transmission over or by means of such additional or extended line, unless and until there shall have been obtained from the Commission a certificate that the present or future public convenience and necessity require or will require the construction, or operation, or construction and operation, of such additional or extended line: *Provided*, That no such certificate shall be required under this section of (1) a line within a single State, unless said line constitutes part of an interstate line; (2) local, branch, or terminal lines not exceeding 10 miles in length; or (3) any lines acquired under section 221 of this act: *Provided, further*, That the Commission may upon appropriate request being made authorize temporary or emergency service, or the supplementing of existing facilities without regard to the provisions of this section.

(a) *Telegraph*.—During the period covered by this report, 27 applications were filed for the acquisition and operation of new or supplemental telegraph lines under authority of section 214 of the Communications Act of 1934. None of these applications involved construction, but sought authority to lease such lines or circuits from other telephone or telegraph carriers. Nineteen of the applications were granted during the fiscal year, while 8 were pending on June 30, 1936.

(b) *Telephone*.—During the period covered by this report 15 applications were filed for certificates under section 214 of the Communications Act of 1934 for the acquisition and operation of new or supplemental telephone lines. All were granted during the fiscal year. These applications sought approval of expenditures ranging from a few hundred dollars to more than half a million dollars.

## FOR AUTHORITY TO CONSOLIDATE

Section 221 of the act provides that upon application of one or more telephone companies for authority to consolidate their properties into a single company, or for authority for one or more companies to acquire the whole or any part of another telephone company, when such consolidated company would be subject to the act, the Commission shall give notice of the public hearing upon the application to the governors and State utility commissions of the States in which the physical property is located. If the Commission finds that the proposed application will be of advantage to the persons to whom service is to be rendered and is in the public interest, it shall issue its certificate to that effect. The act provides that any such consolidation that may be authorized by the Commission shall not be deemed to be in violation of the antitrust laws enacted by Congress.

This section of the Communications Act of 1934 was taken from the Interstate Commerce Act. This Commission has accepted the interpretation of the Interstate Commerce Commission that this section is permissive and not mandatory. As a practical matter, applications under this section will be made only when a telephone company de-

sires to have an immunity from any possible violation of the anti-trust acts.

Only one application to the Commission has been made under this section. That was an application for the approval of a contract to purchase the physical property of the North Western Indiana Telephone Co. by the Crown Point Telephone Co., a subsidiary of the Illinois Bell Telephone Co., for approximately \$514,000. This application was designated for hearing before an examiner.

### TARIFF REGULATION

The Communications Act of 1934 imposes the duty upon this Commission of determining what classifications, charges, and practices of the telegraph and telephone carriers engaged in interstate commerce, by wire or radio, are reasonable and nondiscriminatory. During the past year the Law Department has assisted the Tariff Section of the Accounting Department in its work of clarifying the tariffs of the various telephone and telegraph carriers subject to the act and bringing about the elimination of discriminatory tariffs and practices. It has determined the legal basis and prepared the orders for an extensive readjustment of present tariffs to correspond to the requirements of the act. On July 31, 1935, the Commission issued its Tariff Circular No. 1, effective September 1, 1935, governing the construction, filing, and posting of tariffs for both telephone and telegraph carriers.

The Telegraph Division of the Commission, during the previous fiscal year, conducted an extensive hearing upon the classification, regulation, and practices of the various telegraph carriers subject to the jurisdiction of the Commission. Many of the more serious irregularities in the tariffs as originally filed with the Commission have been eliminated and extensive work has been done in further study of the telegraph industry and in the legal problems involved looking toward a final determination of the lawful character of the many tariffs and practices of the different companies and of the proper character of the competitive relationship which should be permitted between them. Further discussion of special features of this work will be found below under "Complaints and investigations and hearings."

### COMPLAINTS AND INVESTIGATIONS ARISING UNDER TITLE III OF THE ACT

Associated with the preparation of legal recommendations upon each application filed with the Commission is the complaint and investigation work. The Commission annually receives a large number of communications, reports, etc., from its field offices and from members of the listening public, concerning the service of existing licensees. The Applications Section of each division of the Law Department has initial responsibility for the investigation of these complaints and makes recommendations concerning them to the appropriate division of the Commission.

**(A) RADIO BROADCAST LICENSEES**

While the past fiscal year has been characterized by an increase in the number of complaints received with regard to the program service of broadcast stations, the majority of the investigations conducted pursuant to such complaints resulted in informal adjustment thereof. In only 11 instances did the investigations, conducted as a result of complaints, or reports from the Commission's field offices, require formal action, these being concerned with stations that broadcast lottery programs, objectionable medical programs, stock-selling schemes, and commercial fortune-telling programs. Final Commission decision has been rendered with respect to 5 of the aforementioned 11 cases, 1 resulting in the failure to renew the license of a station and its consequent deletion.

Order no. 2 of the Broadcast Division requires a broadcast station to report to the Commission all contracts affecting the control of the station and, in addition, all transfers of stock in licensed corporations. The Law Department has endeavored to keep an accurate and up-to-date file on the order no. 2 work. An index has been made of all persons or legal entities to whom licenses have been granted, or who have an interest in any license, and a complete file is kept in the Law Department of all information received under the call letters of the station. Each application for a broadcast license is checked to compare the information therein contained with that contained in the order no. 2 files. All applications are checked with the general complaint and investigation files. During the fiscal year, 255 discrepancies were noted as between the information supplied on the applications and the information available under the order no. 2 returns. These 255 cases included a few where the return itself indicated possible violation of section 310 of the Communications Act of 1934 by transfer of control without consent of the Commission. Of the 255 cases, 208 were satisfactorily explained and the records corrected; 18 unauthorized transfers of control were found which resulted in the filing of applications for the Commission's consent; and 29 were in the process of investigation at the close of the fiscal year.

**(B) TELEPHONE, TELEGRAPH, AND OTHER RADIO STATION LICENSES**

A great many investigations hereunder were conducted during the past fiscal year. These included investigations to determine the needs or the character of operation of radio stations in the telephone, telegraph, press, police, aviation, and experimental services. Most of them resulted in agreement between the parties concerned. Thus, for example, an informal conference between all parties concerned, including the principal users of the service, resulted in the establishment of a multiple address press radio service. In a similar manner, a dispute between stations in the police radio service at Oak Park, Ill., and Chicago, Ill., was settled after a hearing. Only five of these investigations resulted in hearings and final reports by the Commission. Three of these cases concerned violations of the Ship Act of 1910, which requires ships of certain classes to carry radio installations and operators for the protection of life and property at sea.

**(C) OPERATOR LICENSEES**

The investigation of all alleged violations by radio operator licensees, including amateurs, is conducted by the Law Department. The scope of this work may be indicated by the fact that there are over forty-five thousand (45,000) licensed amateur operators, and over half that number of licensed professional operators. During the past fiscal year such investigations resulted in the withholding or suspension of 12 professional operator licenses and 23 amateur operator licenses. Also, 104 persons were barred from examination for periods of 6 to 12 months.

**(D) CRIMINAL INVESTIGATIONS**

The Law Department assisted the Department of Justice in the investigation of 51 cases, 2 of which involved possible violations of section 325 (b) which requires a permit of maintenance of studios of foreign broadcasts, and 49 of which related to alleged violations of sections 301 and 318 of the act which require licenses for stations and operators thereof. Of the two cases involving a violation of section 325 (b) of the Communications Act, one is still under investigation, and, in the other case, three parties have been indicted by the Federal grand jury of the District Court of the Southern District of Texas at Laredo. This case is pending and will be tried during the fall term at Laredo, Tex. It is the first case of its kind to be tried under this section of the act. Of the 49 cases investigated for alleged violations of sections 301 and 318, 1 resulted in a conviction for the operation of an unlicensed station and a jail sentence of 57 days was imposed; 1 case was nolle prossed after indictment; 7 are pending trial in the near future; 9 are being further investigated and violators observed; and 31 were disposed of by issuing warnings to violators.

**(E) MISCELLANEOUS**

During the fiscal year covered by the First Annual Report of the Federal Communications Commission a report was made of a hearing held under section 307 (c) of the act, which provides for a study of the proposal that Congress by statute allocate fixed percentages of radio broadcasting facilities to particular types or kinds of non-profit radio programs or to persons identified with particular types or kinds of non-profit activities. Following this report, a Federal Radio Education Committee was appointed composed of 40 persons prominent in the field of education and radio. The Commission is represented on this committee. During the year the full committee appointed a subcommittee on conflicts. The first meeting of the subcommittee was held in Washington during the week beginning April 28, 1936, and lasted 3 days. A member of the Law Department has served as a member of the latter committee.

The general purpose of the subcommittee on conflicts is to investigate and determine the differences arising between the commercial and the social or educational broadcasters and secure the utmost possible cooperation between the two groups. After the 3-day session, a full report was made to the Federal Radio Education Committee with concrete suggestions for future work.

COMPLAINTS AND INVESTIGATIONS UNDER TITLE II OF THE  
COMMUNICATIONS ACT OF 1934

The Commission receives many complaints, both formal and informal, relating to telegraph and telephone services, classifications or charges. An examination and review of all such complaints is made by the Law Department, which advises the Commission as to the legal sufficiency thereof and whether or not they relate to matters over which the Commission has jurisdiction.

Examples of complaints filed with the Commission during the past fiscal year are: A complaint was filed before the Telegraph Division by Aeronautical Radio, Inc., a company furnishing a Nation-wide aviation radio service, a petition to require the telephone company to furnish it a leased-wire service under its existing tariffs or to establish a separate classification for such service at a reduced rate. The hearings and argument in this matter were concluded near the close of the fiscal year, and the decision of the Telegraph Division has not yet been entered.

In December 1935 a complaint was filed with the Telephone Division by the Pensacola Broadcasting Co., operating Station WCOA, against the American Telephone & Telegraph Co. Briefly stated, it was alleged that the contract between the Pensacola station and Columbia Broadcasting System required the station to pay Columbia the same amount for telephone circuits used in receiving broadcast programs as Columbia in turn paid the American Telephone & Telegraph Co. under a contract with it.

It was also claimed that the wire charges in the tariff filed with the Commission by the American Telephone & Telegraph Co. were unjust, unfair, and unreasonable, particularly as to the calculation of the mileage charged for. The tariff charge was \$60 per circuit mile for the class of service in question. The circuit mileage for which petitioner paid was calculated from Mobile in a northeasterly direction to Flomaton, Ala., a distance of 61 miles, thence southeasterly from Flomaton to Pensacola, a distance of 48 miles, or a total of 109 miles. The air-line distance from Mobile to Pensacola is 67 miles. The petitioner claimed that the program service which it received from Columbia actually came from New York and other eastern points, and that the mileage charge of the 61 miles from Flomaton to Mobile was a "back-haul", for which it should not be charged and that the tariff should be corrected.

The complaint was set for hearing but, before the hearing, complainant and the telephone company reached an agreement as to an adjustment, which reduced the back-haul charge from Flomaton to Mobile 50 percent, so that under the settlement Station WCOA would pay for 75½ miles instead of 109 miles. Thereupon, the telephone company filed a tariff to this effect, and the petitioner withdrew its complaint. There are some eight or nine other broadcast stations with similar mileage situations which will benefit by the new tariff provision.

In the matter of informal complaints by the public, the Law Department investigates the same and endeavors to effect a settlement of the issues between the parties. As an illustration of this type of



thing: A letter was received from a State Tuberculosis Sanitarium at Norton, Kans. It was thought unwise for the patients to congregate in the general amusement room or chapel. There had been installed some sort of a general radio hook-up with wires and headphones for each patient. The institution had its own P. B. X. switchboard with two trunk telephone lines into the city of Norton. It was stated that the local telephone manager had notified the officials of the sanitarium that this service by which the patients were able to receive sermons and religious services held in churches at Norton would have to be discontinued under a ruling of the Commission.

The physical facts were not altogether clear from the letter. The Commission had made no ruling in matters of the kind. The Law Department telephoned an operating official of the American Telephone & Telegraph Co. in New York and read him the letter. He agreed to get in touch with the Southwestern Bell Telephone Co. which operates in Kansas, and ascertain the facts and endeavor to straighten the matter out so that the patients would not be deprived of receiving programs. Within 5 days of the receipt of the complaint the Commission received a telegram from the State board at Topeka, Kans., operating the Tuberculosis Sanitarium, stating that the entire matter had now been adjusted and expressing appreciation for the assistance rendered.

If settlement cannot be reached in matters of informal complaints, the Law Department recommends to the Commission what disposition of the complaint should be made.

Investigations are frequently instigated under the act on the Commission's own initiative, in which case the Law Department has primary responsibility for the conduct thereof. For example, *In the Matter of Minimum Guarantee and Joint-User Provisions in Teletypewriter Exchange Service Schedules of the Bell System Companies*: This was an investigation initiated on the Commission's own motion into the matter of tariff schedules which had been filed by certain Bell System companies for teletypewriter exchange services, providing for a minimum guaranty of \$30 per month and containing joint-user provisions. The opinion of the Division contains findings in respect to the application of the guaranty and the charges for joint users, as a result of which new tariffs were filed by the respondent carriers in accordance therewith.

On October 30, 1935, the Commission authorized the director of telephone, chief accountant, and assistant general counsel to conduct informal conferences with officials of the American Telephone & Telegraph Co., and the Southern Bell (operating in the nine States of North Carolina, South Carolina, Kentucky, Tennessee, Georgia, Alabama, Mississippi, Florida, and Louisiana), as a result of which that company agreed to file new tariffs, effective January 1, 1936, reducing its interstate rates for distances between 56 miles and 318 miles to the same level as the American Telephone & Telegraph Co. for similar distances. It was estimated that this reduction would amount to approximately \$125,000 annually.

In 1935 conferences were had by the Commission and its staff with officials of the American Telephone & Telegraph Co. looking to the establishment of a direct radiotelephone circuit from New York to

Paris. Radiotelephone communication with Europe is now handled over circuits of the American Telephone Co. between New York and London. The circuits are licensed by the Commission. Connection is had at London with the British Telephone System (operated by the British Post Office) and it furnishes the telephone service to and from New York with various points on the continent.

A sufficient number of the circuits, heretofore licensed for use between New York to London, are to be used for direct radiotelephone service to Paris. As soon as the French Government completes the installation of the terminal facilities in France the direct service between New York to Paris will be put into operation.

### CLASSIFICATION OF TELEPHONE COMPANIES

When the Federal Communications Commission was organized July 11, 1934, it received from the Interstate Commerce Commission a mailing list of some 6,500 telephone companies. It was soon ascertained that many of these companies had long since gone out of existence. The Commission was confronted with the problem of determining what telephone companies were subject to its jurisdiction. A questionnaire was prepared by the Law Department and sent out to the names on the list. In many instances the determination of the classification of a particular company has required considerable correspondence and study to develop the facts. With the exception of a small number of companies, involving disputed questions of law and fact, the task of classification has been completed. In addition to a large number of companies classified in the fiscal year 1935, during the fiscal year 1936 some 2,200 telephone companies have been definitely advised of their classification. Class A companies are those with gross revenue of \$100,000 and over; class B companies are those with gross revenue of \$50,000 and not more than \$100,000. Companies with less than \$50,000 gross revenue are not designated by a class letter. Approximately 250 companies from the three classes are fully subject to the act; a very large number of companies are subject to sections 201-205 only; and a substantial number of companies are outside the jurisdiction of the Commission. It has been necessary for the Telephone Division to refer approximately 25 companies to an examiner for hearings, to determine the question of control and resulting jurisdiction as contemplated by section 2 (b) (2). Eight of such companies filed responses to the various orders of the Commission, and the hearings were therefore canceled. Hearings have been held in 14 of these cases, in Washington; Jefferson City, Mo.; Chicago; Indianapolis; Columbus, Ohio; and Madison, Wis. Hearings in two cases have not as yet been held.

### DEPRECIATION

Section 220 (b) provides that the Commission shall, as soon as practicable, prescribe for telephone carriers the classes of property for which depreciation charges may be properly included under operating expenses and the percentage of depreciation which shall be charged with respect to each of such classes of property, classifying the carriers as it may deem proper for this purpose.

There is no more important, complicated, or difficult problem relating to telephone and telegraph companies than that of depreciation. The same subject was included in section 20 of the Interstate Commerce Act. Notwithstanding that the Interstate Commerce Commission gave serious consideration to the subject, it had been unable to fix specific rates for depreciation for classes of telephone property at the time the Federal Communications Commission was established and took over jurisdiction of the matter.

The Commission appointed an interdepartmental committee on depreciation and cost schedules, composed of the general counsel, chief engineer, and chief accountant, to study this problem.

### HEARINGS

Under various sections of the Communications Act of 1934 the Commission is required to hold hearings in the exercise of its regulatory powers. For example, section 204 of the act provides that "whenever there is filed with the Commission any new charge, classification, regulation, or practice, the Commission may, either upon complaint or upon its own initiative without complaint, upon reasonable notice, enter upon a hearing concerning the lawfulness thereof." Section 205 (a) of the act gives the Commission the power to determine and prescribe maximum and minimum charges and classifications, practices, and regulations, "after full opportunity for hearing." Section 209 declares: "If, after hearing on a complaint, the Commission shall determine that any party complainant is entitled to an award of damages under the provisions of this act", it shall make an order directing the carrier to pay, etc. Section 213 (a) provides that "the Commission may from time to time, as may be necessary for the proper administration of this act, and after opportunity for hearing, make a valuation of all or of any part of the property owned or used by any carrier subject to this act, \* \* \*." Section 214 (d) states: "The Commission may, after full opportunity for hearing, in a proceeding upon complaint or upon its own initiative without complaint authorize or require by order any carrier, party to such proceeding, to provide itself with adequate facilities for performing its services as a common carrier; \* \* \*." Section 221 requires the Commission to "fix a time and place for a public hearing" upon application of one or more telephone companies for authority to consolidate their properties, etc. Section 303 gives the Commission power to make regulations not inconsistent with law as it may deem necessary to prevent interference between radio stations and to carry out the provisions of the act with respect to the regulation thereof, provided, however, that changes in frequencies, authorized power, or in times of operation of any station shall not be made without the consent of the licensee, unless, "after a public hearing", the Commission shall determine that such changes will promote public convenience or interest or will serve public necessity or the provisions of the act will be more fully complied with. Section 309 (a) provides that in the event the Commission, after examination of any application for station license, or for the renewal or modification of the station license, shall be unable to determine therefrom that the granting thereof will serve public interest, convenience, and necessity, "it

shall notify the applicant thereof, shall fix and give notice of a time and place for hearing thereon, and shall afford such applicant an opportunity to be heard under such rules and regulations as it may prescribe." Section 312 (a) of the act provides for the revocation of station licenses: *Provided however*, That "no such order of revocation shall take effect until 15 days' notice in writing thereof, stating the cause for the proposed revocation, has been given to the licensee. Such licensee may make written application to the Commission at any time within said 15 days for a hearing upon such order, and upon the filing of such written application said order of revocation shall stand suspended until the conclusion of the hearing conducted under such rules as the Commission may prescribe \* \* \*." Section 312 (b) provides for the modification of station licenses by the Commission: *Provided however*, That "no such order of modification shall become final until the holder of such outstanding license or permit shall have been notified in writing of the proposed action and the grounds or reasons therefor and shall have been given reasonable opportunity to show cause why such an order of modification should not issue."

The Law Department has primary responsibility for the preparation and conduct of all hearings held by the Commission, a division thereof, a member, director, or examiner under any of the foregoing provisions of the act.

Hearings before the Commission are either informal or formal. (See 106.1-106.3, inclusive, Federal Communications Commission Rules of Practice and Procedure.)

#### INFORMAL HEARINGS

Beginning June 15, to and including June 26, 1936, an informal hearing was held before the Commission en banc for the purpose of ascertaining the views of interested parties as to the uses and needs of the various services, with particular reference to the allocation of frequencies above 30,000 kilocycles, and of reviewing present frequency allocations to services in the radio spectrum below 30,000 kilocycles.

#### FORMAL HEARINGS

Matters involving the jurisdiction of two or more divisions of the Commission are heard by the Commission en banc or by it referred to a member, director, or an examiner for hearing.

The Commission en banc heard the matter of the petition of the American Telephone & Telegraph Co. and the New York Telephone Co. in connection with the installation of experimental coaxial cable between New York and Philadelphia, Pa., the estimated cost of construction of which was \$580,000. The testimony showed that this new type of cable will permit 240 telephone circuits to be operated simultaneously or 10 to 20 times as many telegraph circuits, or combinations of both, and it had great possibilities in the field of television. On February 26, 1936, the Commission issued a certificate of public convenience and necessity. (Vol. 2, Federal Communications Commission Reports; not yet published.)

During the last fiscal year 278 applications under section 212 of the Communications Act of 1934 for orders to authorize applicants

to hold positions with more than one carrier subject to the act were referred to and heard by examiners.

The complaint of *Leon Cammen v. The American Telephone and Telegraph Company* alleging certain discriminatory and otherwise unlawful practices of the company effectuated by their tariff filings was by the Commission en banc referred to and heard by an examiner. After careful consideration of the whole record, the Commission was of the opinion that the evidence adduced was not sufficient to require changes in the Rules and Regulations or practices or modifications of the tariffs of the defendants in any of the respects as sought by plaintiff and dismissed the bill. (Vol. 2, Federal Communications Commission Reports; not yet published.)

#### (A) BROADCAST

During the past fiscal year, 296 hearings were had in broadcast cases. Of these, 14 were heard before the Broadcast Division en banc, none before a member of the Broadcast Division, none was heard before the Director of that Division, and 282 were heard before examiners appointed by the Broadcast Division.

All broadcast hearings in the last fiscal year were held pursuant to section 309 (a) of the act and included stations in every section of the United States, its Territories, and possessions. Of the hearings held during the period of this report, probably the two most complicated are the so-called *Brooklyn cases* and those known as the *640 cases*.

The *Brooklyn cases* involved 18 conflicting applications by existing licensees and applicants for new stations, all in the same geographical area. The first hearing in this matter was conducted by the Federal Radio Commission before an examiner appointed by that Commission. After the examiner had filed his reports, the case was remanded for further hearing. Thereafter, the Communications Act of 1934 became law, and the matter was taken over by the Federal Communications Commission. Additional applications having been filed meanwhile, the Federal Communications Commission designated the same, with the pending applications, for hearing before an examiner, and such further hearing was held. On December 17, 1935, the Commission made its decision (vol. 2, Federal Communications Commission Reports; not yet published). Several petitions for rehearing under section 405 of the act were made and granted. Said rehearing had not been had at the close of this fiscal year.

The *640 cases* involved 13 applications, affecting primarily the use of the frequency 640 kilocycles in a number of localities in the United States. The applications were divided into groups and heard together before the Broadcast Division en banc. This frequency is designated by rule 116 of the Commission for the use of "clear channel stations"; that is, on which no simultaneous nighttime operation is permitted. Among others, proposals were made by several of the applicants for simultaneous nighttime operation on 640 kilocycles, in violation of this rule. The hearing also involved the use of this frequency by competing applicants for new stations in Portland, Maine, and Pittsfield, Mass. The Commission's decision, June 12, 1936, will be reported in volume 2, Federal Communications

Commission Reports, when the same is published. Two appeals have been taken to the United States Court of Appeals for the District of Columbia from this decision insofar as it relates to the Portland, Maine, application, and these are pending in that court.

(B) TELEGRAPH

During the past fiscal year 13 hearings were had in telegraph cases. Of these, 3 were heard before the Telegraph Division en banc, none were heard before a member of the Telegraph Division, none were heard before the Director of that Division, and 10 were heard before examiners duly appointed by the Telegraph Division.

Four of these were alleged violations of the Ship Act, 2 for alleged violations by radio-operator licensees, 1 upon an application for renewal of 33 station licenses, 2 upon complaints involving the regulations and tariffs of the American Telephone & Telegraph Co. as affecting its telegraph services, 1 upon an application for a new point of communication, 1 against the American Telephone & Telegraph Co. seeking the enlargement of its private-line service, 1 for the purpose of investigating a proposed rule permitting international multiple-address service, and 1 upon application of a commercial radiotelegraph carrier for additional frequencies to be used in its fixed public service.

Of the foregoing, the following cases are considered of particular interest in addition to those heretofore discussed: The hearing on the application of the Mackay Radio & Telegraph Co. to add Oslo, Norway, as a primary point of radiotelegraph communication. This was an application before the Telegraph Division for modification of fixed public-service licenses of stations of the Mackay Radio & Telegraph Co. to add Oslo, Norway, as a point of communication, which involved the need for an additional direct radio circuit to this point; the adequacy of existing radio and cable facilities between the United States and Norway; the possibility of providing a new or improved service, or reduction in rates, or an increase in traffic; the effect of a grant of such application upon the revenues of competing telegraph carriers; and the question of whether the authorization was necessary for the continued operation of the applicant company or its associated companies comprising the International System. The application was denied.

Thereafter, the Mackay Co. filed a petition for rehearing by the Commission en banc to reconsider and reverse, change, or modify, the decision of the Telegraph Division, and also requested a stay of the effective date of the final order until October 1, 1936. The latter request was granted, and the petition for rehearing is now pending before the Commission.

The hearing upon applications of Globe Wireless, Ltd. This company filed applications for licenses to use five additional frequencies for its fixed public service point-to-point radiotelegraph stations, which were set for hearing to determine the applicant's need for the additional frequencies in rendering its "radio mail" service. The Commission found that the existing frequencies licensed to this company were inadequate at certain seasons and under certain operating conditions to permit it to render an efficient and reliable service, and the applications were, therefore, granted.

## (C) TELEPHONE

During the past fiscal year 20 hearings were had in telephone cases, 19 of which were heard by examiners appointed by the Telephone Division, 1 was heard by the Telephone Division en banc, 5 involved applications for radiotelephone facilities, 14 related to the jurisdiction of the Commission over telephone companies under section 2 (b) (2) of the act, one was a joint petition pursuant to section 221 (a) of the act, requesting the Commission to issue a certificate to the effect that the proposed acquisition of the properties of the North Western Telephone Co. by the Crown Point Telephone Co. would be of advantage to the persons to whom service is to be rendered and in the public interest. The Commission directed that the latter case be heard before an examiner to determine (1) the financial ability of the acquiring carrier to purchase the property outlined in the application without impairing its ability to perform its service to the communities now served by both carriers, (2) to ascertain the reasonableness of the valuation of the property sought to be purchased by the acquiring carriers, and (3) to ascertain whether or not the proposed acquisition will be of advantage to the persons to whom service is to be rendered and in the public interest. At the close of this fiscal year the case was pending decision of the Telephone Division.

## REPORTS AND DECISIONS OF THE COMMISSION

During the last fiscal year, the Law Department assisted in the preparation of 132 reports and decisions for approval and adoption by the Commission. Of these, 120 were statements of fact and grounds for decision and orders in broadcast cases involving 190 applications decided by that division, 6 were statements of fact and grounds for decision in telegraph cases, and 4 were reports of telegraph investigations, 1 was a report by the Telephone Division, and 1 was a report of the Commission en banc in the matter of a complaint involving both the Telegraph and Telephone Division. All of these reports and decisions will be incorporated in volume 2, Federal Communications Commission Reports, when published.

## LITIGATION

The Law Department has charge of, and responsibility for, all litigation in which the Commission is interested or is a party.

On July 1, 1935, there were pending the following number of cases: One in the United States District Court for the Northern District of Illinois, three in the United States Court of Appeals for the District of Columbia, and two in the Supreme Court of the District of Columbia.<sup>2</sup> All were disposed of during the last fiscal year as follows: One was dismissed on motion of the Commission, two were dismissed on motion of appellant, two were dismissed on motion of plaintiff, and one was decided by the United States Court of Appeals for the District of Columbia affirming the decision of the Commission. During the fiscal year covered by this report seven new cases were filed, four in

<sup>2</sup>The name of this court was changed in the last session of Congress to the United States District Court for the District of Columbia.

the United States Court of Appeals for the District of Columbia, two in the United States District Court for the District of Columbia, and one in the United States District Court for the Southern District of New York. Of these, one was dismissed on motion of appellant, two were dismissed on motion of Commission after argument, and four are still pending.

The following cases are thought to be of sufficient interest to warrant special consideration. A brief synopsis of each is given below:

IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA

*Head of the Lakes Broadcasting Company v. Federal Communications Commission; Red River Broadcasting Company, Intervenor.* Decided May 4, 1936—  
Not yet reported

This was an appeal from a decision of the Commission, Broadcast Division, granting an application for the removal of Station KGFK, a 100-watt unlimited-time station, from Moorhead to Duluth, Minn. The application had been originally granted by the Commission without hearing, but later protested by two parties, one of them appellant. The application had been set for hearing, heard by the Commission, and its grant reaffirmed. Appellant, Head of the Lakes Broadcasting Co., one of the two protesting parties before the Commission, is the licensee of a broadcast station located at Superior, Wis., adjacent to Duluth, Minn., to which latter point Station KGFK had been authorized to move. The Commission had found in its decision, after hearing, that a comparison of the Moorhead, Minn.-Fargo, N. Dak., area and the Duluth, Minn.-Superior, Wis., area, from the standpoint of broadcast service available, warranted a removal of the Moorhead station, and that such removal would not materially affect the Superior, Wis., station.

The court upon a review of the evidence held that the decision of the Commission in granting the application for removal was based upon substantial evidence and was not arbitrary or capricious. It, therefore, affirmed the Commission's decision.

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

*Monacacy Broadcasting Company v. Prall et al.* Equity No. 60543. Not reported

This case involved a bill for injunction filed by the Monacacy Broadcasting Co. to restrain the Commission from holding a hearing upon plaintiff's application before the Commission for a new station at Rockville, Md., and praying that the court order the Commission to issue a construction permit for the erection by plaintiff of said station. The Commission had originally granted the plaintiff's application without a hearing, in conformity with its Rules of Practice and Procedure. After the granting thereof, the Commission had received a formal protest from a Philadelphia station and, under its rules, had suspended its action in granting the application and set the same for hearing before an examiner. Prior to the hearing before the examiner, the protest of the Philadelphia station had been withdrawn, and the Commission, in lieu of making final its action originally taken in granting the application, ordered that the application remain on



the calendar for hearing. This action of the Commission, in ordering the application to remain on the calendar for hearing, involved the interpretation to be placed upon a rule of the Commission. The Commission filed a motion to dismiss the bill of complaint upon the ground that it did not commit error in retaining plaintiff's application on the calendar for hearing, and that the court was without jurisdiction to issue the relief prayed for.

After argument upon the Commission's motion to dismiss, the court entered its order dismissing the bill of complaint on the grounds: First, that the court should give weight to the decision of the Commission construing the law under which it operates or its own rules and regulations; and, second, that in any event under the decision of the United States Court of Appeals for the District of Columbia in the *Jenny Wren* case (referred to in the last annual report), the court had no jurisdiction to grant the relief prayed for, the plaintiff having a plain, speedy, and adequate remedy at law under section 402 (b) of the Communications Act of 1934 providing for appeals from Commission orders to the United States Court of Appeals for the District of Columbia.

*William Randolph Hearst v. Hugo L. Black, et al.* Equity No. 60937

This was an action for an injunction brought against Hugo L. Black, et al., constituting a committee of the United States Senate, and Anning S. Prall, constituting the Federal Communications Commission, based on an allegation that plaintiff's constitutional rights in connection with inspection of certain telegrams in possession of the Western Union Telegraph Co. were violated or were threatened to be violated. Plaintiff filed a motion for a preliminary injunction which, after argument, was denied. The matter is still pending before the courts of the District of Columbia.

*Crow v. United States Civil Service Commission and Federal Communications Commission.* At Law No. 87295

On April 18, 1936, David R. Crow filed a petition for mandamus against the Civil Service Commission and the Federal Communications Commission in the District Court of the United States for the District of Columbia. The petitioner alleged that he was a veteran with disability preference and at the top of the list for certain specified legal positions on the roster of the Civil Service Commission. He alleged that the permanent appointments of 10 attorneys by the Federal Communications Commission under Executive order of the President were illegal and that the Executive order was void. The answer of the respondent alleged that the 10 attorneys had been temporarily employed with the consent and approval of the United States Civil Service Commission soon after the organization of the Federal Communications Commission, so that it might function until the establishment of a roster of attorneys by the Civil Service Commission. All of these attorneys had successfully passed the competitive examination held by the Civil Service Commission. On September 26, 1935, the President issued an Executive order at the request of the Federal Communications Commission authorizing the appointment of said attorneys without regard to their relative

standings on the Civil Service Register. The petitioner filed a demurrer to the answers, which squarely raised the question of the validity of the Executive order. The court overruled the demurrer, and the petitioner has taken an appeal to the United States Court of Appeals for the District of Columbia. This appeal is still pending.

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF  
NEW YORK

*American Telephone and Telegraph Company et al. v. United States of America  
and Federal Communications Commission.* Equity No. 81-366

Pursuant to section 220, on June 19, 1935, the Telephone Division promulgated a uniform system of accounts for telephone companies, effective January 1, 1936. In November 1935 the Bell System companies filed in the District Court of the United States for the Southern District of New York a bill of complaint seeking to have the order of the Commission prescribing the uniform system of accounts enjoined as being unconstitutional and void. A hearing was had in New York City before a three-judge court, composed of Judges Matern, Hand, and Knox. A temporary injunction was granted pending final decision. On February 18, 1936, the three-judge court rendered its decision sustaining the order of the Commission except in one or two minor particulars and dissolving the temporary injunction. The three-judge court denied the petition of the telephone companies for a stay of the accounting order pending final decision of the appeal to the Supreme Court of the United States. An appeal has been perfected by the telephone companies to the Supreme Court of the United States, which court has stayed the accounting order until the case shall be finally disposed of by it.

IN THE SUPREME COURT OF THE UNITED STATES

During the last fiscal year, the Supreme Court of the United States denied a petition for writ of certiorari in the *Jenny Wren case* (reported in the last Annual Report of this Commission), 296 U. S. 624; 78 F. (2d) 729.

SPECIAL TELEPHONE INVESTIGATION

The regular staff of the Law Department has not participated in the work of the special telephone investigation under Public Resolution No. 8, which is being conducted by a special staff set up by the Commission specifically to carry on the special investigation. However, realizing that when the special investigation is concluded the regular staff will be confronted with many difficult problems, it has been the policy of the Law Department to endeavor to follow the developments of the special investigation at its public hearings insofar as time and opportunity would permit.

# REPORT OF THE ENGINEERING DEPARTMENT

T. A. M. CRAVEN, *Chief Engineer*

## GENERAL

The work of the Engineering Department is performed by an organization consisting of the following sections:

- (a) Telegraph Section.
- (b) Telephone Section.
- (c) Broadcast Section.
- (d) International Section.
- (e) Field Section.
- (f) Technical Information Section.

The activities of the various sections, with the exception of the last named, are described in the First Annual Report of the Federal Communications Commission for the fiscal year 1935. Since that report, certain functions of the Telegraph, Telephone, and Broadcast Sections have been organized into a separate Technical Information Section, the primary function of which is to keep the Engineering Department and the Commission informed of technical trends in communications. It was ascertained from experience that such a section was necessary in order to keep abreast of the rapid technical progress being made in the art of communications. The Technical Information Section was formed during the month of June 1936.

Dr. C. B. Jolliffe, who was the first chief engineer of the Federal Communications Commission, resigned effective November 12, 1935. He was succeeded on December 2, 1935, by T. A. M. Craven.

The principal engineering items of general interest since June 30, 1935, have been:

(a) Progress being made in the development of new portions of the radio spectrum which promises to increase the total available number of channels for communication.

(b) The advancing development of television.

(c) Facsimile communication.

(d) The commencement of construction for field tests of the coaxial cable system.

(e) Collection of engineering data with respect to the performance of broadcast stations.

(f) Preparation for the International Telecommunication Conference scheduled to be held in Cairo, Egypt, in February 1938, and preparation for the next meeting of the International Consulting Committee on Radio, scheduled to be held in the spring of 1937 in Bucharest, Rumania.

(g) New forms of interference.

Details of these developments will be discussed at greater length elsewhere in this report.

One of the foremost problems confronting the Commission for the past several years has been the formulation of a frequency allocation plan which would meet the pressing demands of the industry for the increasing use of radio in the existing types of service, as well as provide for the inauguration of new services such as television, facsimile, police, and aviation.

With the rapid technical advances in the art, and with the increasing use of radio by the various types of service, the efforts of the Commission have been concentrated on establishing methods to increase the number of available channels, both by technical improvements of existing apparatus as well as the extension of the useful portions of the radio frequency spectrum.

This problem is not only one involving international cooperation, particularly in the bands up to 30,000 kc, but also requires close cooperation between the Government departments interested in radio, the manufacturers of radio apparatus, and the users of radio equipment.

The Commission has established a policy of cooperation with the industry in the solution of this pressing problem in order that there might be a centralization of coordinated effort in this country toward better and more economical use of the radio frequency spectrum. As a result of these efforts, experimentation has been encouraged along specific lines and much factual data necessary in the solution of the problem has been secured. It is expected that additional information will become available rapidly, as the results of this intensive guidance of research progress further into actual accomplishment.

In order that this program could be brought more clearly before the country and in order that the problems might be better understood by all concerned, the Commission called an informal engineering hearing of all persons and organizations interested in the development of the radio art. This hearing was held in the offices of the Commission at Washington, D. C., from June 15 to 26, 1936. The purposes of the hearing were as follows:

(1) To determine the present and future needs of the various classes of service for frequencies above 30,000 kc, with the view of ultimately allocating such frequencies to services.

(2) To secure for the public and the Commission a keener insight into the conflicting problems which confront the industry and the regulatory body in the application of the new frequencies to the service of the public.

(3) To guide experimentation along more definite lines as may be justified from the evidence presented at the hearing.

(4) To review present frequency allocations to services in the radio spectrum below 30,000 kc.

(5) To assist the Government in its preparation for the International Telecommunication Conference at Cairo in 1938.

The Interdepartment Radio Advisory Committee particularly was invited to attend this hearing and to present a consolidated estimate of the requirements of the Government for radio services.

Widespread interest was manifested in the hearing, and approximately 100 persons, representative of all important phases of the radio industry, presented testimony. The transcript of the hearing,

excluding the exhibits, comprises 2,049 pages of most valuable engineering testimony from some of the most competent engineers in the country, and includes information resulting from experimentation and investigation of the propagation characteristics of various frequencies, apparatus limitations, evaluation of various services from the standpoint of public need and benefit, and many other important technical phases.

Among the groups which were represented are the following:

- United States Government departments.
- Broadcasters.
- Commercial communication companies (domestic and international).
- Aviation services.
- Police departments.
- Fire departments.
- Forestry conservation departments.
- Amateur services.
- Television experimenters.
- Manufacturers of radio equipment.
- Private experimenters.
- Labor organizations.
- Motion-picture producers.
- Power transmission systems.
- Press organizations.
- Educational groups.
- Representatives of radio-set manufacturers.
- International Scientific Radio Union.
- American Medical Association.
- Doctors' Telephone Service.
- Geophysical service.
- Electric railways.
- Operators of facsimile transmission.

The record of this hearing, as well as the information compiled in previous years, will in all probability form a basis for an early allocation of frequencies above 30,000 kc and is already forming the basis for the formulation of proposals of the United States to be presented to the various governments of the world for consideration at the next International Telecommunication Conference to be held in Cairo, Egypt, in 1938.

The greatest interest centered around the facts which were developed with respect to the estimated requirements for Government services and the estimated minimum requirements for television. There were also presented to the Commission the estimated requirements of such strikingly different services, as police communication, communication for aviation, and many other well-known services.

While there has not been time in which to draw specific conclusions from the evidence given at the hearing, it was obvious that the allocated radio spectrum from 10 to 30,000 kc is not sufficient to accommodate the existing world-wide demands for radio facilities, and is totally incapable, at the present stage of technical development, of accommodating the new services which are being organized. It was also obvious that while there is a potential possibility of extending the useful radio spectrum to 10,000,000 kc, technical developments to date indicate that in the immediate future extension will in all probability be limited to approximately 200,000 kc. The evidence also indicated that insufficient knowledge is available to date with respect to the practicality of much of the spectrum between 30,000

and 200,000 kc, and that while development in this portion of the spectrum might be considered as emerging from the laboratory, it nevertheless requires further development before it could be allocated to various services for commercial operation on a permanent basis.

However, the evidence showed the necessity for making tentative allocations in order to avoid the pitfalls of premature intrenchment resulting from huge expenditures for experimental apparatus, developing into future obstacles of a practical nature when the time becomes opportune for permanent allocation.

It was also indicated that even though the useful radio spectrum in the next few years will be seven times as extensive as that of today, there would not be made available such additional multiplication of channels, and that with the advent of new services such as television and other new uses for radio, the Commission would continue to be confronted with a dearth of radio facilities in the face of a large demand therefor.

While the technique of television has progressed during the past year, it seemed generally the consensus of opinion that television is not yet ready for public service on a national scale. It must still be considered as experimental. There are numerous obstacles to be overcome and much technical development is required before television can be established on a sound national scale. Nevertheless, the rate of progress is rapid and the energies of the laboratories of the country are being concentrated on the technical development of television.

The rapid progress being made in the development of facsimile communication, both in the transmission of photographs and in the transmission of printed matter by radio and wire, has reached a stage which commands attention. Facsimile transmission and reception has the possibility of affecting considerably the method of conducting record communications in the future. While the future economic problems and benefits presented by facsimile are not yet clearly understood, it appears that the potentialities of this new service are of sufficient importance to require close attention to the results of experimentation and evolution in commercial operation.

The inauguration of field tests of the coaxial cable system between New York and Philadelphia is a forward step in the technique of communications. The results of these tests should be viewed with interest because of the potentialities involved in the application of this type of cable to the service of the public in the future. If the coaxial cable system should prove to be practical, it may bring about economic results of possible benefit to the public. The Commission's policy in this respect is to give full consideration to this technological trend and its social and economic consequences. This subject is covered in more detail later in this report.

During the past year the Commission, in cooperation with the industry, has made an intensive technical survey of the performance of broadcast stations with a view of ascertaining scientific facts leading possibly to an improved allocation of frequencies to broadcasting. This survey has just been completed, and its results are being studied so as to be available prior to October 5, 1936, on which date the Commission will hold a hearing with respect to improvements in

the existing principles of allocation of frequencies to broadcast stations.

The fact that the use of radio is international and the fact that the inherent properties of radio frequencies used by one nation or one service can affect, by reason of interference, the use of these frequencies by another nation or service, make the problem of radio communication one which affects all the nations of the world. In the past these nations have found it necessary to agree upon certain standard practices, as well as provisions for avoiding mutual interference in the use of radio. The next conference dealing with the technical state of the radio art will be held in Bucharest, Rumania, in 1937, and that dealing with agreed practices will be held in Cairo, Egypt, in 1938. Further details with respect to these conferences are mentioned elsewhere in this report.

The increasing use of electrical therapeutic machines on the part of hospitals and physicians, as well as the general public, has created a new type of interference to radio communications. For example, it was ascertained that the use of a diathermy machine in this country could interrupt an international radio communication service. Further, preliminary investigation indicates that interference caused by this type of machine may affect seriously the value of television broadcasting. In addition to this type of interference, the interference caused by the ignition system of an automobile may have a serious effect upon the usefulness of the new portion of the radio frequency spectrum above 30,000 kc, which is now being developed. Preliminary investigations inaugurated by this Commission indicate that the problem is soluble, if the cooperation of the manufacturers of therapeutic machines, the manufacturers of radio, and the automobile industry can be obtained. However, at this time the Commission's investigation of this phase of radio interference is not completed.

Pursuant to Section 218 of the Communications Act of 1934 the Commission inaugurated an investigation of the patent situation in the communications industry. The various carriers were required to submit a list of their patents and the Commission is now making an analysis of each response with the view of obtaining information concerning the various intricate phases of this important activity of the communications industry. This analysis is, of necessity, an extensive undertaking, and at this time no conclusions can be reached. However, it is a continuing study and it is expected that at a later date the Commission will be in a position to render a report to Congress on the matter.

## TELEGRAPH SECTION

### GENERAL

The Telegraph Section of the Engineering Department is charged with the technical examination of all matters relating to record communication by wire, radio, or cable; fixed and mobile radio services as assigned; preparation and presentation of expert testimony at hearings, conferences, etc.; preparation of technical regulations; studies concerning the use of facilities; and qualifications and classifications of radio operators.

During the past year many new assignments were made to stations in all parts of the world, and the problem of finding adequate space in the needed portions of the spectrum for the United States was more difficult than at any time before.

To show the tremendously rapid growth in the use of radio frequencies during the last few years, a comparison with the original international frequency list established by the Berne Bureau in December 1928 is illuminating. In the original list of December 1928 a total of approximately 1,700 stations were listed. Five years later the number of stations was approximately 17,000, or a 10-fold increase. A rough check of the latest list dated March 1936 shows a total of 25,000 stations. These figures are for stations at fixed locations and do not include ship, aircraft, amateur, and portable stations.

Thus it is obvious that the difficulties of fulfilling the radio phase of the requirement of the Communications Act of 1934 for the establishment and maintenance of a rapid efficient world-wide wire and radio communication service with adequate facilities at reasonable charges for the public and for the purpose of the national defense are becoming increasingly difficult by reason of the lack of space in the useful radio spectrum. Detailed studies of an engineering nature are being made of the existing facilities both wire and radio, and the advantages and disadvantages of "direct communication" versus "indirect communication" are being thoroughly investigated, as well as technical improvements leading to increasing the availability of space in the "ether".

#### FIXED SERVICES

On June 30, 1936, there were 321 point-to-point radiotelegraph stations licensed for fixed public service, 75 licensed for fixed public press service, and 7 for agriculture service in the United States, its territories (except Alaska), and possessions subject to the jurisdiction of the Commission. Although the majority of these stations are licensed and operated primarily for international and overseas communication, the figures include approximately 130 stations which communicate with similarly licensed stations within the continental United States on condition<sup>1</sup> that the use of frequencies above 6,000 kilocycles for domestic service shall not interfere with international service. Except for agriculture service each licensee may transmit only correspondence for the general public pursuant to tariffs filed with and accepted by the Commission and the necessary service messages incidental to the expeditious movement of this traffic. Addressed program material to overseas points and the one-way transmission of press to two or more fixed points and to ships at sea are among the classes of traffic handled as public correspondence in conformity with established tariffs.

The majority of these stations are licensed for communication directly with many foreign countries and United States possessions as shown by the following tabulation:

<sup>1</sup> Pursuant to Art. 7, par. 19, of the General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932.



## Licensees

Points of communication authorized by licenses	Globe Wireless, Ltd.	Hearst Radio, Inc.	MacKay Radio & Telegraph Co.	Press Wireless, Inc.	Government of Puerto Rico	RCA Communications, Inc.	South Puerto Rico Sugar Co.	Southern Radio Co.	Tropical Radio Telegraph Co.	United States-Liberia Radio Corporation.
Argentina.....			x	x		x				
Australia.....			x	x		x				
Austria.....						x				
Bahama Islands.....						x				
Belgium.....				x		x			x	
Bolivia.....								x		
Brazil.....			x	x		x				
British Honduras.....									x	
Canada.....										
Chile.....			x	x		x				
China.....	x		x	x		x				
Colombia.....			x			x				
Costa Rica.....						x			x	
Cuba.....						x				
Curacao, D. W. I.....		x	x	x	x	x	x			
Czechoslovakia.....			x			x				
Denmark.....			x			x				
Dominican Republic.....						x				
El Salvador.....			x				x			
England.....				x		x				
Fiji Islands.....						x				
France.....			x	x		x				
French Indo-China.....						x				
Germany.....			x	x		x				
Guadaloupe, F. W. I.....							x			
Guam.....	x									
Guatemala.....						x				
Haiti.....			x			x	x		x	
Hawaii.....	x		x	x		x				
Holland.....				x		x				
Honduras.....										
Hungary.....			x						x	
Italy.....										
Japan.....			x	x		x				
Java.....				x		x				
Liberia.....						x				x
Manchuria.....				x		x				
Mexico.....						x			x	
Nicaragua.....		x		x		x				
Norway.....						x				
Panama.....						x			x	
Persia.....						x				
Peru.....			x							
Philippines.....	x		x	x		x				
Poland.....						x				
Portugal.....						x				
Puerto Rico.....							x			
Siam.....						x			x	
Spain.....			x	x		x				
Surinam.....						x	x			
Sweden.....						x				
Switzerland.....						x				
Syria.....						x				
Tahiti.....						x				
Turkey.....						x				
Union of Soviet Socialist Republics.....				x		x				
Vatican City.....			x			x				
Venezuela.....						x	x			

With the exception of Australia, Persia, Siam, Fiji Islands, and Tahiti, direct radiotelegraph service to each of the countries and possessions listed is available through the facilities of one or more of these communication companies. Communication with Australia is available via stations at Montreal, Canada; with Tahiti and the Fiji Islands via Hawaii; and with Siam via the Philippines. Service between the United States and Persia has not yet been inaugurated.

Commencing on January 13 and continuing until January 28, testimony relative to applications of the Mackay Radio & Telegraph Co. for modification of certain station licenses to authorize the addition of Oslo, Norway, as a point of communication was heard by the Telegraph Division. In addition to the applicant, the International Telephone & Telegraph Corporation, the Postal Telegraph-Cable Co., All America Cables, Inc., Commercial Pacific Cable Co., Cuban All America Cables, Inc., The Western Union Telegraph Co., the French Telegraph Cable Co., and RCA Communications, Inc., were represented and heard. Upon careful consideration of all the evidence, the Telegraph Division on June 3 denied the applications upon its finding that there were adequate radio and cable facilities, keen competition, and existing service with which there is no complaint. This decision will become effective on October 1, 1936, unless the Commission en banc should decide that the case should be reopened for further hearing as requested by the Mackay Radio & Telegraph Co. Prior to this decision, additional applications were received from the Mackay Co. requesting authority to communicate with Warsaw, Poland, and Rome, Italy, on which no action has yet been taken.

On November 26, 1935, the Commission designated for hearing the applications for renewal of a considerable number of point-to-point telegraph station licenses in the fixed public and fixed public press services but renewed the licenses upon a temporary basis pending its final decision. The parts set for hearing covered authorized points of communication outside of the United States to which, according to information in possession of the Commission, no traffic had been directly transmitted by stations of the applicant during the preceding license period. It is not expected that the hearing will be held until a final decision is rendered in the Mackay-Oslo case.

Special authority was granted for certain stations in the United States to communicate directly with Addis Ababa, Ethiopia. A regular circuit to that point, however, has not been established. On September 24, Port-au-Prince, Haiti, was authorized as an additional point of communication for the stations located at Sayville, N. Y. Stations at New Orleans, La., were licensed on May 26 to communicate additionally with La Ceiba, Honduras, and Puerto Cabezas, Nicaragua, for the handling of possible occasional traffic direct to those points when stations at La Lima, Honduras, and Managua, Nicaragua, are closed for the night. Due to the completion of a new and modern station at La Lima, Honduras, the fixed service stations at New Orleans were licensed additionally on March 3 to communicate directly with that point instead of relaying through other stations.

Additional and more modern transmitting equipment for improved international and overseas fixed public service was installed during the year in accordance with construction permits at Brentwood and Rocky Point, N. Y., and Palo Alto and Mussel Rock, Calif. Receiving stations of the various operating companies used for the same service likewise are undergoing more or less continuous improvement and expansion, which in some cases involves the purchase of additional land and the erection of new buildings and antenna systems.

Work is now in progress involving the removal of all point-to-point transmitters and antenna systems at Sayville, N. Y., to the new transoceanic station location at Brentwood, N. Y., several miles distant, without interrupting the international, overseas, and domestic circuits operated out of New York City by means of this equipment.

The completion of an important technical development was represented by the licensing on June 16 of a new high-frequency transoceanic transmitter at Rocky Point, N. Y., capable of a power output of 200 kilowatts. In general, the maximum power of transmitters used for this service is 50 kilowatts. The new transmitter will be used primarily for transmission to London, Berne, and Geneva and will provide an improved transatlantic circuit particularly for multiplex, printer, and facsimile operation.

On April 7, 1936, as the result of a hearing in August 1935, the Telegraph Division approved the assignment of five additional frequencies to Globe Wireless, Ltd., for the purpose of permitting this company to offer a more continuous communication service. All of the additional frequencies were in the 4,000-5,000 kilocycle band and are useful primarily for night-time communication, especially on the shorter circuits. All other fixed service frequencies licensed for the use of this company are above 7,000 kilocycles and consequently are unsuited for use on all of their circuits at night. Although only one class of service, designated as "Radiomail", is rendered by this company, the additional frequencies were licensed solely to make available a more diversified allocation thereby overcoming an obvious technical circuit deficiency.

The use of fixed public press service stations at Hicksville, N. Y., San Francisco, and Honolulu for the transmission of multiple-address press messages to a number of fixed receiving stations in the United States and Canada, and simultaneously to ships at sea, continued to develop during the year. A large proportion of the subscribers at fixed points are broadcast stations, which receive the press through the services of radiotelegraph operators and rebroadcast it on the regular aural broadcast frequencies to the general public.

As a result of an informal hearing on March 30, 1936, the Telegraph Division on May 19, 1936, promulgated a new rule (241-a) particularly designed to permit expeditious action in the granting of authority to licensees of fixed public press stations to transmit multiple address messages to additional specified points throughout the world as and when the necessity arises. At the hearing it was contended by operating officials that in many cases the urgent need for authority to transmit press messages to an additional point no longer exists after such authority is finally obtained by compliance with routine procedure. Under the new rule, fixed public press licenses may be issued (subject to the required showing of public interest), providing for multiple-address transmission to "two or more fixed points"; these points must be notified to the Commission when transmission is first inaugurated and are subject to confirmation or other appropriate action of the Commission within 30 days.

Improved equipment and increased power for the transmission of press messages have been provided during the year for stations near New York, Chicago, and San Francisco. A new direct press circuit

between Carlstadt, N. J., and Redwood City, Calif., was authorized on June 2, 1936. In addition, a similar circuit between Tinley Park, Ill., and Redwood City, Calif., was approved on October 8, 1935.

The majority of domestic point-to-point telegraph stations are located in the principal cities and are operated by large communication companies in conjunction with their international and overseas circuits. In their present stage of development they provide limited competition with the parallel intercity landwire telegraph circuits. A new domestic station of this type at Huntington Beach, Calif., to serve the city of Los Angeles was licensed on July 16, 1935, and is authorized to communicate with San Francisco.

Stations located in and near the oil fields of Texas, Oklahoma, and adjoining States continue to serve the general public and especially satisfy communication needs peculiar to the oil and natural gas industries operating in these areas. During the year additional stations of this group were licensed at Crane, Tex., and near East St. Louis, Ill. On April 15, 1936, eight portable stations of this system were licensed for use at locations in the oil fields where adequate wire facilities are not available.

Other groups of stations, providing domestic circuits only, are operated in the Great Lakes region, principally in connection with the maritime operations on the Great Lakes; in Hawaii for inter-island telegraph service, and in California for the expeditious handling of market information for the benefit of fruit growers exchanges and other agricultural interests. The last-mentioned agriculture group operates on frequencies allocated especially for this class of station; the same frequencies are available for similar service at any location and for assignment to any properly qualified applicant.

Applications for construction permits requesting the establishment of fixed stations to render private service on behalf of private business organizations and inquiries concerning this subject have been received by the former Radio Commission and this Commission. However, in view of the statutory requirement of public interest, convenience, or necessity, and because of the definitely limited number of available frequencies for radio communication, such applications are usually designated for hearing. In no case has fixed private service been authorized except where the safety of life and property is involved and the required service cannot be supplied by wire lines or by public service radio communication companies.

#### MARITIME SERVICES

On June 30, 1936, there were 57 coastal telegraph stations in the public coastal service and 3 in the private coastal service licensed by the Commission for operation in the United States, its territories and possessions exclusive of Alaska. Additional licenses for marine relay service were in effect for 42 of these stations. On the same date, there were also 5 mobile press stations licensed for mobile press service.

Coastal stations are licensed for private service only under exceptional circumstances where the required communication cannot be provided efficiently by public service stations; for example, the In-

land Waterways Corporation, authorized by an act of Congress, is the licensee of a private coastal telegraph station at Memphis, Tenn., used for necessary communication with its vessels navigating the Mississippi, Missouri, and Ohio Rivers.

There were 2,020 licensed ship stations on June 30, 1936. Of this number, 95 are licensed to operate on frequencies allocated for use exclusively in Alaskan waters.

Ship stations are licensed in three classes. The division by classes on June 30, 1936, was 329 in the first class, none in the second class, and 1,691 in the third class. Most of the stations in the first class are compulsorily equipped with radio apparatus under the Ship Act of 1912. Those in the third class are voluntarily equipped.

At the request of the chairman of the Senate Committee on Commerce a representative of the Engineering Department assisted that committee throughout the year in preparing legislation to replace the Ship Act of 1910, as amended in 1912, requiring the installation of radio equipment on certain vessels of the United States. The effect of the new legislation would have been to increase the number of American vessels compulsorily fitted with radio apparatus. The bill, S. 4619, was passed by the Senate, but failed of enactment in the House during the closing days of the last session of Congress.

On June 19, 1936, the Senate consented to the ratification of the International Convention for the Safety of Life at Sea signed in London, 1929. The effective date of the convention as applying to the United States is dependent upon ratification by the President and the deposit of the ratification with the British Government. This convention will require all cargo ships over 1,600 tons and all passenger ships going on an international voyage to be equipped with radio apparatus, and maintain certain prescribed hours of watch for safety purposes. It is anticipated that approximately 1,200 ships of the United States will be affected by this treaty.

The General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932, provide for the use of an automatic alarm signal in connection with ship station receivers for calling the attention of a ship operator off duty to the presence of a distress call. These regulations prescribe the exact combination of signals to be transmitted for this purpose by the vessel in distress, specify general conditions to be met by apparatus to be employed for receipt of this combination of signals, and provide that before an administration may approve such a device, it must be satisfied by practical tests that the apparatus complies with these international requirements. The Convention for the Safety of Life at Sea recognizes the use of an automatic distress alarm in lieu of a certified watcher or a qualified operator. Realizing that the United States might become a party to this convention in the near future, the Commission on July 15, 1935, after considerable study in cooperation with the United States Department of Commerce and other interested parties, promulgated its specifications for auto-alarms which may be installed aboard vessels of United States registry, if and when the convention becomes effective for such vessels. At present, the United States Ship Act of July 23, 1912, requires that on United States or foreign vessels compulsorily equipped pursuant to this stat-

ute, the radio apparatus must be in charge of a person skilled in the use of such apparatus at all times while the vessel is being navigated.

Regulations were promulgated (effective Jan. 1, 1936) by the United States Department of Commerce, Bureau of Navigation and Steamboat Inspection, which require the installation of radiotelegraph transmitting and receiving apparatus on at least one motor lifeboat of passenger vessels over 2,500 gross tons, when these vessels navigate more than 200 miles from land. These regulations prescribe certain technical standards to be met by such installations and in order to assist in the administration and enforcement of these safety measures, the Commission on October 1, 1935, promulgated a new rule (281½) specifying additional requirements for lifeboat radio stations with respect to emission, frequency stability, power input, antenna, receiver, power supply, method of installation, spare parts, instructions, and provisions for effective and regular inspection. Although a minimum range of 50 nautical miles is required, tests have shown that ranges from 100 to 200 miles are obtained with equipment designed and built by commercial firms to comply with these regulations. In cases of distress, after the motor lifeboat is launched, it may take in tow other lifeboats from the vessel and, by using the radio transmitter, enable a rescuing ship to take radio direction-finder bearings and thus establish definitely the position of the lifeboats.

In general, only minor changes concerning the operation of coastal stations occurred during the year. The service of one of the larger stations located at Palo Alto, Calif., was improved by the installation of two new high-frequency replacement transmitters of modern design. An additional transmitter for coastal service was installed at one of the two coastal telegraph stations in Hawaii. A change in the frequency assignment of this station also was approved to permit the more expeditious handling of traffic with ship stations whose operators have formed the practice of listening on preferred frequencies. A construction permit was granted on May 12, 1936, authorizing the Mackay Radio & Telegraph Co. to remove all coastal transmitters from the long-established Sayville, N. Y., station to a more favorable site for efficient transmission at Amagansett, N. Y. This project is expected to be completed within the next few months, and will not interrupt the regular handling of marine traffic by the licensee through its New York City message center.

On June 30, 1936, the Telegraph Division granted authority for the coastal station at Bolinas, Calif., to transmit press material, upon a secondary basis, to subscribers at insular possessions of the United States, except to Puerto Rico and Hawaii, simultaneously with transmission of the same material to ship stations. In practice, the station makes no change in its normal mode of operation as a result of this authorization. Its regular press transmission to ships is simply overheard and legally copied for use by the involved subscribers at fixed points within the specified areas. The purpose is to provide a press service to persons located on small islands and in isolated regions which would not otherwise receive press dispatches. In view of the efficient existing point-to-point facilities for handling press traffic to Hawaii and Puerto Rico these areas were omitted from

this authorization. The new service is intended to be especially beneficial to the residents of Midway and Wake Islands who are stationed at these points in connection with the operation of the transpacific commercial air route.

#### AVIATION SERVICE

The growth of the aviation industry reported in the last annual report has continued until at the present time there are only two lines carrying mail and passengers which are not equipped for two-way radio communication. Provisions have been made in the Commission's plan for the development of this service for the accommodation of these two lines if they should at any time desire to install radio equipment or be required to make such an installation by the Government.

During the past year construction permits were granted to the Pan American Airways System for stations on Long Island to serve as the western terminus of a proposed North Atlantic air service to be operated by Pan American Airways and the Imperial Airways of Great Britain as a joint project. It is probable that in the near future announcement will be made of plans for this airline which at the present are somewhat nebulous. The same company inaugurated transpacific air transport service on November 22, 1935. In this service the company operates ground stations at San Francisco, Hawaii, Midway Island, Wake Island, Guam, and the Philippines.

There are at present seven major chains using 59 frequencies for communication with aircraft and 39 frequencies for point-to-point communication between airports. A great many of these frequencies are duplicated in various sections of the country in order to reduce the ill effects of a shortage in frequencies suitable for the communication needs of this industry.

The Commission has cooperated with other agencies with regard to the coordination of activities in the interest of safety of life and property in the air. The Radio Technical Committee for Aeronautics, composed of representatives of Government departments and commercial organizations interested in aviation, was formed under the auspices of the Bureau of Air Commerce. The Commission has had representatives at the various meetings of this committee; and insofar as its recommendations have affected the use of radio communications by commercial interests, an effort has been made to carry them out. One of the most important of these recommendations is that with regard to the assignment of a long-distance daytime frequency for itinerant airmen. Such a frequency has been assigned and will be used, for the most part, in the western section of the United States for flying across established routes where the distances between radio stations involved are beyond the communication range of the frequencies previously assigned and most generally used.

#### POLICE STATIONS

There has been no change in the plan of operation or the number of conventional radio frequencies set aside for radiotelephone communication between police headquarters and police cars. There has

been a steady growth in this system, although not so much as in previous years. This is probably due to the rapid increase in experimental use by municipal and State police departments of the frequencies above 30,000 kilocycles discussed elsewhere in this report.

As in the case of municipal police, there has been no change in the policy or number of frequencies allocated for use by State police departments. The number of stations in use by such organizations has practically doubled, there now being a total of 101 stations operated by 15 States.

The report of the Associated Police Communication Officers mentioned in the last annual report with regard to the establishment of an intercity radiotelegraph network was received and given thorough study. As a result the Commission has allocated frequencies, established rules and regulations, and provided an operating procedure for such a system. Due to some protests against the allocations which were filed by television experimenters, these rules are not yet effective. However, it is believed that a satisfactory solution will be reached and there will be no need to extend the effective date now set beyond September 15, 1936. Under this plan the United States will be divided into zones. Tentatively, zone boundaries will coincide with State boundaries. All licensed radiotelegraph stations within a zone may communicate with each other under the direction of a control station, known as an interzone police station. This station will have control of the operation of other stations within the zone and may also communicate with interzone police stations in the neighboring zones. Under limited circumstances it may authorize interstate communication between zone stations.

The organization and operating procedure of this system are practically identical with that used by the Army and Navy. The establishment of this system should provide a valuable reserve of trained operators who could be made available to the defense forces in time of national emergency. While this was one consideration used in the establishment of this network, it was felt that since the activities of the police are essentially similar to military activities, the needs for communication are also somewhat similar, and therefore a military communication system should be most suitable.

#### ALASKA STATIONS

The Commission's policy of cooperation with the office of the Chief Signal Officer of the Army in connection with the administration of radio stations in Alaska has been continued with very satisfactory results. A large number of new stations have been established, including those operated by the Territory of Alaska in the Aleutian chain in the Eastern Hemisphere.

At the time of the last report one aviation chain had been established, namely, that flown by aircraft of Pacific Alaska Airways, which extended from Nome to Ketchikan via Fairbanks and Whitehorse Canyon. In the past year an additional chain was authorized extending from Kennecott to Dillingham via Anchorage. This chain is not operated as a single unit but is flown by two separate organizations. It is believed that in the near future provision will be made for connecting schedules between these two units and also between



this chain and the chain flown by the Pacific Alaska Airways, in order that the air traveler may receive the maximum benefit of available air transportation.

#### SPECIAL EMERGENCY STATIONS

The number of stations of this classification has increased approximately 20 per cent, making a total of 57 licensed stations on June 30, 1936. This class of station operates during emergencies, such as floods, earthquakes, and hurricanes, when wire-communication facilities become disrupted. There were several occasions during the past year, particularly during the spring floods of 1936, when these and other radio stations were the only means of communication with the outside world.

#### GEOPHYSICAL STATIONS

The number of stations in this classification has increased by approximately 20 per cent during the last year, indicating that with the resumption of activity in industry there has been a resumption in the oil industry, with a consequent increased use of radio in the explorations for new oil fields.

#### MARINE FIRE STATIONS

There has been practically no change in this classification. Since the period of the last report no new stations have been licensed. As yet the majority of cities operating fireboats in connection with the patrolling of water fronts are controlling those fireboats through the agency of municipal police radio stations.

#### MOTION PICTURE STATIONS

After a short period of quiescence the motion picture industry has again embarked on a program involving photography in remote locations and embodying large groups of personnel. On several occasions use has been made of radio stations authorized under this classification.

#### AMATEUR SERVICE

On June 30, 1936, there were approximately 46,850 amateur stations licensed by the Commission. Of this number many are affiliated with the Naval Communications Reserve and the Army Amateur Reserve system. A large number of these stations, as well as others not associated with the Army and Navy, continue to cooperate with the American Red Cross in times of emergency, providing communication between headquarters and areas affected by storms, floods, earthquakes, and similar catastrophes when other means of communication fail.

During the past year amateur stations rendered valuable service to the public. Beginning early in July 1935, with the flood in the Finger Lakes region of New York State, and continuing through the severe sleet and snow storms of the past winter, the amateurs furnished in many cases the sole means of communication between the stricken areas and outside aid. Their services to the public during the disastrous floods of this spring, which affected 14 States and isolated 20 large cities, were outstanding.

Many amateur stations participated in the Navy Day competition held on October 28, 1935, when a message from the Secretary of the Navy to all amateurs was transmitted from the naval radio stations at Arlington, Va., and San Francisco, Calif.

On November 11, 1935, the Chief Signal Officer of the United States Army transmitted a message to members of the Army Amateur Reserve system. These yearly events stimulate interest, encourage accuracy in receiving, and enable amateurs to test their skill and proficiency in the International Morse Code.

Continuing the Commission's policy to encourage technical developments and operating proficiency in the amateur service, a number of rules respecting this service were revised during the past year. The technical and engineering requirements were increased with respect to the equipment used by amateurs, and on June 2, 1936, the Commission increased the code speed requirement from 10 to 13 words per minute.

The Commission has been requested to allocate additional frequencies for radiotelephony in the 3,500-4,000 kilocycle amateur band in order to relieve some of the congestion existing in this frequency band due to the large number of amateur radiotelephone stations in operation. The Commission finds, however, many amateurs oppose any change being made in the present amateur frequency allocation. In order that all interested parties may be given an opportunity to present their views, a public hearing has been set for October 20, 1936.

#### REPORTS OF DISCREPANCIES IN OPERATION

During the past year approximately 1,500 cases were handled involving violation of the law and/or regulations. This number represents a reduction of approximately 12 per cent over the number of cases handled last year. This reduction was achieved in spite of a larger number of stations in operation and is believed to be due to the activities of the Commission in this regard. On several occasions hearings were held and disciplinary action taken with satisfactory results.

#### RADIO OPERATORS

Under the provisions of Section 318 of the Communications Act of 1934, licensed radio stations may be operated only by licensed operators. Section 303 of this act, among other things, confers upon the Commission authority to prescribe the qualifications of station operators, to classify them according to the duties to be performed, to fix the form of such licenses, and to issue them to such citizens of the United States as the Commission finds qualified.

Radio operator licenses are classified under three general headings, as radiotelegraph, radiotelephone, and amateur. Radiotelegraph and radiotelephone class licenses are divided into first, second, and third class. Only one class of amateur operator license is issued; however, the privileges granted holders of this class license are designated as Class A, B, or C.

In the administration of operator licensing this limited classification has been found adequate and has enabled the Commission to prescribe the proper qualifications for operators engaged in operating

licensed radio stations in the many services established by this Commission.

Specific rules governing operators' licenses have been prepared. These rules pertain to the requirements for obtaining radio operator licenses of the different classes, the class of licenses valid for the operation of radio stations in the various services, license renewal requirements, points at which examinations are held, and other information pertinent to the subject.

No major changes have been made in the rules governing operator licenses during the past year. However, examinations and other requirements are revised from time to time as technical advancements are made in the radio art.

#### WIRE TELEGRAPH AND SUBMARINE CABLE

An extensive study was made during the year of the following:

1. *Route miles, wire miles, and telegraph channel miles of the major telegraph carriers.*—This information was made available to the Commission in response to Telegraph Division Order No. 9 and is summarized in statistical form in the last annual report. In this connection no applications for construction of new telegraph wire lines were received during the year. The Western Union Telegraph Co. was granted the authority requested in 12 applications to lease a total of 353 miles of circuit from the Bell Telephone System companies for temporary operation, and the authority requested in four applications to lease a total of 102 miles of circuit from the Bell System for permanent use. The RCA Communications, Inc., was granted the authority requested in four applications to lease a total of 615 miles of circuit from the Western Union Telegraph Co. for permanent use.

2. *Quality of telegraph service.*—This study which is still in progress includes such factors as (1) type of message, (2) time of day, (3) type of circuit, (4) length of haul, (5) number of relays, (6) method of delivery, (7) complaints from customers, and (8) difference between cities with full-time offices and cities with only part-time offices. This study is not yet completed, therefore no conclusions have been drawn.

3. *Message classification.*—This study involves a vast number of problems and is being made as a result of the hearings under Telegraph Division Order No. 12. Since this study has not yet been completed no conclusions have been drawn.

The Western Union Telegraph Co. has recently inaugurated between New York and San Francisco, and between New York and Los Angeles, a telemeter service, a form of leased wire service in which the customer is charged according to the words he transmits instead of according to the time he uses the circuit, as is the case with the leased wire service. The novel feature of this service is that the circuit is always available to the customer and is automatically made available for the use of the telegraph company when the customer is not using it.

#### VALUATION

In order to keep the Commission informed on current changes in costs and values of carrier properties, and to assist the Accounting Department in determining proper depreciation rates, a unit was

organized on July 1, 1935, to make appraisals and depreciation studies of wire telegraph companies and radio companies.

The Interstate Commerce Commission transmitted to this Commission on July 27, 1935, a tentative valuation of the Western Union Telegraph Co. as of December 31, 1931, which, owing to the pressure of other matters, has not been made final.

In order that the same engineering principles may be applied for telegraph, radio, and telephone companies, work of this character will be consolidated into one unit as soon as the necessary personnel can be made available. The work of the telegraph unit has been a study of recent Supreme Court decisions pertaining to valuation matters, making trends on costs, from reports of carriers and other sources, and a study of the most economical manner of keeping an appraisal current after it is made.

The work of the telegraph unit on appraisals and depreciation included the preparation of Telegraph Division Order No. 25, relating to purchases, by carriers, and the net prices paid for such purchases and the rates of compensation paid its employees, and other general information, so that the Commission may be informed of current changes in costs in accordance with Section 213 (e) of the Communications Act of 1934. This order repealed Valuation Order No. 17, prescribed by the Interstate Commerce Commission, effective May 5, 1915, as revised March 30, 1932, insofar as it applies to carriers subject to the Communications Act. A similar order is contemplated for radio companies.

The Section has completed about 95 per cent of the indexes for units of material and labor for the years 1932, 1933, 1934, and 1935. These indexes were prepared from returns to Valuation Order No. 17. Beginning with 1936 they will be prepared from returns to Telegraph Division Order No. 25. This is a continuing activity.

Indexes are a ready visual reference of the changes in costs and values of carrier properties, in compliance with Section 213 (e) of the Communications Act. The use of indexes, when properly prepared and applied, has been sustained by the United States Supreme Court.

Studies have been completed from valuation data in our files, showing the service life of telegraph poles in the States of Alabama, Arizona, Georgia, Idaho, Massachusetts, New Mexico, Utah, and Washington, to be used in establishing mortality tables in connection with depreciation accounting. This work is a continuing activity, at least until the mortality tables are established.

A draft of Supplement no. 8 to Valuation Order No. 3 prescribed by the Interstate Commerce Commission has been prepared with a view to reducing the expense to the Commission and to the carriers of keeping the engineering reports up to date, as compared to the practice outlined in Valuation Order No. 3. This is a continuing activity.

#### EXPERIMENTAL AND RESEARCH

Considerable progress was made during the past year in the collection and dissemination of technical data which are of fundamental significance and importance to radio and wire communication services. The information functions heretofore performed by this section of the Engineering Department recently have been transferred to the

newly organized Technical Information Section, as mentioned elsewhere in this report.

During the past year the new devices and improvements, as disclosed by the industry, have progressed at a rapid rate. A careful study and analysis of these developments has been made in order to determine their potentialities and to insure the maximum public benefit as a result of their application to the communications art.

During the past year the use of the very high frequencies for commercial application has shown marked increase, particularly in the police service. In the strictly commercial field, three important radio systems, noteworthy of mention, have been developed and placed into operation on an experimental service basis. The Radio Corporation of America has developed an experimental multichannel circuit between New York and Philadelphia. This circuit, operating on frequencies between 90,000 and 104,000 kilocycles, is unique in its operation in that it employs automatic relay stations at New Brunswick and Trenton, N. J., which may be turned on and off from either terminal station by radio. At the present time, the circuit provides for one telegraph printer channel, one hand telegraph channel, one start-stop channel to control the remote transmitters, and one facsimile circuit, all for simultaneous transmission in each direction. Many future experiments will be necessary to determine future possibilities and limitations of this type of circuit.

In Philadelphia the Atlantic Communications Corporation established a coastal harbor station operating on a frequency of 38,600 kilocycles for communication within a radius of 20 miles with harbor craft in the Delaware-Schuylkill River area. By means of this public service system, it is possible to establish communication from any point with connecting wire telephone facilities to any harbor craft equipped to receive the transmissions in this area. The apparatus employs an A-T cut crystal, maintaining a frequency tolerance of better than 0.02 per cent and affords high quality service of commercial grade.

The Mutual Telephone Co. of Hawaii also placed into operation an experimental circuit between the islands of Molokai and Maui, operating on 220 and 230 megacycles, respectively. Technical considerations which influenced the selection of frequencies in the neighborhood of 230 megacycles for this circuit were primarily those of automobile ignition interference and interference from other sources as well as directional antenna costs. During the experiments conducted, it was noted that frequencies in the range of 150 to 400 megacycles are relatively unaffected by automobile ignition interference. It was further noted that by elevating the directive antenna it was possible practically to eliminate all types of interference.

Progress in the collection of data on wave propagation from 2,500 to 20,000 kilocycles has been continued. However, the need of further experimental data with which to verify and check the results of theory and the accuracy of formulas advanced by mathematical physicists remains. Commercial operating companies are continuing their efforts in the collection of this technical information and are providing comprehensive reports to the Commission. The collection, coordination, and analysis of the technical data obtained from

licensees on the actual use of the frequencies will be continued by the Commission.

Considerable study and analysis of the field intensities necessary for the various services have been made. Some of the many factors involved in the field intensity requirements are well known. However, adequate information with respect to some factors, particularly the reliability of service, is lacking. In connection with this factor as well as all others, further experimental data are required. It will be necessary to draw upon the experience of the communication organizations to a large extent in order to conduct a full analysis of this important subject.

The number of stations in the experimental service has increased approximately 62 per cent in the past 12 months. There are now 1,613 licensed general and special experimental stations, of which 1,359 are under the jurisdiction of the Telegraph Division, 228 under the jurisdiction of the Broadcast Division, and 26 under the jurisdiction of the Telephone Division. It is of particular importance to invite attention to the large increase of general experimental stations operating as municipal police stations. The number of stations of this class has increased from 393 on June 30, 1935, to 963 on June 30, 1936. Other services exhibiting continued interest in the adaptation of the ultra-high frequencies are television, facsimile, broadcast, relay broadcast, aviation, special emergency, geophysical, fixed public and public coastal, fixed public press, coastal and ship harbor, and proposed services for forestry and railroads.

## TELEPHONE SECTION

### GENERAL

The Telephone Section is responsible for the technical examination of all matters relating to telephone communication (other than broadcasting) by wire or radio, including fixed and mobile radio-telephone services as assigned; preparation and presentation of expert testimony at formal hearings; preparation of technical regulations, and collaboration with the Telegraph Section in matters relating to teletype, telephoto, and facsimile systems.

The Telephone Section of the Engineering Department has had but a nucleus of an organization during the past year because of the necessity of conserving funds. Basic principles for the engineering phases of future regulation of the telephone industry are being carefully formulated, but will not become entirely apparent until after the results of the special investigation of the telephone companies, ordered by Congress, under Public Resolution No. 8, are known. At this time this investigation is still in progress and to date no conclusions can be reached. However, the Telephone Section of the Engineering Department has carried on a definite routine, the scope of which is illustrated in part in this report.

### WIRE

#### SPECIAL STUDIES

During the past fiscal year the Telephone Section conducted the following special studies:

1. Plant engineering and accounting methods employed by certain telephone companies.
2. Study of data to be furnished by telephone carriers in connection with "Applications for certificates of convenience and necessity."
3. Carrier in cable.
4. Development of coaxial cables and coaxial cable systems.
5. Analysis of construction completion reports submitted to the Commission by telephone carriers in connection with certificates of convenience and necessity.
6. Comparison of telephone service in the United States with that in other countries.
7. Frequency band widths for certain Bell System services.

#### CERTIFICATES OF CONVENIENCE AND NECESSITY

During the past year the Telephone Section of this Department prepared reports with respect to applications for certificates of convenience which were made on the part of the following companies and which were acted upon by the Commission:

(a) Inter-Mountain Telephone Co. Application to construct a pole line for telephone toll service between Wytheville and Bland, Va.

(b) Crown Point Telephone Co. and Northwestern Indiana Telephone Co. Application for approval of sale of Northwestern Indiana Telephone Co. to Crown Point Telephone Co.

(c) New England Telephone & Telegraph Co. and American Telephone & Telegraph Co. Application to construct a cable line between Worcester and Fitchburg, Mass.

(d) Inter-Mountain Telephone Co. Application to construct a toll circuit between Johnson City and Erwin, Tenn.

(e) Mountain States Telephone & Telegraph Co. Application to extend telephone pole lines in region between Ashton, Idaho, and West Yellowstone, Mont.

(f) Inter-Mountain Telephone Co. Application to construct a toll circuit between Bristol, Tenn., and Abingdon, Va.

(g) Northwestern Bell Telephone Co. and Tri-State Telephone & Telegraph Co. Application to construct a toll circuit between Spirit Lake, Iowa, and Jackson, Minn.

(h) Mountain States Telephone & Telegraph Co. Application to construct an open wire pole line between Mammoth Hot Springs, Wyo., and Cooke, Mont.

(i) Northwestern Bell Telephone Co. Application to construct a toll circuit between Pine Ridge, S. Dak., and Rushville, Nebr.

(j) Southwestern Associated Telephone Co. Application for approval of sale of telephone properties of the Western Telephone Corporation of Texas, the Western Telephone Corporation of Oklahoma, the Western Telephone Corporation, and the Western Light and Telephone Co., to the Southwestern Associated Telephone Co.

(k) Inter-Mountain Telephone Co. Application for authority to construct a toll circuit between Wytheville and Bland, Va.

(l) American Telephone & Telegraph Co. Application to supplement existing facilities between Marinette, Wis., and Escanaba, Mich.

(m) American Telephone & Telegraph Co. Application to supplement existing facilities between Watertown, N. Y., and the International Boundary (United States-Canada).

## MISCELLANEOUS

The section assisted in the presentation of expert testimony in several hearings, among which were those of the American Telephone & Telegraph Co. and the New York Telephone Co., relative to the installation of a coaxial cable system between New York and Philadelphia. The section also made certain field surveys with respect to the valuation and appraisal of telephone properties, including an estimate for the Department of Agriculture pertaining to the relocation of the American Telephone & Telegraph Co.'s pole line within the Squaw Creek Migratory Waterfowl Refuge near Mound City, Mo., and an appraisal in connection with the hearing conducted on the application for the sale of the Northwestern Indiana Telephone Co. to the Crown Point Telephone Co.

## TECHNICAL DEVELOPMENTS IN TELEPHONY

During the past year a number of technical developments were effected in telephone communication, the most important of which are as follows:

(a) The Commission granted the application of the American Telephone & Telegraph Co. for authority to construct a coaxial cable between New York and Philadelphia, a distance of 94½ miles, and authorized its use for experimental telegraph, telephone, and television purposes. The line structure consists of a gas-filled 7/8-inch lead sheath containing two 19 gauge paper insulated quads. The coaxial structure consists of an outer copper conductor, the inside diameter being 0.27 inch with insulating disks supporting a central copper conductor of 0.072-inch diameter. One such coaxial circuit is used for each direction of transmission. A new type of repeater is to be inserted in the line at 10-mile intervals in order to counteract the large transmission loss of the high frequencies employed. Each repeater is designed to handle the entire range of frequencies in the order of a million cycles or more.

This coaxial cable will have a capacity of 240 telephone channels and more than 2,000 telegraph channels, and will permit a single high grade transmission of moving images. The experiment is one of importance to the country in that it promises a possibility of an increase in availability of channels for telephone and telegraph transmission at a cheaper cost, and also because it gives promise of affording a means of visual communication between points, as well as the relaying by wire of television broadcast programs. At this time the system is not fully developed in its practical phases and the conclusions which can be reached with respect to the application of such a system to the service of the public must of necessity be conservative. In view of the potentialities with respect to the various problems of competition involved between voice communication and record communication, as well as the problems involved in the ultimate application of television for both person-to-person contact and general public broadcasting, the Commission felt it advisable to consider the use of this system entirely experimental at this time. In addition to this, the solution of the various technical obstacles still to be overcome and the lessons to be learned as a result of the field test so far authorized, are still to be ascertained.



(b) During the year improvements were made on the cross-bar switch, which is a device for reducing considerably the amount of equipment required for the operation of an automatic telephone exchange. It is also expected that economies of operation will be effected by this apparatus.

(c) Many improvements have been announced by telephone manufacturers in connection with the development and improvement of hand telephone sets. The developments have effected improvements both in appearance and operation of station apparatus.

The regular engineering staff of the Telephone Section has cooperated with the Engineering Section of the Special Investigation, the latter staff being under the direction of Mr. Cyrus G. Hill, Engineer in Charge, Special Investigation. Assistance has been given on studies pertaining to patents, depreciation, long lines practices, and manufacturing costs of telephone equipment of the telephone and manufacturing companies under investigation. The result of the engineering phases of the Special Investigation will be made the subject of a separate report to Congress, as it is not entirely within the jurisdiction of the regular Engineering Department of the Federal Communications Commission.

## RADIO

### POINT-TO-POINT RADIO TELEPHONE STATIONS

On June 30, 1936, there were 44 point-to-point radiotelephone stations in the continental United States, Puerto Rico, and Hawaii, licensed for international and overseas fixed public service in connection with land-wire telephone networks. Eight of these stations are used to interconnect the land line telephone systems of the principal Hawaiian Islands. Two stations, located in Puerto Rico, are utilized for service with the Dominican Republic and with the United States in conjunction with other stations in southern Florida. The Florida stations also connect with the Bahama Islands and 10 Latin American countries. Twenty stations located in New Jersey and New York provide direct connection with similar stations in England, Bermuda, Peru, Brazil, Argentina, and via connecting cables and land lines to many additional foreign countries. There are also six stations near San Francisco employed for direct connection with Hawaii, the Philippines, Japan, and Java, and two stations in Hawaii which communicate directly with San Francisco. The Commission defines one station as 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 international and overseas service a separate license and call-letter group is issued for each assigned frequency at a given location, pursuant to the requirements of the General Radio Regulations Annexed to the International Telecommunication Convention.

During the year the Commission authorized additional direct point-to-point radiotelephone circuits for public service from Hialeah, Fla., to San Salvador, El Salvador; Tela, Puerto Castilla, and La Lima, Honduras; San Juan, Puerto Rico; also from San Juan to Miami, Fla.; Ciudad Trujillo, Dominican Republic; and from Lawrenceville, N. J., to Paris, France. Public telephone service to

some of these points and to certain other points previously authorized by the Commission was inaugurated on the following named dates:

Miami to Santo Domingo, Dominican Republic, October 31, 1935.

Miami to La Lima, Honduras, January 15, 1936.

Miami to San Juan, Puerto Rico, February 20, 1936.

Miami to Kingston, Jamaica, April 3, 1936.

Miami to San Salvador, El Salvador, June 10, 1936.

Arrangements were made during the year looking toward the establishment of a direct radiotelephone circuit between New York and Paris to handle calls to and from France which are now routed via London.

At the close of the fiscal year telephone service from the United States had been extended to reach a total of 65 countries, thus making possible interconnection of approximately 93 per cent of the world's telephones. Service to 62 of these countries is provided by means of radio circuits of the American Telephone & Telegraph Co., either direct or through switched connections at the distant terminals. The maximum daily number of calls over these circuits occurred on Christmas Day, when a total of 358 calls was completed. Other companies operating overseas and international public telephone circuits from points outside the continental United States in accordance with licenses granted by the Commission are the Radio Corporation of Puerto Rico, RCA Communications, Inc., and the Mutual Telephone Co. Effective July 1, 1936, there will be substantial rate reductions from all places in the continental United States to most foreign countries.

A tropical hurricane in Florida on September 2, 1935, demolished a 40-mile section of pole line and interrupted wire telephone circuits between Miami and Key West, isolating the latter point with respect to commercial communication service, with no prospect of early renewal. Some small aircraft radiotelephone transmitters, together with suitable receivers, all battery operated, were immediately installed by the American Telephone & Telegraph Co. at Big Pine Key and Tavernier, at each end of the remaining pole lines, and were used temporarily to bridge the 40-mile gap. Special experimental licenses were granted for this purpose by the Telephone Division. Two emergency telephone circuits were established by this method and provided satisfactory service pending reconstruction of the normal facilities.

On November 27, 1935, the Commission designated for hearing in part the applications for renewal of the point-to-point telephone station licenses for the stations at Dixon, Calif., operated by the Transpacific Communication Co., Ltd., a 100 per cent owned subsidiary of the American Telephone & Telegraph Co., and issued temporary renewal licenses. The parts set for hearing covered the points of communication—Shanghai, China, and Sydney, Australia—to which public telephone service had not been established by the licensee. In view of information subsequently received indicating that satisfactory progress was being made toward opening service on the Shanghai circuit, the Telephone Division reconsidered its decision with respect to a hearing on this point and granted same as a regular point of communication. Temporary licenses for the

Dixon stations, however, are still in effect, pending a hearing and decision relative to the granting of Sydney, Australia, as a point of communication in the regular renewal licenses.

#### TELEPHONY IN THE MARITIME MOBILE SERVICE

There are six coastal harbor radiotelephone stations and three coastal radiotelephone stations in the public coastal service licensed by the Commission for operation in the United States, territories, and possessions, exclusive of Alaska. In addition, six point-to-point radiotelephone stations at Dixon, Calif., are licensed secondarily to handle telephone calls with the Steamship *Empress of Britain* and other ships in the Pacific Ocean. The Japanese Administration of Posts and Telegraphs has requested the licensee of the Dixon stations also to provide telephone service with the transoceanic liner Steamship *Chichibu Maru*. A coastal station license for the Dixon transmitter was granted on June 3, authorizing the use of an additional frequency for reliable service over the shorter distances. On March 31 a temporary license for public coastal telephone service was granted for a station in Hawaii to communicate with the steamships *Reliance* and *Empress of Britain*, when these vessels, in the course of their voyages, were within satisfactory communication range.

The coastal stations at Ocean Gate and Lawrenceville, N. J., continue to furnish public telephone service with several foreign transoceanic passenger vessels which regularly carry American citizens. These vessels are listed below:

Aquitania	Europa	Queen of Bermuda
Berengaria	Hamburg	Queen Mary
Bremen	Hansa	Reliance
Columbus	Ile De France	Rex
Conte Di Savoia	Monarch of Bermuda	Transylvania
Deutschland	New York	
Empress of Britain	Normandie	

Public coastal harbor radiotelephone stations near Seattle, Wash.; San Francisco, Calif.; San Pedro, Calif.; New York, N. Y.; Boston, Mass.; and Lorain, Ohio, are licensed for communication primarily with low-power ship telephone stations aboard vessels in and near harbors and on the Great Lakes; however, they may be used also for service to transoceanic vessels nearing or leaving principal ports within communication range.

Since it appeared that the opening of the coastal harbor stations near Seattle, San Francisco, San Pedro, and New York for regular public service had been delayed because of economic reasons, the Telephone Division designated the applications for renewal of these station licenses for hearing to determine the need for the service at these locations. The four applications, all on behalf of the Bell System companies, were consolidated and heard by an examiner on April 21. Although no respondents were involved, a considerable volume of evidence was introduced by the applicants, showing the potential amount of business to be expected at each harbor, the characteristic advantages of telephony rather than telegraphy for harbor service, the nature of the tariff, the investment and operating costs, and the current development and availability of equipment. Temporary renewal licenses have been issued pending the final decision

of the Telephone Division; however, regular public service was inaugurated by the station near Seattle on November 1 and by the stations near San Francisco and San Pedro on March 20. The stations at Boston and Lorain have been in regular operation for some time, and tests are in progress under experimental authorization looking to the opening of the New York station in the near future.

In the Philadelphia, Pa., area considerable success has been obtained in rendering a ship-shore telephone service with vessels on the Delaware and Schuylkill Rivers reliably over distances up to 30 miles by operating both the shore and ship stations exclusively on a very high frequency (38,600 kilocycles). This service is offered to the general public in accordance with an established tariff but at present is conducted under the terms of experimental licenses granted by the Telephone Division and subject to the condition that the assigned frequency may be changed at any time in accordance with the discretion of the Commission.

## BROADCAST SECTION

### I. GENERAL

The Broadcast Section examines all matters pertaining to broadcast engineering. The stations included in the broadcast service are regular broadcast, experimental high-fidelity broadcast, experimental relay broadcast, experimental visual broadcast, very high frequency experimental broadcast, and broadcast pick-up stations.

### II. REGULAR BROADCAST

The basic plan of allocation of regular broadcast facilities in the band 550 to 1,500 kilocycles has continued unchanged insofar as concerns the general plan of allocation of stations by frequency, power, and hours of operation. Individual changes in assignments have occurred, however, as the result of granting of applications on their showing and after hearings. The exception concerning the granting of additional licenses for 100-watt stations without charge to quota, which was included in Section 307 of the Communications Act of 1934, enabled the Commission to grant several licenses for 100-watt stations in areas where a need was shown for additional service and operation as proposed would not interfere with the fair and efficient service of existing broadcast stations. Stations granted without charge to quota were as follows:

100-watt stations, daytime.....	15
100-watt stations, unlimited.....	14

There were outstanding at the close of the fiscal year three construction permits for additional 100-wat, unlimited time stations.

A comparison of the number of broadcast stations licensed or under construction at the close of the fiscal years 1927 to 1936 is as follows:

TABLE 1

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
Total number of stations.....	681	677	606	618	612	604	598	593	623	656
Total simultaneous operations at night..	565	514	400	416	420	397	376	397	421	439

## 1. REPEAL OF QUOTA REQUIREMENTS

The Commission was required by Section 307 (b) of the Communications Act of 1934 to "make and maintain an equal allocation of broadcasting licenses, of bands of frequency, of periods of time for operation, and of station power", to each zone, and "make a fair and equitable allocation of licenses, frequencies, time for operation, and station power to each of the States and the District of Columbia, within each zone, according to population." Under this mandate the Commission established the quota system as embodied in rules 109-111, as revised October 9, 1934. The quota due each zone was based on saturation of the smallest zone as determined by conditions of mutual interference between stations. This condition of saturation had been reached in the smaller zones; and as the aggregate of assignments which could be made in a zone was a function of the total area of the zone, it was apparent that additional facilities could be granted in the larger zones before saturation would be reached.

By an act of Congress approved June 5, 1936, the Communications Act of 1934 was amended in that Section 302 was repealed and Section 307, subsection (b), was rewritten as follows:

In considering applications for licenses, and modifications and renewals thereof, when and insofar as there is demand for the same, the Commission shall make such distributions of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same.

To enable the Commission to "provide a fair, efficient, and equitable distribution of radio service", the Engineering Department has under consideration a system distribution of facilities based on interference, service, population, etc.

The summary of quota units due and assigned for day and night operation, by zones, as of June 5, 1936, is given in Table 2.

TABLE 2

	Units due		Units assigned		Net amount over or under quota			
	Day	Night	Day	Night	Units		Percent	
					Day	Night	Day	Night
Zone 1.....	65	36	47.885	36.315	-17.115	+0.315	-26	+1
Zone 2.....	65	36	49.99	38.25	-15.01	+2.25	-23	+6
Zone 3.....	65	36	63.74	46.70	-1.26	+10.70	-2	+30
Zone 4.....	65	36	68.17	40.43	+3.17	+4.43	+5	+12
Zone 5.....	65	36	59.50	46.68	-5.50	+10.68	-8	+30
Total.....	325	180	289.285	208.375				

## 2. NEW TECHNICAL RULES

The Commission on October 15, 1935, promulgated Rule 131, which reads as follows:

(a) All applicants for new, additional, or different broadcast facilities and all licensees requesting authority to move the location of the station shall specify a radiating system the efficiency of which complies with the requirements of good engineering practice for the class and power of the station.

(b) The Commission will publish from time to time specifications deemed necessary to meet the requirements of good engineering practice.

(c) No broadcast station licensee shall change the physical height of the transmitting antenna, or supporting structures, or make any changes in the radiating system which will measurably alter the radiation patterns except upon written application to and authority from the Commission.

(d) The antenna and/or supporting structures shall be painted and illuminated in accordance with the specifications supplied by the Commission pursuant to Section 303 (q) of the Communications Act of 1934.

The Commission on the same date released the specifications mentioned under Section (b) of the rule and entitled "Minimum Antenna Heights Required for Broadcast Stations Pursuant to Rule 131." These specifications contain the minimum actual physical vertical height of antenna proper or minimum effective field intensity that stations must have in accordance with the recommendations set forth under Antenna Requirements, pages 28 and 29, of the First Annual Report of the Federal Communications Commission.

Before this rule was adopted a study of broadcast station antenna systems revealed that many stations were employing antennas which were very inefficient. In many cases a material increase in the station coverage could have been accomplished by erecting an efficient radiating system. It was not infrequent to find a station making application for an increase in power and proposing to continue in service an antenna system having such low radiating efficiency that its replacement with a modern, well designed structure would accomplish a greater increase in service than that which would be accomplished by the proposed increase in power.

Believing it to be the licensees' obligation to make efficient usage of the assignment granted the Commission promulgated the rule.

The Commission on March 30, 1936, released a statement entitled "Field Intensity Measurements Pursuant to Rule 131." This statement outlines the procedure necessary when an applicant wishes to supply data showing that the antenna efficiency complies with the minimum efficiencies set forth under Rule 131 in lieu of complying with the antenna height requirements of the rule.

On November 12, 1935, the Commission adopted Rule 132, which reads in part as follows:

(a) The transmitter proper and associated transmitting equipment of each broadcast station shall be designed, constructed, and operated in accordance with good engineering practice in all phases not otherwise specifically included in these regulations.

(b) The transmitter shall be wired and shielded in accordance with good engineering practice and shall be provided with safety features in accordance with the specifications of Article 37 of the current National Electric Code as approved by the American Standards Association.

The rule further provides that spurious emissions, including radio and audio frequency harmonics, shall be maintained at as low a level as required by good engineering practice. The rule became effective upon its adoption: *Provided however*, that existing broadcast stations were allowed 1 year in which to comply therewith. The pertinent sections of the National Electrical Code require that the transmitter shall be enclosed in a metal frame or grill or separated from operating space by proper barriers, that all external metallic parts shall be at ground potential and that no voltages in excess of 150 volts shall be placed on parts exposed to direct contact. It also

requires that all doors allowing access to the transmitting equipment be provided with interlocks which will disconnect voltages in excess of 750 volts when the door is opened. Subsequent to the adoption of this rule, the Commission issued a statement entitled "Interpretations of Good Engineering Practice as Used in Federal Communications Commission Rule 132", which provides a standard to determine whether or not transmitting equipment complies with the rule. These interpretations provide minimum standards of safety appliances and measures required to comply with the pertinent sections of Article 37 of the National Electrical Code and the minimum technical standards which a transmitter should meet in order to be in accordance with the term "good engineering practice" as used in the rule. Contained in the interpretations of good engineering practice is a statement which briefly outlines the purpose of Rule 132. It is quoted:

The purpose of this rule is to improve broadcast reception and to protect the lives of the station operators. Many frequency deviations are caused by poor equipment. The mutual interference caused by such deviations will thus be reduced as the deviations are reduced. The continuity of service and fidelity of transmission will be improved. This rule is for the good of the licensees as well as the listeners and the cooperation of all licensees is requested in assisting the Commission in the administration thereof.

Subsequent to the adoption of the rule and prior to June 30, 1936, all broadcast stations under the jurisdiction of the Commission were visited by inspectors of the Field Section and a detailed report prepared setting forth the points wherein the transmitting equipment found at the station did not comply with Rule 132 and the "interpretations of good engineering practice." At the time of this inspection the equipment was examined in detail by the inspector and the licensee informed of the corrections necessary in order that his transmitting equipment will comply with the rule. The reports prepared by the inspectors were forwarded to the Commission for study.

On October 29, 1935, the Commission amended Rule 139 to increase the minimum percentage of modulation of which a transmitter must be capable from 75 to 85 per cent and require that on and after November 1, 1936, all broadcast stations shall have in operation a modulation monitor approved by the Commission. The rule also stated that specifications and requirements for approval of these monitors would be published by the Commission. On the same date the Commission published the specifications under the title "Modulation Monitors for Broadcast Stations." These specifications outline the minimum technical requirements which the monitors must meet and state that tests of the instruments will be conducted at the Bureau of Standards before approval by the Commission will be granted.

This rule was promulgated as a result of the engineering conferences held by the Commission during the previous fiscal year and a conference held at the Commission's offices in Washington, D. C., on July 18, 1935, when the final specifications for the monitors were discussed by the Commission's personnel with representatives of manufacturers of radio transmitting apparatus, radio operating companies, etc.

The installation of a modulation monitor and its proper use by station operating personnel will aid materially in correcting two

technical weaknesses common to present-day broadcasting. Over modulation causes audio frequency distortion and the generation of audio harmonics with the attendant broad signal which may cause interference to the reception of stations operating on frequencies many kilocycles removed from the station carrier frequency. Insufficient modulation of the carrier renders the received signals more susceptible to interference and provides much less service than that of which a station is capable if a proper percentage of modulation is maintained.

### 3. OPERATION AT 500 KILOWATTS

As a result of the continued operation of station WLW, Cincinnati, Ohio, on 700 kilocycles, with special experimental authority to operate with a power output of 500 kilowatts during regular broadcast hours, considerable additional information concerning the effectiveness of this high power in serving the rural listener and the listener located in small urban centers remote from other broadcast service has been obtained. The use of a directional antenna at night to prevent interference to CFRB has been continued, and the effect upon the service rendered by the station appears to be slight.

The results of the postcard questionnaire section of the allocation survey made by the Commission indicated that the first choice of the listeners in 13 States was WLW. In addition, WLW was the second choice of listeners in 6 more States.

Several additional clear channel stations have filed applications requesting construction permits or special experimental authority to increase power from 50 to 500 kilowatts.

On June 30, 1936, such applications were pending from the following stations: KDKA, Pittsburgh, Pa.; KFI, Los Angeles, Calif.; KNX, Hollywood, Calif.; WGN, Chicago, Ill.; WHAS, Louisville, Ky.; WHO, Des Moines, Iowa; WJR, Detroit, Mich.; WJZ, New York, N. Y.; and WSM, Nashville, Tenn.

### 4. SPECIAL BROADCAST STATIONS (FORMERLY EXPERIMENTAL HIGH-FIDELITY BROADCAST)

Authorizations for this type of regular broadcast station on the frequencies of 1,530, 1,550, and 1,570 kilocycles, are issued only to those primarily interested in a special program of research leading to the development of high-fidelity program transmissions (at least 10 kilocycle audio frequency transmissions). The broadcast of sponsored programs is incidental to the program of research. All rules governing regular broadcast stations apply to special broadcast stations, which are, therefore, required to have frequency monitors, modulation monitors, protected equipment, etc., and are issued a license for a period of 6 months. Five applications were filed during the past year, but none have received final consideration and no grants for new stations were made. There are four stations of this type in operation at the present time.

### III. NEW RULES PERTAINING TO ALL BROADCAST STATIONS OTHER THAN REGULAR BROADCAST STATIONS

The importance of broadcast stations in the broadcast service other than the regular stations in the band 550 to 1,500 kilocycles has advanced rapidly in the last few years. At the close of the fiscal year



there were some 287 of these stations licensed. The rules governing their operation also applied to several other services and on many points of operation the requirements were not clear, resulting in the Commission having many unpublished policies. To correct this situation and clarify the requirements for obtaining a license for these experimental broadcast stations new rules were prepared pertaining to relay, international, television, facsimile, and experimental broadcast stations. The new rules were adopted by the Commission on May 27 to become effective July 1, 1936. Prior to July 1 the effective date was extended until September 15, 1936.

To permit a full discussion of the new rules, which established new policies and set up certain new technical requirements for these stations, an informal engineering conference was held on June 8 at which licensees of all these stations were invited to be present and discuss the working of the rules. The licensees were also invited to submit constructive suggestions prior to July 20 in writing. The revision of the rules, if deemed desirable, will go forward during the next fiscal year.

#### 1. INTERNATIONAL BROADCAST STATIONS (FORMERLY EXPERIMENTAL RELAY STATIONS)

There were no new international broadcast stations licensed during the fiscal year. The activity of these stations progressed about in keeping with the progress of the broadcast art. The new rules established the name "international broadcast station" in place of that formerly used on account of the fact that this name is more in keeping with the service rendered. As originally conceived these stations would transmit programs for rebroadcasting in foreign nations throughout the world. However, in practice it was found that very little rebroadcasting was done and that stations filled a very important international need by transmitting programs for worldwide reception. The frequencies of operation must be selected dependent upon the time of day, season, and so on, to accomplish the reception in the foreign nation or nations desired.

The conditions of interference as reported in the first annual report have not improved, and as a matter of fact the interference in the band 6,000-6,150 kilocycles has increased substantially. This band is used by many South American nations and has been rendered virtually useless for international transmission between sunset and midnight. The new rules established that the minimum power of these stations should be 5 kilowatts and require that they should render an international service.

#### 2. RELAY BROADCAST STATIONS (FORMERLY BROADCAST PICKUP STATIONS IN THE TEMPORARY AND EXPERIMENTAL SERVICE)

By the new rules the name of these stations was changed from broadcast pick-up to relay broadcast stations. This is more in keeping with the purpose of the station as given in the definition of a relay station:

The term "relay broadcast station" means a station licensed to transmit from points where wire facilities are not available, programs for broadcast by one or more broadcast stations or orders concerning such programs.

The number of relay stations has increased from 102 on July 1, 1935, to 204 on June 30, 1936. The use of these stations has become an integral part of regular broadcasting and many feature programs originating at points where wire facilities are not available are made possible.

The licensee of one of these stations must also hold a license for a regular broadcast station. Two new groups of frequencies were made available in the very high frequency group for this class of station. The very high frequencies are being used more on account of the fact that small mobile or pack sets can be made to operate satisfactorily with a very small antenna on these frequencies. An example of this is the portable relay stations used on the floor of the national political conventions to relay the programs across the room to the receiver and permanent wire-distributing facilities. By this means a high degree of flexibility is accomplished.

### 3. VISUAL BROADCAST SERVICE (TELEVISION BROADCAST STATIONS AND FACSIMILE BROADCAST STATIONS)

In the new rules, visual broadcast service is defined as a service rendered by stations broadcasting images for general public reception. Under this heading is classified (a) television broadcast stations licensed for the transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public and (b) facsimile broadcast stations licensed to transmit images of still objects for record reception by the general public. A single television broadcast station license authorizes the transmission of both the image and the associated synchronized sound (aural broadcast).

(a) *Television broadcast stations.*—No new television broadcast stations were licensed during the fiscal year. Two applications were pending for new stations at the close of the year. The general public interest in television has increased substantially, due to extensive publicity by certain of the large manufacturers of radio equipment and the reports of development in television in European countries. On June 29 television broadcast station W2XF began operating in the Empire State Building, New York, on an experimental basis for public reception. A few receivers were distributed to selected observers. It was reported that the operation would continue as the experimental work permitted.

The new rules governing the television broadcast stations are very specific in prohibiting the sale of programs. The several licensees of television stations have recommended to the Commission certain standards of transmission. While these standards will not be approved by the Commission, the fact that several of the large manufacturers of radio equipment have virtually agreed upon certain standards indicates that this very difficult phase in television development as reported in the last annual report is progressing satisfactorily.

(b) *Facsimile broadcast stations.*—Due to the extremely wide band required for television transmission (6 megacycles) frequencies are not available for these stations to transmit high-definition television programs to wide rural areas at the present development.

of the art. However, a visual service can be rendered to the rural areas by means of facsimile or record reception. The band width required for this type of transmission reception is no greater than conventional broadcasting. A recorder is required which prints the program similar to a newspaper or page print. Three frequencies were made available by the new rules for stations of this class. These frequencies have such propagation characteristics that secondary service can be rendered for many hundreds of miles. The public has not shown a great interest in this type of broadcast service in that there are no commercial facsimile recorders now on the market. There are many claims that this service will render a valuable contribution.

#### 4. HIGH FREQUENCY BROADCAST STATIONS (FORMERLY GENERAL EXPERIMENTAL STATIONS OPERATING AS BROADCAST STATIONS)

The interest in high frequency broadcast stations has developed rapidly. There are now 29 of these stations licensed and 53 applications pending for new stations (June 30, 1936). On January 15, 1936, the Broadcast Division suspended granting new licenses for these stations pending consideration of the rules governing their operation. The previous rules were very lax and did not require the licensees to carry on an extensive program of research and experimentation as required to develop this experimental service. The new rules are very specific in requiring licensees of this class of station to carry on experimentation for the development of service. Additional frequencies were made available for these stations. The licensees are not permitted to transmit commercial programs for pay.

#### 5. EXPERIMENTAL BROADCAST STATIONS

This class of broadcast stations was established to permit the carrying on of the development of research for the advancement of the broadcast service along lines other than that permissible by the above-described stations. All the general experimental frequencies were made available for these stations, and other frequencies under the jurisdiction of the Commission provided the experimentation to require such frequencies and no interference will be caused to established stations. The Commission occasionally receives applications for the development of broadcasting which cannot be properly classified under the above list of stations. This new classification permits granting of licenses for these stations. Also there are several stations licensed to carry on development along specific lines which fall under this classification. With all it is desired to offer a class of station where anyone who has a new idea or wishes to carry on some development can be licensed without causing interference to the established services.

### IV. TECHNICAL DEVELOPMENTS IN REGULAR BROADCASTING

#### 1. ALLOCATION SURVEY

The allocation survey which was conducted during the last 6 months of the previous fiscal year has yielded a large amount of useful data. This survey was divided into four principal parts:

namely, (1) questionnaires sent to rural listeners and fourth-class postmasters; (2) the extended field trips made by the Commission personnel, on which radio listeners throughout the United States were interviewed; (3) the continuous recordings of the signal received from broadcast stations in 10 different locations throughout the United States; and (4) the determination of the radiating efficiency and primary service areas of several broadcast stations.

Of the total of 116,000 questionnaires mailed by the Commission, 46,586 were returned. Of this number 13,916 were found to be unsuitable for the purpose of analysis because of insufficient information. The data from the remaining 32,671 questionnaires was tabulated to show the listener preference as to clear, regional, and local channel broadcast stations, the year of manufacture of the receiver used by the listener and the number of tubes employed. From this compilation the national preference of the rural listeners was found to be as follows:

*National rural listener preference by channels*

Station classification	Per cent	Number of stations licensed
Clear channel.....	76.3	95
Regional channel.....	20.6	277
Local channel.....	2.1	256
Foreign.....	1.0	

These data indicate very clearly the reliance which the rural listener places upon the clear channel broadcast station for service of an acceptable nature. The preference for clear channel stations varies with the States, due to local conditions existing in the area. In general, this preference is greater in the eastern and southern States than in the north-central and northwestern States, due to the differences in station assignments within these areas. However, with only three exceptions, the first choice of the listeners in each State was a clear channel station. The usefulness of the clear channel assignments in rendering service at great distances was amply demonstrated by the fact that the first choices of listeners in the Territory of Alaska and the Territory of Hawaii were clear channel stations located in the southern California area. These same questionnaires indicate by the individual station preferences of rural listeners that with few exceptions the service of regional stations is confined to a limited area within 30 to 75 miles of the transmitter. The general conclusion of the questionnaire survey was that the average rural listener is dependent upon secondary service from clear channel stations, frequently hundreds of miles away. It was not unusual to find reply cards which listed four stations, all at distances of several hundred miles, indicating that in spite of the variations due to fading in the secondary service area the signal is satisfactory for service and that many a listener who would otherwise be without satisfactory radio reception receives considerable entertainment by this means. The effectiveness of the use of high power in extending the coverage and rendering increased service to the rural listeners

was demonstrated by the fact that WLW was the first choice of the listeners in 13 States ranging from Michigan to Florida and from Virginia to Arkansas, and in six additional States, among them Texas, WLW appeared as second choice.

As the questionnaire part of the allocation survey was concluded about March 30, 1935, very few 1935 receivers were included in the tabulation. However, at that time the percentages of receivers in use according to the year of manufacture were as follows:

*Year of manufacture of radio receiver*

Year of receiver:	Per cent
1929 or earlier.....	26.1
1930.....	12.7
1931.....	10.1
1932.....	12.1
1933.....	13.8
1934.....	21.6
1935.....	3.6

The percentages of receivers employing various numbers of tubes were found to be:

*Number of tubes in receiver*

Number of tubes:	Per cent
4 or less.....	5.6
5 to 7.....	69.9
8 or more.....	24.5

While on the trips made by the inspectors of the Field Section of the Commission's Engineering Department, measurements were made to determine the day field strength at the average limit of the night primary service area of representative stations of the clear, regional, and local classifications. Although sufficient data were not obtained in all cases to be conclusive, results agree very satisfactorily with the present empirical standards of the Engineering Department. The following table contains this information in condensed form and a comparison with the signals protected from interference under existing standards:

Class of channel	Number of measurements	Number of stations	Day field strength at limit of night-time service area mv/m	Present empirical standard of F. C. C. mv/m
Clear.....	8	4	0.414	<sup>1</sup> 0.5
Regional.....	123	66	.935	<sup>2</sup> 1.0
Local.....	44	30	1.27	2.0

<sup>1</sup> From adjacent channel interference.

<sup>2</sup> Night.

At the time of this investigation the listeners interviewed were also questioned as to their choice of stations and the information tabulated as in the questionnaire survey. This preference, as shown by the following table, agrees very closely with the data obtained from the questionnaire survey:

TABLE 3

	First choice	Second choice	Third choice	Total 3 positions
Clear.....	945 (75.1 per cent)...	826 (71.3 per cent)...	598 (72.4 per cent)...	2,369 (73.3 per cent).
Regional.....	278 (22.6 per cent)...	312 (27 per cent)...	203 (24.6 per cent)...	793 (24.5 per cent).
Local.....	28 (2.3 per cent).....	20 (1.7 per cent).....	25 (3 per cent).....	73 (2.2 per cent).

Analysis of the continuous recordings of field strength made at the different locations throughout the United States entailed a great deal of labor and the data were not completely compiled on June 30, 1936. The analysis of these recordings, of which there are in excess of 500 covering approximately 12,000 hours of operation, will be completed shortly and the data will be made available early in the fall of 1936. Preliminary results, based on a partial analysis of the data, were published in answer to question 7 on the Agenda of the Fourth Meeting of the C. C. I. R. to be held in Bucharest, Rumania, during the spring of 1937. From the partial analysis of data a set of curves was drawn showing the received signal which is exceeded 10 per cent of the time and 50 per cent of the time for two different night hours as a function of the distance from the transmitter. Such curves, based on the whole of the data accumulated, will be published when the analysis is completed.

Surveys made by means of the field intensity equipment located in the Commission's test car were necessary to determine the radiating efficiency and primary service areas of the clear channel stations from which night sky wave field intensity recordings were made. These data enabled the personnel of the Commission's engineering department to correct the data from the recordings to show the field intensities at various distances for 1 kw radiated power. The data from the survey also furnished information concerning the primary service areas of representative stations and the effectiveness with which service is rendered from various transmitter locations.

## 2. DIRECTIONAL ANTENNAS

During the fiscal year 1936 additional licensees and applicants for new stations have installed or requested authority to install many directional antenna systems. The voluminous data available concerning the operation of such systems has enabled engineers to predict with greater accuracy the performance of such antennas. The use of directional antennas has enabled numerous stations to increase their service without interference to the fair and efficient service of other broadcast stations. On June 30, 1936, approximately 40 stations were installing or operating with directional antenna systems.

## 3. LOW TEMPERATURE COEFFICIENT QUARTZ CRYSTALS

The recent development of quartz plates having a temperature frequency coefficient of less than three cycles per million per degree centigrade has provided the operators of broadcast transmitters with a much more stable source of transmitter frequency. These crystals have been installed in the automatic frequency control units of many broadcast stations with very gratifying results. Their use

has materially decreased the number of citations issued licensees for deviation from assigned frequency in excess of 50 cycles and reduced the heterodyne interference between stations on the shared frequencies.

### INTERNATIONAL SECTION

Beginning February 14, 1936, a series of meetings were held for the purpose of preparing the United States material for the Fourth Meeting of the International Consulting Committee on Radio, to be held at Bucharest, Rumania, in May 1937.

The preparatory work was carried on under the direction of the Chief Engineer of the Commission, who organized several committees to prepare recommendations for proposals of the United States Government to the conference. The proposals dealt with technical matters, such as good engineering practice concerning the performance of transmitters, receivers, and antennas, as well as technical information concerning the propagation of radio waves at various frequencies; also proposals were made which dealt with good engineering practice concerning methods to improve the use of frequencies from an engineering standpoint.

This preparatory work was actively carried on through the cooperation of the various Government departments and private organizations interested in communications. The final material was transmitted to the Department of State on May 21, 1936, for dissemination to the other nations of the world prior to the convening of the conference.

At the request of the Department of State, the Federal Communications Commission began the preparatory work for the radio conference, administrative in nature, which is to be held in Cairo, Egypt, beginning February 1, 1938. The preparatory work for this conference was started by committees working under the chairmanship of the Chief Engineer of the Federal Communications Commission. These committees considered the various articles of the existing General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932. By June 30, 1936, considerable progress had been accomplished in the preparation of recommended proposals for the United States Government to make to the various nations of the world with respect to the necessary changes in the international radio regulations based upon the experience of the past few years. The evidence presented at the June 15, 1936, hearing, mentioned elsewhere in this report, was most useful in assisting the committees in their work.

The membership of the committees was open to the public and all persons interested in radio were invited to attend the meetings. The actual membership of the committees consisted of representatives of all Government departments interested in radio, as well as all of the communication organizations having radio station licenses from the Commission, and other organizations, such as the National Association of Broadcasters, the amateurs, the Associated Police Communication Officers, etc.

A number of meetings were held and it is expected that the preliminary preparatory work of this Government will be completed by September 1, 1936.

Because of growing needs for the use of radio by Government departments, the work in the International Section has greatly increased during the last year. The Interdepartment Radio Advisory Committee, which is the Government committee established for the purpose of advising the President with reference to assigning frequencies to Government radio stations under the Communications Act of 1934, was reorganized. The new Chairman selected was Judge Eugene O. Sykes, member of the Federal Communications Commission. Mr. Gerald C. Gross, of the Commission's staff, continued to serve as secretary of the committee. The committee has had frequent meetings and participated actively in the June 15, 1936, engineering hearing before the Federal Communications Commission.

#### MISCELLANEOUS

The International Section, in addition to the special work mentioned above, has carried on its regular work of coordinating international and interdepartmental relations in connection with wire radio and cable services. This Section maintains up-to-date visible records of the Canadian, Mexican, Cuban, and European broadcast stations. From time to time there are issued for distribution lists of these stations. The section also compiles and issues lists of the short-wave broadcast stations of the world.

During the year a large number of translations were made by this section for its own use and for other departments of the Commission.

#### FIELD SECTION

##### SHIP INSPECTIONS

During the year there were 13,578 clearances from our ports of American and foreign ships which are required to carry radio apparatus under the Ship Act of June 24, 1910, as amended July 23, 1912. During the same period 6,337 inspections were made of the radio installations on these vessels which revealed 151 cases of violation of the law. In 145 of these cases the masters were served with official penalty notices. Corrective action was taken, however, prior to departure from port. In addition, 192 discrepancy notices were served on the licensees of these vessels for failure to comply with the provisions of international treaty or regulations of the Commission.

On ships voluntarily equipped with radio apparatus 3,108 inspections were made. Of this number 658 cases revealed defects and required the radio licensees to take corrective action.

There were 1,701 detailed inspections made of ship radio installations under Section 303 of the Communications Act of 1934 to determine if they met the license requirements as to frequency of operation, frequency stability, decrement, etc.

Effective January 1, 1936, the general rules and regulations of the Department of Commerce required that radio equipment be installed on at least one of the motor lifeboats which are required on each passenger vessel of 2,500 gross tons or more which in the course of its voyage goes more than 200 miles from the nearest land. In this connection, the Commission adopted Rule 281½ governing such installations and the maintenance and operation of the equipment. In-



spections of this equipment have been made by the Field Section, cooperating with the inspectors of the Department of Commerce.

The enforcement of the provisions of the Safety of Life at Sea Convention will increase the ship inspection work at all port offices beginning in November 1936, when this convention becomes effective in the United States, due to the increased number of ships which must be equipped with radio apparatus.

#### AIRCRAFT INSPECTION

Nearly all transport aircraft were inspected during the year. Inspections were confined to determining that the transmitters involved complied with the laws, rules, regulations, and licenses under which they are authorized to operate radio stations. During the entire year 498 radio-equipped aircraft were inspected, as compared with 134 the previous year.

#### UNLICENSED STATIONS

During the year reports were received of operation of 416 unlicensed radio stations. The action taken by the Commission resulted in discontinued operation of 358, leaving 58 pending cases still under investigation at the close of the year.

#### INTERFERENCE COMPLAINTS

During the year 4,490 complaints of interference with radio reception were received by the Commission. In addition 401 cases were carried over from the previous year. As a result of investigations, remedial action was taken in 4,459 cases. The remaining 432 cases were still being investigated at the close of the year.

#### FREQUENCY OBSERVATIONS

During the year 14,557 measurements were made of the frequencies of United States broadcast stations. There were 234 deviations beyond the permitted frequency tolerance of 50 cycles (plus or minus). Of stations other than broadcast, 23,126 measurements disclosed 1,740 frequency deviations. Foreign station measurements numbered 730, with 164 deviations.

The monitoring of United States stations disclosed 2,234 discrepancies in operation, involving violations of international treaties, laws, and regulations of the Commission. In each case the licensee was required to explain the violation and take corrective action.

#### TRAVEL

The routine work of the field force included 448 trips, totaling 206,017 miles. The purpose of this travel was in connection with radio station inspections, operator examinations, investigations, etc.

#### FIELD ACTIVITIES

The following is a summary of the work performed by the field force during the past fiscal year:

District no. and location	Stations inspected						Frequency measurements						
	Ship			Land	Broadcast	Amateur	Aircraft	United States				Foreign	
	Under Act	Voluntary equipment	For license					Broadcast		Other than broadcast		Measurements	Deviations
				Measurements	Deviations	Measurements	Deviations						
1. Boston, Mass.....	379	295	168	62	86	7	1	1,606	9	1,593	176	20	10
2. New York, N. Y.....	2,894	331	242	43	77	17	86	0	0	0	0	0	0
3. Philadelphia, Pa.....	187	348	164	27	51	29	3	0	0	0	0	0	0
4. Baltimore, Md.....	292	389	211	18	19	8	3	2,720	29	905	38	23	17
5. Norfolk, Va.....	123	276	100	24	41	1	0	0	0	0	0	0	0
6. Atlanta, Ga.....	0	6	0	115	98	8	15	1,499	63	1,201	73	18	15
7. Miami, Fla.....	141	22	14	57	26	8	31	0	0	0	0	0	0
8. New Orleans, La.....	340	193	122	42	72	26	17	0	0	0	0	0	0
9. Galveston, Tex.....	49	234	99	31	17	8	13	0	0	0	0	0	0
10. Dallas, Tex.....	0	0	0	62	92	6	24	0	0	0	0	0	0
11. Los Angeles, Calif.....	643	365	140	84	77	11	20	1,219	19	704	131	110	99
12. San Francisco, Calif.....	454	307	240	50	45	7	42	0	0	0	0	0	0
13. Portland, Oreg.....	127	181	55	19	43	6	21	967	9	3,875	280	14	7
14. Seattle, Wash.....	390	81	114	80	56	1	41	0	0	0	0	0	0
15. Denver, Colo.....	0	0	0	21	45	0	6	0	0	0	0	0	0
16. St. Paul, Minn.....	0	0	0	46	76	1	24	0	0	0	0	0	0
17. Kansas City, Mo.....	0	3	1	72	95	9	55	0	0	0	0	0	0
18. Chicago, Ill.....	12	1	0	81	157	1	28	0	0	0	0	0	0
19. Detroit, Mich.....	31	20	4	156	103	27	51	0	0	0	0	0	0
20. Buffalo, N. Y.....	14	16	15	38	83	5	10	0	0	0	0	0	0
21. Honolulu, Hawaii.....	261	60	12	62	6	1	7	0	0	0	0	0	0
Grand Island, Nebr.....	0	0	0	0	0	0	0	3,463	65	12,308	911	517	0
Great Lakes, Ill.....	0	0	0	0	0	0	0	3,083	40	2,540	131	28	16
Total.....	6,337	3,108	1,701	1,190	1,365	187	498	14,557	234	23,126	1,740	730	164

Operators examined

District no. and location	Commercial							Amateur		
	Extra first	First telegraph	Second telegraph	Third telegraph	First telephone	Second telephone	Third telephone	Code test only	Class A	Class B
1. Boston, Mass.....	0	12	85	4	116	7	344	113	222	740
2. New York, N. Y.....	1	37	110	14	162	29	977	155	431	1,609
3. Philadelphia, Pa.....	0	2	33	4	47	15	156	37	131	483
4. Baltimore, Md.....	0	5	32	11	36	7	70	27	34	81
5. Norfolk, Va.....	0	4	23	2	28	6	134	10	69	155
6. Atlanta, Ga.....	0	2	17	7	56	14	119	16	83	120
7. Miami, Fla.....	0	26	40	13	48	10	124	26	46	33
8. New Orleans, La.....	0	10	74	34	31	5	74	41	58	49
9. Galveston, Tex.....	0	0	40	18	29	2	105	37	31	59
10. Dallas, Tex.....	0	0	30	28	96	17	227	24	118	343
11. Los Angeles, Calif.....	0	21	90	11	92	15	832	74	222	632
12. San Francisco, Calif.....	0	23	54	19	76	45	301	80	183	411
13. Portland, Oreg.....	0	9	21	1	39	7	35	120	56	122
14. Seattle, Wash.....	0	18	40	26	50	9	254	41	72	156
15. Denver, Colo.....	0	0	7	1	53	14	58	10	55	94
16. St. Paul, Minn.....	0	0	11	6	51	12	110	10	98	176
17. Kansas City, Mo.....	0	0	15	11	201	30	507	273	238	414
18. Chicago, Ill.....	0	11	98	24	310	62	881	91	369	824
19. Detroit, Mich.....	0	6	56	15	129	58	450	53	336	1,233
20. Buffalo, N. Y.....	0	0	76	7	95	19	124	26	164	608
21. Honolulu, T. H.....	0	4	6	6	8	4	33	22	27	67
Total.....	1	190	958	262	1,803	387	5,924	1,286	3,043	8,409

## Operators licensed

District no. and location	Commercial															
	Extra first	First telegraph	First with first tele- phone endorsement	First with second tele- phone endorsement	First with third tele- phone endorsement	Second telegraph	Second with first tele- phone endorsement	Second with second tele- phone endorsement	Second with third tele- phone endorsement	Third telegraph	Third with first tele- phone endorsement	Third with second tele- phone endorsement	Third with third tele- phone endorsement	Telephone first	Telephone second	Telephone third
1. Boston, Mass.....	1	89	32	1	0	70	32	0	0	2	0	0	0	102	3	348
2. New York, N. Y.....	7	287	85	8	1	65	59	9	0	6	2	2	-1	163	26	954
3. Philadelphia, Pa.....	1	54	17	2	0	22	11	0	0	3	0	0	0	50	14	145
4. Baltimore, Md.....	2	76	29	0	0	30	17	2	2	1	1	0	4	101	23	93
5. Norfolk, Va.....	0	15	7	0	0	11	8	1	1	0	1	0	0	31	1	109
6. Atlanta, Ga.....	0	12	4	3	0	6	22	2	0	1	2	2	2	78	15	107
7. Miami, Fla.....	0	36	13	3	0	32	11	2	4	8	0	0	0	32	8	103
8. New Orleans, La.....	2	110	30	3	2	50	33	1	2	11	4	0	11	72	8	62
9. Galveston, Tex.....	1	47	7	0	0	45	7	0	0	8	4	0	0	30	2	92
10. Dallas, Tex.....	0	6	17	2	1	20	27	2	0	19	4	0	0	119	30	224
11. Los Angeles, Calif.....	1	58	38	4	0	50	54	4	1	5	2	0	1	78	17	791
12. San Francisco, Calif.....	4	156	33	3	0	53	23	0	0	5	4	7	0	75	70	325
13. Portland, Oreg.....	0	16	5	0	0	6	16	1	0	0	0	0	0	45	8	39
14. Seattle, Wash.....	0	74	16	1	0	37	9	3	0	17	0	1	0	50	18	264
15. Denver, Colo.....	0	1	4	0	0	4	10	1	0	1	0	0	0	56	29	74
16. St. Paul, Minn.....	0	5	4	0	0	5	4	1	0	4	1	0	0	74	9	98
17. Kansas City, Mo.....	0	3	16	1	0	10	29	2	0	1	4	1	0	215	30	468
18. Chicago, Ill.....	0	11	38	1	0	38	71	9	0	6	5	1	3	239	79	770
19. Detroit, Mich.....	0	22	26	2	2	30	47	4	3	1	3	4	0	146	50	467
20. Buffalo, N. Y.....	0	5	12	0	0	35	21	2	0	-1	2	0	1	60	12	104
21. Honolulu, Territory of Hawaii.....	0	28	8	1	0	5	0	0	0	3	0	0	1	8	3	29
Total.....	19	1,111	441	35	6	624	511	46	13	101	39	18	22	1,824	455	5,666

## Complaints and investigations

	Amateur	Unli- censed Broad- cast	Unli- censed other than Broadcast	Miscel- laneous	Total
Carried over from previous year.....	260	10	60	71	401
Received this year.....	2,802	54	362	1,272	4,490
Closed this year.....	2,518	39	319	1,583	4,459
Number of those cases closed requiring personal investigation.....	2,170	14	139	880	3,203
On hand at close of this fiscal year.....	284	15	43	90	432

## TECHNICAL INFORMATION SECTION

The duties of the Technical Information Section are to keep the Engineering Department and the Commission informed of technical developments in communications, particularly with reference to the following:

- (a) Inventions which should have an important bearing on efficiency of communications, or lead to reduced rates.
- (b) Inventions which increase the number of available channels.
- (c) Wave propagation.
- (d) New theories.
- (e) Development of radio frequency spectrum.
- (f) Current good engineering practice concerning both transmission and reception.

In addition to the foregoing, the Technical Information Section will keep the master frequency records for the Engineering Department.

This Section will also have charge of a technical library for the use of the Engineering Department.

The Technical Information Section will have no administrative functions with respect to the regulation of communications. However, it must keep abreast of technical progress in order to be in a position to advise the various administrative sections of the Engineering Department with respect to scientific and practical engineering matters.

At the present time the Technical Information Section has been organized but a few days.

Dr. L. P. Wheeler, an eminent physicist, will report on July 1, 1936, to take charge of this Section.

The personnel at this time is merely a nucleus, and it is expected to increase the personnel, when funds become available, in order to enable a more thorough investigation of the patents used and available for the communications industry.

Some of the work of this Section has in the past been accomplished by the administrative sections of the Engineering Department, but due to the pressure of such work and because of the intricacies involved in keeping abreast of scientific progress, it was felt essential that expert scientists and physicists, having practical knowledge of the technical and patent phases of communications, should be organized into a cohesive unit in order to produce more effective results than was possible under the past system.

In view of the fact that this Section is still in the process of organization, no information is available at this time with respect to the results accomplished.

# ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT

WILLIAM J. NORFLEET, *Chief Accountant*

The close of the fiscal year 1936 marked the completion of the first full year of service of the Accounting, Statistical, and Tariff Department, the department having been organized in October 1934.

## ORGANIZATION—FUNCTIONS

The organization and functions of this department are described in the first annual report of the Commission to Congress for the fiscal year 1935, which is here referred to in order to avoid undue repetition.

The organization is similar to that described in the above report, except that during the fiscal year 1936 two of the sections of the department were consolidated and a field office was established at New York, N. Y. The two sections consolidated were the Depreciation and Cost Analysis Section and the Investigation and Field Examination Section, mentioned in the previous report to Congress. The consolidated section was designated as the Field Section, the duties and functions of which are similar to those of the component sections above mentioned.

## ESTABLISHMENT OF NEW YORK OFFICE

An office of the Accounting, Statistical, and Tariff Department was established in New York, N. Y., on May 16, 1936. Ten men, including clerks, were transferred from Washington, D. C., to New York on the above date.

The establishment of the New York office will result in substantial savings to the Commission in per diem and travel expense. New York is the headquarters of the telephone, telegraph, and radio industries, and much of the factual information required by the Commission in the discharge of its duties must be gathered at that point. Already the benefits from the establishment of this office are apparent.

## ACTIVITIES OF THE DEPARTMENT DURING THE PAST FISCAL YEAR

There follow brief statements with reference to the more important accomplishments of the department during the fiscal year ended June 30, 1936. This narrative is arranged according to sections of the department, the sections being arranged alphabetically.

## CLASSIFICATION SECTION

*Injunction proceeding involving new uniform system of accounts for telephone companies.*—Among the most important work performed during the year in the Classification Section was the compilation and preparation of a large portion of the relevant material used by the Law Department and the furnishing of technical advice

at the court hearing in the suit brought by American Telephone & Telegraph Co., its associated Bell System companies, and additional plaintiffs (Equity No. 81-366, U. S. D. C., S. D. N. Y.) to enjoin the Commission from enforcing certain accounting procedures required in the recently revised uniform system of accounts for telephone companies which had been ordered to become effective on January 1, 1936. The promulgation of this revised accounting system was a step forward in public-utility accounting. It is endorsed by the National Association of Public Utility Commissioners, the New York Public Service Commission, and various other State commissions.

**REVISION OF PRESENT UNIFORM SYSTEM OF ACCOUNTS FOR TELEGRAPH AND CABLE CARRIERS DELAYED**

The final drafting of a new uniform system of accounts for wire-telegraph and cable carriers and the drafting of a uniform system of accounts for radiotelegraph carriers have been postponed temporarily pending disposition of the injunction proceeding referred to above by the Supreme Court of the United States. It is expected, however, that both new systems of accounts will be completed and ready for promulgation by the Commission in time to be ordered effective on January 1, 1938.

In the case of wire-telegraph and cable carriers, the new system will be a revision of the uniform system of accounts now in effect for such carriers. The necessary revisions, however, are extensive in scope. In the case of radiotelegraph carriers, no uniform system of accounts has ever been prescribed for, or adopted by, such carriers, and there is a serious lack of uniformity in their accounting practices.

Notwithstanding delay occasioned by the injunction proceeding above mentioned, much progress has been made toward the formulation of a new uniform system of accounts for wire-telegraph and cable carriers, the work having been substantially finished except for certain phases, as will be occasioned by the following:

1. The decision of the Supreme Court of the United States in the telephone-accounting case referred to above;
2. Consideration of suggestions by other regulatory bodies and other interested parties after the completion of a tentative set of regulations;
3. The completion of studies now being directed to the adoption of a definite policy with reference to the proper method or plan of accounting for depreciation and amortization; and
4. Subsequent decisions and determinations of policy by the Commission.

This section has also made substantial progress in drafting a tentative set of accounting rules and regulations applicable to radiotelegraph carriers.

**OTHER ACTIVITIES OF THE CLASSIFICATION SECTION**

Among other activities of the Classification Section during the fiscal year 1936 were the following:

1. Canvassing, and tabulating of data contained in response of State and other regulatory bodies on the subject of uniform accounting systems for telegraph and cable and for radio carriers, and with

respect to work-order systems and perpetual records of property changes for all classes of communication carriers.

2. Attending committee meetings and hearings conducted by State and other Federal commissions and associations of regulatory bodies, and participation in ensuing oral and written discussion directed to the consistent development of uniform systems of accounts for communication carriers and other types of public utilities.

3. Drafting (in conjunction with the Engineering Department) of proposed rules governing work-order systems and perpetual records of property changes. (As these rules must be articulated with the uniform systems of accounts, their completion has similarly been delayed for the reasons hereinbefore given.)

4. Collaboration with the Law Department and the Special Investigation in drafting four orders, subsequently adopted by the Commission, partially modifying the regulations governing the destruction of records to meet the needs of the Special Investigation and other current developments.

5. Interpretation of accounting regulations, the answering of all inquiries raised by communication carriers or others relating to proper accounting for specific transactions, and the handling of notifications relative to accidental destruction of records. There was an increase of approximately 770 percent over the fiscal year 1935 in units of outgoing correspondence of this nature.

6. Drafting accounting circulars occasioned by current situations of major importance, of which two related to accounting for social-security taxes.

7. Consideration of proposed journal entries, submitted by carriers for the Commission's approval, involving acquisition of property through consolidation, merger, or purchase.

8. A request made of carriers to file identifications of the officials supervising the destruction of records, pursuant to resolutions of their boards of directors. Many of the carriers complied with this request during the fiscal year.

9. Consideration, and making of recommendations to the Commission, with respect to 20 applications of telegraph and cable carriers, and 10 applications of telephone carriers for "extension of lines", followed by the review of final and progressive completion reports required in the orders granting the applications with respect to several of the major projects, including the installation of experimental coaxial cable by American Telephone & Telegraph Co. and New York Telephone Co. between New York, N. Y., and Philadelphia, Pa.

10. Collaboration with the Engineering and Law Departments in the designing, for adoption by the Telegraph Division, of a uniform application form for use by telegraph and cable carriers in the matter of "extension of lines."

11. Studies of several specific practices of major communication carriers, involving substantial amounts of money, from the standpoint of conformity with accounting regulations. Some of these matters will necessitate further investigation before disposition by the Commission.

12. A special study of the general classes of service in which communication carriers are engaged and the extent of encroachment into

the primary fields of other carriers, with a view to determining the feasibility and most expeditious method of maintaining a perpetual record in this respect.

### FIELD SECTION

The important activities performed in the Field Section during the fiscal year 1936 are divided, in general, as follows: (1) Field examinations and investigations, (2) depreciation studies and special cost analyses, and (3) special assignments. A mention of the more important accomplishments of this section follows:

#### COST STUDY, MANUFACTURING COMPANY

A special field examination of certain accounts and records of a manufacturing company affiliated with the telephone industry was made for the purpose of developing the cost of manufacturing certain telephone-plant units entering into the proposed construction of new interstate telephone toll lines.

#### EXAMINATION OF ACCOUNTS OF TELEGRAPH CARRIERS

A major accomplishment of this section was the completion of a general examination of the accounts and records of a major telegraph carrier, this being the first examination of the accounts of the carrier by public authority. This included an inquiry into intercorporate relationships, investment in facilities, existing depreciation practices, and operations. A report embodying important recommendations is being prepared as a result of this examination, which will relate to certain plant or investment accounts of that carrier and various accounting practices.

One of the important benefits from this and other examinations of the accounts of wire-telegraph carriers during the fiscal year 1936 was to obtain information necessary to an intelligent revision of the uniform system of accounts for this class of common carriers.

Somewhat similar examinations were made into the books and records of accounts of two important radiotelegraph carriers and similar examinations of the accounts of two of the larger carriers of this class were under-way at the close of the fiscal year, with a particular view to the prescription of a uniform system of accounts for radiotelegraph carriers. The latter examination will include analyses of present capital facilities, traffic exchange and development, and other data required in the determination of the cost of various services rendered.

#### INTERCORPORATE RELATIONS

An examination of the accounts and records of the American companies in one of the large communication systems was in progress at the close of the fiscal year for the purpose of developing information with respect to the intercorporate relations of such companies.

#### EXAMINATION OF THE ACCOUNTS OF TELEPHONE CARRIERS

A field examination was made of certain accounts of two large telephone-operating carriers to determine the cost of maintaining toll service in the areas served by those carriers.



## OTHER ACTIVITIES OF THE FIELD SECTION

Among other activities of the Field Section during the fiscal year 1936 were the following:

1. Examination and the making of recommendations, from an accounting viewpoint, with respect to 20 petitions for transfer of license or control filed by broadcasters.
2. Examination and the making of recommendations, from an accounting viewpoint, with respect to 13 petitions filed by telephone and telegraph carriers, and cost certificates filed in connection therewith, for authority to supplement existing facilities or acquire or lease circuits.
3. An inquiry into the effect of exclusive grants and other relationships between railroad and telegraph carriers upon the revenues of the telegraph carriers.
4. Preparation of a comparative history of funded debt of the Bell System.
5. Preparation of data in connection with a public hearing before an examiner relating to the question of jurisdiction of the Commission over a large telephone carrier.
6. An inquiry and report relating to the practices of telephone carriers with respect to relief and pensions and the accounting therefor through operating expenses and through reserves.
7. Preparation of data in connection with the injunction proceeding involving the revised uniform system of accounts prescribed for telephone carriers, hereinbefore mentioned.
8. Conduct of special inquiries as assigned.

## DEPRECIATION

Personnel of the department was inadequate to undertake any extensive inquiry into depreciation. However, much basic work was done toward the development of information for the Commission. Typical of the activities performed during the fiscal year 1936 relating to depreciation are the following:

1. Comprehensive review and digest of depreciation proceedings conducted under prior Federal regulations and the assembling of basic statistical data with reference to depreciable plant.
2. Formulation of the theory of depreciation to be applied to data to be taken from the carriers' records.
3. Preparation of depreciation circulars recommended for issuance to carriers engaged in wire telegraphy, telephony, and radio communications.
4. Study of the relationship of depreciation reserves of large telegraph and radio carriers to plant, capital, and other accounts, and the relationship of annual depreciation charges to revenue and related accounts.
5. Field examinations at the offices of three large radio carriers to determine the classes of depreciable property peculiar to radio plant.

## STATISTICAL SECTION

## PUBLICATIONS

The following publications were prepared in the Statistical Section during the fiscal year 1936:

Selected Financial and Operating Data from Annual Reports of Telephone Carriers for the year ended December 31, 1934;  
 Selected Financial and Operating Data from Annual Reports of Telegraph, Cable, and Radiotelegraph Carriers for the year ended December 31, 1934;  
 A Table Showing the Intercorporate Relations of Carriers Reporting to the Federal Communications Commission and the Controlling Companies:  
 Salary Report of Telephone and Telegraph Carriers, 1934;  
 Summary of Monthly Reports of Large Telephone Carriers in the United States; and  
 Operating Data from Monthly Reports of Telegraph Carriers.

The above publications are widely called for and used by universities, civic organizations, State commissions, and other governmental bodies, and financial institutions throughout the United States. Plans have been made to prepare hereafter a yearbook which will contain vital information with reference to the telephone and telegraph industries.

#### ANNUAL REPORTS REQUIRED OF COMMUNICATION CARRIERS

Annual report forms are composed in this department and prescribed by the Commission, pursuant to section 219 of the Communications Act of 1934. The annual report forms prescribed by the Commission are also widely used by State commissions throughout the United States, some of which use the same forms in requiring reports of carriers within their respective jurisdictions.

The following changes were made in the annual reports required of telephone and telegraph companies for the calendar year 1935, which were required to be filed during the fiscal year 1936:

1. In cases where a carrier prepared a report to stockholders containing a consolidated-system balance sheet, income statement, and surplus statement, it was requested to show similar data in the annual report to the Commission.

2. A new schedule was inserted requiring carriers to give detailed information with respect to their relief and pension funds.

3. The carriers were required to show the total amount paid to each officer and director receiving \$10,000 or more during the year, in addition to the data previously shown.

4. The segregation of plant and operating statistics of telephone carriers, by States or Territories, and a segregation of plant mileage and telegraph offices of telegraph carriers, by States, Territories, or foreign countries, were required, whereas aggregate returns were heretofore shown.

5. Three schedules were inserted which require telephone carriers to show data concerning private-line statistics, teletypewriters on customers' premises used in teletypewriter-exchange service, and statistics concerning other stations; and telegraph carriers were required to show data relative to service equipment furnished free to customers, telegraph printers in service on customers' premises, and leased-wire statistics.

6. The schedule for telegraph revenue messages transmitted was revised to show a detailed analysis of the messages transmitted and the amount of revenue received.

In order to enable this Commission to obtain information regarding the performance of communication services by railway carriers, the Interstate Commerce Commission inserted a new schedule entitled "Telegraph and Telephone Operating Revenues" in its report

form A required to be filed by railway carriers under its jurisdiction, for the calendar year 1935.

#### MONTHLY REPORTS

Monthly reports are also required to be filed by telephone and telegraph carriers. These reports constitute the source of information tabulated in the monthly releases entitled "Summary of Monthly Reports of Large Telephone Carriers in the United States" and "Operating Data from Monthly Reports of Telegraph Carriers." These monthly summaries were revised during the fiscal year 1936 to show more detailed information. Among other things, geographical groupings were made, as illustrated in the monthly summaries for April 1936, shown as tables XI and XII in the appendix of this report.

#### REPORTS REQUIRED OF HOLDING COMPANIES

The Commission also adopted report forms, composed in this section, required to be filed by holding companies annually, pursuant to authority contained in section 219 (a) of the Communications Act of 1934. Two such forms were prescribed, known as form H required of holding companies primarily interested in the communications industry and Statistical Circular No. 1 required of holding companies nominally interested in the communications industry.

#### PUBLIC REFERENCE ROOM

A public reference room is maintained in this section where the public is permitted to examine the reports filed by communication carriers. A considerable number of persons availed themselves of this privilege during the fiscal year 1936.

#### EXAMINATION AND CORRECTION OF REPORTS

All reports filed by communication and holding companies are carefully examined in the Statistical Section and correspondence is conducted with officials of the various companies with reference to discrepancies discovered in the reports. These examinations and the preparation of such correspondence require an intimate knowledge of the accounting regulations and practices of these companies. When changes are authorized they are inserted in the reports.

During the examination of the various accounting schedules in these reports, items of unusual interest, or apparent inconsistencies, are brought to the attention of the proper officials of the Commission. This constitutes a very important function of the Statistical Section.

#### OTHER ACTIVITIES OF THE STATISTICAL SECTION

The Statistical Section was called upon, during the fiscal year 1936, to prepare a large number of special statistical tabulations or reports for the Commission and answered quite a large volume of correspondence from outside the Commission with reference to statistical matters relating to the communications industry. Among other things, the section prepared forms used in connection with the returns covering telephone and telegraph frank service and compiled data concerning free and concession service of telephone carriers.

*Statistical tables shown in appendix.—In appendix A will be found statistical tables nos. I to XIX, inclusive, and charts nos. 1 to 8, inclusive, relating to the communications industry.*

## TARIFF SECTION

### FILING OF CHARGES AND REGULATIONS

The requirements contained in section 203 of the Communications Act of 1934 regarding the filing of rates and regulations by communication companies was a new requirement insofar as interstate communication service was concerned. Many rates, regulations, classifications, or practices of communication companies, affecting interstate service, were not published in any tariff and were not accessible to the public. Tariffs voluntarily published by the carriers were generally incomplete.

In order to eliminate the chaotic condition incident to the initial filing of rates by communication carriers, for interstate services, and in order to develop tariff files which would be readable and understandable by the public and which would contain information desired by the Commission, it was necessary to establish rules and regulations governing the filing of all rate schedules. To this end a tariff circular, designated Tariff Circular No. 1, showing a definite and lawful procedure for the construction, filing, and posting of schedules of charges and regulations for interstate and foreign communication by wire or radio, was completed, approved by the Commission, and over 1,000 copies mailed to telephone and telegraph carriers, or their agents, and to various State commissions. This circular, effective on September 1, 1935, included the requirement that all schedules of charges and regulations, and concurrences therein, on file with the Commission on and after January 1, 1936, should be in compliance with the provisions of its rules. Pursuant to this instruction the following tariffs, or schedules of charges and regulations, and concurrences were received from 201 carriers, and were examined and filed:

	Tele- phone	Tele- graph	Tele- phone and tele- graph	Total
New tariffs.....	432	236	28	696
Additional or revised loose-leaf pages.....	12,695	3,087	357	16,139
Supplements.....	191	304		495
Concurrences.....			116	116

Rule 8 (i) of Tariff Circular No. 1 was amended by Commission Order No. 12-B, previous to which carriers had filed notices for the establishment or discontinuance of service in 264 instances under the authority of this rule.

In 302 instances tariff schedules tendered for filing by carriers were rejected because of failure to give lawful notice of their effective date.

*Elimination of discriminatory and other unlawful provisions or irregularities contained in tariffs.*—It was necessary to examine the many thousands of pages of rates and regulations filed with the Commission by the communication companies, page by page and word by

word, in order to determine whether or not such schedules were in compliance with the provisions of the act and with the regulations promulgated by the Commission, and particularly to discover rates, regulations, practices, or other provisions which appeared to be unjustly discriminatory or otherwise unlawful. In many instances during the fiscal year 1936 the Department, through the Tariff Section, discovered and directed attention to such provisions contained in tariff schedules filed with the Commission and participated in numerous conferences with representatives of various carriers and with officials of other departments of the Commission for the purpose of bringing about the elimination or correction of such provisions.

#### SPECIAL APPLICATIONS

Carriers filed 115 applications for waiver of certain tariff rules and regulations, chiefly requesting special authority to effect changes in their rates, regulations, classifications, or practices on less than required notice, pursuant to section 203 of the act. In eight instances such applications were denied.

Press releases relating to changes in rates, rules, regulations, classes of service, or conditions under which services are rendered, were prepared and published in 212 instances. Letters and telegrams in the number of 887 and 62, respectively, were sent to carriers or their agents, relating to rate and tariff matters. Memoranda in the number of 336 were prepared for the Commission, or employees of other departments of the Commission, containing tariff, rate, or traffic information.

The section, through its representatives, cooperated with the other departments of the Commission in drafting various orders, such as Telegraph Division Order No. 15-A, respecting rates for Government communications by telegraph.

Special studies were constantly made of tariff rules, rate structures, and traffic arrangements with the intent of bringing about general uniformity as well as definite application of tariffs.

#### RATE REDUCTIONS

The department, through this section (so far as available personnel permitted) assembled data relating to telephone and telegraph rates applicable to the many classes of interstate communication service in various parts of the United States, and prepared charts, graphs, and rate exhibits. Such studies have aided in securing certain rate reductions beneficial to the public.

With respect to telegraph rates, there were numerous reductions effected by the telegraph companies between certain points in the United States, and also from many points in the United States to certain foreign countries. There were also reductions in the rates for special telegraph services, such as for the transmission of photographs. There were also established, during the fiscal year 1936, various flat rates applicable to certain new classes of telegraph service between all points in the United States such, for instance, as the flat rate of 35 cents applicable to tourate messages not exceeding 15 words. The effect of the establishment of these flat rates was to reduce the charges on certain types of messages.

With respect to telephone rates there were numerous reductions published by the telephone companies during the fiscal year 1936. These reductions were all of importance and, in the aggregate, will result in a large annual saving to the public. The following may be mentioned:

*Effective on January 15, 1936.*—Extension of the discount period on station-to-station calls and the introduction, for the first time, of the discount period on person-to-person calls. The estimated annual saving to the public from these changes will be \$3,000,000.

*Effective on February 1, 1936.*—Reduction of numerous interstate toll-message rates applicable between various points in the southeastern section of the United States. These reductions will result in an estimated annual saving to the public of \$125,000.

*Effective on April 1, 1936.*—Reduction in the interstate toll-message rates between Washington, D. C., and Alexandria, Va. These changes will result in an estimated annual saving to the public of \$40,000.

*Effective on July 1, 1936.*—Substantial reductions in telephone toll-message rates between points in the United States and points in certain countries in Europe, Central America, and South America, and points in certain other countries. Reductions in telephone toll-message rates from Key West, Fla., to Cuban points. Reductions in telephone toll-message rates from Miami, Fla., and San Francisco, Calif., to South American and trans-Pacific points.

#### INTERNATIONAL RATES

Special studies have been made of the composition of international rates and the effect thereof upon American carriers and American users of international service.

The Tariff Section has actively participated in the preparatory work incident to the forthcoming meeting of the International Consultative Committee on Telegraphs scheduled to be held at Warsaw in October 1936. Such committee has before it highly important questions bearing upon the classification of international messages and coefficients to be applied in the establishment of international rates.

#### INFORMATION SUPPLIED MEMBERS OF THE PUBLIC AND OTHER GOVERNMENTAL AGENCIES

In addition to responding to numerous requests from other departments of the Commission for traffic, rate, and tariff information, many requests of this nature were also received from other governmental agencies and from members of the public. The latter requests were complied with so far as possible and proper. Duplicate copies of all tariffs filed with the Commission are kept available for inspection by members of the public. Many persons availed themselves of this privilege during the fiscal year 1936.

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## APPENDIX A

### STATISTICAL DATA CONCERNING CARRIERS ENGAGED IN WIRE OR RADIO COMMUNICATIONS AND THE COMPANIES CONTROLLING THEM

The following tables and charts are assembled into three major groups. The first group relates to annual reports for the calendar year 1935; the second group refers to monthly reports; and the third group relates to the intercorporate relations of carriers reporting to the Federal Communications Commission and the controlling companies.

#### ANNUAL REPORTS

The data included in table I cover reports received from 108 class A telephone carriers (including operating data shown in 3 period reports filed by merged companies) and 40 class B telephone carriers (including operating data shown in 2 period reports filed by a reorganized company). The number of carriers shown in the table represent the carriers operating as of December 31, 1935, and the returns are incomplete. Approximately 82 carriers that previously filed "Annual Report Form M" will not file an annual report for 1935, due to the fact that they are subject only to the provisions of sections 201-205 of the Communications Act of 1934, although 20 of the aforementioned carriers voluntarily filed the reports for the year 1935.

In table II the returns shown for the telephone systems and lines included in the "Census of Electrical Industries, Telephones and Telegraphs", for the year 1932, are compared with the returns shown in the annual reports of carriers reporting to the Interstate Commerce Commission for 1932 and with the returns shown in the annual reports of carriers reporting to the Federal Communications Commission for 1935. The amounts applicable to the year 1932 for the latter group are also shown in the table. The difference in the number of carriers reporting in 1932 and 1935 is due to mergers and reorganizations.

The decrease in the amount of operating revenues of carriers reporting to the Commission in 1935 compared with returns for 1932 for the same group of carriers is due principally to the fact that the accounting classifications were changed in 1933, providing for the deduction of "Uncollectible operating revenues" from the gross operating revenues, whereas the amount was previously deducted in the income statement. It was also noted that several large carriers actually showed a decrease in revenues for 1935 in comparison with 1932. The decrease in the number of employees is probably due to the installation of dial (automatic) switchboards.

A summary of financial and operating data concerning telephone carriers reporting to the Commission for 1935 in comparison with 1934 is given in table III. The relative importance of the Bell System carriers in comparison with other than Bell System carriers is also indicated in this table. During the year, three Bell System carriers were merged with other Bell System carriers, as follows: (a) The Home Telephone & Telegraph Co. of Southern Oregon and the Home Telephone & Telegraph Co. of Spokane were purchased by the Pacific Telephone & Telegraph Co., and (b) the Petersburg Telephone Co. was purchased by the Chesapeake & Potomac Telephone Co. of Virginia.



TABLE I.—Summary of financial and operating data from annual reports of telephone carriers for the year ended Dec. 31, 1935

Item	Class A carriers	Class B carriers	Total
Number of carriers.....	108	40	148
Investment in telephone plant.....	\$4,560,132,733	\$12,544,907	\$4,572,677,640
Other investments.....	2,639,874,685	1,523,995	2,641,398,680
Cash.....	59,510,179	442,344	59,952,523
Material and supplies.....	54,396,234	267,729	54,663,963
Total current assets.....	447,949,205	1,323,859	449,273,064
Capital stock.....	4,321,986,214	5,399,962	4,327,386,176
Funded debt.....	1,065,699,625	2,618,300	1,068,317,925
Total long-term debt.....	1,317,973,041	3,795,880	1,321,768,921
Total current liabilities.....	91,606,774	804,942	92,411,716
Depreciation reserve.....	1,119,385,198	3,407,768	1,122,792,966
Total surplus.....	415,403,137	1,144,375	416,547,512
Toll-service revenues.....	285,241,008	609,456	285,850,464
Total operating revenues.....	1,013,206,793	2,499,701	1,015,706,494
Operating expenses.....	712,782,533	1,890,342	714,672,875
Operating taxes:			
Other than United States Government taxes.....	75,983,878	161,880	76,145,758
United States Government taxes.....	24,429,343	47,096	24,476,439
Total.....	100,413,221	208,976	100,622,197
Net operating income.....	199,943,942	400,383	200,344,325
Interest deductions.....	66,066,157	233,821	66,299,978
Net income.....	279,234,174	207,261	279,441,435
Dividends declared.....	315,999,852	264,517	316,264,369
Miles of wire in cable.....	78,956,835	85,284	79,042,119
Miles of aerial wire.....	4,550,883	63,532	4,614,415
Total miles of wire.....	83,507,718	148,816	83,656,534
Miles of pole line.....	557,455	16,244	573,699
Miles of underground conduit (single duct).....	127,195	101	127,296
Central offices—type of switchboard:			
Magneto, manual.....	5,176	215	5,391
Common-battery, manual.....	2,886	50	2,936
Auto, manual.....	30	1	31
Dial (automatic) system.....	1,216	14	1,230
Total.....	9,308	280	9,588
Total company telephones.....	15,195,815	76,315	15,272,130
Service telephones.....	319,211	7,274	326,485
Private-line telephones and other stations.....	97,635	13	97,648
Total telephones.....	15,612,661	83,602	15,696,263
Average number of calls originated per month:			
Local.....	2,190,316,754	9,789,868	2,200,106,622
Toll.....	66,644,861	321,769	66,966,630
Average number of company and service telephones.....	15,168,016	78,879	15,246,895
Private-line service revenues: †			
Commercial:			
Broadcasting.....	\$5,692,764		\$5,692,764
Miscellaneous.....	15,570,196		15,570,196
Government.....	860,311		860,311
Press.....	3,738,895		3,738,895
Telegraph stations:			
Private-line, Morse:			
Number.....	3,578		3,578
Revenue.....	\$6,836,233	\$1,070	\$6,837,303
Private-line, teletypewriter:			
Number.....	6,636		6,636
Revenue.....	\$9,574,668	\$78	\$9,574,746
Teletypewriter exchange:			
Number.....	7,885		7,885
Revenue.....	\$3,812,682		\$3,812,682
Telephotograph: Revenue.....	\$459,934		\$459,934
Total number of employees:			
At close of June.....	272,551	1,344	273,895
At close of year.....	271,343	1,335	272,678
Total compensation for year.....	\$408,011,491	\$1,045,024	\$409,056,515

† Relates to interstate services furnished to customers and includes revenues for intrastate lines used in interstate communication.

TABLE II.—Comparison of data concerning telephone carriers shown in the report of the Bureau of the Census for 1932, and reports filed with the Interstate Commerce Commission for 1932, and the Federal Communications Commission for 1935

Item	Census figures, 1932	Interstate Commerce Commission, 1932		Federal Communications Commission, 1935			
		Amount	Percent of census figures	1932 <sup>1</sup>		1935	
				Amount	Percent of census figures	Amount	Percent of census figures
Number of systems and lines.....	44,828	296	0.7	158	0.4	148	0.3
Investment in telephone plant.....	\$4,791,902,525	\$4,660,662,997	97.3	\$4,537,651,215	94.7	\$4,572,677,640	95.4
Operating revenues.....	\$1,061,530,140	\$1,049,757,095	98.9	\$1,030,094,760	97.0	\$1,015,706,494	95.7
Central offices.....	19,228	11,130	57.9	9,736	50.6	9,588	49.9
Total telephones.....	17,424,406	16,148,115	92.7	15,556,983	89.3	15,696,263	90.1
Number of employees at close of year.....	334,085	300,485	89.9	292,512	87.6	272,678	81.6
Total compensation.....	\$458,116,677	( <sup>2</sup> )		( <sup>2</sup> )		\$409,056,515	89.3

<sup>1</sup> Represents data applicable to 1932 for carriers reporting to the Federal Communications Commission in 1935.<sup>2</sup> Data not reported.

TABLE III.—Summary of selected items from the annual reports of identical telephone carriers for the years 1935 and 1934

Item	All carriers		Bell System carriers		Other than Bell System carriers	
	1935	1934	1935	1934	1935	1934
Number of carriers at close of year.....	148	151	40	43	108	108
Investment in telephone plant.....	\$4, 572, 677, 640	\$4, 556, 141, 728	\$4, 310, 879, 700	\$4, 293, 795, 042	\$261, 797, 940	\$262, 346, 686
Capital stock.....	\$4, 327, 388, 176	\$4, 327, 339, 599	\$4, 209, 144, 517	\$4, 208, 938, 117	\$118, 241, 659	\$118, 401, 482
Unmatured funded debt.....	\$1, 068, 317, 925	\$1, 037, 259, 914	\$962, 318, 225	\$933, 228, 723	\$105, 999, 700	\$104, 031, 191
Depreciation reserve.....	\$1, 122, 792, 966	\$1, 020, 587, 992	\$1, 072, 964, 942	\$979, 375, 714	\$49, 828, 024	\$47, 222, 278
Total surplus.....	\$416, 547, 512	\$464, 423, 769	\$403, 122, 864	\$451, 143, 448	\$13, 424, 648	\$13, 250, 321
Operating revenues.....	\$1, 015, 709, 494	\$962, 245, 397	\$970, 378, 771	\$919, 110, 633	\$45, 330, 723	\$43, 134, 764
Operating expenses.....	\$714, 672, 875	\$677, 466, 123	\$685, 029, 030	\$648, 378, 283	\$29, 643, 845	\$29, 087, 840
Net operating income.....	\$200, 344, 325	\$190, 625, 603	\$188, 619, 384	\$180, 383, 822	\$11, 724, 941	\$10, 241, 781
Dividend appropriations.....	\$315, 264, 369	\$310, 357, 923	\$311, 619, 358	\$305, 648, 765	\$4, 645, 011	\$4, 709, 158
Miles of wire.....	53, 656, 534	83, 396, 956	80, 526, 953	80, 150, 764	3, 129, 581	3, 246, 192
Total company telephones.....	15, 272, 130	14, 756, 001	14, 050, 093	13, 594, 140	1, 212, 037	1, 161, 861
Average number of calls originated per month:						
Local.....	2, 200, 105, 822	2, 127, 342, 661	2, 029, 275, 997	1, 949, 783, 247	170, 829, 625	177, 559, 414
Toll.....	66, 966, 630	64, 836, 285	62, 693, 256	60, 794, 052	4, 273, 374	4, 042, 233
Number of employees at close of year.....	272, 678	275, 594	254, 995	257, 820	17, 683	17, 774
Total compensation.....	\$409, 056, 515	\$392, 641, 698	\$391, 647, 455	\$375, 922, 163	\$17, 409, 060	\$16, 719, 535
PERCENT OF TOTAL						
Number of carriers at close of year.....	100.0	100.0	27.0	28.5	73.0	71.5
Investment in telephone plant.....	100.0	100.0	94.3	94.2	5.7	5.8
Capital stock.....	100.0	100.0	97.3	97.3	2.7	2.7
Unmatured funded debt.....	100.0	100.0	90.1	90.0	9.9	10.0
Depreciation reserve.....	100.0	100.0	95.6	95.4	4.4	4.6
Total surplus.....	100.0	100.0	96.8	97.1	3.2	2.9
Operating revenues.....	100.0	100.0	95.5	95.5	4.5	4.5
Operating expenses.....	100.0	100.0	95.9	95.7	4.1	4.3
Net operating income.....	100.0	100.0	94.1	94.6	5.9	5.4
Dividend appropriations.....	100.0	100.0	98.5	98.5	1.5	1.5
Miles of wire.....	100.0	100.0	96.3	96.1	3.7	3.9
Total company telephones.....	100.0	100.0	92.1	92.1	7.9	7.9
Average number of calls originated per month:						
Local.....	100.0	100.0	92.2	91.7	7.8	8.3
Toll.....	100.0	100.0	93.6	93.8	6.4	6.2
Number of employees at close of year.....	100.0	100.0	93.5	93.6	6.5	6.4
Total compensation.....	100.0	100.0	95.7	95.7	4.3	4.3

The tax accruals, by States, are shown in table IV concerning telephone carriers reporting for the year 1935.

The principal credit and debit items included in the income and surplus accounts of class A telephone carriers are shown in table V and chart no. 1. It will be noted that the total debits exceed the total credits by \$56,783,741, and that dividends were appropriated from income and surplus. The amount of compensation chargeable to operating expenses is not stated in the annual reports. However, the bulk of the amount is charged to operating expenses and the remainder is charged to construction or other accounts. The total compensation is indicated in the table and chart for comparative purposes.

The data included in table VI cover the operations of 11 telegraph, 5 cable, and 20 radiotelegraph carriers for the year 1935. In addition, 3 reports were filed by radiotelegraph carriers; but as the reports were not complete, the statistical data could not be included in the table. The 3 reports were received from the Mayor and City Council of Baltimore, Md.; Pacific Communications Co.; and George Collins Warner, Jr.

A summary of financial and operating data concerning telegraph, cable, and radiotelegraph carriers reporting to the Commission for 1935 in comparison with 1934 is given in table VII. The returns cover the identical carriers for both years with the exception of the Minnesota & Manitoba Railroad, which did not file a report for the year 1934.

A list of the telephone carriers and holding companies in the hands of receivers or trustees, showing the names of the fiduciaries and dates of their appointments, is given in table VIII together with the amounts of investment and capitalization involved. There were no telegraph, cable, or radiotelegraph carriers reporting to the Commission for the year 1935 that were in the hands of receivers or trustees.

TABLE IV.—Tax accruals by States of telephone carriers for the year ended Dec. 31, 1935

State	Class A carriers	Class B carriers	Total
Total, United States.....	\$100,411,823	\$208,976	\$100,620,799
Alabama.....	544,318	.....	544,318
Arizona.....	362,803	.....	362,803
Arkansas.....	351,860	6,185	358,045
California.....	6,344,740	13,433	6,358,173
Colorado.....	663,329	.....	663,329
Connecticut.....	749,841	.....	749,841
Delaware.....	80,191	75	80,266
Florida.....	665,545	.....	665,545
Georgia.....	628,836	.....	628,836
Idaho.....	284,068	.....	284,068
Illinois.....	6,719,502	9,902	6,729,404
Indiana.....	2,071,927	40,226	2,112,153
Iowa.....	817,734	3,872	821,606
Kansas.....	927,819	11,306	939,125
Kentucky.....	727,347	.....	727,347
Louisiana.....	1,057,029	5,773	1,062,802
Maine.....	329,483	2,350	331,833
Maryland.....	1,216,536	.....	1,216,536
Massachusetts.....	3,111,884	5,191	3,117,075
Michigan.....	3,072,423	.....	3,072,423
Minnesota.....	834,708	5,333	840,041
Mississippi.....	524,896	.....	524,896
Missouri.....	1,950,050	.....	1,950,050
Montana.....	217,428	6,663	224,091
Nebraska.....	713,289	2,800	716,089
Nevada.....	160,074	.....	160,074
New Hampshire.....	366,475	.....	366,475
New Jersey.....	4,206,227	.....	4,206,227
New Mexico.....	101,634	.....	101,634
New York.....	16,804,532	6,380	16,810,912
North Carolina.....	828,395	1,310	829,705
North Dakota.....	178,911	1,573	180,484
Ohio.....	4,312,234	6,470	4,318,704
Oklahoma.....	1,111,708	30	1,111,738
Oregon.....	926,115	.....	926,115
Pennsylvania.....	2,204,675	2,782	2,207,457
Rhode Island.....	207,334	.....	207,334
South Carolina.....	457,488	.....	457,488
South Dakota.....	265,442	.....	265,442

<sup>1</sup> Excludes \$1,398 Canadian taxes.

TABLE IV.—The accruals by States of telephone carriers for the year ended Dec. 31, 1935—Continued

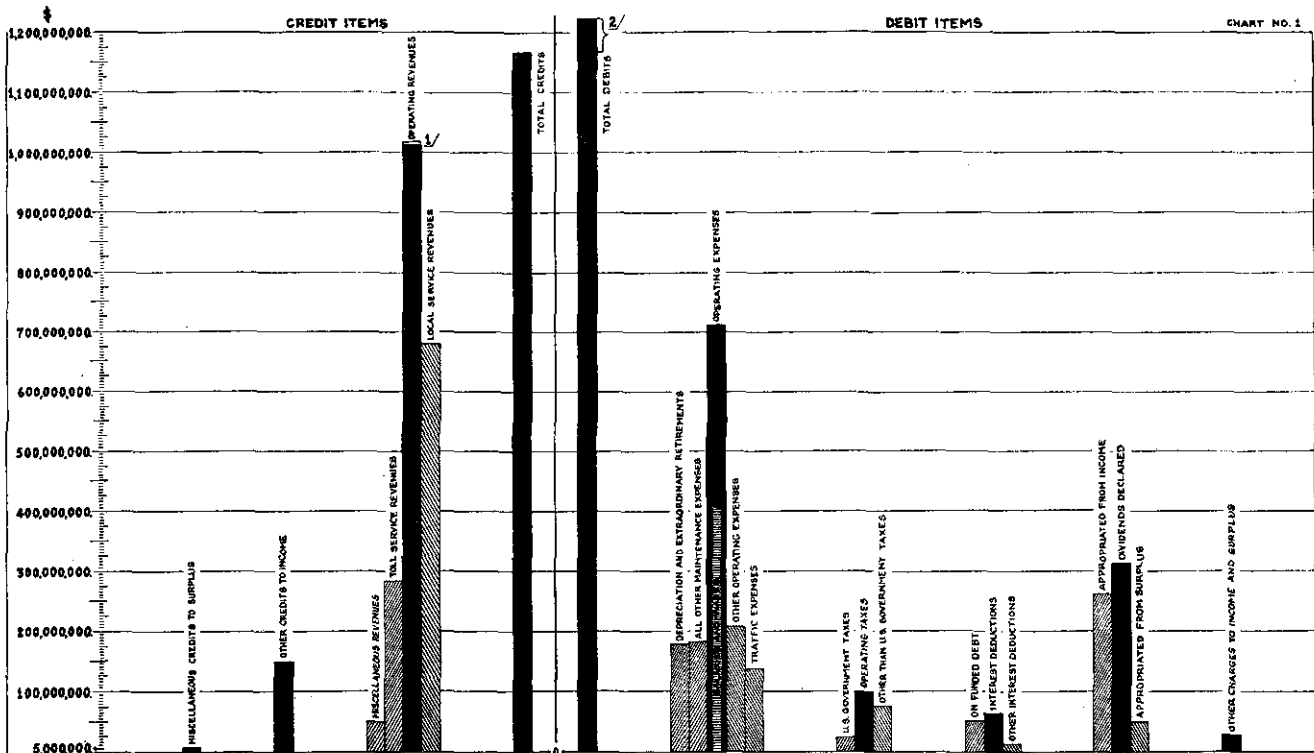
State	Class A carriers	Class B carriers	Total
Tennessee.....	\$777,161		\$777,161
Texas.....	2,449,213	\$20,511	2,469,724
Utah.....	288,310		288,310
Vermont.....	108,353	1,621	109,974
Virginia.....	675,781	5,522	681,303
Washington.....	1,699,202		1,699,202
West Virginia.....	533,312		533,312
Wisconsin.....	1,779,059	2,572	1,781,631
Wyoming.....	127,947		127,947
District of Columbia.....	445,312		445,312
U. S. Government.....	24,429,343	47,096	24,476,439

TABLE V.—Analysis of returns shown in income and surplus statements, class A telephone carriers, year ended Dec. 31, 1935

CREDITS		
Operating revenues.....		\$1,013,096,326
Local service revenues.....	\$680,266,845	
Toll service revenues.....	285,236,453	
Miscellaneous revenues.....	51,758,789	
Uncollectible revenues, debit.....	4,165,761	
Other income.....		<sup>1</sup> 147,723,415
Miscellaneous credits to surplus.....		6,160,341
Total credits.....		<u>1,166,980,082</u>
DEBITS		
Operating expenses.....		\$712,724,988
Depreciation and extraordinary retirements.....	\$180,878,173	
All other maintenance expenses.....	184,132,474	
Traffic expenses.....	139,673,632	
Other operating expenses.....	208,040,709	
Operating taxes.....		100,400,455
Other than U. S. Government taxes.....	75,972,750	
U. S. Government taxes.....	24,427,705	
Interest deductions.....		66,066,157
On funded debt.....	51,953,285	
Other interest deductions.....	14,112,872	
Dividends declared.....		315,999,852
Appropriated from income.....	263,979,597	
Appropriated from surplus.....	52,020,255	
Other charges to income.....		2,439,849
Other charges to surplus.....		26,132,522
Total debits.....		<u>1,223,763,823</u>
Excess of debits over credits.....		<u>56,783,741</u>
Balance in surplus at beginning of year.....		381,895,126
Balance in surplus at end of year.....		325,111,385
Decrease during year.....		<u>56,783,741</u>
Total compensation for year <sup>2</sup> .....		408,011,491

<sup>1</sup> Consists chiefly of dividends and interest on securities.<sup>2</sup> The bulk of the amount paid for salaries and wages is charged to operating expenses and the remainder is charged to construction or other accounts.

ANALYSIS OF RETURNS SHOWN IN INCOME AND SURPLUS STATEMENTS  
CLASS A TELEPHONE CARRIERS  
YEAR ENDED DECEMBER 31, 1935



1/ UNCOLLECTIBLE OPERATING REVENUES AMOUNTING TO \$4,164,761 DEDUCTED FROM GROSS OPERATING REVENUES.  
2/ DECREASE IN "UNAPPROPRIATED SURPLUS" AMOUNTING TO \$56,703,741.

Prepared in the Accounting, Statistical and Traffic Department, Federal Communications Commission, August, 1936.

CHART NO. 1

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935

No.	Name of carrier	Investment in plant and equipment	Other investments	Cash	Material and supplies	Total working assets	Capital stock	Unmatured funded debt	Total long-term debt	
	<b>Grand total</b> .....	\$532,561,389	\$66,745,768	\$25,146,722	\$9,965,070	\$75,179,545	\$174,069,065	\$130,381,076	\$182,415,370	
	Telegraph carriers.....	411,738,539	19,892,024	18,555,680	8,040,819	40,236,912	104,966,768	106,182,000	157,452,833	
	Cable carriers.....	89,402,831	34,622,185	5,391,651	1,167,273	30,138,005	61,435,540	20,055,036	20,055,036	
	Radiotelegraph carriers.....	31,420,019	12,231,559	1,199,391	756,978	4,804,628	7,666,757	4,144,040	4,907,501	
	<b>TELEGRAPH CARRIERS</b>									
1	Canadian Pacific Railway Co. (lines in United States).....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
2	Central Idaho Telegraph & Telephone Co.....	104,517				9,694	100,000			
3	Colorado & Wyoming Telegraph Co.....	38,710		36,904	284	39,176	56,300			
4	Continental Telegraph Co.....	299				1,546	5,000			
5	Great North Western Telegraph Co. of Canada <sup>2</sup> .....	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	
6	Interstate Telephones & Telegraph Co. <sup>2</sup> .....	25,702				1,960	41	50,000	50,000	
7	Minnesota & Manitoba R. R.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
8	Mountain Telegraph Co.....	9,378		255		9,071	15,000			
9	Northern Telegraph Co.....	337,591		9,621	4,682	75,135	262,800			
10	Postal Telegraph-Cable Co. (Land Line System).....	82,359,781	837,188	2,223,112	879,409	6,106,355			51,270,833	
11	Western Union Telegraph Co.....	328,862,561	19,054,836	16,285,788	7,156,444	33,993,975	104,527,867	106,132,000	106,132,000	
	<b>CABLE CARRIERS</b>									
12	All American Cables, Inc. <sup>3</sup> .....	32,253,882	3,205,437	2,676,883	288,193	5,004,081	27,037,100			
13	Commercial Cable Co.....	30,876,402	29,802,282	1,116,913	418,326	17,054,341	25,000,000	20,000,000	20,000,000	
14	Commercial Pacific Cable Co.....	22,966,670		985,667	172,493	6,521,551	6,000,000			
15	French Telegraph Cable Co. <sup>4</sup> .....	208,424	1,614,288	53,543	276,763	956,212	712,940	755,036	755,036	
16	Mexican Telegraph Co.....	3,097,453	178	558,645	11,498	601,820	2,685,500			

<sup>1</sup> No data reported, as telegraph lines are an integral part of respondent's railway system and separate capital accounts are not kept.

<sup>2</sup> Lessor company.

<sup>3</sup> No data reported, as telegraph lines are an integral part of Canadian National Telegraph Co. and separate capital accounts are not kept.

<sup>4</sup> Represents book liability for 1,000 shares of common stock without par value.

<sup>5</sup> Figures include data for the Cuban All America Cables, Inc.

<sup>6</sup> The general balance sheet of this carrier has been rearranged to conform with the Uniform System of Accounts, and the data reported in French francs have been converted into dollars at the average exchange rate for the year 1935 of \$0.066013.

<sup>7</sup> Reported as "Interest and bonds payable."

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Total working liabilities	Accrued depreciation	Total corporate surplus	Total operating revenues	Total operating expenses	Operating taxes		
							Other than U. S. Government taxes	U. S. Government taxes	Total
	Grand total.....	\$55,102,590	\$121,838,544	\$107,266,043	\$130,170,934	\$110,419,170	( <sup>6</sup> )	( <sup>6</sup> )	\$4,601,064
	Telegraph carriers.....	33,790,271	51,875,685	98,448,219	112,114,567	94,437,341	\$3,835,412	\$72,535	3,907,997
	Cable carriers.....	5,719,791	54,236,271	6,920,801	10,093,361	8,137,846	( <sup>6</sup> )	( <sup>6</sup> )	479,308
	Radiotelegraph carriers.....	15,592,528	15,726,588	1,897,023	7,963,006	7,843,983	155,736	58,028	213,764
	TELEGRAPH CARRIERS								
1	Canadian Pacific Railway Co. (lines in United States)....	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	4,261	18,902	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
2	Central Idaho Telegraph & Telephone Co.....			14,211	1,152	561	91	5	96
3	Colorado & Wyoming Telegraph Co.....	3,091	11,462	7,501	15,913	8,313	981	519	1,500
4	Continental Telegraph Co.....	1,724			15,099	35,509	2,122	1	2,123
5	Great North Western Telegraph Co. of Canada <sup>2</sup> .....	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )			510		510
6	Interstate Telephone & Telegraph Co. <sup>2</sup> .....	28,362	6,345	\$ 65,556		782	510		500
7	Minnesota & Manitoba R. R.....	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	5,471	4,491			
8	Mountain Telegraph Co.....	597	9,378	\$ 8,526	3,718	3,361	246		246
9	Northern Telegraph Co.....	3,506	31,430	117,727	54,489	42,761	962	2,060	3,022
10	Postal Telegraph-Cable Co. (Land Line System).....	19,984,053	20,002,585	\$ 8,227,014	\$ 22,145,891	20,525,243	500,000		500,000
11	Western Union Telegraph Co.....	13,768,938	31,814,485	108,595,875	\$ 89,868,573	73,797,118	3,330,000	70,000	3,400,000
	CABLE CARRIERS								
12	All America Cables, Inc. <sup>3</sup> .....	505,963	10,851,238	1,125,833	4,383,539	3,543,466	( <sup>12</sup> )	( <sup>12</sup> )	312,503
13	Commercial Cable Co.....	3,452,123	22,172,345	5,236,048	4,087,596	3,326,668	( <sup>12</sup> )	( <sup>12</sup> )	94,500
14	Commercial Pacific Cable Co.....	169,699	19,994,813	405,426	974,276	746,041	6,580	54,533	61,113
15	French Telegraph Cable Co. <sup>4</sup> .....	1,534,224	<sup>13</sup> 476,724		<sup>14</sup> 323,080	<sup>14</sup> 270,972	<sup>14</sup> 978	<sup>14</sup> 109	<sup>14</sup> 1,087
16	Mexican Telegraph Co.....	54,782	741,151	153,494	324,870	250,699	1,000	9,100	10,100

<sup>1</sup> No data reported, as telegraph lines are an integral part of respondent's railway system and separate capital accounts are not kept.

<sup>2</sup> Lessor company.

<sup>3</sup> No data reported, as telegraph lines are an integral part of Canadian National Telegraph Co. and separate capital accounts are not kept.

<sup>4</sup> Figures include data for the Cuban All America Cables, Inc.

<sup>5</sup> The general balance sheet of this carrier has been rearranged to conform with the Uniform System of Accounts, and the data reported in French francs have been converted into dollars at the average exchange rate for the year 1935 of \$0.066013.

<sup>6</sup> Insufficient data.

<sup>7</sup> Deficit or other reverse item.

<sup>8</sup> Includes \$649,117 revenues from telephone operations.

<sup>9</sup> Includes \$5,961,349, "Revenues from transmission—cable."

<sup>10</sup> Data not reported on accrual basis.

<sup>11</sup> Reported as "Reserve for repairs and emergencies."

<sup>12</sup> Figures cover operations of New York City office.



TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Operating income	Total interest deductions	Net income	Dividends declared		Miles of wire in cable	Miles of aerial wire	Total miles of wire	
					Amount	Rate percent				
	<b>Grand total</b> .....	\$14,150,056	\$9,614,663	\$3,810,028	\$6,216,031		<sup>15</sup> 546,901	1,853,723	<sup>16</sup> 2,400,624	
	Telegraph carriers.....	13,004,422	7,884,699	3,527,065	2,105,820		471,151	1,845,326	2,316,477	
	Cable carriers.....	1,421,912	916,768	724,264	2,710,211		<sup>16</sup> 75,750	8,397	<sup>16</sup> 84,147	
	Radiotelegraph carriers.....	<sup>17</sup> 276,378	813,196	<sup>18</sup> 641,301	1,400,000					
	<b>TELEGRAPH CARRIERS</b>									
1	Canadian Pacific Railway Co. (lines in United States).....	(1)	(1)	(1)			24	5,177	5,201	
2	Central Idaho Telegraph & Telephone Co.....	495		495				90	90	
3	Colorado & Wyoming Telegraph Co.....	5,800		2,876			16	641	657	
4	Continental Telegraph Co.....	<sup>19</sup> 22,615					242	14,437	14,679	
5	Great North Western Telegraph Co. of Canada <sup>2</sup> .....	<sup>20</sup> 510		17,990						
6	Interstate Telephone & Telegraph Co. <sup>2</sup> .....	<sup>21</sup> 1,282	3,045	<sup>22</sup> 3,586						
7	Minnesota & Manitoba R. R.....	980		980				613	613	
8	Mountain Telegraph Co.....	111		<sup>23</sup> 668				251	251	
9	Northern Telegraph Co.....	8,420		10,602	15,756	6.00	8	2,893	2,901	
10	Postal Telegraph-Cable Co. (Land Line System).....	970,648	2,534,136	<sup>24</sup> 1,769,704			56,260	329,966	386,226	
11	Western Union Telegraph Co.....	12,042,375	5,347,518	5,258,078	2,090,064	2.00	414,601	1,491,258	1,905,859	
	<b>CABLE CARRIERS</b>									
12	All America Cables, Inc. <sup>3</sup> .....	497,570		678,880	1,622,226	6.00	<sup>16</sup> 27,192	5,138	<sup>18</sup> 32,330	
13	Commercial Cable Co.....	642,428	911,743	<sup>25</sup> 318,554			<sup>17</sup> 23,667		<sup>17</sup> 23,667	
14	Commercial Pacific Cable Co.....	167,122		286,618	900,000	15.00	<sup>17</sup> 10,253		<sup>17</sup> 10,253	
15	French Telegraph Cable Co.....	<sup>14</sup> 51,021	<sup>14</sup> 5,025	<sup>14</sup> 47,496			<sup>18</sup> 12,763	1,937	<sup>18</sup> 14,700	
16	Mexican Telegraph Co.....	63,771		29,794	187,985	7.00	1,875	1,322	3,197	

<sup>1</sup> No data reported, as telegraph lines are an integral part of respondent's railway system and separate capital accounts are not kept.

<sup>2</sup> Lessor company.

<sup>3</sup> Figures include data for the Cuban All America Cables, Inc.

<sup>4</sup> Deficit or other reverse item.

<sup>5</sup> Figures cover operations of New York City office.

<sup>6</sup> Includes 59,358 nautical miles of wire.

<sup>7</sup> Includes 25,438 nautical miles of wire.

<sup>8</sup> Represents nautical miles of wire.

<sup>9</sup> Includes 3,705 miles of wire not in service at the end of the year 1935.

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Miles of pole line	Miles of underground conduit (single duct)	Telegraph offices			Telegraph revenue messages transmitted				
				United States <sup>13</sup>	Foreign	Total	Domestic	Foreign	Mobile	Total	
	Grand total.....	253,375	5,987	25,793	211	26,004	176,884,250	13,126,427	635,020	190,645,697	
	Telegraph carriers.....	251,345	5,827	25,657	49	25,706	174,517,441	4,095,793		178,613,234	
	Cable carriers.....	2,030	160	8	136	144		5,156,459		5,156,499	
	Radiotelegraph carriers.....			128	26	154	2,366,809	3,874,145	635,020	6,875,974	
	TELEGRAPH CARRIERS										
1	Canadian Pacific Railway Co. (lines in United States).....	227		13	( <sup>20</sup> )	13	15,624	( <sup>20</sup> )		15,624	
2	Central Idaho Telegraph & Telephone Co.....	60		5		5	2,030			2,030	
3	Colorado & Wyoming Telegraph Co.....	44		14		14	<sup>21</sup> 20,016			<sup>21</sup> 20,016	
4	Continental Telegraph Co.....	2,776	6	155		155	149,538			149,538	
5	Great North Western Telegraph Co. of Canada <sup>2</sup> .....										
6	Interstate Telephone & Telegraph Co. <sup>1</sup> .....										
7	Minnesota & Manitoba R. R.....	44		5		5	9,867	7		9,874	
8	Mountain Telegraph Co.....	6		5		5	6,717			6,717	
9	Northern Telegraph Co.....	631		68		68	<sup>22</sup> 128,815	<sup>22</sup> 319		<sup>22</sup> 129,134	
10	Postal Telegraph-Cable Co. (Land Line System).....	32,018	885	4,477		4,477	<sup>21</sup> 37,002,960			<sup>21</sup> 37,002,960	
11	Western Union Telegraph Co.....	215,539	4,936	20,915	49	20,964	137,181,874	4,095,467		141,277,341	
	CABLE CARRIERS										
12	All America Cables, Inc. <sup>3</sup> .....	1,577	62	1	83	84		1,854,210		1,854,210	
13	Commercial Cable Co.....		<sup>23</sup> 54	1	38	39		2,547,918		2,547,918	
14	Commercial Pacific Cable Co.....		<sup>23</sup> 31	4	3	7		279,893		279,893	
15	French Telegraph Cable Co.....	7		1	7	8		<sup>14</sup> 201,730		<sup>14</sup> 201,730	
16	Mexican Telegraph Co.....	446	13	1	5	6		<sup>24</sup> 272,738		272,738	

<sup>2</sup> Lessor company.

<sup>3</sup> Figures include data for the Cuban All America Cables, Inc.

<sup>14</sup> Figures cover operations of New York City office.

<sup>19</sup> Includes Territories and possessions of the United States except the Philippine Islands.

<sup>20</sup> Data not reported.

<sup>21</sup> Estimated on the basis of the number of messages transmitted during the month of January.

<sup>22</sup> Estimated on the basis of the number of messages transmitted on the 15th and 16th day of each month of the year 1935.

<sup>23</sup> Represents nautical miles of single duct.

<sup>24</sup> Includes 194,455 international messages transmitted in accordance with respondent's rules governing domestic messages.

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Leased-wire revenues				Number of employees at end of June	Total compensation for year
		Commercial		Government	Press		
		Broadcasting	Miscellaneous				
	Grand total.....	( <sup>9</sup> )	( <sup>9</sup> )	( <sup>9</sup> )	( <sup>9</sup> )	68,987	\$76,376,532
	Telegraph carriers.....	( <sup>9</sup> )	( <sup>9</sup> )	( <sup>9</sup> )	( <sup>9</sup> )	62,408	67,640,191
	Cable carriers.....					3,764	4,530,884
	Radiotelegraph carriers.....					2,815	4,205,457
	TELEGRAPH CARRIERS						
1	Canadian Pacific Railway Co. (lines in United States).....					8	8,825
2	Central Idaho Telegraph & Telephone Co.....					( <sup>25</sup> )	( <sup>25</sup> )
3	Colorado & Wyoming Telegraph Co.....		\$5,400			<sup>26</sup> 23	7,016
4	Continental Telegraph Co.....					<sup>27</sup> 37	10,546
5	Great North Western Telegraph Co. of Canada <sup>1</sup> .....						
6	Interstate Telephone & Telegraph Co. <sup>2</sup> .....						
7	Minnesota & Manitoba R. R.....					1	976
8	Mountain Telegraph Co.....					<sup>28</sup> 9	3,000
9	Northern Telegraph Co.....					<sup>29</sup> 50	32,819
10	Postal Telegraph-Cable Co. (Land Line System).....	\$5,722	30,686		\$9,766	<sup>30</sup> 15,792	<sup>31</sup> 12,730,759
11	Western Union Telegraph Co.....	<sup>32</sup> 1,826	<sup>32</sup> 54,323	<sup>32</sup> \$151	<sup>32</sup> 47,972	46,488	54,846,250
	CABLE CARRIERS						
12	All America Cables, Inc. <sup>3</sup> .....					1,715	1,845,639
13	Commercial Cable Co.....					1,571	2,003,492
14	Commercial Pacific Cable Co.....					282	399,335
15	French Telegraph Cable Co.....					<sup>14</sup> 98	<sup>14</sup> 151,512
16	Mexican Telegraph Co.....					<sup>20</sup> 98	130,996

<sup>2</sup> Lessor company.

<sup>3</sup> Figures include data for the Cuban All America Cables, Inc.

<sup>8</sup> Insufficient data.

<sup>14</sup> Figures cover operations of New York City office.

<sup>25</sup> No employees or compensation reported; employees are carried on pay roll of the Pacific & Idaho Northern Ry. Co.

<sup>26</sup> Includes 14 persons who received no compensation from respondent.

<sup>27</sup> Includes 10 persons who received no compensation from respondent.

<sup>28</sup> Includes 5 persons who received no compensation from respondent.

<sup>29</sup> Includes 4 persons who received no compensation from respondent.

<sup>30</sup> Includes 6 persons who received no compensation from respondent.

<sup>31</sup> This figure represents the total compensation paid, whereas during 1934 the estimated aggregate monthly rates of compensation based on the month of June were reported.

<sup>32</sup> Data cover revenues reported for month of December only.

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Investment in plant and equipment	Other investments	Cash	Material and supplies	Total working assets	Capital stock	Unmatured funded debt	Total long-term debt
RADIOTELEGRAPH CARRIERS									
17	Central Radio Telegraph Co.....	\$12,181		\$826		\$2,158	\$12,000		
18	City of Seattle, harbor department.....	1,214				3,979			
19	Globe Wireless Ltd.....	950,006	\$176,590	43,723	\$9,650	114,479	<sup>33</sup> 883,700		
20	Hearst Radio, Inc.....	237,282	755,871	10,812	8,792	157,174	1,000	\$494,583	\$494,583
21	Mackay Radio & Telegraph Co. (California).....	3,183,670	82,271	28,255	32,521	149,959	1,000,500		
22	Mackay Radio & Telegraph Co. (Delaware).....	2,859,246	2,054,096	45,932	304,121	701,470	<sup>34</sup> 4,000		
23	Magnolia Radio Corporation.....	12,475				1,295	5,000		
24	Michigan Wireless Telegraph Co.....	5,865		2,456	98	2,744	7,000		
25	Olympic Radio Co.....	3,482		97		254	25,000		
26	Pere Marquette Radio Corporation.....	6,756		1,173		1,812	5,000		1,800
27	Press Wireless, Inc.....	397,137		5,562		46,588	350,900	28,457	26,457
28	RCA Communications, Inc.....	20,189,704	9,075,206	964,733	110,635	2,278,886	<sup>35</sup> 5,000,000	3,623,000	3,623,000
29	Radiomarine Corporation of America.....	1,662,655		70,247	269,710	763,607	500,000		
30	Southern Radio Corporation.....	161,294	7,241	15,706	15,459	46,461	1,500		521,181
31	South Porto Rico Sugar Co. (of Puerto Rico).....	<sup>(36)</sup>	<sup>(36)</sup>	<sup>(36)</sup>	<sup>(36)</sup>	<sup>(36)</sup>	<sup>(36)</sup>	<sup>(36)</sup>	<sup>(36)</sup>
32	Tidewater Wireless Telegraph Co.....	10,000		262		559	5,500		
33	Tropical Radio Telegraph Co.....	1,646,700	69,955	8,601	5,992	509,303	10,000		240,480
34	United States-Liberia Radio Corporation.....	22,165		777		21,387	<sup>37</sup> 5,000		
35	Wabash Radio Corporation.....	25,000				2,284	<sup>38</sup> 25,000		
36	Western Radio Telegraph Co.....	33,187	10,329	229		229	<sup>39</sup> 25,657		

<sup>33</sup> Represents book liability for 6,837 shares of common stock without par value.

<sup>34</sup> Represents book liability for 12,000 shares of common stock without par value.

<sup>35</sup> Represents book liability for 50,000 shares of common stock without par value.

<sup>36</sup> Data not shown, as radiotelegraph operations are an integral part of respondent's business and separate capital accounts are not kept.

<sup>37</sup> Represents book liability for 50 shares of common stock without par value.

<sup>38</sup> Represents book liability for 40,000 shares of common stock without par value.

<sup>39</sup> Represents book liability for 5,000 shares of common stock without par value.

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Total working liabilities	Accrued depreciation	Total corporate surplus	Total operating revenues	Total operating expenses	Operating taxes		
							Other than U. S. Government taxes	U. S. Government taxes	Total
RADIOTELEGRAPH CARRIERS									
17	Central Radio Telegraph Co.....	\$4,151	\$9,211	<sup>a</sup> \$3,985	\$7,296	\$6,310	\$32	\$263	\$295
18	City of Seattle, harbor department.....	2,081		3,112	4,959	9,672			
19	Globe Wireless Ltd.....	21,832	80,646	422,241	378,791	313,338	1,611	9,602	11,213
20	Hearst Radio, Inc.....	1,358,987	256,425	<sup>a</sup> 932,322	4,101	148,388	2,574	9	2,583
21	Mackay Radio & Telegraph Co. (California).....	2,970,840	397,367	<sup>a</sup> 1,023,097	983,439	907,195	13,000		13,000
22	Mackay Radio & Telegraph Co. (Delaware).....	7,252,000	379,342	<sup>a</sup> 2,095,270	836,521	1,089,732	5,000		5,000
23	Magnolia Radio Corporation.....	2,831	10,699	<sup>a</sup> 4,760	3,252	3,633	109		109
24	Michigan Wireless Telegraph Co.....	2,457	2,566	<sup>a</sup> 3,414	5,297	4,118	18	184	202
25	Olympic Radio Co.....	1,725		<sup>a</sup> 164	2,071	2,109			
26	Pere Marquette Radio Corporation.....	193	1,282	567	9,985	9,896	14	75	89
27	Press Wireless, Inc.....	45,532	123,258	<sup>a</sup> 102,082	374,580	356,832	4,076	1,000	5,076
28	RCA Communications, Inc.....	1,878,465	12,393,184	6,080,913	4,161,195	3,847,416	107,258	31,851	139,109
29	Radiomarine Corporation of America.....	127,770	1,126,666	659,473	431,884	397,975	12,229	14,793	27,022
30	Southern Radio Corporation.....	12,557	85,958	<sup>a</sup> 364,914	46,105	69,707	522		522
31	South Porto Rico Sugar Co. (of Puerto Rico).....	( <sup>36</sup> )	( <sup>36</sup> )	( <sup>36</sup> )	7,127	8,812	142		142
32	Tidewater Wireless Telegraph Co.....	10,000		<sup>a</sup> 4,841	4,311	4,507	34	80	114
33	Tropical Radio Telegraph Co.....	1,896,582	841,961	<sup>a</sup> 765,643	611,261	586,402	7,865		7,865
34	United States-Liberia Radio Corporation.....	102		38,450	65,929	56,338	1,209	76	1,285
35	Wabash Radio Corporation.....	67		2,217	12,606	12,117		71	71
36	Western Radio Telegraph Co.....	14,356	8,023	<sup>a</sup> 4,378	12,296	9,488	43	24	67

<sup>a</sup> Deficit or other reverse item.<sup>36</sup> Data not shown, as radiotelegraph operations are an integral part of respondent's business and separate capital accounts are not kept.

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Operating income	Interest deductions	Net income	Dividends declared		Telegraph offices		
					Amount	Rate percent	United States <sup>19</sup>	Foreign	Total
RADIOTELEGRAPH CARRIERS									
17	Central Radio Telegraph Co.....	\$ 2,479		\$ 603			1		1
18	City of Seattle, harbor department.....	4,713		4,713			1		1
19	Globe Wireless Ltd.....	50,640	\$653	50,365			13		13
20	Hearst Radio Inc.....	\$ 331,629	17,952	\$ 349,891			12		12
21	Mackay Radio & Telegraph Co. (California).....	62,228	172,858	\$ 106,672			10	1	11
22	Mackay Radio & Telegraph Co. (Delaware).....	\$ 254,250	386,445	\$ 626,687			8		8
23	Magnolia Radio Corporation.....	490		479			1		1
24	Michigan Wireless Telegraph Co.....	979		979			2		2
25	Olympic Radio Co.....	38		38			( <sup>20</sup> )		( <sup>20</sup> )
26	Pere Marquette Radio Corporation.....						1		<sup>40</sup> 1
27	Press Wireless, Inc.....	12,672		12,672			4		4
28	RCA Communications, Inc.....	86,088	220,784	229,429	\$1,000,000	( <sup>41</sup> )	25	4	29
29	Radiomarine Corporation of America.....	107,115		114,946	400,000	80.00	29		29
30	Southern Radio Corporation.....	\$ 24,124	75	\$ 17,730				2	2
31	South Porto Rico Sugar Co. (of Puerto Rico).....	\$ 1,827		\$ 1,827	( <sup>35</sup> )	( <sup>35</sup> )	1		1
32	Tidewater Wireless Telegraph Co.....	310		310			1		1
33	Tropical Radio Telegraph Co.....	13,276	14,429	48,438			9	16	<sup>42</sup> 25
34	United States-Liberia Radio Corporation.....	8,306		8,306			1	3	4
35	Wabash Radio Corporation.....	417		417			4		4
36	Western Radio Telegraph Co.....	2,741		2,097			5		5

<sup>9</sup> Deficit or other reverse item.

<sup>19</sup> Includes Territories and possessions of the United States except the Philippine Islands.

<sup>20</sup> Data not reported.

<sup>26</sup> Data not shown, as radiotelegraph operations are an integral part of respondent's business and separate capital accounts are not kept.

<sup>40</sup> Excludes 9 ship stations.

<sup>41</sup> Represents \$20 per share on 50,000 shares of common stock without par value.

<sup>42</sup> Excludes 61 ship stations.

TABLE VI.—Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935—Continued

No.	Name of carrier	Telegraph revenue messages transmitted				Number of employees at end of June	Total compensation for year
		Domestic	Foreign	Mobile	Total		
RADIOTELEGRAPH CARRIERS							
17	Central Radio Telegraph Co.....	(20)		(20)	(20)	3	\$4,671
18	City of Seattle, harbor department.....			9,976	9,976	5	8,770
19	Globe Wireless Ltd.....		94,623	4,009	98,632	43 99	160,920
20	Hearst Radio, Inc.....	157,170			157,170	44 12	44 41,469
21	Mackay Radio & Telegraph Co. (California).....	21 834,348	21 146,160	21 46,680	21 1,027,188	45 304	426,720
22	Mackay Radio & Telegraph Co. (Delaware).....	21 676,884	21 172,584	21 87,756	21 937,224	27 269	434,862
23	Magnolia Radio Corporation.....			2,821	2,821	29 5	2,495
24	Michigan Wireless Telegraph Co.....	378		3,912	4,290	43 5	3,328
25	Olympic Radio Co.....	(20)	(20)	(20)	(20)	1	1,610
26	Pere Marquette Radio Corporation.....	1,951		7,991	9,942	28 10	9,053
27	Press Wireless, Inc.....		228,155	2,635	230,790	59	129,855
28	RCA Communications, Inc.....	643,890	3,010,413	8,130	3,662,433	43 1,515	2,282,711
29	Radiomarine Corporation of America.....			368,320	368,320	145	340,913
30	Southern Radio Corporation.....		14,717		14,717	46 2	46 5,192
31	South Porto Rico Sugar Co. (of Puerto Rico).....	858	1,373	5,576	7,807	46 6	46 6,497
32	Tidewater Wireless Telegraph Co.....			4,489	4,489	2	3,196
33	Tropical Radio Telegraph Co.....	12,778	198,817	75,689	287,284	47 340	325,283
34	United States-Liberia Radio Corporation.....		7,303		7,303	29 9	5,240
35	Wabash Radio Corporation.....	15,318		7,036	22,354	80 12	9,774
36	Western Radio Telegraph Co.....	23,234			23,234	12	46 2,900

<sup>20</sup> Data not reported.

<sup>21</sup> Estimated on the basis of the number of messages transmitted during the month of January.

<sup>27</sup> Includes 10 persons who received no compensation from respondent.

<sup>28</sup> Includes 5 persons who received no compensation from respondent.

<sup>29</sup> Includes 4 persons who received no compensation from respondent.

<sup>30</sup> Includes 6 persons who received no compensation from respondent.

<sup>43</sup> Includes 3 persons who received no compensation from respondent.

<sup>44</sup> Data cover radiotelegraph department only.

<sup>45</sup> Includes 9 persons who received no compensation from respondent.

<sup>46</sup> Data cover radiotelegraph operators in the United States only.

<sup>47</sup> Includes 94 persons who received no compensation from respondent.

<sup>48</sup> Represents only the portion of compensation paid by respondent.

TABLE VII.—Selected items from the annual reports of telegraph, cable, and radiotelegraph carriers for the years 1935 and 1934

Item	Total all carriers		Telegraph carriers		Cable carriers		Radiotelegraph carriers	
	1935 <sup>1</sup>	1934	1935 <sup>1</sup>	1934	1935	1934	1935	1934
Number of carriers.....	36	35	11	10	5	5	20	20
Investment in plant and equipment.....	\$532,561,389	\$532,659,535	\$411,738,539	\$411,426,002	\$89,402,831	\$90,327,558	\$31,420,019	\$30,905,975
Capital stock.....	\$174,069,065	\$173,864,680	\$104,966,768	\$104,966,793	\$61,435,540	\$61,432,030	\$7,666,757	\$7,465,857
Unmatured funded debt.....	\$130,381,076	\$130,353,000	\$106,182,000	\$106,564,000	\$20,055,036	\$20,000,000	\$4,144,040	\$3,789,000
Accrued depreciation.....	\$121,838,544	\$120,831,566	\$51,875,685	\$52,341,015	\$54,236,271	\$53,695,067	\$15,726,588	\$14,795,484
Total corporate surplus.....	\$107,266,043	\$111,256,833	\$98,448,219	\$97,159,633	\$6,920,801	\$10,018,789	\$1,897,023	\$4,078,411
Operating revenues.....	\$130,170,934	\$126,481,408	\$112,114,567	\$108,342,087	\$10,093,361	\$10,710,991	\$7,963,006	\$7,428,330
Operating expenses.....	\$110,419,170	\$109,825,695	\$94,437,341	\$94,521,830	\$8,137,846	\$8,280,539	\$7,843,983	\$7,023,326
Operating income.....	\$14,150,956	\$11,189,969	\$13,004,422	\$9,134,295	\$1,421,912	\$1,889,825	\$275,378	\$165,849
Dividends declared.....	\$2,216,031	\$2,096,498	\$2,105,820	\$15,756	\$2,710,211	\$1,780,742	\$1,400,000	300,000
Total miles of wire.....	<sup>2</sup> 2,400,624	<sup>2</sup> 2,399,039	2,316,477	2,311,613	<sup>2</sup> 84,147	<sup>3</sup> 87,426	-----	-----
Revenue messages transmitted.....	190,645,697	165,786,459	178,613,234	155,250,224	5,186,489	5,449,805	6,875,974	5,086,430
Number of employees at end of June.....	68,987	70,983	62,408	64,871	3,764	3,750	2,815	2,362
Total compensation for year.....	\$76,376,532	\$77,170,766	\$67,640,191	\$68,458,639	\$4,530,884	\$4,670,589	\$4,205,457	\$4,041,538
PERCENT OF TOTAL								
Number of carriers.....	100.0	100.0	30.6	28.6	13.9	14.3	55.5	57.1
Investment in plant and equipment.....	100.0	100.0	77.3	77.2	16.8	17.0	5.9	5.8
Capital stock.....	100.0	100.0	60.3	60.4	35.3	35.3	4.4	4.3
Unmatured funded debt.....	100.0	100.0	81.4	81.8	15.4	15.3	3.2	2.9
Accrued depreciation.....	100.0	100.0	42.6	43.3	44.5	44.4	12.9	12.3
Total corporate surplus.....	100.0	100.0	91.8	87.3	6.4	9.0	1.8	3.7
Operating revenues.....	100.0	100.0	86.1	85.6	7.8	8.5	6.1	5.9
Operating expenses.....	100.0	100.0	85.5	86.1	7.4	7.5	7.1	6.4
Operating income.....	100.0	100.0	91.9	81.6	10.0	16.9	1.9	1.6
Dividends declared.....	100.0	100.0	33.9	0.8	43.6	84.9	22.5	14.3
Total miles of wire.....	100.0	100.0	96.5	96.4	3.5	3.6	-----	-----
Revenue messages transmitted.....	100.0	100.0	93.7	93.6	2.7	3.3	3.6	3.1
Number of employees at end of June.....	100.0	100.0	90.5	91.4	5.4	5.3	4.1	3.3
Total compensation for year.....	100.0	100.0	88.6	88.7	5.9	6.1	5.5	5.2

<sup>1</sup> Includes data for the Minnesota & Manitoba R. R., which did not report for 1934; the amounts included for 1935 are relatively small.

<sup>2</sup> Includes 59,353 nautical miles of wire.

<sup>3</sup> Includes 59,977 nautical miles of wire.



TABLE VIII.—Communication companies in the hands of receivers and trustees

[Year ended Dec. 31, 1935]

Name of company	Receivers or trustees		Date of appointment	Investment in telephone plant	Capital stock	Funded debt	Matured funded debt
	Name	Title					
<b>TELEPHONE CARRIERS</b>							
<b>CLASS A</b>							
Central West Public Service Co. <sup>1</sup> .....	Arthur B. Darling and E. Ennals Berl.	Trustees.....	June 8, 1934	<sup>2</sup> \$7,528,142	<sup>3</sup> \$8,852,757	\$8,837,000	\$3,966,500
Kansas Telephone Co., The.....	M. B. Gourley and M. F. Cosgrove.....	Receivers.....	Feb. 27, 1932	855,073	5,000	620,500	-----
Southwest Telephone Co., The (Dallas, Tex.).....	William H. Heald and Chester H. Loveland.....	Trustees.....	Oct. 18, 1935 <sup>3</sup>	4,407,344	<sup>4</sup> 540,500	2,852,400	650,000
Southwestern States Telephone Co.....	do.....	Receivers.....	Nov. 9, 1932	3,773,169	750,000	2,300,000	800,000
Total telephone carriers.....				16,563,728	9,898,257	14,609,900	5,416,500
<b>HOLDING COMPANIES</b>							
American Union Telephone Co.....	Fred E. Hummel.....	Trustee.....	Aug. 1, 1934		25,000		403,500
Ann Arbor Railroad Co., The.....	Norman B. Pitcairn and Frank C. Nicodemus, Jr.....	Receivers.....	Dec. 4, 1931 <sup>5</sup>		7,250,000	9,217,041	-----
Indiana Central Telephone Co.....	Christopher L. Ward, Jr.....	Trustee.....	June 25, 1935 <sup>9</sup>		<sup>10</sup> 1,000,000	1,700,000	-----
Postal Telegraph & Cable Corporation.....	Alfred E. Smith and George S. Gibbs.....	Trustees.....	Dec. 24, 1935 <sup>11</sup>		<sup>12</sup> 55,970,750	50,670,210	-----
Standard Telephone Co. of Delaware.....	Clement A. Nance.....	Trustee.....	Sept. 25, 1934 <sup>13</sup>		<sup>14</sup> 1,936,360	4,780,000	-----
Total holding companies.....					66,182,110	66,367,251	403,500
Grand total.....				16,563,728	76,080,367	80,977,151	5,820,000

<sup>1</sup> Owns and operates electric, gas, ice, and water utilities; segregation of capitalization, etc., not available.<sup>2</sup> Represents return for telephone business only.<sup>3</sup> Includes \$6,653,462 book liability for 288,896 shares of common stock without par value.<sup>4</sup> Represents book liability for 1,000 shares of common stock without par value.<sup>5</sup> William H. Heald and Chester H. Loveland were appointed receivers, Nov. 9, 1932.<sup>6</sup> Includes \$12,500 book liability for 25,000 shares of common stock without par value.<sup>7</sup> Includes \$100,000 book liability for 25,000 shares of common stock without par value.<sup>8</sup> Norman B. Pitcairn appointed receiver, Oct. 20, 1933, to succeed Walter S. Franklin, resigned.<sup>9</sup> Christopher L. Ward, Jr. and Wm. J. Wardall were appointed receivers, Jan. 1, 1935. Christopher L. Ward, Jr., was appointed temporary trustee, June 25, 1935, which appointment was made permanent, July 22, 1935.<sup>10</sup> Represents book liability for 10,000 shares of common stock without par value.<sup>11</sup> Date of temporary appointment.<sup>12</sup> Includes \$25,441,250 book liability for 1,017,650 shares of common stock without par value.<sup>13</sup> Date of temporary appointment, made permanent Oct. 25, 1934.<sup>14</sup> Represents book liability for 17,735 shares of preferred stock and 30,000 shares of common stock both without par value.

The amount of revenues from telegraph and telephone operations received by class I steam railways during 1935 is shown in table IX. The returns are included in account 138, "Telegraph and telephone", in the annual reports filed by railways with the Interstate Commerce Commission.

TABLE IX.—Revenues received by class I steam railways included in account 138, "Telegraph and telephone", in the annual reports filed by railways with the Interstate Commerce Commission for the year ended Dec. 31, 1935

Name of railway	Amount of revenue		
	Telegraph	Telephone	Total
Akron, Canton & Youngstown Ry. Co.	\$159		\$159
Ann Arbor R. R. Co.	1,879		1,879
Atchison, Topeka & Santa Fe Ry. Co.	323,248		323,248
Atlanta & West Point R. R. Co.	114		114
Baltimore & Ohio R. R. Co.	60,140		60,140
Boston & Maine R. R. Co.	2,647	\$12,025	14,672
Central R. R. Co. of New Jersey	6,045	495	6,540
Central Vermont Ry. Inc.	244		244
Chesapeake & Ohio Ry. Co.	7,426		7,426
Chicago, Burlington & Quincy R. R. Co.	140,762	370	141,132
Chicago Great Western R. R. Co.	466		466
Chicago & Illinois Midland Ry. Co.	394		394
Chicago, Indianapolis & Louisville Ry. Co.	1,199		1,199
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	39,574		39,574
Chicago, Rock Island & Gulf Ry. Co.	759		759
Chicago, Rock Island & Pacific Ry. Co.	13,190		13,190
Cincinnati R. R. Co.	4,062		4,062
Colorado & Southern Ry. Co.	863		863
Delaware & Hudson R. R. Corporation	15,099		15,099
Delaware, Lackawanna & Western R. R. Co.	6,179		6,179
Denver & Rio Grande Western R. R. Co.	3,044		3,044
Denver & Salt Lake Ry. Co.	6,409		6,409
Detroit & Mackinac Ry. Co.	295		295
Detroit, Toledo & Ironton R. R. Co.	620		620
Duluth, Missabe & Northern Ry. Co.	2,504	70,949	73,453
Duluth, South Shore & Atlantic Ry. Co.	308		308
Duluth, Winnipeg & Pacific Ry. Co.	1,246		1,246
Erie R. R. Co.	5,891		5,891
Fort Worth & Denver City Ry. Co.	1,038		1,038
Georgia R. R. (lessee organization)	317		317
Grand Trunk Western R. R. Co.	8,471		8,471
Great Northern Ry. Co.	115,396		115,396
Gulf, Mobile & Northern R. R. Co.	7,761		7,761
Lake Superior & Ishpeming R. R. Co.	157	1,804	1,961
Lehigh & Hudson River Ry. Co.	568		568
Lehigh Valley R. R. Co.	11,703		11,703
Long Island R. R. Co.	5,179		5,179
Los Angeles & Salt Lake R. R. Co.	19,251		19,251
Louisville & Nashville R. R. Co.	44,468		44,468
Maine Central R. R. Co.	392	177	569
Midland Valley R. R. Co.	641		641
Minneapolis & St. Louis R. R. Co.	700		700
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	50,652		50,652
Mississippi Central R. R. Co.	399		399
Missouri and Arkansas Ry. Co. <sup>1</sup>	274		274
Missouri-Illinois R. R. Co.	271		271
Missouri & North Arkansas Ry. Co. <sup>1</sup>	( <sup>2</sup> )	( <sup>2</sup> )	67
Missouri Pacific R. R. Co.	9,631		9,631
Nashville, Chattanooga & St. Louis Ry.	10,309		10,309
Nevada Northern Ry. Co.	( <sup>2</sup> )	( <sup>2</sup> )	8,753
New Jersey & New York R. R. Co.	65		65
New York Central R. R. Co.	7,379	11	7,390
New York, Chicago & St. Louis R. R. Co.	2,144		2,144
New York, New Haven & Hartford R. R. Co.	31,665		31,665
New York, Ontario & Western Ry. Co.	3,285		3,285
New York, Susquehanna & Western R. R. Co.	195		195
Norfolk Southern R. R. Co.	6,613		6,613
Norfolk & Western Ry. Co.		450	450
Northern Pacific Ry. Co.	83,500		83,500
Northwestern Pacific R. R. Co.	580		580
Oklahoma City-Ada-Atoka Ry. Co.	587		587
Oregon Short Line R. R. Co.	58,435		58,435
Oregon-Washington R. R. & Navigation Co.	566		566
Pennsylvania R. R. Co.	119,363		119,363
Pennsylvania-Reading Seashore Lines	5,397		5,397
Pere Marquette Ry. Co.	4,500		4,500
Pittsburgh & Lake Erie R. R. Co.	19		19
Pittsburg & Shawmut R. R. Co.		449	449
Pittsburg & Shawmut & Northern R. R. Co.	296	1,071	1,367
Reading Co.	5,942		5,942

<sup>1</sup> The Missouri & North Arkansas Ry. Co. changed its name to Missouri and Arkansas Ry. Co. on Apr. 15, 1935.

<sup>2</sup> Revenue not segregated.

TABLE IX.—Revenues received by class I steam railways included in account 138, "Telegraph and telephone", in the annual reports filed by railways with the Interstate Commerce Commission for the year ended Dec. 31, 1935—Continued

Name of railway	Amount of revenue		
	Telegraph	Telephone	Total
Rutland R. R. Co.....	\$429		\$429
St. Joseph & Grand Island Ry. Co.....	3,013		3,013
St. Louis, San Francisco & Texas Ry. Co.....	507		507
San Antonio, Uvalde & Gulf R. R. Co.....	2,275		2,275
San Diego & Arizona Eastern Ry. Co.....	2,911		2,911
Southern Pacific Co.....	45,385		45,385
Spokane International Ry. Co.....	96		96
Spokane, Portland & Seattle Ry. Co.....	7,460		7,460
Texas Mexican Ry. Co.....	4,575		4,575
Texas & New Orleans R. R. Co.....	11,026		11,026
Texas & Pacific Ry. Co.....	3,102		3,102
Toledo, Peoria & Western R. R.....	1,927		1,927
Union Pacific R. R. Co.....	94,977		94,977
Virginian Ry. Co.....	2,222		2,222
Western Ry. of Alabama.....	34		34
Wichita Falls & Southern R. R. Co.....	54		54
Yazoo & Mississippi Valley R. R. Co.....	3,495		3,495
Total for United States.....	1,446,195	\$87,861	1,542,816
Copper River & Northwestern Ry. Co. (located in Alaska).....	(?)	(?)	1,975
Grand total.....	1,446,195	87,801	1,544,791

<sup>1</sup> Revenue not segregated.

In the accompanying chart no. 2 the total operating revenues, total operation expenses, and net operating income of all communication carriers are indicated. The relative amounts applicable to telephone, and to telegraph, cable, and radiotelegraph carriers are shown separately. The uniform system of accounts used by telephone carriers differs from that prescribed for telegraph, cable, and radiotelegraph carriers. In the former classification, the amount of "Uncollectible operating revenues" is deducted from the gross operating revenues when transferred to the income statement, whereas in the latter classification it is handled as an income account and deducted subsequently. The "Uncollectible operating revenues" applicable to telegraph, cable, and radiotelegraph carriers, which were deducted from the gross operating revenues during 1935, amounted to \$875,873.

#### MONTHLY REPORTS

The list of the 62 large telephone carriers reporting on a monthly basis is shown in table X, and the carriers marked with an asterisk are included in the Bell System. The Home Telephone & Telegraph Co. of Spokane discontinued filing reports because it was merged with the Pacific Telephone & Telegraph Co., and the Petersburg Telephone Co. discontinued filing reports because it was merged with the Chesapeake & Potomac Telephone Co. of Virginia during the year. Several carriers which are subject only to the provisions of section 201-205 of the Communications Act of 1934 resumed filing monthly reports for statistical purposes, including the following: Kittanning Telephone Co., Lorain Telephone Co., Peninsular Telephone Co., Union Telephone Co., and Upstate Telephone Corporation of New York.

TABLE X.—List of 62 large telephone carriers reporting on a monthly basis to the Federal Communications Commission showing territorial groups to which the carriers have been assigned for statistical purposes

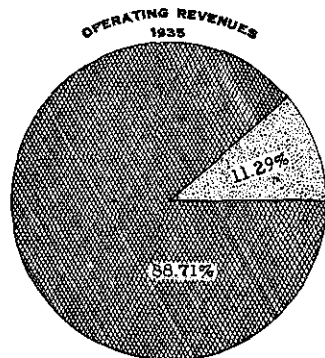
Name of carrier	Geographical region
American Telephone Co.....	South Central.
* American Telephone & Telegraph Co.....	Middle Atlantic.
* Bell Telephone Co. of Nevada.....	Mountain.
* Bell Telephone Co. of Pennsylvania.....	Middle Atlantic.
Bluefield Telephone Co.....	Chesapeake.
Carolina Telephone & Telegraph Co.....	Southeastern.
* Chesapeake & Potomac Telephone Co.....	Chesapeake.
* Chesapeake & Potomac Telephone Co. of Baltimore City.....	Do.

\* Represents carriers included in the Bell System.

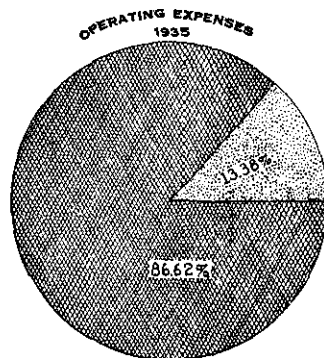
OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING REVENUES FOR THE YEAR, 1935,  
OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION

CHART NO. 2

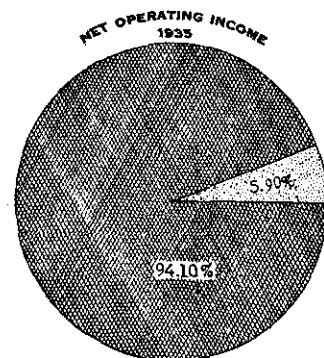
KEY



TELEPHONE CARRIERS	\$1,015,709,494
TELEGRAPH & CABLE	\$121,374,180
RADIOTELEGRAPH	7,920,961
TOTAL TELEGRAPH, CABLE, & RADIOTELEGRAPH CARRIERS	129,295,161
TOTAL ALL REPORTING CARRIERS	1,145,004,655



TELEPHONE CARRIERS	\$714,672,675
TELEGRAPH & CABLE	\$102,575,187
RADIOTELEGRAPH	7,640,935
TOTAL TELEGRAPH, CABLE, & RADIOTELEGRAPH CARRIERS	110,419,170
TOTAL ALL REPORTING CARRIERS	825,092,845



TELEPHONE CARRIERS	\$501,036,619
TELEGRAPH & CABLE	\$18,799,993
RADIOTELEGRAPH	76,998
TOTAL TELEGRAPH, CABLE, & RADIOTELEGRAPH CARRIERS	18,875,991
TOTAL ALL REPORTING CARRIERS	519,912,610

TABLE X.—List of 62 large telephone carriers reporting on a monthly basis to the Federal Communications Commission showing territorial groups to which the carriers have been assigned for statistical purposes—Continued

Name of carrier	Geographical region
*Chesapeake & Potomac Telephone Co. of Virginia	Chesapeake
*Chesapeake & Potomac Telephone Co. of West Virginia	Do.
*Cincinnati & Suburban Bell Telephone Co.	Great Lakes.
*Commonwealth Telephone Co. (Pennsylvania)	Middle Atlantic.
*Dakota Central Telephone Co.	North Central.
*DeKalb-Ogle Telephone Co.	Great Lakes.
*Diamond State Telephone Co.	Middle Atlantic.
*Illinois Bell Telephone Co.	Great Lakes.
Indiana Associated Telephone Corporation	Do.
*Indiana Bell Telephone Co.	Do.
*Inter-Mountain Telephone Co.	Southeastern.
Interstate Telephone Co.	Pacific.
Jamestown Telephone Corporation	Middle Atlantic.
Keystone Telephone Co. of Philadelphia	Do.
*Kittanning Telephone Co.	Do.
Lincoln Telephone & Telegraph Co.	North Central.
Lorain Telephone Co.	Great Lakes.
*Michigan Associated Telephone Co.	Do.
*Michigan Bell Telephone Co.	Do.
Middle States Telephone Co. of Illinois	Do.
*Mountain States Telephone & Telegraph Co.	Mountain.
*Nebraska Continental Telephone Co.	North Central.
*New England Telephone & Telegraph Co.	New England.
*New Jersey Bell Telephone Co.	Middle Atlantic.
*New York Telephone Co.	Do.
*Northwestern Bell Telephone Co.	North Central.
Ohio Associated Telephone Co.	Great Lakes.
*Ohio Bell Telephone Co.	Do.
*Pacific Telephone & Telegraph Co.	Pacific.
Peninsular Telephone Co.	Southeastern.
Portsmouth Home Telephone Co.	Great Lakes.
*Rio Grande Valley Telephone Co.	South Central.
Rochester Telephone Corporation	Middle Atlantic.
*San Angelo Telephone Co.	South Central.
Southeast Missouri Telephone Co.	Do.
*Southern Bell Telephone & Telegraph Co.	Southeastern.
*Southern California Telephone Co.	Pacific.
*Southern New England Telephone Co.	New England.
Southwest Telephone Co. (Texas)	South Central.
Southwestern Associated Telephone Co.	Do.
*Southwestern Bell Telephone Co.	Do.
Southwestern States Telephone Co.	Do.
Star Telephone Co.	Great Lakes.
*Tri-State Telephone & Telegraph Co.	North Central.
Two States Telephone Co.	South Central.
Union Telephone Co.	Great Lakes.
*United Telephone Co. (Kansas)	South Central.
United Telephone Co. (Missouri)	Do.
United Telephone Cos., Inc.	Great Lakes.
United Telephone Co. of Pennsylvania	Middle Atlantic.
Upstate Telephone Corporation of New York	Do.
West Coast Telephone Co.	Pacific.
Western Telephone Corporation of Missouri	South Central.
*Wisconsin Telephone Co.	Great Lakes.

\* Represents carriers included in the Bell System.

Table XI represents the Summary of Monthly Reports of Large Telephone Carriers in the United States and table XII the Operating Data from Monthly Reports of Telegraph Carriers, which are issued on a monthly basis by the Commission and distributed to a wide range of organizations. They show data for the month of April 1936 and cumulative figures for the period from January to April 1936, inclusive, together with data for the same period in 1935.

Table XIII shows operating revenues, operating expenses, and net operating income of large telephone carriers reporting on a monthly basis from January 1933 to April 1936, inclusive, and chart no. 3 indicates the trend during this period. Similar data showing the amounts applicable to the Bell System are shown in chart no. 4. Refunds, amounting to approximately \$16,000,000, to coin-box subscribers in Chicago covering an 11-year period were deducted in June 1934 by the Illinois Bell Telephone Co., but have been restored in chart no. 3 to preserve the consistency of the trend.

The amount of "Message tolls", by months, is shown in table XIV as reported by large telephone carriers from January 1933 to June 1936, inclusive. The revenues received from "Toll private line services" and "Other toll service revenues" are not included in this table.

TABLE XIII.—Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to April 1936, inclusive

Month	Operating revenues	Operating expenses	Net operating income
1933			
January.....	\$78,005,471	\$57,086,284	\$13,571,757
February.....	74,377,100	54,475,302	12,644,150
March.....	77,259,222	56,284,500	13,829,550
April.....	76,397,373	54,603,833	14,431,895
May.....	79,110,353	56,233,645	15,514,307
June.....	79,007,025	56,127,751	15,708,146
July.....	77,734,097	54,420,541	15,460,287
August.....	77,659,171	54,632,705	15,896,255
September.....	76,913,729	54,226,799	15,326,957
October.....	78,723,379	56,131,325	16,121,002
November.....	77,565,331	55,701,172	14,546,938
December.....	78,999,802	57,911,518	14,950,286
Total.....	931,752,053	665,835,375	178,001,585
1934			
January.....	79,941,399	55,762,222	16,277,592
February.....	76,914,462	53,770,491	15,334,651
March.....	80,993,311	56,737,772	16,165,482
April.....	80,143,511	55,378,910	16,947,987
May.....	81,694,834	57,514,431	15,759,920
June.....	<sup>1</sup> 64,915,267	<sup>1</sup> 40,278,641	<sup>1</sup> 16,991,766
July.....	78,862,489	57,710,576	13,340,748
August.....	79,553,849	57,535,980	14,205,618
September.....	78,345,197	55,905,810	14,720,477
October.....	81,924,797	58,237,607	16,287,278
November.....	79,895,074	57,234,642	15,219,477
December.....	<sup>1</sup> 80,707,097	<sup>1</sup> 58,931,320	<sup>1</sup> 15,041,409
Total.....	<sup>1</sup> 943,891,287	<sup>1</sup> 664,098,402	<sup>1</sup> 186,292,405
1935			
January.....	81,778,419	58,002,517	15,466,521
February.....	<sup>1</sup> 78,142,098	<sup>1</sup> 55,594,968	<sup>1</sup> 14,315,710
March.....	81,513,963	57,478,375	15,881,983
April.....	82,438,922	57,692,600	16,300,908
May.....	83,705,567	59,256,546	16,131,465
June.....	82,063,346	57,628,126	16,106,289
July.....	82,357,197	59,878,442	14,477,228
August.....	82,657,615	58,438,209	16,121,937
September.....	82,959,823	57,578,847	17,058,186
October.....	86,630,789	59,504,510	18,616,993
November.....	<sup>1</sup> 85,650,454	<sup>1</sup> 59,937,648	<sup>1</sup> 17,479,457
December.....	<sup>1</sup> 86,446,073	<sup>1</sup> 60,904,827	<sup>1</sup> 17,437,607
Total.....	<sup>1</sup> 996,343,266	<sup>1</sup> 701,895,424	<sup>1</sup> 195,394,284
1936			
January.....	86,782,563	59,498,366	17,290,640
February.....	85,363,701	57,648,790	17,746,281
March.....	88,909,429	59,582,258	19,165,275
April.....	88,753,917	59,542,933	18,817,690
Total.....	349,809,610	236,272,347	73,019,875

<sup>1</sup> These returns reflect adjustments covering estimated refunds.

TABLE XIV.—Summary showing the monthly message tolls reported by large telephone carriers from January 1933 to June 1936, inclusive

## MESSAGE TOLLS

Month	1933	1934	1935	1936
January.....	\$16,762,755	\$19,384,212	\$19,861,763	\$21,894,589
February.....	15,270,002	18,070,612	18,005,199	21,271,176
March.....	17,914,803	20,236,760	20,131,160	23,458,540
April.....	17,207,146	19,551,237	20,546,260	23,297,797
May.....	19,225,143	20,511,799	21,323,003	23,485,712
June.....	19,559,018	20,036,058	20,647,873	24,116,376
July.....	19,879,808	19,874,953	21,593,399	.....
August.....	20,001,212	20,694,537	22,260,879	.....
September.....	18,913,841	19,272,110	21,480,791	.....
October.....	18,956,323	20,339,385	22,708,350	.....
November.....	18,153,978	19,076,100	21,300,187	.....
December.....	19,542,399	19,965,325	22,408,399	.....
Total.....	221,386,428	237,043,088	252,367,063	137,524,000

TELEPHONE STATISTICS SHOWING OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS

CHART NO. 3



PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

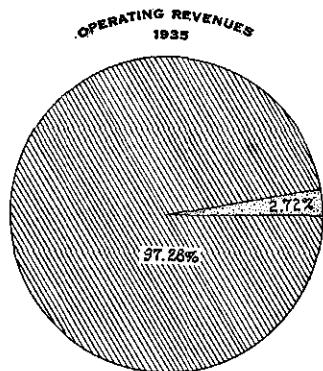
AUGUST 1936

TELEPHONE STATISTICS SHOWING OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS  
A COMPARISON OF BELL SYSTEM CARRIERS WITH OTHERS

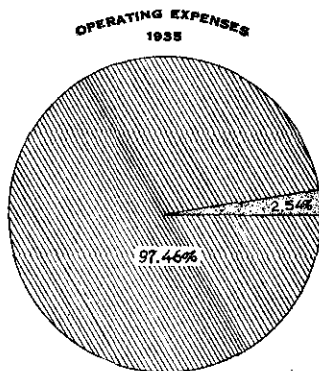
CHART NO. 4

107112-36-8

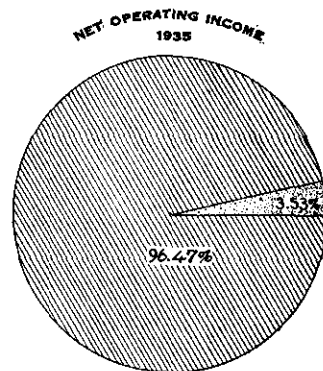
KEY  
BELL SYSTEM CARRIERS  
OTHER THAN BELL SYSTEM CARRIERS

ALL LARGE TELEPHONE CARRIERS	\$996,343,266
BELL SYSTEM CARRIERS	969,198,802
OTHER THAN BELL SYSTEM CARRIERS	27,144,464



ALL LARGE TELEPHONE CARRIERS	\$701,895,424
BELL SYSTEM CARRIERS	684,078,941
OTHER THAN BELL SYSTEM CARRIERS	17,816,483



ALL LARGE TELEPHONE CARRIERS	\$195,394,284
BELL SYSTEM CARRIERS	188,494,140
OTHER THAN BELL SYSTEM CARRIERS	6,900,144

AUGUST 1936

PREPARED IN THE  
ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT  
FEDERAL COMMUNICATIONS COMMISSION



A summary showing the number of telephones in service, compiled from monthly reports of large telephone carriers from October 1915 to April 1936, inclusive, is given in table XV, and chart no. 5 indicates the trend during this period. The fluctuations in the number of carriers shown are due to mergers or consolidations and the expansion of service rendered by small telephone carriers, placing them in the reporting class. The reduction from 102 carriers reporting monthly to the Interstate Commerce Commission to 64 carriers reporting monthly to the Federal Communications Commission is due to the fact that certain of the carriers are subject only to the provisions of sections 201-205 of the Communications Act of 1934. These carriers have been requested to resume filing monthly reports for statistical purposes.

The following statement shows the volume of business done by telephone carriers reporting to the Commission on a monthly basis in comparison with the total telephone carriers operating in the United States:

Item	Total operating revenues Dec. 31, 1932	Number of telephones
Census of electrical industries: 44,828 system lines.....	\$1,061,530,140	17,424,406
104 carriers reporting to the Interstate Commerce Commission.....	\$1,031,429,879	15,142,489
Percent of census total.....	97.16	86.90
62 carriers reporting to the Federal Communications Commission.....	\$1,009,197,293	14,553,756
Percent of census total.....	95.07	83.53
Percent of Interstate Commerce Commission total.....	97.84	96.11

TABLE XV.—Summary showing number of telephones in service

[Compilations, subject to revision, from summaries of monthly reports of large telephone carriers, as reported to the Interstate Commerce Commission from October 1915 to May 1934, inclusive, and as reported to the Federal Communications Commission from June 1934 to April 1936, inclusive]

Month	1915 <sup>1</sup>		1916 <sup>1</sup>		1917		1918	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January.....			6,606,056	60	7,288,134	60	7,704,469	61
February.....			6,603,777	60	7,340,257	60	7,737,013	61
March.....			6,679,930	60	7,495,470	60	7,825,698	61
April.....			6,743,132	60	7,448,965	60	7,864,255	61
May.....			6,792,694	60	7,404,968	60	7,892,465	61
June.....			6,847,146	60	7,437,578	60	7,910,717	61
July.....			6,869,458	61	7,576,963	61	7,918,432	61
August.....			6,904,870	61	7,586,962	61	7,904,884	60
September.....			6,964,312	61	7,607,468	61	7,892,160	60
October.....	6,470,497	59	7,080,314	59	7,637,027	61	7,834,724	60
November.....	6,524,529	60	7,137,887	60	7,674,389	61	7,827,249	60
December.....	6,559,807	59	7,192,510	59	7,707,294	61	7,858,772	61

Month	1919		1920		1921		1922	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January.....	7,988,869	65	8,671,382	70	9,331,127	68	9,836,074	68
February.....	8,046,394	65	8,741,012	70	9,376,382	68	9,876,694	68
March.....	8,113,019	65	8,812,092	70	9,439,648	68	9,927,397	68
April.....	8,173,645	65	8,867,170	70	9,649,647	68	10,004,799	71
May.....	8,213,020	65	8,903,516	70	9,528,900	68	10,054,746	70
June.....	8,250,252	65	8,954,846	70	9,580,787	69	10,100,164	70
July.....	8,253,072	64	8,995,707	66	9,594,631	68	10,140,484	71
August.....	8,266,670	64	9,026,229	66	9,552,938	67	10,183,767	71
September.....	8,314,394	64	9,067,714	65	9,638,489	67	10,223,813	71
October.....	8,383,188	64	9,111,315	65	9,672,948	67	10,306,584	71
November.....	8,462,053	64	9,161,657	65	9,727,895	67	10,380,708	71
December.....	8,544,079	64	9,224,524	64	9,777,331	67	10,456,648	71

<sup>1</sup> The figures for the months of October 1915 to September 1916, inclusive, are the comparative figures taken from the reports submitted for the months of October 1916 to September 1917, inclusive.

TABLE XV.—Summary showing number of telephones in service—Continued

Month	1923		1924		1925		1926	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	10,546,838	72	11,421,398	70	12,297,910	70	13,085,746	69
February	10,674,723	72	11,522,814	72	12,386,460	70	13,151,587	69
March	10,716,156	71	11,609,924	72	12,464,368	70	13,282,935	70
April	10,790,975	70	11,690,262	72	12,537,788	70	13,347,561	71
May	10,869,666	71	11,752,382	72	12,601,106	70	13,420,748	71
June	10,939,446	72	11,801,659	72	12,644,082	70	13,471,105	71
July	10,978,660	72	11,821,684	72	12,674,333	70	13,493,960	71
August	11,026,380	71	11,856,544	72	12,705,554	70	13,532,914	71
September	11,086,005	70	11,954,489	70	12,762,822	70	13,611,229	71
October	11,158,859	70	12,046,477	71	12,843,000	69	13,701,431	70
November	11,248,719	70	12,124,247	71	12,935,295	68	13,784,674	70
December	11,337,320	70	12,216,977	71	13,008,315	68	13,870,287	70

Month	1927		1928		1929		1930	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	13,954,460	69	14,822,782	83	15,891,373	97	16,907,056	101
February	14,021,053	69	14,884,329	82	15,979,662	97	16,973,939	106
March	14,179,658	77	15,022,265	88	16,089,712	98	17,018,588	106
April	14,246,756	76	15,090,028	89	16,169,656	98	17,071,003	105
May	14,302,426	75	15,171,028	88	16,296,719	100	17,111,679	103
June	14,386,739	79	15,204,342	87	16,332,476	99	17,129,989	104
July	14,400,040	79	15,238,610	87	16,378,856	99	17,185,818	103
August	14,421,483	79	15,285,055	87	16,433,110	98	17,159,425	103
September	14,509,865	80	15,376,685	87	16,571,581	98	17,106,253	103
October	14,589,504	80	15,530,770	91	16,650,877	98	17,116,487	103
November	14,694,937	80	15,658,268	93	16,739,138	98	17,123,716	103
December	14,740,452	78	15,759,152	94	16,801,102	97	17,114,851	103

Month	1931		1932		1933		1934	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	17,134,820	103	16,783,133	102	15,015,173	103	14,483,197	102
February	17,125,628	104	16,692,918	99	14,902,464	103	14,522,628	102
March	17,134,310	105	16,640,164	101	14,779,316	103	14,580,807	102
April	17,151,726	106	16,526,239	102	14,676,449	103	14,634,759	102
May	17,165,900	103	16,372,916	104	14,588,925	103	14,684,725	102
June	17,094,402	103	16,108,700	104	14,483,329	103	14,098,272	102
July	17,018,182	103	15,815,226	104	14,398,531	103	14,061,771	64
August	16,977,374	103	15,592,322	103	14,368,127	103	14,070,919	64
September	16,992,251	103	15,497,569	104	14,427,335	103	14,139,025	64
October	16,941,225	103	15,379,327	104	14,443,576	103	14,175,352	64
November	16,928,645	104	15,261,248	104	14,448,272	103	14,194,567	64
December	16,887,120	104	15,142,489	104	14,448,585	103	14,215,733	64

Month	1935		1936	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	14,245,571	64	14,770,292	62
February	14,284,757	64	14,839,188	62
March	14,334,334	64	14,921,045	62
April	14,386,643	64	15,004,403	62
May	14,438,372	64		
June	14,418,856	64		
July	14,406,236	64		
August	14,433,816	64		
September	14,530,097	64		
October	14,596,946	63		
November	14,654,089	63		
December	14,708,248	62		

The average operating revenues and expenses per telephone per day of large telephone carriers are shown in table XVI by geographical regions, and the amounts applicable to Bell System and other than Bell System carriers are indicated in chart no. 6. Since the operations of the long-lines department of the American Telephone & Telegraph Co. cover the entire country, the returns have been excluded from the averages for the geographical regions, but are included in a separate total for the United States as indicated in table XVI. The gross operating revenues and expenses have been used in computing these averages similar to the methods used by other organizations. During 1935 the Bell System carriers reported gross operating revenues amounting to \$969,198,852. Of this amount, \$20,918,098, or 2.16 percent, was reported as revenues from telegraph operations. The averages are computed on the basis of 325 days to the year as used by the Bureau of the Census in similar computations.

TABLE XVI.—Averages showing operating revenues and operating expenses per telephone per day of large telephone carriers in the United States

## ALL LARGE TELEPHONE CARRIERS

Geographical groupings	Operating revenues	Operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region.....	\$83,442,708	\$60,336,895	1,426,713	\$0.1800	\$0.1301
Middle Atlantic region <sup>1</sup> .....	302,600,243	217,424,318	4,188,136	.2223	.1597
Great Lakes region.....	184,780,033	126,918,074	3,093,005	.1838	.1263
Eastern district <sup>1</sup> .....	570,822,884	404,679,287	8,707,854	.2017	.1430
Chesapeake region.....	37,324,533	25,720,183	667,433	.1721	.1186
Southeastern region.....	56,283,889	37,435,692	979,020	.1769	.1177
Southern district.....	93,608,422	63,155,875	1,646,453	.1749	.1180
North Central region.....	39,478,997	28,654,220	789,650	.1538	.1117
South Central region.....	79,976,690	53,020,404	1,369,808	.1796	.1191
Mountain region.....	21,290,880	15,223,639	409,810	.1599	.1143
Pacific region.....	96,915,850	64,654,714	1,529,589	.1950	.1301
Western district.....	237,662,417	161,552,977	4,098,867	.1784	.1213
United States <sup>1</sup> .....	902,093,823	629,388,139	14,453,164	.1920	.1340
United States <sup>2</sup> .....	996,343,266	701,895,424	14,453,164	.2121	.1494

## BELL SYSTEM CARRIERS

New England region.....	\$83,442,708	\$60,336,895	1,426,713	\$0.1800	\$0.1301
Middle Atlantic region <sup>1</sup> .....	293,972,657	211,486,715	3,999,952	.2261	.1627
Great Lakes region.....	179,580,986	123,820,626	2,941,164	.1879	.1295
Eastern district <sup>1</sup> .....	556,996,351	395,644,236	8,367,829	.2048	.1455
Chesapeake region.....	36,934,221	25,439,651	659,828	.1722	.1186
Southeastern region.....	52,526,409	35,188,248	893,234	.1809	.1212
Southern district.....	89,460,630	60,627,899	1,553,062	.1772	.1201
North Central region.....	36,581,270	26,667,296	714,389	.1576	.1149
South Central region.....	75,609,496	49,990,914	1,256,354	.1852	.1224
Mountain region.....	21,290,880	15,223,639	409,810	.1599	.1143
Pacific region.....	95,010,782	63,417,672	1,485,582	.1968	.1314
Western district.....	228,492,428	155,299,521	3,866,135	.1818	.1236
United States <sup>1</sup> .....	874,949,409	611,571,656	13,787,026	.1953	.1365
United States <sup>2</sup> .....	969,198,852	684,078,941	13,787,026	.2163	.1527

<sup>1</sup> Excludes figures for American Telephone & Telegraph Co., inasmuch as its operations are not confined to one geographical region.

<sup>2</sup> Includes figures for American Telephone & Telegraph Co.

TABLE XVI.—Averages showing operating revenues and operating expenses per telephone per day of large telephone carriers in the United States—Continued

## OTHER THAN BELL SYSTEM CARRIERS

Geographical groupings	Operating revenues	Operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England Region.....					
Middle Atlantic region.....	\$8,627,586	\$5,937,603	188,184	\$0.1411	\$0.0971
Great Lakes region.....	5,190,047	3,097,448	151,841	.1054	.0628
Eastern district.....	13,826,633	9,035,051	340,025	.1251	.0818
Chesapeake region.....	390,312	280,532	7,605	.1579	.1135
Southeastern region.....	3,757,480	2,247,444	85,786	.1348	.0806
Southern district.....	4,147,792	2,527,976	93,391	.1367	.0833
North Central region.....	2,897,727	1,986,924	75,261	.1185	.0812
South Central region.....	4,367,194	3,029,490	113,454	.1184	.0822
Mountain region.....					
Pacific region.....	1,905,038	1,237,042	44,007	.1332	.0865
Western district.....	9,169,989	6,253,456	232,722	.1212	.0827
United States.....	27,144,414	17,816,483	666,138	.1254	.0823

Table XVII shows the monthly operating revenues, operating expenses, operating income, and net income of large telegraph, cable, and radiotelegraph carriers from July 1934 to April 1936, inclusive, and chart no. 7 indicates the trend during this period. The names of the telegraph carriers reporting on a monthly basis are shown in table XII.

TABLE XVII.—Monthly operating statistics, showing revenues, expenses, operating income, and net income as reported by large telegraph, cable, and radiotelegraph carriers from July 1934 to April 1936, inclusive

[Italics denote red figures]

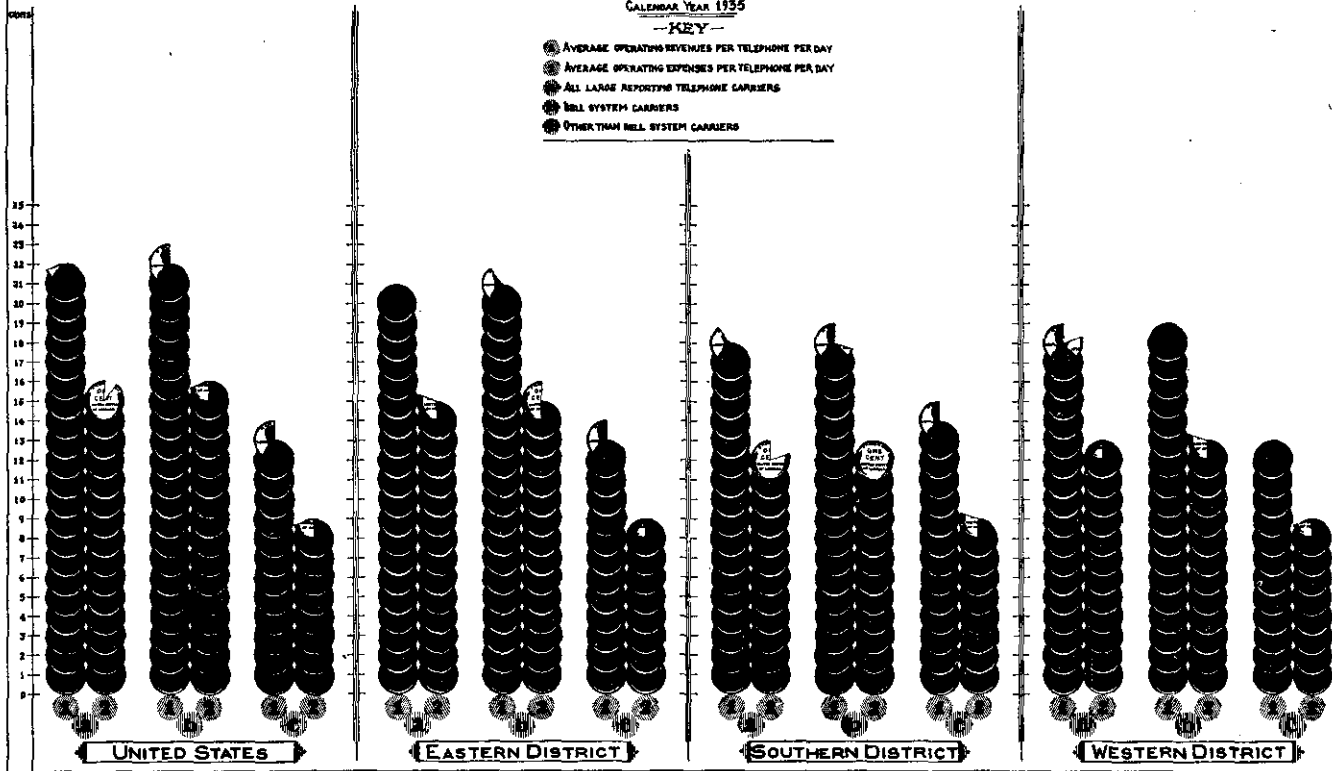
Month	Operating revenues	Operating expenses	Operating income	Net income
<i>1934</i>				
July.....	\$10,288,243	\$9,275,142	\$527,309	\$852,781
August.....	10,886,673	9,326,337	1,074,209	244,478
September.....	10,178,062	9,028,709	668,071	169,840
October.....	10,725,812	9,225,020	1,075,143	318,698
November.....	9,933,054	9,019,603	438,859	396,241
December.....	11,004,971	9,458,110	1,330,026	207,065
Total.....	63,016,815	55,332,921	5,113,617	442,761
<i>1935</i>				
January.....	10,362,033	9,126,390	778,067	60,911
February.....	9,611,350	8,686,579	470,181	463,886
March.....	10,729,707	9,153,476	1,115,485	206,972
April.....	10,878,367	9,130,371	1,280,193	433,001
May.....	11,408,433	9,360,849	1,550,097	646,541
June.....	10,795,656	9,162,486	1,174,642	246,799
July.....	10,710,994	9,287,008	969,467	129,271
August.....	11,086,596	9,315,832	1,313,224	390,030
September.....	10,897,977	9,027,066	1,418,777	523,989
October.....	11,533,962	9,392,086	1,683,762	828,808
November.....	10,666,677	9,179,024	1,040,010	85,637
December.....	11,925,569	9,831,214	1,617,587	875,994
Total.....	130,607,321	110,652,381	14,411,492	3,842,245
<i>1936</i>				
January.....	10,911,897	9,420,527	981,459	131,091
February.....	10,585,700	9,161,369	918,017	26,036
March.....	11,726,246	9,651,369	1,562,929	623,123
April.....	11,542,789	9,534,459	1,503,698	691,179
Total.....	44,766,632	37,767,724	4,966,103	1,419,357

A COMPARISON OF OPERATING EXPENSES TO OPERATING REVENUES PER TELEPHONE PER DAY OF LARGE REPORTING TELEPHONE CARRIERS

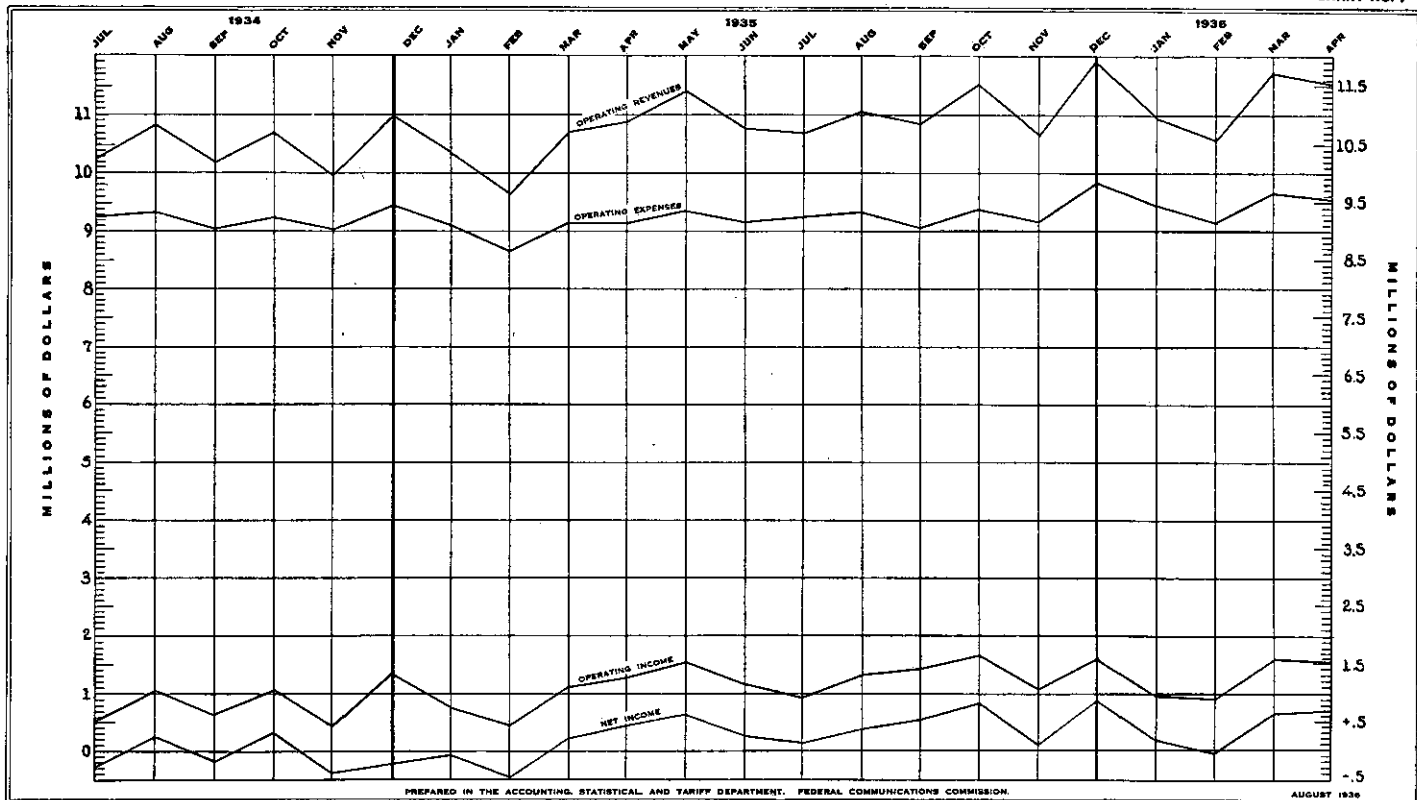
CALENDAR YEAR 1935

—KEY—

- AVERAGE OPERATING REVENUES PER TELEPHONE PER DAY
- AVERAGE OPERATING EXPENSES PER TELEPHONE PER DAY
- ALL LARGE REPORTING TELEPHONE CARRIERS
- BILL SYSTEM CARRIERS
- OTHER THAN BILL SYSTEM CARRIERS



Prepared in the Accounting, Statistics, and Traffic Department, Federal Communications Commission



PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

AUGUST 1936

The data shown in table XVIII concerning the number of employees and the amounts of compensation pertaining to telephone, telegraph, cable, and radiotelegraph carriers which report on a monthly basis, were taken from the annual reports filed by the carriers. The returns cover the period from January 1934 to December 1935, inclusive, and show the amounts applicable to the Bell System carriers and other than Bell System carriers. Telegraph, cable, and radiotelegraph carriers, during 1934, were not required to show the number of employees at the close of the year. Accordingly, the number of employees in service as of June 30 are shown in the table. The data for telephone carriers represent the number of employees in service at the close of the year.

Employees of large communication carriers, as of December 31, 1935, are shown in chart no. 8, which indicates the number of employees in the Bell System and the total number of telephone employees, in contrast to the number of telegraph, cable, and radiotelegraph employees.

CHART NO. 8

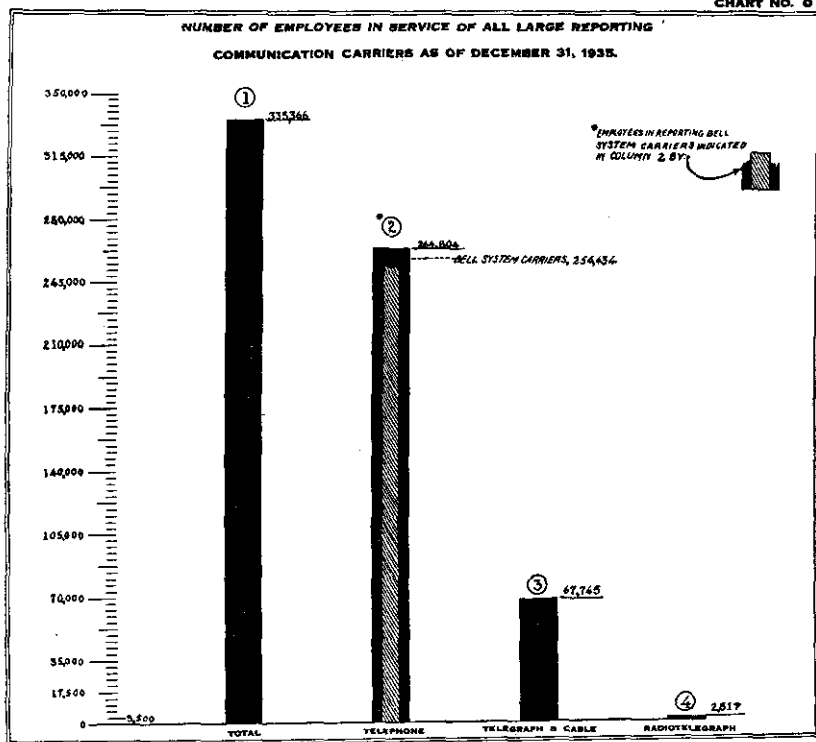


TABLE XVIII.—Monthly compensation of employees as reported by large telephone, telegraph, cable, and radiotelegraph carriers for the years 1934 and 1935, and number of employees in service

Month	Telegraph carriers				Telephone carriers.			Grand total
	Telegraph	Cable	Radio-telegraph	Total	Bell System	Other than Bell System	Total	
1934								
January.....	\$5,592,963	\$387,374	\$272,631	\$6,252,968	\$31,084,784	\$822,017	\$31,906,801	\$38,159,769
February.....	5,285,001	391,004	270,563	5,946,568	28,803,467	781,966	29,585,433	35,532,001
March.....	5,719,022	393,369	283,764	6,396,155	30,710,360	825,355	31,535,715	37,931,870
April.....	5,643,867	392,862	283,019	6,319,748	29,790,153	818,324	30,608,477	36,928,225
May.....	6,012,823	395,643	302,183	6,710,649	32,034,994	851,774	32,886,768	39,597,417
June.....	5,962,567	388,268	308,100	6,658,935	31,084,351	849,306	31,933,657	38,590,592
July.....	5,800,882	390,341	319,194	6,510,417	32,199,552	863,474	33,063,026	39,573,443
August.....	5,837,207	382,058	324,258	6,543,523	32,462,181	871,281	33,333,462	39,876,985
September.....	5,538,007	389,842	315,356	6,243,205	31,089,083	842,907	31,931,990	38,175,195
October.....	5,742,965	384,213	325,637	6,452,815	32,468,060	867,740	33,335,800	39,788,615
November.....	5,500,135	381,486	326,222	6,207,843	31,690,722	855,980	32,546,702	38,754,545
December.....	5,797,578	396,129	328,205	6,521,912	31,990,826	864,180	32,855,006	39,376,918
Total.....	68,433,017	4,670,589	3,659,132	76,762,738	375,408,533	10,114,304	385,522,837	462,285,575
Number of employees in service <sup>1</sup> .....	64,784	4,633	2,317	71,734	257,137	10,432	267,569	339,303
1935								
January.....	\$5,584,184	\$381,068	\$330,776	\$6,296,028	\$32,828,658	\$871,348	\$33,700,006	\$39,996,034
February.....	5,177,774	380,339	324,172	5,882,285	30,132,676	822,765	30,955,441	36,837,726
March.....	5,552,495	383,126	334,506	6,270,127	31,663,211	859,052	32,522,263	38,792,390
April.....	5,563,922	382,121	339,400	6,285,443	31,896,353	866,332	32,762,715	39,048,158
May.....	5,732,341	378,168	349,059	6,459,568	33,480,362	889,975	34,370,337	40,829,905
June.....	5,584,818	379,324	341,402	6,305,544	31,460,986	881,330	32,342,316	38,647,860
July.....	5,726,054	377,819	351,608	6,455,481	34,015,043	917,490	34,932,533	41,388,014
August.....	5,776,926	372,908	349,732	6,498,566	33,070,415	902,972	33,973,387	40,471,953
September.....	5,528,900	368,333	343,815	6,241,048	32,510,123	890,085	33,400,208	39,641,256
October.....	5,764,265	369,277	347,785	6,481,327	33,648,710	905,182	34,553,892	41,035,219
November.....	5,547,895	373,963	347,586	6,271,444	32,818,968	879,875	33,698,843	39,970,287
December.....	6,071,254	382,438	351,855	6,805,547	33,610,412	911,049	34,521,461	41,327,008
Total.....	67,609,828	4,530,884	4,111,696	76,252,408	391,135,947	10,597,455	401,733,402	477,985,810
Number of employees in service as of Dec. 31, 1935.....	64,020	3,725	2,817	70,562	254,434	10,370	264,804	335,366

<sup>1</sup> Represents number of employees in service as of June 30, 1934, for telegraph carriers, and as of Dec. 31, 1934, for telephone carriers.



## INTERCORPORATE RELATIONS OF CARRIERS AND THE CONTROLLING COMPANIES

Table XIX includes the telephone, telegraph, cable, and radio-telegraph carriers reporting to the Commission for the year 1935, and shows the intercorporate relations between these carriers and the controlling companies. They are arranged in alphabetical order by independent companies and their subsidiaries. The independent companies are shown flush, and the subsidiaries indented to indicate the intercorporate relations. The returns were incomplete at the date of the preparation of this report.

An index of the names of all companies appears at the end of this table and is arranged in alphabetical order for reference purposes. The number opposite the name of the company in the first column corresponds with the number following the name in the index. The following is a key to the symbols used in the third column:

M-A—Annual Report Form M for class A telephone carriers.

M-B—Annual Report Form M for class B telephone carriers.

O—Annual Report Form O for telegraph, cable, and radiotelegraph carriers.

H—Annual Report Form H for holding companies having large interests in communication carriers.

Cir.—Statistical Circular No. 1 for holding companies having nominal interests in communication carriers.

The operating revenues of the carriers, for the year 1935, are shown in the fourth column.

TABLE XIX.—*Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935*

No.	Name of company	Form of annual report	Operating revenues
1	Alleghany Corporation.....	Cir. <sup>1</sup>	-----
2	Chesapeake Corporation.....	Cir. <sup>1</sup>	-----
3	Chesapeake & Ohio Ry. Co.....	Cir. <sup>1</sup>	-----
4	Pere Marquette Ry. Co.....	Cir.	-----
5	Central Land Co.....	Cir. <sup>1</sup>	-----
6	Pere Marquette Radio Corporation.....	O	\$9,985
7	American Newspapers, Inc.....	Cir.	-----
8	Hearst Radio, Inc.....	O	4,101
9	American Telephone & Telegraph Co.....	M-A	94,249,444
10	Bell Telephone Co. of Pennsylvania.....	M-A	60,907,995
11	Chesapeake & Potomac Telephone Co. (New York).....	M-A	10,066,522
12	Chesapeake & Potomac Telephone Co. of Baltimore City.....	M-A	13,249,974
13	Chesapeake & Potomac Telephone Co. of Virginia.....	M-A	8,068,250
14	Petersburg Telephone Co. <sup>1</sup> .....	M-A	172,103
15	Chesapeake & Potomac Telephone Co. of West Virginia.....	M-A	5,377,372
16	Cincinnati & Suburban Bell Telephone Co. <sup>3</sup> .....	M-A	8,877,939
17	Diamond State Telephone Co.....	M-A	1,925,378
18	Illinois Bell Telephone Co.....	M-A	76,134,796
19	Crown Point Telephone Co.....	M-B	52,107
20	Indiana Bell Telephone Co.....	M-A	10,750,498
21	Lebanon Telephone Co.....	M-B	45,323
22	Michigan Bell Telephone Co.....	M-A	32,753,727
23	Mountain States Telephone & Telegraph Co.....	M-A	20,356,679
24	New England Telephone & Telegraph Co.....	M-A	67,787,349
25	Eastern Telephone & Telegraph Co. (Maine).....	M-A	124,380
26	Moosehead Telephone & Telegraph Co.....	M-B	86,786
27	Westerly Automatic Telephone Co.....	M-A	139,778
28	Western New England Telephone Co.....	M-B	83,131
29	White River Valley Telephone Co.....	M-B	47,936
30	New Jersey Bell Telephone Co.....	M-A	42,323,690
31	New York Telephone Co.....	M-A	188,815,593
32	Northwestern Bell Telephone Co.....	M-A	30,141,782
33	Tri-State Telephone & Telegraph Co.....	M-A	5,233,823
34	Dakota Central Telephone Co.....	M-A	1,205,666
35	Fulda Telephone Co.....	M-B	35,454
36	Nicollet County Telephone & Telegraph Co.....	M-B	49,705
37	Peoples Telephone Co., (St. Paul, Minn.).....	M-B	44,537

See footnotes at end of Table.

TABLE XIX.—Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935—Continued

No.	Name of company	Form of annual report	Operating revenues
38	Ohio Bell Telephone Co.	M-A	\$35,762,333
39	Pacific Telephone & Telegraph Co.	M-A	56,869,136
40	Bell Telephone Co. of Nevada	M-A	934,201
41	Home Telephone & Telegraph Co. of Southern Oregon <sup>4</sup>	M-A	97,798
42	Home Telephone & Telegraph Co. of Spokane <sup>4</sup>	M-A	1,282,255
43	Southern California Telephone Co.	M-A	36,859,392
44	Southern Bell Telephone & Telegraph Co.	M-A	52,526,408
45	Christian-Todd Telephone Co.	M-A	190,069
46	Southern New England Telephone Co. <sup>3</sup>	M-A	15,655,359
47	Southwestern Bell Telephone Co.	M-A	73,594,577
48	Emporia Telephone Co.	M-A	182,911
49	Rio Grande Valley Telephone Co.	M-A	412,067
50	United Telephone Co. (Abilene, Kans.)	M-A	1,602,852
51	Wisconsin Telephone Co.	M-A	15,301,696
	Bell System, total		970,378,771
52	American Utilities Service Corporation	Cir.	
53	Bluefield Telephone Co.	M-A	390,310
54	Northwestern Illinois Utilities	M-B	55,312
	System, total		445,622
55	Ashtabula Telephone Co. <sup>5</sup>	M-A	153,851
56	Bangor & Aroostook R. R. Co.	Cir.	
57	Northern Telegraph Co.	O	54,489
58	Buffalo Valley Telephone Co. <sup>5</sup>	M-B	50,450
59	Byllesby Corporation	Cir. <sup>1</sup>	
60	Byllesby, H. M., & Co.	Cir. <sup>1</sup>	
61	Standard Power & Light Corporation <sup>6</sup>	Cir. <sup>1</sup>	
62	Standard Gas & Electric Co.	Cir. <sup>1</sup>	
63	Mountain States Power Co. <sup>5</sup>	M-B	72,579
64	Northern States Power Co. (Delaware)	Cir. <sup>1</sup>	
65	Northern States Power Co. (Minnesota) <sup>5</sup>	M-A	110,467
66	Western Continental Utilities, Inc. (In receivership).	Cir. <sup>1</sup>	
67	Southwest Telephone Co. (Texas). (In receivership)	M-A	659,623
68	Southwestern States Telephone Co. <sup>5</sup> (In receivership)	M-A	457,867
69	Louisiana Telephone Co. <sup>5</sup>	M-B	53,763
	System total		1,354,290
70	Canadian Northern Ry. Co.	Cir.	
71	Canadian National Telegraph Co.	Cir. <sup>1</sup>	
72	Great North Western Telegraph Co. of Canada	O	( <sup>7</sup> )
72a	Minnesota & Manitoba R. R.	O	5,471
73	Canadian Pacific Ry. Co. (lines in United States)	O	4,261
74	Capital City Telephone Co.	M-A	161,946
75	Carolina Telephone & Telegraph Co.	M-A	1,284,333
76	Home Telephone & Telegraph Co. of Virginia	M-B	56,040
	System total		1,340,373
77	Central West Public Service Co. (In trusteeship)	M-A	534,415
78	Central West Public Service Co. of North Dakota	M-A	111,367
79	South East Public Service Co.	M-A	210,614
80	South East Public Service Corporation of Virginia	M-A	328,643
	System total		1,185,039
81	Central West Utilities Corporation	Cir.	
82	Midwest Telephone & Utilities Co., Inc.	M-B	45,078
83	Champaign Telephone Co.	M-B	69,584
84	Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	Cir.	
85	Continental Telegraph Co.	O	15,099
86	Chillicothe Telephone Co.	M-A	157,639
87	Citizens Utilities Co. <sup>8</sup>	Cir.	
88	Public Utilities California Corporation	M-A	138,540
89	City of Seattle, harbor department	O	4,959
90	Citizens Telephone Co. (Decatur, Ind.) <sup>5</sup>	M-B	71,595
91	Citizens Telephone Co. of Clay County	M-B	67,809
92	Colorado Fuel & Iron Co. (In trusteeship)	Cir. <sup>1</sup>	
93	Colorado & Wyoming Telegraph Co.	O	15,913
94	Colusa County Telephone Co.	M-B	52,447
95	Consolidated Utilities Co. (Georgia)	H	
96	Mississippi Valley Telephone Co. <sup>5</sup>	M-B	63,265
97	DeKalb-Ogle Telephone Co.	M-A	248,801

See footnotes at end of Table.

TABLE XIX.—Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935—Continued

No.	Name of company	Form of annual report	Operating revenues
98	Del Rio & Winter Garden Telephone Co. ....	M-A	\$196,903
99	Dollar, Robert, Co. ....	Cir	
100	Globe Wireless Ltd. ....	O	378,791
101	First-Chicago Corporation .....	Cir	
102	North-Western Indiana Telephone Co. ....	M-A	133,397
103	Firestone Plantations Co. ....	Cir	
104	United States-Liberia Radio Corporation.....	O	65,929
105	Florida Telephone Corporation .....	M-A	209,298
106	French Telegraph Cable Co. ....	O	323,080
107	General Telephone Corporation <sup>9</sup> .....	H	
108	Associated Telephone Co., Ltd. ....	M-A	2,837,784
109	Central Telephone Co. (Delaware) <sup>10</sup> (In trusteeship)	H	
110	Indiana Central Telephone Co. (In trusteeship)	H	
111	Interstate Telephone Co. (Spokane, Wash.)	M-A	725,228
112	Michigan Associated Telephone Co. ....	M-A	969,590
113	Southwestern Associated Telephone Co. ....	M-A	853,430
114	Haskell Telephone Co. ....	M-A	144,016
115	Commonwealth Telephone Co. (Wisconsin)	M-A	1,005,135
116	Illinois Commercial Telephone Co. ....	M-A	1,806,806
117	Indiana Telephone Utilities Co. ....	H	
118	Indiana Associated Telephone Corporation	M-A	1,120,583
119	Ohio Associated Telephone Co. ....	M-A	633,392
120	Pennsylvania Telephone Corporation .....	M-A	2,049,520
121	Standard Telephone Co. of Delaware. (In trusteeship)	H	
122	Platte Valley Telephone Corporation .....	M-A	190,822
123	United Telephone Co. (Delaware) .....	H	
124	Tri-State Associated Telephone Corporation	M-B	89,482
125	Upstate Telephone Corporation of New York	M-A	747,046
	System total .....		13,172,834
126	General & Telephone Investments, Inc. ....	H	
127	Gary, Theodore, & Co. ....	H	
128	Midland Electric Co. ....	(U)	
129	Community Telephone Co. ....	Cir	
130	Inland Telephone Co. ....	Cir	
131	Ohio Community Telephone Co. <sup>8</sup> .....	M-B	86,399
132	Telephone Bond & Share Co. ....	H	
133	Continental Telephone Co. ....	H	
134	Nebraska Continental Telephone Co. ....	M-A	321,399
135	Citizens Independent Telephone Co. ....	M-A	558,102
136	Home Telephone & Telegraph Co., (Ft. Wayne, Ind.)	M-A	1,172,549
137	Missouri Telephone Co. <sup>12</sup> .....	M-A	258,932
138	Portsmouth Home Telephone Co. ....	M-A	314,167
139	Texas Long Distance Telephone Co. <sup>3</sup> .....	M-A	187,560
140	Wabash Telephone Co. ....	M-A	458,731
141	Imperial Securities Co. ....	H	
142	Telephone Securities, Inc. ....	H	
143	Keystone Telephone Co. of Philadelphia	M-A	1,765,974
144	Eastern Telephone & Telegraph Co. (Pennsylvania)	M-A	138,558
	System total .....		5,262,371
145	Greenville Telephone Co. ....	M-B	84,653
146	Gulf Radio Service (George Collins Warner, Jr.) <sup>13</sup>	O	
147	Gulf States Telephone Co. <sup>15</sup> .....	M-A	324,151
148	Home Telephone Co. of Ridgway .....	M-A	147,926
149	Inter County Telephone & Telegraph Co. <sup>5</sup> .....	M-A	167,403
150	Inter-Mountain Telephone Co. ....	M-A	554,862
151	International Telephone & Telegraph Corporation	H	
152	All America Cables, Inc. ....	O	4,383,539
153	Postal Telegraph & Cable Corporation. (In trusteeship)	H	
154	Mackay Companies .....	H	
155	Commercial Cable Co. ....	O	4,087,596
156	Commercial Pacific Cable Co. <sup>14</sup> .....	O	974,276
157	Mackay Radio & Telegraph Co. (California)	O	983,439
158	Postal Telegraph-Cable Co. (Land Line System)	O	22,145,891
159	Interstate Telephone & Telegraph Co. (Portland, Oreg.) <sup>16</sup>	O	7
160	Radio Communication Co., Inc. <sup>18</sup> .....		
161	Mackay Radio & Telegraph Co. (Delaware)	O	836,521
	System total .....		33,411,262
162	Intra State Telephone Co. ....	M-A	254,069
163	Investment Bond & Share Corporation .....	(U)	
164	Kansas State Telephone Co. <sup>17</sup> .....	M-B	41,730
165	Jamestown Telephone Corporation .....	M-A	441,614

See footnotes at end of Table.

TABLE XIX.—Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935—Continued

No.	Name of company	Form of annual report	Operating revenues
238	United Telephone & Electric Co.....	H.....	
239	Clair Telephone Co.....	M-B.....	\$52, 191
240	New Jersey Telephone Co.....	M-A.....	135, 779
241	United Telephone Co. of Pennsylvania.....	M-A.....	578, 101
242	United Telephone & Telegraph Corporation.....	H.....	
243	Interstate Telephone & Telegraph Co. (Indiana).....	H.....	
244	Ohio Telephone Service Co.....	M-A.....	196, 409
245	United Corporation.....	M-B.....	80, 854
246	United Telephone Cos., Inc.....	M-A.....	520, 489
247	United Telephone Investment Corporation.....	H.....	
248	Union Telephone Co. (Greenfield, Ind.).....	M-A.....	137, 461
249	United Utilities Securities Co.....	H.....	
250	United Telephone & Telegraph Co.....	H.....	
251	American Telephone Co.....	M-A.....	426, 317
252	United Telephone Co. (Missouri).....	M-A.....	352, 607
	System total.....		2, 480, 208
253	Utilities Holding Corporation.....	H.....	
254	Middle States Utilities Co. (Delaware).....	H.....	
255	Middle States Utilities Co. of Iowa.....	M-B.....	80, 768
256	Middle States Utilities Co. of Missouri.....	M-A.....	142, 890
	System total.....		223, 658
257	Victor-American Fuel Co.....	Cir.....	
258	Mountain Telegraph Co.....	O.....	3, 718
259	Wabash Ry. Co. (in receivership) <sup>23</sup> .....	Cir.....	
260	Ann Arbor R. R. Co. (in receivership).....	Cir.....	
261	Wabash Radio Corporation.....	O.....	12, 606
262	Western Arkansas Telephone Co.....	M-B.....	66, 930
263	Western Light & Telephone Co. <sup>24</sup> .....	Cir.....	
264	Kansas Home Telephone Co. (in receivership) <sup>25</sup> .....	M-B.....	29, 241
265	Western Telephone Corporation (Kansas).....	M-A.....	208, 583
266	Western Telephone Corporation of Iowa.....	M-A.....	125, 876
267	Western Telephone Corporation of Missouri.....	M-A.....	260, 501
268	Western Telephone Corporation of Nebraska.....	M-B.....	52, 331
269	Western Telephone Corporation of Oklahoma.....	M-A.....	134, 098
270	Western Telephone Corporation of Texas.....	M-B.....	39, 808
	System total.....		850, 486
271	Western Union Telegraph Co.....	O.....	89, 868, 573
272	Great North Western Telegraph Co. of Canada <sup>26</sup> .....	O.....	(7)
273	Mexican Telegraph Co.....	O.....	324, 870
	System total.....		90, 193, 443

<sup>1</sup> Report for 1935 not received.

<sup>2</sup> Merged with Chesapeake & Potomac Telephone Co. of Virginia Oct. 1, 1935.

<sup>3</sup> American Telephone & Telegraph Co. owns only a minority of the capital stock but company is customarily considered a part of the Bell System.

<sup>4</sup> Merged with Pacific Telephone & Telegraph Co. Dec. 1, 1935.

<sup>5</sup> Subject only to secs. 201-205 of the act.

<sup>6</sup> Controlled jointly by H. M. Bylesby & Co. and the United States Electric Power Corporation through ownership of majority of voting capital stock.

<sup>7</sup> None reported, lessor company.

<sup>8</sup> Formerly Public Utilities Consolidated Corporation which was reorganized Nov. 30, 1935.

<sup>9</sup> Formerly Associated Telephone Utilities Co., which was reorganized June 17, 1935.

<sup>10</sup> Dissolved Apr. 1, 1935.

<sup>11</sup> Report for 1935 not received and classification cannot be determined from the information available.

<sup>12</sup> Filed too late for data to be included in the other tables in this report.

<sup>13</sup> Not included in the tabulations, as returns were incomplete.

<sup>14</sup> The Mackay companies own only a minority of the capital stock but company is operated as part of their system.

<sup>15</sup> Independent. Leased by the Postal Telegraph-Cable Co. (Land Line System).

<sup>16</sup> Inactive company, files no report; inserted to show corporate relation of subsidiary carrier.

<sup>17</sup> Controlled by the General Telephone Corporation until October 1935, when the entire voting capital stock was purchased by present controlling company.

<sup>18</sup> Controls the Iowa Union Telephone Co., which is subject only to secs. 201-205 of the act and which did not file a report for 1935.

<sup>19</sup> Not included in the tabulations, as the returns were incomplete.

<sup>20</sup> Controls the Commonwealth Telephone Co. (Pennsylvania), which is subject only to secs. 201-205 of the act and which did not file a report for 1935.

<sup>21</sup> Subject only to secs. 201-205 of the act. Formerly Kansas Home Telephone Co., whose assets were acquired June 1, 1935.

<sup>22</sup> Files no report. Inserted to show corporate relation of subsidiary carriers.

<sup>23</sup> Filed too late for data to be included in table VIII.

<sup>24</sup> Formerly Western Power, Light & Telephone Co., which was reorganized June 1, 1935.

<sup>25</sup> Assets acquired by Eastern Kansas Telephone Co., June 1, 1935.

<sup>26</sup> Lines in the United States, in New England, and northern New York State, leased by the Western Union Telegraph Co. For control see no. 72.

122 REPORT OF THE FEDERAL COMMUNICATIONS COMMISSION

TABLE XIX.—Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935—Continued

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241	United Telephone Co. of Pennsylvania.....	M-A	578, 101
242	United Telephone & Telegraph Corporation.....	H	
243	Interstate Telephone & Telegraph Co. (Indiana).....	H	
244	Ohio Telephone Service Co.....	M-A	196, 409
245	United Corporation.....	M-B	80, 854
246	United Telephone Cos., Inc.....	M-A	520, 489
247	United Telephone Investment Corporation.....	H	
248	Union Telephone Co. (Greenfield, Ind.).....	M-A	137, 461
249	United Utilities Securities Co.....	H	
250	United Telephone & Telegraph Co.....	H	
251	American Telephone Co.....	M-A	426, 317
252	United Telephone Co. (Missouri).....	M-A	352, 607
	System total.....		2, 480, 208
253	Utilities Holding Corporation.....	H	
254	Middle States Utilities Co. (Delaware).....	H	
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256	Middle States Utilities Co. of Missouri.....	M-A	142, 890
	System total.....		223, 658
257	Victor-American Fuel Co.....	Cir.	
258	Mountain Telegraph Co.....	O	3, 718
259	Wabash Ry. Co. (in receivership) <sup>23</sup> .....	Cir.	
260	Ann Arbor R. R. Co. (in receivership).....	Cir.	
261	Wabash Radio Corporation.....	O	12, 606
262	Western Arkansas Telephone Co.....	M-B	66, 930
263	Western Light & Telephone Co. <sup>24</sup> .....	Cir.	
264	Kansas Home Telephone Co. (in receivership) <sup>25</sup> .....	M-B	29, 241
265	Western Telephone Corporation (Kansas).....	M-A	208, 583
266	Western Telephone Corporation of Iowa.....	M-A	125, 876
267	Western Telephone Corporation of Missouri.....	M-A	260, 501
268	Western Telephone Corporation of Nebraska.....	M-B	52, 381
269	Western Telephone Corporation of Oklahoma.....	M-A	134, 098
270	Western Telephone Corporation of Texas.....	M-B	39, 808
	System total.....		850, 488
271	Western Union Telegraph Co.....	O	89, 868, 573
272	Great North Western Telegraph Co. of Canada <sup>26</sup> .....	O	(7)
273	Mexican Telegraph Co.....	O	324, 870
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<sup>1</sup> Report for 1935 not received.

<sup>2</sup> Merged with Chesapeake & Potomac Telephone Co. of Virginia Oct. 1, 1935.

<sup>3</sup> American Telephone & Telegraph Co. owns only a minority of the capital stock but company is customarily considered a part of the Bell System.

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# INDEX PERTAINING TO INTERCORPORATE RELATIONS

	Number
All America Cables, Inc.....	152
Alleghany Corporation.....	1
American Newspapers, Inc.....	7
American Telephone Co.....	251
American Telephone & Telegraph Co.....	9
American Union Telephone Co.....	184
American Utilities Service Corporation.....	52
Ann Arbor Railroad Co.....	260
Ashtabula Telephone Co.....	55
Associated Telephone Co., Ltd.....	108
Baltimore, Md., Mayor and City Council of.....	173
Bangor & Aroostook Railroad Co.....	56
Bell Telephone Co. of Nevada.....	40
Bell Telephone Co. of Pennsylvania.....	10
Bluefield Telephone Co.....	58
Buffalo Valley Telephone Co.....	58
Byllesby, H. M., & Co.....	60
Byllesby Corporation.....	59
Canadian National Telegraph Co.....	71
Canadian Northern Railway Co.....	70
Canadian Pacific Railway Co.....	73
Capital City Telephone Co.....	74
Carolina Telephone & Telegraph Co.....	75
Central Idaho Telegraph & Telephone Co.....	231
Central Land Co.....	5
Central Radio Telegraph Co.....	235
Central Telephone Co. (Delaware).....	109
Central West Public Service Co.....	77
Central West Public Service Co. of North Dakota.....	78
Central West Utilities Corporation.....	81
Champaign Telephone Co.....	83
Chesapeake Corporation.....	2
Chesapeake & Potomac Telephone Co. (New York).....	11
Chesapeake & Potomac Telephone Co. of Baltimore City.....	12
Chesapeake & Potomac Telephone Co. of Virginia.....	13
Chesapeake & Potomac Telephone Co. of West Virginia.....	15
Chesapeake & Ohio Railway Co.....	3
Chicago, Milwaukee, St. Paul & Pacific Railroad Co.....	84
Chillicothe Telephone Co.....	86
Christian-Todd Telephone Co.....	45
Cincinnati & Suburban Bell Telephone Co.....	16
Citizens Independent Telephone Co.....	135
Citizens Telephone Co. (Decatur, Ind.).....	90
Citizens Telephone Co. of Clay County.....	91
Citizens Utilities Co.....	87
City of Seattle, harbor department.....	89
Claar Telephone Co.....	239
Colorado Fuel & Iron Co.....	92
Colorado and Wyoming Telegraph Co.....	93
Colusa County Telephone Co.....	94
Commercial Cable Co.....	155
Commercial Pacific Cable Co.....	156
Commonwealth Telephone Co. (Wisconsin).....	115
Community Telephone Co.....	129
Consolidated Utilities Co. (Georgia).....	95
Continental Telegraph Co.....	85

	Number
Continental Telephone Co.....	133
Crown Point Telephone Co.....	19
Dakota Central Telephone Co.....	34
De Kalb-Ogle Telephone Co.....	97
Del Rio & Winter Garden Telephone Co.....	98
Diamond State Telephone Co.....	17
Dollar, Robert, Co.....	99
Eastern Kansas Telephone Co.....	224
Eastern Telephone & Telegraph Co. (Maine).....	25
Eastern Telephone & Telegraph Co. (Pennsylvania).....	144
Emporia Telephone Co.....	48
Federal Steel Co.....	233
First-Chicago Corporation.....	101
Firestone Plantations Co.....	103
Florida Telephone Corporation.....	105
French Telegraph Cable Co.....	106
Fulda Telephone Co.....	35
Gary, Theodore, & Co.....	127
General & Telephone Investments, Inc.....	126
General Telephone Corporation.....	107
Globe Wireless Ltd.....	100
Great North Western Telegraph Co. of Canada.....	72, 272
Greenville Telephone Co.....	145
Gulf Radio Service (George Collins Warner, Jr.).....	146
Gulf States Telephone Co.....	147
H. M. Byllesby & Co.....	60
Haskell Telephone Co.....	114
Hearst Radio, Inc.....	8
Home Telephone Co. of Ridgway.....	148
Home Telephone & Telegraph Co. (Fort Wayne, Ind.).....	136
Home Telephone & Telegraph Co. of Southern Oregon.....	41
Home Telephone & Telegraph Co. of Spokane, Wash.....	42
Home Telephone & Telegraph Co. of Virginia.....	76
Huron Portland Cement Co.....	178
Huron Transportation Co.....	179
Illinois Bell Telephone Co.....	18
Illinois Commercial Telephone Co.....	116
Imperial Securities Co.....	141
Indiana Associated Telephone Corporation.....	118
Indiana Bell Telephone Co.....	20
Indiana Central Telephone Co.....	110
Indiana Telephone Utilities Co.....	117
Inland Telephone Co.....	130
Inter County Telephone & Telegraph Co.....	149
Inter-Mountain Telephone Co.....	150
International Telephone & Telegraph Corporation.....	151
Interstate Telegraph Co.....	187
Interstate Telephone Co. (Spokane, Wash.).....	111
Interstate Telephone & Telegraph Co. (Indiana).....	243
Interstate Telephone & Telegraph Co. (Portland, Oreg.).....	159
Intra State Telephone Co.....	162
Investment Bond & Share Corporation.....	163
Jamestown Telephone Corporation.....	165
Kansas Home Telephone Co.....	264
Kansas State Telephone Co.....	164
Kansas Telephone Co.....	185
Keystone Telephone Co. of Philadelphia.....	143
Kittanning Telephone Co.....	166
La Crosse Telephone Corporation.....	181
Lebanon Telephone Co.....	21
Lee Telephone Co.....	167
Lincoln Telephone & Telegraph Co.....	169
Lincoln Telephone Securities Co.....	168
Louisiana Telephone Co.....	69
Loveland & Co., Ltd.....	170
Mackay Cos.....	154

	Number
Mackay Radio & Telegraph Co. (California).....	157
Mackay Radio & Telegraph Co. (Delaware).....	161
Magnolia Petroleum Co.....	213
Magnolia Radio Corporation.....	214
Mayor and City Council of Baltimore, Md.....	173
Meadville Telephone Co.....	174
Mexican Telegraph Co.....	273
Meyer Rubber Co.....	230
Michigan Alkali Co.....	175
Michigan Associated Telephone Co.....	112
Michigan Bell Telephone Co.....	22
Michigan Limestone & Chemical Co.....	234
Michigan Wireless Telegraph Co.....	177
Middle States Telephone Co. of Illinois.....	182
Middle States Utilities Co. (Delaware).....	254
Middle States Utilities Co. of Iowa.....	255
Middle States Utilities Co. of Missouri.....	256
Middle Western Telephone Co.....	180
Midland Electric Co.....	128
Mid-West States Utilities Co.....	183
Midwest Telephone & Utilities Co., Inc.....	82
Minnesota & Manitoba Railroad.....	72a
Mississippi Valley Telephone Co.....	96
Missouri Telephone Co.....	137
Moosehead Telephone & Telegraph Co.....	26
Mountain States Power Co.....	63
Mountain States Telephone & Telegraph Co.....	23
Mountain Telegraph Co.....	258
Nebraska Continental Telephone Co.....	134
Nevada-California Electric Corporation.....	186
New England Telephone & Telegraph Co.....	24
New Jersey Telephone Co.....	240
New Jersey Bell Telephone Co.....	30
New York Telephone Co.....	31
Nicollet County Telephone & Telegraph Co.....	36
Norfolk and Carolina Telephone & Telegraph Co.....	188
North-West Telephone Co.....	189
North-Western Indiana Telephone Co.....	102
Northern States Power Co. (Delaware).....	64
Northern States Power Co. (Minnesota).....	65
Northern Telegraph Co.....	57
Northwestern Bell Telephone Co.....	32
Northwestern Illinois Utilities.....	54
Northwestern Telephone Co.....	190
Ohio Associated Telephone Co.....	119
Ohio Bell Telephone Co.....	38
Ohio Community Telephone Co.....	131
Ohio Telephone Service Co.....	244
Olympic Radio Co.....	191
Oregon-Washington Telephone Co.....	192
Oxnard Home Telephone Co.....	193
Ozark Central Telephone Co.....	194
Pacific Communication Co.....	195
Pacific Telephone & Telegraph Co.....	39
Palestine Telephone Co.....	196
Peninsular Telephone Co.....	197
Pennsylvania Telephone Corporation.....	120
Peoples Telephone Co. (St. Paul, Minn.).....	37
Pere Marquette Radio Corporation.....	6
Pere Marquette Railway Co.....	4
Petersburg Telephone Co.....	14
Phillips Petroleum Co.....	198
Pike County Telephone Co.....	200
Platte Valley Telephone Corporation.....	122
Portsmouth Home Telephone Co.....	138
Postal Telegraph-Cable Co. (Land Line System).....	158



	Number
Postal Telegraph & Cable Corporation.....	153
Press Wireless, Inc.....	201
Princeton Telephone Co.....	202
Public Service of Pennsylvania, Inc.....	203
Public Utilities California Corporation.....	88
RCA Communications, Inc.....	205
Radio Communication Co., Inc.....	160
Radio Corporation of America.....	204
Radiomarine Corporation of America.....	206
Red River Valley Telephone Co.....	207
Rio Grande Valley Telephone Co.....	49
Robert Dollar Co.....	99
Rochester Telephone Corporation.....	208
San Angelo Telephone Co.....	209
Santa Barbara Telephone Co.....	210
Santa Paula Home Telephone Co.....	211
Seattle, City of, harbor department.....	89
Socony-Vacuum Oil Co., Inc.....	212
South East Public Service Co.....	79
South East Public Service Corporation of Virginia.....	80
South Porto Rico Sugar Co. (of Puerto Rico).....	216
South Porto Rico Sugar Co. (New Jersey).....	215
Southeast Missouri Telephone Co.....	217
Southern Bell Telephone & Telegraph Co.....	44
Southern California Telephone Co.....	43
Southern New England Telephone Co.....	46
Southern Radio Corporation.....	220
Southwest Telephone Co. (Kansas).....	218
Southwest Telephone Co. (Texas).....	67
Southwestern Associated Telephone Co.....	113
Southwestern Bell Telephone Co.....	47
Southwestern States Telephone Co.....	68
Standard Gas & Electric Co.....	62
Standard Oil Co. (New Jersey).....	219
Standard Power & Light Corporation.....	61
Standard Telephone Co. of Delaware.....	121
Standard Telephone & Telegraph Co. (Alabama).....	221
Sullivan Telephone Co.....	222
Telephone Bond & Share Co.....	132
Telephone Securities, Inc.....	142
Telephone Utility & Investment Co.....	223
Texas Long Distance Telephone Co.....	139
Theodore Gary & Co.....	127
Tidewater Wireless Telegraph Co.....	225
Tri-State Associated Telephone Corporation.....	124
Tri-State Telephone & Telegraph Co.....	32
Tropical Radio Telegraph Co.....	228
Two States Telephone Co.....	226
Union Telephone Co. (Greenfield, Ind.).....	248
United Corporation.....	245
United Fruit Co.....	227
United States Rubber Co.....	229
United States-Liberia Radio Corporation.....	104
United States Steel Corporation.....	232
United Telephone Co. (Delaware).....	123
United Telephone Co. (Abilene, Kans.).....	50
United Telephone Co. (Missouri).....	252
United Telephone Co. (Llano, Tex.).....	236
United Telephone Co. (Monroe, Wis.).....	237
United Telephone Cos., Inc.....	246
United Telephone Co. of Pennsylvania.....	241
United Telephone & Electric Co.....	238
United Telephone Investment Corporation.....	247
United Telephone & Telegraph Co.....	250
United Telephone & Telegraph Corporation.....	242
United Utilities Securities Co.....	249

	Number
Upstate Telephone Corporation of New York .....	125
Utilities Holding Corporation .....	253
Victor-American Fuel Co.....	257
Wabash Radio Corporation.....	261
Wabash Railway Co.....	259
Wabash Telephone Co.....	140
Warner, Jr., George Collins (Gulf Radio Service).....	146
West Coast Telephone Co.....	172
West Coast Utilities Corporation.....	171
Westerly Automatic Telephone Co.....	27
Western Arkansas Telephone Co.....	262
Western Continental Utilities, Inc.....	66
Western New England Telephone Co.....	28
Western Light & Telephone Co.....	263
Western Radio Telegraph Co.....	199
Western Telephone Corporation (Kansas).....	265
Western Telephone Corporation of Iowa.....	266
Western Telephone Corporation of Missouri.....	267
Western Telephone Corporation of Nebraska.....	268
Western Telephone Corporation of Oklahoma.....	269
Western Telephone Corporation of Texas.....	270
Western Union Telegraph Co.....	271
White River Valley Telephone Co.....	29
Wisconsin Telephone Co.....	51
Wyandotte Transportation Co.....	176

[ Page 128 in the original document is intentionally blank ]

# GENERAL INDEX

	Page
Accounting Department report.....	74
Accounting, International radio.....	10
Accounting Systems.....	31, 74, 76, 77, 78
Addis Ababa.....	39
Aeronautical Radio, Inc.....	21
Aeronautical radio stations.....	4, 44
Agriculture radio service.....	4, 37, 41
Agriculture radio stations.....	41
Aircraft radio stations.....	4, 44, 70
Airport radio stations.....	4, 44
Airway marker radio beacon.....	4
Alaska.....	7, 41, 45
Allocation Survey.....	33, 34, 64, 66
Amateur radio service.....	4, 7, 46
American Telephone and Telegraph Co.....	21, 22, 25, 26, 27, 31, 75
Antenna Systems.....	59, 67
Applications.....	2, 5, 6, 7, 8, 16, 19, 26, 61, 82
Appropriation.....	9
Assignment of permit or license.....	5, 12, 16
Authorizations, radio.....	4, 5, 6, 8
Automatic Alarm Signals.....	42
Aviation radio service.....	4, 44, 45, 70
Beacon, Airway marker.....	4
Broadcast radio service.....	4, 5, 19, 57
Brooklyn Cases.....	26
Bucharest meeting.....	36, 67
Cable Carriers.....	92, 118
Cable lines.....	48
Cairo Conference.....	32, 34, 36, 68
Call-books.....	6, 7
Certificates of public convenience and necessity.....	16, 52
Chief Accountant.....	1
Coastal radio services.....	4, 7, 41, 43, 56
Coaxial cable.....	25, 35, 53
Commercial radio services.....	6
Commission:	
Actions.....	2
Decisions.....	2, 12
Hearings.....	2
Reports.....	2, 14, 28
Sessions.....	2
Communications Act.....	1, 14, 16, 24, 81
Competition of radio and land circuits.....	39
Complaints.....	12, 18, 21, 24, 27, 70, 72
Consolidation of Carriers.....	17, 76
Cost study, Telephone manufacture.....	77
Criminal investigations.....	20
Cross Bar Switch.....	54
<i>Crow v. Civil Service Commission, et al.</i> .....	30
Crown Point Telephone Co.....	28
Decisions of the Commission.....	2, 15, 28
Depreciation.....	23, 78
Diathermy, interference.....	36
Directional antennas.....	67
Disbursements.....	9
Discrepancies in radio operation.....	18, 19, 20, 47, 68, 69
Docket Cases.....	2, 12

# 130 REPORT OF THE FEDERAL COMMUNICATIONS COMMISSION

	Page
Educational radio.....	20
Empirical standards.....	66
Employees of carriers.....	116
Emergency radio service.....	4, 44, 46
Engineering Department report.....	32
Examination of accounts.....	77
Examination of radio operators.....	8, 47, 71
Examiners' hearings and reports.....	12
Examining department report.....	12
Expenditures.....	9
Experimental radio service.....	4, 7, 49, 61-66
Facsimile transmission.....	35, 63
Field intensity.....	51, 59, 66
Files.....	11
Fireboats.....	7
Fixed radio services.....	4, 37, 54
Frequency allocation.....	25, 32-35, 37, 43, 47
Frequency conference.....	33
Frequency control.....	5
Frequency measurements.....	70
Geophysical radio service.....	4, 46
Globe Wireless, Ltd.....	27, 37
"Good engineering practice".....	58
Head of the Lakes Broadcasting Co.....	29
Hearings.....	2, 12, 16, 21, 24-28, 33-35
<i>Hearst v. Black</i> .....	30
Holding Companies.....	80
Ignition systems, interference of.....	36
Injunction proceedings.....	29, 30, 75
Inspections.....	69, 70
Intercorporate relations.....	77, 85, 118
Interdepartment Radio Advisory Committee.....	33, 69
Interference, radio.....	24, 36, 50, 70
Interlocking directorates.....	12, 25
International matters.....	10, 32, 34, 36, 37, 42, 54, 68, 83
Interstate Commerce Commission.....	11, 17, 79
Investigations.....	18-22, 31, 69
Itinerant Airmen.....	44
<i>Jenny Wren Case</i> .....	30, 31
Law Department report.....	14
Legislation.....	14, 42
License and Records Section report.....	4
Lifeboat radio.....	43, 69
Listener preference.....	65
Lists of radio stations.....	6, 7, 69
Litigation.....	20, 28, 74
London-New York radiotelephone.....	23
Mackay Radio & Telegraph Co.....	27, 39, 43
Mails and Files.....	11
Marine radio service.....	4, 7, 19, 41, 46, 56, 69
Message tolls.....	106
Mobile radio service.....	4, 7
Modulation.....	60
Monitoring.....	70
Monocacy Broadcasting Co.....	29
Motion picture radio stations.....	4, 46
Multi-channel circuit.....	50
Multiple address messages.....	40
Multiplex printer & facsimile.....	40
Naval Communications Reserve.....	46
New York Office, Accounting Department.....	74
New York Telephone Co.....	25
North Western Telephone Co.....	28
Oil Field radio stations.....	41
Operating data of carriers.....	106
Operating revenues and expenses.....	112

	Page
Operators, radio.....	4, 8, 20, 27, 45, 47, 71, 72
Oslo, Norway.....	27, 39
Pan American Airways.....	44
Paris-New York radiotelephone.....	22
Patents.....	36
Pensacola Broadcasting Co.....	21
Petitions.....	2, 12
Police radio stations.....	4, 7, 44, 51
Press radio service.....	4, 37, 39, 41
Printing and binding.....	10, 11, 15
Publications.....	6, 78
Public convenience and necessity.....	16, 52
Public reference room.....	80
Quartz Crystals.....	67
Quotas, broadcast.....	57
Radio Corporation of America.....	39, 48, 50
Radio operators.....	4, 8, 20, 27, 45, 47, 71, 72
Radio Service Bulletin.....	7
Radiotelegraph carriers.....	92, 113
Rates.....	18, 21, 81
Receivers for carriers.....	89
Receiving sets, age.....	66
Red River Broadcasting Co.....	29
Regulations.....	12, 15, 42, 48, 58, 61, 81
Reports of the Commission.....	2, 15, 28, 54
Reports of carriers and holding companies.....	79
Research.....	49, 61, 63-67, 72
Revenues.....	85
Rules and regulations.....	12, 15, 42, 48, 58, 61, 81
Rules of practice and procedure.....	15
Rural listener preference.....	65
Safety of life.....	41, 60
Secretary's report.....	2
Ship radio service.....	4, 7, 42, 69
Ship Act.....	19, 27, 42, 69
Sidney, Australia.....	55
640 cases.....	26
South Western Bell Telephone Co.....	22
Special Telephone Investigation.....	31, 54
Spurious Emissions.....	59
Statistics of carriers.....	78
Supplies & printing.....	11
Tariffs.....	18, 21, 22, 81
Taxes.....	89
Technical Developments.....	49, 53, 61, 64, 72
Technical rules changed.....	58
Telegraph carriers.....	22, 48, 77, 91
Telegraph lines.....	17, 48
Telephone Carriers.....	22, 23, 31, 73, 102
Telephone lines.....	17
Telephone manufacturing.....	77
Telephones in service.....	110
Teletypewriter.....	22
Television.....	4, 32, 35, 45, 63
Temporary radio service.....	4
Therapeutic machines, interference.....	36
Time sharing agreements.....	5
Travel.....	70
Unlicensed radio operation.....	70
Valuation.....	48
Violations.....	18, 19, 20, 47, 69, 70
Visual Broadcasting.....	4, 32, 35, 45, 63
Wave propagation.....	50
Western Union Telegraph Co.....	48
Wire Telegraph facilities.....	7, 48
Wire telephone facilities.....	7
Work order systems.....	76