

FIFTH ANNUAL REPORT

FEDERAL
COMMUNICATIONS
COMMISSION

Copy 1



FISCAL YEAR ENDED JUNE 30, 1939

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MEMBERS OF THE FEDERAL COMMUNICATIONS COMMISSION

(AS OF NOVEMBER 1, 1939)

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GEORGE HENRY PAYNE

NORMAN S. CASE

FREDERICK I. THOMPSON²

T. A. M. CRAVEN

THAD H. BROWN

¹ Succeeded Frank R. McNinch, resigned September 1, 1939.

² Appointed April 8, 1939, to succeed Eugene O. Sykes, resigned.

LETTER OF TRANSMITTAL

FEDERAL COMMUNICATIONS COMMISSION,
WASHINGTON, D. C., *November 15, 1939.*

To the Congress of the United States;

It is my pleasure to transmit herewith the Fifth Annual Report of the Federal Communications Commission for the fiscal year ended June 30, 1939, pursuant to the provisions of section 4 (k) of the Communications Act of 1934, as amended.

The report as a whole reflects the increasing volume and importance of the Commission's widely varied regulatory problems. In efficiency and in scope the communications industry is constantly progressing. Its complexities are myriad; its national significance great. The pressing need for a numerically adequate staff and for the effective facilities which will enable the Commission to discharge its responsibilities under the law has created a situation which warrants particular consideration by the Congress.

Respectfully.

JAMES LAWRENCE FLY, *Chairman.*

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CHAPTER I

Introductory Summary

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INTRODUCTORY SUMMARY

The Federal Communications Commission has, since the outbreak of the European war, undertaken new and exacting burdens in connection with the preservation of neutrality and the important relationship of all forms of communications to the national defense.

Its policing of the ether waves must now take cognizance of the role assigned to radio in national emergency. For the war in Europe is the first major conflict to be fought on the land, on the sea, and in the air to the inclusion of the ether. In the World War there was no broadcast or high-frequency communication problem as we know it today; only wireless. Today the United States has some 800 broadcast stations (not to mention 55,000 amateur stations and more than 5,000 commercial stations), whose air messages filter to more than 40,000,000 receiving sets. And international broadcasts, thanks to the short wave, now cut across time and distance to challenge any claim of isolation.

Until the Federal Communications Commission was created in 1934, domestic regulation of communications services was a patchwork affair. Jurisdiction was shared by the Post Office Department, the Interstate Commerce Commission, and the Federal Radio Commission (which had been set up in 1927 to handle that newcomer in the field). The Communications Act of 1934 not only coordinated supervision under a single agency—the Federal Communications Commission—but established the basis for a national communications policy.

The Commission has since pursued the mandate of Congress set forth in section 1 of the act, as amended:

For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property through the use of wire and radio communication, and for the purpose of securing a more effective execution of this policy by centralizing authority heretofore granted by law to several agencies and by granting additional authority with respect to interstate and foreign commerce in wire and radio communication, there is hereby created a Commission to be known as the "Federal Communications Commission," which shall be constituted as hereinafter provided and which shall execute and enforce the provisions of this act.

In its early years the Commission functioned with three divisions—Broadcast, Telephone, and Telegraph—but today it operates as a single unit. The Examining Department was abolished in December 1938. Hearings are now conducted by Commissioners or suitably qualified employees.

During the past fiscal year the Commission held 550 regular meetings, presided at 143 hearings, heard 86 oral arguments en banc, issued 480 final orders as a result of such hearings, and designated 490 applications for formal hearing. In addition, 467 formal motions were acted upon by the Commission, and such interlocutory matters were disposed of through the Motions Docket.

Besides spending at least three days of every week at regular meetings of the full Commission, the commissioners meet as committees, individually preside at hearings in particular matters, hold informal staff conferences, and discharge special duties assigned to them.

For the fiscal year reported, the Commission received and studied nearly 17,000 tariff schedules. In the interest of safety at sea, approximately 16,500 ship inspections were made. Some 1,200 point-to-point telephone applications were examined. More than 550 new police-radio systems—mostly in the smaller communities—were authorized, and nearly 250 forestry-radio systems received Commission approval.

In the same period 7,500 applications for various types of broadcast stations were received. Of that number, about 1,650 were for new or increased facilities, and nearly 2,300 were renewals. In that same time the Commission heard oral argument in more than 100 broadcast matters, and adopted formal decisions in more than 200 such cases. Investigation was made of 265 broadcast stations, and licenses of eight stations were canceled or otherwise vacated.

Public service is the basic consideration in licensing broadcast stations. "Just as it may be a powerful instrumentality for public good," opined the Commission in a recent case, "so a broadcast station has potentialities of causing great public harm, and it is accordingly imperative that the limited broadcast channels belonging to the public should be entrusted to those who have a sense of public responsibility."

The continued growth of the broadcast industry was reflected in the number of new stations and increased facilities. Twenty-nine new stations were licensed and 76 applications were denied. Effective August 1, 1939, the Commission increased the license period for standard broadcast stations from 6 months to 1 year.

In 1938, the Commission began inquiry into chain broadcasting practices with respect to contractual relationship in programs and advertising, competitive practices, and network policies in general. Hearings, which ran 73 days, from November 1938 to May 1939 produced nearly 100 witnesses, 700 exhibits, and almost 9,000 pages of testimony. The report, when issued, will be the basis of possible new regulations and recommendations to Congress. The special committee assigned to this task comprises Commissioners Brown, Walker, and Thompson.

A notable contribution during the year was the adoption of revised rules and regulations governing all radio services. Chief among these were the rules affecting standard broadcast stations which were made effective August 1, 1939. Hearings were held from June 6 to June 30, 1938, before a committee composed of Commissioners Case, committee chairman; Craven, and Payne. More than 2,500 pages of testimony and more than 200 exhibits were considered. Forty-five representatives of broadcast equipment manufacturers attended the conference which preceded adoption of the Standards of Good Engineering Practice which were incorporated in this exhaustive work.

Commissioner Brown is completing a detailed "Special Study of the Radio Requirements Necessary or Desirable for Safety Purposes for Ships Navigating the Great Lakes and the Inland Waters of the United States," which was ordered by Congress. Hearings were held at Cleveland, Detroit, and elsewhere, and Canadian authorities have cooperated in working out standards to make more effective the

International Convention for Safety of Life at Sea and for other mutual purposes.

The Commission has active representation on the Interdepartment Radio Advisory Committee which allots frequencies to Government radio stations. Of more than 9,500 such present assignments, more than half—nearly 5,500—were made during the fiscal year.

Interest in the amateur field was attested in the nearly 50,000 types of licenses issued to these operators. In addition, nearly 18,000 commercial operator applications were received, and more than 15,000 were granted.

The year witnessed increased interest in television. For the first time, the Commission received applications for use of television frequencies in public service. A special committee, consisting of Commissioners Craven, as chairman; Brown, and Case, made painstaking inquiry into the present status of television. In its first report this committee found that television has barely emerged from the "technical" research stage of development and that it would be unwise for the Commission to adopt standards that may "freeze" further progress. The committee stressed that careful coordination is essential to television's progress. Extreme limitation of television channels also presents a serious problem. Only seven of the 19 channels allocated to television have been satisfactorily developed technically for television service. The committee's second report—on television application—was in final preparation.

On June 13, 1939, the Commission reported on its special investigation of the telephone industry. This inquiry was inaugurated by Public Resolution No. 8 of the Seventy-fourth Congress and was begun by Commissioner Walker, as chairman of the former Telephone Division of the Commission. The final report, consisting of approximately 900 mimeographed pages, traced the history, development, and operating practices of the largest single business in the world—the Bell System. Savings to telephone subscribers of more than \$30,000,000 to date through rate reductions resulting from this investigation justified Congress' reference that "the American people are entitled to know if they are being overcharged for this service even though they may be satisfied with the service." The report made 9 specific recommendations looking to stricter regulation of the industry.

In 1935, the Commission had made certain legislative recommendations with respect to telegraph companies. Pursuant to Senate Resolution 95, Seventy-sixth Congress, first session, which directed the Senate Interstate Commerce Committee to investigate the telegraph industry with a view to possible merger, a Senate subcommittee headed by Senator Burton K. Wheeler of Montana is utilizing records and other services of the Commission.

During the year, the Commission undertook to define the nature of services to be rendered by international broadcast. On May 23, 1939, it issued specific rules and regulations governing such international service, which marked a new policy in opening these channels to commercial programs.

The subsequent outbreak of the European war introduced such complications that a committee, composed of Chairman Fly and Commissioners Brown and Craven, was appointed to maintain contact with other Government agencies, as well as with the industry, to study and report on new problems presented.

In cooperation with the State Department and other Government agencies, the Commission has effected arrangements with other American republics in working out mutual communications problems. The Commission is charged with carrying out certain provisions of treaties and international agreements to which the United States is a party.

In administering and enforcing laws, regulations, and international treaties pertaining to radio, the Commission effectively utilizes a field staff. The ether waves are, in effect, patrolled by field offices at strategic points throughout the United States and its possessions, augmented by seven radio monitoring stations located at Atlanta, Baltimore, Boston, Grand Island, Nebr.; Great Lakes, Ill.; San Pedro, Calif., and Portland, Oreg. Mobile equipment, additions to which the Commission urgently needs, is useful in tracing unlicensed stations and, at the same time, maintaining an effective neutrality patrol of the entire radio spectrum.

Through its Engineering Department, the Commission has investigated many communication techniques and refinements. It has made considerable study of frequency modulation, a subject now commanding much broadcast interest. The Commission's engineers have also given attention to directional antennas, facsimile reproducers, and a wide variety of other devices to improve the communication services. At the same time these engineers are working to reduce interference from electromedical and other low-power radio-frequency electrical apparatus.

The most comprehensive study of sunspot effect on communications yet undertaken has been begun by the Commission's engineering staff. Several new types of carrier telephone systems have been developed by the industry and are being closely followed. One type permits 15 telephone channels over a single pair of open wires. The pioneer experimental coaxial cable system between New York and Philadelphia has resulted in installation of the first commercial system of this type, from Minneapolis to Stevens Point, Wis., a distance of nearly 200 miles. This one small cable will be capable of transmitting 480 simultaneous telephone conversations. Other possibilities with respect to message-telegraph communications are 12 times greater.

Other experimental and research activities included charting ground frequency wave field intensities, experiment with automatic devices on shipboard to receive distress signals, and comparative study of frequency modulation and amplitude modulation.

There were no amendments to the Communications Act during the year. This report makes no recommendation for new legislation with respect to the act.

However, the Commission is seriously concerned about its lack of personnel and equipment to carry out the increased duties, particularly in the field of radio monitoring, and in the better preparation of cases involving the issuance of radio licenses. This is more fully discussed in the chapter, Recommendations to Congress.

CHAPTER II

General

1. ORGANIZATION
2. PROCEDURE
3. LEGISLATION
4. INTERNATIONAL MATTERS
5. INTERDEPARTMENT RADIO ADVISORY COMMITTEE
6. EXPERIMENTAL, RESEARCH, AND TECHNICAL INVESTIGATIONS
7. PUBLICATIONS

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1. ORGANIZATION

The Commission, composed of seven members, functions as a unit with respect to all duties which it performs under the Communications Act, other laws, and international agreements. During the first 3 years of its existence, the Commission operated largely through three divisions (Broadcast, Telephone, and Telegraph). Effective November 15, 1937, these divisions were abolished.

Supplementing the general unit plan, under which the Commission directly supervises all its activities, a delegation of responsibility with respect to certain classes of matters has been effected. Committees of the Commission, consisting usually of three members, have been delegated to make special studies and supervise particular undertakings. Detailed activities have been delegated to individual Commissioners and the heads of certain departments. Special care, however, has been exercised to reserve to the Commission as a whole all important policy determinations.

The only change in the membership of the Commission during the fiscal year was appointment, on April 8, 1939, of Frederick I. Thompson to fill the unexpired term ending June 30, 1941, caused by the resignation of Commissioner Eugene O. Sykes. Commissioner Paul A. Walker, whose term expired June 30, 1939, was reappointed, for seven years. (Subsequently, on September 1, 1939, James Lawrence Fly succeeded Frank R. McNinch as Chairman, to complete the unexpired term of the late Anning S. Prall, ending June 30, 1942.)

DEPARTMENTS

The staff organization consists of the following departments:

Accounting, Statistical, and Tariff Department, whose functions include matters of accounting regulation, compilation and analysis of statistics, and tariff analysis and regulations.

Engineering Department, whose functions include the engineering phases of broadcast, common carrier, and private and ship service regulation and enforcement; international and interdepartmental matters; supervision of the field staff; and technical engineering information and research.

Law Department, whose functions include the legal phases of radio licensing and of common carrier regulation; administration (including legislation, rule-making, and international matters) and litigation before the courts.

Secretary's Office which has charge of all matters of internal administration.

The heads of the Commission's departments meet regularly as a Committee on Rules for the consideration, looking to recommendations to the Commission, of proposals for new or revised rules and regulations, and upon other matters of administration, and by means of the functioning of this Committee coordination of Commission activities has been further promoted.

2. PROCEDURE

The procedure under which hearings are conducted and the procedural steps leading up to final action by the Commission were revised in several important respects during the year. From the standpoint of internal administration, the changes made have simplified and expedited the process; under the new procedural rules, the speeding up of the process has proved possible without sacrifice of thorough-going consideration of the merits of the matters the Commission is called upon to act upon. At the close of the fiscal year there were only 25 pending and undecided cases, a very considerable reduction from the number pending at the close of the previous year.

Formerly it was the practice of the Commission to include in the issues upon which hearings on applications were to be held not only those matters on which the Commission entertained doubt but issues which required affirmative proof of all items contained in the applications. As a result, the task of preparation for hearings was rendered extremely burdensome, and hearings were unnecessarily prolonged by the applicant's tedious proof of many facts not really in controversy. The Commission has now undertaken the burden of determining and specifying limited issues which are actually controversial in character and upon which the result of the proceeding must turn.

Under its former rules the Commission permitted any party to intervene if his petition disclosed a "substantial interest in the subject matter." Furthermore the Commission designated as parties to its hearings those persons shown by its records to have some potential interest, whether or not such persons were known to have an intention to appear. The effects of comparatively unrestricted intervention and of automatic inclusion of parties to the proceeding were the unnecessary prolongation of discussion of noncontroversial issues and the unnecessary multiplication of evidence on relevant issues, due to the cross-examination to which witnesses were subjected by the various parties. The Commission's rules now require all parties who desire to appear in opposition to an application to file petitions to intervene, by means of which their interests may be tested, and parties are required to make a showing that the requested intervention will be in the public interest. At the same time, the Commission has made specific provision for the filing and consideration of motions for enlargement of the issues, a further safeguard for the protection of interests of applicants and other parties.

Following abolition of the Examining Department on November 9, 1938, the Commission changed its entire post-hearing procedure. In substitution for the plan under which the facts developed in hearings were reported by examiners, the practice has been set up of requiring all parties to proceedings to submit proposed findings of fact, following which proposed findings and conclusions are issued by the Commission. To these proposed decisions the parties have full opportunity to file exceptions upon which they may base oral argument before the Commission. Benefits derived from the new procedure include better preparation of cases by practitioners, with resulting reduction in size of records, simplification of the problem of preparing decisions and improvement generally, in speeding up, accuracy, and substantive comprehensiveness and utility of decisions. Under the new procedure the standards of "fair play" in reaching final

determinations, as laid down by the courts, have been fully met. The parties are notified in advance of the grounds upon which the Commission proposes to take action and opportunity is given for consideration of their objections. Thus, the proprieties as set forth in the second *Morgan* case¹ are completely satisfied.

As a further measure for the improvement of its procedure, the Commission on January 1, 1939, made provision for the holding of oral argument on all interlocutory pleadings and motions. Previously these motions were disposed of by the Commission without opportunity for argument, and thus without full opportunity for interested parties to make a contest. These interlocutory matters are now placed on a Motions Docket presided over by an individual Commissioner, which is called Friday of each week. During the period January 1 to June 30, 1939, 345 motions and petitions were disposed of on the Motions Docket.

3. LEGISLATION

The basic law under which the Commission functions is the Communications Act of 1934, as amended. There were no amendments to the Communications Act during the fiscal year 1939.

On June 19, 1939, Senate Resolution 95 was adopted, which authorized an investigation of the telegraph industry in the United States by the Interstate Commerce Committee of the United States Senate. Pursuant to this resolution, a subcommittee of the Interstate Commerce Committee, headed by Senator Burton K. Wheeler, of Montana, was directed to conduct the study. The Commission has cooperated with this subcommittee in the furnishing of statistical data, and is lending its facilities and records, as requested. Also, representatives of the Commission have appeared and given testimony at the hearings on the resolution.

The Commission submitted to Congress its report on the special telephone investigation, which contains a number of proposals for new legislation looking to more comprehensive and effective regulation of the telephone industry. These proposals are more fully reviewed elsewhere in this report.

A number of matters were studied with a view to the possibility of subsequent recommendations for legislation.

Various measures were introduced in Congress affecting activities of the Commission, and the Commission was requested by the various congressional committees to furnish reports and comments on a large number of these bills. A list of the measures on which the Commission furnished information, data, and recommendations to Congress during the year is contained in the Appendixes.

4. INTERNATIONAL MATTERS

GENERAL

The Commission has collaborated with the Department of State in international matters involving communications, including radio, wire, and cable services. During the last fiscal year two international communications conferences were held in which representatives of the Commission participated, one in Guatemala City, Guatemala,

¹ *Morgan v. United States*, 304 U. S. 1.

in December 1938 and one in Cracow, Poland, in May 1939. These conferences are discussed separately hereafter.

In addition, the Commission has participated in preparatory work for future international conferences, particularly the meeting of the International Consulting Committee on Radio (C. C. I. R.) scheduled to be held in Stockholm, Sweden, in June 1940, and the Inter-American Radio Conference to be held in Santiago, Chile, in January 1940.

A vast amount of correspondence relative to international problems has been handled, and an accurate record of international communications statistics is maintained so that such information is available upon request. The Commission compiles lists of the international broadcast stations of the world, as well as all Canadian, Mexican, and Cuban broadcast stations.

The work involved in the notification of radio frequencies to the Bureau of the International Telecommunication Union, Berne, Switzerland, has been continued, including general supervision of the Radio Service Bulletin issued semimonthly by the Commission.

CENTRAL AMERICAN CONFERENCE

The Regional Radio Conference of Central America, Panama, and the Canal Zone was in session from November 24 to December 8, 1938.

The principal subject before the conference was the allocation of the frequency band 2300-2400 kilocycles, in accordance with the provisions of article 7, paragraph 8, section 1, subsection 3, division (b) and (c) of the General Radio Regulations of Cairo, 1938, annexed to the International Telecommunications Convention of Madrid, 1932. The Convention, by unanimous vote, recognized the special needs for tropical broadcasting in the Central American area without prejudicing the interests of either the military departments or non-Government radio as represented by the Commission.

CRACOW RADIO CONFERENCE

By designation of the President, Mr. E. M. Webster, Assistant Chief Engineer of the Commission, attended the meeting of the subcommittee of the Third World Conference of Radiotelegraph Experts for Aeronautics at Cracow, Poland, on May 19, 1939.

The conference produced a set of recommendations addressed to the interested governments for study with the expectation that final conclusions would be reached at a future "World Conference of Radiotelegraph Experts for Aeronautics" at Berlin in February of 1940. Tentative arrangements were also concluded among the representatives of the countries particularly concerned with flights across the North Atlantic relative to the use of the radio frequencies assigned to the route by the Cairo Radio Conference of 1938, effective September 1, 1939.

INTERCONTINENTAL AVIATION

In view of the fact that, except for Government stations, all aeronautical radio in the United States is subject to the licensing authority of the Commission, any arrangements made in regard to allocation of frequencies and to the use of radio by aircraft flights to and from the United States must be coordinated with the Communications Act and the policies of the Commission.

The number of intercontinental aircraft flights is rapidly increasing and the radio problems in their connection have increased proportionately. These flights involve coordination with radio stations of foreign countries, and accordingly increased consultation with foreign governments through conference is to be expected.

NORTH AMERICAN REGIONAL BROADCASTING AGREEMENT

Considerable study has been given by the Commission to the placing into effect of the North American Regional Broadcasting Agreement which will go a long way in clearing problems among broadcasting stations in the North American region. This agreement, which has now been ratified by Canada, Cuba, Haiti, and the United States of America, will be made effective after approval by the Mexican Government.

INTERNATIONAL SCIENTIFIC RADIO UNION

The International Scientific Radio Union is an international scientific organization which has contributed important studies on the scientific aspects of radio, especially in the field of radio wave propagation. The Chief of the International Division attended the General Assembly of the International Scientific Radio Union held in Venice, Italy, in September 1938 as a delegate for the National Research Council.

COMMITTEE ON COOPERATION WITH AMERICAN REPUBLICS

The Chief of the International Division has participated regularly in the work of the Committee on Cooperation with the American Republics, which has met periodically in the Department of State under the chairmanship of the Under Secretary of State, Mr. Sumner Welles.

5. INTERDEPARTMENT RADIO ADVISORY COMMITTEE

The representatives of the Commission have devoted much time and effort during the fiscal year to the work of the Interdepartment Radio Advisory Committee. This Committee is the Government committee established for the purpose of advising the President with reference to the assignment of frequencies to Government radio stations, under the Communications Act of 1934, as amended. The Committee has had frequent meetings and has approved the assignment of 5,425 frequencies for Government radio stations during the past year. At the present time there are 9,508 active assignments to Government radio stations, all of which have been recommended by the Committee since its establishment. In view of the increasing magnitude and importance of the Committee's work, increased attention was given to systematizing the assignment of frequencies to all Government radio stations. A set of principles was developed and coordinated with the practices of the Federal Communications Commission in its assignment of frequencies to non-Government stations. Definitions of classes of stations were adopted and a system of symbols indicating restrictions on frequency assignments was developed. On April 4, 1939, the Committee elected Mr. E. K. Jett, Chief Engineer of the Commission, as its chairman to succeed Judge E. O. Sykes, formerly member of the Commission, who resigned.

6. EXPERIMENTAL, RESEARCH, AND TECHNICAL INVESTIGATIONS

The experimental, research, and technical investigations undertaken by the Commission during the year included the following:

1. *Investigation of necessary power for ship transmitters.*—Analysis of the mass of data obtained, the results of an investigation of over 100 ship antennas of the measurements of continuous recordings of average noise over a period of 2,311.5 hours and the results of over 100 separate tests of the ability of ship operators to copy code signals through varying amounts of static, required approximately 3 months' time, after which a report was prepared for use at the ship power hearing of November 11, 1938.

2. *Preparation of ground wave field intensity charts.*—For use in connection with the Standards of Good Engineering Practice Governing Standard Broadcast Stations.

3. *Study of the distribution of received sky wave field intensities of broadcast stations with time.*

4. *Interference to broadcast reception caused by atmospheric noise.*

5. *Eleven-Year sunspot cycle recording program.*—An accurate knowledge of field intensity and of atmospheric noise is essential in order to have a measure of the present service areas of broadcast stations and a measure of the expected improvements of any proposed re-allocations. This program involves the measurement of approximately 20 different broadcast stations by the Commission's monitoring stations at Baltimore, Grand Island, and Portland, Oreg. The survey, if continued over the sunspot cycle as contemplated, will constitute the most extensive and comprehensive investigation of radio wave propagation ever made.

6. *Investigation of the performance and reliability of automatic alarms used on board ship for the reception of distress signals.*

7. *Investigation of the methods of measuring field intensity and noise at the various frequencies utilized by the different radio services.*

8. *Comparative study of frequency modulation and amplitude modulation.*—Demonstrations, through actual field tests of the results of frequency modulated transmissions as compared to amplitude modulated transmissions, that have been witnessed by members of the Commission, have revealed many interesting factors requiring serious study. Most impressive of these is the substantial improvement with respect to freedom from noise caused by the ignition systems of automobiles, also demonstrations indicating the possibility of operating frequency modulated transmitters in different cities on the same frequency while at the same time providing service areas practically free from interference.

9. *Investigations of the extent and of the necessary methods of minimizing the interference being caused to radio communications by the operation of diathermy and other electromedical apparatus.*—Complaints of interference to radio reception caused by the operation of therapeutic machines have increased materially during the year. A thorough study of the known methods of eliminating the interference at the source through the use of filters and metallic screens was made by the Commission's field force during the year from which it is known that from an engineering standpoint the solution of the problem is simple. From the standpoint of the manufacturers and the medical profession the solution is encumbered with economic and practical

difficulties. The extreme importance of the use of surgical and medical diathermy apparatus to the medical profession and the public in the preservation of health and life is unquestioned. Unquestioned also—and for the same reason, the preservation of life and property—is the necessity that a reasonable solution of the problem be found promptly so that interruption to the service of the vital communication circuits of the Nation caused by this type of interference may be eliminated.

10. *Carrier call apparatus.*—As mentioned in the Fourth Annual Report, preliminary investigations of the operation of carrier call apparatus, designed primarily for interoffice communication, showed that this type of equipment is capable of causing a considerable amount of interference to radio reception. Later tests of equipment made by a number of manufacturers have indicated, however, that if operation is confined to frequencies within the range of approximately 60 to 300 kilocycles, and if correctly designed filter circuits are installed and maintained in proper operation, these devices could be operated without causing objectionable interference.

11. *Low power radio frequency devices.*—As a result of the increased use of many different types of low-power radio frequency electrical devices for alarms, phonograph-record-playing and remote-control purposes, an informal engineering conference was held at the Commission's offices in Washington on September 19, 1938, for the purpose of considering proposed rules and regulations governing their operation. The rules and regulations were based on certain radiation characteristics of importance in regulating the operation of the devices so as to prevent interference to radio reception.

The rules and regulations were tentatively adopted by the Commission. The tests of the apparatus made by the Commission's field offices have indicated that if the rules and regulations are strictly complied with the devices may be used without causing interference to established radio services.

7. PUBLICATIONS

Publications prepared and released by the Commission during the fiscal year included the Report of the Commission on the Special Telephone Investigation, various parts of the Rules and Regulations, including the Standards of Good Engineering Practice applicable to Standard Broadcast Stations and to Ship Radio Services, and volume 5 of the Federal Communications Commission Reports. [A list of publications relating to the work of the Commission, appears in the appendixes.]

Volume 5 covers the decisions and reports of the Commission for the period November 16, 1937, to June 30, 1938, and contains the Commission's decisions in 140 cases. The compilation of volume 6, covering the period June 30, 1938, to February 28, 1939, was in preparation at the end of the fiscal year.

A number of factors combined to make necessary the complete revision of all the Commission's rules. This important and laborious undertaking was begun in 1938 and completed (except for final printing) by the close of the fiscal year 1939. Fundamental changes in the Commission's decision processes, which have already been discussed, necessitated revision of the Rules of Practice. The adoption by the Federal Courts of the revised Federal Rules of Civil Procedure prompted further revisions.

Technical advances in the art and developments of a national and international character in the use of the frequencies available for *broadcasting brought about a complete overhaul* of the rules affecting the broadcast services. Many of the remaining provisions of the Commission's substantive Rules and Regulations had been carried over from the Federal Radio Commission and the Interstate Commerce Commission. Some were out of print and for other reasons they were difficult of ready access. Also provisions had become obsolete, and as to others the need for revision had become apparent on the basis of informative reports, investigations, developments in hearings, and other researches conducted by the Commission.²

Accordingly the Commission during the fiscal year devoted special attention to the complete revision of its rules, collecting them in a logical arrangement, with systematized section numbers. All the revisions have been published in the Federal Register, and in addition, they are in process of being printed in convenient pamphlet form, suitable for inclusion in a single volume of all the Commission's rules.

² The description of the new rules and regulations relating to a particular service is contained in the part of this report dealing with such service. For example, a review of the provisions of the new rules governing standard broadcast stations is contained elsewhere in this report.

CHAPTER III

Regulation of Telephone and Telegraph Carriers

1. INTRODUCTION
2. TELEPHONE INVESTIGATION
3. RATES AND TARIFFS
4. SUPERVISION OF ACCOUNTS
5. FINANCIAL AND OTHER STATISTICAL DATA
6. COMPLAINTS AND INVESTIGATIONS
7. EXTENSION OF FACILITIES
8. TECHNICAL DEVELOPMENTS
9. TELEPHONE DISASTERS
10. LITIGATION

1. INTRODUCTION

All telephone and telegraph companies engaged as common carriers for hire in interstate or foreign communication by wire or radio are subject to the jurisdiction of the Commission. The regulation of matters having to do with their operations as common carriers, such as rates and tariffs, supervision of accounts, complaints, and investigations, etc., is discussed herein both as to companies which operate by wire and as to companies which operate by radio. The licensing of radio facilities to telephone and telegraph carriers, however, is discussed hereinafter.

The discussion which follows includes those matters which were the subject of hearings before the Commission or its staff and revisions of rules and regulations directly related to rates and tariffs. Elsewhere in the report are contained matters relating to hearings and the adoption of rules concerning the licensing function of the Commission in connection with telephone and telegraph carriers.

2. TELEPHONE INVESTIGATION

The telephone investigation, instituted in 1935, has been completed and the Commission, under date of June 14, 1939, forwarded to Congress its final report. This report has been printed as House Document No. 340, Seventy-fourth Congress.

The report suggests certain amendments to the Communications Act for the purpose of clarification, and also amendments to enlarge the Commission's authority over the telephone industry. This report also contains a detailed discussion of the problems in the regulation of the telephone industry, particularly the Bell System. The investigation has resulted in the development and the analysis of a large and important fund of data which is ample to form the foundation upon which adequate regulatory machinery may be constructed. Data developed have proved of value to State commissions in meeting the problems with which they are confronted in the regulation of intrastate rates of telephone companies.

The preliminary report was made by Commissioner Walker, chairman of the former Telephone Division of the Commission. The Commission has pending before it at this time a proceeding involving interstate rates of the Pacific Telephone & Telegraph Co., covering business originating and terminating in the State of Washington. The successful conduct of this proceeding depends, of course, upon adequate personnel, and demonstrates the necessity of keeping the material gathered by the special investigation in a current condition available for use in the regulation of rates as the necessity arises.

The savings to telephone subscribers resulting from this special investigation now approximate \$30,000,000, and it is essential, if the telephone subscribers are to continue to receive the benefit of effective regulation, that sufficient funds be provided to enable the work commenced by the special investigation to be carried on.

Congress appropriated originally \$750,000 for the telephone investigation. This was supplemented by two additional appropriations of \$400,000 and \$350,000, respectively. During the period of the investigation, when additional funds were suggested for permanent organization for telephone regulation, the Commission was advised that such appropriations were not needed during the period of the investigation but that Congress should have definite recommendations growing out of the investigation, both as to the character of regulatory work to be done and the amount of money needed therefor. Now that the telephone report has been submitted to Congress, together with certain recommendations of the Commission, it is obvious that if there is to be effective regulation increased funds and expanded personnel are needed.

3. RATES AND TARIFFS

RATE SCHEDULES

On June 30, 1939, 230 communication carriers had tariffs and concurrences on file with the Commission. During the fiscal year they filed 16,746 tariff publications (books, pamphlets, and loose-leaf tariffs, revised loose-leaf pages, and concurrences), containing changes in rates, regulations, practices, and classifications of service or establishing new communication services, also 357 new or revised instruments of concurrence whereby some carriers adopted as their own certain tariffs of other carriers. Of the total number of tariff publications filed, 10,868 related to telephone services, 3,552 related to telegraph services, and 2,326 related to both telephone and telegraph services. A total of 28 tariff publications were rejected for failure to conform to statutory requirements.

These tariffs and concurrences were carefully examined and studied with a view to the discovery and correction of rates and regulations therein which might appear to be unjustly discriminatory or otherwise unlawful. Numerous irregularities in the rate schedules were corrected or eliminated through correspondence with the carriers, in connection with which 689 letters were written.

During the year special and successful effort was made to secure the filing by international carriers of tariff schedules of rates and regulations applicable to inbound-communication service from foreign countries to the United States and its territories and possessions.

The Commission continued to make copies of the tariff schedules available for inspection by the public. An increased use of these facilities was noted.

INVESTIGATIONS AND SUSPENSIONS

Volume rates.—In four instances, schedules of charges of telegraph carriers were suspended or ordered investigated where the charges for the same communication service differed solely because of differences in the number of words offered by the users for transmission during a fixed period. In each case the carrier voluntarily amended its schedules and the proceedings were dismissed.

Allowances.—The tariff schedules of two telegraph carriers which proposed to effect allowances for non-communication services performed by users were suspended. The carriers withdrew the proposed schedules and the orders of suspension were vacated.

Non-communication-service charges.—The schedules of charges of five radiotelegraph carriers relating to the transmission of multiple-press or news service were made the subject of an order of investigation because the published charges included the charges for both the communication service and the news itself. Revised tariff schedules containing only the communication-service charges were filed and the order of investigation was vacated.

Multiple-address service.—The charges, practices, classifications, and regulations for and in connection with multiple-address press services to outlying territories and possessions of the United States were the subject of investigation and hearing. At the close of the fiscal year a decision was pending with regard to this matter.

Reforwarding of messages.—The regulations and practices of the telegraph carriers concerning the reforwarding of telegraph messages were the subject of investigation and hearing. At the close of the fiscal year a decision was pending with regard to this matter.

Ship-telephone service.—The schedules of charges of two carriers relating to the furnishing of radiotelephone service to and from vessels on the Great Lakes have been suspended or ordered investigated. At the close of the fiscal year hearings on this matter were pending.

Interzone telephone rates.—An investigation is pending regarding the action of one large telephone carrier in withdrawing from publication certain rates for interstate telephone service to and from points in the vicinity of a large metropolitan area, and the establishment by such carrier of alleged local exchange service through the extension of the local service area of the metropolitan center for considerable distances in order to include the interstate points mentioned. The question at issue is of importance in the case of various other large metropolitan areas in the United States located at or near State boundaries, and may involve the question of whether, through such an arrangement, telephone carriers would be able to avoid the jurisdiction of the Commission in many of their activities. At the close of the fiscal year this matter had been designated for hearing.

Concurring carriers.—Schedules of charges were suspended in one instance when such schedules proposed to discontinue certain carriers as "concurring carriers" on the alleged ground that such carriers had become "agents" of the filing carrier. This matter was pending at the close of the fiscal year.

RATE CHANGES

Among the changes in communication rates or services during the fiscal year the following items are worthy of note: Ship-telephone service was enlarged in scope and reduced rates were made applicable; radiotelephone service to and from ships on the Great Lakes was enlarged; message toll telephone service to Newfoundland was established; direct radiotelephone service to Australia was inaugurated; "radio-mail" service was discontinued as a classification of service; and telemeter service was extended to additional points.

4. SUPERVISION OF ACCOUNTS

ACCOUNTANTS NEEDED FOR FIELD SERVICE

Accomplishments in the matter of regulating the accounts of communication carriers have been confined largely to the development

and prescription of accounting regulations and have not included adequate field examinations to enforce these regulations and to assemble necessary factual data. For instance, during a prior fiscal year, the Commission pioneered in the matter of prescribing accounting regulations requiring telephone carriers to restate their plant accounts on the basis of original cost, and, during the present fiscal year, prescribed similar regulations for radiotelegraph carriers.

However, the Commission has been without sufficient funds to provide an adequate force in the field to examine the records of the carriers for the purpose of testing compliance with the prescribed accounting rules or for the other regular and continuing duties contemplated by section 220 of the act (relating to the accounts and records of communication carriers) and by section 215 of the act (relating to the accounts and records of affiliated companies including manufacturing subsidiaries and others furnishing equipment, supplies, or services, the cost of which affects or may affect the rates charged for communication service). It is important to effective regulation to be able to gather the information and facts upon which the Commission must rely at first hand through its representatives, and by direct access to the accounts and records of carriers, manufacturing subsidiaries, and others contemplated by these sections of the act. Otherwise, the Commission is forced to rely upon ex parte statements made in response to questionnaires and inquiries.

ACCOUNTING REGULATIONS

The activities of the Commission in the matter of regulating the accounts of communication carriers during the fiscal year, as in previous fiscal years, were confined largely to the prescription of accounting regulations rather than to field enforcement, which latter activity was not possible to a satisfactory extent because of the limited funds available to the Commission. Among the Commission's activities in the matter of accounting regulations were the following:

Uniform system of accounts—radiotelegraph carriers.—A draft of a uniform system of accounts for radiotelegraph carriers having average annual operating revenues in excess of \$50,000 was completed during the year and was prescribed, to be effective January 1, 1940. While this system was not made effective for the smaller carriers having average annual operating revenues of \$50,000 or less, it is expected that such carriers will voluntarily adopt it in principle and will apply its provisions insofar as they are applicable to their affairs. This is the first uniform system of accounts that has been prescribed for radiotelegraph carriers.

Uniform system of accounts—class C telephone carriers.—A uniform system of accounts for class C telephone carriers was prescribed by the Commission in June 1938, and became effective January 1, 1939. Class C telephone carriers are those having average annual operating revenues exceeding \$25,000 but not exceeding \$50,000. This uniform system of accounts is an abridged system designed for the practical use of the smaller telephone carriers.

Uniform system of accounts—wire-telegraph and ocean-cable carriers.—Wire-telegraph and ocean-cable carriers are now subject to a uniform system of accounts that was prescribed by the Interstate Commerce

Commission in January 1914. It is contemplated, however, that a revised uniform system of accounts for such carriers will be prescribed during the coming year. There are several intercorporate and other situations that should receive thorough study prior to the issuance of this revised system.

Restatement of plant accounts on basis of original cost.—The recently issued uniform system of accounts for radiotelegraph carriers mentioned above contains a requirement that these carriers restate their plant accounts on the basis of original cost, and such a requirement is also contained in the uniform system of accounts for the larger telephone companies that was prescribed by this Commission effective January 1, 1937.

The telephone carriers are now in the process of restating their accounts for the purpose of complying with the foregoing requirements. The restatement creates a difference to be disposed of as directed by the Commission, with due regard to all the pertinent facts concerning its component parts.

Depreciation.—Accounting studies have been actively pursued with respect to depreciation with a view to the formulation of appropriate accounting regulations therefor. The cost of furnishing communication service for the year 1937 included approximately \$181,000,000 as depreciation expense. The justification for such charges rests on the fact that they represent portions of the original investments consumed in the public service and form an appropriate part of the cost of rendering such service. It is, therefore, important that the depreciation expense entering into the cost of furnishing service be limited to amounts consistent with the base on which a fair return is allowed to be earned, which can only be determined after extensive studies.

Relief and pensions.—Comprehensive financial, actuarial, and accounting data were prepared and testimony was presented by members of the accounting staff in connection with the hearing in Docket 5188, *In the Matter of Additional Charges to Operating Expense Account 672 (Relief and pensions) in the Uniform System of Accounts for Telephone Companies.*

The study of the data submitted by telephone and telegraph carriers with respect to their several relief and pension plans pursuant to a previous outstanding order of the Commission was being continued at the end of the fiscal year, and the announcement of a decision as to compliance with applicable regulations, as revealed by these data, was being withheld pending a decision in Docket 5188, which will be the controlling factor in the interpretation of a number of controversial points.

Cost accounting.—The uniform system of accounts for radiotelegraph carriers, hereinbefore referred to, was designed with a view to the possible superimposing of cost-accounting routines. As indicated, however, by the first recommendation in the Commission's Report on the Telephone Investigation transmitted to the Congress on June 14, 1939, the most important field for cost-accounting developments is believed to be that of the associated manufacturing companies.

Accounting studies have been continued looking to the development of data bearing on the reasonableness of the "spread" between the costs of manufacturing and furnishing equipment and supplies by companies under direct or indirect common control with communica-

tion carriers on the one hand, and the prices at which these items are sold to such carriers by their respective affiliates, on the other hand.

Continuing property record.—Progress has been made in connection with developing a system of records designed for the purpose of recording changes in telephone property and the cost associated therewith, as required by the Commission's regulations.

Miscellaneous.—The accounting features involved in 62 applications by common carriers for extensions of lines and acquisitions of property were examined and reported upon during the year.

Attention was also given to accounting or financial considerations involved in 68 applications of radiotelegraph carriers for various authorizations from the Commission, such as construction permits for new stations and for changes in equipment.

FIELD EXAMINATIONS

During the year general examinations were made of the accounts of 2 ocean-cable carriers and 1 radiotelegraph carrier, and 10 special examinations along particular lines were concluded. These 3 general examinations marked the first time that a regulatory body had examined the accounting practices of these companies.

COOPERATION WITH STATE AND OTHER FEDERAL REGULATORY BODIES

A policy of active cooperation with State and other Federal regulatory bodies, including the National Association of Railroad and Utilities Commissioners, has been pursued in all matters relating to the regulation of telephone and telegraph accounts and in the development of a form of report that would meet the requirements of both State and Federal authorities, thus tending to reduce the number of reports to be filed by common carriers. This subject is touched upon in the Federal Communications Act of 1934 and cooperation between the respective Federal and State commissions has been generally practiced since the inception of the Commission. The first important example was the promulgation of accounting rules which were adopted after cooperative conferences between the former Telephone Division and State commission representatives, and which rules were affirmed by both the Federal Court for the Southern District of New York and the Supreme Court of the United States.

During the last year, this Commission has cooperated regularly with the State commissions on accounting matters.

It has also cooperated in litigation involving both state and interstate jurisdiction. An example in point is litigation pending before the Department of Public Service of the State of Washington involving rates of the Pacific Telephone & Telegraph Co. and the complaint of the Department of Public Service of Washington before this Commission, attacking interstate rates, charges, and practices of the Pacific Telephone & Telegraph Co. between points in the State of Washington on one hand and points in the remainder of the territory of the Pacific Telephone & Telegraph Co. on the other hand.

Subsequent thereto this Commission, on its own motion, instituted an investigation into the rates, charges, classifications, services, and practices of the Pacific Telephone & Telegraph Co. throughout the territory covered by that company. An invitation was extended by this Commission to the State telephone regulatory authorities of the

States of Washington, California, Oregon, Idaho, and Nevada to cooperate therein, and these States have indicated their intention of so doing.

This policy of cooperation was also pursued with the view of coordinating the accounting rules applicable to the regulation of all public utilities in so far as it may be appropriate to apply similar principles to each class of utility.

5. FINANCIAL AND OTHER STATISTICAL DATA

ANNUAL AND MONTHLY REPORTS

Annual reports for the calendar year 1938 were filed by a total of 170 companies. Of this number, 92 were telephone carriers, 15 were wire-telegraph and ocean-cable carriers, 19 were radiotelegraph carriers, and 44 were holding companies. Monthly reports were filed during this period by 91 telephone carriers, 8 wire-telegraph and ocean-cable carriers, and 9 radiotelegraph carriers.

In the case of telephone carriers, only those having average annual operating revenues in excess of \$50,000 were required to file annual reports and only those having such revenues in excess of \$250,000 were required to file monthly reports. All telegraph carriers subject to the jurisdiction of the Commission were required to file annual reports, but only those having average annual operating revenues in excess of \$50,000 were required to file monthly reports. The large telephone carriers having such revenues in excess of \$1,000,000 were required to file additional monthly reports showing various income and balance-sheet items. The matter of designing a brief annual report form for small telephone carriers having average annual operating revenues not exceeding \$50,000 was receiving attention at the close of the fiscal year.

Among the changes in the annual report form prescribed for telephone carriers was the inclusion of a schedule requiring the showing of data concerning radiotelephone service pertaining principally to service between points in the United States and points in foreign countries or between the United States and ships at sea.

STATISTICAL COMPILATIONS AND PUBLICATIONS

The following regularly published statistical summaries were compiled by the Commission during the fiscal year:

Selected financial and operating data from the annual reports of telephone carriers for the year ended December 31, 1937.

Selected financial and operating data from the annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1937.

Summary of the monthly reports of large telephone carriers in the United States.

Operating data from the monthly reports of telegraph carriers.

Salary report of telephone and telegraph carriers, and holding companies, 1937.

Telephone hand-set charges and changes since January 1, 1938.

Selected financial data from the annual reports of holding companies controlling carriers.

Intercorporate relations of carriers and controlling companies, 1938, including an index to companies.

Various other statistical data were compiled during the fiscal year, which included the following: (1) Statements regarding the holdings of the thirty largest stockholders in four of the major communication

carriers, (2) statistical data concerning domestic and international traffic to and from the principal countries of the world, and (3) a special study of the traffic of American companies operating in South America, Central America, and the West Indies. In addition, responses were made to numerous inquiries by the public, embracing statistical data shown by reports filed with the Commission and held open for public inspection.

COMPARATIVE DATA RELATING TO COMMON CARRIERS

Comprehensive statistical data pertaining to the communication industry are shown in the appendixes of this report. Some of the important financial and operating data concerning 73 class A telephone carriers operating in the United States, and 34 telegraph, cable, and radiotelegraph carriers for the calendar year 1938, and comparisons with similar information for the calendar year 1937, are shown below:

*Class A telephone carriers*¹

Item	1938	1937	Increase or decrease	
			Amount	Ratio, percent
Investment in telephone plant.....	\$4, 783, 082, 079	\$4, 678, 893, 476	\$104, 188, 603	2. 23
Capital stock.....	\$4, 284, 792, 921	\$4, 276, 220, 332	\$8, 572, 589	. 20
Funded debt.....	\$1, 031, 567, 735	\$941, 509, 080	\$90, 058, 655	9. 57
Depreciation reserve.....	\$1, 316, 367, 516	\$1, 262, 171, 574	\$54, 195, 942	4. 29
Total surplus.....	\$362, 922, 201	\$390, 180, 025	-\$27, 257, 824	-6. 99
Operating revenues.....	\$1, 139, 737, 155	\$1, 138, 132, 784	\$1, 604, 371	. 14
Operating expenses.....	\$783, 964, 478	\$774, 549, 427	\$9, 415, 051	1. 22
Operating taxes.....	\$151, 692, 583	\$142, 167, 406	\$9, 525, 177	6. 70
Net operating income.....	\$204, 052, 989	\$221, 416, 111	-\$17, 363, 122	-7. 84
Total interest deductions.....	\$54, 125, 410	\$52, 182, 146	\$1, 943, 264	3. 72
Dividends declared.....	\$338, 175, 841	\$351, 031, 702	-\$12, 855, 861	-3. 66
Miles of wire.....	87, 395, 243	85, 525, 108	1, 870, 135	2. 19
Number of telephones.....	17, 431, 353	17, 005, 401	425, 952	2. 50
Number of employees at close of year.....	285, 550	295, 088	-9, 538	-3. 23
Total compensation of employees.....	\$501, 504, 752	\$488, 797, 654	\$12, 707, 098	2. 60

Telegraph, cable, and radiotelegraph carriers

Item	1938	1937	Increase or decrease	
			Amount	Ratio, percent
Investment in plant and equipment.....	\$537, 843, 572	\$536, 383, 818	\$950, 754	. 18
Capital stock.....	\$165, 189, 841	\$172, 910, 813	-\$7, 720, 972	-4. 47
Unmatured funded debt.....	\$111, 026, 210	\$114, 740, 018	-\$3, 714, 708	-3. 24
Reserve for accrued depreciation.....	\$166, 552, 579	\$162, 340, 960	\$4, 211, 619	2. 59
Total corporate surplus.....	\$67, 194, 086	\$70, 116, 329	-\$2, 922, 243	-4. 17
Operating revenues.....	\$133, 650, 346	\$146, 299, 718	-\$12, 649, 372	-8. 65
Operating expenses.....	\$120, 074, 182	\$126, 515, 291	-\$6, 441, 109	-5. 09
Operating taxes.....	\$7, 955, 671	\$7, 626, 530	\$329, 141	4. 32
Operating income.....	\$5, 109, 741	\$11, 460, 700	-\$6, 350, 959	-55. 42
Total interest deductions.....	\$8, 553, 738	\$8, 753, 388	-\$199, 650	-2. 28
Dividends declared.....	\$642, 210	\$4, 496, 257	-\$3, 854, 047	-87. 94
Miles of wire.....	2, 428, 245	2, 428, 750	-505	-. 02
Number of revenue messages transmitted.....	205, 382, 652	222, 431, 477	-17, 048, 825	-7. 66
Number of employees at close of year.....	65, 673	72, 820	-7, 247	-9. 96
Total compensation of employees.....	\$82, 793, 030	\$90, 413, 563	-\$7, 620, 533	-8. 43

¹ Class A. telephone carriers are those having average annual operating revenues exceeding \$100,000. Note--Dash [-] indicates deficit or other reverse item.

6. COMPLAINTS AND INVESTIGATIONS

A large number of investigations covering a wide range of subjects, including rates, charges, services, discrimination, and other related matters have been conducted during the year. Many of such complaints have been satisfactorily adjusted without the necessity of formal proceedings and in other cases the matters were adjusted before a hearing was actually held.

A considerable number of complaints were received during the year, a large number of which, as in previous years, relate to local telephone exchange or intrastate toll service over which this Commission has no jurisdiction. When such a complaint relative to a matter outside the jurisdiction of the Commission is received, the complainant is so advised and referred to the proper local or State regulatory authority.

INVESTIGATIONS AND SUSPENSION CASES

In addition to the investigations made upon complaints filed, the Commission has conducted a number of investigations upon its own motion. During the past fiscal year, investigation and suspension cases were instituted in connection with tariff schedules filed by telegraph carriers, both wire and radio, and radiotelephone carriers. In a majority of such cases, the carriers withdrew the objectionable features of the tariffs prior to the date of hearing and the proceedings were dismissed. Among the investigation and suspension cases now before the Commission is one involving the radiotelephone rates and service furnished to ships operating on the Great Lakes.

WIRE FACILITIES USED IN CONNECTION WITH BROADCASTING

Complaints relative to charges and practices in connection with program transmission channels furnished by telephone companies for use in connection with radiobroadcasting have been received during the year. Several concerned the restrictive provisions of the Bell System tariffs covering program transmission service for broadcast stations. One of especial interest involved the refusal of a telephone company to permit a broadcast station to interconnect wire facilities furnished by a telegraph company to such station, with channels furnished by the telephone company.

INTERSTATE TOLL RATES

The Department of Public Service of the State of Washington has filed with this Commission a complaint against the rates, charges, and practices of the Pacific Telephone & Telegraph Co. with respect to the interstate service between points within the State of Washington and points without said state. The matter is now pending before the Commission.

GOVERNMENT RATES

Postal Telegraph-Cable Company, The Western Union Telegraph Co., and Mackay Radio & Telegraph Co. petitioned the Commission for increase in rates charged for domestic telegrams between Government departments and their officers and agents. The Commission has ordered that the presently effective rates for the handling of United States Government telegraph messages, as promulgated by its order

No. 41, effective July 1, 1938, be continued in effect commencing July 1, 1939, pending decision and the further order of the Commission.

EXCHANGE AREAS

During the year the Commission, on its own motion, directed that an investigation be instituted with respect to the enlargement of the Kansas City exchange area served by Southwestern Bell Telephone Co. The question involved is the jurisdiction of this Commission over interstate-interzone message rates in the extended Kansas City exchange area, under the provisions of section 221 (b) of the Communications Act. The Kansas and Missouri State Commissions have been invited to participate in the hearing.

UNREASONABLE PRACTICES

A complaint filed with the Commission by Licht & Kaplan, Inc., charged that the Postal Telegraph-Cable Co. has employed practices which are unreasonable and, therefore, illegal, and which caused complainant to suffer damages from failure of the company to deliver a telegram. No award of damages by the Commission was asked for, and the complainant expressly reserved the right to proceed in the courts for the recovery of his damages if and when the Commission makes a finding that the practice complained of is illegal. No decision has yet been rendered by the Commission.

CLASSIFICATION

In 1936 several of the wire and radio carriers filed with the Commission a petition attacking the lawfulness of the "radiomail" classification offered by Globe Wireless, Ltd. Globe Wireless, Ltd., in 1938 filed new tariffs with the Commission canceling the then effective tariffs and establishing classifications, regulations, and practices generally recognized by international convention and comparable to those of the other American telegraph carriers. Whereupon the Commission dismissed this and related proceedings upon motion of the parties, April 24, 1939.

7. EXTENSION OF FACILITIES

The Communications Act provides that the Commission may, in its discretion, grant certificates of public convenience and necessity for the construction, extension, and transfer of wire facilities and the supplementing of existing facilities in connection with the regulation of wire carriers. In addition to the extensions of wire facilities made during the current year, several extensions of radiotelephone and radiotelegraph service were also made.

WIRE TELEPHONE

The applications for extension of lines or facilities from telephone carriers handled during the current year include those for (1) acquisition and construction under section 214; (2) the supplementing of existing facilities under the second proviso clause of section 214 (a); and (3) authority to consolidate under section 221 (a). These applications totaled 49 for the year and the major portion thereof was filed by the Bell System, only four being filed by other companies.

The expenditures in connection with the individual projects ranged from a few thousand dollars to \$2,382,000 and totaled \$6,960,123.

ACQUISITION UNDER SECTION 214

The application of the Michigan Bell Telephone Co. to acquire certain toll facilities of the American Telephone & Telegraph Co. on the Kalamazoo-Niles toll lines in the State of Michigan was granted.

SUPPLEMENTING OF EXISTING FACILITIES UNDER SECTION 214

The second proviso of section 214 (a) gives the Commission power to authorize the supplementing of existing facilities without regard to the other provisions of the section, requiring hearings, notices, etc. During the year 46 applications were received under this proviso, requesting authority to supplement existing facilities. Forty-five of these were analyzed and approved by the Commission.

This represents an increase over any previous year, both in total expenditure and miles of toll cable constructed. The following table reflects the totals mentioned:

Wire-telephone applications approved by the Commission from July 1, 1934, to June 30, 1939

Period	Number of applications	Estimated construction cost	Miles of cable placed	Miles of open wire
July 1, 1934, to June 30, 1935.....	7	\$1, 145, 851	1 234. 3	-----
July 1, 1935, to June 30, 1936.....	15	275, 625	24	475
July 1, 1936, to June 30, 1937.....	50	5, 551, 702	206	17, 045
July 1, 1937, to June 30, 1938.....	45	3, 921, 000	499	1, 212
July 1, 1938, to June 30, 1939.....	45	6, 960, 123	646	1, 967
Total.....	162	17, 854, 301	1, 639. 3	20, 699

¹ Of which 94.5 miles are coaxial cable containing 2 coaxial units.

² Of which 195 miles are coaxial cable containing 4 coaxial units.

PETITIONS FOR AUTHORITY TO CONSOLIDATE UNDER SECTION 221 (A)

Section 221 (a) of the act provides that telephone carriers desiring to consolidate their properties may file with the Commission a petition requesting a certificate to the effect that the proposed consolidation, merger, acquisition or control of the property of one or more telephone companies by another will be of advantage to the persons to whom service is to be rendered, and in the public interest. Such a certificate exempts the carriers from the provisions of the antitrust laws.

WIRE TELEGRAPH

The number of applications for the extension of wire-telegraph facilities filed with the Commission under section 214 of the act continued to be small during the past fiscal year. Nineteen (19) such applications granted authorized the leasing and operation of telegraph wire circuits, none of which involved new construction. A total of 76½ leased circuit miles was authorized for permanent use and 208½ leased circuit miles for temporary operation. There were three applications of this class pending at the close of the fiscal year.

8. TECHNICAL DEVELOPMENTS

TECHNICAL DEVELOPMENTS IN WIRE TELEPHONE

During the past year many technical developments and improvements were effected in wire-telephone communication, a few of the more important of which are as follows:

New York-Philadelphia coaxial system.—A number of experiments and tests were performed over the New York-Philadelphia coaxial cable system. With the 2 megacycle repeater equipment installed at 5 mile intervals, it was found that it was possible to superpose 480 simultaneous two-way telephone channels on this cable. Satisfactory test conversations were held over a circuit 2,100 miles in length built up by looping back and forth through the coaxial system a total of 20 times. The conversation employed channels located in different parts of the frequency band between 100 and 1,900 kilocycles, and passed 20 times through each amplifier.

Stevens Point-Minneapolis coaxial cable.—After the tests on the New York-Philadelphia cable proved to be successful, the American Telephone & Telegraph Co., the Wisconsin Telephone Co., and the Northwestern Bell Telephone Co. obtained authority for the installation of a coaxial cable between Stevens Point, Wis., and Minneapolis, Minn., a distance of 195 miles. This cable is to be a link in the Northern Transcontinental Toll Route. The cable is now being installed and consists of 4 coaxial units together with a small number of wire conductors, which will be used largely for regulation of equipment installed on the cable. The 4 units will provide two paths of transmission in each direction. The two complete paths will permit arrangement of the carrier systems so that, in the event of trouble occurring on one path, the system on that path may be switched to the other, thus affording greater continuity of service.

Carrier systems.—There has been considerable activity in the development of new and the improvement of existing carrier-telephone systems in this country during the past year. This has been particularly true in connection with the type J carrier system which operates on a pair of open wires and also with the type K carrier system which operates on two pair of wires in cable. Both of these systems provide for 12 telephone channels in each direction. In the past year, a number of these systems have been placed in operation in this country. A few of the more important are the installation of the type J system on the Fourth Transcontinental Route between Oklahoma City, Okla., and White Water, Calif.; the installation of the type J system between West Palm Beach, Fla., and Charlotte, N. C.; and the installation of type K system between Charlotte, N. C., and New York.

A single-channel carrier system (type H) has been developed which is capable of economically spanning distances between 50 and 200 miles and operates on either battery or A. C. power supply. The terminal equipment is much more compact than any other single-channel system. Besides reduction in size, it is lower in cost and includes a number of improvements in transmission performance. This system is particularly useful in supplying an additional circuit to care for seasonal or peak loads and is portable enough to be used in case of storms and other emergencies.

Vocoder.—A new device, which does not transmit speech as a telephone or microphone but, after changing it into electrical energy, uses the energy to operate a mechanism that artificially builds up speech, at the same time varying the frequency and intensity to give the desired transmission. While this device may find uses in other fields, the motive of the experimenters is to reduce speech to a monotone which can be transmitted in a band about 25 cycles wide, as contrasted with a speech band of 3,000 cycles, permitting possible simultaneous transmission of a number of telephone messages over a single telephone channel.

Cross-bar switching system.—During the year considerable developments have been made in the dial-telephone central-office switching system employing the cross-bar or coordinator switch. A number of installations of this system have been made in offices capable of serving 10,000 subscriber lines. This system offers important improvements in telephone switching, both in operation and maintenance. Central offices of the cross-bar type can be installed in the same building with existing panel central offices without loss in operating economies in either type of office.

TECHNICAL DEVELOPMENTS IN WIRE TELEGRAPH

The wire-telegraph carriers have continued their engineering work on multiplex, varioplex, and carrier-current circuits, and equipment to increase the number of telegraph channels obtainable from their existing wire plant. Telemeter service has been extended to a number of additional cities by means of varioplex channels.

A dry conducting recording paper which is sensitive to electric currents has been developed for facsimile so that it is possible instantly to record drawings, sketches, or written matter without further processing. Automatic facsimile transmitting equipment has been developed by means of which material in sheet form, when inserted in a slot in the machine, is wrapped around the transmitting drum and transmitted to the receiving office. The receiving machine receives the copy, drops the completed message into a basket ready for delivery and sets itself in readiness for receiving the next transmitted message.

Although facsimile is available to the general public for transmission between certain cities, there has been a very limited demand for this type of service. This method of operation is being used experimentally as a means of pick-up and delivery of regular telegrams between branch offices and the main telegraph office in a city, or between the main office and offices of customers to determine the economies of using facsimile to replace the expensive teleprinters used for this purpose.

A service for the transmission of photographs and facsimile material has been recently established from London to New York over ocean-cable facilities. The system is capable of transmitting a picture six by seven inches in twenty minutes.

9. TELEPHONE DISASTERS

During the past year sleet storms, floods, and hurricanes of almost unprecedented severity occurred in sections of the United States. Telephone lines were demolished, central offices were flooded and

service was disrupted. Even under such conditions telephone service was maintained wherever possible; repairs were made and service resumed as soon as practicable.

The New England hurricane of September 1938 was the most severe disaster which has ever confronted the telephone industry; Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine, also New York, and New Jersey were affected. It is estimated that over 600,000 telephones were put out of service and over 241 telephone central offices were cut off from outside service, with a telephone-property damage of about \$10,000,000. More than 2,300 telephone workers and 615 automobiles and trucks were called into the area from States as far west as Nebraska and North Dakota, and as far south as Virginia and Arkansas.

Radiotelephone service played an interesting and important part in bridging gaps in telephone service. The permanent radio link between Green Harbor (near Boston) and Provincetown, Mass., afforded the only telephone communication between Cape Cod and the outside areas. Portable short-wave equipment, which had been recently developed, the use of which had been authorized by this Commission, was used to furnish service between Block Island and Newport, R. I., between Gardner, Mass., and Keene, N. H. Additional use of this equipment was made at Westerly, R. I., and small isolated points in Massachusetts.

Three days after the storm telephone toll traffic had increased to 116.5 percent at the toll boards at Boston, while in New York City traffic was 77 percent above normal for that day.

10. LITIGATION

ROCHESTER CASE

In the case of Rochester Telephone Corp. v. U. S., 307 U. S., 125, decided April 17, 1939, a bill in equity had been filed to set aside an order of the Commission classifying the Rochester Telephone Corporation as one subject to all the provisions of the act applicable to wire-telephone carriers and one not entitled to exemption under section 2 (b) (2). On appeal to the Supreme Court of the United States, the decree of the United States District Court for the Western District of New York upholding the decision of the Commission was affirmed in an opinion important both from the point of view of communications regulation, and of the principles of law involved in the so-called "negative orders" doctrine.

DRISCOLL V. EDISON POWER & LIGHT CO.

The Commission joined the Department of Justice and the Federal Power Commission in an amicus curiae brief filed in the Supreme Court of the United States in the case of *Driscoll, et al v. Edison Power & Light Company*, 307 U. S. 104.

CHAPTER IV

Regulation of Broadcast Service

1. INTRODUCTION
2. STANDARD BROADCAST SERVICE
3. TELEVISION
4. BROADCAST SERVICES OTHER THAN STANDARD
5. USE OF BROADCAST FACILITIES IN EMERGENCIES
6. COMPLAINTS AND INVESTIGATIONS
7. LITIGATION

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1. INTRODUCTION

During the year there were received in the Commission 7,334 applications for various types of authorizations for stations in the broadcast services. Of these, 1,652 were formal applications for new or increased facilities or for modification of existing authorizations, 2,290 for renewals of existing authorizations. The remaining 3,392 were informal or routine requests for authorizations for use of broadcast facilities in emergencies, for temporary use of facilities beyond the terms of existing licenses, for experimental authorizations giving promise of substantial contribution to the advancement of the radio-broadcast art, and for other miscellaneous authorizations. There are included in the appendixes, detailed statistics covering the various classes of applications handled.

The continuing growth of the broadcast industry is reflected in the number of applications granted for new broadcast stations, and for increases in the facilities of existing stations. On July 1, 1938, there were 743 standard and 4 special broadcast stations, and during the year 39 new stations were authorized and 8 deleted, so that at the close of the fiscal year, the total number of standard and special broadcast stations licensed by the Commission was 778. Seventy-six applications for standard broadcast facilities were denied after public hearings. The expansion in the remaining classes of broadcast services, which include among others, television, international broadcast, and the recently developed high-frequency and noncommercial educational broadcast services, is reflected in the statistical tables mentioned.

TOTAL NUMBER OF STATIONS

The following compilation shows the number of new stations authorized, the number of stations deleted, and the total number of stations as of June 30, 1939:

Class of station	New stations authorized	Stations deleted	Total number of stations, June 30, 1939
Broadcast.....	39	8	774
Special broadcast.....	0	0	4
Relay (low frequency) broadcast.....	64	8	199
Relay (high frequency) broadcast.....	47	38	275
High-frequency broadcast.....	6	8	46
Television broadcast.....	7	3	23
International broadcast.....	2	1	14
Facsimile broadcast.....	7	1	12
Developmental broadcast.....	3	5	12
Noncommercial educational broadcast.....	1	0	2
Total.....	176	72	1,361

The more important developments in connection with the various broadcast services, including a review of the revisions made in the rules and regulations relating to them, and matters arising out of hearings, are reflected in the following sections of this report.

2. STANDARD BROADCAST SERVICE

ALLOCATION PLAN

The basic plan of allocation of broadcast facilities in the band between 550 and 1600 kilocycles has continued unchanged insofar as the general plan of allocation of stations by frequency, power, and hours of operation is concerned. However, under date of June 23, 1939, the Commission adopted new Rules and Regulations Governing Standard Broadcast Stations (the new Rules define a broadcast station in the band 550 to 1600 kilocycles as a standard broadcast station), and the Standards of Good Engineering Practice Concerning Standard Broadcast Stations, effective August 1, 1939, which are discussed in detail in a later section of this report. It is expected that the application of those Rules and Standards will have far reaching effect on the allocation of broadcast facilities, and will materially improve and extend the standard broadcast service to the public.

DISTRIBUTION OF BROADCAST FACILITIES

Appendix F of the Fourth Annual Report gave the results of a study made as of May 1, 1938, of the distribution of broadcast facilities within the United States. This study has been continued, particularly with respect to the distribution of facilities among the several States and cities of various sizes. While the increase from 738 stations, which were in existence at the time of this study, to the present 778 has made some changes in the service within the United States, the conditions as set forth in the Fourth Annual Report were, in general, the same as at the present time. While application of the new Rules and Standards is expected to materially improve these conditions, the minimum desirable service¹ to the population of the United States cannot be realized due to a number of factors which cannot be controlled, such as the limited assignments available as compared to the demand therefor, the economic factors arising from the distribution of the population, particularly in the sparsely settled areas, and the present state of technical development of broadcasting. The distribution of standard broadcast facilities throughout the United States on the basis of authorized hours of operation as of July 1, 1939, is shown below:

	Clear	Regional	Local	Total
Unlimited time.....	33	229	272	534
Limited time.....	25			25
Daytime.....	23	37	38	98
Sharing time.....	16	36	21	73
Specified time.....	5	17	26	48
Total stations.....	102	319	357	778

DIRECTIONAL ANTENNAS

The following table shows the number of directional antenna systems in use or authorized to be installed at the close of each fiscal year from 1932 to 1939. As was pointed out in previous reports,

¹ As will be noted in the attached appendixes, it is considered that each person in the United States, regardless of his location, is entitled to a choice between at least two programs at any time during the regular broadcast day.

this type of antenna has proven very useful in reducing interference and directing the signals to desired areas, thus improving service. The new Rules and Regulations and Standards of Good Engineering Practice contemplate still more extended use of this type of antenna on regional and clear-channel frequencies. It is not considered feasible from an economic or allocation standpoint to use directional antennas in connection with local channel stations (class IV stations under the new classification). In addition to the new directional antennas indicated by the table, a number of those already installed have been readjusted, redesigned, or rebuilt in order to improve the operation or to provide for changes in conditions affecting their operation.

Number of directional antennas in use or authorized for use fiscal year ended June 30, 1939

	1932	1933	1934	1935	1936	1937	1938	1939
Stations on clear channels.....	0	2	4	7	8	9	11	14
Stations on regional channels.....	2	4	11	20	25	39	53	68
Total.....	2	6	15	27	33	48	64	82

NEW STATIONS

The following table shows the class and hours of operation of the 39 new broadcast stations which were authorized during the fiscal year:

Class of station	Hours of operation	Number
Local channel.....	Unlimited.....	24
Do.....	Daytime, sharing and specified hours.....	8
Regional channel.....	Unlimited.....	1
Do.....	Daytime.....	6
Clear channel.....	Unlimited.....	0
Do.....	Daytime.....	0
Total.....		39

NEW RULES AND REGULATIONS AND STANDARDS OF GOOD ENGINEERING PRACTICE

In the last annual report there was discussed at considerable length the proposed new and modified Rules and Regulations Governing Standard Broadcast Stations on which a hearing was held from June 6 to June 30, 1938, inclusive, at which hearing the testimony adduced extended to 2,170 pages in addition to several hundred exhibits being introduced and being made a part of the record. The testimony and exhibits were carefully studied and analyzed, and a report made thereon by the committee of Commissioners conducting the hearing to the full Commission on June 1, 1939. Oral argument was held on these rules, except with respect to the more technical ones which were considered at an engineering conference on June 5 and 6, 1939, in conjunction with the Standards of Good Engineering Practice which will be discussed later in this report. The final rules were adopted June 23, 1939, effective August 1, 1939. Several of

these rules were not operative until later dates, in order to permit licensees of existing stations sufficient time within which to comply with the new rules.

ENLARGED SCOPE OF NEW RULES

In a considerable portion of the rules no new principles were involved and only changes were made which were considered as necessary for clarity or to bring the rules in accordance with the present state of development of the broadcast art. However, there were also a number of new principles set out in order that the plan of allocation of broadcast stations within the United States would not be in conflict with the principles set out by the North American Regional Broadcasting Agreement, as well as certain other changes deemed advisable as a result of the studies of problems which have arisen during the administration of the Communications Act of 1934. The principal changes involved are:

(a) *Classes of standard broadcast channels.*—As under the former rules, the three classes of channels are clear, regional, and local. However, the new definitions establishing these classes of channels clarify the purpose of each class of channel and, in general, establish the protection provided for stations operating on these channels.

(b) *Classes of standard broadcast stations.*—The four general classes of stations established by these rules are I, II, III, and IV which are discussed in their respective order herewith.

(1) A *class I station* is defined as a dominant station operating on a clear channel and designed to render primary and secondary service over an extended area and at relatively long distances. Its primary service area is free from objectionable interference. The power of the class I station is specified as 50 kilowatts and no other stations will be assigned to these frequencies except for limited time or daytime operation only. With few exceptions, the class I stations assigned to these frequencies are those located west of the Appalachian and east of the Rocky Mountains in order to make the fullest use of the secondary service areas of these stations. On channels on which more than one class I station may be assigned, the operating powers of such stations shall be not less than 10 kilowatts nor more than 50 kilowatts. On these frequencies unlimited time stations (Class II stations hereinafter discussed) may be assigned in accordance with the principles set forth in the Rules and the Standards of Good Engineering Practice.

However, provisions are made for the protection of the secondary service areas from interference on the same channel within the limits of the United States to only the 500 uv/m. 50 percent skywave contour which is considered approximately the average field intensity required for good rural service. These stations are, in general, those located on the east and west coasts which give sufficient mileage separation for simultaneous operation with powers not in excess of 50 kilowatts. By the use of directional antennas, mutual interference may be readily controlled and the energy normally directed over the ocean directed inland to materially enlarge and better the service area of such stations. There are allocated 26 channels on which no nighttime duplication is permitted and 18 channels on which duplication is permitted. It is considered that this allocation of frequencies will permit a maximum usage of clear channels both for the benefit

of the remote rural areas as well as for general coverage throughout the particular section in which the stations are located. Stations formerly designated as high power regional stations are included in this group.

(2) A *class II station* is defined as a secondary station which operates on a clear channel and is designed to render service over a primary service area which is limited by and subject to such interference as may be received from class I stations. A station of this class may operate with power not less than 0.25 kilowatts nor more than 50 kilowatts. Whenever necessary a class II station is required to use a directional antenna or other means to avoid interference with class I stations and with other class II stations, in accordance with Engineering Standards of Allocation set forth in the Standards of Good Engineering Practice. Included in this classification are the daytime and limited stations assigned to clear channels, also unlimited time stations on clear channels on which duplicate nighttime operation is permitted. Although class I stations are not required to protect class II stations, it is normally recommended that class II stations be so allocated as not to receive interference during daytime within the 500 uv/m. ground wave contour and during nighttime within the 2,500 uv/m. ground wave contour.

(3) A *class III station* is defined as a station which operates on a regional channel and renders service primarily to a metropolitan district and the rural area contiguous thereto. Class III stations are subdivided into two classes:

A class III-A station is one which operates on a regional channel with a power not less than 1 kilowatt nor more than 5 kilowatts. Provision is made for protection of the daytime service area to the 500 uv/m. contour and of the nighttime service area to the 2,500 uv/m. contour in accordance with the Standards of Good Engineering Practice.

A class III-B station is a station which operates on a regional channel with a power not less than 0.5 kilowatt nor more than 1 kilowatt night and 5 kilowatts daytime. Provision is made for protection of the daytime service area to the 500 uv/m. contour and of the nighttime service area to the 4,000 uv/m. contour. It is not proposed to allocate class III channels exclusively for class III-A or III-B stations. The classification of these stations depends upon the conditions surrounding the particular station. However, it is considered that, on a large percentage of the regional channels, by cooperation of all or part of the stations on a class III channel, the installation of proper directional antennas may so modify the mutual interference as to permit their classification as class III-A stations, otherwise class III-B classification would be necessary.

(4) A *class IV station* is defined as a station operating on a local channel and designed to render service primarily to a city or town and the suburban and rural areas contiguous thereto. The power of a station of this class is limited to not less than 0.1 kilowatt nor more than 0.25 kilowatt, and provision is made for the protection to the 500 uv/m. contour daytime and the 4000 uv/m. contour nighttime. On local channels the separation required for the daytime protection shall also determine the nighttime separation. In addition, class IV stations may be assigned to regional channels on the condition that interference will not be caused to any class III station in accordance

with the above and the Standards of Good Engineering Practice and that the regional channel is fully used for class III stations. In such cases the class III stations are not required to protect the class IV stations. However, it is recommended that the class IV stations be so located that the interference received will not be greater than to the 4000 uv/m. ground wave contour nighttime and the 500 uv/m. contour daytime.

(c) *Extension of the broadcast band from 1500 to 1600 kilocycles.*—Although the broadcast band is extended to 1600 kilocycles no allocation of stations is proposed in the band 1500 to 1600 kilocycles except on the frequencies 1530 and 1550 kilocycles to which special broadcast stations are at present assigned. These stations are to be classified as class III broadcast stations instead of special broadcast stations. No other assignments are proposed in this band for the reason that such allocation would conflict with the North American Regional Broadcast Agreement and materially complicate placing this agreement into effect.

(d) *Increased normal license period.*—Under former rules the license of a standard broadcast station was limited to 6 months. In view of the evidence submitted at the hearing and other information available, it appeared that the broadcast industry had reached a point making it advisable to increase the license period to 1 year which is the period specified by the new rules. Under the Communications Act of 1934 the maximum license period which can be authorized is 3 years. It is believed that the issuance of 1-year licenses will assist to stabilize the broadcast industry without reducing the necessary control of the Commission over the licenses.

(e) *Increased power of stations where needed and where technically feasible.*—As previously discussed, the rules provide for increase in power of class II, III, and IV stations where such increase in power is needed to overcome electrical noise and static, where technically feasible.

There is no doubt, from an engineering standpoint, that the use of power in excess of 50 kilowatts constitutes one method whereby additional service can be provided throughout the remote sparsely populated sections of the United States and to many small urban centers which now lack facilities or where it is not economically practical to support local or regional channel stations. However, for social and economic reasons the rules do not contemplate the use of power greater than 50 kilowatts at this time.

(f) *Making regulations flexible.*—Every effort has been made to make the proposed rules and Standards of Good Engineering Practice as flexible as possible, as it is believed that by this means the fullest use can be made of the broadcast facilities and at the same time provide for the future needs as advancements are made in the art.

(g) *Requirements for applicants.*—For the first time the rules set forth the showing which applicants for new standard broadcast stations or increased facilities of existing stations must make before the Commission. Previously there has been no guide for such applicants.

While the necessary showing varies considerably with individual cases, the general principles set out provide a guide which is valuable to applicants.

(h) *Experimental authorizations.*—The new rules specifically provide for special experimental authorizations in the broadcast band. This will encourage experimentation in the use of broadcast frequencies and at the same time maintain the desired control over such authorizations and prevent commercial operation from interfering with experimentation.

(i) *Power of all stations determined by direct method.*—In order to provide for uniformity in determining the operating power of stations employing different types and makes of equipment, the new rules require that each new broadcast station authorized after August 1, 1939, and that every broadcast station after July 1, 1940, determine the operating power by the direct method, that is, from the resistance and current in the antenna system. The existing stations will be permitted to continue determining the operating power by the indirect method (from the plate input power to the last radio stage) until July 1, 1940, and for temporary periods after that date subject to certain conditions.

SCOPE OF STANDARDS OF GOOD ENGINEERING PRACTICE

As stated, the Standards of Good Engineering Practice were the subject of a formal hearing before a committee of Commissioners in conjunction with the rules and regulations from June 6 to June 30, 1938, and the informal engineering conference on June 5 and 6, 1939. Some 45 representatives of broadcast equipment manufacturers, networks, broadcast associations, and consulting engineers were present. The majority of those present were in agreement with the standards as finally approved by the Commission.

Necessity for the standards arises by reason of the fact that all of the technical principles of allocation, and use of facilities cannot be incorporated in the rules and regulations, because of the rapid changes taking place. The rules and regulations cover only the basic and more general principles. To obtain uniformity in presenting technical data on all applications concerning standard broadcast stations, it is necessary that the Commission enunciate the manner and method in which the data shall be presented. This provides a distinct advantage in the administration of the technical regulations, greatly improves the uniformity of action on formal applications, and serves as a guide to engineers. Many of the standards set out certain methods of compiling and submitting data.

The provisions of the Standards may be divided into three classes, as follows:

- (1) Those provisions which are incorporated by reference in the rules and regulations and which have substantially the same meaning and effect as the rules and regulations.
- (2) Those provisions which go beyond the rules and regulations so as to disclose policies and principles of allocation and regulation.
- (3) Those provisions which are included primarily as a guide to applicants and licensees.

The various subjects dealt with in these standards are—

1. Engineering Standards of Allocation.
2. Field Intensity Measurements in Allocation.
3. Data Required with Applications Involving Directional Antenna Systems.
4. Locations of Transmitters of Standard Broadcast Stations.
5. Minimum Antenna Heights or Field Intensity Requirements.
6. Standard Lamps and Paints.
7. Further Requirements for Direct Measurements of Power.
8. Power Rating of Vacuum Tubes.
9. Requirements for the Approval of the Power Rating of Vacuum Tubes.
10. Plate Efficiency of Last Radio Stage.
11. Operating Power Tolerance.
12. Construction, General Operation and Safety of Life Requirements.
13. Indicating Instruments Pursuant to Section 3.58.
14. Requirements for Approval of Broadcast Transmitters and Automatic Frequency Control Equipments.
15. Requirements for Approval of Frequency Monitors.
16. Requirements for Approval of Modulation Monitors.
17. Use of Low Temperature Coefficient Crystals by Broadcast Stations.
18. Money Required to Construct and Complete Electrical Tests of Stations of Different Classes and Powers.
19. Use of Common Antenna by Standard Broadcast Stations or Another Radio Station.
20. Use of Frequency and Modulation Monitors at Auxiliary Transmitter.
21. Approved Frequency Monitors.
22. Approved Modulation Monitors.
23. Approved Equipment.
24. Standard Broadcast Application Forms.
25. Field Offices of the Commission.
26. Average Sunset Time.

HEARINGS ON APPLICATIONS

Where the Commission, upon the examination of a particular application, is unable to reach the requisite statutory determination that a grant thereof would serve public interest, convenience, and necessity, it is designated for formal hearing upon specific issues, and all persons having an interest in the matter are given an opportunity to become parties and to participate in the hearing. During the first 4 months of the fiscal year, a vast majority of the hearings were held before members of the examining department, which was abolished by Commission action on November 9, 1938. Thereafter, the Commission's Rules of Practice and Procedure were amended, providing for, among other things, the holding of hearings before a presiding officer appointed by the Commission for a specific case. During the last 8 months of the year, practically all of the hearings on broadcast applications were held in this manner. Under the new procedure,² after a hearing has been held the parties thereto are permitted 20 days from the date that the transcript of record is filed within which to file proposed findings of fact and conclusions. The Commission then issues its proposed findings of fact and conclusions and the parties are allowed 20 days thereafter within which to file exceptions thereto and to request oral argument thereon before a final decision is rendered. In the event no exceptions or requests for oral argument are filed, the Commission issues an order adopting and giving final effect to its proposed decision. Under the new procedure, the Commission is able, where a proceeding proves to be noncontroversial, to decide

² The Commission's Rules of Practice and Procedure were partially amended effective November 14, 1938, and new Rules of Practice and Procedure were adopted by the Commission effective January 1, 1939, which was subsequently amended, effective August 1, 1939.

docket cases by issuing its final order in lieu of a proposed decision. This practice is followed whenever it is practicable to do so.

Formal hearings were held on 140 applications involving requests for new stations and for changes in broadcast station facilities, 46 of which were decided and 94 were still pending at the close of the year. Hearings were held on 25 applications involving assignment of licenses and transfer of control of licensee corporations, 11 of which were decided and the remainder were still pending at the close of the year. The majority of such applications were acted upon without the necessity of formal hearings. Hearings were also held on 18 renewal of license applications, 5 of which were decided. During the year the Commission heard oral argument in more than 100 broadcast cases, and it adopted formal decisions in more than 200 cases.

STATIONS DELETED

During the year there were five authorizations for standard broadcast stations which were canceled by the Commission; one Commission order authorizing a new station was vacated; and two stations which had been in operation were deleted. To review these cases:

A construction permit for a new broadcast station, issued to the Democrat News Company, Inc., (KDNC), Lewiston, Mont., expired on December 3, 1938, and was canceled by the Commission on January 24, 1939.

An authorization granted to Clarence A. Berger and Saul S. Freeman (KGCI), Coeur d'Alene, Idaho, was canceled when the permittees' application for modification of construction permit was denied as in default by the Commission.

An authorization for a new station granted to Hunt Broadcasting Association, Fred Horton, President (KGVL), Greenville, Tex., was canceled when its application for modification of construction permit was dismissed by the Commission after the permittee association was dissolved.

The construction permits for new stations granted to Lincoln Memorial University (WLMU), Middlesboro, Ky., and P. W. Spencer (WRKL), Rock Hill, S. C., were canceled by the Commission after having been surrendered.

The Commission's order of February 9, 1937, granting a construction permit for a new station to Harold F. Gross and Edmund C. Shields (WHAL), was vacated on November 28, 1938, following a decision by United States Court of Appeals for the District of Columbia.

Station WFAB, New York City, licensed to Debs Memorial Radio Fund, Inc., was deleted on November 7, 1938, and its time was surrendered to Station WEVD for the purpose of effecting a consolidation of the two stations.

The application for renewal of license of Attala Broadcasting Corporation (WHEF), Kosciusko, Miss., was denied as in default and the station was deleted.

PETITIONS FOR REHEARING

By reason of interpretations placed on a decision of the Court of Appeals in the *Red River Broadcasting Co. case* (Fourth Annual Report, p. 232) that in order to exhaust administrative remedies petitions for rehearing must be filed and disposed of before the Com-

mission prior to taking an appeal, there was a very substantial increase in the number of such petitions the Commission was required to consider.

During the year 71 petitions for rehearing were filed, 63 of which were denied, 4 granted, 1 granted in part, and 1 dismissed when the Commission ordered further proceedings on its own motion. Three petitions were dismissed at the request of the parties filing same.

ACCOUNTING, FINANCIAL, AND OTHER STATISTICAL DATA

Financial and statistical data from all standard broadcast stations were obtained for the year 1938 in the form of an annual report, in accordance with the Rules of Practice and Procedure issued by the Commission. In addition to being corrected and preserved as information for the Commission, the data contained in these reports were tabulated for all stations and were published without disclosing the identity or affairs of particular stations.

Voluminous data were assembled and were introduced in evidence in the hearing held on chain broadcasting (docket 5060). These data related to chain broadcast companies, stations owned or otherwise operated by or for them, the results of their contracts with stations independently owned, and a number of economic factors contributing to the welfare of the stations and the chain broadcast companies. Data were presented, also, on the matter of ownership of standard broadcast stations, showing the actual ownership of the stations and the community of interest among the several stations.

Financial and operating data.—Of the 674 standard broadcast stations in the continental United States operating on a commercial basis, statistics were compiled relating to 660, reports from the remaining 14 stations not being included because they were incomplete or not satisfactory otherwise. Considerable statistical data are shown in appendixes to this report. In the following table are shown a few salient items of financial and operating data with respect to the 3 major networks and the 660 stations.

For the calendar year 1938

Revenue from sale of time.....	\$100, 892, 259
Miscellaneous broadcast revenues.....	10, 466, 119
Total broadcast revenues.....	111, 358, 378
Broadcast expenses (including taxes, depreciation, compensation, and other expenses of conducting broadcast activities.....)	92, 503, 594
Broadcast income.....	18, 854, 784
Investment in broadcast assets (at cost) at the end of the year 1938..	72, 961, 659
Less: Accumulated depreciation and amortization.....	26, 183, 672
Net amount of broadcast assets.....	46, 777, 987
Number of officers and employees at the end of the year 1938....	23, 060
Total compensation to officers and employees for the year 1938..	\$45, 663, 757

Applications for construction permits, transfers of control, and assignments of license required the preparation and consideration during the fiscal year of 232 accounting reports dealing with the financial aspects of such applications. Accounting reports prepared from the records of hearings in 107 broadcast docket cases were also considered.

3. TELEVISION

During the past year increased interest was shown in television development. A number of applications were received during the year requesting the use of television frequencies with experimentation directed toward the use of television as a public service which is in direct contrast to previous authorizations which were primarily directed toward the development of television equipment, standards, and systems of transmission. In view of this trend, the Commission designated a committee of three Commissioners comprising T. A. M. Craven, chairman; Norman S. Case; and Thad H. Brown to study the various aspects of television and to recommend to the entire Commission a policy which may serve as a guide to the industry. As a result of their study, there was issued the first television report which is briefly summarized as follows:

The first question studied by the Television Committee was necessitated by the request of the Radio Manufacturers' Association for approval of the technical standards for television, as proposed by that association. The second problem confronting the committee involves the disposition to be made of the various applications for construction permits to erect new television stations and, in particular, the applications requesting television facilities with the ultimate purpose of providing television to the public on a service basis.

The committee was of the opinion that any jurisdiction which the Commission may lawfully have in the matter of television standards is solely that arising from its specification of external-performance requirements for transmitting stations which the Commission may license in the future.

The committee was not unmindful, however, of the complex ramifications of the television problem, relative to the engineering, economic, and sociological expectations of this budding industry. With this point in mind, the committee and representatives of the staff make various trips into the field to secure a first-hand picture of the state of the art, as well as to secure an index of possible future trends, as may be reflected in the thoughts of the present leaders of the industry.

Television appears to have thoroughly definite stages of development: First, a period of technical research, which includes fundamental research, initial development of manufacturing processes, designing of all equipment, and the adoption of a procedure for continuing improvements in accordance with the demands of the public; and, secondly, experimental operation, which includes the initial testing of television as a service to the public on a limited scale, and the ascertaining of the requirements of the public for types of programs and character of service, as well as securing experience in the production of such service. Along this line is also included the securing of information relative to propagation, characterizations, and allocation information from transmitters operating under service conditions. Included also in this phase of the development is the commencement of construction of facilities to insure an efficient distribution for a program service on a regional scale. The third stage of television development will be marked by the construction of transmitting stations throughout the Nation and the operation of television as a service to the public on a sound, economic basis. In this stage the public will be expected to purchase receivers with the expectancy of a stable television service of good technical quality, without too rapid an obsolescence of the instruments it has purchased.

Considerable credit should be given to the engineers in the industry for the present high state of technical development, and it is entirely possible that the technical quality of television produced in accordance with the proposed R. M. A. standards may be accepted by the public as a practical beginning, provided the public is also informed that improvements in quality and reduction in cost of equipment are possible as a result of future progress in scientific and engineering research. In view of this fact, it appears that rigid adoption of standards at this state of the art may either "freeze" the television industry, and thus retard future development, or may result in a high rate of obsolescence of equipment purchased by the public, which may not be able to receive signals from a station that may have different standards from those now in use, or from stations employing standards which may be considerably better than those now in use or proposed to be used, and at the present state of the art are not now generally recognized or known. As a result of these two factors, considerable patience, caution, and understanding

must be used at this time. Careful, coordinated planning is essential, not only by various elements of the industry but also between the industry as a whole and the Federal Communications Commission.

The extreme limitation of a number of available television channels presents a serious problem, particularly in the early stages of television service, inasmuch as there are by now only seven channels developed from a technical standpoint. This scarcity of channels is a result of the fact that one television station requires a 6000-kilocycle band, and in order to proportionately conserve the available radio spectrum, it is, of course, necessary to restrict the number of these channels.

In addition to the scarcity of channels, the operation of a television station is a costly project, and at the present time without return from the sale of advertising or from sponsorship, due, first, to the fact that these stations are licensed only on an experimental basis, and, secondly, because the technical development has not reached the stage where it can be standardized in essential details for uniformity. From these points it appears highly essential that the industry be encouraged to undertake further practical research leading toward the development of methods which will permit more stations to be accommodated in the limited space in the radio frequency spectrum, as well as facilitating lower costs in the production of good quality program service to the public.

The Television Committee is preparing a second television report which will serve to determine policies relative to existing stations and action on the pending applications requesting television authorizations to operate stations as a service to the public.

4. BROADCAST SERVICES OTHER THAN STANDARD

There has been rapid growth and development in broadcast services other than standard. Besides television this includes relay, international, facsimile, high frequency, noncommercial educational, and developmental services. Several policies have been changed which have necessitated revision of the Commission's rules and regulations. New allocations were provided for services operating on frequencies from 30000 to 300000 kilocycles. These allocations meant a frequency reassignment for high frequency relay, television, facsimile, high frequency broadcast, and some developmental broadcast stations.

The class of station previously known as an experimental broadcast station was redesignated as "developmental broadcast station" in order to eliminate confusion with reference to general experimental and special experimental stations.

The rules and regulations governing noncommercial educational broadcast stations were expanded and clarified in order to maintain this class of station for the strict educational purpose for which it was originally established and intended.

Considerable interest has been shown in the use of frequency modulation for high frequency broadcasting, and much research and development has been carried on along this line. Technical interest has been reflected by the large number of applications submitted to the Commission for frequency modulation facilities.

While 12 experimental authorizations were issued to standard broadcast stations to broadcast facsimile signals on their assigned frequencies during the experimental period at 12 midnight to 6 a. m. during the last fiscal year, the present year finds that 4 of these stations

voluntarily withdrew their authorizations and that but 1 new station requested and was granted such authorization.

A tabulation of the applications received concerning broadcast services other than standard is contained in the appendixes.

INTERNATIONAL BROADCAST STATIONS

There was also a high degree of interest in international broadcasting during the past year. A major change in policy occurred with the adoption of the new rules and regulations governing this service, which provide for commercial operation of this class of station. In addition, the rules provide that all international broadcast stations shall, after July 1, 1940, operate with power of not less than 50 kilowatts and with antenna so designed that the signal toward the specific foreign country or countries to be served shall be at least 3.16 times the average effective signal from the station. During the past year one licensee started operation with 100 kilowatts power, while another was granted a construction permit to increase power to 50 kilowatts.

Two hearings were held relative to the request for international facilities during the past year, namely, the Pillar of Fire, Zarepath, N. J., requesting 5 kilowatts power, A3 emission, and the frequencies 6080, 11830 and 17780 kilocycles (facilities of W9XAA); and the Chicago Federation of Labor, requesting assignment of license of W9XAA to the Radio Service Corporation of Utah (licensee of Station KSL), heard jointly with the application of the Radio Service Corporation of Utah for a construction permit to move W9XAA to Salt Lake City, Utah, and increase power to 10 kilowatts. The application of the Pillar of Fire was denied, while to date no action has been announced on the application of the Chicago Federation of Labor and the Radio Service Corporation of Utah.

Pursuant to the Cairo Radio Regulations, 10 new frequencies, namely, 6170, 6190, 9650, 9670, 17830, 21570, 21590, 21610, 21630, and 21650, were made available for international broadcast stations in this country. Of these, all but one frequency have been requested and assigned.

The new rules also specify a more rigid frequency tolerance for international broadcast stations, requiring this class of station, after January 1, 1941, to maintain frequency within plus or minus 0.005 percent of the assigned frequency.

The "Pan-American" frequencies are now in regular use under temporary restrictions at General Electric Co. Station, W2XED San Francisco, assigned the frequencies 9550 and 21500 kilocycles, and at World Wide Broadcasting Corporation stations, W1XAL and W1XAR, Boston, assigned the frequencies 11730 and 15130 kilocycles.

One new international broadcasting station was authorized during the past year, namely, W1XAR, assigned to World Wide Broadcasting Corporation, Boston. It is pointed out, however, that in reality this provides an extension of the facilities now assigned W1XAL.

During the past year W6XBE, assigned to the General Electric Co., Belmont, Calif., started operation at its temporary location at Treasure Island, San Francisco Bay. Of particular interest was the fact that numerous letters have been received from Alaska requesting the extension of the hours of operation of this station.

Transmissions of various international broadcast stations were rebroadcast over standard broadcast stations located in both Puerto Rico and Cuba.

RELAY BROADCAST SERVICE

Relay broadcast stations provide an adjunct service to broadcast stations by relaying programs from remote localities or places where wire lines are not available or accessible. Under the new rules and regulations, high frequency relay broadcast stations (except those operating on frequencies above 300000 kilocycles were changed from an experimental status to regular licenses.

Recognition has also been given to the possibilities of frequency modulation, and accordingly, four frequencies in the band 133030-138630 kilocycles were provided for relay broadcast stations using this type of emission. Another group of frequencies in the same general range were provided for relay broadcast stations employing amplitude modulation. In almost every event of national interest and importance relay broadcast services have been utilized, particularly national emergencies, such as the New England hurricane and flood in September 1938, forest fires in 1939, inauguration of the trans-Atlantic Air Service, the Seattle-Alaska Air Mail Service, etc.

FACSIMILE

There are two types of facsimile authorizations. Regular licenses may be issued to facsimile broadcasting stations intended for research, design, development, and service testing of facsimile and facsimile equipment. This class of facsimile station is assigned frequencies in the bands 25025-25050, 43540-43940, and 116110-116470 kilocycles. Reception of such facsimile signals necessitates the use of special high-frequency receivers or the use of an all-wave broadcast receiver in conjunction with the facsimile recorder equipment. General practice, however, has indicated that the average receiver designed to pick-up aural broadcasting does not possess a sufficiently "flat" automatic volume control system for satisfactory reproduction and therefore facsimile equipment manufacturers are generally recommending the use of specially designed receivers to be used with their facsimile recorders.

Special experimental facsimile authorizations may be issued to standard broadcast stations for the purpose of transmitting facsimile signals on their regularly licensed frequencies during the experimental period (12 p. m. to 6 a. m., local standard time).

Considerable research and experimentation has been carried on relative to the reporting style, format, and type best suited for the transmission of facsimile. There has been an increase in the interest in high frequency facsimile broadcast stations, five new applications having been granted during the past year.

HIGH FREQUENCY

High frequency broadcast stations are classified into two general groups depending upon the type of modulation used.

The system of modulation known as amplitude modulation is a system in most general use for speech and music transmission by radio. It was the first system developed and has long been used by

standard broadcast stations. Amplitude modulation involves a system of varying the amplitude of the carrier current in accordance with the audio frequency electrical current resulting from the conversion of sound energy into electrical energy.

The other system of modulation, known as frequency modulation, is a system whereby the frequency of the carrier current is varied in accordance with an audio frequency electrical current resulting from the conversion of sound energy into electrical energy. This system of modulation has been the subject of considerable research and experimentation and is known to possess characteristics especially favorable in discriminating against noise and interference. For high fidelity operation, this system has been operated with a frequency band of emission approximating 200 kilocycles when operating on frequencies around 40000 kilocycles.

The licensees of the various high frequency broadcast stations operating on an experimental basis have been required to actively prosecute a program of research and experimentation during the present license period. When applications for renewal of license were received by the Commission, careful study was made of the work the licensee had carried on during the past license period and the work it proposed to carry on during the next license period. If the licensee had failed to actively prosecute a program of research and experimentation compatible with the Commission's rules and regulations and did not indicate that it would prosecute such a program during the ensuing license period, the application for renewal of license was designated for hearing. When the licensee indicated that he had done some work and would continue to do so, the Commission requested prior to the granting of renewal of license, a specific commitment be made relative to the appropriation and the personnel the licensee would provide during the next license period in order to prosecute such a program of research and experimentation. When a licensee had actively prosecuted a program of research and experimentation, the renewal was granted in the usual manner.

It is expected that the experimental reports submitted at the end of the present license period will contain a large amount of valuable information relative to the propagation characteristics and coverage possibilities of these frequencies and provide a contrast between the two systems of modulation, as well as serve as an index to the allocation problem of frequency modulated stations.

EDUCATIONAL BROADCAST

The term "noncommercial educational" broadcast station is used to identify a high-frequency broadcast station licensed to an organized nonprofit educational agency for the advancement of its educational work and for the transmission of educational and entertainment programs to the general public. Stations of this class will be licensed only to an organized nonprofit educational agency and upon a showing that the station will be used for the advancement of the agency's educational program. In particular, the applicant for this class of station must show that the transmissions will be directed to specific schools in a system, or for use in connection with regular courses, as well as routine and administrative material pertaining to a school system.

During the past year two such stations were licensed, namely: WBOE, Board of Education, Cleveland, Ohio, and WCNY, Board of Education, city of New York. Considerable interest in this class of station among the educational institutions in the country is indicated by the large amount of correspondence and the number of inquiries received by the Commission since the announcement of the establishment of this class of station and service in January 1938.

The Federal Radio Education Committee has operated since its organization under grants made in 1935 by the National Advisory Council on Radio in Education, and by the National Association of Broadcasters, with supplementary grants from the Rockefeller Foundation and the General Education Board. The grant of the National Association of Broadcasters for studies being conducted by the Office of Education, expires on June 30, 1940. The original grant made by the Rockefeller Foundation to Princeton University for carrying on a Committee study has been extended to May 30, 1940. The Committee study which has been under way at Ohio State University for the past 2 years, and which was financed by the General Education Board, has been extended for another 3-year period. The newest grant by the National Advisory Council on Radio in Education is supporting a study in New York City which was begun during the spring of 1939, and is expected to be completed within the current year. The combined funds that have been provided by various agencies and organizations to underwrite the several research studies derived from the study program of the Federal Radio Education Committee, at the present time, total approximately \$500,000.

5. USE OF BROADCAST FACILITIES IN EMERGENCIES

During the fiscal year ending June 30, 1939, the only major catastrophe was the New England hurricane and flood during September 1938. The general loss of power greatly handicapped both radio transmission and reception facilities but in spite of this, invaluable service was rendered by stations inside and outside the affected area where power facilities were repaired or emergency equipment was employed. Fifteen special authorizations to operate with temporary equipment or at a temporary location were issued. In addition, numerous authorizations were issued for operation beyond the normally licensed operations and a release was made calling the attention of licensees of both broadcast and amateur stations to the additional operation during the emergency.

Due to the suddenness and nature of this catastrophe, the effect on broadcast stations was greater than that during the Ohio flood in 1937. However, it is believed that as in the case of the Ohio flood, the service rendered by broadcast stations, as well as other stations, would have been much more effective had the various units been previously organized for coordinated emergency service. To this end a great deal of study and work has been done during the fiscal year and it is hoped that in the near future a definite program for full coordination of communication facilities with other emergency services may be adopted.

6. COMPLAINTS AND INVESTIGATIONS

General nature of complaints.—The majority of the investigations conducted with regard to complaints received concerning the program service of broadcast stations did not necessitate the holding of hearings. Other complaints involving possible violations of the act and of the rules and regulations of the Commission, including the broadcasting of lotteries, medical programs, and fortune-telling programs, and the illegal assignments of licenses and transfers of the control of licensee corporations, have been investigated, and appropriate action has followed either by way of adjustment or by the designation for hearing of applications for renewal of license.

The Commission maintains complete records of the names and addresses of all officers, directors, and stockholders, of the amount and kind of stock held, and of all contracts affecting the conduct or the control of all licensees of standard broadcast stations. This information is designed to show the citizenship of officers, directors, and stockholders, the ultimate control of a licensee corporation, and the relationship of managerial contracts, leases, and agreements for the sale of time to the actual operation of the station.

All applications for standard broadcast facilities, including those for the regular renewal of a broadcast station license, are compared with these records to determine whether a change in ownership or a transfer of the control of a licensee corporation has occurred and also to determine what interests the licensees or stockholders may have in other stations.

MONOPOLY INVESTIGATION

The Commission on March 18, 1938, by Order No. 37, authorized an investigation to determine what special regulations applicable to radio stations engaged in chain or other broadcasting are required in the public interest, convenience, or necessity. The Commission's order directed that hearings be held in connection with the investigation and that it include among other matters inquiry into the contractual relationships between network and stations, the extent of control over programs and advertising contracts exercised in practice by stations engaged in chain broadcasting, duplication of network programs in the same areas, exclusive contracts restricting stations to one chain service and chain services to one station in a given area, extent to which single chains have exclusive coverage, policies of networks with respect to character of programs, diversification, and accommodation to requirements of areas served, the number of stations in each network together with hours controlled and hours used by networks, rights and obligations of stations in relation to advertisers having network contracts, service rendered by stations licensed to network, competitive practices of chain stations, effect of chain broadcasting upon stations not engaged in chain broadcasting, practices or agreements in restraint of trade or furthering monopoly in connection with chain broadcasting, and extent and effect of concentration of control of stations locally, regionally, and nationally.

The Committee appointed by the Commission on April 6, 1938, to supervise the investigation, comprised Chairman McNinch and Commissioners Walker, Sykes,¹ and Brown, and began hearings November

¹ Commissioner Sykes was succeeded in April, 1939, by Commissioner Thompson.

14, 1938, pursuant to public notice that the Commission would hear any person or organization desiring to present evidence on the matters included for investigation in Commission Order No. 37.

The Committee called upon the national networks, regional networks, licensees of a number of stations, and representatives of transcription and recording companies to present evidence. It also requested information through questionnaire from licensees of stations, and holders of stock in licensee corporations. A number of organizations filed appearances, requesting an opportunity to be heard.

The hearing was adjourned on May 19, 1939, subject to the call of the Committee, after 73 days of hearing sessions at which there were heard 94 witnesses from whom there were 8,713 pages of testimony adduced and with respect to whose testimony there were 674 exhibits admitted. The witnesses heard included the presidents of the large chain broadcast companies, their technical, administrative, and other managerial representatives, as well as representatives of the smaller networks, certain stations, transcription companies, labor union representatives, and others interested.

NUMBER OF INVESTIGATIONS

There were 65 broadcast stations under investigation at the beginning of the fiscal year, and during the year investigations were instituted against 257 other stations. Investigations against 265 stations were handled and completed in an informal manner, and those against 15 stations were closed after formal hearings were held. At the close of the year, investigations were still pending against 42 stations, 17 of which were on the hearing docket.

FIELD INSPECTIONS, EXAMINATIONS, AND INVESTIGATIONS

For the purpose of administration and the enforcement of radio laws, treaties, and regulations, the Commission maintains 22 radio district offices scattered throughout the United States and its possessions. In addition, the Commission has seven monitoring stations, located at Boston, Mass.; Baltimore, Md.; Atlanta, Ga.; San Pedro, Calif.; Portland, Oreg.; Great Lakes, Ill., and Grand Island, Nebr.

The monitoring stations, in general, do not participate in investigation of unlicensed stations or stations otherwise violating the law other than to report their operation and to intercept and record their signals as proof of such illegal operation.

Most of the investigating is done by the field stations. Each field station is administered by an inspector in charge who has on his staff additional inspectors and other assistants. The 115 inspectors of the Field Division are radio engineers and, in addition, are radio operators, many of whom have had previous experience in the maritime, aeronautical, and other services.

Besides locating private stations, these inspectors are required to check all classes of radio stations, such as broadcast, police, ship and aircraft (including foreign craft which touch our shores); television, amateur, and point-to-point service; and to monitor radio transmissions for adherence to frequency, quality of emission, and compliance with prescribed procedure; investigate complaints of interference to radio reception, and conduct examinations for various classes of operators licenses.

At each radio district headquarters, inspection cars are provided for more detailed field inquiry. Some of these cars are equipped with all-wave communication receivers which may be operated, if necessary, while the car is in motion, from the car's 6-volt battery. The receivers are so constructed that they may be removed from the car and worked from a 110-volt alternating-current power supply such as is available in a residence, tourist cabin or such other place that may be chosen by an inspector as a base of operation. The mobile units are also equipped with special antennas.

Additional units to this type of equipment are urgently needed by the Commission, particularly because of new demands for regional investigations. The mobile equipment is also used by field offices to transport examination equipment to various points in the United States where applicants for various classes of commercial and amateur operator licenses are examined. In addition, technical equipment necessary for use in connection with inspection of all classes of radio stations is so transported.

At certain field offices, portable field strength measuring equipment is necessary. This is used primarily to determine the efficiency of broadcast station antennas. From the data thus accumulated, the Commission's engineers are able to ascertain whether a station is making appropriate use of its facilities.

Monitoring stations are very useful in determining if licensed stations are transmitting beyond their allotted sphere and, further, if interference is caused to established service.

Detailed tables reflecting the volume and nature of the field-inspection work are contained in the appendixes.

7. LITIGATION

The conduct of litigation in the courts was one of the Commission's most important activities during the year. Issues arose in several cases, the final determination of which will affect, in a far-reaching and fundamental way, the future conduct of the Commission's proceedings in broadcast cases, and will also determine in an important degree the extent and scope of the jurisdiction of the Court of Appeals of the District of Columbia over Commission action. A brief summary of the facts and holdings of the court in the decisions handed down during the year is included in the appendixes.

At the beginning of the fiscal year the following litigation relating to radio broadcasting was pending in which the Commission was a party litigant: 10 cases in the United States Court of Appeals for the District of Columbia in which appellants were seeking a review of a decision of the Commission granting or denying a broadcast application; one case was pending in the Court of Appeals on appeal from a decision of the District Court for the District of Columbia; and one petition for writ of certiorari was pending in the Supreme Court seeking a review of a decision of the Court of Appeals for the District of Columbia.

During the fiscal year 23 appeals were taken to the Court of Appeals for the District of Columbia seeking a review of Commission decisions in broadcast matters; 3 original proceedings were commenced in the Court of Appeals seeking writs of mandamus and prohibition directed to the Commission; 1 injunction suit was instituted in the

District Court; and 1 petition for writ of certiorari was filed in a case which had been disposed of by the Court of Appeals during the preceding fiscal year.

The following tabulation shows the total number of cases pending during the fiscal year:

Thirty-three cases involving appeals to the Court of Appeals for the District of Columbia from decisions of the Commission;
 Three original proceedings instituted in the Court of Appeals;
 Two suits instituted in the District Court for the District of Columbia;
 Two petitions for writs of certiorari in the Supreme Court.

Of the 33 direct appeals to the Court of Appeals for the District of Columbia from orders of the Commission, 14 were dismissed,³ 2 of the Commission's decisions were reversed⁴ and 2 were affirmed, leaving 15 cases⁵ pending in the court at the end of the fiscal year.

Of the three original proceedings instituted in the Court of Appeals during the fiscal year, only one had been decided at the end of the fiscal year and in this case the writs of prohibition and mandamus requested were granted.⁶ The other two proceedings were still pending at the end of the fiscal year.⁷

Of the two cases instituted in the District Court for the District of Columbia in which injunctions were sought, in one case the District Court refused to grant the injunction, which decision was affirmed by the United States Court of Appeals for the District of Columbia, and in this case certiorari was denied by the Supreme Court. In the other District Court case an injunction was granted but on appeal to the Court of Appeals for the District of Columbia the District Court was reversed.

The petition for writ of certiorari which was pending at the beginning of the fiscal year as well as the petition for writ of certiorari which was filed during the fiscal year in a case which had been disposed of by the Court of Appeals during the preceding fiscal year were both denied by the Supreme Court.

The following tabulation shows the disposition at the end of the fiscal year of all the cases pending at the beginning of the year and instituted during the fiscal year:

Nature of case	Number	Decision for Commission	Decision against Commission	Pending end of fiscal year
Direct appeals to the Court of Appeals.....	33	16	2	15
Original suits in District Court.....	2	2		
Original suits in Court of Appeals.....	3		1	2
Petitions for certiorari.....	2	2		
	40	20	3	17

¹ In 1 of these cases a petition for writ of certiorari was denied by the Supreme Court.

² In 2 of these cases writs of certiorari had been granted by the Supreme Court, and were pending in the Supreme Court when this report went to the printer.

³ In two of these cases the appellants filed petitions for certiorari in the Supreme Court; both petitions were denied.

⁴ In one case the Commission filed a petition for writ of certiorari in the Supreme Court which was granted, and the case was in the Supreme Court when this report was sent to the printer.

⁵ Of these, 8 were subsequently dismissed, and in 1, the Commission's decision was affirmed, leaving 6 of such cases pending and undecided in the Court of Appeals when this report went to the printer.

⁶ The Commission's petition for writ of certiorari from the Supreme Court in this case has been granted, and the case was awaiting oral argument when this report was sent to the printer.

⁷ In one of these the Court subsequently granted the writs of mandamus and prohibition and the Commission's petition for writ of certiorari in the Supreme Court was granted and the case awaiting argument in the Supreme Court when this report was sent to the printer.

A list of broadcast cases in litigation during the year, together with a detailed statement of the facts and principles of law involved, will be found in the appendixes.

Specific mention should be made here of three of these cases:

In *Sanders Brothers Radio Station v. Federal Communications Commission*, No. 7087, the Commission had entered an order granting authority to construct a new radiobroadcast station at Dubuque, Iowa, and had simultaneously granted the licensee of Station WKBB authority to move its station from East Dubuque to Dubuque, Iowa. The licensee of Station WKBB appealed from that part of the decision authorizing the new station to be constructed at Dubuque, the ground for its appeal being that the Commission had failed to dispose of the question of whether there was adequate economic support in the community for both stations. The Commission moved to dismiss on the ground that the appellant had no appealable interest, since the only damage which it alleged as its "aggravement" was prospective financial loss resulting from competition with the new station, which the Commission contended was "damnum absque injuria." The Commission contended that the congressional policy as expressed in the Communications Act of 1934, as amended, contemplated that licensees of radiobroadcast stations would be subject to and not protected from competition from other licensees. The court set aside the Commission's order, overruling the Commission's contention that if damage had resulted to the station taking the appeal, such damage did not constitute legal injury and was not a proper basis for an appeal under the statute. The court held that it was the Commission's duty to receive evidence and make findings on the economic issue and that as the Commission had not made such findings "the administrative task has not been completed and there is no proper basis for judicial review."

The decision of the court of appeals is of outstanding significance in its sweeping interpretation of the jurisdiction of the Commission over licensees of broadcast stations. The court construed the Communications Act of 1934, as amended, as conferring upon the Commission the duty of determining the competitive effect upon existing licensees of the grant of an application for new broadcast facilities. The court also held, in effect, that a license for a broadcast station conferred upon the holder thereof a right to question the validity of a similar license issued to a competitive broadcast station.

In holding that the Commission was required to make findings in granting an application for construction permit for a radio station, the court placed an interpretation upon the statute which may impose a heavy administrative burden upon the Commission. The Commission's contention in the case was that the Commission is not required under section 319 (a) or 309 (a) of the statute to make findings when it grants an application for construction permit or for a radio-station license.¹

The case of *The Pottsville Broadcasting Company v. Federal Communications Commission*, No. 7016, involves questions relating to the jurisdiction of the court of appeals to control the procedure of the Commission on a broadcast application which has been remanded to the Commission after a reversal by the court of a decision denying such application. The court of appeals in a case decided during the last fiscal year reversed a decision of the Commission which had denied the application of Pottsville Broadcasting Co. for a construction permit to erect a new radiobroadcast station in Pottsville, Pa.

After the remand, the Commission set the Pottsville Co.'s application for oral argument together with two other conflicting applications, which had been filed and heard before an examiner after the Pottsville application, but which were then ready for final action. The Commission order stated that it would consider the three applications individually on a comparative basis, although not in a consolidated proceeding and would grant the application which in the judgment of the Commission would best serve the public interest.

The Pottsville Broadcasting Co. applied to the court of appeals for the issuance of a writ of prohibition to prevent the Commission from taking any procedural steps relating to the granting of an application for construction permit for a new station in Pottsville, Pa., until it had first acted upon the petitioner's application and for a writ of mandamus to compel the Commission to render a decision on the petitioner's application within a time fixed by the court. The Commission

¹ The Commission's petition for writ of certiorari from the Supreme Court to review the decision of the Court of Appeals in this case was granted and the case was pending in the Supreme Court when this report went to the printer.

opposed the granting of the writs on the ground that the court was without power to control the administrative proceedings by the Commission on the petitioner's application as requested. The court directed the issuance of a writ commanding the Commission to set aside its order relating to the petitioner's application having the effect of designating such application for hearing on a comparative basis with other pending applications and commanding the Commission to hear and consider the petitioner's application on the basis of the record originally made on such application.²

The third case which involves principally a question of statutory construction, is *The Crosley Corporation v. Federal Communications Commission*. This case involved an appeal to the Court of Appeals for the District of Columbia from a decision of the Commission which denied the application of the Crosley Corporation for an extension of its special experimental authorization to operate Station WLW with 500 kilowatts power, unlimited hours, for the purpose of carrying on a program of experimentation. The special experimental authorization was originally issued in 1934 and had been extended from time to time. The Commission's rules fixing the maximum power for stations operating on the frequency assigned to WLW was 50 kilowatts. The primary purpose of permitting Station WLW to operate with 500 kilowatts, unlimited time, was to permit experimentation to be undertaken to demonstrate the feasibility of operation with "super power." The station's request for an extension of this experimental authorization, filed in December 1938, was designated for hearing by the Commission before a committee consisting of three Commissioners. This committee recommended that the request for extension be denied and after the applicant was permitted to file exceptions and to make oral argument on the committee's report, the Commission denied the application for extension on the ground that the applicant had failed to show that the use of 500 kilowatts power, unlimited hours, was necessary in order to carry on the program of experimentation proposed.

Station WLW appealed to the Court of Appeals for the District of Columbia seeking a review of the Commission's decision. The Commission moved to dismiss the appeal on the grounds that the special authorization was not a radio station license within the purview of the appeal section of the statute and, therefore, the Commission's order denying the request for extension of the authorization did not constitute the denial of an application for renewal or modification of radio station license. The appellant contended that the experimental authorization was a station license within the meaning of the appeal section of the statute. The court granted the Commission's motion and dismissed the appeal.³

² The Commission applied to the Supreme Court for a writ of certiorari which was granted. The case was awaiting oral argument before the Supreme Court when this report went to the printer.

³ A petition for writ of certiorari filed by Station WLW was denied by the Supreme Court on November 6, 1939.

CHAPTER V

Promotion of Safety of Life and Property

- 1. INTRODUCTION**
- 2. GREAT LAKES AND INLAND WATERS SURVEY**
- 3. MARINE SERVICES**
- 4. AVIATION SERVICES**
- 5. EMERGENCY SERVICES**

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1. INTRODUCTION

The Communications Act of 1934, as amended, has, as one of its purposes, the promotion of safety of life and property through the use of wire and radio communication. The act contains a number of provisions under which the Commission functions in this connection. Title III, part 2 of the act, contains specific provisions with respect to the employment of radio for the promotion of safety at sea, and the duty of enforcing the radio provisions of the International Convention for the Safety of Life at Sea, London, 1929, adds to the Commission's responsibility in this field. The greater part of the activities of the Commission, with respect to promotion of safety, has to do with the maritime services.

The employment of radio for safety purposes, outside of the marine field, has also engaged a considerable part of the Commission's attention. National and international conferences have been held in connection with the use of radio in aviation. The emergency services including police, forestry, and other classes of stations are devoted to protection of life and property, aiding law enforcement, fire prevention, and similar safety missions, and these services are of constantly increasing importance.

The types of stations which the Commission considers to be primarily devoted to promoting safety of life and property are classified as rendering marine services, aviation services, and emergency services. Under the latter category are included municipal and State police, marine, fire, forestry, and special emergency stations. These services, except for marine service, are of comparatively recent origin, and are continuing to show a rapid expansion.

With respect to many of the emergency stations, there has been a tendency on the part of licensees not to fully appreciate the responsibility of operating the station in full compliance with Federal regulation. In many instances this was due to the divided authority inherent in municipal governments. There has been, however, an increased realization of the necessity for conducting the stations in strict accordance with technical requirements and regulations governing the manner of operation, in order that the best results may be obtained from the necessarily complex system. The improved situation is in no small measure due to the study of the subject by certain police and other officers who have realized the possibilities and have insisted on having trained personnel in charge of the equipment.

In addition to these services, the Commission receives many applications for special stations which are intended to be useful in promoting safety under circumstances in which normal communication facilities are inadequate. Such applications have received, and will continue to receive, careful consideration. However, the limitations in the use of available frequencies make it necessary to exclude all but those services which are most needed by the greatest number of people.

2. GREAT LAKES AND INLAND WATERS SURVEY

The special study of the radio requirements necessary or desirable for safety purposes for ships navigating the Great Lakes and inland waters of the United States, which the Congress directed the Federal Communications Commission to make and report its recommendations and reasons therefor to the Congress not later than December 31, 1939, is being conducted under the direction of Commissioner Thad H. Brown.

During the past year open formal public hearings were held at Cleveland, from July 18 to July 22, 1938, from August 1 to August 5, 1938, from March 6 to March 17, 1939, and from April 5 to April 6, 1939; at Detroit from August 16 to August 18, 1938; and at Washington, from May 23 to May 26, 1939. Members of the Great Lakes and Inland Waters Survey research and engineering staff presented testimony based upon investigations conducted by the Survey in these hearings. Testimony was presented by representatives of commercial shipping companies, shipmasters' associations, communication companies, labor organizations, yachting associations, and governmental agencies with respect to vessel operating conditions and the use of radio communications.

The engineering group for the Great Lakes and Inland Waters Survey, utilizing the services of some of the personnel of the Commission and one additional engineer employed specifically for the purpose, continued to carry out its experimental test projects designed to determine the relative effectiveness of radiotelegraphy and radiotelephony for safety-communication purposes under practical operating conditions on the Great Lakes, and to ascertain the reliable communication ranges which could be obtained using a type of radio transmitting installation comparable to equipment of average cost and design available on the open market. This equipment at various times was installed and operated for these tests on board Government and commercial vessels navigated over the steamship lanes on Lakes Huron, Michigan, and Superior. Suitable radio receiving and measuring equipment was set up and operated on the shores of these lakes and on board two Government vessels. These tests during the summer season of highest atmospheric interference to radio communication were carried out on Lakes Huron and Superior during July and August 1938, and on Lake Michigan during the more favorable radio receiving conditions of the fall season.

Two commercial type auto-alarms, modified for operation on the Great Lakes distress frequency 410 kc., were also subjected to tests under practical operating conditions on Lake Superior, utilizing the radio station on board a Coast Guard cutter and a commercial cargo vessel as transmitting ship stations for this purpose.

Communication tests were conducted with regularity during the periods mentioned, generally at sunrise, noon, sunset, and late evening of each day. Each test involved attempted complete reception at the official receiving points of both radiotelegraph and radiotelephone test messages transmitted under equivalent conditions on at least six frequencies distributed throughout the radio spectrum. Considerable resultant engineering data of a comparative nature was developed and prepared in the form of exhibits. These exhibits, together with considerable oral description of this experimental

emergency work, were made a part of the record of hearings conducted at Cleveland, Ohio, during the month of March.

The factual studies of the physiographic features, volume and nature of commerce, types of vessels, operating conditions, navigation facilities and conditions, navigation and other casualties, weather conditions, radio communication facilities and services of the Great Lakes, commenced in December 1937 have been completed.

Following the first informal conference with representatives of the Department of Transport, Dominion of Canada, held in New York May 12, 1938, a second informal conference was held with these representatives at Ottawa, on October 17, 1938, in order to facilitate the studies, to arrange for the transmission of data with respect to Canadian vessel operation, radio facilities and services, and to consider suggestions for further cooperation between the representatives of the radio regulatory bodies of the United States and Canada.

Since the inauguration of the Survey there has been a material increase of voluntary installations of radiotelephone facilities on vessels of the Great Lakes. As of May 1, 1938, there were 109 vessels on the Great Lakes equipped with radiotelephone, 65 of the United States registry and 44 of Canadian registry. As of July 24, 1939, there were 146 American vessels equipped with radiotelephone and 50 vessels of Canadian registry.

Conferences between representatives of United States and Canadian vessel owners of the Great Lakes were held in Toronto on October 5, 1938, and January 9, 1939. Resolutions were addressed jointly to the Commissioner-in-Charge, Federal Communications Commission, and to the Minister of Transport, Dominion of Canada, in connection with these conferences which expressed the opinion of these operators that radiotelephone has been demonstrated to be a prompt and reliable instrumentality for communication between ships and between ship and shore, and requesting the Governments of the United States and Canada to immediately endeavor to reach an agreement and to make frequency allocations at least on a temporary basis for a uniform radiotelephone communication service with respect to all of the Great Lakes.

Through the cooperation of the State Department, the Federal Communications Commission and the Department of Transport of the Dominion of Canada established a temporary arrangement for uniform radiotelephone communication upon the same fundamental basis as that used for radiotelegraphy, thereby affording the proper opportunity for the demonstration by United States and Canadian vessel owners of the practicability of radiotelephony for safety purposes on the Great Lakes. This system is being used, insofar as practicable, by vessels of United States and Canadian registry during the season of 1939. The results of this temporary arrangement, the operation of which is being observed by members of the Engineering staff of the Commission, are expected to be of material service to the Commission and to the Canadian Department of Transport in the development of various proposals and recommendations for a uniform system of radio communication on the Great Lakes. As a result of such consultation between these representatives and members of the staff of the Great Lakes and Inland Waters Survey, the study of radio communication requirements necessary or desirable for ships navigated on inland waters of the United States

was limited to passenger-carrying vessels of 100 gross registered tons or over, and freight vessels of 1,000 gross registered tons or over engaged in operation on bays and sounds or on other larger bodies of inland waters, excluding those which confine their operations to rivers.

3. MARINE SERVICES

EXEMPTION FROM COMPLIANCE WITH TITLE III, PART II

The Commission is authorized by the International Convention for the Safety of Life at Sea, London, 1929, and Public Law No. 97, to grant exemptions from the radio requirements prescribed therein when the vessels are navigated within certain specified limits, provided the Commission considers that the route and conditions of the voyage, or other circumstances, are such as to render compliance therewith as unnecessary or unreasonable for the purposes of the act and treaty.

Few applications were filed during the past fiscal year for exemption of vessels from the requirements of Public, No. 97, May 20, 1937, amending the Communications Act of 1934, in comparison to the number received in the preceding fiscal year.

As of June 30, 1939, numerous small pleasure passenger vessels below 100 gross tons were operating in an exempted status and subject to certain restrictions and specified distance limitations from shore in restricted areas. The general exemption previously granted by the Commission May 17, 1938, to small pleasure passenger vessels as a class up to and including 15 gross tons was renewed by the Commission May 16, 1939, for a period of 1 year.

Exemption was granted for a period of 1 year to certain individual vessels in excess of 100 gross tons for various operations. Exemption of a temporary nature for periods varying from 10 days to 3 months has in the past fiscal year also been granted in seven cases.

A large number of the vessels to which exemption has been granted during the past fiscal year are equipped with low power radiotelephone or radiotelegraph equipment which is available for communication with Coast Guard, coastal-harbor radiotelephone and ship stations, and consequently are not without some form of communication in case of emergency.

VIOLATIONS AND DEFICIENCY REPORTS

The enforcement of the operation and maintenance of marine radio equipment required by the Act and specific rules promulgated by the Commission on the basis thereof resulted in the serving of some 4,100 deficiency reports in contrast to 3,000 served during the preceding fiscal year, the additional number being attributable to the assignment of additional inspector personnel, which permitted the performance of 16,431 ship inspections, and represented an increase of 2,482 inspections over the number of inspections conducted during the preceding fiscal year.

An apparent increase in familiarity with the law and its application and the cooperative attitude shown in general by those responsible for compliance therewith has resulted in expeditious correction of the reported deficiencies with few exceptions. In one instance, however, it became necessary to notify the owner of a vessel of United States

registry that such vessel had become subject to a forfeiture for violation of the Communications Act of 1934. At the end of the year the Department of Justice was taking the necessary steps to collect the forfeiture.

COASTAL TELEPHONE

There has been no change in the number of coastal telephone stations operated as reported in the previous fiscal year. There are 6 American trans-Atlantic and trans-Pacific passenger vessels licensed to handle public telephone communications with this class of station, and there are also a total of 23 foreign ocean-going ships which normally communicate with these stations.

COASTAL HARBOR STATIONS

During the past year licenses were granted for new public coastal harbor telephone stations at Duluth, Minn., Port Washington, Wis., Memphis, Tenn., and San Juan, P. R. Construction of a station of this class was authorized at Port Sulphur, La. An application is pending for additional coastal harbor facilities at Lake Bluff, Ill., on Lake Michigan. Hearings were held on this application and on an application for a new coastal harbor station at Galveston, Tex. As of June 30, 1939, there were 14 coastal harbor telephone stations in the United States and Puerto Rico licensed to provide public radiotelephone service. Applications also are pending for new coastal harbor stations at Rogers City, Mich.; Caseville, Mich.; Sturgeon Bay, Wis.; West Dover, Ohio; Buffalo, N. Y.; Charleston, S. C.; Tampa, Fla.; Wilmington, Del.; and Cape Girardeau, Mo. An application to construct a public coastal harbor station at Seattle, Wash., was denied after formal hearing.

SHIP TELEPHONE

As of June 30, 1938, there were 765 ship telephone stations licensed by the Commission to communicate with coastal harbor stations. On June 30, 1939, this number had increased to 1,561. Of this number, 141 ship telephone stations were licensed for service on the Great Lakes.

EQUIPMENT

In order to insure compliance with section 354 (d) of the Communications Act of 1934, as amended, the Commission, on January 18, 1938, amended the Ship Radiotelegraph Safety Rules, modifying paragraphs 12 (c) and 12 (e) of these rules with respect to the standards for intermediate frequency, radiotelegraph, transmitting equipment installed on board vessels subject to title III, part II of the act.

This modification met with objection from certain shipowners, the main point at issue being the provision of the modified paragraph 12 (c) with respect to power required to be developed by new and existing transmitters with particular reference to the provision of subparagraph (3), requiring the replacement of existing radio equipment of a power less than the rules specified with new or modified equipment by October 1, 1938.

Having failed to reach an agreement satisfactory to the shipowners and the Commission at an informal conference held in the offices of the Commission at Washington, on April 21, 1938, the matter of

investigation of power requirements for ship radio transmitters was, on the Commission's own motion, designated for a formal hearing scheduled for November 14, 1938; and, on June 9, 1938, the Commission postponed the effective date of the subparagraph (3) of paragraph 12 (c) until further order of the Commission.

A preliminary study revealed that three main technical factors were involved in the determination of the minimum power required of a ship transmitter to satisfy the provisions of section 354 (d) of the act, namely:

- (a) Intensity of the prevailing atmospheric noise level.
- (b) Performance characteristics of ship transmitters, receivers, and antennas.
- (c) Signal-to-noise ratio required for safety service.

In the absence of published data on the intensity of the atmospheric noise level to be encountered in different parts of the world, an investigation of this and other factors as well, was undertaken. In this connection, four United States ships were fitted with apparatus capable of continuously recording the intensity of the atmospheric noise level. Commission engineers operated this equipment while these vessels were engaged on their normal voyages, traversing different trade routes on the Atlantic and Pacific Oceans and in the Gulf of Mexico. Data on transmitter and antenna performance characteristics for over 100 representative United States ships were obtained by field personnel. Performance data on receivers in common use on United States vessels were also compiled. Tests were also conducted to determine the signal-to-noise ratio required for a grade of service consistent with safety of life and property at sea and, in addition, data were recorded on sound records for reproduction and demonstration.

All these data, when correlated, formed a basis on which an engineering estimate was formulated of the power necessary to be developed into an average ship antenna, by an average ship main transmitter, to provide a safety radiotelegraphic communication service between ships at sea over the prescribed distance of 200 nautical miles by day under normal conditions and circumstances, when maintaining a watch on the international distress frequency of 500 kilocycles.

On November 8, 1938, the Commission designated Commissioner T. A. M. Craven to conduct the hearing theretofore ordered; and the hearing was held in the offices on November 14-18, 1938, in which shipowners, radio communication companies, and radio operators' unions participated. The resultant report substantiated the Commission's rule as modified on January 18, 1938, with the exception that a proposed further modification of subparagraph (3) of paragraph 12 (c) was set forth and recommended for consideration.

This proposed further modification, if adopted as an amendment to the rules, would provide for the continued use of existing equipment not capable of meeting the applicable requirements of the rules with respect to power output and installed on board subject vessels, as temporary main transmitters until January 1, 1940. It would further provide for the approval of a specific electron-tube transmitter installed on board a subject vessel, if it is demonstrated that all the applicable requirements of the rule other than the power output requirement are capable of being met and if it is further demonstrated that the involved transmitter, as installed, is capable of producing

certain prescribed field intensities at a distance of 1 nautical mile over sea water.

Exceptions to the report were filed and the status of the matter as of June 30, 1939, was that oral argument before the full Commission was scheduled for July 13, 1939; and final action is to be taken after consideration of the points covered in the oral argument.

As a result of the amendment of the Ship Radiotelegraph Safety Rules on January 18, 1938, modifying paragraphs 12 (c) and 12 (e) of these rules, several new types of marine radiotelegraph transmitters, reflecting recent advancements in the radio art, have been developed. Also certain types of transmitters in common use on vessels of the United States have been modified to conform with the less stringent requirements of the amended rules, contained in subparagraph 12 (c) (2) thereof. In line with the Commission's policy to approve types of equipment, after satisfactory demonstration, as capable of meeting the requirements of the rules governing a specific service, tests have been conducted in the presence of engineering representatives of the Commission. Twenty-two types of transmitters made by four leading manufacturers of marine radio equipment have been approved as capable of meeting the applicable requirements of paragraph 12 (c) of the amended rules.

The approval of specific types of radio receivers, radio direction finders, and radio equipment for lifeboats, for use on vessels required by law to be equipped with apparatus of these classifications, has been held in abeyance pending the promulgation of Standards of Good Engineering Practice for Ship Stations which will furnish a basis for consideration of type approval.

Studies have been made and are being continued with the view of ascertaining the needs of the maritime mobile service with reference to safety of life and property at sea. These studies have been classified as follows: First, engineering standards considered necessary to adequately protect life and property, to be applied to all vessels subject to title III, part II of the act; and second, standards consistent with the advancement of the radio art, to be applied only to new vessels under construction and vessels on which new equipment is installed in the future. In this connection, conferences with other Government agencies and departments for the purpose of obtaining the benefits of the experiences of their engineering staffs have been held. Careful consideration has been given to the standards of the leading professional engineering societies. The results of these studies are reflected in some measure in the Rules and Regulations of the Commission, now undergoing revision and codification and they will be further reflected in the Standards of Good Engineering Practice for ship stations in process of preparation.

AUTOMATIC ALARMS

There are now 1,150 automatic alarms of tentatively approved types installed on vessels of the United States registry, 29 of this number having been reported as installed during the past year. A study of the operation of these devices under service conditions aboard vessels of the United States and in certain field monitoring stations of the Commission has been in progress during the past 2 years and will be continued for at least the greater part of the next year.

imately half-way between New York and Bermuda, encountered conditions which caused a forced landing at sea. Distress signals were transmitted from the plane and relayed to a New York coastal telegraph station which transmitted the autoalarm signal. Auto alarms on 53 American vessels responded to these signals and as a result of the response of the autoalarm installed on the American tanker steamship *Esso Baytown*, 10 of the 13 persons aboard the plane were rescued.

The effectiveness of the transmission of the alarm signal by a ship was demonstrated when the American tanker steamship *Bullock* caught on fire after an explosion while this vessel was in the Gulf of Mexico on October 6, 1938. The explosion rendered the radio inoperative and the fire which followed the explosion spread so rapidly that the men were forced to abandon ship immediately. The steamship *Bernuth* was within sight of the burning ship and transmitted the alarm signal which caused autoalarms on 15 vessels within the immediate vicinity to respond. The steamship *Bernuth* rescued all the crew, except one man who had been killed by the explosion, but other vessels on which autoalarms had responded were in a position to have rendered assistance if it had been necessary.

Special marine safety radio watches are established in the field offices of the Commission at Baltimore, Md., and Portland, Oreg., for the purpose of securing information in the marine radio service. These stations are manned on a 24-hour basis by trained experts and are equipped with special marine receivers, autoalarms, and frequency-measuring apparatus. The personnel of the stations is charged with the duty of observing the conditions prevailing in the marine radio service, particularly during the periods when ships are in distress, whether or not any undue interference is caused by other stations that prevents the speedy handling of the distress calls or the messages relating thereto, interference to hydrographic, medico, or other urgent messages, occupancy of the various ship-frequency bands, the measurement of the exact frequency used, performance of autoalarms, and general adherence to the international procedure in the marine service. The special marine safety watch established at Baltimore, Md., has in one instance been able to secure phonographic recordings of the transmissions made during a period of one distress case. Accurate data of the transmissions made during all the distress cases within range of both the marine monitoring stations were made. These data were used in corroboration with the information abstracted from the original ship radio logs received from vessels within the vicinity of the distressed vessel to complete the studies.

ENFORCEMENT

In regard to enforcement of the requirements for merchant ships, the Commission has found that its policy of leniency until such time as vessel owners and masters become familiar with the various aspects of the law was fully justified. We have noted a desire to cooperate in meeting all requirements, and an increased interest and responsibility on the part of the masters in seeing that their radio stations are properly maintained and operated. Nevertheless, two cases were pending at the end of the year which seemed to warrant proceedings to collect forfeitures.

The performance of the automatic alarms on board vessels has been discussed with the manufacturers of such equipment and certain modifications of the tentatively approved types have been proposed by representatives of the Commission as being highly desirable in the light of the results of the studies made as a result of which further research and design work has been undertaken by the respective manufacturers of the two types of automatic alarms tentatively approved.

The Commission, on November 9, 1938, ordered that tentative approval of the two types of automatic alarms designated as Radio Corporation of America, model AR-8600, auto alarm, and Mackay Radio & Telegraph Co. auto alarm, type 101-A, manufactured by Federal Telegraph Co., until December 31, 1938, be extended until March 31, 1939, in order that further study and analyzation of the data already accumulated may be completed before consideration of these devices for final approval. On February 7, 1939, the Commission ordered a further extension of the period of tentative approval of these automatic alarm devices to March 31, 1940, for the purpose of further studies of the equipment under service conditions.

The further research and design work undertaken by one manufacturer has resulted in the development of an improved model which, by order of the Commission on March 20, 1939, was tentatively approved.

RECORD OF SEA DISASTERS

Twenty-nine safety communications studies have been made of distress cases involving the use of radio distress signals during the 12-month period covered by this report for the purpose of investigating all phases of the safety problem to obtain the maximum effectiveness from the use of radio and wire communications in connection with safety of life and property. A master record of each study is maintained by the Commission. The investigations and studies have disclosed certain methods by which improvements can be made to increase the effectiveness of the use of radio in connection with safety of life and property. Conferences with other departments of the Government whose duties concern the safety of life and property at sea and with representatives of the major licensees of ship radio stations have been held for the purpose of correcting and improving distress procedure disclosed as a result of the Commission's studies of these cases. A number of new rules have been promulgated to reduce interference and increase safety in the maritime mobile service. In general these rules establish priority of communications for both ship telegraph and telephone services on any frequency based upon international regulations and provide for the transmission and repetition of distress and auto-alarm signals. Certain facts disclosed by these studies which involve ship stations and stations of foreign countries have been brought to the attention of representatives of the foreign governments involved. The interest and cooperation received has been most gratifying. The communication studies have also brought out important subjects for discussion at future radio conferences for the drafting of international rules and regulations for the safety of life and property at sea.

There were several disasters at sea wherein the lives of persons were saved by American vessels as a result of the transmission and response to distress signals. The outstanding case occurred on January 21, 1939, when the British Imperial airplane *Cavalier*, while approx-

4. AVIATION SERVICES

The increasing use of radio communication in the field of aviation, the many outstanding improvements in radio facilities contributing materially to air navigation and orderly operation of aircraft, and an increase of more than 30 percent in the number of aircraft radio-equipments licensed by the Commission, were among the most significant developments in the entire field of communications during the year. The growth of the service made necessary the revision of the radio regulations governing aviation communication. New frequencies have been made available to the aviation service, and technical advancements in the art have justified licensing on a regular basis classes of aviation stations heretofore authorized for experimental purposes only. Some of the problems with which the Commission was confronted in the revision of its rules to meet the changing conditions and increased demand arose in connection with—

- (1) Air navigation aids such as instrument landing systems and radio marker beacons.
- (2) Transpolar intercontinental flights.
- (3) Transoceanic flights.
- (4) Public correspondence from transport planes in flight.
- (5) Instructional services and motorless flights.

Each had the customary frequency allocation problem in an already overcrowded radio spectrum. The important task of revision of the regulations required the united effort of several groups for the formulation of provisions to meet present needs and to anticipate future requirements. Numerous conferences with the Civil Aeronautics Authority were held in a spirit of closest cooperation and harmony. Conferences were also held with representatives of the aircraft industry and operators.

One of the complex problems present in the aviation communication services is the change from the present airport control frequency, 278 kilocycles, to a more suitable ultra-high frequency. Because the characteristics of radiocommunications over that part of the radio spectrum embodying frequencies above 100000 kilocycles (less than 3 meters) are unusually favorable for the purpose, equipment used in connection with instrument landing systems, airport control, and public correspondence should operate in that range. The more obvious and important features are—

- (1) The signals between aircraft and ground stations are more reliable over an appropriate distance range on the ultra-high frequencies.
- (2) The signals have the ability to penetrate clearly through bursts of static during severe thunderstorms unaffected by such conditions that ordinarily render radiocommunications impossible on 278 kilocycles.
- (3) The signals follow the general line-of-sight range which is also favorable for repeated assignments of the same frequency and reduces the number of channels and complication required in designs of aircraft transmitters.
- (4) The dimensions of ultra-high frequency equipment are generally small and the units compact and conducive to light-weight construction which again is favorable for aircraft.

- (5) Ultra-high frequencies will be kept clear of interference from other assignments on the same and adjacent channels which is not the case on 278 kilocycles.

The frequencies immediately above 129000 kilocycles have been allocated to aviation, as appropriate for the needs described; but the equipment required for operation on these frequencies is not fully developed and is not therefore in general use on aircraft. The problem is further complicated by the development of the frequency modulation system which, from present indications, bids fair to render more dependable service, if applied to instrument landing units.

It is apparent that the economic problem in connection with changing from existing equipment operating on the airport frequency 278 kilocycles to new ultra-high equipment will require time. The formulation of a safe and fair plan agreeable to all concerned was not easy. The solution finally decided upon is set forth in the regulations wherein it is required that after January 1, 1941, applicants for renewal of airport control station licenses must specify an ultra-high frequency in addition to 278 kilocycles and continue to provide service on 278 kilocycles until an ultra-high frequency is designated as a substitute for 278 kilocycles. For the time being, stations using either frequency or amplitude modulation may be authorized on any of the ultra-high frequencies listed, until sufficient information is available to enable the approval of a system for universal use. It is expected, at the writing of this report, that ultra-high frequencies for airport control and instrument landings can be specified and additional frequencies can be made available by January 1, 1940.

INTERCONTINENTAL FLIGHTS

The picture of intercontinental flights during the fiscal year is a varied one resulting from many years of intensive development and international competition. The 20,000-mile shake-down flight of the *China Clipper* across the Pacific, and return, was successful after the establishment of a complete radiocommunication system along the route. Trans-Pacific scheduled flights have been established on a regular basis.

Similarly, before attempting the shake-down flight over the Atlantic, a coordinated communicating system was set up between operating bases in the Azores, Portugal, France, England, and Iceland. The big four-motored seventy-four passenger *Yankee Clipper* departed May 20, 1939, on the first successful airmail flight to Europe. Then on June 17, the *Atlantic Clipper* inaugurated the first scheduled passenger and mail trans-Atlantic flights.

Much remains to be worked out on the extensive subject of public correspondence between planes in flight and a ground system of stations placed at regular intervals along the route. To facilitate the regulation of this proposed service, two new types of stations were found necessary: (1) Public-service aircraft stations, and (2) public-service aeronautical stations. The former serves to handle the two-way conversation of a passenger on board the plane in flight, and the latter may be a series of ground stations feeding the radio signals into the telephone-wire system at points nearest the plane

along the flight path. In this manner, the passenger in flight across the United States may talk direct with his family at home. This public correspondence service is a reality in some foreign countries. The ultra-high frequencies are believed to be more appropriate for the development of a domestic public aviation radiotelephone service.

Public service aircraft stations on transport planes engaged in intercontinental service may be authorized to operate on frequencies available to shiptelephone and shiptelegraph stations for the handling of public correspondence in the same manner that they are available to ships of the United States. Communication facilities available for aircraft flying transoceanic air routes are therefore in the same category as those of oceangoing vessels.

There has been a very insistent and increasing demand for instructional facilities and radio equipment for motorless flight activities. Therefore, in the last revision of the rules and regulations, provision was made for this new type of service under the heading, "Flying School Station." Students in flight may now carry on two-way communication with the instructor on the ground or in another ship. If the student activities are in the vicinity of an airport having an airport control station, the airport control operator is given direct break-in microphone connections on the flying school station frequency to order the students in flight to clear the air prior to the arrival of commercial aircraft. Traffic on the national aircraft calling frequency 3105 kilocycles is generally congested and, especially at busy airports, the importance of complete supervision by the airport control operator cannot be overemphasized. Student communication on 3105 is therefore prohibited. Ultra-high frequencies appropriate for such needs have been made available for this service.

5. EMERGENCY SERVICES

At the beginning of the past fiscal year the Commission was engaged in bringing into the emergency services a large number of stations devoted to the promotion of safety of life and property which theretofore had been licensed on an experimental basis.

The adoption of the new emergency service rules shortly before the beginning of the year brought about marked increases in the number of stations operating in this service, i. e., State, municipal, zone, and interzone police stations, marine, fire, forestry, and special emergency stations. An added factor in this development has been the recognition by the Commission of the value of the ultra-high frequencies for providing reliable short distance communication between low power mobile units, and extended and cooperative use of the ultra-high frequencies has permitted rapid growth. During the year there have been 557 new police stations and 247 new forestry stations licensed, and it should be noted that "station" as used under the new emergency service rules means not only a fixed transmitter but may also include a large number of mobile units operated in conjunction with the fixed station as a coordinated emergency communication system.

POLICE STATIONS

The new frequencies have been of particular utility to municipal police departments and for this reason the Commission allocated 25 such frequencies for use by these agencies. The reassignment of

municipal police equipment from the four overcrowded experimental frequencies to the new allocations permitted a large number of cities to have a frequency separate from those used by other municipalities in the same geographical area. The resulting freedom from interference has allowed an increase in the number of installations to include most of the police cars and trucks. Several cities are now operating close to 100 mobile transmitters.

The ultra-high frequency police equipment had previously been operating under experimental authorizations, and the Commission on July 1, 1938, started accepting applications for regular municipal police licenses covering these units. By October 1, the expiration date of the experimental licenses, most of the 2,500 experimental stations had been regularly relicensed. The number of authorizations issued for these units was considerably reduced by including in the fixed station license all of the mobile transmitters operated by one licensee.

The growth in the number of new municipal police stations authorized in the past year has been particularly noticeable in the case of small communities. This is especially true of towns adjacent to large cities where efficient intercommunication by radio had led to more effective policing of these areas and closer cooperation between the law enforcement agencies involved.

As a result of the experience gained in the administration of the emergency service rules, the Commission on February 27, 1939, approved certain modifications. One such change provided for the licensing of low-power portable pack transmitters as part of a coordinated system. This means that licensees may by authorization from the Commission keep several battery-operated sets on hand to be used by men on foot during emergencies such as riots, or organized searches for escaped criminals. The provisions of the new rules permit these units to be licensed on the same frequency as the car transmitters. Thus, the individual will be in constant communication with the whole communication system and may summon immediate assistance whenever necessary.

FORESTRY STATIONS

While various forest protection agencies have previously applied radio to the solution of their communication problems, it was not until this year that stations were authorized on a regular basis for this purpose. Previously only experimental authorizations were issued for the operation of radio equipment by these organizations. However, with the availability of 10 ultra-high frequencies for forestry stations, as contained in the new emergency service rules, it was not long before several States made application for their use. A few such States have at the present time outstanding authorizations to construct considerably more than 100 forestry stations.

The Commission on January 16, 1939, allocated three frequencies in the 2,000 to 3,000 kilocycle band for use by forestry stations. These facilities were made available as a result of a conference held with forestry officials on June 29, 1938. It now appears that these frequencies are successfully supplementing the ultra-high channels in providing communication facilities for the protection of forest areas. This is particularly evident in mountainous areas where the ultra-high frequencies have very limited application.

SPECIAL EMERGENCY STATIONS

In addition to the classes of emergency stations authorized for use by instrumentalities of Government, special emergency stations have proved of great value in maintaining communication during periods of stress. Authorizations in this class are issued only to (a) organizations established for relief purposes in emergencies and which have a disaster communication plan; (b) persons having establishments in remote locations which cannot be reached by other means of communication; and (c) public utilities. Their purpose is to maintain communication in emergencies during which normal means of communication are interrupted or are inadequate.

The widespread interest in the past year by power and communication companies in the use of special emergency stations has undoubtedly been due to the fact that public utilities were definitely included in the emergency service rules among those eligible to receive authorization for such stations. Such companies have heretofore made use of two channels in the medium frequency band, but it remained for the assignment of the 10 ultra-high frequencies to permit needed expansion of their operations. These facilities permitted the public utilities to request their use for handling communications from mobile repair units. Generally speaking, immediate communication with such units is of vital importance in those cases involving broken power, telephone, and telegraph lines as well as disasters involving widespread areas.

CHAPTER VI

Licensing

1. INTRODUCTION
2. COMMON CARRIERS
3. EXPERIMENTAL SERVICES
4. ALASKAN STATIONS
5. COMMERCIAL RADIO OPERATORS
6. AMATEUR RADIO OPERATORS
7. MISCELLANEOUS RADIO SERVICES
8. PROSECUTION OF UNLICENSED ACTIVITIES

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1. INTRODUCTION

In addition to the licensing functions of the Commission which have already been discussed, growth has been equally rapid in the common carrier, experimental, Alaskan, amateur, and miscellaneous radio services. The increased availability and use of the ultra-high frequencies and technical advances have created a substantial increase in the applications presented to the Commission and have required unusual attention. The past year has witnessed numerous reallocations of the frequencies in these services and a revision of the rules governing them. Certain classes of stations heretofore authorized on an experimental basis are now regularly licensed in other services.

The discussion of the common carrier services contained in this part relates solely to the licensing functions of the Commission, and the regulation of these stations as common carriers is considered elsewhere in this report.

Since the Territory of Alaska is geographically separated from the rest of the United States and since its communication problems are peculiar to it, for convenience the discussion of all classes of stations in Alaska, other than broadcast and amateur, is included in this section of the report.

2. COMMON CARRIERS

The licensees in the fixed public radiotelephone and radiotelegraph services are engaged as common carriers of radio communications. As such the Commission has the duty, in addition to the licensing function, of regulating their rates, practices, classifications of services, and tariffs, and of supervising their accounts. The following discussion, however, is concerned only with their status as licensees of radio facilities.

The fact that this service is highly competitive, and yet is necessarily limited both by the state of the radio art and by economic demands, requires that the Commission have before it full information prior to its determination upon any application. Consequently, many applications for authorizations in these services, other than those requesting renewal of licenses or technical changes in existing stations, can be finally acted upon only after extensive hearings.

All of the licensees operating radiotelegraph or radiotelephone stations in the public or fixed radio services (with the exception of Alaskan stations and one licensee in the agriculture service in the United States) are engaged in radio communication offering a general message service to the public principally in the international field. At the close of the fiscal year, there were 15 radiotelegraph companies operating in the continental United States, Hawaii, and Puerto Rico, 7 of which offer direct circuits to 56 foreign points of communication, 4 radiotelephone companies with direct circuits to 30 foreign points, and 1 company in the fixed public press service offering a limited press communication service to 40 foreign points and 98 domestic points. As a practical matter, American radio common carriers in general

offer a communication service to practically every point throughout the world through their own facilities (either direct or indirect circuits) or through the facilities of associated or connecting carriers.

On June 30, 1939, there were licensed a total of 371 point-to-point radiotelegraph stations (an increase of 23 new stations during the last year), 68 point-to-point radiotelephone stations (an increase of five new stations during the last year), and 69 point-to-point radiotelegraph press stations (an increase of 8 new stations during the last year). Within the period covered by this report there were no new common carriers licensed to engage in the transmission of public communications nor did any of the existing companies retire from business as some did the previous year. The number of applications for instruments of authorization for point-to-point telegraph stations received and acted upon was 1,200 as compared with 853 for the previous year or an increase of approximately 40.7 percent. As a result of such applications the Commission issued a total of 974 instruments of authorization. In the point-to-point radiotelephone service a total of 416 applications were received and 357 instruments of authorization were issued as compared with 336 applications and 313 instruments of authorization for the year 1938.

During the fiscal year several important changes were effected in the rules and regulations governing the public radio services. As the consequence of a petition filed by Press Wireless, Inc., the sole licensee in the fixed public press service, the Commission on December 20, 1938, held an informal conference on a proposed revision of rule 241 (a) which governed the transmission of multiple-address press service. This service is used largely by broadcast stations and newspapers both in the domestic and foreign field and has expanded rapidly since its inception in April 1936, until, at the time of the conference, approximately 70 percent of the total paid press traffic handled by this company was in the multiple-address classification. It was proposed by Press Wireless, Inc., that the transmission of multiple-address press messages be authorized on a primary basis instead of on a secondary basis as contained in the existing rule. As a result of the facts presented, the Commission on February 20, 1939, adopted a revision of this rule which placed the transmission of such traffic on an equal footing with point-to-point messages destined for primary points of communication.

On May 8, 1939, the Commission revised its rules and regulations governing fixed services. The new rules became effective June 9, 1939. They incorporate many previous policies and practices with respect to licensing and operating, point-to-point telegraph and telephone stations which heretofore were not set forth in specific rules. Among the noteworthy changes is the requirement that all licenses hereafter shall specify not only the point of communication but the name of the organization, agency, or person operating the receiving end of the circuit. The effect of the adoption of this rule gives the Commission more information concerning radio circuits to foreign countries, particularly those circuits which may be inactive or where a change has occurred in the organization operating the receiving end of the circuit or where a change has occurred in the effective control of such organization.

Commencing July 1, 1939, all licensees will be required to submit quarterly reports setting forth the estimated volume of paid message

traffic transmitted during the previous quarter on each frequency licensed for public message traffic. A complete analysis of the use of all frequencies for each common carrier will be made from the reports submitted. Such analysis will be valuable in determining future requirements for additional frequency assignments which heretofore has not been available. In addition, it will furnish the Commission with information as to the propagation characteristics and the usefulness of frequencies over long distances during the various seasons of the year and different hours of the day.

Additional frequencies above 30000 kilocycles were made available to the fixed services by the Commission in rendering its decision on March 13, 1939, in connection with the protests to Commission order No. 19 by the licensees of certain experimental stations. This decision further amended order No. 19 insofar as it allocated frequencies above 30000 kilocycles and became effective April 13, 1939. It is anticipated that many more applications for facilities will be received by the Commission as technical developments in the radio art progress, particularly in the frequency bands above 300 megacycles.

FIXED PUBLIC RADIOTELEGRAPH SERVICES

Although the majority of the point-to-point radiotelegraph stations in the fixed public and fixed public press service are licensed for, and operate principally in, the international and overseas service, several common carriers operate domestic radiotelegraph circuits between 11 principal cities of the United States. In addition, point-to-point radiotelegraph circuits are operated by certain companies between 13 cities on the Great Lakes which are used principally in connection with the shipping industry during the navigation season from April until November each year. All of the stations serving the Great Lakes are licensed to operate on frequencies below 200 kilocycles. In the southwestern portion of the United States public radio communication service is available between 6 cities. However, these cities are located in or in the proximity of oil producing and distribution centers and the traffic principally relates to activities in the industry. With the exception of 1 licensee in the agricultural service, a limited radio communication service for the transmission of agricultural market news only in the State of California.

All licensees except the agriculture service may transmit only public correspondence pursuant to tariffs on file with the Commission and service messages which are incidental and necessary to the expeditious movement of this traffic. Included among the various classes of traffic handled as public correspondence in conformity with established tariffs are addressed program material to and from overseas points for rebroadcast by broadcast stations, facsimile and photograph service and addressed press service to one or more fixed points for reception principally by newspapers and broadcast stations.

During the year the Globe Wireless, Ltd., circuit between Honolulu and Shanghai, China, was opened for the first time for general message traffic. Heretofore due to its contract with the Chinese Government, only traffic relating to the Robert Dollar Steamship Line could be handled between these points by Globe Wireless, Ltd.

All licensees have continued their efforts to modernize and improve their transmitting and receiving equipment so as to keep abreast of

the latest developments in the radio art, meet the demands of traffic conditions, and provide a highly efficient service to the public. These improvements have consisted mainly in constructing additional facilities, replacing obsolete equipment with that of modern design and capabilities, and reconstructing transmitters which have been in service a number of years.

FIXED PUBLIC RADIOTELEPHONE SERVICES

Radiotelephone service from the continental United States is rendered to practically all points throughout the world through the facilities of the American Telephone and Telegraph Co. located at three primary distribution centers, namely, New York, Miami, and San Francisco. Telephone service to points in Europe, Africa, South America (except Venezuela and Colombia), and the Near East is handled via New York while that for Asia and Oceania is routed through the facilities at San Francisco. Messages destined for Central America and northern South America are transmitted from Miami.

In Puerto Rico service is rendered by the Radio Corporation of Porto Rico at San Juan and in Hawaii by the joint facilities of the Mutual Telephone Co. and the RCA Communications, Inc.

Since its inception in 1927, the transoceanic radiotelephone traffic has grown rapidly. During the year of 1927 the number of paid telephone calls in both directions was only 2,296. In 1930, the number of messages had increased to 14,639, in 1937 to 34,938, and during the calendar year of 1938 to a peak of 51,389 radiotelephone calls. During the first 6 months of 1939, approximately 27,966 messages had been transmitted.

Additional facilities have been made available during the past year in order that the increase in traffic loads might be expediently handled. Of primary importance is the development of twin single side band transmission on the trans-Atlantic circuits. This development has provided two voice channels where only one existed heretofore. As advances in the art have made possible the practical use of twin single side band transmission, it appears likely that additional channels will become available in the future, thereby utilizing the frequency space now occupied to its fullest extent. In addition, the establishment of a new short wave receiving radiotelephone station at Manahawkin (N. J.) has been completed. This station employs the newly developed multiple unit steerable antenna which is expected to improve the quality and efficiency of the radio circuits.

Pursuant to authority of the Commission granted June 28, 1938, the Radio Corporation of Puerto Rico has opened to public communications a new direct radiotelephone circuit between San Juan, P. R., and Port-au-Prince, Haiti.

On December 20, 1938, a direct circuit between the United States and Australia was placed on commercial service. Prior to this time, radiotelephone calls destined to Australia were transmitted via the New York-London circuit. The establishment of the direct circuit from San Francisco resulted in a reduction in cost of the radiotelephone calls and a more efficient and expeditious service to the user.

On June 1, 1939, radiotelephone service via Bandoeng was extended to Malaya. This service had also been previously rendered via the New York-London circuit and connecting carriers from there on.

New direct circuits to Berlin (Germany), Rome (Italy), and Berne (Switzerland), have not yet been commercially established.

3. EXPERIMENTAL SERVICES

The past fiscal year witnessed the transition into other services of a number of stations theretofore authorized on an experimental basis. This group includes, among others, the police and forestry stations which now operate in the emergency service on a regular basis.

The rules and regulations governing the experimental service have been substantially revised and broadened with a view to encouraging scientific research. The new rules became effective for all new experimental stations on May 23, 1939, the old rules remaining in effect for existing licensees of general and special experimental stations (other than experimental stations in the broadcast service) until October 1, 1939. The experimental service is a service conducted by stations engaged in research and experimentation for the advancement of the radio art.

The new rules, effective May 23, 1939, insofar as they apply to new authorizations, eliminate the former general and special experimental licenses and provide for three classes of experimental stations. Class 1 experimental stations are licensed for general or specific research or experimentation for the advancement of the radio art along lines which are not specifically directed to any proposed or established radio service. Class 2 stations are authorized to conduct research and experimentation in radio directed toward the development of a new or proposed radio service or some phase of an established radio service. Class 3 stations are licensed to individuals interested in radio technique solely with a personal aim to conduct an experimental program on their own behalf, requiring the use of radio for a limited time.

Classes 1 and 2 are now differentiated on the basis of the experimental program contemplated, whereas the former classifications of general and special experimental stations were based on the frequencies employed. Class 3 stations are granted to individuals for a limited period to permit actual tests of specific ideas with respect to some phase of the radio art. These authorizations will not normally be renewable and will be issued only under such limitations and restrictions as are found necessary to avoid interference and commercial exploitations.

During the past year the Commission has issued approximately 1,000 authorizations permitting experimentation in various phases of the radio art. These authorizations included such research programs as developing, testing, and calibrating radio equipment; fundamental research in connection with scientific theories; and the development or extension of such important services as aviation, meteorological, coastal and ship harbor, police, forestry, geophysical, and the fixed point-to-point services.

The experimental program of research being conducted by the Department of Forests and Waters of the Commonwealth of Pennsylvania furnishes a typical example of the efforts being made to improve existing service. The present plans provide for the installation of a number of experimental stations, seven of which were authorized by the Commission on March 6, 1939. The final objective of the experimental program of research in this instance is the develop-

ment of a State-wide emergency communication network for flood control and forestry protection. The present plan contemplates the installation of a number of unattended stations at strategic points within the State. These stations will serve as relay or repeater stations and will be actuated by small manually operated sets licensed as forestry stations and located in the immediate vicinity. Information relative to weather conditions such as precipitation, stream heights, dike and dam control can be collected and correlated. It is anticipated that such information will be vital in the prediction of flood crests and will be an important factor in the safety of life and property particularly with respect to communities in the areas adjacent to the main rivers which have been subject to considerable loss of life and property during recent floods.

An important instrument being developed for the aviation service is the radio altimeter. As this instrument operates on frequencies above 300000 kilocycles, the practical application has been delayed pending the development of vacuum tubes having sufficient power output to render the system feasible. With the recent advances in the vacuum tube technique, the problem of obtaining a reliable altimeter appears to be rapidly nearing a solution.

In addition to the development of equipment for the needs of specific services and the application of such equipment in the service, continuous observations have been made in the physical phenomena directly affecting propagation of radio waves. There are a number of stations actively engaged in the measurement of the height and intensity of ionization of the Kennely-Heaviside layer. A comprehensive knowledge of the manner in which the ionization changes over long periods will no doubt aid materially in future radio regulations and the adjustment of the services to conform to the optimum conditions for each service.

4. ALASKAN STATIONS

The licensing function of the Commission in respect to radio communication in Alaska presents a problem entirely different from that of the continental United States. Due to the difficulty of transportation, the remote location of many communities, and the inaccessibility of wire lines to many persons, radio provides the only means of communication throughout much of the Alaskan territory.

There are approximately 300 point-to-point telegraph and telephone radio stations in Alaska, many of which operate without charge and without filing tariffs with the Commission. There are also more than 150 coastal stations for communication with ships in Alaskan waters.

Pursuant to the new rules of the Commission governing radio stations in Alaska (other than amateur and broadcast), which were adopted by the Commission on December 5, 1938, any station in Alaska, regardless of the class in which it is licensed, is permitted to transmit messages concerning matters relating to the safety of life and property where there is no other established means of communication, and provided the service is rendered without charge.

The mountainous terrain combined with the heavy snows and long winters has emphasized the importance of radio communication in the Territory in connection with air travel. On a per capita basis, the

air passenger traffic in Alaska is in excess of sixteen and one-half times greater than in the United States.

The importance of radio communication for aviation had not been fully realized in the Territory until about the beginning of the fiscal year. Extensive freight, express, and passenger traffic to the various portions of the Territory has been handled principally on a non-scheduled basis by a number of independent aircraft operators. Many remote mining areas are served by aircraft and radio that could not be reached by any other means. Such keen competition has developed among the operators, that it has seemed impossible for them to organize among themselves the coordinated communications system so necessary for successful airways operation in the Territory. Such a system is made necessary by the increasing demand for the limited supply of frequencies in the radio spectrum. Unfortunately, the frequencies available are not adequate for present demands and the individual assignments desired by each operator, therefore, cannot be made. There are approximately 70 aeronautical point-to-point stations now operating in the Alaska aviation service.

With a coordinated communications system similar to that in successful operation in the aviation service over the entire United States, complete and impartial communications could be furnished promptly to all on a nonprofit pro rata basis. In an effort to bring about an understanding of this important problem, a general hearing on Alaskan aviation communications has been called for the fall of 1939.

The fiscal year witnessed the expansion of the communications system in connection with extended lanes of passenger and mail services generally on weekly flight basis. Plans for regular mail and passenger service between Seattle, Wash., Juneau and Fairbanks, Alaska, have been formulated. Likewise tentative plans have been considered for transpolar flights from Alaska to Europe. Channels for transpolar communications have been designated by international agreement.

The Commission through its established office in Alaska functions to a large extent in conjunction with the Alaska Communications System, a division of the Signal Corps of the Army, which has for a number of years operated the communications system in Alaska. All applications for service in Alaska are submitted to the Alaska Communications System for its recommendations prior to action by the Commission thereon.

5. COMMERCIAL RADIO OPERATORS

During the past year the Commission completed its study of the Rules Governing Commercial Radio Operators. An informal hearing held before the Chief Engineer of the Commission on July 11 and 12, and September 14 and 15 afforded all parties interested in the subject of radio operators an opportunity to participate with respect to proposed rules then under consideration for adoption by the Commission. Under the revised regulations, six classes of commercial operator licenses have been established. An operator is permitted to hold separately a radiotelephone and radiotelegraph class license. Previous regulations required endorsement of radiotelegraph class license to indicate granting of radiotelephone privilege, thus making it necessary to issue as many as 18 different license combinations. By elimination

of license endorsements an improvement in licensing procedure will be obtained.

Of major importance to the aviation, police, and ship-harbor service is the establishment of the restricted radiotelephone operator permit which greatly simplifies the licensing requirements for operators in these services. Because of the nontechnical nature of the examination for this permit, the operator is prohibited from making any adjustments that may result in improper transmitter operation and any required maintenance or servicing of the equipment is performed by a radiotelegraph or radiotelephone first- or second-class operator. Under this policy a large number of stations employing personnel having specialized knowledge pertinent to a particular class of service are provided with licensed operators as required by law without in any way impairing the technical operation of the station. To facilitate examining members of police and other governmental agencies where absence of the applicants from their post of duty would jeopardize the safety of life and property, provision has been made to conduct by mail the examination for the restricted radiotelephone operator permit.

The adoption of a new type of examination for commercial operators and specific rules respecting procedure and qualifications is probably the most outstanding change in the operator regulations. The new examination procedure will enable an applicant to complete the examination in much less time than formerly and reduce the time required in grading papers, thus permitting the Commission's inspectors to devote additional time to other duties.

Provision has been made whereby renewal of operator licenses and permits may be obtained on the basis of employment as radio operators during the license term as a substitute for reexamination. Credit for service has been extended to operators employed on vessels and stations of the United States Government as well as to operators engaged in the maintenance and servicing of radio transmitters. Under the new regulations, the license term has been extended from 3 to 5 years.

During the past year there were received a total of 17,626 commercial applications consisting of 17,566 applications for radio facilities, and 60 applications for either telephone or telegraph wire certificates. A total of 15,208 authorizations for radio facilities and 57 wire certificates were issued.

For comparative purposes there is tabulated below the number of commercial applications received and authorizations issued for the preceding 5 years.

	1935	1936	1937	1938	1939	Percent increase 1939-35
Applications received	8, 221	9, 751	12, 192	16, 573	17, 626	114
Authorizations granted	7, 772	8, 427	11, 834	14, 463	15, 265	96

The Radio Service Bulletin has been prepared semimonthly for official notification by the United States to the Bureau of the International Telecommunication Union at Berne, Switzerland, of all commercial and government radio stations, and registration of radio-

frequencies to be included in the international radio lists published in accordance with the International Telecommunications Convention, Cairo, 1938.

6. AMATEUR RADIO OPERATORS

A very liberal policy has continued in licensing radio amateurs and their transmitters. During the fiscal year the Commission issued nearly 50,000 licenses for amateur stations or their operators. The number of individuals holding such licenses grew at increased pace to a total exceeding 53,000 and their applications for new licenses, renewals, or changes exceeded a hundred per day.

Such figures illustrate an attitude toward the radio amateur characteristic of democracy. In some countries the amateur is prohibited, in many curtailed by various fees, taxes, or other special restraints that are strange to the American amateur and experimenter. In all other countries combined the number of authorized radio amateurs is less than half those licensed by this Commission.

Holders of the Commission's amateur license are scattered throughout the States, Territories, and possessions from Alaska to Puerto Rico and from Maine to American Samoa. Some of the first air clippers over the Pacific carried radiomen to man new island posts, licensed amateurs taking with them their amateur equipment that enabled them to continue their experiments and keep in touch with licensed amateurs in the States. Wherever the flag flies are likely to be found radio amateurs maintaining communication that may become vital in time of emergency or local disaster.

The liberal policy toward the radio amateur extends to the nature of his privilege. The licensed amateur may use one or more transmitters at the location fixed in his license or may operate temporarily at other locations. He may use his portable equipment at other points or take it to and from moving vehicles for operation in motion. Under general limitations he may alter or replace his equipment, leaving maximum freedom for his initiative and invention. He may use radiotelegraphy, radiotelephony, or experiment with other types of emission. In short, he has considerable latitude in choosing or changing his location, equipment, schedule, frequency, power, or emission, subject to the limitations or general provisions of treaty, statute, and regulations.

These provisions limit the amateur radio privilege to citizens of the United States and the amateur may not locate his station on premises controlled by aliens. He may in general communicate only with other amateur stations and if with such stations in other countries that permit, the communication must be in plain language and of unimportant nature. At all times he must select and maintain his operating frequency and power within assigned limits and comply with other requirements in the Commission's regulations. The portion of these regulations governing amateurs was revised during the year, mainly for improved technical standards.

Since the licensed amateur is authorized to place a radio transmitter on the air largely on his own resources, with opportunity to cause undue interference to other radio services if he is not properly prepared, it is important that he have a measure of special qualification. The United States has agreed by treaty to qualify all its amateurs in the International Morse Code and the tests of applicants in

sending and receiving code are supplemented by written examinations to prove their familiarity with the governing provisions of treaty, statute, and regulation, as well as their knowledge on the technical side. During the past year such examinations, given at many points throughout the United States and outlying areas, exceeded a thousand monthly. More than a third of the applicants failed on first appearance, many returning and passing the tests after better preparation.

The control and regulation of the operating amateur is further accomplished by means of monitoring, inspection, and occasional action of other special nature. While numerous amateurs are cited for infractions of technical standards it has been comparatively rare that the Commission has found it necessary to revoke or suspend an amateur's license, there were only seven such instances during the year.

The Commission completed a special study of the amateur service during the fiscal year, resulting in revised rules becoming effective December 1, 1938.

7. MISCELLANEOUS RADIO SERVICES

In line with the general revision of all Commission rules and regulations which have taken place during the period embraced by this report, the Commission on December 12, 1938, adopted chapter XI, Rules Governing Miscellaneous Radio Services. This group is composed of certain services, which while providing safety communications, are mainly established for use during limited periods under certain specific conditions. The stations which may be authorized include geological, mobile press, relay press, motion picture, and provisional stations.

Geological stations operating in the Geophysical Service are used primarily in the investigation of physical characteristics of the surface and subsurface strata of the earth. Mobile press and relay press stations are authorized in the Special Press Service, a limited radio communications service for the transmission of news items and related material between fixed and mobile stations. The Intermittent Service now contains two classes of stations, motion picture and provisional, for use during limited periods of time or at irregular intervals where other facilities are unavailable or their use impracticable.

Licenses in the Miscellaneous Services must coordinate operation with other licenses in order to avoid interference and make the most effective use of allocated frequencies, none of which are assigned exclusively to any station or applicant. There were 300 stations operating in these services on June 30, 1939.

Included in the new rules are provisions relating to the authorization and use of relay press stations. Such stations may be assigned a total of 11 ultra-high frequencies usable for the transmission of news or inquiries concerning news to or from points where other communication facilities are not available. Inasmuch as this is very recent development only a few stations have been established and, therefore, little can be said concerning the results of their operation.

Provisional stations are of particular interest since this is a new type of station heretofore not authorized except on an experimental basis. A definite need for this authorization has been recognized by the Commission. As a result nine ultra-high frequencies were made

available for use during limited periods in connection with projects affecting public welfare in situations involving safety or where radio communication is of practical necessity. Several stations of this nature have been authorized in conjunction with a large bridge being built in the northwest part of the country.

8. PROSECUTION OF UNLICENSED ACTIVITIES

Many cases of alleged unlicensed operation of radio stations were investigated during the year. Because of the apparent necessity, in criminal cases, of affirmatively proving the interstate characteristics of the transmissions, the investigation of these cases frequently presents a most difficult problem. There were some 20 cases, however, in which the proof was satisfactory and in which the other circumstances seemed to warrant reference of the case to the Department of Justice. A conviction or plea of guilty was obtained in 7 of the cases, although probation was granted in each instance. Indictment was refused in 2 cases. The remainder are pending.

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CHAPTER VII

Recommendations to Congress

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RECOMMENDATIONS TO CONGRESS

A serious handicap to the Commission in its efforts to obtain adequate and reliable hearing records has been its inability to hold hearings in the field due to lack of personnel and travel appropriations. All too frequently it has been compelled to make findings based on deposition evidence, in the taking of which it has not been possible for the Commission to participate. Such depositions often constitute mere unsubstantiated ex parte statements.

Also, the Commission is without adequate means of developing facts through field investigations bearing on issues involved in hearings, unlicensed activities, and violations of law and regulations. Its experience has been that at least a small staff of trained investigators, supplemented by the placing of attorneys in key field offices, is necessary if the Commission is to carry out in any effective way the enforcement and regulatory responsibilities with which it is charged under the statute.

It has not been possible with the staff available to do more than scratch the surface of regulating the vast telephone industry. The Commission invited the special consideration of Congress to this situation in a request for deficiency appropriations made during the year.

In order to keep abreast of its work—constantly increasing in difficulty, variety and volume—hours of overtime by the staff have been unavoidable and excessive, with resulting loss of efficiency. The Commission reported 2,062 days of overtime for the fiscal year ended June 30, 1938, and the daily figures continued to mount higher in the past year during which a total of 5,115 days was accumulated in Washington and in the field.

Reorganization of staff units and simplification of procedure have been among the steps taken to remedy this situation arising from understaffing and overload, but these measures alone cannot be a complete solution. Among the inescapable additions to the already heavy overburdening of the staff has been the increasing importance and volume of litigation conducted in the courts, which was one of the Commission's outstanding activities during the year. Issues arose in several cases, the final determination of which will affect, in a far reaching and fundamental way, the future conduct of the Commission's proceedings in broadcast cases. The 42 appeals and other proceedings pending before the courts during the year were substantially in excess of any previous total.

These proceedings were complex in character and required substantial additions to the work assignments of the staff. In addition, flowing from this litigation, there was a very substantial increase in the number of petitions and procedural steps which had to be passed upon within the Commission.

REPORT OF THE SECRETARY

For the fiscal year ending June 30, 1939, there was appropriated \$1,745,000. This sum is accounted for as follows:

Personal services, District of Columbia.....	\$1, 103, 093. 28
Personal services, field.....	454, 680. 89
Supplies and materials.....	37, 485. 64
Gasoline and oil.....	3, 988. 52
Storage and care of vehicles.....	5, 378. 50
Communication service.....	15, 786. 60
Travel expenses.....	21, 279. 52
Car fare.....	1, 187. 50
Transportation of things.....	3, 417. 59
Stenographic reporting.....	1, 630. 20
Heat, light, power, and water.....	4, 083. 28
Rents.....	12, 454. 78
Repairs and alterations.....	3, 635. 55
Special and miscellaneous.....	1, 334. 42
Furniture, fixtures, and equipment.....	25, 300. 72
Reserve.....	5, 263. 01
Total.....	1, 700, 000. 00

	Allotments	Expended and obli- gated
Printing and binding.....	\$25, 000. 00	\$21, 200. 26
Study of radio requirements, ship navigation, inland waters.....	20, 000. 00	19, 879. 20

At the close of the fiscal year, the Commission had 421 employees in Washington, and 193 in the field.

Appendixes

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APPENDIX A

LEGISLATION

At the request of various Congressional committees, the Commission commented on the following listed bills and resolutions during the fiscal year:

H. R. 234. To provide an adequate method to obtain data to determine the social and economic effects of power in excess of 50 kilowatts for broadcast stations, etc.

H. R. 7188. To remove certain restrictions on the character of international broadcasts and, specifically, to nullify the provisions of section 42.03 (a) of the Commission's Rules.

H. R. 6695-H. R. 5791. To amend the Communications Act of 1934 so as to prohibit and penalize the unauthorized mechanical reproduction of music and other wire and radio-program material.

S. 2611-H. R. 5756. To authorize the Federal Communications Commission to purchase a site and erect a building in the State of Massachusetts for use as a radio-monitoring station, and other purposes.

S. 2466-H. R. 5508. To amend the Communications Act of 1934 so as to prevent monopolies and to prohibit excessive duplication of broadcast programs in any area.

H. R. 6114. To authorize Postmasters in the Territory of Alaska to administer oaths or affirmations required under acts of Congress, and for other purposes.

S. 517. To amend the Communications Act of 1934 by prohibiting the advertising of alcoholic beverages over the radio, etc.

H. R. 4684. To amend section 307 (d) and (e) of the Communications Act of 1934 so as to provide an increased term for broadcast station licenses, and for other purposes.

S. 1970. To eliminate certain oppressive labor practices affecting interstate and foreign commerce, and for other purposes.

S. 2058. Relating to promotion contests carried on through the use of the mails or the facilities of interstate or foreign commerce.

H. R. 2536. To prohibit future trading in commodities through the mails or by any means or instruments of interstate commerce.

H. R. 2545. To amend section 13 of the act of March 4, 1915, known as the Merchant Marine Act, so as to provide in part for the exemption of radio operators from the provisions for the issuance of certificates of service by the Bureau of Marine Inspection and Navigation of the Department of Commerce.

S. Res. 95. To authorize an investigation of the telegraph industry in the United States by the Interstate Commerce Committee of the United States Senate.

H. R. 2721. To authorize the Secretary of the Navy to construct and maintain a Government radio broadcasting station, and for other purposes.

S. 94. To authorize the Committee on Interstate Commerce of the Senate, or a subcommittee thereof, to make an investigation of several matters relating to the Commission.

H. R. 4425. To provide for reorganizing agencies of the Government, and for other purposes.

H. R. 4798. To prevent and make unlawful the practice of law before Government Departments, Bureaus, Commissions, and their Agencies by those other than duly licensed attorneys at law.

S. 1520. To amend the Communications Act of 1934, and for other purposes.

H. R. 978. To amend the Rural Electrification Act.

S. 635. To require licensees of broadcast stations to set aside regular and definite periods for uncensored discussions of social, political, and economic problems, and vest in the Commission the power to appoint an advisory committee of disinterested citizens to make recommendations with regard to carrying such provisions into effect, etc.

S. 636. This bill would add new section 315 (a) to the Communications Act, requiring maintenance by licensees of records showing all applications for time, all rejected applications and reasons for rejection, and all additions and changes requested in programs on public, social, political, and economic issues and on educational subjects.

S. 637. This bill would repeal the last sentence of section 326 of the Communications Act.

H. R. 3582. To require informative advertising of imported articles.

H. R. 4224-S. 1268. To amend the Communications Act of 1934 so as to create a Federal Communications and Radio Commission to be administered by a Board composed of three members.

H. J. Res. 127. Would authorize and direct the Federal Trade Commission to make an investigation with respect to alleged efforts of privately owned public utilities unfairly to control public opinion concerning municipal or public ownership of electrical generating or distributing facilities.

S. 1095-H. R. 3752. To amend section 303 of the Communications Act.

H. R. 94. To amend section 317 of the Communications Act, so as to require that personal endorsements of articles by radio be accompanied by a statement that the endorsement is paid for.

S. 550. To amend section 303 of the Communications Act.

S. 2407. Would amend section 303 (e) (intended as an amendment of 303 (l) of the Communications Act.

S. 1352. A bill to amend section 301 (b) of the Merchant Marine Act.

APPENDIX B

LITIGATION AND COURT DECISIONS

Broadcast cases in litigation during fiscal year

DIRECT APPEALS TO UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA

Name of case	Status at end of fiscal year
<i>Adirondack Broadcasting Co., Inc., v. Federal Communications Commission.</i>	Pending.
<i>Associated Broadcasters, Inc. (KSFO), v. Federal Communications Commission.</i>	Do.
<i>Colonial Broadcasters, Inc., v. Federal Communications Commission.</i>	Commission affirmed.
<i>Columbia Broadcasting System of California, Inc., v. Federal Communications Commission.</i>	Pending.
<i>Courier Post Publishing Co., The, v. Federal Communications Commission.</i>	Commission reversed.
<i>Crosley Corporation, The (WLW), v. Federal Communications Commission.</i>	Appeal dismissed. ¹
<i>El Paso Broadcasting Co. v. Federal Communications Commission.</i>	Pending.
<i>Evangelical Lutheran Synod of Missouri, Ohio, and Other States, Rev. R. Kr-tzschmer, Chairman, Board of Control of Concordia Seminary (KFUO) v. Federal Communications Commission.</i>	Commission affirmed.
<i>Faske, Arthur, v. Federal Communications Commission.</i>	Appeal dismissed.
<i>Florida Broadcasting Co. v. Federal Communications Commission.</i>	Pending.
<i>Gallatin Radio Forum v. Federal Communications Commission.</i>	Appeal dismissed.
<i>Genesee Radio Corporation v. Federal Communications Commission.</i>	Pending. ²
<i>Greater Kampeska Radio Corporation, The, v. Federal Communications Commission.</i>	Do. ³
<i>Jacobs Broadcasting Co., Dr. William States v. Federal Communications Commission.</i>	Appeal dismissed.
<i>Liners Broadcasting Station, Inc., v. Federal Communications Commission.</i>	Do.
<i>Massachusetts Broadcasting Corporation (WCOP) v. Federal Communications Commission.</i>	Pending. ⁴
<i>Northside Broadcasting Corporation v. Federal Communications Commission.</i>	Do.
<i>Pultzer Publishing Co. (KSD) v. Federal Communications Commission.</i>	Appeal dismissed.
<i>Sanders Brothers Radio Station v. Federal Communications Commission.</i>	Commission reversed. ⁵
<i>Scripps-Howard Radio, Inc., v. Federal Communications Commission.</i>	Appeal dismissed.
<i>Southland Industries, Inc., v. Federal Communications Commission.</i>	Do.
<i>Stuart, W. P. v. Federal Communications Commission.</i>	Do.
<i>Times-Dispatch Radio Corporation (WRTD) v. Federal Communications Commission.</i>	Do.
<i>Tri-City Broadcasting Co., Inc., v. Federal Communications Commission.</i>	Pending. ⁶
<i>Tri-City Broadcasting Co., Inc., v. Federal Communications Commission.</i>	Do.
<i>Tri-State Broadcasting Co., Inc., v. Federal Communications Commission.</i>	Do.
<i>Tri-State Broadcasting System, Inc. (KTBS), v. Federal Communications Commission.</i>	Appeal dismissed.
<i>United States Broadcasting Corporation v. Federal Communications Commission.</i>	Do.
<i>Voice of Brooklyn, Inc., v. Federal Communications Commission.</i>	Do.
<i>Ward, J. T. (WLAC) v. Federal Communications Commission.</i>	Pending.
<i>WOKO, Inc., v. Federal Communications Commission.</i>	Do.
<i>Woodmen of the World Life Insurance Society v. Federal Communications Commission.</i>	Appeal dismissed. ⁷
<i>Yankee Network, Inc. (WAAE), v. Federal Communications Commission.</i>	Pending. ⁸

¹ Petition for writ of certiorari pending in Supreme Court when this report went to printer.

² Appeal dismissed on Oct. 27, 1939.

³ Commission affirmed on Oct. 16, 1939.

⁴ Dismissed on Oct. 23, 1939.

⁵ Petition for writ of certiorari filed in Supreme Court Nov. 2, 1939.

⁶ Dismissed on Oct. 14, 1939.

⁷ Petition for writ of certiorari denied Oct. 9, 1939.

⁸ Dismissed on Aug. 24, 1939.

Broadcast cases in litigation during fiscal year—Continued

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

Name of case	Status at end of fiscal year
<i>Courier Post Publishing Co., The, v. Federal Communications Commission.</i>	Pending.
<i>Heitmeyer, Paul R., v. Frank R. McNinch, Norman S. Case, T. A. M. Craven, George Henry Payne, Frederick I. Thompson, Thad H. Brown, and Paul A. Walker</i>	Do. ⁹
<i>Pottsville Broadcasting Co., The, v. Federal Communications Commission.</i>	Writs of prohibition and mandamus granted. ¹⁰

CASES INSTITUTED IN THE DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

<i>Black River Valley Broadcasts, Inc., v. Frank R. McNinch et al, as Federal Communications Commission.</i>	Supreme Court refused to review decision of Court of Appeals which had affirmed District Court's dismissal of bill for injunction.
<i>Heitmeyer, Paul R. v. Frank R. McNinch et al, as Federal Communications Commission.</i>	Court of Appeals reversed decision of District Court granting injunction.

PETITIONS FOR WRIT OF CERTIORARI

<i>Gross, Harold F., and Edmund C. Shields, v. Saginaw Broadcasting Co.</i>	Certiorari denied to review judgment of Court of Appeals dismissing appeal.
<i>Red River Broadcasting Co., Inc., v. Federal Communications Commission.</i>	Do.

⁹ Certiorari granted by Supreme Court on Oct. 16 to review judgment of Court of Appeals entered on July 12 granting writ of mandamus.

¹⁰ Petition of writ of certiorari granted by Supreme Court on Oct. 19, 1939.

COURT DECISIONS

DECISIONS OF THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA IN BROADCAST CASES AND PRINCIPLES ENUNCIATED THEREIN

Black River Valley Broadcasters, Inc., v. Frank R. McNinch, Eugene O. Sykes, Norman S. Case, et al., 101 F. (2d) 235

This was an appeal from a decree of the District Court of the United States for the District of Columbia, dismissing appellant's injunction suit against the Commission. The decree of the lower court was affirmed.

The appellant had applied for a construction permit to establish a new station at Watertown, N. Y. Watertown Broadcasting Co. had also applied to establish a station in that city. The Commission granted appellant's application and the Watertown Broadcasting Co. petitioned for rehearing. The commission granted the petition for rehearing and designated appellant's application for a hearing de novo, together with the application of the Watertown Broadcasting Co. and two other applications which were filed after appellant's application. Appellant thereupon filed a bill of complaint in the district court to enjoin the Commission from holding the de novo hearing (No. 64232, *Black River Valley Broadcasts, Inc., v. McNinch, et al.*). That court dismissed the suit, whereupon Black River appealed to the Court of Appeals of the District of Columbia.

The court of appeals held that Watertown filed its petition for rehearing in conformity with section 405 of the Communications Act of 1934 and that the petition required final action and determination as a matter of right. The court also held that the Commission was fully empowered to order a hearing de novo and to join new parties and determine such issues as will be necessary to make a proper finding of public interest, convenience, and necessity. The court said, referring to the appellant's suit:

"This attempted blockade of the duties of the agency which is entrusted by statute to determine matters of which this is one, shows clearly that plaintiff is not entitled to relief under general equity powers by the issuance of the highly discretionary writ of injunction. It being necessary to receive an administrative determination before the judicial remedy prescribed by statute inures to the benefit of an applicant, it becomes very clear that this cause is entirely uncognizable in equity."

Sanders Brothers Radio Station v. Federal Communications Commission, 106 F. (2d) 321

(See discussion on p. 55 of this report.)

The Courier Post Publishing Company v. Federal Communications Commission, 104 F. (2d) 213

The Commission denied the application of the Courier Post Publishing Co. to establish a new station at Hannibal, Mo., on the ground that there was no need for the service proposed, and from this order Courier Post appealed, assigning as error the findings that there is not a public need in Hannibal for a local broadcast station. The court took the view that the affirmative evidence in the record was such as to prove that there was need for a local station in Hannibal and that no station presently filled this need. The court held:

"That the appellant has sustained the burden of proof that there is a public need for a local station in Hannibal; that there is no substantial evidence in the record supporting the finding of the Commission that no such public need exists; and, that the finding by the Commission that the public convenience, interest, and necessity would not be served by granting the permit for a local station is in law arbitrary and capricious."

The Pottsville Broadcasting Company v. Federal Communications Commission, 105 F. (2d) 36

(See discussion on p. 55 of this report.)

Frank R. McNinch, et al., v. Paul Heitmeyer, 105 F. (2d) 41

This case arose in the following manner: In 1935 Heitmeyer applied for a permit to construct a new radiobroadcast station at Cheyenne, Wyo. The application was denied on the ground that Heitmeyer was not financially qualified. He appealed, and in December 1937, the court reversed the Commission (*Heitmeyer v. Federal Communications Commission*, 95 F. (2d) 91). The Commission then entered an order directing that the Heitmeyer record be reopened for further hearing and consolidated with a hearing de novo upon the subsequently filed applications of Frontier Broadcasting Co. and Cheyenne Radio Corporation.

Heitmeyer's request for stay of Commission action was on three occasions denied by the court of appeals. Heitmeyer brought suit in the United States district court asking that the Commission be enjoined permanently from granting any construction permit or license to any other applicant for a radio station at Cheyenne until after the Commission had rendered a decision on the record as made at the original hearing (No. 76291, *Heitmeyer v. McNinch, et al.*). The Commission moved to dismiss the bill of complaint on the ground that the district court had no jurisdiction in the case for the reason that it involved the discretion and judgment of an administrative body authorized by law to act in the premises. The Commission's motion was denied and a special appeal was allowed by the court of appeals. The court of appeals stated that the rule in the *Pottsville case* (see discussion on p. —) was controlling in this case "and that the order of the Commission for a hearing on a new and different record and placing new parties on a parity with appellee is erroneous." The court stated that Heitmeyer could make application "to us for mandamus if—in view of what we have said—such application is necessary for the protection of his rights." Heitmeyer then filed a petition for writ of mandamus in the court of appeals which was pending at the end of the fiscal year.⁴

⁴ Subsequently the court of appeals granted the writ of mandamus; the Commission applied for writ of certiorari which was granted and the case was awaiting oral argument in the Supreme Court when this report went to the printer. On October 16, 1939, the Supreme Court granted a petition for certiorari filed on behalf of the Commission in this case.

Woodmen of the World Life Insurance Society v. Federal Communications Commission, 105 F. (2d) 75

This case was an appeal from a decision of the Commission granting the application of WKZO, Inc., to operate with 250 watts power, unlimited time, on the frequency 590 kilocycles, using a directional antenna. The appellant was the licensee of Station WOW, located at Omaha, Nebr., which also operates on the frequency 590 kilocycles, using 1 kilowatt power night and 5 kilowatts day.

The court pointed out that the appellant contended it was aggrieved and adversely affected by the action of the Commission in granting the WKZO application and summarized the case as follows:

"We have, therefore, a case in which the Commission after 5 years of study and investigation, and after having twice granted and twice revoked the permit, set the application down for final hearing to be considered on the condition that the applicant would agree that in the event the grant was made the transmitting equipment should be designed and constructed in accordance with the Commission's specifications as required by Commission's new rule 131. These conditions were accepted by WKZO, and appellant was forehanded with knowledge that the grant, if made, would be made on specifications different from those set out in the original application. With notice of the changed specifications, it not only failed to offer any evidence showing interference with its station, but on the cross-examination of its own witnesses objected to evidence showing that under these changed conditions there would be none. The whole course of the hearing indicates that appellant was afforded opportunity to show that interference would result, but preferred instead to rest its case upon a wholly technical objection based on procedure. To approve its position in this respect, would involve denial to the city of Kalamazoo of night radio service on a record which preponderatingly shows that this can be had without resulting in objectionable interference to WOW or any other station."

The court ruled that Station WOW had due notice, but that there was substantial evidence in the record that no damage would ensue and appellant had failed to show the contrary: and consequently the appellant was not a person "aggrieved or whose interests are adversely affected" by the Commission's decision. The appeal was dismissed.³

Colonial Broadcasters, Inc. v. Federal Communications Commission, 105 F. (2d) 781

The Commission granted the application of Arthur Lucas to establish a new radio-broadcast station at Savannah, Ga. The appellant, who had filed an application after the Lucas application was filed, to establish a new station in the same city, took an appeal from the Commission's order granting the Lucas application. The court said:

"The main question on this appeal is whether the Commission acted unlawfully in failing to consider and decide appellant's application, contemporaneously and on a comparative basis, with the application of Arthur Lucas, which had been filed and set for hearing prior to the filing of appellant's application."

The Commission contended that the appeal should be discussed or the Commission's decision affirmed not because the Lucas application was filed first or designated for hearing before the Colonial application was filed but because the Commission had discretionary power to conduct its proceedings as done in this case.

The court set forth the Commission's rule relating to the fixing of dates for hearings, and said that this rule means no more than that where two applications are filed for the same facilities and neither has been designated for hearing, the applications will be consolidated and heard together; but where by reason of previous filing, one of the applications has been designated for hearing, the application will be heard in turn and not necessarily upon a comparative basis. The court also declared that there is no inconsistency in adhering to this rule and yet permitting the later applicant to intervene in the proceedings on the first application to show proper cause, if he can, why it could not be granted. In affirming the Commission, the court summarized its decision as follows:

"In the instant case Lucas was first in the field. His application was filed and designated for hearing more than a month before appellant's application was even filed. Notwithstanding this, appellant was permitted to intervene and to show cause before both the examiner and the Commission why Lucas' application should be denied. The Commission, upon a fair hearing, reached the conclusion

¹ On October 9, 1939, the Supreme Court denied a petition for certiorari filed on behalf of Station WOW in this case.

that the service was necessary and that Lucas had qualified himself in all respects as capable of furnishing it, and on this basis granted the license."

W. P. Stuart v. Federal Communications Commission, 105 F. (2d) 788

Appellant and Southwest Broadcasting Co. each applied to the Commission for permits to construct new broadcast stations at Prescott, Ariz. The Commission granted the application of Southwest Broadcasting Co. and denied that of appellant. The appellant thereupon appealed and the Commission moved to dismiss on the ground that section 402 (c) of the Communications Act requires the reasons for appeal to be stated and that the reasons given in this case were purely argumentative and mere abstract propositions of law, which failed to satisfy the requirements of the act, and accordingly the court lacked jurisdiction to entertain the appeal.

The court said that the statement of reasons for appeal required by the statute serves the purpose of an assignment of errors and must therefore set forth with particularity the errors on which the appeal is based, and held in dismissing the case that "appellant's statement in this case is merely a general assignment without designation of particular errors upon which it is based. Considered from the most liberal standpoint, it wholly fails to meet the test of the rule which we have laid down and to which we intend to adhere." The court discussed the evidence and procedure and ruled that the appellant in any event "has no case on the merits."

The Crosley Corporation v. Federal Communications Commission, No. 7351
(Not yet reported. See page 56 of this report.)

Evangelical Lutheran Synod v. Federal Communications Commission 105 F. (2d) 793

This was an appeal from an order of the Commission denying appellant's application to increase the hours of operation and the power of Station KFÜO. Station KFÜO) operated by the Evangelical Lutheran Synod) and Station KSD (operated by the Pulitzer Publishing Co.) are each located in St. Louis, Mo., and operate on the frequency 550 kilocycles under a time-sharing agreement whereby KSD has about 80 percent and KFÜO about 20 percent of the broadcast time. KSD applied for unlimited hours of operation, which would result in the deletion of KFÜO. KFÜO applied to increase its hours to one-half time, with the consequent partial deletion of KSD, and at the same time applied to increase its power to 1 kilowatt night and 5 kilowatts day. The Commission denied both applications and from this order KFÜO appealed.

The court held that "The Commission's decision that the public interest will be served by maintaining the status quo, rather than by switching time from one station to the other, is supported by substantial evidence and is not arbitrary or capricious." The court said that it cannot substitute its judgment for the Commission's as to the relative public importance of the different types of programs offered by KSD and KFÜO and that the public interest does not necessarily demand that all stations become commercial or that none be supported by religious bodies.

DECISION OF THE SUPREME COURT OF THE UNITED STATES

Rochester Telephone Corporation v. United States of America and Federal Communications Commission, 307 U. S. 125

(See page 32 of this report)

APPENDIX C

PUBLICATIONS

The following material has been printed and placed on sale by the Government Printing Office:

Federal Communications Act of 1934 with Amendments and Index Thereto (revised to May 20, 1937).

First Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1935.

Second Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1936.

Third Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1937.

Fourth Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1938.

Federal Communications Commission Practice and Procedure Promulgated Pursuant to the Communications Act of 1934, effective December 19, 1935.

Federal Communications Commission Reports—Volume 1: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1934 to July 1935.

Federal Communications Commission Reports—Volume 2: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1, 1935, to June 30, 1936.

Federal Communications Commission Reports—Volume 3: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1936 to February 1937.

Federal Communications Commission Reports—Volume 4: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, March 1937 to November 15, 1937.

Federal Communications Commission Reports—Volume 5: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, November 16, 1937, to June 30, 1938.

Proposed Report, Telephone Investigation.

Report, Telephone Investigation.

Uniform System of Accounts for Telephone Companies, Issue of June 19, 1935, Effective January 1, 1937.

Uniform System of Accounts for Telegraph and Cable Companies, Effective January 1, 1914.

Tariff Circular No. 1, Issue of July 31, 1935—Rules Governing the Construction, Filing, and Posting of Tariffs Relating to Interstate and Foreign Wire or Radio Communications, by Carriers Subject to the Communications Act of 1934, Excepting Connecting Carriers as Defined in Section 3 (u) of the Act and Excepting Carriers Operating in Alaska.

Ship Radiotelegraph Safety Rules, Effective May 21, 1937.

Rules Governing Classification of Telephone Employees, Effective July 1, 1917.

Mimeographed material.—The following material has been prepared in mimeographed form and is available at the offices of the Commission:

Rules and regulations of the Federal Communications Commission governing the various radio services.

Periodic reports of broadcast and other applications received.

Reports of action taken by the Commission at its weekly meetings.

Reports of statements of facts and grounds for decision in all formal cases decided by the Commission.

Uniform system of accounts for class C telephone companies, effective January 1, 1939.

Radio station lists, arranged by services (not all services included).

Radio Service Bulletin.

Descriptive list of Berne publications. (World lists of radio stations are published by the Bureau of the International Telecommunications Union, Berne, Switzerland.)

Selected financial and operating data from annual reports of telephone carriers for the year ended December 31, 1937.

Selected financial and operating data from the annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1937.

Summary of monthly reports of large telephone carriers in the United States.

Operating data from monthly reports of telegraph carriers.

Salary report of telephone and telegraph carriers, 1937.

Telephone hand set charges and changes since January 1, 1938.

Summary of responses of networks and broadcast stations showing financial and operating data for 1937 and data concerning program service and personnel for week beginning March 6, 1938.

Selected financial data from annual reports of holding companies.

Intercorporate relations of carriers and controlling companies, 1938; and an index to companies.

APPENDIX D

FINANCIAL AND OTHER STATISTICAL DATA RELATING TO TELEPHONE AND TELEGRAPH CARRIERS AND CONTROLLING COMPANIES

The various tables and charts in this appendix containing statistical data pertaining to communication carriers and controlling companies are assembled in the following groups:

(A) Statistics from annual reports of telephone and telegraph carriers and holding companies are shown on pages 102 to 143;

(B) Statistics from monthly reports of telephone and telegraph carriers are shown on pages 144 to 163;

(C) Statistics concerning intercorporate relations are shown on pages 164 to 170.

(A) STATISTICS FROM ANNUAL REPORTS OF TELEPHONE AND TELEGRAPH CARRIERS AND HOLDING COMPANIES

General arrangement.—This section of the appendix contains tables and charts relating to telephone, wire-telegraph, and radiotelegraph carriers and controlling companies, which filed annual reports with the Commission for the year ended December 31, 1938. The statistical data were compiled from returns shown in the annual reports unless otherwise noted. The tables and charts are arranged in the following order: (a) Those pertaining to telephone carriers, (b) those pertaining to telegraph carriers, and (c) those pertaining to both telephone and telegraph carriers. The references to holding companies in this appendix are given only in tables XII, XXIV, and XXXVIII.

Bell System.—Those telephone carriers that report on an annual basis to the Commission and that are subsidiary to the American Telephone & Telegraph Co. in a direct line of control (in a few instances involving intermediate companies) as measured by the holding of a majority of the voting capital stock, are considered in this appendix as Bell System carriers.

Geographical groupings.—For statistical purposes, the United States has been divided into three districts, which have been subdivided into nine regions. All telephone carriers that operate in the United States and file annual reports with the Commission have been assigned to these geographical regions, as indicated in table I. A description of the geographical regions is given following chart 1.

EASTERN DISTRICT

New England region.—This region comprises the following States: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Middle Atlantic region.—This region comprises the following States: Delaware, New Jersey, New York, and Pennsylvania.

Great Lakes region.—This region comprises the following States: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

SOUTHERN DISTRICT

Chesapeake region.—This region comprises the following States and District: District of Columbia, Maryland, Virginia, and West Virginia.

Southeastern region.—This region comprises the following States: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

WESTERN DISTRICT

North Central region.—This region comprises the following States: Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

South Central region.—This region comprises the following States: Arkansas, Kansas, Missouri, Oklahoma, and Texas (except El Paso County).

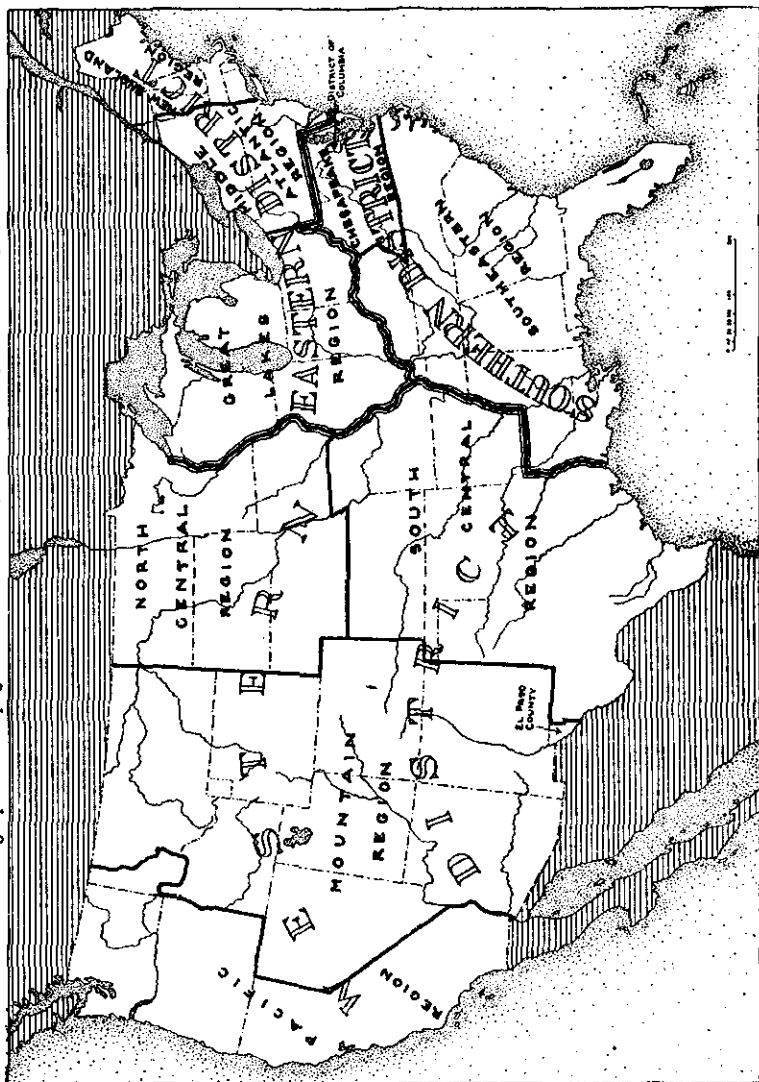
Mountain region.—This region comprises the following States: Arizona, Colorado, Idaho (south of Salmon River), Montana, Nevada, New Mexico, Texas (El Paso County), Utah, and Wyoming.

Pacific region.—This region comprises the following States: California, Idaho (north of Salmon River), Oregon, and Washington.

Names of telephone carriers.—A list of the names of the telephone carriers that filed annual reports for the year ended December 31, 1938, is shown in table I.

CHART 1

Geographical Groupings for Statistical Analysis of the Telephone Industry



There were three telephone carriers which filed reports for the year 1937 but which did not file reports for 1938, as they were notified that under the provisions of section 2 (b) (2) of the Communications Act of 1934 they were subject only to sections 201-5 of the act. Four carriers similarly classified have voluntarily continued to file annual reports for statistical purposes, as indicated in table I. The gross operating revenues of the carriers which filed annual reports for the year 1938 and whose data are included in the following tables and charts constitute

approximately 97 percent of the gross operating revenues of all telephone carriers in the United States.

TABLE I.—List of telephone carriers reporting on an annual basis to the Commission for the year 1938, showing classification and geographical region to which each carrier has been assigned for statistical purposes¹

Name of carrier	Class of carrier	Geographical region
American Telephone Co.	A	South Central.
*American Telephone & Telegraph Co.	A	Middle Atlantic.
†Ashtabula Telephone Co.	A	Great Lakes.
*Bell Telephone Co. of Nevada	A	Mountain.
*Bell Telephone Co. of Pennsylvania	A	Middle Atlantic.
Bluefield Telephone Co.	A	Chesapeake.
Carolina Telephone & Telegraph Co.	A	Southeastern.
Central Kansas Telephone Company, Inc.	A	South Central.
Champaign Telephone Co.	B	Great Lakes.
*Chesapeake & Potomac Telephone Co.	A	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	A	Do.
*Chesapeake & Potomac Telephone Co. of Virginia	A	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia	A	Do.
*Christian-Todd Telephone Co.	A	Southeastern.
Cincinnati & Suburban Bell Telephone Co.	A	Great Lakes.
Colusa County Telephone Co.	B	Pacific.
*Crown Point Telephone Co.	B	Great Lakes.
Cuban American Telephone & Telegraph Co. ²	A	Unassigned.
*Dakota Central Telephone Co.	A	North Central.
Del Rio & Winter Garden Telephone Co.	A	South Central.
*Diamond State Telephone Co.	A	Middle Atlantic.
*Eastern Telephone & Telegraph Co. (Maine)	A	New England.
Eastern Telephone & Telegraph Co. (New Jersey)	A	Middle Atlantic.
Greenville Telephone Co.	B	South Central.
Home Telephone & Telegraph Co. (Indiana)	A	Great Lakes.
Home Telephone & Telegraph Co. of Virginia	B	Chesapeake.
*Illinois Bell Telephone Co.	A	Great Lakes.
Indiana Associated Telephone Corporation	A	Do.
*Indiana Bell Telephone Co.	A	Do.
Inter-Mountain Telephone Co.	A	Southeastern.
Interstate Telegraph Co.	A	Pacific.
Interstate Telephone Co.	A	Do.
Kansas State Telephone Co.	B	South Central.
Keystone Telephone Co. of Philadelphia	A	Middle Atlantic.
†Kittanning Telephone Co.	A	Do.
Lee Telephone Co.	A	Chesapeake.
†Lincoln Telephone & Telegraph Co.	A	North Central.
Michigan Associated Telephone Co.	A	Great Lakes.
*Michigan Bell Telephone Co.	A	Do.
Middle States Utilities Co. of Iowa	B	North Central.
Middle States Utilities Co. of Missouri	B	South Central.
*Moosehead Telephone & Telegraph Co.	A	New England.
*Mountain States Telephone & Telegraph Co.	A	Mountain.
Mutual Telephone Co. (Hawaii) ²	A	Unassigned.
Nebraska Continental Telephone Co.	A	North Central.
Nebraska Continental Telephone Corporation ³	A	Do.
*New England Telephone & Telegraph Co.	A	New England.
*New Jersey Bell Telephone Co.	A	Middle Atlantic.
New Jersey Telephone Co.	A	Do.
*New York Telephone Co.	A	Do.
*Nicollet County Telephone & Telegraph Co.	B	North Central.
Norfolk & Carolina Telephone & Telegraph Co.	A	Southeastern.
North-West Telephone Co.	A	Great Lakes.
North-Western Indiana Telephone Co. ⁴	A	Do.
†Northern States Power Co.	A	North Central.
*Northwestern Bell Telephone Co.	A	Do.
Ohio Associated Telephone Co.	A	Great Lakes.
*Ohio Bell Telephone Co.	A	Do.
Ohio Telephone Service Co.	A	Do.
Oregon-Washington Telephone Co.	A	Pacific.
Oxnard Home Telephone Co.	B	Do.
Ozark Central Telephone Co.	A	South Central.
*Pacific Telephone & Telegraph Co.	A	Pacific.
Palestine Telephone Co.	B	South Central.
Pennsylvania Telephone Corporation	A	Middle Atlantic.
Platte Valley Telephone Corporation	A	North Central.
Public Utilities California Corporation	A	Pacific.
Rochester Telephone Corporation	A	Middle Atlantic.
San Angelo Telephone Co.	A	South Central.
Santa Paula Home Telephone Co.	B	Pacific.
Southeast Missouri Telephone Co.	A	South Central.
*Southern Bell Telephone & Telegraph Co.	A	Southeastern.
*Southern California Telephone Co.	A	Pacific.
Southern New England Telephone Co.	A	New England.

See footnotes at end of table.

TABLE I.—List of telephone carriers reporting on an annual basis to the Commission for the year 1938, showing classification and geographical region to which each carrier has been assigned for statistical purposes—Continued

Name of carrier	Class of carrier	Geographical region
Southwest Telephone Co. (Kansas).....	A	South Central.
Southwestern Associated Telephone Co.....	A	Do.
•Southwestern Bell Telephone Co.....	A	Do.
Tri-State Associated Telephone Corporation.....	B	Middle Atlantic.
•Tri-State Telephone & Telegraph Co.....	A	North Central.
Two States Telephone Co.....	A	South Central.
Union Telephone Co. (Indiana).....	A	Great Lakes.
•United Telephone Co. (Kansas) ¹	A	South Central.
United Telephone Co. (Missouri).....	A	Do.
United Telephone Co. (Texas).....	B	Do.
United Telephone Companies, Inc.....	A	Great Lakes.
United Telephone Co. of Pennsylvania.....	A	Middle Atlantic.
West Coast Telephone Co.....	A	Pacific.
•Westerly Automatic Telephone Co.....	A	New England.
Western Arkansas Telephone Co.....	B	South Central.
•Western New England Telephone Co.....	B	New England.
•White River Valley Telephone Co.....	B	Do.
•Wisconsin Telephone Co.....	A	Great Lakes.

*Represents carriers included in Bell system.

†Represents carriers, subject only to the provisions of sections 201-205 of the Communications Act of 1934, which file reports for statistical purposes.

¹ Telephone carriers filing annual reports are classified as follows: Class A carriers are those having average annual operating revenues exceeding \$100,000, Class B carriers are those having average annual operating revenues exceeding \$50,000, but not more than \$100,000. Telephone carriers having average annual operating revenues not exceeding \$50,000 are not required to file annual reports.

² Figures not included in United States totals.

³ Property sold to Nebraska Continental Telephone Co. as of April 1, 1938.

⁴ Major portion of telephone property sold to Indiana Associated Telephone Corporation as of December 1, 1937, and balance sold to Illinois Bell Telephone Company as of June 15, 1938.

⁵ Merged with Southwestern Bell Telephone Co. as of December 31, 1938.

Telephone financial and operating data by geographical divisions.—The statistical data shown in table II were compiled from annual reports filed by 73 class A and 17 class B (see footnote 1 to table I) telephone carriers operating in the United States, and by 2 class A telephone carriers operating outside of the United States, the latter 2 being the Cuban American Telephone & Telegraph Co. and the Mutual Telephone Co. (Hawaii). Duplications of financial data, owing to intercorporate relations, have not been excluded. This summary includes data for the period of operations for a portion of the year 1938 of 3 class A carriers, as explained in the footnotes accompanying table I.

TABLE II.—Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions

[Year ended Dec. 31, 1938]

No.	Item	All carriers				Unassigned ¹	Bell System carriers			
		United States	Eastern district ¹	Southern district	Western district		United States	Eastern district	Southern district	Western district
	Number of carriers.....	90	38	12	40	2	33	17	6	10
	Investment in telephone plant:									
1	Telephone plant in service.....	\$4,720,701,670	\$3,121,343,363	\$433,024,827	\$1,165,433,480	\$0,501,263	\$4,431,523,066	\$2,896,624,131	\$122,311,104	\$1,112,587,831
2	Telephone plant under construction.....	36,308,932	21,393,025	3,940,581	10,976,326	-----	33,293,932	18,712,203	3,754,202	10,824,527
3	Property held for future telephone use.....	12,593,931	9,249,117	719,340	2,593,474	-----	12,236,465	9,013,930	719,340	2,553,195
4	Telephone plant acquisition adjustment.....	19,720,302	5,614,783	4,357,938	9,747,599	-----	15,114,592	4,516,166	4,234,092	6,364,334
5	Total investment in telephone plant.....	4,780,292,835	3,157,597,270	442,942,686	1,188,752,879	9,501,263	4,492,215,055	2,928,866,430	431,018,738	1,132,329,887
	Investments other than telephone plant:									
6	Investments in affiliated companies.....	2,410,168,245	2,261,711,581	836,717	147,619,917	-----	2,408,599,906	2,261,229,016	836,717	146,504,143
7	Advances to affiliated companies.....	178,064,932	144,741,716	-----	33,323,216	-----	175,492,419	142,292,615	-----	33,199,804
8	Miscellaneous investments.....	103,809,185	83,723,110	3,355,993	16,730,082	73,435	99,768,390	82,772,263	3,308,084	13,688,043
9	Total investments other than telephone plant.....	2,692,042,362	2,490,176,407	4,192,710	197,673,245	73,435	2,683,830,715	2,486,293,924	4,144,801	193,391,990
10	Cash.....	90,006,420	83,395,175	3,973,834	11,637,411	172,936	92,211,407	78,469,952	3,862,831	9,878,624
11	Material and supplies.....	51,301,519	34,967,711	4,061,453	12,267,355	274,808	47,228,016	32,281,365	3,909,184	11,037,467
12	Total current assets.....	316,308,060	243,796,575	20,106,916	62,404,569	614,764	297,878,705	220,591,911	19,570,900	47,715,894
13	Capital stock.....	4,287,169,374	3,297,487,206	211,781,500	747,900,668	5,265,000	4,150,952,236	3,192,426,965	236,157,400	722,867,871
14	Funded debt.....	1,032,572,535	803,570,735	49,813,000	170,188,830	932,000	934,782,035	746,188,035	49,000,000	159,594,000
15	Total long-term debt.....	1,334,444,039	945,457,151	97,001,810	291,985,878	932,000	1,247,525,633	892,341,016	93,984,205	269,193,412
16	Total current liabilities.....	98,269,163	63,586,068	11,752,683	22,920,412	693,396	85,872,221	53,328,092	10,977,813	21,568,314
17	Taxes accrued.....	81,198,455	52,945,071	6,438,501	21,814,883	131,664	77,101,312	49,804,595	6,193,670	21,103,047
18	Unmatured interest, dividends, and rents accrued.....	56,108,804	51,689,391	556,003	3,863,410	17,087	53,875,550	40,840,140	516,258	3,519,152
19	Depreciation reserve.....	1,318,152,092	890,593,637	98,075,570	329,483,485	3,305,063	1,250,442,114	838,723,975	94,450,527	317,267,612
20	Amortization reserve.....	3,532,189	1,440,462	947,357	1,144,370	1,903	3,507,570	1,465,930	917,219	1,124,397
21	Total surplus.....	363,097,778	318,410,544	14,458,447	30,228,787	342,091	347,301,387	306,317,943	13,433,692	27,549,752
	Operating revenues:									
22	Local service.....	758,801,044	497,425,476	77,166,120	191,210,348	1,680,016	713,512,758	451,590,846	75,253,411	186,668,501
23	Toll service.....	324,693,773	218,412,905	28,782,360	77,365,513	494,613	311,849,460	210,307,180	27,579,475	73,962,805
24	Miscellaneous.....	62,903,409	45,881,369	4,978,899	12,043,234	42,142	60,423,793	43,909,131	4,890,920	11,017,742
25	Uncollectible—Dr.....	6,320,261	3,621,570	464,811	1,233,880	5,588	5,118,793	3,486,443	448,575	1,183,745
26	Total operating revenues.....	1,141,073,960	748,128,177	110,462,568	282,485,215	2,211,213	1,080,667,248	702,320,714	107,281,231	271,065,303

27	Operating expenses:										
28	Maintenance.....	219,334,178	147,854,980	18,033,190	52,846,008	444,432	208,097,946	138,861,837	18,192,016	51,044,098	
29	Depreciation and amortization.....	167,448,423	107,957,990	16,558,828	42,091,905	851,437	157,638,787	100,487,945	16,052,550	41,098,292	
30	Traffic.....	170,419,261	106,609,258	19,338,824	44,471,179	264,173	161,316,233	99,907,490	18,832,701	42,576,042	
31	Commercial.....	90,055,531	58,072,330	8,828,786	23,154,478	101,287	85,970,601	54,994,065	8,066,482	22,310,054	
32	General office salaries and expenses.....	64,501,031	45,986,675	4,550,538	13,963,818	205,948	61,073,412	43,469,570	4,342,466	13,261,376	
33	Other.....	73,193,194	55,165,124	5,683,648	12,344,422	138,181	70,846,412	53,402,971	5,479,351	11,964,090	
33	Total operating expenses.....	784,951,681	521,046,357	73,593,814	189,711,510	1,505,458	744,943,391	491,123,878	71,565,566	182,253,947	
34	Operating ratio (percent).....	68.70	69.73	66.62	67.16	68.08	68.93	69.93	66.71	67.24	
35	Operating taxes:										
36	Other than U. S. Government.....	\$107,071,823	\$69,148,698	\$10,626,458	\$27,296,673	\$176,702	\$102,880,604	\$66,144,079	\$10,260,473	\$26,476,052	
36	U. S. Government.....	44,761,630	29,178,883	4,179,533	11,403,194	101,860	42,270,744	27,255,489	4,036,172	10,979,083	
37	Total operating taxes.....	151,833,459	98,327,581	14,806,011	38,699,867	278,562	145,160,348	93,399,568	14,305,645	37,455,135	
38	Net operating income.....	204,263,715	128,154,239	22,062,743	54,046,733	427,193	190,504,283	117,797,268	21,410,020	51,356,995	
39	Dividend income.....	160,976,184	150,420,481	211,444	10,338,259		160,860,104	150,417,283	209,622	10,233,199	
40	Interest income.....	14,151,822	11,522,367	231,593	2,397,862	5,353	13,827,383	11,235,131	221,578	2,370,674	
41	Miscellaneous other income.....	1,175,023	937,888	25,510	211,025	29,246	1,064,536	929,077	24,435	111,024	
42	Miscellaneous deductions from income.....	1,997,338	1,278,511	161,696	567,161	18,015	1,848,550	1,191,623	145,509	611,518	
43	Interest on funded debt.....	38,980,767	32,042,249	1,693,747	5,274,771	37,280	35,704,224	29,784,883	1,633,957	4,285,384	
44	Other interest deductions.....	15,211,000	6,821,435	2,839,653	5,579,912	10,500	14,574,692	6,339,164	2,818,196	5,417,302	
45	Miscellaneous fixed charges.....	741,150	557,648	118,157	65,445		607,117	483,809	116,367	6,941	
46	Net income.....	323,609,489	250,341,232	17,758,067	55,507,190	395,997	313,581,753	242,579,380	17,151,626	53,850,747	
47	Dividends declared:										
48	Common stock.....	\$328,020,590	\$265,195,183	\$17,475,271	\$45,950,136	\$342,000	\$321,428,040	\$258,871,979	\$17,031,420	\$45,524,641	
49	Rate percent or amount per share.....										
50	Preferred stock.....	\$9,648,636	\$2,614,075	\$111,576	\$6,922,985		\$7,504,090	\$1,672,015	\$22,500	\$5,809,575	
50	Rate percent or amount per share.....										
51	Miles of wire in cable:										
52	Aerial.....	29,714,244	19,378,722	3,442,003	6,963,519	38,902	28,096,437	18,105,970	3,835,671	6,654,790	
53	Underground.....	62,376,721	35,829,379	4,236,520	12,310,813	56,221	49,774,831	33,370,484	4,206,600	12,197,747	
54	Buried.....	863,233	370,727	33,956	449,550	3,287	810,253	360,061	33,843	425,349	
54	Submarine.....	201,730	132,775	19,944	53,011	421	196,744	124,051	19,881	52,812	
55	Total miles of wire in cable.....	83,169,928	55,650,603	7,732,432	19,776,893	98,831	78,887,205	51,900,572	7,395,005	19,330,698	
56	Miles of aerial wire.....	4,318,358	1,888,212	699,784	1,730,362	14,883	3,824,274	1,660,471	656,171	1,507,632	
57	Total miles of wire.....	87,478,286	57,538,815	8,432,216	21,507,255	113,714	82,711,539	53,621,043	8,252,166	20,838,330	
58	Miles of pole line.....	467,962	209,375	56,126	232,461	1,455	401,840	169,032	49,811	182,677	
59	Miles of underground conduit (single duct).....	126,312	88,573	9,010	28,729	217	118,803	81,026	8,923	28,254	

See footnotes at end of table.

TABLE II.—Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions—Continued

No.	Item	All carriers				Un- signed ¹	Bell System carriers			
		United States	Eastern dis- trict ¹	Southern district	Western dis- trict		United States	Eastern dis- trict	Southern district	Western district
	Central offices—types of switchboard:									
60	Magneto-manual.....	3,761	1,220	560	1,981	24	2,855	931	540	1,384
61	Common battery-manual.....	2,987	1,264	523	1,200		2,577	1,085	482	1,010
62	Auto-manual.....	14	9		5		6	5		1
63	Dial (automatic) system.....	1,860	966	405	489	7	1,586	839	313	434
64	Total central offices.....	8,622	3,459	1,488	3,675	31	7,024	2,860	1,335	2,829
65	Company telephones.....	17,097,766	10,114,082	2,050,165	4,933,519	32,205	15,777,546	9,145,506	1,977,974	4,653,976
66	Service telephones.....	290,391	45,868	40,475	204,048	777	248,833	38,125	38,528	172,180
67	Private line telephones.....	82,471	51,914	5,807	24,750	305	79,613	49,380	5,779	24,454
68	Total telephones.....	17,470,628	10,211,864	2,096,447	5,162,317	33,287	16,105,992	9,233,101	2,022,281	4,850,610
69	Other stations.....	23,447	15,939	1,732	5,776	5	22,915	15,438	1,732	5,745
	Company telephones by type of switch- board: ²									
70	Magneto-manual.....	669,548	317,470	101,896	250,182	6,617	515,769	246,290	98,759	170,720
71	Common battery-manual.....	7,615,515	4,420,697	1,034,172	2,110,646		7,002,065	4,004,687	1,035,627	1,961,751
72	Auto-manual.....	16,075	12,893		3,182		4,318	4,282		36
73	Dial (automatic) system.....	8,796,602	5,362,996	864,097	2,669,509	25,588	8,255,398	4,890,311	843,588	2,521,469
	Company telephones by type of customer:									
74	Business.....	6,617,279	3,973,700	814,912	1,828,667	14,244	6,154,142	3,623,345	788,043	1,742,754
75	Residential.....	10,480,487	6,140,382	1,235,253	3,104,852	17,961	9,623,404	5,522,251	1,189,931	2,911,222
	Company telephones by class:									
76	Main.....	12,122,986	7,026,259	1,448,186	3,648,541	23,267	11,112,743	6,315,982	1,390,381	3,406,380
77	P. B. X.....	3,192,170	2,048,088	364,949	779,133	5,639	3,025,487	1,903,003	359,041	763,443
78	Extension.....	1,782,610	1,039,735	237,030	505,845	3,299	1,639,316	928,611	228,552	484,153
	Average number of calls originated per month:									
79	Local calls.....	2,488,963,112	1,259,087,324	397,428,674	832,447,114	5,901,234	2,291,412,367	1,122,368,672	382,671,616	786,372,079
80	Toll calls.....	73,052,694	50,127,105	5,837,455	17,088,034	139,381	68,014,839	46,470,497	5,501,126	16,043,216
81	Average number of company and service telephones.....	17,114,212	10,044,134	2,027,062	5,043,016	32,005	15,765,539	9,076,926	1,954,635	4,734,078
	Private-line service revenues: ⁴									
82	Commercial:									
	Broadcasting.....	\$7,897,617	\$6,962,139	\$223,635	\$711,843	\$3,450	\$7,848,496	\$6,914,432	\$222,986	\$711,078
	Miscellaneous:									
83	Telephone.....	5,591,987	5,436,848	36,598	118,541	27,605	5,520,602	5,368,468	36,193	115,941
84	Morse.....	4,972,118	4,964,242	3,158	4,718		4,968,660	4,960,859	3,158	4,643

85	Teletypewriter.....	4,391,267	4,070,092	9,344	311,831	2,717	4,387,643	4,066,468	9,344	311,831
86	Other.....	45,421	36,265	7,723	1,433		35,300	31,783	2,690	917
87	Government.....	1,256,123	1,214,884	33,090	8,149		1,255,922	1,214,683	33,090	8,149
88	Press.....	4,078,482	3,932,494	140	145,848		4,078,213	3,932,494	140	145,579
89	Total private-line-service revenues.....	28,233,015	26,616,964	313,688	1,302,363	33,773	28,064,926	26,489,187	307,601	1,298,138
	Telegraph stations:									
	Private-line Morse:									
90	Number.....	3,083	2,696	4	383		3,065	2,689	3	373
91	Revenue.....	\$5,492,704	\$5,083,510	\$89,918	\$319,276		\$5,458,318	\$5,071,033	\$87,348	\$299,937
	Private-line teletypewriter:									
92	Number.....	7,170	5,899	255	1,016	13	6,968	5,746	254	968
93	Revenue.....	\$10,755,163	\$8,762,644	\$242,202	\$1,750,317	\$1,188	\$10,638,323	\$8,665,527	\$239,009	\$1,733,787
	Teletypewriter-exchange service:									
94	Number.....	13,231	7,333	1,475	4,423		12,882	7,003	1,475	4,404
95	Revenue.....	\$6,824,241	\$4,833,547	\$405,643	\$1,585,051		\$6,723,344	\$4,738,195	\$405,643	\$1,579,506
96	Telephotograph-service revenue.....	\$493,810	\$383,617	\$288	\$109,875		\$493,810	\$383,617	\$288	\$109,875
97	Other telegraph-service revenue.....	\$396,857	\$103,238	\$4,666	\$288,953		\$318,996	\$80,877	\$602	\$267,317
	Radiotelephone service:									
	Total chargeable calls:									
98	Between fixed stations.....	51,389	51,389				51,389	51,389		
99	In mobile service.....	14,377	10,035	378	3,964		14,377	10,035	378	3,964
100	Land-line charges—continental United States (gross).....	\$103,069	\$101,208	\$177	\$1,684		\$103,069	\$101,208	\$177	\$1,684
101	Radio-link charges (respondent's portion).....	\$997,007	\$991,027	\$418	\$5,562		\$997,007	\$991,027	\$418	\$5,562
102	Number of employees at close of June.....	286,954	172,176	33,884	80,894	647	267,738	159,184	32,622	75,932
103	Male employees.....	111,006	69,021	11,872	30,113	440	103,615	63,719	11,426	28,470
104	Female employees.....	175,948	103,155	22,012	50,781	207	164,123	95,465	21,196	47,462
105	Number of employees at close of year.....	286,181	171,884	34,300	79,997	659	267,290	159,065	33,071	75,154
106	Male employees.....	111,197	69,009	12,144	30,044	439	103,828	63,656	11,717	28,453
107	Female employees.....	174,984	102,875	22,156	49,953	220	163,464	95,409	21,354	46,701
108	Total compensation for year.....	\$502,064,285	\$328,561,167	\$48,407,019	\$125,096,099	\$998,330	\$476,038,127	\$308,288,724	\$47,197,008	\$120,552,395
109	Compensation chargeable to operating expenses.....	\$128,413,476	\$283,280,505	\$39,007,395	\$106,125,576	\$769,887	\$407,214,984	\$266,866,076	\$38,008,164	\$102,340,744
	Benefits:									
110	Number of cases handled during year.....	51,500	33,430	6,660	11,410		48,926	31,207	6,562	11,157
111	Amount paid during year.....	\$7,993,400	\$3,370,657	\$850,157	\$1,772,586		\$7,644,171	\$5,067,570	\$829,345	\$1,747,256
	Pensions:									
112	Number of cases being paid at end of year.....	8,471	5,810	828	1,833	13	7,998	5,395	819	1,784
113	Disbursements from pension fund.....	\$5,957,213	\$4,325,173	\$449,314	\$1,181,725	\$9,841	\$5,705,340	\$4,103,584	\$442,602	\$1,169,154
114	Relief and pension charges to operating expenses.....	\$20,563,568	\$13,568,569	\$1,853,531	\$5,141,468	\$41,552	\$19,972,361	\$12,822,037	\$1,781,806	\$5,068,518
115	Balance in pension fund at beginning of year.....	\$183,229,705	\$124,685,476	\$15,398,497	\$43,146,732	\$558,801	\$176,680,140	\$118,921,834	\$15,189,090	\$42,569,216
116	Balance in pension fund at end of year.....	\$198,374,589	\$133,793,996	\$16,826,608	\$47,753,985	\$659,761	\$191,319,129	\$127,603,033	\$16,573,605	\$47,142,491

See footnotes at end of table.

TABLE II.—Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region ¹	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
	Number of carriers.....	7	13	18	7	5	10	18	2	
1	Investment in telephone plant:									
2	Telephone plant in service.....	\$407,864,408	\$1,822,309,492	\$891,109,463	\$168,322,169	\$265,602,658	\$100,612,225	\$332,110,118	\$112,452,119	\$480,220,018
3	Telephone plant under construction.....	5,316,065	11,834,342	4,249,618	1,623,262	2,317,319	1,044,310	4,143,333	1,181,319	4,607,364
4	Property held for future telephone use.....	1,071,499	4,021,363	3,256,255	317,619	401,721	93,903	778,673	264,113	1,458,785
5	Telephone plant acquisition adjustment.....	\$-88,827	2,045,743	2,757,849	1,536,993	2,820,945	608,271	3,952,137	602,192	4,584,906
6	Total investment in telephone plant.....	414,163,145	1,842,000,940	901,433,185	171,800,043	271,142,643	192,358,712	390,993,261	114,520,743	490,871,163
7	Investments other than telephone plant:									
8	Investments in affiliated companies.....	961,160	2,260,308,854	501,567		836,717	16,644,147	1,017,274	74,539	120,883,946
9	Advances to affiliated companies.....	835,243	143,905,573	900			16,403,902	5,902	20,000	16,893,412
10	Miscellaneous investments.....	4,833,161	69,221,171	9,608,778	278,856	3,077,137	2,533,154	8,931,038	305,802	4,960,088
11	Total investments other than telephone plant.....	6,569,564	2,473,435,598	10,171,245	278,856	3,913,854	35,681,203	9,954,214	400,332	151,737,446
12	Cash.....	3,135,195	66,697,921	13,562,059	690,691	3,283,143	1,312,509	5,116,708	3,221,514	1,986,680
13	Material and supplies.....	3,598,451	21,580,023	9,789,247	1,620,813	2,436,640	2,540,269	3,261,071	1,250,071	5,215,014
14	Total current assets.....	18,762,218	177,109,918	47,921,439	7,077,303	13,029,613	8,331,026	18,224,809	6,757,595	19,088,139
15	Capital stock.....	174,325,565	2,584,899,303	538,262,338	96,452,100	115,329,400	118,168,351	182,295,014	52,899,700	394,537,013
16	Funded debt.....	122,149,300	626,788,735	51,632,700	4,225,000	45,598,000	5,443,000	82,624,300	30,009,000	61,121,500
17	Total long-term debt.....	137,792,835	716,030,043	91,034,273	30,611,759	66,389,851	48,718,572	97,445,750	30,105,280	115,716,276
18	Total current liabilities.....	5,549,235	36,215,697	21,821,136	4,758,832	7,003,851	4,246,039	8,633,889	1,837,309	8,303,675
19	Taxes accrued.....	2,553,168	26,120,644	24,271,259	2,330,163	4,108,338	4,463,382	7,473,903	2,300,349	7,508,249
20	Unmatured interest, dividends, and rents accrued.....	1,360,859	48,428,173	1,909,359	46,286	509,717	390,490	865,896	936,411	1,643,583
21	Depreciation reserve.....	111,239,652	542,658,808	236,695,177	34,761,420	63,314,150	55,699,669	105,585,066	32,920,606	135,278,144
22	Amortization reserve.....	\$-29,893	209,698	1,260,667	\$-10,796	958,123	\$-22,336	920,477	\$-16,012	262,291
23	Total surplus.....	10,659,979	262,744,665	45,005,900	10,818,019	3,640,428	4,899,406	18,019,658	975,639	6,305,634
24	Operating revenues:									
25	Local service.....	67,242,970	235,079,216	165,103,299	33,601,962	43,564,158	31,418,261	62,512,366	16,880,903	83,392,818
26	Toll service.....	22,580,741	152,226,934	43,635,230	8,114,090	20,668,270	11,351,623	27,082,273	7,583,157	31,448,460

24	Miscellaneous.....	3,417,130	33,783,134	8,881,102	2,014,519	2,961,380	2,325,578	5,039,424	1,091,742	3,586,490
25	Uncollectible—(Dr.).....	391,787	2,385,831	843,952	179,068	285,743	173,471	405,968	120,230	534,202
26	Total operating revenues.....	92,810,054	438,703,453	216,575,670	43,551,503	68,911,065	44,921,991	94,228,095	25,441,563	117,893,566
27	Operating expenses:									
28	Maintenance.....	21,796,831	85,724,193	40,333,956	7,189,760	11,443,430	8,948,506	16,343,646	4,284,118	23,269,678
29	Depreciation and amortization.....	11,464,911	62,315,023	31,178,056	6,500,361	10,049,464	6,724,105	14,074,835	3,792,232	18,310,433
30	Traffic.....	16,584,306	55,329,646	34,695,306	8,073,546	11,265,278	7,050,433	14,715,192	4,458,767	18,246,787
31	Commercial.....	7,264,475	33,312,666	17,493,189	3,936,362	4,892,424	3,016,558	7,505,052	2,340,382	9,692,486
32	General office and salaries and expenses.....	4,265,253	30,741,642	10,979,780	2,024,760	2,525,778	2,632,130	4,369,565	1,423,069	5,539,031
33	Other.....	4,761,631	41,608,816	8,794,677	1,977,263	3,706,385	2,147,041	4,197,057	1,148,001	4,852,323
33	Total operating expenses.....	69,137,407	309,031,986	143,476,964	20,711,055	43,882,759	31,118,833	61,205,347	17,446,589	79,940,741
34	Operating ratio (percent).....	74.46	70.44	66.25	68.22	65.58	60.27	64.05	68.58	67.81
35	Operating taxes:									
36	Other than U. S. Government.....	\$6,074,620	\$10,312,939	\$22,781,139	\$3,713,334	\$6,913,124	\$3,948,500	\$8,191,836	\$2,756,710	\$12,399,567
37	U. S. Government.....	2,590,118	18,502,999	8,085,760	1,661,361	2,518,192	1,627,359	4,242,029	829,680	4,704,126
37	Total operating taxes.....	8,664,738	58,815,938	30,846,905	5,374,695	9,431,316	5,575,919	12,433,865	3,586,390	17,103,693
38	Net operating income.....	15,046,909	70,855,529	42,251,801	8,465,753	13,566,990	8,200,115	20,589,183	4,408,493	20,848,942
39	Dividend income.....	33,213	150,104,454	288,814	20,588	190,856	74,064	427,968	6,440	9,829,778
40	Interest income.....	325,570	10,692,169	504,022	149,818	81,745	896,698	486,853	102,904	911,407
41	Miscellaneous income.....	103,766	763,675	70,447	17,400	8,110	30,925	64,273	10,619	115,800
42	Miscellaneous deductions from income.....	186,797	767,401	324,313	62,078	89,588	144,893	209,959	62,990	149,319
43	Interest on funded debt.....	5,004,841	25,009,847	2,027,561	180,457	1,483,290	223,006	2,412,781	531,309	2,107,675
44	Other interest deductions.....	565,508	4,027,385	2,228,542	1,323,731	1,515,919	2,085,976	738,732	578,168	2,177,036
45	Miscellaneous fixed charges.....	165,598	358,433	33,517	11,288	106,869	12,705	34,201	2,120	16,410
46	Net income.....	9,586,720	202,252,761	38,501,751	7,076,032	10,682,035	6,735,225	18,162,606	3,353,878	27,255,481
47	Dividends declared:									
48	Common stock.....	10,842,208	218,539,423	35,813,652	7,117,950	10,357,312	5,136,141	15,887,266	3,436,229	21,490,500
49	Rate percent or amount per share.....									
50	Preferred stock.....		1,844,563	769,507	19,068	92,508	355,704	1,376,516		5,190,765
50	Rate percent or amount per share.....									
51	Miles of wire in cable:									
52	Aerial.....	2,732,188	11,307,140	5,269,394	1,085,929	2,350,074	960,198	2,712,071	536,316	2,754,934
53	Underground.....	4,170,930	19,839,667	11,818,782	1,945,208	2,291,321	1,742,033	4,009,268	840,173	5,719,339
54	Buried.....	44,234	262,228	73,265	9,071	24,885	100,797	276,520	21,303	50,840
54	Submarine.....	24,051	79,398	29,326	5,947	13,907	748	2,911		49,352
55	Total miles of wire in cable.....	6,971,403	31,488,433	17,190,767	3,046,155	4,688,277	2,803,776	7,000,770	1,397,882	8,574,466

See footnotes at end of table.

TABLE II.—Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
56	Miles of aerial wire.....	245,392	1,051,359	581,461	151,634	548,150	443,145	635,183	286,918	365,116
57	Total miles of wire.....	7,216,795	32,549,792	17,772,228	3,197,789	5,234,427	3,246,921	7,635,953	1,684,800	8,939,581
58	Miles of pole line.....	33,747	82,522	93,106	14,650	41,476	79,315	76,653	40,103	36,390
59	Miles of underground conduit (single duct).....	10,682	48,848	29,043	4,187	4,823	4,142	8,499	2,009	14,079
	Central offices—types of switchboard:									
60	Magneto-manual.....	366	308	546	76	484	518	732	264	467
61	Common battery-manual.....	249	559	456	171	352	265	449	218	268
62	Auto-manual.....	1	8	8				2		3
63	Dial (automatic) system.....	112	497	357	152	253	123	137	21	208
64	Total central offices.....	727	1,365	1,367	399	1,089	906	1,320	503	946
65	Company telephones.....	1,580,325	4,767,174	3,766,583	843,838	1,206,327	911,372	1,608,270	506,263	1,907,614
66	Service telephones.....	1,601	19,427	24,840	9,425	31,050	62,332	79,140	15,051	47,525
67	Private-line telephones.....	5,637	30,836	15,441	3,993	1,814	3,235	5,766	1,318	14,431
68	Total telephones.....	1,587,563	4,817,437	3,806,864	857,256	1,239,191	976,939	1,693,176	522,632	1,969,570
69	Other stations.....	1,784	9,213	4,942	625	1,107	556	1,537	555	3,128
	Company telephones by type of switchboard: ³									
70	Magneto-manual.....	106,554	80,139	130,777	19,906	81,990	76,005	103,659	26,973	43,545
71	Common battery-manual.....	786,164	1,849,566	1,784,967	443,245	640,927	411,694	659,977	317,759	721,216
72	Auto-manual.....	89	89	12,804				450		2,732
73	Dial (automatic) system.....	687,607	2,837,354	1,838,035	390,687	483,410	423,673	844,184	161,531	1,140,121
	Company telephones by type of customer:									
74	Business.....	551,274	2,051,320	1,371,106	323,835	491,077	291,361	599,147	198,515	739,644
57	Residential.....	1,029,051	2,715,854	2,395,477	520,003	715,250	620,011	1,009,123	307,748	1,167,970
	Company telephones by class:									
76	Main.....	1,175,858	3,106,483	2,743,918	545,850	902,336	714,939	1,210,201	376,249	1,347,152
77	P. B. X.....	230,944	1,125,717	691,427	188,441	176,508	116,346	225,113	76,155	361,519
78	Extension.....	173,523	534,974	331,238	109,547	127,483	80,087	172,966	53,859	198,943

	Average number of calls originated per month:									
79	Local calls.....	204,242,399	566,181,912	488,663,013	119,727,354	277,701,320	150,936,692	329,632,484	78,969,837	272,908,101
80	Toll calls.....	9,711,416	28,524,527	11,891,162	2,250,303	3,587,152	2,253,104	4,590,893	1,419,746	8,824,351
81	Average number of company and service telephones.....	1,580,133	4,739,518	3,724,483	828,080	1,198,982	963,402	1,660,126	508,897	1,910,591
	Private line service revenues: 4									
	Commercial:									
82	Broadcasting.....	\$71,388	\$6,616,307	\$274,444	\$70,545	\$153,090	\$122,320	\$131,015	\$58,147	\$400,361
	Miscellaneous:									
83	Telephone.....	170,964	5,011,125	254,739	5,531	31,067	35,271	64,904	9,667	8,699
84	Morse.....	1,947	4,954,995	7,300		3,158	75		298	4,345
85	Teletypewriter.....	52,682	3,974,311	43,099	5,667	3,677		17,102	5,098	289,631
86	Other.....	64	22,189	14,012	2,690		387	744		302
87	Government.....		1,214,239	645	6,725	26,365	1,248	3,169	3,732	
88	Press.....		3,932,494			140	269			145,579
89	Total private line service revenues.....	297,045	25,725,660	594,259	91,158	217,497	159,570	216,934	76,942	848,917
	Telegraph stations:									
	Private line Morse:									
90	Number.....	132	1,929	635	2	2	25	117	53	188
91	Revenue.....	\$27,189	\$4,650,627	\$405,694	\$31,370	\$58,548	\$33,951	\$80,396	\$35,743	\$169,186
	Private line teletypewriter:									
92	Number.....	586	3,971	1,342	138	117	110	204	30	672
93	Revenue.....	\$298,344	\$7,358,687	\$1,105,613	\$94,996	\$147,206	\$58,543	\$247,293	\$235,856	\$1,208,625
	Teletypewriter exchange service:									
94	Number.....	1,066	3,313	2,954	485	990	456	1,216	472	2,279
95	Revenue.....	\$255,305	\$3,151,181	\$1,427,061	\$122,168	\$283,475	\$140,202	\$361,045	\$124,102	\$959,702
96	Telephotograph service revenue.....	180	370,723	12,744	288			1,396	23,261	85,218
97	Other telegraph service revenue.....	7,178	64,075	31,985	802	3,864		3,212	10,898	274,843
	Radiotelephone service:									
	Total chargeable calls:									
98	Between fixed stations.....		51,389							
99	In mobile service.....	1,244	8,791		378					3,964
100	Land-line charges—continental United States (gross).....	\$590	\$100,618		\$177					\$1,684
101	Radio link charges (respondent's portion).....	1,622	989,405		418					5,562
102	Number of employees at close of June.....	25,971	89,485	56,720	12,705	21,179	13,969	27,774	8,109	31,042
103	Male employees.....	9,621	38,237	21,163	4,356	7,516	5,296	9,477	2,911	12,420
104	Female employees.....	16,350	51,248	35,557	8,349	13,663	8,673	18,297	5,198	18,613
105	Number of employees at close of year.....	26,163	88,749	56,972	12,684	21,616	13,586	27,973	7,860	30,578
106	Male employees.....	9,587	38,161	20,961	4,397	7,747	5,179	9,743	2,840	12,282
107	Female employees.....	16,276	50,588	36,011	8,287	13,869	8,407	18,230	5,020	18,296

See footnotes at end of table.

TABLE II.—Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
108	Total compensation for year.....	\$46,470,542	\$186,977,139	\$95,113,486	\$20,683,005	\$27,724,014	\$20,673,213	\$37,945,586	\$11,253,576	\$55,223,724
109	Compensation chargeable to operating expenses.....	39,050,354	161,469,814	82,760,337	16,847,314	22,160,081	17,406,348	32,628,834	9,351,380	46,739,014
	Benefits:									
110	Number of cases handled during year.....	4,997	19,081	9,352	2,008	4,652	2,128	3,501	945	4,836
111	Amount paid during year.....	\$850,653	\$3,120,371	\$1,399,633	\$290,207	\$559,950	\$283,557	\$520,048	\$189,139	\$779,842
	Pensions:									
112	Number of cases being paid at end of year.....	1,129	3,197	1,484	209	529	435	588	145	665
113	Disbursements from pension fund.....	\$764,309	\$2,633,378	\$928,496	\$186,523	\$262,791	\$270,545	\$346,833	\$90,389	\$473,959
114	Relief and pension charges to operating expenses.....	2,723,318	7,481,093	3,364,158	822,011	1,031,520	725,406	1,287,706	401,624	2,726,732
115	Balance in pension fund at beginning of year.....	13,823,249	74,648,552	36,213,675	6,234,345	9,134,152	7,994,191	14,323,043	4,094,320	16,735,178
116	Balance in pension fund at end of year.....	15,667,839	79,386,361	38,739,796	6,982,293	9,844,315	8,519,834	15,663,819	4,368,174	19,202,158

¹ Data concerning the American Telephone & Telegraph Co. have been included in the Middle Atlantic region and the Eastern district inasmuch as only aggregate figures are reported.

² 2 carriers located outside the continental limits of the United States. Not included in United States totals.

³ Excludes 26 telephones of the American Telephone & Telegraph Co. which were not connected with exchange offices.

⁴ Represents, except in minor instances, gross revenue billed for interstate services furnished to customers, and includes data for intrastate lines used in interstate communication.

⁵ Deficit or other reverse item.

Proportion of the telephone industry covered by annual reports.—A comparison of the data compiled from the annual reports filed with the Commission by class A and class B telephone carriers for the year 1937 with the figures for all telephone systems and lines in the United States (shown in the "Census of Electrical Industries, Telephones, and Telegraphs: 1937") is given in table III. This table also shows a similar comparison of the data for 1938 for the same group (including mergers and consolidations) of carriers reporting to the Commission with the data obtained from the Commission and unofficial sources for all class A and class B carriers. Although the number of telephone carriers reporting annually to the Commission represents less than one-fifth of 1 percent of the total number of systems and lines, it will be observed that they handle practically all of the telephone business in the United States.

TABLE III.—Comparison of data concerning telephone carriers shown in the report of the Bureau of the Census, and reports filed with the Commission and data secured from unofficial sources

Item	Census figures, 1937	Federal Communications Commission, 1937		Total classes A and B carriers, 1938 ¹	Federal Communications Commission, 1938	
		Amount	Per-cent of census figures		Amount	Per-cent of total
Number of systems and lines.....	50,560	93	0.18	240	90	37.50
Investment in telephone plant.....	\$5,001,803,335	\$4,685,231,383	93.67	\$4,983,294,102	\$4,789,292,835	96.11
Operating revenues.....	\$1,180,028,372	\$1,139,534,334	96.57	\$1,180,690,933	\$1,141,075,960	96.64
Central offices.....	18,937	8,623	45.46	10,647	8,622	80.98
Total telephones.....	19,453,401	17,047,588	87.03	18,614,330	17,470,828	93.86
Number of employees.....	325,943	295,774	90.74	(?)	286,181	-----
Total compensation.....	\$516,640,009	\$489,420,830	94.73	(?)	\$502,064,285	-----

¹ Data secured from annual reports filed with the Commission and from unofficial sources.

² Data not available.

Development of class A telephone carriers from 1926 to 1938.—Selected data relative to class A telephone carriers for the years 1926 to 1938, inclusive, are shown in table IV and the trends reflected in chart 2. The difference in the number of carriers reporting to the Commission in 1938 in comparison with prior years is caused by mergers and consolidations. The investment in telephone plant increased from \$2,973,932,711 in 1926 to \$4,783,082,079 in 1938, while the net income during this period increased from \$247,371,069 in 1926 to \$323,489,437 in 1938.

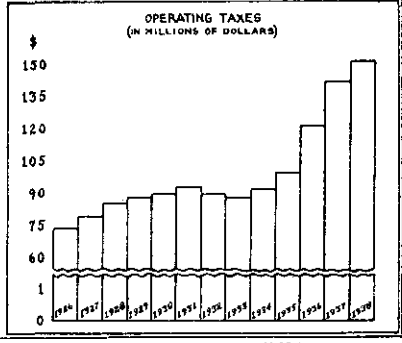
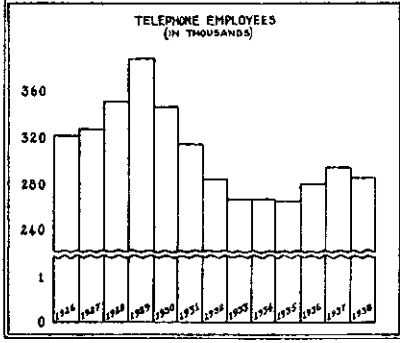
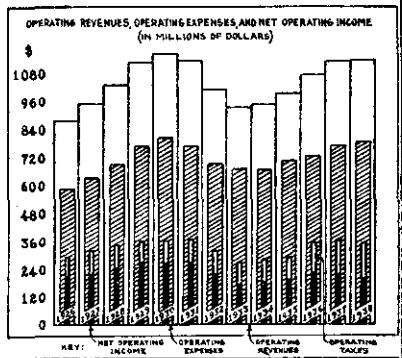
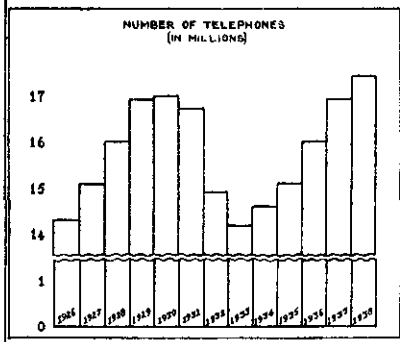
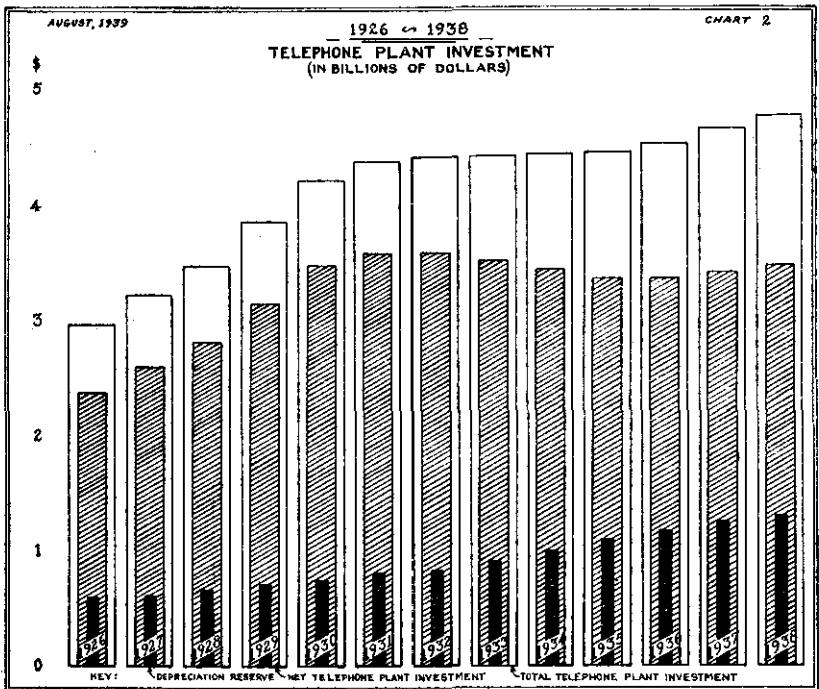


TABLE IV.—Selected data showing the development through the years 1926 to 1938, inclusive, of class A telephone carriers which reported for the year 1938¹

Year	Number of carriers	Investment in telephone plant	Depreciation reserve	Ratio of depreciation to investment	Capitalization			Ratio of debt to total capitalization	Total surplus	Interest on funded debt	Dividends declared
					Capital stock	Funded debt	Total capitalization				
1926	140	\$2,973,982,711	\$601,481,350	Percent 20.23	\$2,583,283,669	\$988,246,141	\$3,571,529,810	Percent 27.67	\$344,539,547	\$49,010,892	\$189,752,127
1927	146	3,215,271,753	624,614,255	19.43	2,863,966,791	974,594,895	3,838,561,686	25.39	477,511,166	48,804,397	211,056,375
1928	142	3,481,213,250	674,727,230	19.38	3,181,105,824	973,665,048	4,154,770,872	23.43	545,496,259	48,916,199	234,303,419
1929	139	3,862,241,317	724,413,173	18.76	3,320,379,615	1,143,540,703	4,463,920,318	25.62	631,643,528	52,341,709	258,372,149
1930	136	4,217,710,052	762,345,270	18.07	4,090,105,534	1,094,811,355	5,184,916,889	21.12	638,094,295	57,212,814	293,847,585
1931	109	4,384,958,752	814,241,820	18.57	4,276,926,127	1,021,222,053	5,298,148,180	19.28	639,375,809	54,231,013	333,544,383
1932	91	4,423,855,828	846,151,536	19.13	4,217,783,773	994,714,437	5,212,498,210	19.08	589,495,032	50,229,270	336,005,596
1933 ²	83	4,433,207,365	929,495,109	20.97	4,254,146,109	987,797,508	5,241,943,617	18.84	522,947,692	49,608,524	321,595,698
1934	84	4,442,414,118	1,007,750,873	22.68	4,273,574,149	984,991,823	5,258,565,972	18.73	459,605,230	49,340,893	306,510,650
1935	83	4,460,068,270	1,102,228,896	24.71	4,273,955,436	1,013,702,525	5,287,657,961	19.17	411,901,270	49,640,662	314,308,414
1936	79	4,636,600,007	1,187,499,944	26.18	4,305,034,326	971,773,490	5,276,807,726	18.42	386,450,580	47,259,891	346,625,791
1937 ²	73	4,674,627,528	1,261,070,772	26.98	4,275,062,632	939,852,090	5,214,914,712	18.02	389,869,290	38,376,940	350,963,590
1938	73	4,783,082,079	1,316,367,516	27.52	4,284,792,921	1,031,567,735	5,316,360,656	19.40	362,922,201	38,933,819	338,175,841

Year	Local-service revenues	Toll-service revenues	Operating revenues	Operating expense	Operating ratio	Operating taxes	Net operating income	Net income	Miles of wire ³		
									Cable	Aerial	Total
1926	\$598,352,797	\$261,547,874	\$879,503,186	\$589,236,728	Percent 67.00	\$73,293,571	\$211,596,266	\$247,371,069	49,493,901	4,944,238	54,438,139
1927	639,452,150	286,628,340	948,205,721	637,159,692	67.20	79,493,783	225,628,392	314,201,683	55,323,855	5,090,946	60,414,801
1928	680,667,029	325,790,281	1,032,113,717	690,998,145	66.95	84,838,233	249,835,341	308,616,856	60,556,041	5,269,692	65,825,733
1929	730,089,175	372,718,236	1,132,732,200	766,082,109	67.63	87,126,337	272,177,500	346,388,980	67,975,087	5,675,618	73,650,705
1930	765,782,625	367,694,063	1,166,447,243	803,857,137	68.92	90,759,879	263,590,386	341,126,045	74,676,564	5,846,637	80,523,201
1931	758,395,087	344,984,781	1,136,464,163	768,117,829	67.50	93,948,259	265,276,505	347,649,908	78,645,817	5,643,127	84,288,944
1932	701,200,382	278,852,510	1,010,513,693	689,776,938	68.26	89,602,772	217,903,206	289,020,387	80,479,859	5,388,248	85,868,108
1933 ²	642,936,925	250,909,943	932,787,485	666,427,361	71.44	87,836,849	178,422,173	266,745,812	77,706,913	4,495,919	82,202,832
1934	653,509,683	266,284,006	944,172,583	665,188,994	70.45	92,530,845	186,364,115	251,383,681	77,653,905	4,423,711	82,077,616
1935	667,266,265	281,689,597	996,630,598	702,091,043	70.45	98,317,480	196,554,406	278,212,728	78,887,848	4,339,261	82,427,109
1936	706,406,478	318,149,537	1,075,902,427	721,514,563	67.06	121,260,531	233,090,777	362,403,616	78,888,064	4,300,464	83,188,528
1937 ²	747,157,241	334,428,818	1,137,279,373	773,954,020	68.05	142,067,080	221,258,433	363,582,760	81,123,993	4,321,733	85,456,726
1938	757,841,542	324,344,687	1,139,373,155	783,964,478	68.78	151,692,583	204,052,989	323,489,437	83,101,869	4,293,374	87,395,243

See footnotes at end of table.

TABLE IV.—Selected data showing the development through the years 1926 to 1938, inclusive, of class A telephone carriers which reported for the year 1938—Continued

Year	Miles of pole line	Telephones				Average number of calls originated per month		Number of employees at close of year	Total compensation	Average compensation per employee per annum
		Company	Service	Private line	Total	Local	Toll			
1926.....	514, 419	13, 863, 380	340, 195	68, 347	14, 371, 922	2, 016, 708, 881	76, 236, 937	322, 526	(¹)	-----
1927.....	535, 736	14, 781, 424	354, 129	75, 481	15, 191, 034	2, 073, 997, 804	82, 639, 153	327, 839	(¹)	-----
1928.....	551, 967	15, 589, 748	363, 734	82, 116	16, 035, 598	2, 191, 999, 849	90, 656, 284	350, 008	(¹)	-----
1929.....	576, 989	16, 523, 871	361, 178	93, 541	16, 978, 590	2, 354, 593, 215	98, 532, 631	387, 023	(¹)	-----
1930.....	585, 927	16, 645, 729	347, 715	95, 397	17, 088, 841	2, 355, 187, 583	88, 967, 215	346, 312	(¹)	-----
1931.....	592, 699	16, 354, 030	338, 259	99, 495	16, 791, 784	2, 312, 053, 095	82, 070, 752	314, 727	(¹)	-----
1932.....	586, 963	14, 592, 210	298, 887	88, 505	14, 979, 602	2, 163, 674, 876	66, 983, 473	284, 450	(¹)	-----
1933 ²	513, 411	13, 913, 185	286, 432	93, 634	14, 293, 251	1, 996, 903, 490	60, 206, 139	267, 129	\$369, 130, 229	\$1, 382
1934.....	510, 048	14, 230, 124	285, 070	96, 829	14, 618, 023	2, 047, 545, 412	62, 421, 097	267, 674	385, 755, 421	1, 441
1935.....	504, 680	14, 726, 245	287, 995	97, 625	15, 111, 865	2, 136, 383, 682	64, 749, 630	264, 873	401, 849, 306	1, 517
1936.....	497, 292	15, 663, 180	290, 908	83, 534	16, 037, 622	2, 290, 569, 404	72, 616, 128	280, 985	433, 066, 028	1, 541
1937 ³	496, 378	16, 608, 048	288, 750	84, 907	16, 981, 705	2, 429, 225, 217	73, 947, 702	294, 821	488, 423, 528	1, 657
1938.....	492, 531	17, 061, 520	287, 363	82, 470	17, 431, 353	2, 483, 731, 922	72, 857, 647	285, 550	501, 504, 752	1, 756

¹ Includes, for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercorporate duplications have not been excluded.

² In comparing data in this table, consideration may be given to the minor effect of the revisions of the uniform system of accounts, first revised issue, and the issue of June 19, 1935, as amended, resulting in certain changes in and rearrangements of both the balance sheet and the income statement.

³ The decrease reflected in data shown for the year 1933 is due mainly to the fact that prior to that year the total of wire jointly owned with other companies was included, whereas from 1933 on only the respondent's portion of jointly owned wire was included.

⁴ Data not reported.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding \$100,000.

Radiotelephone service.—There are shown in Table V statistical data concerning radiotelephone service during the year 1938. This information was obtained from the annual reports received from the six telephone carriers that hold licenses to operate radiotelephone facilities. A total of 65,766 radiotelephone calls were handled during the year with gross revenues as follows: (a) Land-line charges (continental United States), \$103,069, and (b) radio-link charges (respondent's portion), \$997,007. In addition, \$37,185 and \$13,153 were received from foreign program transmission service and foreign private-line service, respectively, during the year.

 TABLE V.—Radiotelephone service reported by telephone carriers ¹

[Year ended Dec. 31, 1938]

Class of service	Number of chargeable calls	Gross revenues	
		Land-line charges—continental United States	Radio-link charges—respondents' portion
A. Calls between fixed stations:			
1. In Overseas service:			
Bermuda and trans-Atlantic.....	35,934	\$42,876	\$734,557
Central and South American and Caribbean.....	9,522	27,370	114,416
Trans-Pacific.....	5,933	26,852	94,497
Other.....			
Total.....	51,389	97,098	943,470
2. In other than overseas service:			
Intrastate, interstate, intraterritory, and intra-possession.....			
Alaska.....			
Other.....			
Total.....			
Total calls between fixed stations.....	51,389	97,098	943,470
B. Calls in mobile service:			
1. In ship telephone service through land stations located on:			
Atlantic and Gulf of Mexico coasts:			
Dispatching service.....	866	2	841
Other service.....	9,497	4,036	46,720
Pacific coast:			
Dispatching service.....	69		40
Other service.....	3,945	1,933	6,136
Great Lakes and inland waterways:			
Dispatching service.....			
Other service.....			
Other land points:			
Dispatching service.....			
Other service.....			
Total.....	14,377	5,971	53,537
2. In other than ship telephone service.....			
Total calls in mobile service.....	14,377	5,971	53,537
Total calls in fixed and mobile service.....	65,766	103,069	997,007

Revenues from foreign program transmission service.....	\$37,185
Revenues from domestic program transmission service.....	
Revenues from private line service—foreign.....	13,153

Vessels with radiotelephone service:

Number of high-seas vessels.....	23
Number of other than high-seas vessels.....	843

Total vessels.....	866
--------------------	-----

¹ Six telephone carriers offer radiotelephone service.

Membership dues and contributions.—Data compiled from the annual reports filed by all telephone carriers reporting to the Commission for the year 1938 with reference to membership dues and contributions paid to noncommercial organizations are shown in the following statement. Approximately 75 percent of the total was expended in connection with boards of trade, chambers of commerce, and other businessmen's organizations.

Item	Number		
	Organizations	Memberships	Amount
Boards of trade, chambers of commerce, and other businessmen's organizations.....	4, 724	7, 832	\$366, 047
Social, athletic, and other clubs.....	392	514	20, 087
Associations of telephone companies.....	96	111	78, 458
Professional and scientific organizations.....	279	414	13, 735
Other organizations.....	133	158	11, 925
Total.....	5, 624	9, 029	490, 252

Names and selected statistics of telegraph carriers.—The names of the 15 wire-telegraph and 19 radio-telegraph carriers that filed annual reports for the year 1938 are given in table VI. Financial and operating data pertaining to these carriers are shown in table VII. Hearst Radio, Inc., discontinued radiotelegraph operations as of December 31, 1937. The Northern Telegraph Co. discontinued filing annual reports with the Commission in 1938, as it was notified that, under the provisions of section 2 (b) (2) of the Communications Act of 1934, it was subject only to sections 201-5 of the act.

TABLE VI.—List of wire-telegraph and radio-telegraph carriers reporting on an annual basis to the Commission for year 1938

Name of carrier	Type of carrier
All America Cables and Radio, Inc. ¹	Ocean cable and radiotelegraph.
Canadian Pacific Ry. Co.....	Land-line telegraph.
Central Idaho Telegraph & Telephone Co.....	Do.
Central Radio Telegraph Co.....	Radiotelegraph.
City of Seattle, Harbor Department.....	Do.
Colorado & Wyoming Telegraph Co.....	Land-line telegraph.
Commercial Cable Co.....	Ocean cable.
Commercial Pacific Cable Co.....	Do.
Continental Telegraph Co.....	Land-line telegraph.
French Telegraph Cable Co.....	Ocean cable.
Globe Wireless Ltd.....	Radiotelegraph.
Great North Western Telegraph Co. of Canada.....	Land-line telegraph.
Interstate Telephone & Telegraph Co.....	Do.
Mackay Radio & Telegraph Co. (California).....	Radiotelegraph.
Mackay Radio & Telegraph Co. (Delaware).....	Do.
Magnolia Radio Corporation.....	Do.
Mexican Telegraph Co.....	Ocean cable.
Michigan Wireless Telegraph Co.....	Radiotelegraph.
Minnesota & Manitoba R. R.....	Land-line telegraph.
Mountain Telegraph Co.....	Do.
Olympic Radio Co.....	Radiotelegraph.
Pere Marquette Radio Corporation.....	Do.
Postal Telegraph-Cable Co. (land-line system).....	Land-line telegraph.
Press Wireless, Inc.....	Radiotelegraph.
R. C. A. Communications, Inc.....	Do.
Radiomarine Corporation of America.....	Do.
South Porto Rico Sugar Co. (of Puerto Rico).....	Do.
Southern Radio Corporation ²	Do.
Tidewater Wireless Telegraph Co.....	Do.
Tropical Radio Telegraph Co.....	Do.
United States-Liberia Radio Corporation.....	Do.
Wabash Radio Corporation.....	Do.
Western Radio Telegraph Co.....	Do.
Western Union Telegraph Co.....	Land-line telegraph and ocean cable.

¹ Formerly All America Cables, Inc.

² United States operations ceased May 31, 1938.

TABLE VII.—Statistics of wire-telegraph and radio-telegraph carriers reporting on an annual basis to the Commission, classified by kinds of carriers

[Year ended Dec. 31, 1938]

No.	Item	Telegraph carriers	Cable carriers	Radiotelegraph carriers †	Total carriers
	Number of carriers.....	10	5	19	34
1	Investment in plant and equipment.....	\$416,948,185	\$88,301,547	\$32,593,840	\$537,843,572
2	Other investments.....	19,261,851	33,761,894	10,131,405	63,155,240
3	Cash.....	9,240,656	5,534,118	1,656,392	16,431,166
4	Material and supplies.....	7,537,285	1,171,170	833,765	9,542,220
5	Total current assets.....	29,992,623	29,643,680	6,118,768	65,755,071
6	Capital stock.....	104,704,053	52,675,831	7,809,957	165,189,841
7	Unmatured funded debt.....	89,218,000	20,000,000	1,808,210	111,026,210
8	Total long-term debt.....	146,151,505	20,270,000	11,608,873	178,030,378
9	Taxes accrued.....	4,808,041	491,266	459,712	5,759,019
10	Unmatured interest, dividends, and rents accrued.....	1,331,892	92,636	1,677	1,426,205
11	Total current liabilities.....	36,912,271	10,068,043	5,357,839	52,338,153
12	Reserve for accrued depreciation.....	93,830,879	55,322,866	17,398,834	166,552,579
13	Total corporate surplus.....	57,104,634	7,002,350	3,087,102	67,194,086
	Telegraph operating revenues:				
14	Transmission-telegraph.....	97,564,514		4,116,634	101,681,148
15	Transmission-cable.....	6,196,212	10,331,970	5,267,713	21,795,895
16	Nontransmission.....	10,511,533	115,120	977,536	11,604,189
17	Contract—Dr.....	1,430,886			1,430,886
18	Total operating revenues.....	112,841,373	10,447,090	10,361,883	133,650,346
	Telegraph operating expenses:				
19	Depreciation and extraordinary depreciation.....	10,114,721	880,353	1,418,717	12,413,791
20	All other maintenance.....	14,493,267	1,842,898	576,096	16,912,261
21	Conducting operations.....	72,787,518	4,777,344	5,581,962	83,146,824
22	Relief department and pensions.....	2,649,487	550,630	67,265	3,267,382
23	All other general.....	2,617,403	509,563	1,210,122	4,337,088
24	Total operating expenses.....	102,662,396	8,560,788	8,850,998	120,074,182
25	Operating ratio (percent).....	90.98	81.94	85.42	89.84
26	Other operating revenues.....			\$523,567	\$523,567
27	Other operating expenses.....			606,260	606,260
	Operating taxes:				
28	Other than U. S. Government.....	\$6,010,810	\$358,477	248,791	6,618,078
29	U. S. Government.....	902,777	136,365	298,451	1,337,593
30	Total operating taxes.....	6,913,587	494,842	547,242	7,955,671
31	Operating income.....	2,873,113	1,375,160	861,468	5,109,741
32	Dividend income.....	1,045,208	310,837	28,886	1,384,931
33	Interest income.....	426,216	98,229	60,371	585,416
34	Other nonoperating income.....	145,503	74,225	144,079	363,807
35	Interest on funded debt.....	4,143,377	800,000	51,675	4,995,052
36	Other interest deductions.....	2,858,889	140,213	559,579	3,558,686
37	Other deductions.....	3,180,065	649,928	229,202	4,059,195
38	Net income.....	\$-5,692,291	268,905	254,348	\$-5,169,038
	Dividends declared:				
39	Common stock.....		247,710	294,500	542,210
40	Rate percent or amount per share.....				
41	Preferred stock.....				
42	Rate percent or amount per share.....				
	Miles of wire in cable:				
43	Aerial.....	118,778	381		119,159
44	Underground.....	333,640	3,416		336,656
45	Submarine.....	43,309	72,267		115,576
46	Total miles of wire in cable.....	495,627	75,764		571,391
47	Miles of aerial wire.....	1,848,664	8,190		1,856,854
48	Total miles of wire.....	2,344,291	83,954		2,428,245

† In comparing data shown in this table with prior years, consideration should be given to the effect of certain changes in the reporting requirements embodied in a circular letter dated Jan. 4, 1939.

‡ Includes one telegraph carrier engaged in land-wire and ocean-cable business.

§ Total reflects discount of \$3,164.

¶ Deficit or other reverse item.

‡ Includes 59,380 nautical miles of wire.

TABLE VII.—Statistics of wire-telegraph and radio-telegraph carriers reporting on an annual basis to the Commission, classified by kinds of carriers—Continued

No.	Item	Telegraph carriers	Cable carriers	Radiotelegraph carriers	Total carriers
49	Miles of pole line.....	248,347	2,021	-----	250,368
50	Miles of underground conduit (single duct). Service equipment furnished free to customers:	6,114	125	-----	6,239
	Average number:				
51	Telegraph printers.....	18,971	107	122	19,200
52	Telegraph printer tie lines.....	18,692	109	123	18,924
53	Morse tie lines.....	783	55	29	867
54	Telephones.....	8,444	249	210	8,903
55	Telephone tie lines.....	9,448	248	263	9,959
56	Pneumatic tubes.....	56	-----	-----	56
57	Call boxes.....	511,688	4	1,501	513,193
58	Automatic transmitting apparatus.....	17	-----	-----	17
59	Other.....	2	-----	-----	2
	Leased wire revenues:				
	Commercial:				
60	Broadcasting.....	\$13,896	-----	-----	\$13,896
61	Miscellaneous.....	\$907,150	-----	\$1,562	\$908,721
62	Government.....	\$3,061	-----	-----	\$3,061
63	Press.....	\$643,813	-----	-----	\$643,813
	Telegraph offices:				
	United States:*				
64	Independent.....	5,704	9	106	5,819
65	Joint.....	18,810	1	25	18,836
	Foreign:				
66	Independent.....	45	137	30	212
67	Joint.....	9	2	-----	11
68	Total offices.....	24,568	149	161	24,878
	Telegraph revenue messages transmitted:				
	Number of messages:				
69	Domestic.....	186,491,843	202,276	3,462,972	190,157,091
70	Foreign.....	4,361,015	5,495,548	4,588,511	14,445,974
71	Mobile.....	-----	-----	779,587	779,587
72	Total messages.....	190,853,758	5,697,824	8,831,070	205,382,652
	Number of words:				
73	Foreign.....	88,570,407	100,609,306	120,638,723	309,818,436
74	Mobile.....	-----	-----	9,737,891	9,737,891
	Amount of revenue:				
75	Domestic.....	\$99,004,805	\$244,409	\$1,778,140	\$101,027,354
76	Foreign.....	6,196,233	6,259,393	5,955,740	21,411,366
77	Mobile.....	-----	-----	835,365	835,365
78	Total revenue.....	105,201,038	9,503,802	8,569,245	123,274,085
	Number of employees:				
79	Close of June.....	59,698	3,713	3,161	66,572
80	Close of year.....	58,936	3,563	3,074	65,573
81	Total compensation for year.....	\$72,847,111	\$4,570,150	\$3,375,769	\$82,793,030
82	Compensation chargeable to operating expenses.....	\$66,129,013	\$4,523,424	\$4,663,527	\$75,315,964
	Pensions:				
83	Relief and pension charges to operating expenses.....	\$2,649,487	\$550,630	\$67,265	\$3,267,382
84	Balances in pension fund at beginning of year.....	\$8,032,263	\$2,448,469	\$757,258	\$11,237,990
85	Balance in pension fund at end of year.....	\$8,034,378	\$2,541,468	\$822,358	\$11,398,204

* Includes territories and possessions of the United States except the Philippine Islands and the Canal Zone.

Development of telegraph industry from 1926 to 1938.—Selected data relative to the wire-telegraph carriers for the years 1926 to 1938, inclusive, are shown in table VIII, and similar data applicable to radio-telegraph carriers are given in table IX. One of the larger radiotelegraph carriers included in its gross operating revenues substantial amounts reported as nontransmission revenues covering miscellaneous sales, rentals, service fees, etc.

TABLE VIII.—Selected data showing development through the years 1926 to 1938, inclusive, of wire-telegraph carriers which reported for the year 1938¹

Year	Number of carriers	Investment in plant and equipment	Depreciation reserve	Ratio of depreciation to investment	Capitalization				Total corporate surplus	Operating revenues	Operating expenses	Operating ratio
					Capital stock	Funded debt ²	Total capitalization	Ratio of debt to total capitalization				
				<i>Percent</i>				<i>Percent</i>				<i>Percent</i>
1926	15	\$303,083,112	\$102,507,728	20.08	\$175,752,110	\$117,058,158	\$292,810,268	39.98	\$124,227,467	\$180,226,580	\$145,608,452	80.79
1927	14	412,165,755	108,366,719	26.23	175,922,587	96,637,000	272,559,587	35.46	135,520,299	177,541,362	142,245,364	80.12
1928	15	428,664,940	113,411,202	26.46	178,630,559	97,187,000	275,817,559	35.24	143,570,668	185,113,182	149,146,646	80.57
1929	15	441,184,432	117,019,933	26.52	178,631,327	97,025,000	275,656,327	35.20	141,365,333	196,380,082	160,291,373	81.62
1930	15	485,763,229	107,943,056	22.22	178,633,558	132,005,000	310,638,558	42.49	137,737,762	176,628,107	151,167,961	85.59
1931	14	497,487,506	97,519,319	19.60	170,780,379	128,950,000	299,780,379	43.03	130,547,055	148,492,484	129,732,270	87.37
1932	14	499,673,753	105,950,274	21.20	170,146,310	127,955,000	298,101,310	42.92	108,168,939	114,983,934	103,182,383	89.74
1933	14	500,714,383	106,136,738	21.20	170,265,060	127,916,000	298,181,060	42.90	108,524,605	114,296,918	96,711,979	84.61
1934	14	501,417,245	106,066,555	21.14	166,136,223	126,564,000	292,700,223	43.24	107,055,093	118,994,572	102,758,773	86.36
1935	15	500,803,779	105,603,802	21.09	166,139,708	126,237,036	292,376,744	43.18	105,251,293	122,153,439	102,532,426	83.94
1936	15	501,666,031	106,027,495	21.14	166,087,003	114,250,913	280,337,916	40.75	109,560,203	132,638,598	109,945,703	82.89
1937	15	503,911,584	144,922,577	28.76	163,863,756	111,161,000	275,024,756	40.42	68,983,785	135,502,816	117,375,605	86.62
1938	15	505,249,732	149,153,745	29.52	157,379,884	109,218,000	266,597,884	40.97	64,106,984	123,288,463	111,228,184	90.21

Year	Operating taxes	Operating income	Total interest deductions	Net income	Dividends declared	Miles of wire		Number of revenue messages transmitted	Number of employees at close of June	Total compensation	Average compensation per employee per annum ⁴
						In cable	Aerial wire				
1926	\$6,963,507	\$27,055,956	\$3,508,005	\$22,064,532	\$14,839,005	374,517	1,751,877	199,804,664	87,175	(⁵)	-----
1927	7,020,562	27,672,782	4,779,357	23,184,476	14,343,583	393,316	1,855,710	197,114,180	83,027	(⁵)	-----
1928	6,818,088	28,009,851	4,817,440	24,028,285	15,015,519	417,352	1,939,402	226,090,133	85,350	(⁵)	-----
1929	6,058,548	29,516,762	4,804,849	25,305,002	22,312,408	483,019	1,952,275	213,558,426	95,024	(⁵)	-----
1930	5,239,275	19,733,874	7,057,065	13,250,738	23,064,491	471,982	1,954,110	188,776,653	92,658	(⁵)	-----
1931	4,507,849	13,829,396	7,452,630	5,318,017	11,652,325	515,718	1,877,878	148,024,402	79,519	(⁵)	-----
1932	4,417,730	6,654,011	7,716,658	-2,437,030	4,445,026	526,629	1,853,831	130,464,619	67,089	(⁵)	-----
1933	4,431,938	12,247,904	7,789,755	4,033,606	2,800,600	531,260	1,854,717	147,324,549	64,163	(⁵)	-----
1934	4,351,890	11,012,044	8,734,576	1,043,058	1,780,742	542,622	1,853,509	160,653,221	68,570	\$73,096,228	\$1,066
1935	4,384,278	14,417,914	8,801,467	4,240,727	4,800,275	546,893	1,850,830	183,040,589	66,122	72,138,256	1,091
1936	5,235,630	16,805,187	8,470,920	6,914,305	1,837,157	570,335	1,852,657	200,344,531	69,951	78,449,915	1,121
1937	6,946,765	10,718,477	8,070,537	1,293,649	3,082,022	567,711	1,858,127	212,480,846	73,350	85,190,848	1,161
1938	7,408,429	4,248,273	7,942,484	-6,423,386	247,710	571,391	1,856,854	196,551,682	63,411	77,417,261	1,221

¹ Includes for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercompany duplications have not been excluded.

² Excludes "long-term advances payable" reported by Postal Telegraph-Cable Co. (land line system) as due affiliated companies.

³ Includes \$38,000,000 transferred to depreciation reserve from surplus as a temporary adjustment necessitated by revaluation.

⁴ Represents total compensation for the year divided by the number of employees at the close of June.

⁵ Data not reported.

⁶ Deficit or other reverse item.

TABLE IX.—Selected data showing development through the years 1926 to 1938, inclusive, of radiotelegraph carriers which reported for the year 1938

Year	Number of carriers	Investment in plant and equipment	Capitalization				Total corporate surplus	Operating revenues	Operating expenses	Operating ratio
			Capital stock	Funded debt	Total capitalization	Ratio of debt to total capitalization				
1926	4	\$15,809,630	(¹)	(¹)	(¹)	(¹)	(¹)	\$5,484,019	\$4,462,796	Percent 81.38
1927	4	17,160,127	(¹)	(¹)	(¹)	(¹)	(¹)	6,013,408	4,977,059	82.77
1928	5	19,426,847	(¹)	(¹)	(¹)	(¹)	(¹)	6,853,624	5,212,277	76.05
1929	9	21,927,678	\$14,875,162	\$150,000	\$15,025,162	1.00	\$1,152,265	7,431,426	6,634,118	89.27
1930	15	26,181,619	15,970,512	151,824	16,122,336	.94	1,077,713	7,127,071	7,103,550	99.67
1931	16	27,883,288	15,982,512	228,763	16,211,275	1.41	² -85,890	6,631,415	6,498,657	98.00
1932	16	28,322,246	14,007,512	233,514	14,241,026	1.64	1,091,648	6,082,007	6,258,158	102.90
1933	17	28,311,110	6,756,157	204,283	6,960,440	2.93	4,525,853	6,560,135	6,488,911	98.91
1934	19	30,708,155	7,464,857	3,664,000	11,128,857	32.92	4,661,465	7,928,419	7,377,487	93.07
1935	19	31,182,737	7,665,757	3,648,457	11,315,214	32.25	2,829,345	8,450,256	8,083,718	95.66
1936	19	31,004,814	7,694,757	898,127	8,592,884	10.45	3,189,755	9,384,233	8,428,685	89.82
1937	19	32,254,211	7,784,457	3,519,737	11,304,194	31.14	2,536,077	10,719,708	8,898,611	83.01
1938 ³	19	32,593,840	7,809,957	1,808,210	9,618,167	18.80	3,087,102	10,361,883	8,850,998	85.42

Year	Operating taxes	Operating income	Total interest deductions	Net income	Dividends declared	Number of revenue messages transmitted	Number of employees at close of June	Total compensation	Average compensation per employee per annum
1926	(¹)	\$1,009,045	(¹)	(¹)	(¹)	3,585,758	1,270	(⁴)	-----
1927	(¹)	1,014,604	(¹)	(¹)	(¹)	3,792,295	1,468	(⁴)	-----
1928	(¹)	1,568,073	(¹)	(¹)	(¹)	4,364,806	1,583	(⁴)	-----
1929	\$242,779	715,338	88,622	\$875,014	\$375,000	5,099,492	1,883	(⁴)	-----
1930	185,328	130,695	160,345	160,345	-----	5,182,795	2,147	(⁴)	-----
1931	181,638	72,207	278,499	9,009	300,000	4,922,366	1,838	(⁴)	-----
1932	158,961	² -289,260	428,012	² -594,371	300,000	4,543,956	1,876	(⁴)	-----
1933	245,971	² -128,535	551,259	² -325,526	3,600,000	4,984,539	1,869	(⁴)	-----
1934	274,798	233,720	770,995	² -72,741	300,000	5,083,409	2,362	\$3,710,985	\$1,571
1935	211,181	56,251	795,244	² -991,192	1,400,000	6,718,804	2,803	4,163,988	1,486
1936	380,596	513,447	702,391	199,113	542,637	7,959,971	2,984	4,499,570	1,508
1937	639,765	1,132,005	680,058	1,245,596	1,399,792	9,545,943	3,116	5,133,645	1,648
1938 ³	547,242	861,468	611,254	254,348	294,500	8,831,070	3,161	5,378,769	1,701

¹ Data not available, as radiotelegraph figures, in some instances, cannot be segregated from those applicable to other business activities.

² Deficit or other reverse item.

³ In comparing data shown in this table for the year 1938 with prior years, consideration should be given to the effect of certain changes in the reporting requirements embodied in a circular letter dated Jan. 4, 1939.

⁴ Data not available.

Revenue messages handled by telegraph carriers.—A tabulation of data relating to revenue messages handled by wire-telegraph and radiotelegraph carriers compiled from annual reports for the year 1938 is given in table X. The message data are segregated into the following major groups: (a) Domestic—telegraph; (b) foreign—cable and radiotelegraph; and (c) mobile—including marine. The average revenue per message for transmitting “full-rate messages” in the domestic group during 1938 was \$0.54; “full rate ordinary messages” in the foreign group, \$2.18; and “full-rate messages” in the mobile group, \$1.31.

TABLE X.—Revenue messages transmitted, showing number of messages, number of words, and amount of revenues, by classes, as reported by wire-telegraph and radiotelegraph carriers

[Year ended Dec. 31, 1938]

Class of messages	Land-wire telegraph carriers			Ocean cable carriers ¹			Radiotelegraph carriers			Total all carriers					
	Number of words ²	Number of messages	Amount of revenue	Number of words ¹	Number of messages	Amount of revenue	Number of words ²	Number of messages	Amount of revenue	Number of words ³	Number of messages	Message revenue			
												Amount	Average per word	Average per message	
Domestic—telegraph: ¹															
Commercial messages:															
Full-rate messages	85,260,616		\$46,697,000		85,155	\$111,117		1,131,783	\$607,360		86,477,554	\$47,415,477			\$0.54
Night messages	33,389		18,185		24,178	17,100		2,071	811		59,641	36,105			.61
Day letters	18,598,639		16,571,343		26,030	44,025		308,996	270,421		18,933,665	16,885,789			.89
Night letters	10,634,232		9,128,176		50,558	56,753		240,703	113,936		19,925,493	9,298,865			.47
Serial service (sections)	8,556,657		4,159,845					682,436	274,711		9,239,093	4,434,556			.48
Timed wire service	2,900,840		2,856,408					21,624	19,182		2,922,464	2,875,590			.98
Mobile messages (domestic haul)	488,047		189,381		815	931		199,784	21,296		688,640	211,608			.31
Foreign messages (domestic haul)	5,178,483		3,114,133					686,262	378,720		5,864,745	3,492,853			.60
Money-order messages	4,003,191		2,551,672		1,973	2,553					4,005,164	2,554,225			.64
Greeting messages	16,363,169		4,708,112		1,878	1,083		3	1		16,365,050	4,709,201			.29
Miscellaneous messages	725,610		697,746					22,873	12,679		748,483	710,425			.95
Stock and commercial news messages	4,333,974		4,456,606								4,333,974	4,456,606			1.03
U. S. Government messages:															
Ordinary messages	2,682,795		1,233,010		1,235	2,655		46,685	17,915		2,730,715	1,253,580			.46
Weather reports	5,942,777		376,877					503			5,943,280	376,877			.06
Press messages	11,789,424		2,245,618		10,454	8,178		119,246	61,108		11,919,124	2,314,904			.19
Total domestic	186,491,843		99,004,805		202,276	244,409		3,462,972	1,778,140		190,157,091	101,027,354			.53
Foreign—cable and radiotelegraph: ¹															
Commercial messages:															
Full-rate urgent messages	80,480	5,360	27,248	109,691	7,890	41,429	155,517	8,139	39,574	345,688	21,389	108,251	\$0.31	5.06	
Full-rate ordinary messages	2,931,449	201,551	444,400	2,407,173	171,191	429,030	3,315,524	206,019	386,771	8,654,146	578,761	1,260,210	.15	2.18	
CDE urgent messages	1,661,465	273,218	374,460	1,039,459	166,304	200,229	451,873	69,772	63,387	3,152,797	508,294	638,076	.20	1.26	
CDE ordinary messages	14,773,067	1,321,012	1,440,761	25,880,391	2,264,378	3,476,385	18,271,902	1,549,564	1,723,586	58,925,360	5,134,954	6,640,732	.11	1.29	

Deferred messages	20,049,034	1,302,971	1,484,770	22,607,245	1,602,955	2,202,708	17,786,679	1,253,878	1,146,285	60,442,958	4,159,804	4,833,763	.08	1.16
Letter messages (DLT and NLT)	34,969,748	941,346	1,821,027	31,292,924	828,107	1,967,949	24,472,734	689,444	1,063,603	90,735,406	2,438,897	4,852,579	.05	1.97
Greeting messages (GTG and XLT)	1,097,951	105,080	60,540	865,338	78,080	68,367	905,827	68,161	34,086	2,869,116	251,327	169,002	.06	.67
Miscellaneous messages							5,521,922	199,029	510,514	5,521,922	199,029	510,514	.09	2.57
Government messages (United States and foreign)	1,643,665	27,885	88,470	4,921,217	117,266	326,530	3,063,720	60,602	189,821	9,623,608	205,753	604,821	.06	2.94
Press messages	11,363,548	183,486	448,539	11,482,620	258,574	546,529	46,677,574	483,156	632,143	69,523,748	925,216	1,627,211	.02	1.76
Meteorological				3,212		803	15,445	1,747	1,393	18,687	2,550	1,630	.09	.64
Total foreign	88,570,407	4,361,915	6,196,233	100,609,306	5,495,548	9,259,393	120,638,723	4,583,511	5,791,163	309,818,436	14,445,974	12,246,789	.07	1.47
Mobile—including marine:														
Commercial messages:														
Full-rate messages							2,690,040	220,015	288,513	2,690,040	220,015	288,513	.11	1.31
CDE messages							478,020	66,828	28,990	478,020	66,828	28,990	.06	.43
Letter messages							90,803	3,669	6,210	90,803	3,669	6,210	.07	1.60
Greeting and gift messages (GTG and XLT)							103,491	10,569	8,845	103,491	10,569	8,845	.09	.84
Miscellaneous messages							1,096,183	34,132	30,891	1,096,183	34,132	30,891	.04	1.17
Government messages:														
United States							858,526	43,650	28,374	858,526	43,650	28,374	.03	.65
Foreign							44,767	2	3	44,767	2	3		1.50
Press messages							110,280	1,378	2,148	110,280	1,378	2,148	.02	1.56
Meteorological messages							189,707	28,945	18,008	189,707	28,945	18,008	.09	.62
Total mobile							9,737,891	770,587	835,366	9,737,891	779,587	835,365	.09	1.07
Grand total ⁶	190,853,758	105,201,033		5,697,824	9,503,802		8,831,070	8,401,698		205,382,652	123,100,508			.60

¹ "Domestic—telegraph" includes international messages (primarily Canadian and Mexican) transmitted in accordance with carriers' rules governing domestic traffic.

² Data not reported in connection with "domestic" classification.

³ The number of messages is not known in connection with unclassified revenues amounting to \$693, included in the total.

⁴ Excludes number of words not reported for 5,067 foreign messages.

⁵ Excludes \$161,577 representing adjustments in connection with foreign exchange and "cable interruption" traffic.

⁶ Includes 3,013,476 full-rate, 557,392 CDE, 71,850 letter, 135,696 greeting and gift, and

297,660 miscellaneous words which were excluded from the number of such words shown above for the reason that the revenues derived therefrom were not classified.

⁷ Includes 251,123 full-rate, 69,674 CDE, 2,874 letter, 16,962 greeting and gift, and 29,766 miscellaneous messages which were excluded from the number of such messages shown above for the reason that the revenues derived therefrom were not classified.

⁸ Includes \$414,383 applicable to the messages and words specified in footnotes 6 and 7 and not reported separately for each class.

⁹ Includes domestic haul of mobile and foreign messages, shown under "Domestic—telegraph."

Selected statistics of telephone and telegraph carriers and controlling companies, 1938.—Selected data compiled from the annual reports received from all telephone, wire-telegraph, and radiotelegraph carriers for the year 1938 are shown in table XI. Similar information relative to the controlling companies that have large interests in carriers engaged in wire or radio communication is given in table XII. The total investment in plant and equipment of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission for the year ended December 31, 1938, amounted to \$5,268,046,505, and the gross operating revenues were \$1,276,937,519. The total number of employees at the close of the year was 352,413, and the total amount of salaries and wages paid during the year was \$585,855,645.

TABLE XI.—*Summary of selected data from annual reports of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission*
(Year ended Dec. 31, 1938)

Item	All telephone carriers ¹	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers ²	Total
Number of carriers.....	92	15	19	126
Investment in plant and equipment.....	\$4,730,202,933	\$505,249,732	\$32,593,840	\$5,268,046,505
Capital stock.....	4,292,434,374	157,379,854	7,809,957	4,457,624,215
Funded debt.....	1,033,504,535	109,218,000	1,808,210	1,144,530,745
Depreciation reserve.....	1,321,458,355	149,153,745	17,398,834	1,488,010,934
Total surplus.....	363,439,869	64,106,984	3,087,102	430,633,955
Operating revenues.....	1,143,287,173	123,288,463	10,361,883	1,276,937,519
Operating expenses.....	786,457,139	111,223,184	8,850,998	906,531,321
Operating taxes:				
Other than U. S. Government.....	107,248,531	6,369,287	248,791	113,866,609
U. S. Government.....	44,863,490	1,039,142	298,451	46,201,083
Total operating taxes.....	152,112,021	7,408,429	547,242	160,067,692
Net operating income.....	204,690,908	4,248,273	861,468	209,800,649
Dividends declared.....	338,611,226	247,710	294,500	339,153,436
Miles of wire.....	87,592,000	2,428,245		90,020,245
Number of employees (Dec. 31).....	286,840	62,499	3,074	352,413
Total compensation for year.....	503,062,615	77,417,261	5,375,769	585,855,645

¹ Includes data from two carriers located outside the continental limits of the United States.

² In comparing data shown in this table with prior years' data, consideration should be given to the effect of certain changes in the reporting requirements for radiotelegraph carriers embodied in a circular letter dated Jan. 4, 1939.

TABLE XII.—*Summary of selected data from annual reports of holding companies having large interests in the communications industry*
(Year ended Dec. 31, 1938)

Item	Amount
Number of companies.....	24
Investments in securities:	
Affiliated companies:	
Communication carriers.....	¹ \$375,267,539
Other companies.....	² 196,967,466
Nonaffiliated companies:	
Communication carriers.....	³ 2,187,885
Other companies.....	⁴ 8,396,643
Investment advances to affiliated companies.....	145,445,440
Capital stock.....	378,575,998
Funded debt.....	196,769,230
Advances from affiliated companies.....	32,934,570
Total surplus.....	77,564,438
Dividend and interest income.....	21,669,810
Interest charges.....	12,323,335
Net income.....	7,194,357
Dividends declared.....	7,407,375
Operating taxes.....	1,222,338

¹ Includes foreign investments amounting to \$161,440,071.

² Includes foreign investments amounting to \$15,883,097.

³ Includes foreign investments amounting to \$1,175,646.

⁴ Includes foreign investments amounting to \$437,103. The reduction in this item compared with preceding year includes \$43,108,926 due to reorganization of Postal Telegraph and Cable Corporation.

Stock voted by proxies.—The voting rights of stockholders of all telephone, wire-telegraph, and radio-telegraph carriers reporting to the Commission for the year 1938 are shown in table XIII. The table also includes data from holding companies having large interests in communication carriers. There were 1,066,297 stockholders entitled to 77,082,594 votes, of which 74,020,916 were based on common stock and 3,061,678 on preferred stock. During the year, 60,163,377 votes were cast at meetings for the election of directors of which number 58,950,638 votes, or 97.98 percent, represented shares voted by proxy.

TABLE XIII.—Statement showing the voting rights of stockholders in communication carriers and controlling companies for the year 1938, and the number of shares voted by proxy

Company groups	Number of companies	Number of stockholders having voting shares	Number of votes to which all stockholders were entitled		
			Total	Common	Preferred
Telephone carriers (class A)	75	692,192	49,070,750	47,915,958	1,154,801
Telephone carriers (class B)	17	684	164,529	164,529	-----
Telegraph carriers	9	30,932	1,069,420	1,069,420	-----
Cable carriers	5	829	803,226	803,226	-----
Radiotelegraph carriers	17	90	131,912	131,912	-----
Holding companies ¹	24	341,570	25,842,748	23,935,871	1,906,877
Total	147	1,066,297	77,082,594	74,020,916	3,061,678

Company groups	Number of votes to which 30 largest stockholders were entitled			Votes cast at most recent meeting for election of directors	
	Total	Common	Preferred	Total votes cast	Shares voted by proxy
Telephone carriers (class A)	29,413,183	28,605,736	807,447	40,477,420	40,214,697
Telephone carriers (class B)	147,366	147,366	-----	172,943	75,872
Telegraph carriers	198,303	198,303	-----	584,682	575,237
Cable carriers	587,226	587,226	-----	686,237	626,770
Radiotelegraph carriers	131,901	131,901	-----	161,661	129,511
Holding companies ¹	6,961,899	6,278,434	683,465	18,080,434	17,328,551
Total	37,439,878	35,948,966	1,490,912	60,163,377	58,950,638

¹ Represents companies having large interests in communication carriers.

Statistical averages and ratios relating to telephone and wire-telegraph carriers.—The averages and ratios shown in table XIV relate to the data compiled from the annual reports filed by all telephone and wire-telegraph carriers for the year 1938. The average investment in telephone plant, less depreciation, per company telephone at the close of 1938 was \$203.02; the average amounts of local revenue and toll revenue per company telephone for the year were \$43.43 and \$18.58, respectively. The ratio of depreciation and amortization expenses to investment in telephone plant of telephone carriers was 3.5 percent, whereas the ratio of depreciation and extraordinary depreciation to investment in plant and equipment of wire-telegraph carriers was 2.18 percent. The operating ratio of telephone carriers and that of wire-telegraph carriers were 68.79 percent and 90.21 percent, respectively.

TABLE XIV.—Averages and ratios of selected data of all telephone and wire-telegraph carriers ¹

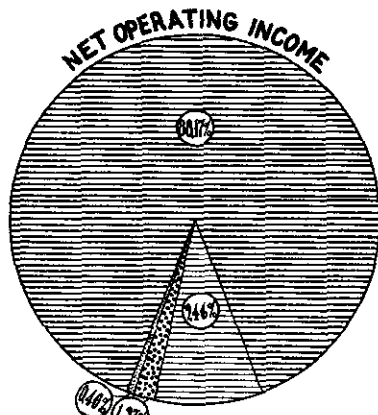
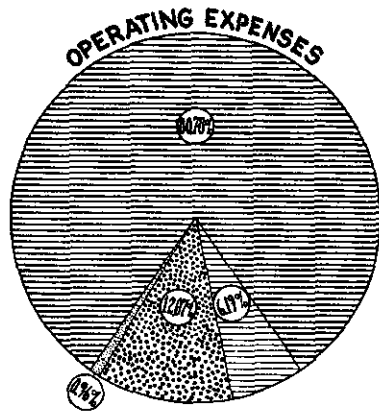
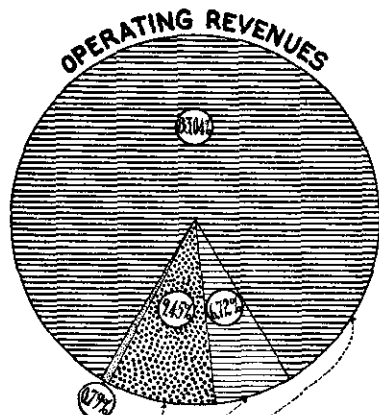
[Year ended Dec. 31, 1938]

Item	Amount
TELEPHONE CARRIERS ²	
Investment in telephone plant:	
Per mile of wire.....	\$54. 75
Per company telephone.....	\$280. 11
Per company telephone (less depreciation).....	\$203. 02
Ratio of operating revenues to investment in telephone plant..... percent.....	23. 83
Ratio of depreciation reserve to investment in telephone plant..... percent.....	27. 52
Total local service revenues per telephone.....	\$43. 43
Total toll service revenues per telephone.....	\$18. 58
Operating revenues per telephone.....	\$65. 31
Operating expenses per telephone.....	\$44. 93
Ratio of operating expenses to operating revenues..... percent.....	68. 79
Depreciation and amortization expenses:	
Ratio to investment in telephone plant..... percent.....	3. 50
Ratio to operating revenues..... percent.....	14. 67
Ratio to operating expenses..... percent.....	21. 33
Operating taxes:	
Ratio to investment in telephone plant..... percent.....	3. 17
Ratio to operating revenues..... percent.....	13. 31
Net operating income:	
Ratio to investment in telephone plant..... percent.....	4. 27
Ratio to operating revenues..... percent.....	17. 90
Wire mileage:	
Percent wire in cable.....	95. 05
Percent aerial wire.....	4. 94
Calls originated per telephone per month: ³	
Local.....	145. 43
Toll.....	4. 27
Employees at close of year, percent of total:	
Male.....	38. 86
Female.....	61. 14
Average compensation per employee per annum.....	⁴ \$1, 754. 36
Compensation chargeable to operating expenses:	
Ratio to operating revenues..... percent.....	37. 54
Ratio to operating expenses..... percent.....	54. 58
WIRE-TELEGRAPH CARRIERS ⁴	
(Land line and ocean cable)	
Investment in plant and equipment:	
Per mile of wire.....	\$208. 07
Ratio of operating revenues to investment in plant and equipment..... percent.....	24. 40
Ratio of reserve for accrued depreciation to investment in plant and equipment..... percent.....	29. 52
Ratio of operating expenses to operating revenues..... percent.....	90. 21
Depreciation and extraordinary depreciation:	
Ratio to investment in plant and equipment..... percent.....	2. 18
Ratio to operating revenues..... percent.....	8. 92
Ratio to operating expenses..... percent.....	9. 89
Operating taxes:	
Ratio to investment in plant and equipment..... percent.....	1. 47
Ratio to operating revenues..... percent.....	6. 01
Operating income:	
Ratio to investment in plant and equipment..... percent.....	8. 84
Ratio to operating revenues..... percent.....	3. 45
Wire mileage:	
Percent wire in cable.....	23. 53
Percent aerial wire.....	76. 47
Average compensation per employee per annum.....	⁴ \$1, 238. 70
Compensation chargeable to operating expenses:	
Ratio to operating revenues..... percent.....	57. 31
Ratio to operating expenses..... percent.....	63. 52

¹ For basic data underlying the computations in this table, see tables II and VII.² Data for 2 carriers located outside the continental limits of the United States not included.³ Company and service telephone data.⁴ Represents total compensation for the year divided by the number of employees as of the close of the year.⁵ Excludes radiotelegraph carriers.

Analysis of operating data pertaining to communication carriers.—There is shown in chart 3, which follows, an analysis of the operating revenues, operating expenses, and net operating income of the telephone, wire-telegraph, and radiotelegraph carriers reporting for the year 1938. The data were compiled principally from the annual reports, but include also figures for 42 telephone carriers that are subject only to the provisions of sections 201-5 of the act. These carriers file monthly reports of revenues, expenses, and capital changes voluntarily for statistical purposes, but do not file annual reports with the Commission.

OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME FOR THE YEAR 1938
OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION



BELL SYSTEM CARRIERS
OTHER THAN BELL SYSTEM CARRIERS
ALL TELEPHONE CARRIERS
WIRE-TELEGRAPH CARRIERS
RADIOTELEGRAPH CARRIERS
ALL TELEGRAPH CARRIERS
ALL REPORTING CARRIERS

OPERATING REVENUES	OPERATING EXPENSES	NET OPERATING INCOME
\$1,080,667,248	\$744,943,391	\$190,564,223
87,440,832	57,059,225	20,446,224
<u>1,168,108,080</u>	<u>802,002,616</u>	<u>211,010,507</u>
122,935,913	111,267,593	4,255,615
10,342,401	8,850,998	861,468
<u>133,278,314</u>	<u>120,118,591</u>	<u>5,117,083</u>
1,301,386,394	922,121,207	216,127,590

The gross operating revenues during 1938 of all reporting carriers were \$1,301,386,394, of which \$1,168,108,080, or 89.76 percent, were reported by 134 telephone carriers filing annual or monthly reports; \$122,935,913, or 9.45 percent, were reported by 16 wire-telegraph carriers; and \$10,342,401, or 0.79 percent, were reported by 19 radiotelegraph carriers during 1938.

The "uncollectible operating revenues" under the uniform system of accounts prescribed for telephone carriers are deducted from the gross operating revenues before the latter amount is transferred to the income statement; while under the provisions of the uniform system of accounts prescribed for telegraph carriers the "uncollectible operating revenues" are deducted subsequently from the "net telegraph and cable operating revenues" in the income statement. The operating revenues of wire-telegraph and radiotelegraph carriers, however, have been adjusted in chart 3 by the exclusion of the "uncollectible operating revenues" (which amounted to \$428,230 during 1938) in order to make the figures comparable with those of the telephone carriers.

Distribution of operating revenues of communication carriers.—The distribution on a percentage basis of the operating revenues of class A telephone carriers and all wire-telegraph and radiotelegraph carriers reporting during 1938 indicating the principal groups of operating expense accounts, operating taxes, other deductions, and the net operating income, is shown in table XV. The distribution of each \$100 of operating revenues on a similar basis is shown in chart 4. These compilations show the class A telephone carriers paid 13.3 percent of their operating revenues for taxes, whereas wire-telegraph and radiotelegraph carriers paid 6.0 percent during the year.

TABLE XV.—*Distribution of operating revenues showing operating expenses, operating taxes, and other deductions, and net operating income of class A telephone, wire-telegraph and radiotelegraph carriers*

[Year ended Dec. 31, 1938]

Item	Amount	Percent of operating revenues
TELEPHONE CARRIERS		
Operating revenues.....	\$1,139,737,155	100.0
Operating expenses:		
Maintenance.....	219,108,613	19.2
Depreciation and amortization.....	167,210,503	14.7
Traffic.....	170,153,266	14.9
Commercial.....	89,932,682	7.9
General office salaries and expenses.....	64,393,023	5.7
Relief and pensions.....	20,554,071	1.8
All other.....	52,582,320	4.6
Total operating expenses.....	783,964,478	68.8
Operating taxes:		
Other than U. S. Government.....	106,977,890	9.4
U. S. Government.....	44,714,693	3.9
Total operating taxes.....	151,692,583	13.3
Other deductions before net operating income.....	27,105	(1)
Net operating income.....	204,052,989	17.9
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS²		
Operating revenues.....	133,650,346	100.0
Operating expenses:		
Depreciation.....	12,413,791	9.3
All other maintenance.....	16,912,261	12.7
Conducting operations.....	83,146,824	62.2
Relief department and pensions.....	3,267,382	2.4
All other general.....	4,337,088	3.2
Total operating expenses.....	120,074,182	89.8
Operating taxes:		
Other than U. S. Government.....	6,618,078	5.0
U. S. Government.....	1,337,593	1.0
Total operating taxes.....	7,955,671	6.0
Other deductions before operating income.....	510,752	.4
Operating income.....	5,109,741	3.8

¹ Less than 1/10 of 1 percent.

² Wire-telegraph carriers comprise land lines and ocean cables.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding \$100,000. Data of 2 carriers located outside the continental limits of the United States not included.

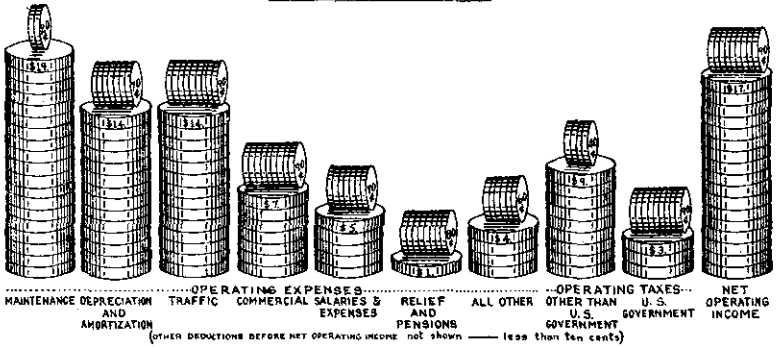
AUGUST, 1939

CHART 4

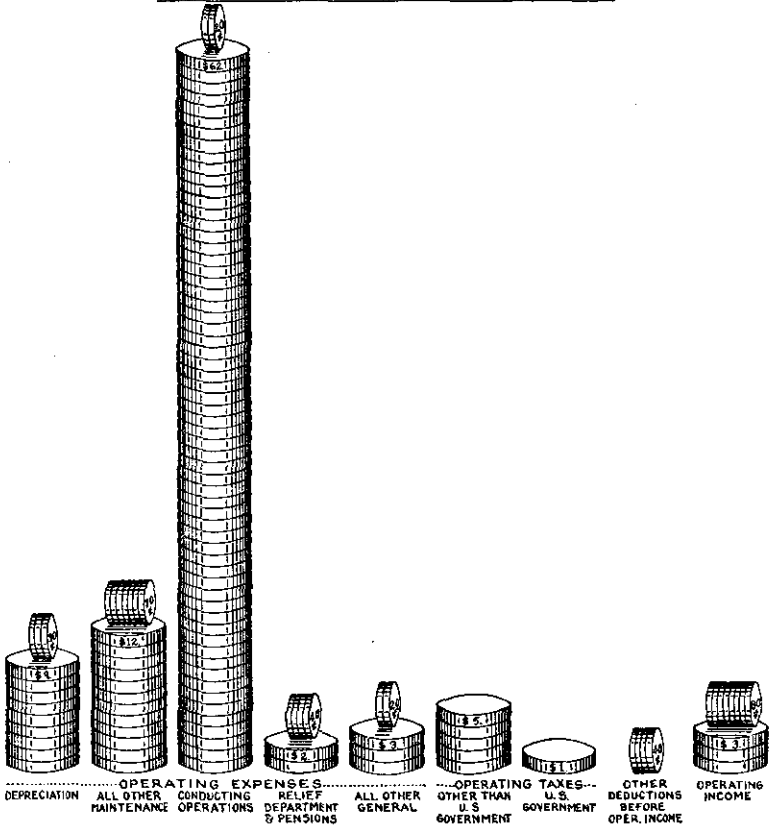
DISTRIBUTION OF EACH HUNDRED DOLLARS OF OPERATING REVENUES
SHOWING OPERATING EXPENSES, OPERATING TAXES AND OTHER DEDUCTIONS,
AND NET OPERATING INCOME

EACH LARGE DISC REPRESENTS ONE DOLLAR AND EACH SMALL DISC REPRESENTS TEN CENTS

TELEPHONE CARRIERS



WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS



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

Tax accruals by States.—The operating tax accruals reported by class A telephone carriers for the year 1938 are shown in table XVI. This table indicates that the amount accruing to the Federal Government was \$44,714,693, or 29.48 percent; and \$106,976,890, or 70.52 percent, to State governments and subdivisions thereof, including \$27,390,969, or 18.06 percent, to New York; \$11,382,271, or 7.50 percent, to Illinois; and \$9,239,481, or 6.09 percent, to California. The amount of excise taxes collected by telephone carriers from persons using telephone service is not included in these figures.

TABLE XVI.—Operating tax accruals by States and the Federal Government, of class A telephone carriers reporting on an annual basis to the Commission

[Year ended Dec. 31, 1938]

State	Amount	State	Amount
Alabama.....	\$609,874	New Jersey.....	\$1,878,829
Arizona.....	448,234	New Mexico.....	155,519
Arkansas.....	454,897	New York.....	27,390,969
California.....	9,329,481	North Carolina.....	1,074,192
Colorado.....	1,039,339	North Dakota.....	248,441
Connecticut.....	918,881	Ohio.....	4,970,427
Delaware.....	113,228	Oklahoma.....	1,378,971
Florida.....	719,152	Oregon.....	1,107,562
Georgia.....	902,281	Pennsylvania.....	3,045,780
Idaho.....	304,189	Rhode Island.....	315,250
Illinois.....	11,382,271	South Carolina.....	495,391
Indiana.....	2,468,641	South Dakota.....	305,553
Iowa.....	1,118,853	Tennessee.....	1,178,719
Kansas.....	1,081,406	Texas.....	3,295,680
Kentucky.....	816,694	Utah.....	401,075
Louisiana.....	1,273,554	Vermont.....	132,153
Maine.....	434,573	Virginia.....	863,014
Maryland.....	1,638,004	Washington.....	1,971,701
Massachusetts.....	4,456,077	West Virginia.....	676,083
Michigan.....	3,642,409	Wisconsin.....	1,844,040
Minnesota.....	1,629,991	Wyoming.....	154,352
Mississippi.....	679,564	District of Columbia.....	702,883
Missouri.....	2,282,817		
Montana.....	363,494	Total other than U. S. Gov-	
Nebraska.....	876,530	ernment taxes.....	1 106,976,890
Nevada.....	177,218	Total U. S. Government taxes.....	44,714,693
New Hampshire.....	419,076		
		Total operating taxes.....	1 151,691,583

¹ Excludes \$1,000 Canadian taxes.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding \$100,000. Data for 2 carriers located outside the continental limits of United States not included.

Aggregate amount of operating tax accruals and excise taxes.—An analysis of the operating tax accruals and the excise taxes collected from persons using the communication services of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission for the year 1938 is given in table XVII. The principal kinds of taxes accruing to the Federal Government are shown separately. The total amount of taxes, including excise taxes accruing to the Federal Government, was \$68,152,444, or 36.56 percent; and the amount accruing to other than the United States Government was \$118,241,668, or 63.44 percent.

TABLE XVII.—*Operating tax accruals and excise taxes collected from persons using communication service, as reported by all telephone, wire-telegraph, and radiotelegraph carriers which filed annual reports with the Commission*

[Year ended Dec. 31, 1938]

Kind of tax	Telephone carriers ¹	Wire-telegraph carriers (land line and ocean cable)	Radio-telegraph carrier	Total
Operating taxes:				
Other than U. S. Government	\$107,071,829	\$6,369,287	\$248,791	\$113,689,907
U. S. Government:				
Income	35,835,798	83,427	130,625	36,049,850
Capital stock	2,768,110	31,646	26,821	2,826,577
Social security	5,875,832	874,065	140,720	6,890,617
Miscellaneous	36,490	4	285	36,779
Unassigned	245,400	.....	.....	245,400
Total	44,761,630	1,039,142	298,451	46,099,223
Total operating taxes	\$151,833,459	7,408,429	547,242	159,789,130
Excise taxes collected from persons using communication service:				
Other than U. S. Government	4,461,999	87,237	2,525	4,551,761
U. S. Government	16,702,659	5,230,727	119,835	22,053,221
Total excise taxes collected	21,164,658	5,317,964	122,360	26,604,982
Total taxes accounted for during the year:				
Other than U. S. Government	111,533,828	6,456,524	251,316	118,241,668
U. S. Government	61,464,289	6,269,869	418,286	68,152,444
Grand total	\$172,998,117	12,726,393	669,602	186,394,112

¹ Data for 2 carriers located outside the continental limits of the United States not included.

² Includes \$1,000 Canadian taxes.

Advertising expenses.—The distribution of advertising expenses for the year 1938 of class A telephone carriers and of wire-telegraph and radiotelegraph carriers is shown in table XVIII. A total of \$6,624,562 was spent by class A telephone carriers during the year, of which \$3,775,255, or 56.99 percent, was used for advertising in newspapers and periodicals. The expenditures for advertising reported by wire-telegraph and radiotelegraph carriers amounted to \$589,607 during the year.

TABLE XVIII.—*Distribution of advertising expenses of class A telephone carriers and wire-telegraph and radiotelegraph carriers for the year 1938*

Item	Amount	
CLASS A TELEPHONE CARRIERS		
Salaries and wages.....		\$904,014
Publicity and advertisements:		
Newspaper and periodical advertising:		
Advertising space, newspapers, regular.....	\$2,190,417	
Special newspaper advertising space and all other periodicals.....	1,296,804	
Preparation cost.....	348,034	
Total newspaper and periodical advertising.....		3,775,255
Booklets, pamphlets, and bill inserts.....		318,936
Window display, exhibits, posters, and placards.....		172,154
Motion pictures.....		55,659
Other publicity and advertisements:		
General press service and special news stories.....	27,561	
Lectures, demonstrations, radio, central office visits, etc.....	1,069,382	
Miscellaneous.....	97,657	
Total other publicity and advertisements.....		1,194,600
Total publicity and advertisements.....		5,546,604
Other expenses.....		173,944
Grand total—class A telephone carriers.....		6,624,562
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS¹		
Newspapers.....		39,528
Periodicals.....		28,282
Radio advertising.....		113,750
Contributions and donations charged to advertising.....		1,403
Advertising department, salaries and expenses.....		175,897
All other advertising expenses.....		230,747
Grand total—wire-telegraph and radiotelegraph carriers.....		589,607

¹ Wire-telegraph carriers comprise land lines and ocean cables.

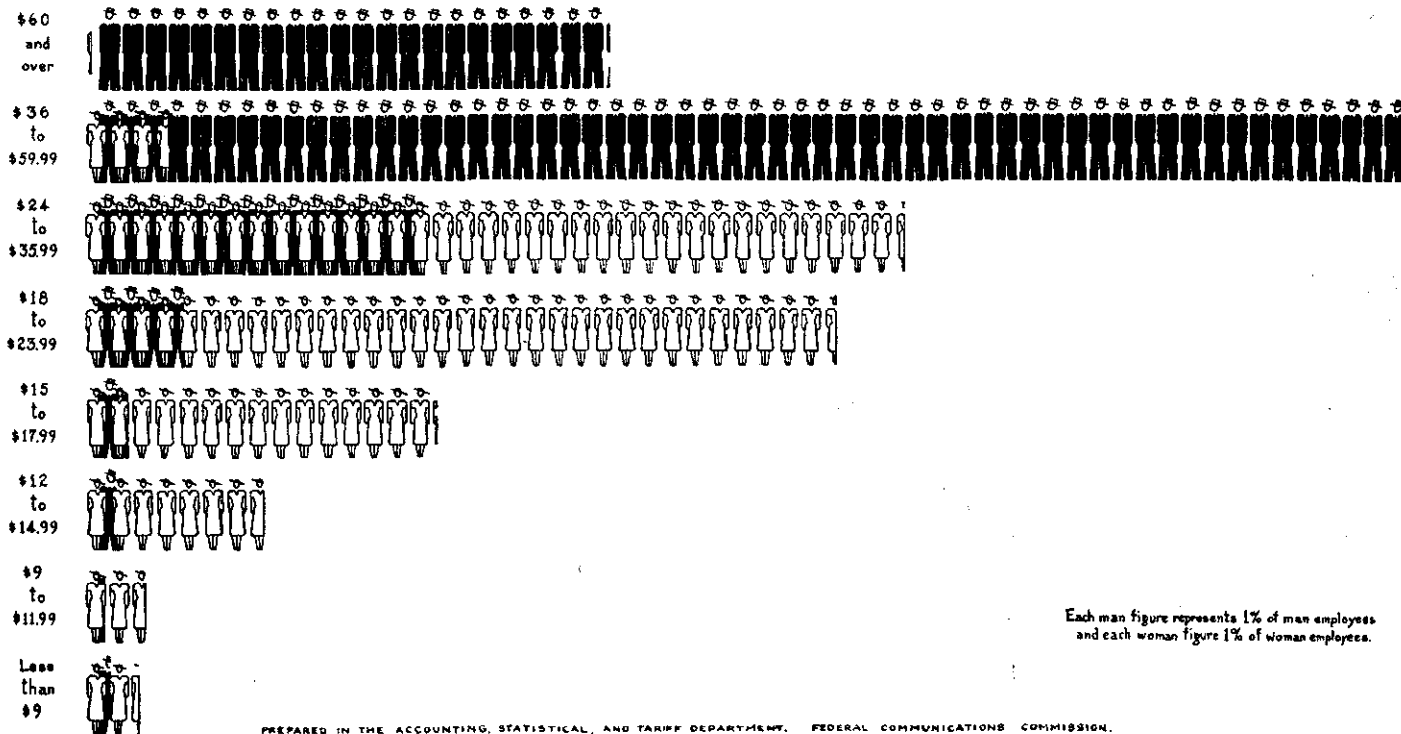
NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding \$100,000. Data for 2 carriers located outside the continental limits of the United States not included.

Number and compensation of telephone employees.—The number of employees at the end of the year, classified with respect to character of service rendered and according to rate of compensation per week, reported by class A telephone carriers is shown in table XIX and illustrated graphically in chart 5. There were 110,996 male employees as of December 31, 1938, of whom 63,114, or 56.86 percent, received weekly compensation ranging from \$36 to \$59.99 per week. There were 174,554 female employees at the close of the year, of whom 26,369, or 15.10 percent, were in the \$15-to-\$17.99-per-week class; 56,899, or 32.60 percent, in the \$18-to-\$23.99-per-week class; and 62,071, or 35.56 percent, in the \$24-to-\$35.99-per-week class.

TABLE XIX.—Number of employees of class A telephone carriers classified with respect to character of service rendered and according to rate of compensation per week, at Dec. 31, 1933

Class of employees	Number of employees at close of year			Number of employees classified according to rate of compensation per week at close of year															
				Less than \$9		\$9 to \$11.99		\$12 to \$14.99		\$15 to \$17.99		\$18 to \$23.99		\$24 to \$35.99		\$36 to \$59.99		\$60 and over	
	Male	Female	Total	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
General officers and assistants	719	20	739	20		6		7		3		11		14		67	8	591	12
Operating officials and assistants	7,825	440	8,265									3		81	98	1,681	305	6,060	37
Attorneys and right-of-way agents	524	2	526	1		1		1		1		1	2	9		218		292	
Engineers	5,023	20	5,043							1		3		50		1,347	16	3,622	4
Draftsmen, surveyors, and student engineers	2,509	121	2,630					4	6	29	4	113	15	470	34	1,428	52	465	10
Accountants	1,379	29	1,408	1		8	1	2	1	1	1	2	1	34	6	370	9	970	2
Clerical employees	10,542	42,961	53,503	31	126	42	206	104	1,283	361	3,675	697	11,293	1,604	22,911	6,432	3,494	1,271	68
Local managers	2,288	181	2,469	3	7	5	1	25	3	34	33	84	174	25	1,262	1	814		
Commercial agents	4,457	128	4,585	2	26	5	35	125	14	134	9	140	21	925	17	2,696	4	430	2
Experienced switchboard operators	163	119,974	120,137	38	2,662	22	3,232	17	10,084	22	21,209	35	43,685	13	36,850	14	2,116	2	136
Operators in training	1	3,746	3,747	1	692		800		1,454		658		142						
Service inspectors	56	1,801	1,857		1		1		3		7		112	1	1,284	17	391	38	2
Supervising foremen	1,327	2	1,329							1		6		42		228	2	1,050	
Central office installation and maintenance men	21,109	30	21,139	3		2		4	3	30	2	262	4	1,464	18	15,143	3	4,201	
Line and station construction, installation, and maintenance men	34,336	1	34,337	48		33		158		247		1,419		4,603	1	23,950		3,878	
Cable and conduit construction and maintenance men	7,732		7,732	1			21		69		544			1,941		4,370		786	
All other employees	11,006	5,098	16,104	514	647	239	408	418	546	520	870	948	1,535	4,222	827	3,921	258	224	7
Total employees	110,996	174,554	285,550	661	4,161	350	4,695	861	13,420	1,422	26,369	4,217	56,899	15,647	62,071	63,144	6,659	24,694	280
RECAPITULATION																			
Bell System carriers:																			
Full-time employees	102,875	155,382	258,257	6	2	105	1,603	652	10,241	1,170	23,371	3,251	53,240	13,599	60,257	60,193	6,402	23,899	266
Part-time employees	886	7,982	8,868	504	2,836	122	1,609	81	1,500	44	965	47	802	23	191	42	28	23	1
Other than Bell System carriers:																			
Full-time employees	7,143	10,690	17,833	97	986	118	1,381	116	1,620	201	2,000	911	2,839	2,022	1,622	2,908	229	770	13
Part-time employees	92	500	592	54	287	5	102	12	59	7	33	8	18	3	1	1		2	
Total class A carriers:																			
Full-time employees	110,018	166,072	276,090	103	988	223	2,984	768	11,861	1,371	25,371	4,162	56,079	15,621	61,879	63,101	6,631	24,669	279
Part-time employees	978	8,482	9,460	558	3,173	127	1,711	93	1,589	51	998	55	820	26	192	43	28	25	1

NOTE.—Class A telephone carriers are those having average annual operating revenues exceeding \$100,000. Data for 2 carriers located outside the continental limits of the United States not included.



Each man figure represents 1% of man employees and each woman figure 1% of woman employees.

Number and compensation of telegraph employees.—The various classes of employees of wire-telegraph and radiotelegraph carriers at the end of June and December 1938, together with the aggregate monthly rates of compensation at the close of the year, are shown in table XX. The total number of employees in service decreased from 66,572 on June 30 to 65,573 on December 31, 1938, or a difference of 999 employees, of whom 912 were employees of wire-telegraph carriers, and 87 were employees of radiotelegraph carriers.

TABLE XX.—*Number of employees of wiretelegraph and radiotelegraph carriers classified with respect to character of service rendered, together with the aggregate monthly rate of compensation by classes of employees*

(Year ended Dec. 31, 1938)

Class of employees	Wire-telegraph carriers ¹			Radiotelegraph			Total		
	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year
	June	December		June	December		June	December	
General officers and staff.....	149	143	\$95,131	101	96	\$22,903	250	239	\$118,034
General office clerks.....	1,151	1,142	214,458	126	129	18,168	1,277	1,271	232,626
Other officers and staff.....	466	463	144,365	32	39	14,589	498	502	158,954
Other officers' clerks.....	1,717	1,595	255,574	75	71	9,550	1,792	1,666	264,904
Managers.....	4,468	4,304	603,008	134	132	34,787	4,602	4,436	637,795
Solicitors.....	474	450	76,425	62	53	10,600	536	508	87,031
Chief operators.....	1,716	1,731	324,606	141	120	12,237	1,857	1,851	336,843
Operators.....	16,062	16,253	1,789,760	730	708	113,755	16,792	16,961	1,903,515
Office clerks.....	9,062	9,214	906,744	415	400	38,236	9,477	9,614	944,980
Other office employees.....	1,396	1,405	136,338	228	225	24,243	1,624	1,630	160,586
Messengers.....	20,564	19,660	979,295	404	388	18,587	20,968	20,048	997,882
Testing and regulating force.....	1,674	1,599	308,111	189	192	31,865	1,863	1,791	339,976
Equipment and power men.....	723	765	115,117	109	104	15,014	832	869	130,131
Section linemen and foremen of construction and maintenance.....	1,881	1,936	306,935	81	79	18,915	1,962	2,015	325,850
Linemen, laborers, teamsters, etc.....	903	908	99,472	80	79	9,661	983	987	109,133
Others.....	1,005	931	99,610	254	254	37,427	1,250	1,185	137,037
Total.....	63,411	62,499	6,454,949	3,161	3,074	430,328	66,572	65,573	6,885,277

¹ Wire-telegraph carriers comprise land lines and ocean cables.

Relief and pension statistics.—The data in table XXI pertaining to relief and pensions have been compiled from the annual reports filed by class A telephone carriers and by all wire-telegraph and radiotelegraph carriers for the year 1938. The gross charges to operating expenses for relief and pensions amounted to \$23,821,453. A portion of these charges, together with interest on funds, was added to benefit and pension reserves and to pension funds held by trustees. During the year, 58,213 benefit cases were handled at an expenditure of \$8,697,532. At the end of 1938, the carriers reported that 11,566 persons were receiving pensions and that the amount paid for pensions during the year was \$8,140,045.

TABLE XXI.—Summary of relief and pension data of class A telephone, wire-telegraph, and radiotelegraph carriers

[Year ended Dec. 31, 1938]

Item	Class A telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Benefits:				
Number of cases handled during year.....	51,467	6,731	(1)	58,213
Amount paid during year.....	\$7,987,847	\$688,494	\$21,191	\$8,697,532
Pensions:				
Number of cases being paid at end of year.....	8,469	3,094	3	11,566
Amount paid during year.....	\$5,957,213	\$2,177,181	\$5,651	\$8,140,045
Benefit and pension reserve at end of year.....	\$1,362,020	\$10,575,846	\$148,285	\$12,086,151
Pension funds held by outside trustees.....	\$198,698,510		\$674,073	\$199,372,583
Relief and pension charges to operating expenses ²	\$20,554,071	\$3,200,117	\$67,265	\$23,821,453
Total number of employees.....	285,550	62,499	3,074	351,123
Total compensation for the year.....	\$501,504,752	\$77,417,261	\$5,375,769	\$584,297,782
Total operating revenues.....	\$1,139,737,155	\$123,288,463	\$10,361,883	\$1,273,387,501

¹ Complete data not available.² Consists of charges to account 672, "Relief and pensions," for telephone carriers, and charges to account 649, "Relief department and pensions," for telegraph, cable, and radiotelegraph carriers.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding \$100,000. Data for 2 carriers located outside the continental limits of the United States not included.

Accident statistics.—Information relative to the number of employees and persons other than employees who were killed or injured in accidents during 1938 is shown as follows: (a) Data reported by class A telephone carriers, in table XXII; and (b) data reported by wire-telegraph and radiotelegraph carriers, in table XXIII.

TABLE XXII.—Persons killed or injured in accidents occurring in connection with the activities of class A telephone carriers

[Year ended Dec. 31, 1938]

Class of employees	Employees and other persons killed or injured during year					
	Number of persons killed			Number of persons injured		
	Male	Female	Total	Male	Female	Total
General officers and assistants.....				2		2
Operating officials and assistants.....				3	3	6
Attorneys and right-of-way agents.....						
Engineers.....	1		1	6		6
Draftsmen, surveyors, and student engineers.....				4		4
Accountants.....				3	1	4
Clerical employees.....				24	119	143
Local managers.....				14		14
Commercial agents.....				41	4	45
Experienced switchboard operators.....					464	464
Operators in training.....					18	18
Service inspectors.....				1	13	14
Supervising foremen.....				4		4
Central office installation and maintenance men.....				37		37
Line and station construction, installation, and maintenance men.....	12		12	494		494
Cable and conduit construction and maintenance men.....				73		73
All other employees.....	3		3	62	97	159
Total for employees.....	16		16	768	719	1,487
Persons other than employees.....	58	20	78	1,580	1,057	2,637
Grand total, employees and other persons.....	74	20	94	2,348	1,776	4,124

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding \$100,000. Data for two carriers located outside the continental limits of the United States not included.

TABLE XXIII.—*Employees killed or injured in accidents occurring in connection with the operations of wire-telegraph and radiotelegraph carriers*¹

[Year ended Dec. 31, 1938]

Item	Number of employees			
	In plant work	In operation	Otherwise	Total
Killed:				
Male.....	7	1	7	15
Female.....				
Total.....	7	1	7	15
Injured:				
Male.....	246	255	2,682	3,183
Female.....		287	92	379
Total.....	246	542	2,774	3,562

¹ Wire-telegraph carriers comprise land lines and ocean cables.

Receiverships and trusteeships.—Statistical data from reports^v filed by^v holding companies which were in the hands of receivers and trustees during 1938 are shown in table XXIV. Information concerning the intercorporate relations of these companies is given in table XXXVIII. Among the telephone, wire-telegraph, and radio-telegraph carriers filing reports on an annual basis there was none in receivership or trusteeship at the close of the year.

TABLE XXIV.—Summary showing statistics of holding companies in the hands of receivers or trustees

[Year ended Dec. 31, 1938]

Name of company	Name of receivers or trustees	Title	Date of appointment	Capital stock	Funded debt	Matured funded debt
HOLDING COMPANIES ¹						
Ann Arbor Railroad Co., The.....	Norman B. Pitcairn and Frank C. Nicodemus, Jr.....	Receivers.....	Dec. 4, 1931 ²	\$7,250,000	\$9,164,341	\$200,200
Associated Companies, The.....	George S. Gibbs and Raymond C. Kramer.....	Trustees.....	June 21, 1938 ³	90,408,400		
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	Henry A. Scandrett, Walter J. Cummings, and George I. Haight.	do.....	Jan. 1, 1936	⁴ 224,407,824	464,318,229	14,870,663
Postal Telegraph & Cable Corporation.....	George S. Gibbs and Raymond C. Kramer.....	do.....	Dec. 24, 1935 ⁵	⁶ 55,970,750	50,670,180	
United Telephone & Electric Co., The Wash Ry. Co.	William C. A. Henry.....	Trustee.....	(⁷)	⁸ 11,952,350		
	Norman B. Pitcairn and Frank C. Nicodemus, Jr.....	Receivers.....	Dec. 1, 1931 ⁹	138,120,767	127,939,826	22,108,994
Total.....				528,110,091	652,092,576	37,179,857

¹ Represents companies which directly or indirectly control communication carriers.² Norman B. Pitcairn appointed receiver Oct. 20, 1933, to succeed Walter S. Franklin, resigned.³ Date of temporary appointment made permanent July 23, 1938.⁴ Includes \$105,100,524 book liability for 1,174,060 shares of common stock without par value.⁵ Date of temporary appointments of Alfred E. Smith and George S. Gibbs made permanent Jan. 27, 1936; resignation of Alfred E. Smith as trustee was accepted as of mid-

night Dec. 31, 1937. Raymond C. Kramer was appointed temporary trustee Sept. 8, 1937, which appointment was made permanent Oct. 5, 1937.

⁶ Includes \$25,441,250 book liability for 1,017,500 shares of common stock without par value.⁷ Data not reported.⁸ Includes \$3,099,350 book liability for 36,178 shares of common stock without par value.⁹ Norman B. Pitcairn appointed receiver Oct. 19, 1933, to succeed Walter S. Franklin, resigned.

Railway telegraph and telephone operations.—The operating revenues derived from telegraph and telephone service performed by class I steam railways during 1938, together with the plant mileage operated, are shown in table XXV. This information was compiled from annual reports filed with the Interstate Commerce Commission. The revenues shown in this table represent amounts received incidentally for telegraph and telephone service rendered to the general public, as the communication facilities are used principally in connection with the operation of railways.

TABLE XXV.—*Telegraph and telephone revenues received and wire mileage operated by class I steam railways*

[Compiled from annual reports filed with the Interstate Commerce Commission for the year ended Dec. 31, 1938]

Name of railway	Operating revenues (account 138)			Mileage operated		
	Telegraph	Telephone	Total	Pole line	Telegraph wire	Telephone wire
Atchison, Topeka & Santa Fe Ry. Co.	\$324, 430	-----	\$324, 430	13, 308	42, 586	37, 342
Baltimore & Ohio R. R. Co.	60, 151	-----	60, 151	5, 739	16, 575	18, 682
Chicago, Burlington & Quincy R. R. Co.	134, 462	-----	134, 462	8, 697	26, 294	17, 689
Duluth, Missabe & Iron Range Ry. Co.	1, 885	\$79, 696	81, 581	565	1, 206	5, 523
Great Northern Ry. Co.	106, 090	-----	106, 090	7, 803	28, 190	21, 403
Louisville & Nashville R. R. Co.	44, 689	-----	44, 689	4, 525	2, 665	18, 802
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	45, 736	-----	45, 736	4, 100	15, 799	817
New York, New Haven & Hartford R. R. Co.	32, 109	-----	32, 109	1, 844	503	26, 241
Northern Pacific Ry. Co.	76, 574	-----	76, 574	5, 863	12, 846	17, 938
Pennsylvania R. R. Co.	103, 425	-----	103, 425	9, 424	7, 373	170, 753
Southern Pacific Co.	358, 198	32, 002	390, 200	8, 388	23, 694	19, 298
Texas & New Orleans R. R. Co.	32, 823	1, 800	34, 623	4, 362	7, 832	10, 645
Union Pacific R. R. Co.	297, 899	-----	297, 899	9, 312	24, 745	23, 771
Other class I steam railways ¹	215, 176	17, 148	232, 324	136, 324	302, 992	383, 694
Total, United States	1, 833, 647	130, 646	1, 964, 293	220, 254	513, 300	772, 596
Copper River & Northwestern Railway Co. (Alaska)	-----	2, 124	2, 124	194	-----	241
Oahu Railway & Land Co. (Hawaii)	-----	-----	-----	186	-----	186
Grand total	1, 833, 647	132, 770	1, 966, 417	220, 634	513, 300	773, 026

¹ Represents returns from 68 class I steam railways in the United States, each having gross annual telegraph and telephone revenues less than \$25,000, and 55 class I steam railways which did not report any telegraph or telephone revenues.

The major class of employees engaged in telegraph and telephone service and their compensation, as reported by class I steam railways, are shown in the following statement. These data were compiled from the annual reports filed with the Interstate Commerce Commission for the year 1938.

Class of employees	Average number of employees ¹	Total annual compensation
Station agents (telegraphers and telephoners)	14, 471	\$27, 604, 183
Chief telegraphers and telephoners or wire chiefs	794	2, 103, 284
Clerk-telegraphers and clerk-telephoners	7, 657	15, 339, 435
Telegraphers, telephoners, and towermen	13, 204	27, 118, 396
Total	36, 126	72, 165, 296

¹ Based on 12 middle-of-month counts.

(B) STATISTICS FROM MONTHLY REPORTS OF TELEPHONE AND TELEGRAPH CARRIERS

Telephone carriers reporting monthly.—The names of the large telephone carriers filing monthly reports with the Commission and the geographical regions in which they are located are shown in table XXVI. All telephone carriers included in the Bell System are marked with an asterisk. The carriers marked with a dagger have been notified that they are subject only to the provisions of sections 201-5 of the Communications Act of 1934, but have continued voluntarily to file monthly reports for statistical purposes.

TABLE XXVI.—List of large telephone carriers reporting on a monthly basis to the Commission, showing geographical regions 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.
†Ashland Home Telephone Co.	Southeastern.
†Associated Telephone Co., Ltd.	Pacific.
*Bell Telephone Co. of Nevada.	Mountain.
*Bell Telephone Co. of Pennsylvania.	Middle Atlantic.
Bluefield Telephone Co.	Chesapeake.
†California Water & Telephone Co.	Pacific.
Carolina Telephone & Telegraph Co.	Southeastern.
*Chesapeake & Potomac Telephone Co.	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City.	Do.
*Chesapeake & Potomac Telephone Co. of Virginia.	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia.	Do.
Cincinnati & Suburban Bell Telephone Co.	Great Lakes.
†Citizens Independent Telephone Co.	Do.
†Commonwealth Telephone Co. (Pennsylvania)	Middle Atlantic.
†Commonwealth Telephone Co. (Wisconsin)	Great Lakes.
*Dakota Central Telephone Co.	North Central.
†DeKalb-Ogle Telephone Co.	Great Lakes.
*Diamond State Telephone Co.	Middle Atlantic.
†Elyria Telephone Co.	Great Lakes.
†Gulf States Telephone Co.	South Central.
Home Telephone & Telegraph Co.	Great Lakes.
*Illinois Bell Telephone Co.	Do.
†Illinois Central Telephone Co.	Do.
†Illinois Commercial Telephone Co.	Do.
†Illinois Consolidated Telephone Co.	Do.
†Illinois Telephone Co.	Do.
Indiana Associated Telephone Corporation.	Do.
*Indiana Bell Telephone Co.	Do.
†Indiana Telephone Corporation.	Do.
Inter-Mountain Telephone Co.	Southeastern.
Interstate Telephone Co.	Pacific.
†Intra State Telephone Co.	Great Lakes.
†Iowa State Telephone Co.	North Central.
†Jamestown Telephone Corporation.	Middle Atlantic.
Keystons Telephone Co. of Philadelphia.	Do.
†Kittanning Telephone Co.	Do.
†La Crosse Telephone Corporation.	Great Lakes.
†Lexington Telephone Co.	Southeastern.
†Lincoln Telephone & Telegraph Co.	North Central.
†Lorain Telephone Co.	Great Lakes.
†Mansfield Telephone Co.	Do.
Michigan Associated Telephone Co.	Do.
*Michigan Bell Telephone Co.	Do.
†Missouri Telephone Co.	South Central.
*Mountain States Telephone & Telegraph Co.	Mountain.
Mutual Telephone Co.	(1).
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.
†Northern Ohio Telephone Co.	Great Lakes.
*Northwestern Bell Telephone Co.	North Central.
Ohio Associated Telephone Co.	Great Lakes.
*Ohio Bell Telephone Co.	Do.
†Ohio Standard Telephone Co.	Do.
†Orange County Telephone Co.	Middle Atlantic.
*Pacific Telephone & Telegraph Co.	Pacific.
†Peninsular Telephone Co.	Southeastern.
Pennsylvania Telephone Corporation.	Middle Atlantic.
†Peoples Telephone Corporation.	Do.
†Portsmouth Home Telephone Co.	Great Lakes.
Rochester Telephone Corporation.	Middle Atlantic.
San Angelo Telephone Co.	South Central.
†Santa Barbara Telephone Co.	Pacific.
Southeast Missouri Telephone Co.	South Central.

See footnotes at end of table.

TABLE XXVI.—List of large telephone carriers reporting on a monthly basis to the Commission, showing geographical regions to which the carriers have been assigned for statistical purposes—Continued

Name of carrier	Geographical region
*Southern Bell Telephone & Telegraph Co.	Southeastern.
*Southern California Telephone Co.	Pacific.
†Southern Continental Telephone Co.	Southeastern.
Southern New England Telephone Co.	New England.
†Southwest Telephone Co. (Texas)	South Central.
Southwestern Associated Telephone Co.	Do.
*Southwestern Bell Telephone Co. ¹	Do.
†Southwestern States Telephone Co.	Do.
†Star Telephone Co.	Great Lakes.
†Texas Long Distance Telephone Co.	South Central.
†Texas Telephone Co.	Do.
†Tri-County 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. (Missouri)	South Central.
United Telephone Companies, Inc.	Great Lakes.
United Telephone Co. of Pennsylvania	Middle Atlanti.
†Upstate Telephone Corporation of New York	Do.
†Wabash Telephone Co.	Great Lakes.
†Warren Telephone Co.	Do.
West Coast Telephone Co.	Pacific.
†Western Light & Telephone Co.	South Central.
*Wisconsin Telephone Co.	Great Lakes.

*Represents carriers included in the Bell System.

†Represents carriers subject only to the provisions of sections 201-205 of the Communications Act of 1934, which file reports for statistical purposes.

¹ Located in Hawaii. Figures not included in the following summaries of monthly reports of large telephone carriers in the United States.

² The United Telephone Co. (Kansas) was acquired by the Southwestern Bell Telephone Co. as of December 31, 1938.

NOTE.—“Large telephone carriers” comprises a group of 90 carriers, each having annual operating revenues of approximately \$250,000 or more.

Monthly operating data from telephone carriers.—The following table XXVII shows statistical data pertaining to December, and cumulative figures for 12 months ended with December 1938, as compared with returns received for the corresponding periods in 1937. This information was compiled from the monthly reports filed by large telephone carriers. The net operating income during the month of December 1938 was 9.06 percent larger than during the same month in 1937, while for the 12-month period in 1938 it was 7.51 percent less than for the corresponding period in 1937. For the 12-month period in 1938, the operating revenues increased 0.29 percent and the operating expenses increased 1.33 percent over the same period in 1937.

TABLE XXVII.—Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers

MONTH OF DECEMBER

Item	1938	1937	Increase or decrease	
			Amount	Ratio, percent
Number of company telephones in service at end of month	17,701,232	17,195,471	508,761	2.96
Operating revenues:				
Subscribers' station revenues	\$62,109,550	\$60,659,036	\$1,450,514	2.39
Public telephone revenues	4,078,114	4,079,780	-1,666	-.04
Miscellaneous local service revenues	964,992	1,011,523	-46,531	-4.60
Message tolls	26,590,714	25,497,144	1,093,570	4.29
Miscellaneous toll service revenues	2,722,664	2,853,063	-136,399	-4.77
Revenues from general services and licenses	1,250,183	1,252,104	4,079	.33
Sundry miscellaneous revenues	4,217,764	4,073,868	143,896	3.53
Uncollectible operating revenues—Dr.	387,994	386,704	1,290	.33
Operating revenues	101,551,987	99,045,814	2,506,173	2.53

TABLE XXVII.—Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers—Continued

MONTH OF DECEMBER—Continued

Item	1938	1937 ¹	Increase or decrease	
			Amount	Ratio, percent
Operating expenses:				
Depreciation and amortization expenses.....	\$14,370,240	\$14,529,910	-\$159,670	-1.10
All other maintenance.....	19,441,255	20,270,938	-829,683	-4.09
Traffic expenses.....	15,035,471	15,183,248	-147,777	-.97
Commercial expenses.....	8,177,728	7,915,472	262,256	3.31
General office salaries and expenses.....	5,762,155	5,794,616	-32,461	-.56
Relief and pensions.....	1,855,786	1,778,913	76,873	4.32
General services and licenses.....	1,229,582	1,225,750	3,832	.31
All other operating expenses.....	3,571,944	3,418,118	153,826	4.50
Operating expenses.....	69,444,161	70,116,971	-672,810	-.96
Income items:				
Net operating revenues.....	32,107,826	28,928,843	3,178,983	10.99
Rent from lease of operating property.....	473	732	-259	-35.38
Rent for lease of operating property.....	903	140	763	545.00
Net operating income before tax deduction.....	32,107,396	28,929,435	3,177,961	10.99
Operating taxes.....	13,272,000	11,659,123	1,612,877	13.83
Net operating income.....	18,835,396	17,270,312	1,565,084	9.06
Ratio of expenses to revenues..... percent.....	68.38	70.79	-2.41	
Changes in capital items:				
Increase during month in "telephone plant" ¹	\$11,186,934	\$5,928,114		
Increase during month in "capital stock" ²	\$29,158,029	\$338,748		
Increase during month in "funded debt" ²	\$288,387	-\$11,131,084		

12 MONTHS ENDED WITH DECEMBER

Operating revenues:				
Subscribers' station revenues.....	\$718,336,586	\$705,100,447	\$13,236,139	1.88
Public telephone revenues.....	45,133,371	46,138,452	-1,005,081	-2.18
Miscellaneous local service revenues.....	11,680,424	12,314,407	-633,983	-5.16
Message tolls.....	296,020,948	304,154,612	-8,133,664	-2.67
Miscellaneous toll service revenues.....	32,918,201	34,905,695	-1,987,494	-5.69
Revenues from general services and licenses.....	14,605,392	14,516,137	89,255	.61
Sundry miscellaneous revenues.....	48,792,290	45,801,937	2,990,353	6.53
Uncollectible operating revenues—Dr.....	5,435,553	4,225,672	1,209,881	28.63
Operating revenues.....	1,162,051,659	1,158,706,015	3,345,644	.29
Operating expenses:				
Depreciation and amortization expenses.....	171,052,362	174,892,854	-3,840,492	-2.20
All other maintenance.....	222,808,604	217,428,889	5,379,715	-2.47
Traffic expenses.....	172,916,712	170,406,709	2,510,003	1.47
Commercial expenses.....	91,410,001	89,562,997	1,847,004	2.06
General office salaries and expenses.....	65,812,890	64,157,986	1,654,904	2.58
Relief and pensions.....	20,713,278	19,777,912	935,366	4.73
General services and licenses.....	14,296,840	14,215,743	81,097	.57
All other operating expenses.....	38,783,222	36,874,022	1,909,200	5.18
Operating expenses.....	797,793,909	787,317,112	10,476,797	1.33
Income items:				
Net operating revenues.....	364,257,750	371,388,903	-7,131,153	-1.92
Rent from lease of operating property.....	6,484	6,434	50	.78
Rent for lease of operating property.....	3,860	1,703	2,157	126.66
Net operating income before tax deduction.....	364,260,374	371,393,634	-7,133,260	-1.92
Operating taxes.....	154,486,678	144,579,252	9,907,426	6.85
Net operating income.....	209,773,696	226,814,382	-17,040,686	-7.51
Ratio of expenses to revenues..... percent.....	68.65	67.95	0.70	
Changes in capital items:				
Increase during period in "telephone plant" ¹	\$118,348,481	\$143,993,677		
Increase during period in "capital stock" ²	\$12,178,885	-\$29,106,758		
Increase during period in "funded debt" ²	\$93,280,461	-\$30,741,245		

¹ The figures for "Telephone plant" include increases in "Telephone plant in service," "Telephone plant under construction," "Property held for future telephone use," and "Telephone plant acquisition adjustment."

² Returns in this column reflect depreciation adjustments on property in Nebraska.

NOTES.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenue of approximately \$250,000 or more.

Dash (—) indicates deficit or other reverse item.

Proportion of the telephone industry covered by monthly reports.—Statistical data relating to large telephone carriers reporting monthly to the Commission for the year 1937 are compared in the following statement with figures shown in the "Census of Electrical Industries—Telephones and Telegraphs: 1937" for all telephone systems and lines in the United States. The gross operating revenues for the year 1937 of the 91 large telephone carriers reporting monthly to the Commission amounted to \$1,158,706,015 and covered approximately 98 percent of the revenues of all telephone carriers in the United States.

Item	Total operating revenues for year 1937	Number of telephones Dec. 31, 1937
Census of electrical industries: 50,560 systems and lines.....	\$1,180,028,372	19,453,401
91 carriers reporting to the Commission.....	1,158,706,015	17,195,471
Percent of census total.....	98.19	88.39

¹ Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

Monthly statistics of telephone carriers from January 1933 to June 1939.—The operating revenues, operating expenses, and net operating income of the large telephone carriers that reported on a monthly basis from January 1933 to June 1939, inclusive, are given in table XXVIII and the trends reflected in chart 6. During the period from June 1933 to June 1939, the monthly operating revenues increased from \$80,428,967 to \$102,118,913; the monthly operating expenses increased from \$55,999,132 to \$68,184,097; and the monthly net operating income increased from \$16,144,719 to \$20,027,371.

Approximately \$16,000,000 in refunds to Chicago coin-box subscribers, in repayment of collections that had been made covering an 11-year period, were deducted from operating revenues during June 1934 by the Illinois Bell Telephone Co., but have been restored in chart 6 in order to preserve the consistency of the trend. The revised uniform system of accounts for telephone carriers that became effective January 1, 1937, had only a minor effect on the operating returns.

TABLE XXVIII.—Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to June 1939, inclusive

Month	Operating revenues						
	1933	1934	1935	1936	1937	1938	1939
January.....	\$79,449,395	\$81,350,361	\$83,230,504	\$88,361,976	\$94,779,883	\$96,257,455	\$99,233,789
February.....	75,790,288	78,320,835	¹ 79,608,659	86,953,032	91,765,272	92,297,164	96,063,633
March.....	78,862,241	82,401,739	82,982,488	90,514,624	97,552,766	97,138,307	101,609,891
April.....	77,783,389	81,574,187	83,938,786	90,361,484	96,057,583	95,911,787	100,083,374
May.....	80,522,404	83,128,231	85,211,685	90,835,259	96,931,883	96,289,146	102,646,302
June.....	80,428,967	¹ 66,384,331	83,589,582	91,334,901	97,205,606	96,305,464	102,118,913
July.....	79,144,340	80,315,541	83,889,282	91,621,342	95,894,942	94,954,498	-----
August.....	79,077,956	81,005,655	84,201,767	90,065,959	95,904,902	96,482,355	-----
September.....	78,338,834	79,805,693	84,526,140	91,164,857	96,614,793	96,724,500	-----
October.....	80,115,279	83,377,342	88,193,336	94,474,691	99,156,085	99,607,641	-----
November.....	78,970,252	81,341,489	¹ 87,209,620	92,888,832	97,196,486	98,531,355	-----
December.....	80,409,359	¹ 82,171,067	¹ 88,044,772	97,136,780	99,045,814	101,551,987	-----
Total.....	948,692,704	¹ 961,176,521	¹ 1,014,626,621	1,095,713,737	1,158,706,015	1,162,051,659	601,755,902
	Operating expenses						
January.....	\$58,023,014	\$56,660,588	\$58,919,333	\$60,455,792	² \$61,761,759	\$66,589,710	\$67,280,618
February.....	55,371,291	54,644,868	¹ 56,498,039	58,603,461	60,601,384	63,906,167	64,155,197
March.....	57,198,070	57,621,102	58,398,745	60,572,358	65,190,035	66,613,821	68,456,196
April.....	55,467,873	56,284,375	58,612,389	60,540,298	64,273,685	65,379,122	65,683,453
May.....	57,107,246	58,425,666	60,170,503	60,599,618	65,350,866	66,323,069	68,982,872
June.....	55,999,132	¹ 41,203,652	58,566,170	60,791,556	66,084,114	65,696,223	68,184,097
July.....	55,301,474	58,638,170	60,820,407	62,441,016	67,003,600	65,504,748	-----
August.....	55,517,814	58,463,602	59,382,059	60,261,329	66,682,231	66,238,646	-----
September.....	55,091,537	56,822,773	58,531,657	61,215,138	66,046,651	67,030,396	-----
October.....	56,026,901	59,169,699	60,530,810	62,266,508	66,513,657	67,633,790	-----
November.....	56,584,655	58,138,980	¹ 60,894,797	61,668,420	67,708,159	67,434,056	-----
December.....	58,788,744	¹ 60,004,837	¹ 61,877,215	64,266,379	² 70,116,971	69,444,161	-----
Total.....	676,477,751	¹ 676,078,312	¹ 713,202,124	¹ 733,681,873	² 787,317,112	797,793,909	402,742,433

Net operating income

1924-3-40-11

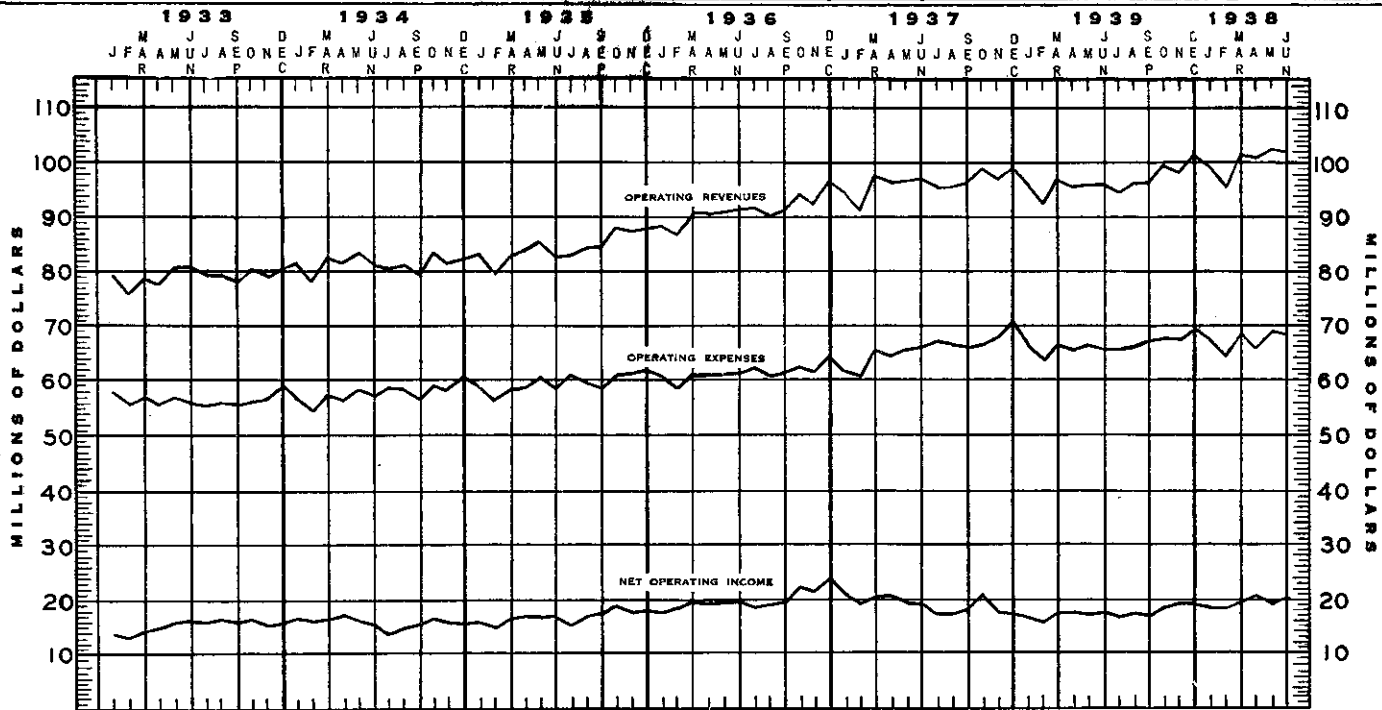
January.....	\$13,963,345	\$16,663,945	\$15,877,224	\$17,752,436	² \$20,913,482	\$16,824,922	\$18,526,976
February.....	13,044,592	15,742,005	¹ 14,754,980	18,220,342	19,219,424	15,634,441	18,437,865
March.....	14,204,427	16,570,554	16,297,776	19,621,878	20,176,734	17,556,969	19,478,655
April.....	14,837,852	17,354,422	16,751,327	19,264,378	20,262,358	17,631,367	20,575,979
May.....	15,937,320	16,160,140	16,580,350	19,659,214	19,298,848	17,426,179	19,832,318
June.....	16,144,719	¹ 17,411,909	16,568,547	² 19,741,809	19,077,687	17,752,080	20,027,371
July.....	15,874,309	13,743,752	14,907,080	18,437,274	17,166,329	16,458,423	-----
August.....	16,313,527	14,609,328	16,563,590	18,992,778	17,164,032	17,260,686	-----
September.....	15,757,741	15,143,451	17,531,376	19,423,669	18,183,595	16,790,844	-----
October.....	16,499,848	16,691,177	19,014,030	22,227,249	20,524,179	18,636,671	-----
November.....	14,950,379	15,645,036	¹ 17,935,997	21,413,818	17,557,402	18,945,718	-----
December.....	15,376,226	¹ 15,327,906	¹ 18,042,773	23,895,867	² 17,270,312	18,835,396	-----
Total.....	182,904,285	¹ 191,063,624	¹ 200,825,050	² 238,650,712	² 226,814,382	209,773,696	116,879,164

¹ These returns reflect adjustments covering estimated refunds.² These returns reflect depreciation adjustments on property in Nebraska.

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenues of approximately \$250,000 or more.

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

CHART NO. 6



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

Monthly total and daily average message tolls.—The message tolls reported by large telephone carriers on a monthly basis from January 1933 to June 1939, inclusive, together with the average amount per day, are shown in table XXIX. The revenues received from "toll private-line services" and "other toll service" are not included in this summary. The total monthly message tolls increased from \$19,807,346 in June 1933, to \$26,923,361 in June 1939. During this period the daily average toll message revenues increased from \$660,245 in June 1933, to \$897,445 in June 1939. The trend during the period from January 1933 to June 1939 of the daily average amount of message tolls is shown in chart 7.

TABLE XXIX.—Summary showing monthly total and daily average message tolls of large telephone carriers from January 1933 to June 1939, inclusive

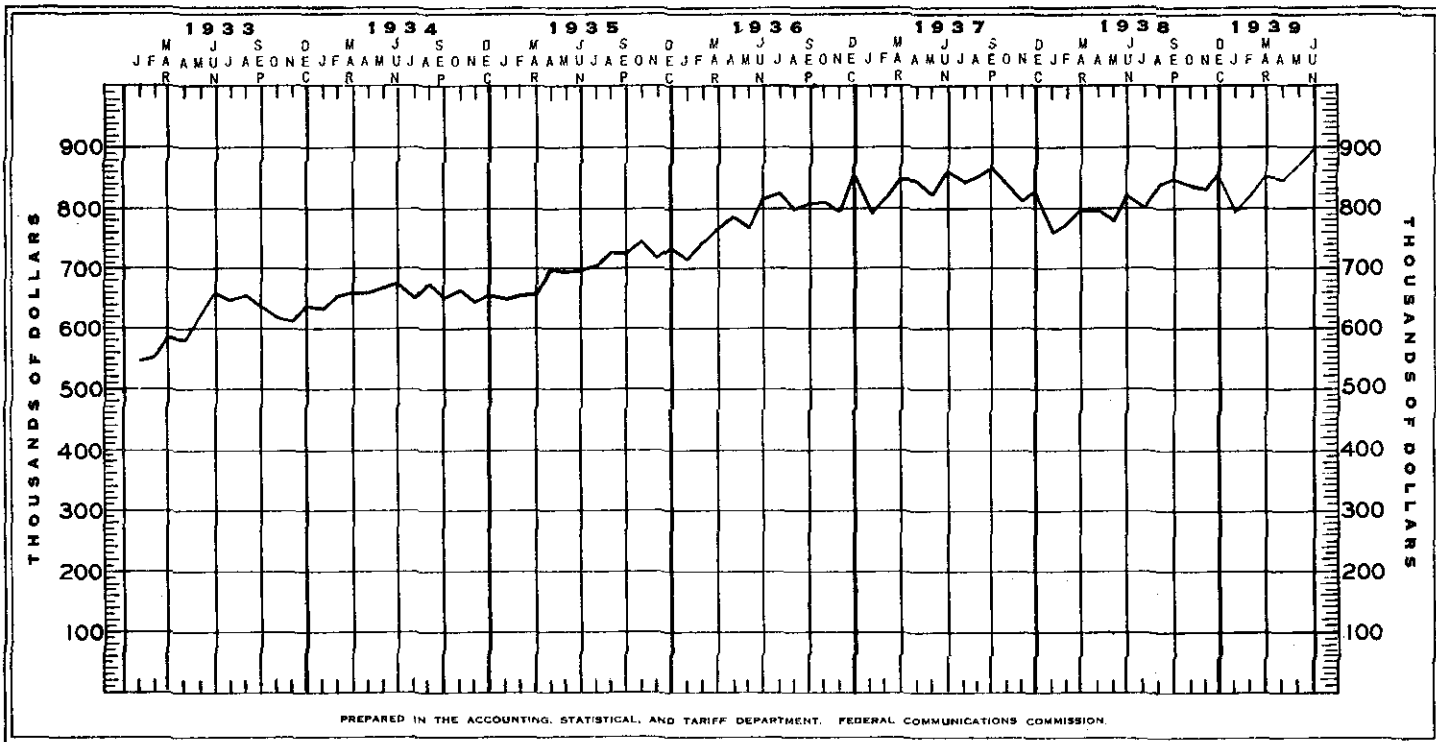
Month	1933		1934		1935		1936	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	\$16,994,165	\$548,199	\$19,629,721	\$633,217	\$20,116,509	\$648,920	\$22,190,303	\$715,816
February	15,488,724	553,169	18,311,989	654,000	18,258,711	652,097	21,579,225	743,801
March	18,133,417	584,949	20,480,088	660,648	20,378,715	657,378	23,765,567	766,631
April	17,423,065	580,769	19,805,866	660,194	20,916,570	697,219	23,613,804	787,127
May	19,478,575	628,341	20,767,992	669,935	21,594,346	696,592	23,796,271	767,622
June	19,807,346	660,245	20,305,817	676,861	20,925,023	697,501	24,443,178	814,773
July	20,135,960	649,547	20,139,894	649,674	21,882,664	705,892	25,506,391	822,787
August	20,261,511	653,597	20,964,208	676,265	22,558,102	727,681	24,797,028	799,904
September	19,174,859	639,162	19,541,690	651,390	21,782,681	726,089	24,196,949	806,565
October	19,185,590	618,890	20,597,693	664,442	23,051,814	743,607	25,080,140	809,037
November	18,393,599	613,120	19,333,804	644,460	21,591,993	719,733	23,939,495	797,983
December	19,789,869	638,384	20,251,714	653,281	22,714,300	732,719	26,439,617	862,891
Total	224,266,700	614,429	240,130,416	657,892	255,771,428	700,744	289,338,968	790,544

Month	1937		1938		1939	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	\$24,519,237	\$790,943	\$23,533,358	\$759,141	\$24,730,843	\$797,769
February	22,754,772	812,670	21,588,677	771,024	22,953,591	819,771
March	26,250,877	846,802	24,649,376	795,141	26,498,389	854,787
April	25,371,260	845,709	23,849,134	794,901	25,274,520	842,484
May	25,397,947	819,289	24,132,468	778,467	27,100,696	874,216
June	25,836,669	861,222	24,576,923	819,231	26,923,361	897,445
July	26,078,333	841,172	24,799,742	799,992	.....	.....
August	26,401,979	851,677	25,984,143	838,198	.....	.....
September	25,887,107	862,904	25,428,288	847,610	.....	.....
October	25,860,549	834,211	25,928,443	836,411	.....	.....
November	24,300,738	810,025	24,959,382	831,979	.....	.....
December	25,497,144	822,489	26,590,714	857,765	.....	.....
Total	304,154,612	833,300	296,020,948	811,016	.....	.....

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenue of approximately \$250,000 or more.

AVERAGE REVENUES PER DAY FROM TOLL MESSAGES AS COMPILED FROM MONTHLY REPORTS FILED BY LARGE TELEPHONE CARRIERS

CHART NO. 7



Telephones in service.—The number of company telephones in service at the end of each month from January 1933, to June 1939 is shown in table XXX, and the trend during this period is reflected in chart 8. The number of telephones in service increased from 14,286,795 in August 1933, to 18,072,020 in June 1939, or 26.49 percent.

TABLE XXX.—*Number of telephones in service in the United States as reported by large telephone carriers, by months, from January 1933 to June 1939, inclusive*¹

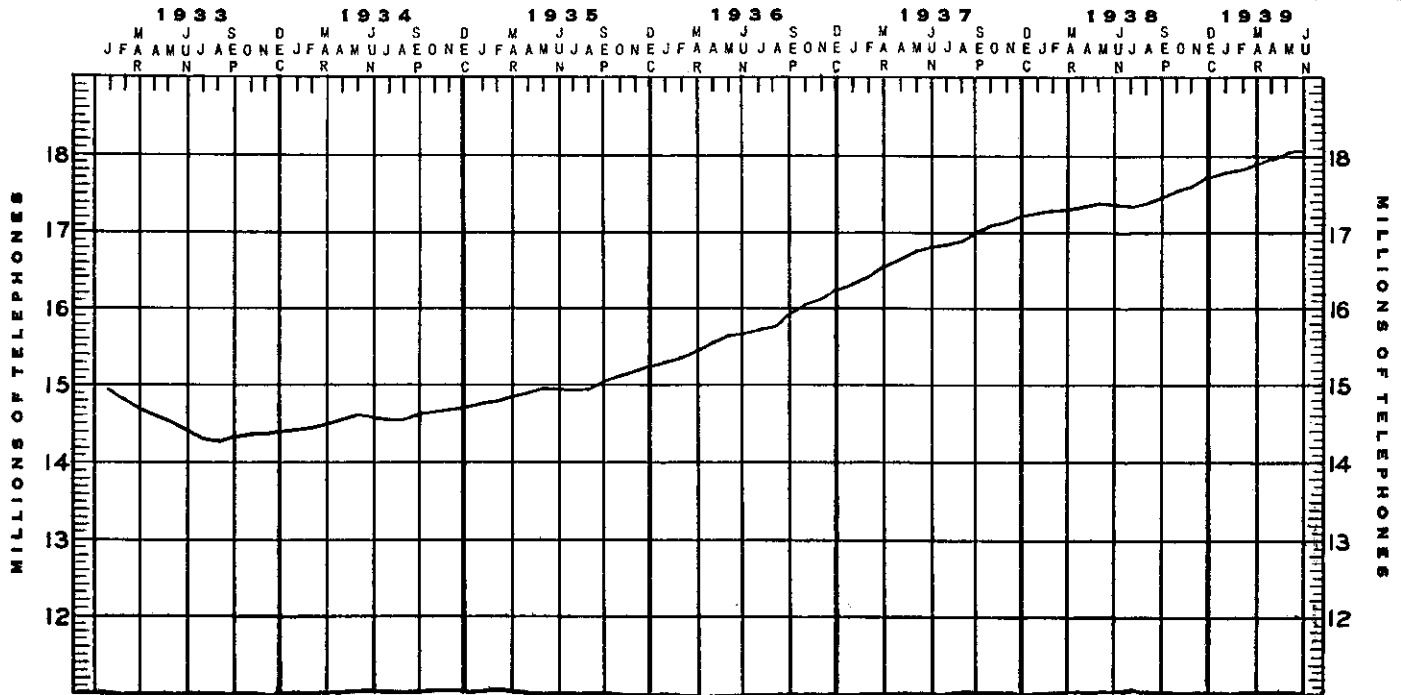
Month	1933	1934	1935	1936	1937	1938	1939
January.....	14,940,458	14,400,043	14,744,353	15,295,692	16,315,289	17,229,895	17,734,613
February.....	14,820,220	14,439,183	14,782,483	15,368,397	16,415,216	17,261,509	17,808,350
March.....	14,693,079	14,496,906	14,837,216	15,455,192	16,532,224	17,301,824	17,897,364
April.....	14,596,401	14,563,647	14,893,258	15,541,044	16,655,031	17,336,387	17,973,761
May.....	14,506,025	14,600,007	14,946,398	15,627,577	16,762,873	17,365,532	18,055,011
June.....	14,400,533	14,583,393	14,936,756	15,650,630	16,800,336	17,343,739	18,072,020
July.....	14,314,697	14,547,163	14,914,281	15,699,574	16,829,994	17,334,621	-----
August.....	14,286,795	14,557,047	14,943,768	15,773,584	16,891,361	17,372,770	-----
September.....	14,345,350	14,626,161	15,048,005	15,914,147	17,002,295	17,465,101	-----
October.....	14,360,902	14,662,525	15,117,838	16,033,442	17,084,607	17,528,279	-----
November.....	14,365,801	14,682,005	15,174,987	16,114,792	17,141,838	17,592,651	-----
December.....	14,376,947	14,703,888	15,231,070	16,221,582	17,195,471	17,704,232	-----

¹ Includes all telephones except private-line telephones and telephones of connecting line for which local or switching services are rendered.

NOTE.—“Large telephone carriers” comprises a group of 90 carriers, each having annual operating revenues of approximately \$250,000 or more.

NUMBER OF TELEPHONES IN SERVICE AS REPORTED BY LARGE TELEPHONE CARRIERS

CHART NO. 8



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

Operating averages per telephone per day.—The average amounts of operating revenues and operating expenses per telephone per day, arranged by geographical regions, and based on reports from large telephone carriers filed on a monthly basis are given in table XXXI. Data applicable to carriers of the Bell System and to carriers not affiliated with the Bell System are shown separately in this table. The returns from the American Telephone and Telegraph Co. were excluded from the averages for the geographical regions, as the operations of the long-lines department of this carrier cover the entire country; but these returns were included in the separate total for the United States. The gross operating revenues and expenses are used in computing these averages. They have been computed on the basis of 325 days to the year, which is the basis used by the Bureau of the Census in similar computations.

The average gross operating revenues per telephone per day for the United States were \$0.2141 for Bell System carriers and \$0.2055 for all reporting large telephone carriers. These amounts compare with average gross operating expenses per telephone per day of \$0.1476 for Bell System carriers and \$0.1411 for all reporting large telephone carriers.

TABLE XXXI.—Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions

[Year ended Dec. 31, 1938]

ALL LARGE TELEPHONE CARRIERS

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region.....	\$92,336,420	\$68,739,628	1,565,842	\$0.1814	\$0.1351
Middle Atlantic region ¹	337,171,521	230,375,348	4,766,739	.2176	.1487
Great Lakes region.....	227,322,284	150,459,818	4,010,207	.1744	.1154
Eastern district ¹	656,830,225	449,574,794	10,342,788	.1954	.1337
Chesapeake region.....	43,288,819	29,518,818	815,749	.1633	.1113
Southeastern region.....	70,451,351	45,787,657	1,248,614	.1736	.1128
Southern district.....	113,740,170	75,306,475	2,064,363	.1695	.1122
North Central region.....	44,899,070	31,094,422	903,697	.1529	.1059
South Central region.....	95,577,529	62,063,279	1,615,110	.1821	.1182
Mountain region.....	25,441,563	17,446,589	494,434	.1583	.1086
Pacific region.....	122,188,911	82,417,412	1,982,652	.1896	.1279
Western district.....	288,107,073	193,021,702	4,995,893	.1774	.1189
United States ¹	1,058,677,468	717,902,971	17,403,044	.1872	.1269
United States ²	1,162,051,659	797,793,909	17,403,044	.2055	.1411

BELL SYSTEM CARRIERS

New England region.....	\$74,299,427	\$55,524,442	1,224,453	\$0.1867	\$0.1395
Middle Atlantic region ¹	324,319,824	221,882,209	4,430,708	.2227	.1524
Great Lakes region.....	199,753,185	133,383,291	3,326,047	.1848	.1234
Eastern district ¹	598,372,436	410,789,942	9,031,208	.2039	.1400
Chesapeake region.....	42,810,476	29,202,197	806,326	.1634	.1114
Southeastern region.....	64,264,739	42,196,641	1,109,322	.1783	.1170
Southern district.....	107,075,215	71,398,838	1,915,648	.1720	.1147
North Central region.....	41,453,614	28,722,636	810,540	.1574	.1090
South Central region.....	89,216,038	58,001,226	1,463,280	.1876	.1220
Mountain region.....	25,441,563	17,446,589	494,434	.1583	.1086
Pacific region.....	114,895,386	78,004,155	1,799,965	.1964	.1333
Western district.....	271,006,601	182,174,606	4,568,219	.1825	.1227
United States ¹	976,454,252	664,363,386	15,515,075	.1936	.1318
United States ²	1,079,828,443	744,254,324	15,515,075	.2141	.1476

¹ Excludes figures for American Telephone & Telegraph Co. Inasmuch as its operations are not confined to geographical region.

² Includes figures for American Telephone & Telegraph Co.

TABLE XXXI.—Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions—Contd.

OTHER THAN BELL SYSTEM CARRIERS

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region.....	\$18,036,993	\$13,215,186	341,389	\$0.1626	\$0.1191
Middle Atlantic region.....	12,851,697	8,493,139	286,031	.1382	.0914
Great Lakes region.....	27,660,099	17,076,527	684,160	.1240	.0763
Eastern district.....	58,457,789	38,784,852	1,311,580	.1371	.0910
Chesapeake region.....	478,343	316,621	9,423	.1562	.1034
Southeastern region.....	6,186,612	3,591,016	139,292	.1367	.0793
Southern district.....	6,664,955	3,907,637	148,715	.1379	.0803
North Central region.....	3,445,456	2,371,786	93,157	.1138	.0783
South Central region.....	6,361,491	4,062,053	151,830	.1289	.0823
Mountain region.....					
Pacific region.....	7,293,525	4,413,257	182,687	.1228	.0743
Western district.....	17,100,472	10,847,096	427,674	.1230	.0786
United States.....	82,223,216	53,539,585	1,887,969	.1340	.0873

NOTE.—“Large telephone carriers” comprises a group of 90 carriers, each having annual operating revenues of approximately \$250,000 or more.

Monthly operating data from telegraph carriers.—Statistical data compiled from monthly reports filed by large wire-telegraph and radiotelegraph carriers for the month of December 1938, and for the 12 months ended with December 1938, are shown in table XXXII. The Southern Radio Corporation discontinued filing monthly reports inasmuch as its radiotelegraph operations in the United States ceased May 31, 1938. The gross operating revenues of the 17 wire-telegraph and radiotelegraph carriers reporting on a monthly basis were \$132,494,224, of which the sum of \$112,857,694 or 85.18 percent, was reported by three wire-telegraph carriers.

TABLE XXXII.—Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers

FOR THE MONTH OF DECEMBER 1938

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Northern Telegraph Co.....	\$5,125	\$3,992	\$608	\$660
Postal Telegraph-Cable Co. (land-line system).....	1,916,967	1,870,858	-35,230	-282,134
Western Union Telegraph Co.....	8,630,620	7,349,787	803,016	386,829
Total, land-line telegraph carriers.....	10,552,712	9,224,637	768,394	105,355
All America Cables and Radio, Inc.....	495,971	333,056	157,382	146,092
Commercial Cable Co. (New York and limited).....	344,909	304,244	84,006	-17,579
Commercial Pacific Cable Co.....	75,753	64,172	10,265	19,801
French Telegraph Cable Co.....	26,605	37,653	-11,630	-11,936
Mexican Telegraph Co.....	33,191	22,757	8,927	6,010
Total, ocean cable carriers.....	976,429	761,882	248,950	142,388
Globe Wireless Ltd.....	44,860	35,546	8,311	8,204
Mackay Radio & Telegraph Co. (California).....	96,675	77,511	15,751	752
Mackay Radio & Telegraph Co. (Delaware).....	79,606	69,270	5,162	-22,542
Mutual Telephone Co. (wireless department—Hawaii).....	4,945	8,146	-3,168	-3,168
Press Wireless, Inc.....	38,055	39,185	-1,130	-1,130
R. C. A. Communications, Inc.....	450,620	387,900	17,967	75,882
Radiomarine Corp. of America.....	90,577	94,343	-6,624	-6,597
Tropical Radio Telegraph Co.....	65,650	52,685	-14,779	-9,773
United States-Liberia Radio Corporation.....	7,549	5,289	1,879	1,879
Total, radiotelegraph carriers.....	878,537	769,875	23,369	43,507
Grand total.....	12,407,678	10,756,394	1,040,713	291,260

See footnotes at end of table.

TABLE XXXII.—Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers—Continued

FOR 12 MONTHS ENDED WITH DECEMBER 1938

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Northern Telegraph Co.....	\$50,198	\$44,409	\$7,342	\$8,360
Postal Telegraph-Cable Co. (land-line system).....	21,089,095	21,061,816	-1,067,409	-4,042,518
Western Union Telegraph Co.....	91,712,401	81,506,663	3,974,730	-1,637,879
Total, land-line telegraph carriers.....	112,857,694	102,612,888	2,914,663	-5,672,037
All America Cables and Radio, Inc.....	4,732,962	3,644,711	685,399	544,231
Commercial Cable Co. (New York and limited).....	3,789,381	3,172,086	652,865	-522,077
Commercial Pacific Cable Co.....	720,081	741,639	-40,240	75,478
French Telegraph Cable Co.....	367,940	371,451	-12,128	-15,803
Mexican Telegraph Co.....	373,591	268,659	88,666	53,649
Total, ocean cable carriers.....	9,983,955	8,198,546	1,274,562	135,478
Globe Wireless Ltd.....	457,245	465,656	-15,976	-16,890
Mackay Radio & Telegraph Co. (California).....	1,060,590	929,076	87,999	-92,894
Mackay Radio & Telegraph Co. (Delaware).....	990,856	968,850	-9,654	-340,374
Mutual Telephone Co. (wireless department—Hawaii).....	62,111	51,265	4,686	4,686
Press Wireless, Inc.....	494,768	456,632	28,186	28,186
R. C. A. Communications, Inc.....	4,701,128	4,340,751	-72,047	443,764
Radiomarine Corp. of America.....	1,154,379	932,351	154,721	155,142
Tropical Radio Telegraph Co.....	659,030	599,862	37,840	96,918
United States—Liberia Radio Corporation.....	72,468	61,708	7,488	7,488
Total, radiotelegraph carriers.....	9,652,575	8,796,151	223,243	286,026
Grand total.....	132,494,224	119,607,585	4,412,468	-5,250,533

¹ Includes revenues from telephone operations amounting to \$55,765 for December 1938, and \$675,929 for the year 1938, respectively.

² Includes "revenues from transmission-cable" amounting to \$669,668 for December 1938, and \$6,196,212 for the year 1938, respectively.

NOTES.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 9 radiotelegraph carriers, each having annual operating revenues of approximately \$50,000 or more.

Dash (—) indicates deficit or other reverse item.

Telegraph operations of large telephone carriers.—In table XXXIII, the revenues applicable to the telegraph operations of 225 large telephone carriers are shown for the month of December 1938, and for the 12 months ended with December 1938, in comparison with the corresponding periods in 1937. Only items that are readily available from the carriers' accounts are reflected in this summary. It includes data from 223 carriers in the Bell System and from the Cincinnati & Suburban Bell Telephone Co. and the Southern New England Telephone Co.

The cumulative figures for the year in this summary indicate that the volume of telegraph business reported by the large telephone carriers decreased from \$26,080,068 in 1937 to \$23,831,705 in 1938. A large portion of these operating revenues was derived from private-line teletypewriter and teletypewriter exchange service, and \$5,468,357 was derived from private-line Morse service.

TABLE XXXIII.—Summary of monthly reports of telephone carriers relative to available data concerning telegraph operations ¹

Item	December 1938		December 1937	
	Total operating revenues	Amounts applicable to respondents' telegraph operations ²	Total operating revenues	Amounts applicable to respondents' telegraph operations ²
OPERATING REVENUES				
Subscribers' station revenues.....	\$58,325,457	\$21,470	\$56,967,896	\$18,161
Public telephone revenues.....	4,024,663		4,025,806	
Miscellaneous local service revenues.....	900,557	219,008	948,149	226,874
Message tolls.....	25,486,913	602,506	24,398,740	558,757
Miscellaneous toll service revenues.....	2,694,877	1,141,255	2,840,689	1,288,652
Revenues from general services and licenses.....	1,255,865		1,251,640	
Sundry miscellaneous revenues.....	4,029,868	510	3,892,469	425
Uncollectible operating revenues—Dr.....	363,051	6,464	369,323	1,409
Total.....	96,355,149	1,978,285	93,956,066	2,091,460

Item	1938 cumulative figures		1937 cumulative figures	
	Total operating revenues	Amounts applicable to respondents' telegraph operations ²	Total operating revenues	Amounts applicable to respondents' telegraph operations ²
OPERATING REVENUES				
Subscribers' station revenues.....	\$673,663,593	\$229,903	\$662,141,424	\$204,051
Public telephone revenues.....	44,530,002		45,522,456	
Miscellaneous local service revenues.....	10,922,618	2,613,353	11,565,416	2,739,499
Message tolls.....	282,924,016	6,785,394	290,770,047	6,788,515
Miscellaneous toll service revenues.....	32,627,454	14,220,500	34,645,813	16,355,941
Revenues from general services and licenses.....	14,598,058		14,508,580	
Sundry miscellaneous revenues.....	46,681,103	5,243	43,793,875	5,694
Uncollectible operating revenues—Dr.....	5,149,063	22,778	3,960,185	13,632
Total.....	1,100,797,781	23,831,705	1,068,987,426	26,080,068

¹ Comprises 23 Bell System carriers and the Cincinnati & Suburban Bell Telephone Co. and Southern New England Telephone Co.

² Reflects only items which are readily available from carriers' accounts.

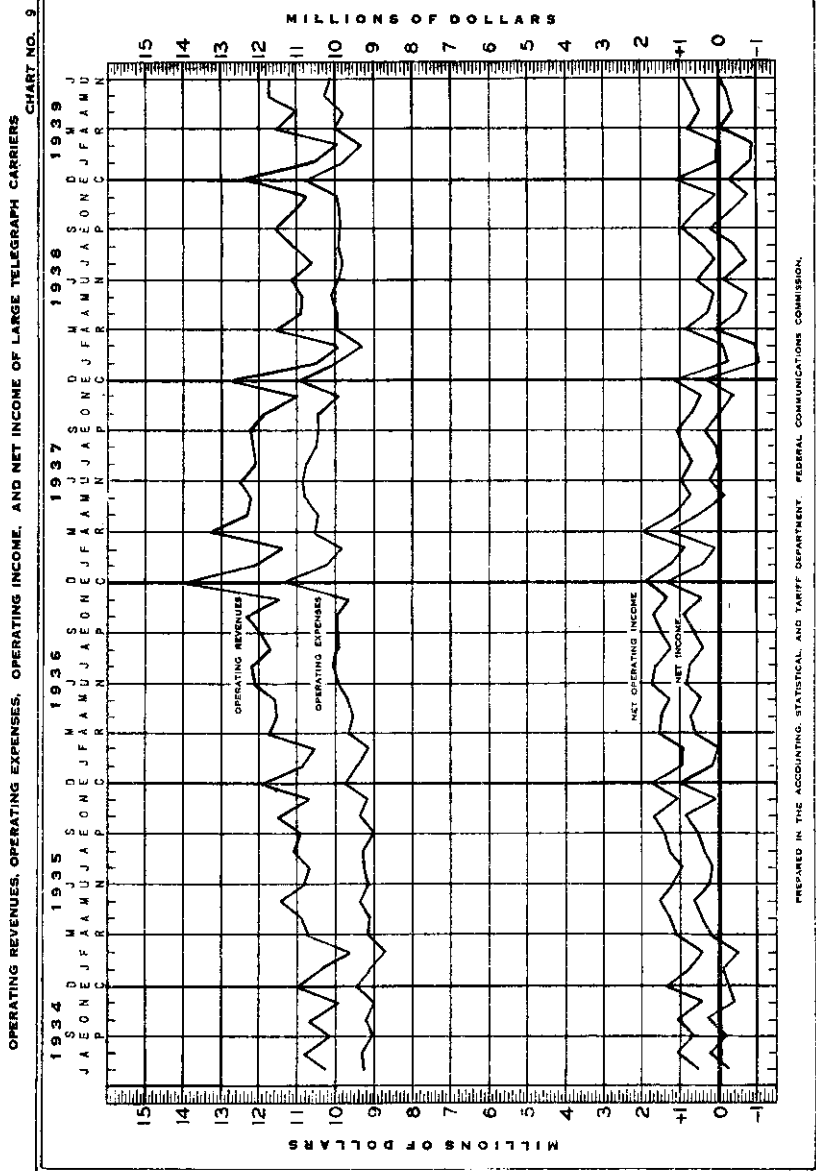
Monthly statistics of telegraph carriers from July 1934 to June 1939.—The operating revenues, operating expenses, operating income, and net income of the large wire-telegraph and radiotelegraph carriers, which reported on a monthly basis from July 1934 to June 1939, are given in table XXXIV, and the trends during this period are shown in chart 9. There was a loss in 1939 in spite of a small increase in operating revenues over the period from July 1934 to June 1939. This loss, however, was not as large as that of 1938. This unfavorable trend began in 1937 when the net income was only about one-third of that of 1936. It reached its lowest ebb in 1938 and was followed by an upward trend in 1939.

TABLE XXXIV.—Monthly operating statistics showing revenues, expenses, operating income, and net income as reported by large telegraph carriers from July 1934 to June 1939, inclusive

Month	Operating revenues					
	1934	1935	1936	1937	1938	1939
January		\$10,362,033	\$10,911,897	\$12,136,018	\$10,541,024	\$10,549,103
February		9,611,350	10,585,074	11,364,374	9,973,641	9,987,040
March		10,729,707	11,726,246	13,250,344	11,598,330	11,577,244
April		10,878,367	11,542,739	12,310,802	10,950,911	11,011,763
May		11,411,833	11,574,330	12,194,855	10,930,917	11,735,134
June		10,798,585	12,128,173	12,510,565	11,231,782	11,720,905
July	\$10,288,243	10,710,993	12,193,309	12,041,073	10,615,984	
August	10,888,673	11,085,297	11,708,672	12,137,157	11,092,365	
September	10,178,062	10,897,978	11,856,495	12,187,289	11,549,524	
October	10,725,812	11,533,959	12,290,679	11,909,809	11,156,127	
November	9,933,054	10,066,676	11,505,224	10,995,002	10,751,258	
December	11,004,971	11,925,571	13,900,521	12,696,183	12,407,678	
Total	63,016,815	130,613,379	142,023,409	145,733,469	132,799,541	66,581,138
Operating expenses						
January		\$9,126,390	\$9,420,527	\$10,224,172	\$10,014,191	\$9,816,459
February		8,686,579	9,159,483	9,812,451	9,328,764	9,318,883
March		9,153,476	9,651,638	10,533,118	9,978,339	10,031,020
April		9,130,371	9,534,459	10,457,912	9,963,893	9,808,871
May		9,376,111	9,811,113	10,796,104	10,071,443	10,289,234
June		9,160,096	9,901,625	10,873,625	9,903,485	10,142,286
July	\$9,275,142	9,286,674	10,089,727	10,762,560	9,856,853	
August	9,329,337	9,314,022	9,961,601	10,503,183	9,935,398	
September	9,028,709	9,027,054	9,974,132	10,414,202	9,898,735	
October	9,225,020	9,392,086	9,965,431	10,431,137	9,903,125	
November	9,019,603	9,179,022	9,669,800	9,949,959	9,991,477	
December	9,458,110	9,720,053	11,290,617	10,957,719	10,756,394	
Total	55,332,921	110,551,944	118,300,173	125,736,142	119,602,068	59,406,753
Operating income						
January		\$778,067	\$981,459	\$1,218,792	—\$196,210	\$15,308
February		470,181	919,278	879,582	—51,025	—10,931
March		1,115,485	1,562,679	1,962,427	890,453	314,020
April		1,280,193	1,503,698	1,156,443	259,890	512,377
May		1,537,331	1,385,138	712,793	130,868	698,901
June		1,179,070	1,720,742	916,378	601,066	886,039
July	\$527,309	969,419	1,614,552	642,317	41,105	
August	1,074,209	1,314,097	1,255,078	950,157	431,067	
September	668,071	1,418,137	1,494,735	1,079,106	952,883	
October	1,075,143	1,682,661	1,698,630	790,687	538,202	
November	438,859	1,039,152	1,332,094	420,779	68,467	
December	1,330,026	1,734,304	1,887,073	1,116,307	1,040,713	
Total	5,113,617	14,518,097	17,355,156	11,875,768	4,717,479	2,909,714
Net income						
January		—\$60,911	\$131,091	\$408,473	—\$1,061,203	—\$884,468
February		—463,886	—24,895	44,583	—948,951	—933,900
March		206,972	622,838	1,248,585	70,810	405
April		433,001	691,179	424,790	—559,813	—387,429
May		637,004	442,004	—135,726	—753,993	—229,328
June		248,659	834,273	203,369	—185,822	42,934
July	—\$232,781	129,721	726,813	—36,395	—762,254	
August	244,478	391,400	395,406	95,591	—408,028	
September	—169,940	523,848	630,833	344,257	199,328	
October	318,698	828,207	905,059	—9,399	—356,488	
November	—396,241	85,273	476,974	—413,539	—774,370	
December	—207,065	996,780	1,304,729	359,312	291,250	
Total	—442,751	3,956,073	7,135,304	2,533,901	—5,249,564	—2,391,786

NOTES.—“Large telegraph carriers” comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 9 radiotelegraph carriers, each having annual operating revenues of approximately \$50,000 or more.

Dash (—) indicates deficit or other reverse item.



The index numbers of operating revenues of telegraph carriers.—The index numbers of the operating revenues of large wire-telegraph and of radiotelegraph carriers, based on returns shown in the monthly reports filed with the Commission, are given in tables XXXV and XXXVI, respectively. The monthly returns received during 1929 from wire-telegraph carriers have been used as a basis in computing the index numbers for subsequent years. While the returns for June 1939 show that the operating revenues decreased to 67.51 percent of the 1929 figure, a slight improvement is shown in the returns for April, May, and June 1939, when compared with the returns for the similar period in 1938.

In view of the fact that the revenue figures of the radiotelegraph carriers for the years 1929 to 1933, inclusive, are incomplete, the index numbers have been computed on the basis of the monthly returns filed during 1934. Effective

January 1, 1939, changed requirements in the reporting of operating revenues by radiotelegraph carriers caused a higher level of the monthly index numbers for 1939 than for prior months. An increase of approximately seven in the amounts of the percentage relatives results therefrom.

TABLE XXXV.—Index numbers of monthly operating revenues of large wire-telegraph carriers from January 1930 to June 1939, inclusive

Month	[1929=100]										
	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>
January.....	100	95.47	80.77	63.84	51.22	61.99	61.01	64.13	71.39	61.30	61.19
February.....	100	96.61	81.96	67.54	52.96	63.09	61.65	67.46	72.34	62.77	63.06
March.....	100	92.62	79.84	65.23	58.17	63.13	60.13	65.66	63.80	63.73	63.69
April.....	100	96.31	81.79	60.97	54.22	60.97	63.35	67.29	71.06	62.78	63.13
May.....	100	92.71	76.69	57.73	60.27	62.17	63.75	64.65	67.76	60.42	64.69
June.....	100	94.90	80.94	61.38	65.04	64.23	62.88	70.62	72.23	64.49	67.51
July.....	100	87.80	75.05	51.37	61.78	57.85	60.40	66.76	66.97	59.35	.....
August.....	100	84.10	69.32	55.36	58.58	59.68	60.90	64.13	65.60	60.49	.....
September.....	100	88.29	73.30	58.27	59.62	57.89	62.02	68.02	68.41	65.36	.....
October.....	100	82.11	67.27	50.85	54.09	56.33	60.46	64.38	61.90	58.15	.....
November.....	100	82.63	69.59	55.84	60.79	60.83	65.29	70.20	66.72	65.20	.....
December.....	100	87.89	72.56	56.36	61.54	62.65	67.98	79.03	71.50	70.24	.....
For year.....	100	90.00	75.64	58.56	58.22	60.84	62.46	67.82	69.05	62.80	.....

NOTE.—“Large wire-telegraph carriers” comprises 3 land-line telegraph carriers and 5 ocean-cable carriers each having annual operating revenues of approximately \$50,000 or more.

TABLE XXXVI.—Index numbers of monthly operating revenues of large radiotelegraph carriers from January 1935 to June 1939, inclusive

Month	[1934=100]					
	1934	1935	1936	1937	1938	1939
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
January.....	100	111.54	120.35	132.50	126.39	136.48
February.....	100	102.07	122.77	134.32	127.18	129.83
March.....	100	105.72	116.89	142.48	136.43	143.81
April.....	100	113.78	118.84	145.90	133.05	141.41
May.....	100	110.10	111.97	127.66	115.68	135.77
June.....	100	104.32	117.05	137.04	124.25	132.06
July.....	100	99.54	113.63	135.33	111.66	.....
August.....	100	98.64	107.58	134.38	109.42	.....
September.....	100	106.74	117.84	143.37	122.30	.....
October.....	100	110.37	118.95	127.92	115.03	.....
November.....	100	108.67	122.40	126.05	123.72	.....
December.....	100	106.58	128.79	132.46	121.89	.....
For year.....	100	106.42	118.06	134.86	121.77	.....

NOTES.—“Large radiotelegraph carriers” comprises 9 radiotelegraph carriers, each having annual operating revenues of approximately \$50,000 or more.

In comparing the index numbers in this table, consideration should be given to the effect of certain changes in the reporting requirements effective on Jan. 1, 1939, embodied in a circular letter dated Jan. 4, 1939. This has resulted in an abnormal increase of approximately 7 in the percentages for the months of 1939.

Employees and their compensation.—Labor statistics relating to large telephone, wire-telegraph, and radiotelegraph carriers are shown in table XXXVII separately for each group of carriers. The table shows data for the year 1938 in comparison with those for 1937. The information relates to the carriers that filed monthly reports with the Commission, but the data were compiled from annual reports and correspondence. The number of telephone employees decreased from 301,771 in 1937 to 293,429 in 1938, whereas their compensation increased from \$496,694,574 to \$510,242,789 during this period. The returns from wire-telegraph and radiotelegraph carriers indicate that, for those carriers, the number of employees and their compensation decreased from 72,685 and \$90,254,217, respectively, in 1937 to 65,476 and \$82,725,616, respectively, in 1938.

A comparative analysis of the number of employees of large telephone, wire-telegraph, and radiotelegraph carriers for 1937 and 1938 is shown in chart 10 and a similar comparative analysis of the total annual compensation of employees in service is shown in chart 11.

TABLE XXXVII.—*Compensation of employees, by months, and number of employees in service at the end of the year, as reported by large telephone and telegraph carriers for the years 1937 and 1938*

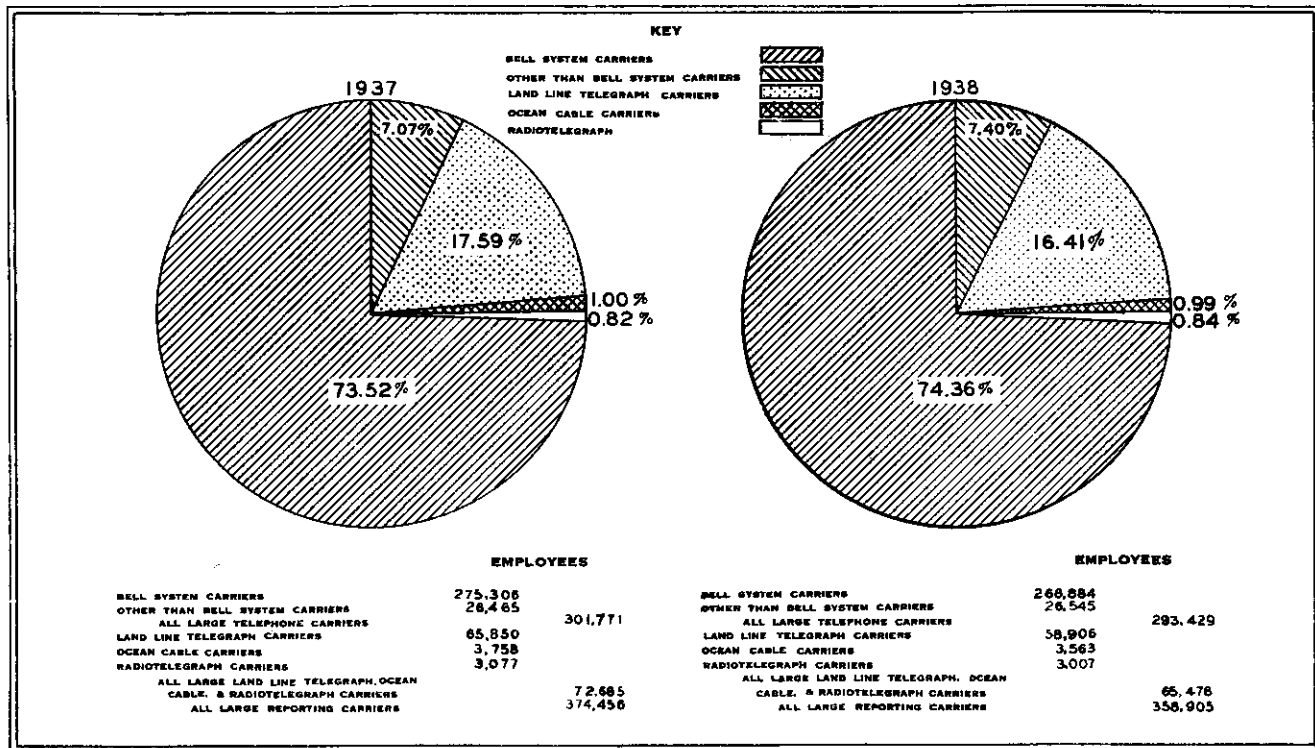
Month	Telephone carriers			Telegraph carriers				Grand total
	Bell System	Other than Bell System	Total	Land-line telegraph	Ocean cable	Radiotelegraph	Total	
1937								
January	\$35,853,512	\$2,635,913	\$38,489,425	\$6,512,297	\$383,432	\$385,661	\$7,281,390	\$45,770,815
February	34,389,272	2,539,065	36,928,337	6,163,950	383,098	394,142	6,931,190	43,859,527
March	37,881,721	2,724,094	40,605,815	6,823,033	382,264	394,862	7,600,159	48,205,974
April	37,641,880	2,681,022	40,322,902	6,683,975	387,100	399,444	7,470,519	47,793,421
May	38,294,031	2,678,914	40,972,945	6,922,887	391,195	405,674	7,719,756	48,692,701
June	38,815,382	2,756,037	41,571,419	6,833,890	381,412	412,405	7,727,707	49,299,126
July	40,049,502	2,852,987	42,902,489	6,994,610	389,938	432,235	7,816,783	50,719,272
August	40,013,677	2,835,819	42,849,496	6,749,981	383,812	429,166	7,562,959	50,412,455
September	40,093,102	2,826,006	42,919,108	6,674,554	384,875	422,478	7,481,902	50,401,010
October	39,448,909	2,803,393	42,252,302	6,623,365	393,026	427,044	7,443,435	49,695,737
November	39,987,440	2,817,561	42,805,001	6,428,831	400,405	429,214	7,258,450	50,063,451
December	41,088,761	2,986,574	44,075,335	7,018,981	399,419	541,567	7,959,967	52,035,302
Total	463,557,189	33,137,385	496,694,574	80,530,354	4,659,976	5,063,887	90,254,217	586,948,791
Number of employees in service Dec. 31, 1937	275,306	26,465	301,771	65,850	3,758	3,077	72,685	374,456
1938								
January	\$39,232,671	\$2,788,455	\$42,021,126	\$6,041,552	\$387,969	\$441,905	\$6,871,516	\$48,892,642
February	37,025,947	2,658,259	39,684,206	5,522,208	391,324	428,786	6,342,318	46,026,524
March	40,182,306	2,880,415	43,062,721	6,026,086	385,491	444,661	6,856,238	49,918,959
April	38,540,606	2,844,687	41,385,293	6,103,512	391,080	437,405	6,931,997	48,317,290
May	39,832,976	2,882,095	42,715,071	6,135,386	379,498	438,206	6,953,090	49,668,161
June	39,227,410	2,859,526	42,086,936	6,021,272	375,778	441,356	6,838,436	48,925,372
July	39,330,502	2,857,684	42,188,186	6,008,378	382,216	447,439	6,838,033	49,026,219
August	40,430,683	2,946,885	43,377,568	6,058,573	369,315	446,546	6,874,434	50,302,002
September	40,712,959	2,984,640	43,697,599	6,022,348	364,601	445,176	6,832,125	50,529,724
October	40,402,987	3,087,057	43,490,044	6,040,697	378,775	440,009	6,859,481	50,349,525
November	40,149,709	2,865,903	43,015,612	6,099,587	373,823	436,501	6,909,911	49,926,523
December	40,523,681	2,944,746	43,468,427	6,767,150	390,280	460,607	7,618,037	51,086,464
Total	475,642,437	34,600,352	510,242,789	72,846,749	4,570,150	5,308,717	82,725,616	592,968,405
Number of employees in service Dec. 31, 1938	266,884	26,545	293,429	58,906	3,563	3,007	65,476	358,905

NOTE.—“Large telephone carriers” comprises a group of 90 carriers, each having annual operating revenues of approximately \$250,000 or more. “Large telegraph carriers”

comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 9 radiotelegraph carriers, each having annual operating revenues of approximately \$50,000 or more.

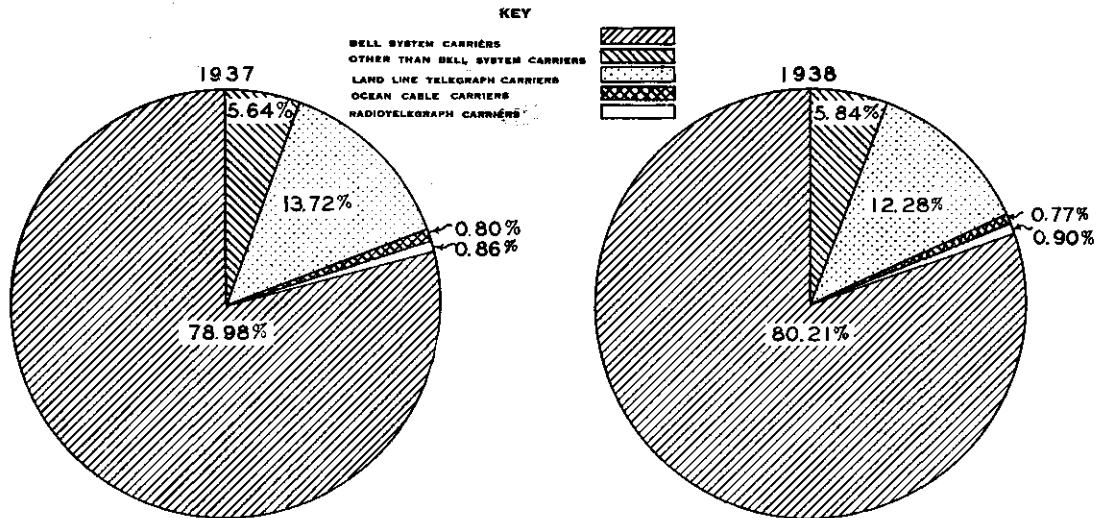
NUMBER OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS AS OF DECEMBER 31, 1937, AND DECEMBER 31, 1938

CHART NO. 10



TOTAL ANNUAL COMPENSATION OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS FOR THE YEARS 1937 AND 1938

CHART NO. 11



COMPENSATION

BELL SYSTEM CARRIERS	\$463,557,189	
OTHER THAN BELL SYSTEM CARRIERS	33,137,385	
ALL LARGE TELEPHONE CARRIERS		\$496,694,574
LAND LINE TELEGRAPH CARRIERS	80,530,354	
OCEAN CABLE CARRIERS	4,659,976	
RADIOTELEGRAPH CARRIERS	5,063,887	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS		90,254,217
ALL LARGE REPORTING CARRIERS		586,948,791

COMPENSATION

BELL SYSTEM CARRIERS	\$475,642,437	
OTHER THAN BELL SYSTEM CARRIERS	34,600,352	
ALL LARGE TELEPHONE CARRIERS		\$510,242,789
LAND LINE TELEGRAPH CARRIERS	72,846,749	
OCEAN CABLE CARRIERS	4,570,150	
RADIOTELEGRAPH CARRIERS	5,308,717	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS		82,725,616
ALL LARGE REPORTING CARRIERS		592,968,405

[C] STATISTICS CONCERNING INTERCORPORATE RELATIONS

Intercorporate relations of telephone and telegraph carriers and controlling companies.—The statistical data shown in table XXXVIII relate to the intercorporate relations of all telephone, wire-telegraph, and radiotelegraph carriers, and controlling companies filing reports with the Commission for the year 1938. The independent or top companies are arranged in alphabetical order and are shown flush with the margin. Each subsidiary is indented beneath the controlling company to indicate the intercorporate relationship at the close of the year. The showing of the intercorporate relations between the carriers and the controlling companies is based on ownership of more than 50 percent of the voting capital stock. An alphabetical list of all the companies is shown in the index following this summary. The number shown in the first column of the table preceding the name of each company corresponds with the reference number shown in the index.

The operating revenues of all telephone, wire-telegraph, and radiotelegraph carriers reporting for the year 1938, together with system totals, are shown in the fourth column.

TABLE XXXVIII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938*

No.	Name of company	Type of company ¹	Operating revenues of carriers
1	American Telephone & Telegraph Co.....	Telephone (A).....	\$103,374,191
2	Bell Telephone Co. of Pennsylvania, The.....	do.....	68,558,521
3	Chesapeake & Potomac Telephone Co., The.....	do.....	11,379,850
4	Chesapeake & Potomac Telephone Co. of Baltimore City, The.....	do.....	16,079,088
5	Chesapeake & Potomac Telephone Co. of Virginia, The.....	do.....	9,958,733
6	Chesapeake & Potomac Telephone Co. of West Virginia, The.....	do.....	6,392,805
7	Diamond State Telephone Co., The.....	do.....	2,308,744
8	Illinois Bell Telephone Co.....	do.....	87,186,670
9	Crown Point Telephone Co., The.....	Telephone (B).....	61,454
10	Indiana Bell Telephone Co.....	Telephone (A).....	13,120,905
11	Michigan Bell Telephone Co.....	do.....	40,116,216
12	Mountain States Telephone & Telegraph Co., The.....	do.....	24,360,802
13	New England Telephone & Telegraph Co.....	do.....	74,299,427
14	Eastern Telephone & Telegraph Co. (Maine).....	do.....	128,971
15	Moosehead Telephone & Telegraph Co.....	Telephone (B).....	91,059
16	Westerly Automatic Telephone Co.....	Telephone (A).....	147,972
17	Western New England Telephone Co.....	Telephone (B).....	90,560
18	White River Valley Telephone Co.....	do.....	54,072
19	New Jersey Bell Telephone Co.....	Telephone (A).....	48,523,103
20	New York Telephone Co.....	do.....	204,929,455
21	Northwestern Bell Telephone Co.....	do.....	33,882,948
22	Dakota Central Telephone Co.....	do.....	1,226,786
23	Tri-State Telephone & Telegraph Co., The.....	do.....	6,343,880
24	Nicollet County Telephone & Telegraph Co.....	Telephone (B).....	58,702
25	Ohio Bell Telephone Co., The.....	Telephone (A).....	41,669,721
26	Pacific Telephone & Telegraph Co., The.....	do.....	68,363,280
27	Bell Telephone Co. of Nevada.....	do.....	1,080,761
28	Southern California Telephone Co.....	do.....	46,532,096
29	Southern Bell Telephone & Telegraph Co.....	do.....	64,264,739
30	Christian-Todd Telephone Co.....	do.....	206,016
31	Southwestern Bell Telephone Co.....	do.....	87,484,339
32	United Telephone Co., The (Kansas) ²	do.....	1,731,699
33	Wisconsin Telephone Co.....	do.....	17,659,673
	System total.....		1,080,867,248
34	American Utilities Service Corporation.....	Holding (N).....	
35	Bluefield Telephone Co., The.....	Telephone (A).....	478,342
36	Ashtabula Telephone Co., The ³	do.....	183,642
37	Canadian National Railway Co.....	Holding (N) ⁴	
38	Canadian Northern Railway Co., The.....	do.....	
39	Canadian National Telegraph Co.....	do. ⁴	
40	Great North Western Telegraph Co. of Canada, The. ⁵	Wire-telegraph.....	(c)
41	Minnesota & Manitoba Railroad, The ⁷	do.....	5,628
42	Canadian Pacific Railway Co. (lines in United States).....	do.....	5,189
43	Carolina Telephone & Telegraph Co.....	Telephone (A).....	1,595,724
44	Central Kansas Telephone Co., Inc., The ⁸	do.....	146,879
45	Champaign Telephone Co., The.....	Telephone (B).....	79,734

See footnotes at end of table.

TABLE XXXVIII.—Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938—Continued

No.	Name of company	Type of company	Operating revenues of carriers
46	Chesapeake & Ohio Railway Co., The	Holding (N) ⁴	-----
47	Pere Marquette Railway Co.	do	-----
48	Central Land Co.	do ⁴	-----
49	Pere Marquette Radio Corporation	Radiotelegraph	\$10,172
50	Chicago, Milwaukee, St. Paul & Pacific Railroad Co. (in trusteeship)	Holding (N)	-----
51	Continental Telegraph Co.	Wire-telegraph	11,235
52	Cincinnati & Suburban Bell Telephone Co., The	Telephone (A)	10,206,991
53	Citizens Utilities Co.	Holding (N)	-----
54	Public Utilities California Corporation	Telephone (A)	163,843
55	City of Seattle, Harbor Department	Radiotelegraph	4,625
56	Colorado Fuel Iron Corporation	Holding (N) ⁴	-----
57	Colorado & Wyoming Telegraph Co., The	Wire-telegraph	12,807
58	Columbia Utilities Co.	(⁹)	-----
59	Interstate Telephone & Telegraph Co. (Oregon) ²	Wire-telegraph	(⁹)
60	Colusa County Telephone Co.	Telephone (B)	56,832
61	Commercial Pacific Cable Co. ¹⁰	Wire-telegraph	720,081
62	Cuban American Telephone & Telegraph Co. ¹¹	Telephone (A)	176,947
63	Del Rio & Winter Garden Telephone Co.	do	262,286
64	Dollar Co., The Robert	Holding (N)	-----
65	Globe Wireless Ltd	Radiotelegraph	465,255
66	Firestone Tire & Rubber Co., The	Holding (N) ⁴	-----
67	Firestone Plantations Co.	do	-----
68	United States-Liberia Radio Corporation	Radiotelegraph	72,466
69	First-Chicago Corporation	Holding (N) ⁴	-----
70	North-Western Indiana Telephone Co., The ¹²	Telephone (A)	1,798
71	French Telegraph Cable Co., The ¹³	Wire-telegraph	831,075
72	General & Telephone Investments, Inc.	Holding (L) ⁴	-----
73	Gary & Co., Theodore	do	-----
74	Telephone Bond & Share Co.	do	-----
75	Continental Telephone Co.	do	-----
76	Nebraska Continental Telephone Co. ¹⁴	Telephone (A)	240,351
77	Nebraska Continental Telephone Corporation ¹⁴	do	75,273
78	Home Telephone & Telegraph Co., The (Indiana)	do	1,362,847
79	Imperial Securities Co.	Holding (L)	-----
80	Telephone Securities, Inc.	do	-----
81	Keystone Telephone Co. of Philadelphia	Telephone (A)	1,912,506
82	Eastern Telephone & Telegraph Co. (New Jersey).	do	181,644
	System total		3,772,621
83	General Telephone Corporation	Holding (L)	-----
84	General Telephone Tri Corporation ¹⁶	do	-----
85	Interstate Telephone Co.	Telephone (A)	847,623
86	Michigan Associated Telephone Co.	do	1,247,257
87	Southwestern Associated Telephone Co.	do	1,235,771
88	Indiana Associated Telephone Corporation	do	1,522,921
89	Ohio Associated Telephone Co.	do	738,889
90	Pennsylvania Telephone Corporation	do	2,371,883
91	United Telephone Co. (Delaware)	Holding (L)	-----
92	Tri-State Associated Telephone Corporation	Telephone (B)	101,030
	System total		8,065,374
93	Greenville Telephone Co., The	Telephone (B)	105,565
94	Home Telephone & Telegraph Co. of Virginia	do	119,932
95	Huron Portland Cement Co.	Holding (N) ⁴	-----
96	Huron Transportation Co.	do	-----
97	Michigan Wireless Telegraph Co. ¹⁷	Radiotelegraph	5,435
98	Inter-Mountain Telephone Co.	Telephone (A)	696,907
99	International Telephone & Telegraph Corporation	Holding (L)	-----
100	All America Cables & Radio, Inc. ¹³	Wire-telegraph	4,732,962
101	Postal Telegraph & Cable Corporation (in trusteeship)	Holding (L)	-----
102	Associated Companies, The (in trusteeship) ¹²	do	-----
103	Commercial Cable Co., The	Wire-telegraph	3,759,381
	Commercial Pacific Cable Co. ¹⁰		-----
104	Mackay Radio & Telegraph Co. (California)	Radiotelegraph	1,000,591
105	Postal Telegraph-Cable Co. (land-line system)	Wire-telegraph	21,089,095
	Interstate Telephone & Telegraph Co. (Oregon) ¹⁰	do	(⁹)
106	Radio Communication Co., Inc. ¹¹	Holding (L)	-----
107	Mackay Radio & Telegraph Co. (Delaware)	Radiotelegraph	990,855
	System total		31,662,884

See footnotes at end of table.

TABLE XXXVIII.—Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938—Continued

No.	Name of company	Type of company	Operating revenues of carriers
108	Investments & Utilities Corporation	Holding (L)	
109	Loveland & Co., Ltd.	do	
110	West Coast Utilities Corporation	do	
111	West Coast Telephone Co.	Telephone (A)	\$1,411,034
112	Investors Telephone Co.	Holding (L)	
113	Platta Valley Telephone Corporation	Telephone (A)	229,373
114	Kansas State Telephone Co., The	Telephone (B)	48,633
115	Kittanning Telephone Co., The ¹	Telephone (A)	256,724
116	Lee Telephone Co.	do	142,733
117	Lincoln Telephone & Telegraph Co., The (Delaware) ²	do	2,666,315
118	Mayor and City Council of Baltimore, Md.	Radiotelegraph	
119	Michigan Alkali Co.	Holding (N) ⁴	4,351
120	Wyandotte Transportation Co.	do	
	Michigan Wireless Telegraph Co. ¹⁷	Radiotelegraph	
121	Mutual Telephone Co. ²²	Telephone (A)	2,034,266
122	Nevada-California Electric Corporation, The	Holding (N)	
123	Interstate Telegraph Co.	Telephone (A)	169,550
124	Norfolk & Carolina Telephone & Telegraph Co., The	do	147,679
125	North-West Telephone Co.	do	189,603
126	Olympic Radio Co.	Radiotelegraph	1,724
127	Oregon-Washington Telephone Co.	Telephone (A)	217,892
128	Oxnard Home Telephone Co.	Telephone (B)	74,589
129	Ozark Central Telephone Co.	Telephone (A)	170,500
130	Palestine Telephone Co.	Telephone (B)	78,381
131	Phillips Petroleum Co.	Holding (N)	
132	Western Radio Telegraph Co.	Radiotelegraph	33,418
133	Press Wireless, Inc.	do	482,490
134	Radio Corporation of America	Holding (L)	
135	R. C. A. Communications, Inc.	Radiotelegraph	5,367,053
136	Radiomarine Corporation of America	do	1,154,379
	System total		6,521,432
137	Rochester Telephone Corporation ²³	Telephone (A)	5,145,298
138	San Angelo Telephone Co., The	do	543,615
139	Santa Paula Home Telephone Co.	Telephone (B)	56,817
140	Socony-Vacuum Oil Co., Incorporated	Holding (N)	
141	Magnolia Petroleum Co.	do	
142	Magnolia Radio Corporation	Radiotelegraph	4,868
143	South Porto Rico Sugar Co. (New Jersey)	Holding (N)	
144	South Porto Rico Sugar Co. (of Puerto Rico)	Radiotelegraph	7,190
145	Southeast Missouri Telephone Co.	Telephone (A)	758,318
146	Southern New England Telephone Co., The	do	18,036,093
147	Southwest Telephone Co., The (Kansas)	do	179,780
148	Standard Oil Co. (New Jersey)	Holding (N) ⁴	
149	Southern Radio Corporation ²⁴	Radiotelegraph	19,765
150	Standard Power & Light Corporation	Holding (N) ⁴	
151	Standard Gas & Electric Co.	do. ⁴	
152	Northern States Power Co. (Delaware)	do. ⁴	
153	Northern States Power Co. (Minnesota) ³	Telephone (A)	112,971
154	Tidewater Wireless Telegraph Co.	Radiotelegraph	4,514
155	Two States Telephone Co.	Telephone (A)	323,104
156	United Fruit Co.	Holding (N)	
157	Tropical Radio Telegraph Co.	Radiotelegraph	659,030
158	United States Rubber Co.	Holding (N) ⁴	
159	Central Idaho Telegraph & Telephone Co. ²⁵	Wire-telegraph	873
160	United States Steel Corporation	Holding (N) ⁴	
161	Bradley Transportation Co.	do	
162	Central Radio Telegraph Co.	Radiotelegraph	5,937
163	United Telephone & Electric Co., The (in trusteeship) ²⁶	Holding (L)	
164	New Jersey Telephone Co.	Telephone (A)	162,769
165	United Telephone & Telegraph Co., The	Holding (L)	
166	American Telephone Co., The	Telephone (A)	457,849
167	United Telephone Co., The (Missouri)	do	377,780
168	United Telephone & Telegraph Corporation	Holding (L)	
169	Interstate Telephone & Telegraph Co. (Indiana)	do	
170	Ohio Telephone Service Co.	Telephone (A)	232,394
171	United Telephone Companies, Inc.	do	727,041
172	United Telephone Investment Corporation, The	Holding (L)	
173	Union Telephone Co. (Indiana)	Telephone (A)	177,914
174	United Telephone Co. of Pennsylvania, The	do	887,596
	System total		3,013,332

See footnotes at end of table.

TABLE XXXVIII.—Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938—Continued

No.	Name of company	Type of company	Operating revenues of carriers
175	United Telephone Co., The (Texas).....	Telephone (B).....	\$97,293
176	Utilities Holding Corporation.....	Holding (L).....	
177	Middle States Utilities Co. (Delaware).....	do.....	85,392
178	Middle States Utilities Co. of Iowa.....	Telephone (B).....	
179	Middle States Utilities Co. of Missouri.....	Telephone (A).....	147,563
	System total.....		232,955
180	Victor-American Fuel Co., The.....	Holding (N).....	4,145
181	Mountain Telegraph Co., The.....	Wire-telegraph.....	
182	Wabash Railway Co. (in receivership).....	Holding (N).....	12,066
183	Ann Arbor Railroad Co., The (in receivership).....	do.....	
184	Wabash Radio Corporation.....	Radiotelegraph.....	78,740
185	Western Arkansas Telephone Co.....	Telephone (B).....	91,712,401
186	Western Union Telegraph Co., The.....	Wire-telegraph.....	
	Great North Western Telegraph Co. of Canada, The ¹⁷	do.....	(⁹)
187	Mexican Telegraph Co.....	do.....	373,591
	System total.....		92,085,992

¹ Symbols in parentheses indicate:

(A) Class A telephone carrier having average annual operating revenues exceeding \$100,000.

(B) Class B telephone carrier having average annual operating revenues exceeding \$50,000, but not more than \$100,000.

(L) Holding company having large interests in carriers engaged in wire or radio communications.

(N) Holding company having nominal interests in the communications industry.

² Merged with Southwestern Bell Telephone Co., Dec. 31, 1938.

³ Subject only to sections 201-205 of the act.

⁴ Files no report. Inserted to show intercorporate relation of subsidiary companies.

⁵ Leased by Western Union Telegraph Co. (No. 186).

⁶ None-reported. Lessor company.

⁷ Telegraph facilities leased to and operated by the Canadian Northern Ry. Co.

⁸ Formerly The Kansas Telephone Co., which company was reorganized and its name changed to The Central Kansas Telephone Co., Inc., Jan. 1, 1938. Subject only to secs. 201-205 of the act.

⁹ Leased by the Postal Telegraph-Cable Co. (land-line system) (No. 105).

¹⁰ The Commercial Pacific Cable Co. is closely affiliated with The Associated Companies.

¹¹ The Cuban American Telephone & Telegraph Co. owns and operates telephone cables between Havana, Cuba, and Key West, Fla.

¹² Purchased by the Indiana Associated Telephone Corporation Dec. 1, 1937, with the exception of 3 toll circuits, which were purchased by the Illinois Bell Telephone Co. June 15, 1938. Ceased operations June 15, 1938.

¹³ Operating revenues for the New York City office, as shown on the December 1938 monthly report, are \$367,940.

¹⁴ The Nebraska Continental Telephone Co. acquired and operated, Jan. 1, 1933, part of the property, and on Apr. 1, 1933, the remaining property of the Nebraska Continental Telephone Corporation.

¹⁵ The Nebraska Continental Telephone Corporation ceased operations Mar. 31, 1938.

¹⁶ Successor to the Indiana Central Telephone Co.

¹⁷ Controlled jointly by the Huron Transportation Co. (No. 96) and the Wyandotte Transportation Co. (No. 120) through ownership of the entire capital stock, each company owning 50 percent.

¹⁸ Formerly the All-America Cables, Inc., which company changed its name Aug. 24, 1938.

¹⁹ Formerly The Mackay Companies, which company changed its name Jan. 4, 1938, due to reorganization.

²⁰ Operated under lease by the Postal Telegraph-Cable Co. (land-line system). For control see No. 59.

²¹ Inactive company; files no report. Inserted to show intercorporate relation of subsidiary carrier.

²² The Mutual Telephone Co. is located in Hawaii.

²³ Bell interests own 33.5 percent of the common voting stock, 1.47 percent of the first preferred nonvoting stock and the entire second preferred stock, which has equal voting power with the common stock, but cannot vote for election of directors or the adoption or amendment of bylaws, unless or until there is a default in the payment of dividends on the second preferred, in which event it shall have full voting power.

²⁴ Operating revenues cover full year period, although United States operations ceased May 31, 1938.

²⁵ Operated by the Union Pacific R. R.

²⁶ Jointly controlled by the United Trust Co. as trustee for Brown Memorial Foundation and C. L. Brown estate.

²⁷ Lines in the United States include New England and northern New York State, leased by the Western Union Telegraph Co. For control see No. 40.

INDEX PERTAINING TO INTERCORPORATE RELATIONS

[For use in connection with table XXXVIII]

	<i>Number</i>		<i>Number</i>
All America Cables & Radio, Inc.	100	Investors Telephone Co.	112
American Telephone & Telegraph Co.	1	Kansas State Telephone Co.	114
American Telephone Co.	166	Keystone Telephone Co. of Philadelphia.	81
American Utilities Service Corporation.	34	Kitanning Telephone Co.	115
Ann Arbor Railroad Co.	183	Lee Telephone Co.	116
Ashtabula Telephone Co.	36	Lincoln Telephone & Telegraph Co.	117
Associated Companies.	102	Loveland & Co., Ltd.	109
Bell Telephone Co. of Nevada.	27	Mackay Radio & Telegraph Co. (California)	104
Bell Telephone Co. of Pennsylvania.	2	Mackay Radio & Telegraph Co. (Delaware)	107
Bluefield Telephone Co.	35	Magnolia Petroleum Co.	141
Bradley Transportation Co.	161	Magnolia Radio Corporation.	142
Canadian National Railway Co.	37	Mayor and City Council of Baltimore, Md.	118
Canadian National Telegraph Co.	39	Mexican Telegraph Co.	187
Canadian Northern Railway Co.	38	Michigan Alkali Co.	119
Canadian Pacific Railway Co. (lines in United States)	42	Michigan Associated Telephone Co.	86
Carolina Telephone & Telegraph Co.	43	Michigan Bell Telephone Co.	11
Central Idaho Telegraph & Telephone Co.	159	Michigan Wireless Telegraph Co.	97
Central Kansas Telephone Co., Inc.	44	Middle States Utilities Co. (Delaware)	177
Central Land Co.	48	Middle States Utilities Co. of Iowa.	178
Central Radio Telegraph Co.	162	Middle States Utilities Co. of Missouri.	179
Champaign Telephone Co.	45	Minnesota & Manitoba R. R.	41
Chesapeake & Ohio Railway Co.	46	Moosehead Telephone & Telegraph Co.	15
Chesapeake & Potomac Telephone Co.	3	Mountain States Telephone & Telegraph Co.	12
Chesapeake & Potomac Telephone Co. of Baltimore City.	4	Mountain Telegraph Co.	181
Chesapeake & Potomac Telephone Co. of Virginia.	5	Mutual Telephone Co.	121
Chesapeake & Potomac Telephone Co. of West Virginia.	6	Nebraska Continental Telephone Co.	76
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	50	Nebraska Continental Telephone Corporation.	77
Christian-Todd Telephone Co.	30	Nevada-California Electric Corporation.	122
Cincinnati & Suburban Bell Telephone Co.	52	New England Telephone & Telegraph Co.	13
Citizens Utilities Co.	53	New Jersey Bell Telephone Co.	19
City of Seattle, harbor department.	55	New Jersey Telephone Co.	164
Colorado & Wyoming Telegraph Co.	57	New York Telephone Co.	20
Colorado Fuel & Iron Corporation.	56	Nicollet County Telephone & Telegraph Co.	24
Columbia Utilities Co.	58	Norfolk & Carolina Telephone & Telegraph Co.	124
Colusa County Telephone Co.	60	Northern States Power Co. (Delaware)	152
Commercial Cable Co.	103	Northern States Power Co. (Minnesota)	153
Commercial Pacific Cable Co.	61	North-West Telephone Co.	125
Continental Telegraph Co.	51	Northwestern Bell Telephone Co.	21
Continental Telephone Co.	75	North-Western Indiana Telephone Co.	70
Crown Point Telephone Co.	9	Ohio Associated Telephone Co.	89
Cuban American Telephone & Telegraph Co.	62	Ohio Bell Telephone Co.	25
Dakota Central Telephone Co.	22	Ohio Telephone Service Co.	170
Del Rio & Winter Garden Telephone Co.	63	Olympic Radio Co.	126
Diamond State Telephone Co.	7	Oregon-Washington Telephone Co.	127
Dollar Co., Robert.	64	Oxnard Home Telephone Co.	128
Eastern Telephone & Telegraph Co. (Maine)	14	Ozark Central Telephone Co.	129
Eastern Telephone & Telegraph Co. (New Jersey)	82	Pacific Telephone & Telegraph Co.	26
Firestone Plantations Co.	67	Palestine Telephone Co.	130
Firestone Tire & Rubber Co.	66	Pennsylvania Telephone Corporation.	90
First-Chicago Corporation.	69	Pere Marquette Radio Corporation.	49
French Telegraph Cable Co.	73	Pere Marquette Railway Co.	47
Gary & Co., Theodore.	73	Phillips Petroleum Co.	131
General & Telephone Investments, Inc.	82	Platte Valley Telephone Corporation.	113
General Telephone Corporation.	73	Postal Telegraph & Cable Corporation.	101
General Telephone Tri Corporation.	85	Postal Telegraph-Cable Co. (Land-line system).	105
Globe Wireless, Ltd.	64	Press Wireless, Inc.	133
Great North Western Telegraph Co. of Canada.	90	Public Utilities California Corporation.	54
Greenville Telephone Co.	43	R. C. A. Communications, Inc.	135
Home Telephone & Telegraph Co. (Indiana)	74	Radio Communication Co., Inc.	106
Home Telephone & Telegraph Co. of Virginia.	98	Radio Corporation of America.	134
Huron Portland Cement Co.	95	Radiomarine Corporation of America.	136
Huron Transportation Co.	96	Rochester Telephone Corporation.	137
Illinois Bell Telephone Co.	8	San Angelo Telephone Co.	138
Imperial Securities Co.	79	Santa Paula Home Telephone Co.	139
Indiana Associated Telephone Corporation.	88	Socony-Vacuum Oil Co., Inc.	140
Indiana Bell Telephone Co.	98	South Porto Rico Sugar Co. (New Jersey)	143
Inter-Mountain Telephone Co.	10	South Porto Rico Sugar Co. (of Puerto Rico)	144
International Telephone & Telegraph Corporation.	99	Southeast Missouri Telephone Co.	145
Intrastate Telegraph Co.	123	Southern Bell Telephone & Telegraph Co.	29
Interstate Telephone & Telegraph Co. (Indiana)	169	Southern California Telephone Co.	28
Interstate Telephone & Telegraph Co. (Oregon)	59	Southern New England Telephone Co.	146
Interstate Telephone Co.	85	Southern Radio Corporation.	149
Investments & Utilities Corporation.	108	Southwest Telephone Co. (Kansas)	147
		Southwestern Associated Telephone Co.	87
		Southwestern Bell Telephone Co.	31
		Standard Gas & Electric Co.	151
		Standard Oil Co. (New Jersey)	148
		Standard Power & Light Corporation.	150
		Telephone Bond & Share Co.	74
		Telephone Securities, Inc.	80

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	<i>Number</i>		<i>Number</i>
Tidewater Wireless Telegraph Co.....	154	United Telephone Co. (Texas).....	176
Tri-State Associated Telephone Corporation.....	92	United Telephone Co. of Pennsylvania.....	174
Tri-State Telephone & Telegraph Co.....	23	United Telephone Investment Corporation.....	172
Tropical Radio Telegraph Co.....	157	Utilities Holding Corporation.....	176
Two States Telephone Co.....	155	Victor-American Fuel Co.....	180
Union Telephone Co. (Indiana).....	173	Wabash Radio Corporation.....	184
United Fruit Co.....	156	Wabash Railway Co.....	182
United States-Liberia Radio Corporation.....	68	West Coast Telephone Co.....	111
United States Rubber Co.....	158	West Coast Utilities Corporation.....	110
United States Steel Corporation.....	160	Westerly Automatic Telephone Co.....	16
United Telephone & Electric Co.....	163	Western Arkansas Telephone Co.....	185
United Telephone & Telegraph Co.....	165	Western New England Telephone Co.....	17
United Telephone & Telegraph Corporation.....	168	Western Radio Telegraph Co.....	132
United Telephone Cos., Inc.....	171	Western Union Telegraph Co.....	180
United Telephone Co. (Delaware).....	91	White River Valley Telephone Co.....	18
United Telephone Co. (Kansas).....	32	Wisconsin Telephone Co.....	33
United Telephone Co. (Missouri).....	167	Wyandotte Transportation Co.....	120

APPENDIX E

TABLE I-A.—*Report of broadcast section for fiscal year ending June 30, 1939*

APPLICATIONS RECEIVED	
Formal:	
Broadcast.....	1, 087
Relay broadcast (low-frequency).....	175
Relay broadcast (high-frequency).....	174
High-frequency broadcast.....	79
Facsimile broadcast.....	21
International broadcast.....	34
Developmental broadcast.....	17
Noncommercial educational broadcast.....	10
Television broadcast.....	55
Total.....	1, 652
Renewals:	
Broadcast.....	1, 796
Relay broadcast (low-frequency).....	151
Relay broadcast (high-frequency).....	260
High-frequency broadcast.....	32
Facsimile broadcast.....	9
International broadcast.....	10
Developmental broadcast.....	12
Noncommercial educational broadcast.....	1
Television broadcast.....	19
Total.....	2, 290
Informals:	
Broadcast.....	1, 650
Relay broadcast (low-frequency).....	74
Relay broadcast (high-frequency).....	374
High-frequency broadcast.....	76
Facsimile broadcast.....	16
International broadcast.....	15
Developmental broadcast.....	3
Noncommercial educational broadcast.....	1
Television broadcast.....	7
Total.....	2, 216
Under order No. 28, paragraph 2.....	1, 176
Grand total.....	7, 334

TABLE II-A.—*Report of broadcast section for fiscal year ending June 30, 1939*

AUTHORIZATIONS ISSUED	
Formal:	
Broadcast.....	642
Relay broadcast (low-frequency).....	122
Relay broadcast (high-frequency).....	136
High-frequency broadcast.....	36
Facsimile broadcast.....	8
International broadcast.....	22
Developmental broadcast.....	6
Noncommercial educational broadcast.....	5
Television broadcast.....	18
Total.....	995
	171

TABLE II-A.—*Report of broadcast section for fiscal year ending June 30, 1939—Continued*

AUTHORIZATIONS ISSUED—continued

Renewals:	
Broadcast.....	1, 631
Relay broadcast (low-frequency).....	162
Relay broadcast (high-frequency).....	328
High-frequency broadcast.....	94
Facsimile broadcast.....	10
International broadcast.....	17
Developmental broadcast.....	17
Noncommercial educational broadcast.....	0
Television broadcast.....	10
Total.....	2, 269
Special authorizations:	
Broadcast.....	1, 220
Relay broadcast (low-frequency).....	58
Relay broadcast (high-frequency).....	370
High-frequency broadcast.....	75
Facsimile broadcast.....	14
International broadcast.....	15
Developmental broadcast.....	3
Noncommercial educational broadcast.....	1
Television broadcast.....	4
Total.....	1, 760
Informals:	
Broadcast.....	430
Relay broadcast (low-frequency).....	16
Relay broadcast (high-frequency).....	4
High-frequency broadcast.....	1
Facsimile broadcast.....	2
International broadcast.....	0
Developmental broadcast.....	0
Noncommercial educational broadcast.....	0
Television broadcast.....	3
Total.....	456
Under order No. 28, paragraph 2.....	1, 176
Grand total.....	6, 656

TABLE III-A.—*Experimental broadcast stations for fiscal year ending June 30, 1939*

Class of station	As of July 1, 1938	New	Deleted	As of July 1, 1939
High-frequency broadcast.....	48	6	8	46
Developmental broadcast.....	14	3	5	12
Television.....	19	7	3	23
International.....	13	2	1	14
Facsimile.....	6	7	1	12
Low-frequency relay.....	143	64	8	199
High-frequency relay.....	266	47	38	275
Noncommercial educational.....	1	1	0	2
Total.....	510	137	64	583

TABLE IV-A.—*Standard broadcast stations (550 to 1600 kc.) licensed or under construction at the close of the fiscal year ending June 30, 1939*

Class of station	As of July 1, 1938	New	Deleted	Total
Broadcast.....	743	39	8	774
Special broadcast.....	4	0	0	4
Total.....	747	39	8	778

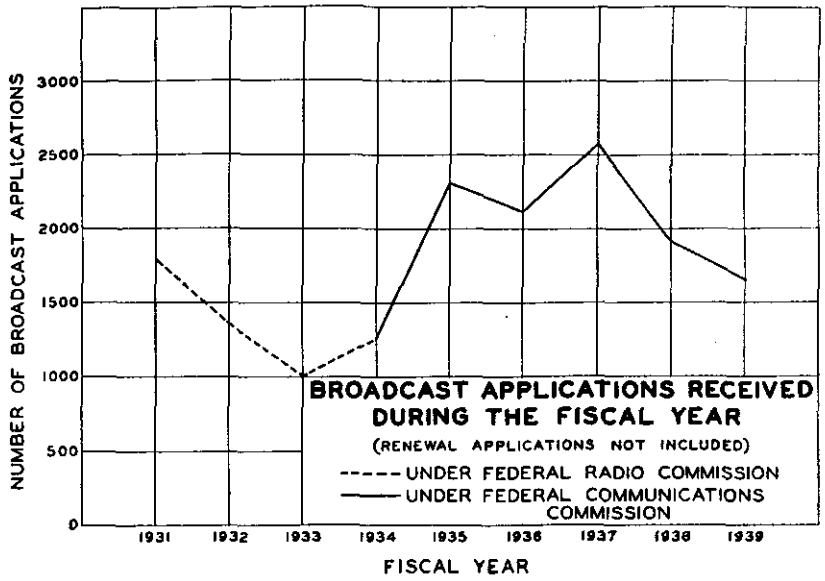
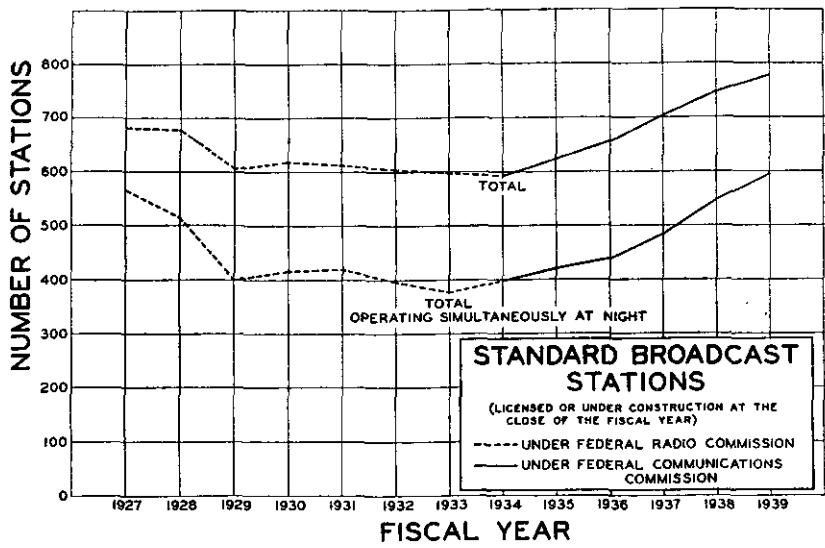


TABLE V-A.—New standard stations authorized for fiscal year ending June 30, 1939

Call letters	Applicant and location	Frequency	Power	Hours of operation
KDRO	Albert S. and Robert A. Drohlich, doing business as Drohlich Bros., Sedalia, Mo.	1500	100	Unlimited.
KFDA	Amarillo Broadcasting Corporation, Amarillo, Tex.	1500	250-LS 100	Do.
KOVO	Clifton A. Tolboe, trading as Citizens Voice and Air Show, Provo, Utah.	1210	100	Do.
KTOH	Garden Island Publishing Co., Ltd., Lihue, T. H.	1500	250-LS 100	Do.
KTSW	Emporia Broadcasting Co., Inc., Emporia, Kans.	1370	100	Daytime.
KVAN	Vancouver Radio Corporation, Vancouver, Wash.	880	250	Do.
KVWC	R. H. Nichols, W. H. Wright and Stewart Hatch, a partnership doing business as The Northwestern Broadcasting Co., Vernon, Tex.	1500	100	Unlimited.
KWAL	Chester Howarth and Clarence Berger, between Wallace and Kellogg, Idaho.	1420	100 250-LS	Do.
KXOX	Sweetwater Radio, Inc., Sweetwater, Tex.	1210	250	Daytime.
WBAB	Press Union Publishing Co., Atlantic City, N. J.	1200	100 250-LS	Unlimited.
WBTH	Williamson Broadcasting Corporation, Williamson, W. Va.	1370	100	Daytime.
WCNC	Aubrey G. McCabe and Trim W. Aydlett, doing business as Albemarle Broadcasting Co., Elizabeth City, N. C.	1370	100 250-LS	Unlimited.
WCOS	Carolina Advertising Corporation, Columbia, S. C.	1370	100 250-LS	Do.
WFNC	W. C. Ewing and Harry Layman, doing business as Cumberland Broadcasting Co., Fayetteville, N. C.	1340	250	Daytime.
WFVA	Fredericksburg Broadcasting Corporation, Fredericksburg, Va.	1260	250	Do.
WGBR	Eastern Carolina Broadcasting Co., west of Goldsboro, N. C.	1370	100	Unlimited.
WGKV	Kanawha Valley Broadcasting Co., Charleston, W. Va.	1500	100	Do.
WGNC	F. C. Todd, Gastonia, N. C.	1420	100 250-LS	Do.
WHMA	Harry M. Ayers, Anniston, Ala.	1420	100	Daytime.
WINN	Kentucky Broadcasting Corporation, Louisville, Ky.	1210	100 250-LS	Unlimited.
WISE	The Asheville Daily News (Harold H. Thoms, owner), Asheville, N. C.	1370	100	Do.
WJHL	W. Hanes Lancaster and J. W. Birdwell, doing business as Johnson City Broadcasting Co., Johnson City, Tenn.	1200	100 250-LS	Do.
WJHP	The Metropolis Co., Jacksonville, Fla.	1290	250	Do.
WJLS	Joe L. Smith, Jr., Beckley, W. Va.	1210	100 250-LS	Do.
WKIN	Kingston Broadcasting Corporation, Kingston, N. Y.	1500	100	Daytime.
WLBJ	Bowling Green Broadcasting Co., Bowling Green, Ky.	1310	100 250-LS	Unlimited.
WMAM	M and M Broadcasting Co., Marinette, Wis.	570	250	Daytime
WMOB	S. B. Quigley, Mobile, Ala.	1200	100	Do.
WMRO	Martin R. O'Brien, Aurora, Ill.	1250	250	Do.
WPIV	Petersburg Newspaper Corporation, Petersburg, Va.	1210	100 250-LS	Unlimited—except Sunday, when WBBL operates.
WRAL	Capitol Broadcasting Co., Inc., Raleigh, N. C.	1210	100 250-LS	Unlimited.
WRKL	P. W. Spencer, Rock Hill, S. C.	1500	100	Daytime.
WRSR	Panama City Broadcasting Co., Panama City, Fla.	1200	100 250-LS	Unlimited.
WSKB	McComb Broadcasting Corporation, McComb, Miss.	1200	100	Daytime.
WSTP	Piedmont Broadcasting Corporation, Salisbury, N. C.	1500	100 250-LS	Unlimited.
WTMA	Y. W. Scarborough and J. W. Orvin, doing business as Atlantic Coast Broadcasting Co., Charleston, S. C.	1210	100 250-LS	Do.
WTMO	John T. Alsop, Jr., Ocala, Fla.	1500	100	Do.
WTRY	Troy Broadcasting Co., Inc., Troy, N. Y.	950	1k	Daytime.
WTSP	Pinellas Broadcasting Co., St. Petersburg, Fla.	1370	100 250-LS	Unlimited.

TABLE VI-A.—Standard broadcast stations deleted for fiscal year ending June 30, 1939

Call letters	Grantee and location	Date of deletion
KDNC.....	Democrat-News Co., Inc., Lewiston, Mont. (Construction permit expired Dec. 3, 1938, and retired to closed files.)	Jan. 24, 1939
KGCI.....	Clarence A. Berger and Saul S. Freeman, Coeur d'Alene, Idaho. (Application for modified construction permit denied as in default Jan. 16, 1939.)	Feb. 20, 1939
KGVL.....	Hunt Broadcasting Association, Fred Horton, president, Greenville, Tex. (Application for modified construction permit dismissed as association dissolved Apr. 3, 1939.)	Apr. 23, 1939
WFAB.....	Dobs Memorial Radio Fund, Inc., New York, N. Y. (Time surrendered to WEVD Nov. 7, 1938.)	Nov. 7, 1938
WHAL.....	Harold F. Gross and Edmund C. Shields, Lansing, Mich. (Order of Feb. 9, 1937, granting application vacated Nov. 28, 1938, in accordance with mandate of court of appeals.)	Nov. 28, 1938
WHEF.....	Attala Broadcasting Corporation, Kosciusko, Miss. (Renewal application denied as in default Oct. 31, 1938, Nov. 25, 1938, amended order to make effective date Oct. 25, 1938.)	Nov. 14, 1938
WLMU.....	Lincoln Memorial University, Middlesboro, Ky. (Construction permit surrendered and application retired to closed files July 6, 1938.)	July 6, 1938
WRKL.....	P. W. Spencer, Rock Hill, S. C. (Construction permit canceled at request of applicant Apr. 24, 1939.)	Apr. 24, 1939

FURTHER STUDY OF SERVICE RENDERED BY STANDARD BROADCAST STATIONS¹

(A) GENERAL

(A) CLASSES OF STATIONS

The existing regulations of the Commission provide for four general classes of regular broadcast stations, namely, clear-channel, high-power regional, regional, and local. Within these classes there are stations which are classified as unlimited time, limited time, daytime, and shared time or specified hours. Frequencies are assigned to each major class of station—40 to clear channel stations, 4 to high power regional stations, 40 to regional stations, and 6 to local stations. Shared time or specified hour stations may be of any class, but it also has been the practice to assign limited time and some of the daytime or specified hour stations to channels which are clear at night, and therefore in general these latter should be classified as regional rather than clear channel.

At present, clear-channel stations generally utilize powers as high as 50 kilowatts with the exception of one which is using, experimentally, a power of 500 kilowatts (application for extension denied 2-6-39, effective 3-1-39). Except where duplicated by special experimental authorization, only one clear-channel station operates on each specific frequency assignment at nighttime so as to make possible the rendering of service over a wide area and thus in the aggregate these clear-channel stations reach a large percentage of the population of the country who would not otherwise receive broadcast service. It has been estimated that 40 percent of the population of the country is dependent upon clear-channel stations for service at nighttime. (See Appendix F of the Fourth Annual Report for detailed analysis of the primary service rendered by standard broadcast stations.) In the daytime by reason of propagation conditions with powers even as high as 50 kilowatts the total number of clear-channel stations cannot render service to wide areas. In order to partially overcome this defect the Commission has in the past taken advantage of the propagation conditions in the daytime to assign stations, in various parts of the country, on the same frequencies as clear-channel stations; and this coupled with the fact that regional and local stations are subject to less mutual interference in daytime than at nighttime enables the rural population to receive as much daytime service as it is practicable under the existing limitations of the art and the existing regulations of the Commission as well as the limitations imposed by lack of financial support in small communities.

Regional stations are generally located in cities and towns and render service to the communities in which such stations are located. These stations at the present are limited to power of 1 kilowatt at nighttime and to 5 kilowatts in the

¹ Compiled from the "Report of the Committee on Proposed Rules and Regulations Governing Standard Broadcast Stations, April 1, 1939."

² While the information set forth herein is as of May 1, 1938, the changes since that date are insufficient to materially change the conditions or conclusions.

daytime except that eight high-power regional stations utilize powers of 5 kilowatts or more both daytime and nighttime. The service areas of regional stations are necessarily limited at night by reason of mutual interference from stations using the same frequency.

Local stations are stations which use the power of 100 watts at night and 100 or 250 watts in the daytime and are extremely useful for rendering service to smaller communities and portions of the larger metropolitan districts. Their service areas are necessarily very limited by reason of mutual interference at night and in the daytime by reason of lack of power.

It is through the medium of regional and local stations that the various communities throughout the country have an excellent means for local self-expression by radio. Also, it is through the medium of these classes of stations that so much excellent broadcasting service is rendered to the urban and suburban population of this Nation. In addition thereto these regional and local stations render service, particularly in the daytime, to the rural population who live near cities or towns.

Generally speaking, regional and local stations afford a medium of communication readily adapted to the variable needs of many communities throughout the country. Such an application of radio to the service of the public should receive every encouragement possible from the Federal regulatory body because it affords an excellent means of providing numerous communities of the Nation with instrumentalities for local self-expression by radio. However, in accomplishing this result, the Commission should not lose sight of the necessity of providing service to remote or rural listeners in all sections of the Nation in a manner conforming with the variable interests of the public in the different sections of the country. The Commission should also not lose sight of the fact that clear-channel stations which must chiefly be relied upon to furnish rural service, also have their importance as means for self-expression, in terms, however, of larger geographical sections of the country. Some metropolitan centers, furthermore, when nearby urban and suburban centers are taken into consideration, are so large that satisfactory coverage over the entire area cannot ordinarily be had from other than stations of relatively high power.

(B) NETWORKS

The testimony showed that under existing conditions many stations operating as independent units do not have available to the many appreciable sources of talent. If left to their own devices they are dependent upon purely local talent, largely amateur in character, and upon program material available through use of phonograph records or electrical transcriptions made especially for broadcasting use. However, many of these stations procure a substantial portion of their programs over land wire from distant talent points. These latter stations are called "network stations." At the present time there are 3 national chain companies operating 4 coast-to-coast networks, and in addition there are 35 regional network groups. (See annex I.) This figure is subject to change because new networks are constantly being organized and old ones disbanded; and opinions differ as to what comprises a network.

Table I-B gives the estimated number of stations which, according to the Commission files of returns from stations, are affiliated with the 3 national and 35 regional networks. This includes stations owned by chain companies.

TABLE I-B

	Total	Unlimited time	Limited time	Shared time or specified hours	Daytime
Clear.....	51	1 32		19	
Regional.....	215	172	10	19	14
Local.....	105	91		7	7
Total.....	371	295	10	45	21

¹ Includes KGO, KJP, and WCFL.

² Includes KPMC, WBRY, and WBZA.

(C) REBROADCASTING

Another method of distributing programs that is now in the early stages of development is the rebroadcasting of the program of high-power stations. In this advantage is taken of special devices and conditions not available in the ordinary household to present locally the reproduced programs transmitted from a distant station. It is felt that while this method of program distribution has merit, it has not, as yet, sufficiently demonstrated either its practicability or the sustained benefits to be gained by the employment of such a method to discuss in great detail at this time.

(B) PHYSICAL SERVICE

(A) DISTRIBUTION OF CLASSES OF STATIONS

The distribution of facilities by classes of stations is indicated in table II-B which shows that as of May 1, 1938, there are 738 standard broadcasting stations of all classes. This table is self-explanatory.

TABLE II-B

	Total	Unlimited time	Limited time	Shared time or specified hours	Daytime
Clear.....	52	32		20	
Regional.....	349	210	25	60	54
Local.....	337	220		62	55
Total.....	738	462	25	142	109

Of significance to the Commission are the 276 stations which share time, operate only in daytime, or have limited or specified hours of operation. The subject is discussed in detail later in this report.

The present distribution of the various existing classes of stations to cities of various populations is indicated in table VII attached hereto. A summary of this distribution is given in table III-B.

The Commission, of necessity, is interested in the distribution of stations of all classes to States. This is given in table VIII attached hereto.

Chart 1 shows the distribution of broadcast stations by clear, regional, and local classification. All of the stations licensed or holding construction permits, as of May 1, 1938, are shown thereon, without regard to hours of operation, that is, unlimited, limited and share time, specified hours or daytime, except where two stations sharing time are located in the same city, in which event, only one dot indicates both such stations. Chart 2 shows the distribution of the population of the United States in accordance with the 1930 census. A comparison of these two exhibits shows that, in general, the density of stations follows quite closely the density of population and that the expensive higher-power stations are in general located in the larger centers of population. This seems to be the result of the automatic application of economic laws, and perhaps shows the greatest diversity between the application of economic laws pertaining to the business of broadcasting stations and the economic laws relating directly to actual social desirabilities; that is, in the areas where wide rural coverage is necessary generally low-power stations exist, whereas in the more densely populated sections where the necessary coverage is essentially urban and immediately surrounding rural sections, the higher-power stations exist.

TABLE III-B

Size of town	Number of cities in United States	Number of cities with Radio stations	Number of stations, including all classes—unlimited time and others								Total stations for population group	Percentage of total number of stations
			Clear		Regional		Local		Total			
			Unlimited	Others	Unlimited	Others	Unlimited	Others	Unlimited	Others		
Under 10,000	15,616	199	0	0	13	23	41	24	54	47	101	13.7
10,000 to 24,999	606	143	0	1	18	24	63	39	81	64	145	19.6
25,000 to 49,999	185	90	0	1	25	13	44	19	69	33	102	13.8
50,000 to 99,999	92	68	2	4	31	17	27	8	60	29	89	12.0
100,000 to 199,999	58	48	4	4	41	15	25	7	70	26	96	13.0
200,000 to 299,999	16	16	3	3	27	7	7	3	37	13	50	6.8
300,000 to 399,999	7	7	3	1	14	7	2	3	19	11	30	4.1
400,000 to 499,999	5	5	3	1	9	3	1	2	12	7	19	2.6
500,000 and over	13	13	17	5	32	30	10	12	59	47	106	14.4
Total	16,598	489	32	20	210	139	220	117	462	276	738	100.0

¹ 3 cities in Alaska.

¹ 1 city in Hawaiian Islands.

¹ 1 city in Puerto Rico.

⁴ In the continental United States there are 982 cities above 10,000, of which 597 have no stations and 385 cities have stations. However, from the tabulation of stations in cities of various population groups we have 390 cities above 10,000, with radio stations. This includes 5 outside the continental limits of the United States. These are Hilo, Hawaii, with a population of 19,468; Mayaguez, P. R., with a population of 37,060; Ponce, P. R., with a population of 53,430; San Juan, P. R., with a population of 114,715; Honolulu, Hawaii, with a population of 137,582.

(B) CITIES WITHOUT ADEQUATE FACILITIES

It was shown in the preliminary engineering report of January 11, 1937, and in the Social and Economic Report of July 1, 1937, that there was a need for improvement of physical service both from the standpoint of signal intensity to practically all areas as well as from the standpoint of availability of transmission facilities in various communities, also while about 62 and 43 percent of the area and 92 and 83 percent of the population of the continental United States has radio reception of some character day and night, respectively, there are many cities and towns which do not have transmission facilities of their own.

In the United States there are approximately 16,598 cities or towns. Of this number 15,616 have a population less than 10,000 each, 606 have a population between 10,000 and 25,000 each, and 376 have a population in excess of 25,000 each. Many of these towns are in metropolitan districts as described by the Bureau of Census and some are adjacent or contiguous to larger towns which are not included in the metropolitan districts, but between which there is some economic interdependence.

Differentiation is made between towns having population of less than 10,000 and those having population greater than 10,000, because the evidence seems to indicate conclusively that, in general, stations located in towns having a population less than 10,000 cannot expect to receive sufficient financial support to sustain a high quality program service over an extended period of time unless they are in the center of a distributed population having a purchasing power greater than the town's population alone would indicate.

As discussed further in this report, the Commission is also confronted with the problem of making an equitable allocation to States as well as communities, and in order that an equitable distribution can be made throughout the Nation, in which from a technical standpoint, each facility is capable of rendering a service to the community in which it is located, the Commission must take into considera-

tion the engineering limitations resulting from the relatively narrow portion of the radio spectrum assigned to broadcasting. This means that not all the cities or towns in the lower population bracket can be assigned radio stations unless the entire structure is to be jeopardized.

Of the foregoing total number (16,598 cities or towns in the continental United States) there are 597 towns each having a population in excess of 10,000 which do not have radio stations. Of this number 464 towns, each with a population between 10,000 and 25,000 and 133 with a population in excess of 25,000 are without radio stations. These towns are listed by States in table X attached hereto.

However, of these towns:

(1) Three hundred and twenty-four, or 54.3 percent, are within one of the 96 "metropolitan districts" specified by the Bureau of Census. Each of these districts has one or more radio stations.

(2) Seven, or 1.2 percent, are adjacent or contiguous to larger towns which have a radio station. These larger towns are not included in "metropolitan districts."

(3) One hundred and fifty-three, or 25.6 percent, not included in (1) and (2) above, are within the 2 millivolt signal intensity coverage of an existing station, which means that such cities already receive fairly good service from a technical standpoint.

(4) The remainder, 113 or 18.9 percent, do not come within the foregoing categories and are located in States as shown in table IV-B.

TABLE IV-B

State	Number of towns in excess of 10,000 population and less than 25,000	Number of towns in excess of 25,000 population	State	Number of towns in excess of 10,000 population and less than 25,000	Number of towns in excess of 25,000 population
Alabama	1		Nevada		
Arizona			New Hampshire	2	1
Arkansas			New Jersey		
California	2		New Mexico		
Colorado	1		New York	6	3
Connecticut	3		North Carolina	3	
Delaware			North Dakota		
District of Columbia			Ohio		
Florida	2		Oklahoma	4	
Georgia	3		Oregon		
Idaho			Pennsylvania	15	1
Illinois	10		Rhode Island	1	
Indiana	1	1	South Carolina	1	
Iowa	2	2	South Dakota	1	
Kansas	3		Tennessee	1	1
Kentucky	1		Texas	4	
Louisiana			Utah	1	
Maine	2	1	Vermont		
Maryland			Virginia	2	
Massachusetts	6		Washington	1	
Michigan	7		West Virginia	1	
Minnesota	2		Wisconsin	2	2
Mississippi	6		Wyoming	1	
Missouri	2				
Montana	1		Total	101	12
Nebraska					

There are now 379 cities and towns in the continental United States which have only 1 radio station. The cities having population in excess of 25,000 and which are not within one of the 96 "metropolitan districts" and which have only 1 broadcast station, are located as shown on table V-B.

TABLE V-B

State	Number of towns above 25,000 population having only 1 radio station and not located within any metropolitan district	State	Number of towns above 25,000 population having only 1 radio station and not located within any metropolitan district
Alabama.....	2	Nevada.....	
Arizona.....		New Hampshire.....	1
Arkansas.....	1	New Jersey.....	
California.....	1	New Mexico.....	
Colorado.....	2	New York.....	3
Connecticut.....	1	North Carolina.....	6
Delaware.....		North Dakota.....	1
District of Columbia.....		Ohio.....	3
Florida.....	3	Oklahoma.....	2
Georgia.....	3	Oregon.....	1
Idaho.....		Pennsylvania.....	4
Illinois.....	4	Rhode Island.....	
Indiana.....	6	South Carolina.....	4
Iowa.....	1	South Dakota.....	
Kansas.....	2	Tennessee.....	
Kentucky.....	2	Texas.....	7
Louisiana.....	2	Utah.....	1
Maine.....		Vermont.....	
Maryland.....	2	Virginia.....	1
Massachusetts.....	1	Washington.....	2
Michigan.....	8	West Virginia.....	2
Minnesota.....		Wisconsin.....	4
Mississippi.....	1	Wyoming.....	
Missouri.....	2		
Montana.....	2	Total.....	88
Nebraska.....			

Of the 2,184 cities in the United States having population between 2,500 and 10,000 it is estimated that 725 (population 3,487,101) of these cities do not have adequate signal from at least 1 station during daytime and 854 (population 4,138,658) do not have adequate signal from at least 1 station during nighttime. In addition, there are a considerable number of towns and portions of towns having population of less than 2,500 which do not receive adequate signal from at least 1 station and which could not be expected to support a station even though facilities were available.

(C) SHARED-TIME STATIONS

The evidence indicates that from a social standpoint the public which has to depend upon stations in its community which share time with stations in different communities are, generally speaking, at a disadvantage as compared to the public which depends upon stations sharing time in the same vicinity, because in the latter instance the public in that community is able to receive almost 100 percent continuity in service, whereas in the former case the public receives intermittent service only.

Of the existing facilities:

- (1) Forty-three or 5.8 percent of stations share time in the same city.
- (2) Seventy-nine or 10.7 percent of stations share time with stations in other cities.
- (3) One hundred and thirty-two or 17.9 percent of stations are limited or day-time stations.
- (4) Twenty-two or 3.0 percent of stations are specified hours stations.
- (5) Four-hundred and sixty-two or 62.6 percent of stations are unlimited-time stations.

These part-time stations are distributed by States as shown by table VI-B.

TABLE VI-B

State	Share time in same city	Share time with stations in other cities	Limited time or daytime stations	Specified-hours stations
Alabama		1	3	
Alaska				1
Arizona				1
Arkansas		1	4	
California	2	2	12	
Colorado	2	4		1
Connecticut		1	2	
Delaware		1		
District of Columbia				
Florida		2	1	
Georgia			3	
Hawaiian Islands			1	
Idaho			1	
Illinois	17	5	8	1
Indiana		5	3	2
Iowa	12	1	2	1
Kansas	2	3	2	
Kentucky				
Louisiana	2	2		
Maine			1	1
Maryland		1	3	
Massachusetts			6	
Michigan	2		3	3
Minnesota		2	3	
Mississippi			1	
Missouri		4	6	
Montana				
Nebraska		1	4	
Nevada				
New Hampshire			1	
New Jersey		7	2	
New Mexico		3	1	
New York	10	8	7	2
North Carolina		1	5	
North Dakota				
Ohio		3	6	
Oklahoma		2	1	
Oregon	2	1	2	
Pennsylvania	8	7	6	1
Puerto Rico				2
Rhode Island				
South Carolina			2	
South Dakota		1	2	3
Tennessee				
Texas	4	4	13	1
Utah				
Vermont			3	1
Virgin Islands				
Virginia		1	2	1
Washington		4	4	
West Virginia		1	1	
Wisconsin			5	
Wyoming				
Total (276)	43	79	132	22
Percentage of licensed stations (37.4)	5.8	10.7	17.9	3.0

¹ WCBD and WMBI share a limited assignment.

² KGCA and KWLC share a daytime assignment.

³ WLB and WCAL share a daytime assignment.

⁴ WFAA and WBAP licensed for different cities but use same transmitter.

NOTE.—Specified-hours stations actually sharing time with other stations were classified as sharing.

(D) GEOGRAPHICAL DISTRIBUTION OF FACILITIES

In the consideration of the geographical distribution of facilities to States and communities, and the improvements to stations not operating on a full-time basis, the Commission must make assignments under the provisions of section 307 of the Communications Act of 1934, as amended, which are as follows:

"SEC. 307. (a) The Commission, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this act, shall grant to any applicant therefor a station license provided for by this act.

"(b) 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 distribution 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." (Italic supplied.)

In the consideration of the distribution of facilities in accordance with section 307 (b) the Commission must take cognizance of the technical facts which in general in the frequency band 550 to 1600 kilocycles impose severe difficulties in making a distribution of efficient transmission facilities to every community in every State.

It should also be thoroughly understood that in many States there are persons who live in remote areas, therefore under such circumstances that it would be highly impractical to provide transmission facilities in the specific areas, and hence if these people are to receive the benefits of radio broadcasting service, it is essential that they utilize the transmission of some distant station. One of the most important social services rendered by broadcasting is that of providing to remote areas proper programs with a sufficient signal intensity to be considered good service. It is considered that the number of programs available at any time at any point in the United States should not be less than two. As has been pointed out in the preliminary engineering report of January 11, 1937, and the Social and Economic Report of July 1, 1937, this cannot be accomplished practically by means other than clear channels. Secondary service of acceptable signal strength must be available from at least two clear channel stations in order to provide reasonably consistent reception of a given program at a given point. These stations should be located so that the paths of transmission to the given point are approximately right angles to each other. Thus in order to provide satisfactory selection of two programs at any time listeners in rural areas should have the choice of signals from four clear channel stations at night and from two such stations during the day.

The evidence shows conclusively that existing clear-channel stations render a degree of rural service, and that in many instances it is the only radio service which many rural listeners secure. A clear-channel station is capable of rendering service to the public in several States, and if such stations are distributed throughout the Nation geographically in such a manner as to be near the centers of talent, and at the same time render service to a wide area, it is possible to have one or more program services available to rural listeners throughout the entire country.

From a theoretical scientific standpoint, some of the clear-channel stations might best be distributed geographically so as to be located in sparsely settled regions, but if such a theory were attempted in practice under the existing method of furnishing broadcasting service, it would certainly be doomed to failure by reason of dwindling economic support. Furthermore, such a procedure might be most costly and detrimental, in that it would be impractical to broadcast interesting programs by reason of remoteness from the centers of talent. It would also tend to lessen competition for the choice of programs in rural areas.

Inasmuch as this class of station renders service to so many people in so many States, and inasmuch as its transmissions cannot recognize State borders, the Committee suggests that the State in which the station is located should not be charged with all the facilities.

Stations having classification other than that of "clear channel" are at least somewhat more susceptible to segregation within State borders, because their service is usually limited to a relatively small area by reason of mutual interference occurring when stations operate simultaneously on the same frequency. However, even in this instance many of the stations are located near State borders and serve a population within more than one State.

The evidence shows that different cities have different shapes and sizes, as well as variations in the ability to support transmission facilities, and therefore it is believed that the best method of obtaining equitable distribution to various communities within a State is to adopt a general rule that if a facility is to be licensed in a community, it should be adequate to serve that community and its sphere of economic and social influence. The criterion of whether a certain class of station should be assigned to a particular community must include a consideration of the ability of the community and its social and economic sphere of influence to support a radio station in such a manner that it can render efficiently a good service.

In the Standards of Good Engineering Practice are listed the signal intensities necessary for satisfactory service under various conditions. Due to the extreme variations in reception conditions, particularly with respect to electrical noise levels (both man-made and natural static), it is impossible to accurately determine the areas or the population therein where satisfactory reception is available without obtaining a great deal more information than is now available. However, on the basis of the required signal level set forth in the Standards of Good Engineering Practice and in view of the evidence submitted at the hearing, it is estimated that during the daytime 8.1 percent (9,988,747) of the total population residing in 38.5 percent of the total land area of the United States do not receive satisfactory primary service from even one station and that during nighttime 17.4 percent (21,308,453) of the total population residing in 56.9 percent of the total land area do not receive satisfactory primary service from even one station, that is, entirely dependent upon secondary service from clear channel stations.

The areas receiving satisfactory service from more than one station are materially less. That is, approximately 31 percent of the total land areas receives primary service from one station, 8 percent from two stations and 5 percent from three or more stations.

Attention is also invited to the fact that due to high electrical noises numerous urban areas within the areas above considered to have good primary service do not receive such service at any time and that due to static extensive rural areas do not receive satisfactory service during periods when the static level is above average.

It was pointed out above that large rural areas are dependent entirely on the secondary service rendered by clear channel stations and that in order to satisfactorily receive the choice of either of two programs at least four secondary signals must be available. Table 7 gives an estimation of the areas (in terms of percentage of total land area of the United States) that are entirely dependent on clear channel secondary service and the number of such services of 500 uv/m. 50 percent sky wave or greater. It also shows the clear channel secondary services available in areas within the primary service area of at least one station.

The greatest need for improved signal intensity is in the southern regions of the country where the static level is the highest and extends for a longer portion of the year than in other parts of the country. In the Rocky Mountain States where the population is scattered and radio stations are scarce there is also a greater need for improvement insofar as engineering aspects of radio service are concerned than in other parts of the country. The States considered to be receiving the best radio service from a technical standpoint are: Connecticut, District of Columbia, Illinois, Indiana, Iowa, Kentucky, Massachusetts, New Jersey, New York, and Ohio. The States considered to be most needing improvements in technical service to the listener are: Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Louisiana, Maine, Mississippi, Montana, Nevada, New Mexico, North Carolina, Oregon, South Carolina, Utah, Virginia, and Wyoming.

TABLE VII-B

	Number of clear channel secondary services available ¹					Total	
	0	1	2	3	4		5 or more
Area in percent ² not within primary service of any station.....	0.14	1.55	6.05	4.66	10.57	33.94	56.91
Area in percent ² within primary service of one or more stations.....	.07	0.30	1.26	2.43	4.99	34.04	43.09
Total.....	.21	1.85	7.31	7.09	15.56	67.98	100.00

¹ 500 microvolt, 50 percent sky wave or greater.

² Percent of total continental United States land area (2,973,776 square miles).

TABLE VIII-B.—Distribution of classes of broadcasting stations to States

[Distribution of stations of all classes to States and Possessions]

State or possession	Clear			Regional					Local				Totals					
	Un-limited time	Share time	Total	Un-limited time	Daytime		Limited time (clear)	Share time and specified hours	Total	Un-limited time	Day-time	Share time and specified hours	Total	Un-limited time	Day-time	Limited time	Share time and specified hours	Total
					Clear	Regional												
Alabama		1	1	3					3	5	3		8	8	3		1	12
Alaska				2			1		3				3				1	3
Arizona				3					3	5		1	6	8			1	9
Arkansas		1	1	2		1			3	3			6	5	4		1	10
California	4		4	23	5		3	2	33	11	4	2	17	38	9	3	4	54
Colorado	1		1	3				4	7	3		3	6	7			7	14
Connecticut		1	1	5		1			6	1	1		2	6	2		1	9
Delaware				1					1			1	1				1	2
District of Columbia				4					4				4					4
Florida				6			1	2	9	7			7	13		1	2	16
Georgia	1		1	3			1		4	7	2		9	11	2	1		14
Hawaii				2			1		3				2			1		3
Idaho				5					5	1	1		2	6	1			7
Illinois	3	3	6	2	1	3	3	1	10	6	3	7	16	11	7	3	11	32
Indiana		1	1	3	1	1		3	8	6	1		10	9	3		7	19
Iowa	1		1	6	1	1	1	1	11	5		3	6	12	2		4	18
Kansas				2	1		1	5	9	6			6	8	1	1	5	15
Kentucky	1		1	2					2	5			5	8				8
Louisiana		2	2	4					4	5		2	7	9			4	13
Maine				2			1		3	2	1		3	4		1	1	6
Maryland		1	1	2		1	1		4	2	1		3	4	2	1	1	8
Massachusetts	1		1	12	1	2	2		12	5	1		6	13	4	2		19
Michigan	1		1	4	1	1		2	8	9	1	3	13	14	3		5	22
Minnesota	1		1	3			1	12	6	9	2		11	13	2	1	2	18
Mississippi				2		1			3	6			6	8	1			9
Missouri	1		1	6	3	1		3	13	3	2	1	6	10	6		4	20
Montana				5					5	4			4	9				9
Nebraska		1	1	2	1	1	2		6	3			3	5	2	2	1	10
Nevada				1					1				1					1
New Hampshire				1	1				2	1			1	2	1			3
New Jersey	1	1	2	1		1		5	7		1		2	2	2		7	11
New Mexico		1	1	1					1	3	1	2	6	4	1		3	8
New York	5	1	6	10	3	1	1	11	26	8	2	8	18	23	6	1	20	50
North Carolina	1		1	2		1	1		4	4	3	1	8	7	4	1	1	13
North Dakota				5					5	3			3	8				8
Ohio	2		2	8		2	1	3	14	6	3		9	16	5	1	3	25

Oklahoma		1	1	4			1	5	8	1		9	12	1		2	15	
Oregon		1	1	5			1	6	6	1	2	9	11	1	1	3	16	
Pennsylvania	3		3	6	1	3		17	8	18	9	19	17	6		16	39	
Puerto Rico				2				2			2	2	2			2	4	
Rhode Island				3				3				3	3				3	
South Carolina				3				4	1	1		2	4	2			6	
South Dakota				2		1	1	7	3		1	4	5	1	1	4	11	
Tennessee	1		1	6				6	6			6	13				13	
Texas	1	3	4	11		1		14	18	12	20	34	30	13		9	52	
Utah	1		1	2				2	4			4	7				7	
Vermont						3		3	1		1	2	1	3		1	5	
Virgin Islands																		
Virginia	1		1	3		2		5	4		2	6	8	2		2	12	
Washington	2	1	1	10		1	2	15	5	1	2	8	16	2	2	4	24	
West Virginia		1	1	3			1	4	2			2	5		1	1	7	
Wisconsin				6	1	2		9	8	2		10	14	5			19	
Wyoming				1				1	2			2	3				3	
Total	32	20	52	210	21	33	25	60	351	220	55	62	335	462	109	25	142	738

¹ Includes WAPI, simultaneous day, S-KVOO-N; S. A. Experiment--U.
² Includes KTHS, 1,040 kilocycles, S-KRLD; S. A. Experiment--simultaneous day with WBAL, 1,060 kilocycles, S. H.--N.
³ Includes KGO 790 kilocycles, 7½ kilowatt, U.
⁴ Includes WTIC, 1,060 kilocycles, S-WBAL; S. A. Experiment--1,040 kilocycles, simultaneous--KRLD.
⁵ Includes WCFL, 970 kilocycles, 5 kilowatts, U.
⁶ Includes WBBM, 770 kilocycles, simultaneous day, S-KFAB-N; S. A. Experiment--synchronize KFAB-N.
⁷ Includes WCBD, L-WBT, S-WMBI and WMBI, L-WBT, S-WCBD.
⁸ Includes WCAZ, 100 watts, day, clear.
⁹ Includes KGAZ, D-S-KWLC and KWLC, D-S-KGCA.
¹⁰ Includes WWL, 850 kilocycles, S. H. (KWKH); S. A. Experiment--U; and KWKH, 850 kilocycles, S. H. (WWL); S. A. Experiment--U, 1,100 kilocycles.
¹¹ Includes WBAL, 1,060 kilocycles, S-WTIC; S. A. Experiment--simultaneous day

with KTHS, 1,060 kilocycles, S. H. to 9 p. m.; synchronize with WJZ, 760 kilocycles, from 9 p. m.
¹² Includes WBZ, 990 kilocycles, 50 kilowatts, synchronized with WBZA.
¹³ Includes WBZA 990 kilocycles, 1 kilowatt, synchronized with WBZ.
¹⁴ Includes WLB, S-WCAL (¾ daytime) and WCAL, S-WLB (½ daytime).
¹⁵ Includes KFAB, 770 kilocycles, simultaneous day, S-WBBM-N; S. A. Experiment--synchronize WBBM-N.
¹⁶ Includes WPTF, L-KPO; S. A. Experiment--to 11 p. m. E. S. T.
¹⁷ Includes KVOO, simultaneous day, S-WAPI-N; S. A. experiment--U.
¹⁸ Includes WIBG, 100 watts, day, clear.
¹⁹ Includes KRLD, S-KTHS; S. A. Experiment--simultaneous with WTIC.
²⁰ Includes KTSM, S-WDAH; permanent authority to carry WDAH'S schedule.
²¹ Includes WNBX, D-LS at Erie, Pa.; S. A. Experiment--U.
²² Includes KJR, 970 kilocycles, 5 kilowatts, U.
²³ Includes KIRO, 650 kilocycles, L-WSM; S. A. Experiment--710 kilocycles, U.

TABLE IX-B.—Distribution of classes of broadcasting stations to cities

[Distribution of classes of stations to cities of various population]

States and cities	Population	Clear		Regional				Local			Total				Total	
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Day-time	Share time and specified hours	Unlimited time	Day-time	Limited time		Share time and specified hours
					Clear	Regional										
POPULATION UNDER 10,000																
Alabama: Sheffield	6,221								1			1			1	
Alaska:																
Anchorage	2,277													1		
Juneau	4,043			1							1				1	
Ketchikan	3,796			1							1				1	
Arizona:																
Bisbee	8,023								1			1			1	
Globe	7,157								1			1			1	
Jerome	4,932								1			1			1	
Safford	1,706								1			1			1	
Yuma	4,892													1	1	
Arkansas: Siloam Springs	2,378						1						1		1	
California:																
Chico	7,961			1								1				
El Centro	8,434								1			1			1	
Merced	7,066				1								1		1	
Monterey	9,141								1			1			1	
Redding	4,188								1			1			1	
San Luis Obispo	8,276									1			1		1	
Visalia	7,263				1								1		1	
Watsonville	8,344									1			1		1	
Colorado:																
Alamosa	5,167													1	1	
Durango	5,400								1			1			1	
La Junta	7,193								1			1			1	
Lamar	4,233													1	1	
Sterling	7,195													1	1	
Florida: Miami Beach	6,494								1			1			1	
Idaho:																
Coeur d'Alene	8,297									1			1		1	
Idaho Falls	9,429			1								1			1	
Lewiston	9,403			1								1			1	
Nampa	8,206								1			1			1	
Twin Falls	8,787			1								1			1	

TABLE IX-B.—Distribution of classes of broadcasting stations to cities—Continued

States and cities	Population	Clear		Regional				Local			Total				Total	
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Day-time	Share time and specified hours	Unlimited time	Day-time	Limited time		Share time and specified hours
					Clear	Regional										
POPULATION UNDER 10,000—CON.																
Oregon:																
Corvallis.....	7,585			1							1					
La Grande.....	8,050										1				1	
Marshfield.....	5,287								1		1				1	
Roseburg.....	4,362								1		1				1	
Pennsylvania: Grove City.....	6,156									1					1	
South Dakota:																
Brookings.....	4,376						1							1	1	
Pierre.....	3,659						1							1	1	
Vermillion.....	2,850						1							1	1	
Yankton.....	6,072			1							1				1	
Texas:																
Brady.....	3,983								1						1	
College Station (Bryan).....	7,814						1							1	1	
Denton.....	9,587								1				1		1	
Dublin.....	2,271								1						1	
Kilgore.....								1							1	
Longview.....	5,036								1				1		1	
Lufkin.....	7,311								1				1		1	
Midland.....	5,484								1				1		1	
Pecos.....	3,304								1				1		1	
Weslaco.....	4,879			1							1				1	
Utah:																
Cedar City.....	3,615								1						1	
Logan.....	9,979								1						1	
Price.....	4,084								1						1	
Vermont:																
St. Albans.....	8,020					1							1		1	
Springfield.....	4,943					1							1		1	
Waterbury.....	1,776					1							1		1	
Virginia: Harrisonburg.....	7,232					1							1		1	
Washington:																
Centralia.....	8,058			1							1				1	
Chehalis.....	4,907			1							1				1	
Pullman.....	3,322						1								1	

Wisconsin:																	
Poynette	672							1				1					1
Rice Lake	5,177								1				1				1
Wyoming:																	
Rock Spring	8,440							1				1					1
Sheridan	8,538							1				1					1
Total				13	4	5	2	12	41	13	11	54	22	2	23		101
POPULATION 10,000 TO 24,999																	
Alabama:																	
Decatur	15,593									1			1				1
Dothan	16,046									1			1				1
Gadsden	24,042								1			1					1
Huntsville	11,554								1			1					1
Selma	18,012								1			1					1
Tuscaloosa	20,659								1			1					1
Arkansas:																	
Blytheville	10,098									1			1				1
Eldorado	16,421								1			1					1
Hot Springs	20,238		1														1
Jonesboro	10,326									1			1				1
Pine Bluff	20,760									1			1				1
California:																	
Beverly Hills	17,429						1										1
Eureka	18,752		1									1					1
Modesto	13,842			1									1				1
Santa Rosa	10,636									1			1				1
Colorado:																	
Grand Junction	10,247								1			1					1
Greeley	12,263							1									1
Florida:																	
Daytona Beach	16,598								1			1					1
Gainesville	10,465						1							1			1
Lakeland	18,554								1			1					1
St. Augustine	12,111								1			1					1
Tallahassee	10,700								1			1					1
Georgia:																	
Albany	14,507								1			1					1
Athens	18,192								1			1					1
Griffin	10,321									1			1				1
Rome	21,843								1			1					1
Thomasville	11,733									1			1				1
Waycross	15,510								1			1					1
Hawaiian Islands: Hilo	19,468		1									1					1
Idaho:																	
Boise	21,544		1									1					1
Pocatello	16,471		1									1					1
Illinois:																	
Champaign	20,348								1			1					1
Harrisburg	11,625										1						1
Urbana	13,060					1							1				1

TABLE IX-B.—Distribution of classes of broadcasting stations to cities—Continued

States and cities	Popu- lation	Clear		Regional				Local			Total				Total	
		Unlim- ited time	Share time	Unlim- ited time	Daytime		Limited time (clear)	Share time and specified hours	Unlim- ited time	Day- time	Share time and specified hours	Unlim- ited time	Day- time	Limited time		Share time and specified hours
					Clear	Region- al										
POPULATION 10,000 TO 24,999— continued																
Iowa:																
Ames.....	10,261				1								1		1	
Boone.....	11,886														1	
Iowa City.....	15,340			1											1	
Marshalltown.....	17,373							1							1	
Mason City.....	23,304							1							1	
Kansas:																
Coffeyville.....	16,198						1								1	
Dodge City.....	10,059			1									1		1	
Lawrence.....	13,726						2								2	
Manhattan.....	10,136						1								1	
Pittsburg.....	18,145				1										1	
Salina.....	20,155							1					1		1	
Kentucky:																
Middlesboro.....	10,350							1					1		1	
Owensboro.....	22,765							1					1		1	
Louisiana:																
Alexandria.....	23,025							1					1		1	
Lafayette.....	14,635							1					1		1	
Lake Charles.....	15,791							1					1		1	
Maine: Augusta.....	17,198							1					1		1	
Maryland:																
Frederick.....	14,434					1							1		1	
Salisbury.....	10,997												1		1	
Massachusetts: Greenfield.....	15,500									1			1		1	
Michigan:																
Ironwood.....	14,299							1					1		1	
Marquette.....	14,789										1				1	
Royal Oak.....	22,904							1					1		1	
Minnesota:																
Albert Lea.....	10,169									1			1		1	
Hibbing.....	15,666							1					1		1	
Mankato.....	14,038							1					1		1	
Rochester.....	20,621							1					1		1	
St. Cloud.....	21,000							1					1		1	

TABLE IX-B.—Distribution of classes of broadcasting stations to cities—Continued

States and cities	Popu- lation	Clear		Regional				Local			Total				Total	
		Unlim- ited time	Share time	Unlim- ited time	Daytime		Limited time (clear)	Share time and specified hours	Unlim- ited time	Day- time	Share time and specified hours	Unlim- ited time	Day- time	Limited time		Share time and specified hours
					Clear	Region- al										
POPULATION 10,000 TO 24,999— continued																
Pennsylvania:																
Greensburg	16,608					1							1			1
Sunbury	16,026														1	1
Uniontown	19,544								1				1			1
South Carolina:																
Anderson	14,383							1				1				1
Florence	14,774								1				1			1
South Dakota:																
Aberdeen	16,465			1								1				1
Huron	10,946					1							1			1
Rapid City	10,404							1			1				1	2
Watertown	10,214							1			1					1
Tennessee:																
Bristol	12,005							1				1				1
Jackson	22,172							1				1				1
Texas:																
Abilene	23,175							1				1				1
Big Spring	13,735							1				1				1
Brownsville	22,021							1				1				1
Corsicana	15,202								1				1			1
Greenville	12,407								1				1			1
Lubbock	20,520							1				1				1
Palestine	11,445								1				1			1
Pampa	10,470								1				1			1
Paris	15,849								1				1			1
Sherman	15,713								1				1			1
Temple	15,345								1				1			1
Tyler	17,113							1				1				1
Vermont:																
Burlington	24,789														1	1
Rutland	17,315							1				1				1
Virginia:																
Charlottesville	15,245														1	1
Danville	22,247							1				1				1
Washington:																
Aberdeen	21,723							1				1				1

Longview	10,652				1							1					1
Olympia	11,733								1			1					1
Walla Walla	15,076								1			1					1
Wenatchee	11,627								1			1					1
Yakima	22,101		1									1					1
West Virginia:																	
Bluefield	19,339		1									1					1
Fairmont	23,159		1									1					1
Wisconsin:																	
Janesville	21,628								1			1					1
Manitowoc	22,963								1			1					1
Stevens Point	13,623				1								1				1
Wausau	23,758								1			1					1
Wyoming:																	
Casper	16,619		1									1					1
Total			1	18	4	10	3	7	63	27	12	80	42	3	20		145
POPULATION, 25,000 TO 49,999																	
Arizona:																	
Phoenix	48,118		2									2					2
Tucson	32,506		1						1			2					2
Arkansas:																	
Fort Smith	31,429								1			1					1
California:																	
Bakersfield	26,016		1						1			2					2
San Bernardino	37,481										1						1
Santa Ana	30,322								1			1					1
Santa Barbara	33,613		1						1			2					2
Stockton	47,963			1					1			1	1				2
Colorado: Colorado Springs	33,237		1									1					1
Connecticut: New London	29,640										1		1				1
Florida:																	
Orlando	27,330		1									1					1
Pensacola	31,579		1														1
St. Petersburg	40,425							1				1					1
West Palm Beach	26,610								1			1					1
Georgia: Columbus	43,131								1			1					1
Illinois:																	
Bloomington	30,930										1						1
Danville	36,765										1		1				1
Galesburg	28,830								1				1				1
Joliet	42,993										1						1
Quincy	39,241					1							1				1
Rock Island	37,953								1			1					1
Indiana:																	
Anderson	39,304								1			1					1
Elkhart	32,949								1			1					1
La Fayette	26,240							1									1
Muncie	46,548								1			1					1
New Albany	25,319										1		1				1
Richmond	32,493										1						1

TABLE IX-B.—Distribution of classes of broadcasting stations to cities—Continued

States and cities	Popu- lation	Clear		Regional				Local			Total				Total	
		Unlim- ited time	Share time	Unlim- ited time	Daytime		Limited time (clear)	Share time and specified hours	Unlim- ited time	Day- time	Share time and specified hours	Unlim- ited time	Day- time	Limited time		Share time and specified hours
					Clear	Region- al										
POPULATION 25,000 TO 49,999— continued																
Iowa: Dubuque.....	41,679					1			1				1	1		2
Kansas: Hutchinson.....	27,086								1				1			1
Kentucky:																
Ashland.....	29,074								1				1			1
Lexington.....	45,736								1				1			1
Paducah.....	33,541								1				1			1
Louisiana:																
Baton Rouge.....	30,729			1									1			1
Monroe.....	26,028								1				1			1
Maine: Bangor.....	28,749			1					1				2			2
Maryland:																
Cumberland.....	37,747						1							1		1
Hagerstown.....	30,861								1							1
Massachusetts:																
Pittsfield.....	49,677								1				1			1
Michigan:																
Battle Creek.....	43,573								1				1			1
Bay City.....	47,355			1									1			1
Muskegon.....	41,390								1				1			1
Port Huron.....	31,361									1				1		1
Mississippi:																
Jackson.....	48,282			1					1				2			2
Meridian.....	31,954			1									1			1
Missouri:																
Joplin.....	33,454								1				1			1
Montana:																
Butte.....	39,532			1									1			1
Great Falls.....	28,822			1									1			1
New Mexico:																
Albuquerque.....	26,570		1	1									1		1	2
New York:																
Auburn.....	36,652								1				1			1
Elmira.....	47,397					1				1				2		2
Jamestown.....	45,155								1				1			1
Newburgh.....	31,275														1	1
White Plains.....	35,830										1				1	1

TABLE IX-B.—Distribution of classes of broadcasting stations to cities—Continued

States and cities	Population	Clear		Regional				Local			Total				Total	
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Day-time	Share time and specified hours	Unlimited time	Day-time	Limited time		Share time and specified hours
					Clear	Regional										
POPULATION 25,000 TO 49,999—continued																
Wisconsin—Continued.																
Sheboygan	39,251			1											1	
Superior	38,113							1				1			1	
Total			1	25	3	5	3	2	44	9	10	69	17	3	13	102
POPULATION 50,000 TO 99,999																
Alabama:																
Mobile	68,202			1								1				1
Montgomery	66,079			1								1				1
Arkansas:																
Little Rock	81,679			2					1			3				3
California:																
Berkeley	82,109								1			1				1
Fresno	52,513			1					1			2				2
Glendale	62,736				1								1			1
Pasadena	76,086										1					1
Sacramento	93,750			1						1		1	1			2
San Jose	57,651			1								1				1
Colorado:																
Pueblo	50,096			1								1				1
Connecticut:																
New Britain	68,128			1								1				1
Waterbury	99,902			2								2				2
Georgia:																
Augusta	60,342								1			1				1
Macon	53,829						1							1		1
Savannah	85,024			1								1				1
Illinois:																
Cicero	66,602								1			1				1
Decatur	57,510										1					1
East St. Louis	74,347								1			1				1
Rockford	85,864			1								1				1
Springfield	71,864								2			2				2

TABLE IX-B.—Distribution of classes of broadcasting stations to cities—Continued

States and cities	Popula- tion	Clear		Regional				Local			Total				Total	
		Unlim- ited time	Share time	Unlim- ited time	Daytime		Limited time (clear)	Share time and specified hours	Unlim- ited time	Day- time	Share time and specified hours	Unlim- ited time	Day- time	Limited time		Share time and specified hours
					Clear	Region- al										
POPULATION 50,000 TO 99,999— continued																
South Carolina:																
Charleston.....	62,265			1							1				1	
Columbia.....	51,581			1							1				1	
Texas:																
Austin.....	53,120						1	1			1			1	2	
Beaumont.....	57,732			1				1			2				2	
Galveston.....	52,938							1			1				1	
Port Arthur.....	50,902					1						1			1	
Waco.....	52,848							1			1				1	
Virginia: Roanoke.....	69,206			1							1				1	
West Virginia:																
Charleston.....	60,408			1							1				1	
Huntington.....	75,572						1						1		1	
Wheeling.....	61,659		1											1	1	
Wisconsin:																
Madison.....	57,899			1		1					1	1			2	
Racine.....	67,542							1			1				1	
Total.....		2	4	31	3	6	3	5	27	1	7	60	10	3	16	
POPULATION 100,000 TO 199,999																
California:																
Long Beach.....	142,032			2							2				2	
San Diego.....	147,995			2							2				2	
Connecticut:																
Bridgeport.....	146,716			1							1				1	
Hartford.....	164,072		1	1				1			2			1	3	
New Haven.....	162,655					1					1	1			1	
Delaware: Wilmington.....	106,597			1							1			1	2	
Florida:																
Jacksonville.....	129,549			1				1			2				2	
Miami.....	110,637			2							2				2	
Tampa.....	101,181			1							1			1	2	
Hawaiian Islands: Honolulu.....	137,582			1			1				1		1		2	
Illinois: Peoria.....	104,969			1							1				1	

Indiana:																		
Evansville	102,249							1	1				1					2
Fort Wayne	114,946		1					1	1				1					1
Gary	100,426			1									1					1
South Bend	104,193							1										2
Iowa: Des Moines	142,559	1		2									3					3
Kansas:																		
Kansas City	121,857								1				1					1
Wichita	111,110			1					1				2					2
Massachusetts:																		
Fall River	115,274			1									1					1
Lowell	100,234								1				1					1
New Bedford	112,597								1				1					1
Springfield	149,900			1		1			1				2			1		3
Worcester	195,311			2					1				2					2
Michigan:																		
Flint	156,492								1				1					1
Grand Rapids	168,592						2											2
Minnesota: Duluth	101,463		1						1				2					2
New Jersey:																		
Camden	118,700							1										1
Trenton	123,356							1										1
New York:																		
Albany	127,412			1					1				2					2
Utica	101,740								1				1					1
Ohio:																		
Canton	104,906								1				1					1
Youngstown	170,092						1							1				2
Oklahoma:																		
Oklahoma City	185,389			2					2				4					4
Tulsa	141,258		1	1									1					2
Pennsylvania:																		
Erie	115,987								1				1					1
Reading	111,171				1				1				1	1				2
Scranton	143,433							2										2
Puerto Rico: San Juan	114,715			2									2					2
Tennessee:																		
Chattanooga	119,798			1					1				2					2
Knoxville	105,802			1					1				2					2
Nashville	153,866	1		1					1				3					3
Texas:																		
El Paso	102,421								1				2					3
Fort Worth	163,447			1		2			1				3					4
Utah: Salt Lake City	140,267	1		1					1				3					3
Virginia:																		
Norfolk	120,710			1									1					1
Richmond	182,929	1		1		1			1				3	1				5
Washington:																		
Spokane	115,514			3						1			3	1				4
Tacoma	106,817			2									2					2
Total		4	4	41	1	2	2	10	25	2	5	70	5	2	19			96

TABLE IX-B.—Distribution of classes of broadcasting stations to cities—Continued

States and cities	Popu- lation	Clear		Regional				Local			Total				Total	
		Unlim- ited time	Share time	Unlim- ited time	Daytime		Lmited time (clear)	Share time and specified hours	Unlim- ited time	Day- time	Share time and specified hours	Unlim- ited time	Day- time	Limited time		Share time and specified hours
					Clear	Region- al										
POPULATION 200,000 TO 299,999																
Alabama: Birmingham.....	259,678		1	1					1			2			1	3
California: Oakland.....	284,063			3								3				3
Colorado: Denver.....	287,861	1		1				3				2			3	5
Georgia: Atlanta.....	270,366	1		2					1			4				4
Minnesota: St. Paul.....	271,606	1		1					1			2				2
Nebraska: Omaha.....	214,066			2	1							2	1			3
New York: Syracuse.....	209,326			2								2				2
Ohio:																
Akron.....	255,040			1					1			2				2
Columbus.....	290,564			1			1	1				2		1	1	4
Dayton.....	200,982			1								1			1	2
Toledo.....	290,718			1						1		1	1			3
Rhode Island: Providence.....	252,981			3								3				3
Tennessee: Memphis.....	253,143			3					1			4				4
Texas:																
Dallas.....	260,475		2	1								1			2	3
Houston.....	292,352			3								3				3
San Antonio.....	231,542	1		1					1		2	3			2	5
Total.....		3	3	27	1	0	1	5	7	1	2	37	2	1	10	50
POPULATION 300,000 TO 399,999																
Indiana: Indianapolis.....	364,161			2	1							2	1			3
Kentucky: Louisville.....	307,745	1		1								2				2
Missouri: Kansas City.....	390,746			3	1				1			4	1			5
New Jersey: Jersey City.....	316,715			1		1						1	1			2
New York: Rochester.....	328,132	1		1					1			3				3
Oregon: Portland.....	301,815		1	3			1				2	3		1	3	7
Washington: Seattle.....	365,583	1		3			2	1			1	4		2	2	8
Total.....		3	1	14	2	1	3	1	2	0	3	19	3	3	5	30

POPULATION 400,000 TO 499,999															
District of Columbia: Washington	486,869			4								4			4
Louisiana: New Orleans	458,762		1	2						2		2		3	5
Minnesota: Minneapolis	464,356	1		1			1	1				2	1	1	4
New Jersey: Newark	442,337	1						1				1		1	2
Ohio: Cincinnati	451,160	1		2					1			4			4
Total		3	1	9	0	0	1	2	1	0	2	13	0	1	19
POPULATION 500,000 AND OVER															
California:															
Los Angeles	1,238,048	2		6			1	2	1			9		1	2
San Francisco	634,394	2		3			1		1			6		1	7
Illinois: Chicago	3,376,438	3	3			1	3	1				3	1	3	14
Maryland: Baltimore	804,874		1	2					1			3			4
Massachusetts: Boston	781,188	1		3		2	1		1			5	2	1	8
Michigan: Detroit	1,568,662	1		2					2			5			5
Missouri: St. Louis	821,960	1		2	1			1	1			4	1		6
New York:															
Buffalo	573,076			3					1			2			6
New York	6,930,448	3	1	3	2		1	9			3	6	2	1	22
Ohio: Cleveland	900,429	1		2		1						3	1		4
Pennsylvania:															
Philadelphia	1,950,961	2		2				2	1	1	2	5	1		10
Pittsburgh	689,817	1		2				1	1			4			5
Wisconsin: Milwaukee	578,249			2						1		2	1		3
Total		17	5	32	3	4	7	16	10	2	10	59	9	7	106

TABLE X-B.—*Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio stations at present*

Alabama:		Illinois—Continued.	
Anniston.....	22,345	*Park ridge.....	10,417
*Bessemer.....	20,721	*Pekin.....	16,129
*Fairfield.....	11,059	Sterling.....	10,012
†Florence.....	11,729	Streator.....	14,728
†Phenix City.....	13,862	West Frankfort.....	14,683
Arkansas:		*Wilmette.....	15,233
*North Little Rock.....	19,418	*Winnetka.....	12,166
California:		Indiana:	
*Anaheim.....	10,995	Bedford.....	13,208
Brawley.....	10,439	Bloomington.....	18,227
*Burbank.....	16,662	Connersville.....	12,795
*Burlingame.....	13,270	Crawfordsville.....	10,355
*Compton.....	12,516	Elwood.....	10,685
*Fullerton.....	10,860	Frankfort.....	12,196
*Gardena Township.....	15,969	Goshen.....	10,397
*Huntington Park.....	24,591	Huntington.....	13,420
*Inglewood.....	19,480	*Jeffersonville.....	11,945
*Monrovia.....	10,890	La Porte.....	15,755
*Ontario.....	13,583	Logansport.....	18,508
*Palo Alto.....	13,652	Marion.....	24,496
*Pomona.....	20,804	New Castle.....	14,027
†Redlands.....	14,177	Peru.....	12,730
*Richmond.....	20,093	Shelbyville.....	10,618
Salinas.....	10,263	Vincennes.....	17,564
*San Leandro.....	11,455	*Whiting.....	10,880
*San Mateo.....	13,444	Iowa:	
Santa Cruz.....	14,395	Fort Dodge.....	21,895
*South Gate.....	19,632	Fort Madison.....	13,779
*South Pasadena.....	13,730	Keokuk.....	15,106
*Vallejo.....	14,476	Muscatine.....	16,778
Ventura.....	11,603	Newton.....	11,560
*Whittier.....	14,822	Oskaloosa.....	10,123
Colorado:		Kansas:	
Boulder.....	11,223	Arkansas City.....	13,946
Fort Collins.....	11,489	Atchison.....	13,024
Trinidad.....	11,732	Chanute.....	10,277
Connecticut:		El Dorado.....	10,311
*Ansonia.....	19,898	Emporia.....	14,067
Danbury.....	22,261	Fort Scott.....	10,763
*Derby.....	10,788	Independence.....	12,782
*East Hartford (town).....	17,125	Leavenworth.....	17,466
*Middletown.....	24,554	Newton.....	11,034
*Naugatuck.....	14,315	Parsons.....	14,903
Norwich.....	23,021	Kentucky:	
*Shelton.....	10,113	Bowling Green.....	12,348
*Stratford (town).....	19,212	*Fort Thomas.....	10,008
*Wallingford.....	11,170	Frankfort.....	11,626
*West Hartford (town).....	24,941	*Henderson.....	11,668
Willimantic.....	12,102	Hopkinsville.....	10,746
Florida:		Louisiana:	
Key West.....	12,831	Bogalusa.....	14,029
Sanford.....	10,100	Maine:	
Georgia:		Auburn.....	18,571
Brunswick.....	14,022	Biddeford.....	17,633
*Decatur.....	13,276	South Portland.....	13,840
Lagrange.....	20,131	Waterville.....	15,454
Valdosta.....	13,482	Westbrook.....	10,807
Illinois:		Maryland:	
*Blue Island.....	16,534	*Annapolis.....	12,531
*Brookfield.....	10,035	Massachusetts:	
Cairo.....	13,532	Adamstown.....	12,697
*Calumet City.....	12,298	*Amesbury (town).....	11,899
Canton.....	11,718	Athol (town).....	10,677
Centralia.....	12,583	*Attleboro.....	21,769
*Chicago Heights.....	22,321	*Belmont (town).....	21,748
*East Moline.....	10,107	*Braintree (town).....	15,712
*Elmhurst.....	14,055	*Clinton (town).....	12,817
*Elmwood Park.....	11,270	*Danvers (town).....	12,957
*Forest Park.....	14,555	*Dedham (town).....	15,136
Freeport.....	22,045	*Easthampton (town).....	11,323
*Harvey.....	16,374	*Fairhaven (town).....	10,951
*Highland Park.....	12,203	*Frammingham (town).....	22,210
Jacksonville.....	17,747	Gardner.....	19,399
Kaukahee.....	20,620	*Gloucester.....	24,204
Kewanee.....	17,093	Leominster.....	21,810
*La Grange.....	10,103	*Marlborough.....	15,587
La Salle.....	13,149	*Melrose.....	23,170
Lincoln.....	12,855	*Methuen (town).....	21,069
Mattoon.....	14,631	Milford (town).....	14,741
*Melrose Park.....	10,741	*Milton (town).....	16,434
Mount Vernon.....	12,375	*Natick (town).....	13,689
Ottawa.....	15,094	*Needham (town).....	10,845

*Within 1 of the 96 metropolitan districts defined by the Bureau of Census.

†Contiguous to a larger city in which a station is located.

TABLE X-B.—Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio stations at present—Continued

Massachusetts—Continued.		New Jersey—Continued.	
*Newburyport.....	15,084	*Englewood.....	17,805
North Adams.....	21,621	*Gloucester.....	13,796
*Northampton.....	24,381	*Hackensack.....	24,568
*North Attleborough (town).....	10,197	*Harrison.....	15,601
*Norwood (town).....	15,049	*Hawthorne.....	11,868
*Peabody.....	21,345	*Hillside Township.....	17,601
Plymouth (town).....	13,042	*Linden.....	21,206
*Saugus (town).....	14,700	*Lodi.....	11,549
Southbridge (town).....	14,264	*Long Branch.....	18,399
*Stoneham (town).....	10,060	*Lyndhurst Township.....	17,362
*Swampscott (town).....	10,316	*Maplewood Township.....	21,321
*Wakefield (town).....	16,318	Millville.....	14,705
Webster (town).....	12,992	*Morristown.....	15,197
*Wellesley (town).....	11,439	*Neptune Township.....	10,625
*Westfield.....	19,775	*Nutley.....	20,572
*West Springfield (town).....	16,684	*Pensauken Township.....	16,915
*Weymouth (town).....	20,882	*Phillipsburg.....	19,255
*Winchester (town).....	12,719	*Pleasantville.....	11,580
*Winthrop (town).....	16,852	*Rahway.....	16,011
*Woburn.....	19,434	*Ridgefield Park.....	10,764
Michigan:		*Ridge-wood.....	12,188
Adrian.....	13,064	*Roselle.....	13,021
Alpena.....	12,166	*Rutherford.....	14,915
Benton Harbor.....	15,434	*South Orange.....	13,630
*Ecorse.....	12,716	*South River.....	10,759
Escanaba.....	14,524	*Summit.....	14,556
*Ferndale.....	20,855	*Teaneck Township.....	16,513
*Grosse Pointe Park.....	11,174	*Union Township.....	16,472
Holland.....	14,346	*Weekawken Township.....	14,807
Iron Mountain.....	11,652	*Westfield.....	15,801
*Lincoln Park.....	12,336	*West Orange.....	24,327
Menominee.....	10,320	New York:	
Monroe.....	18,110	Batavia.....	17,375
*Mount Clemens.....	13,497	†Beacon.....	11,933
†Muskegon Heights.....	15,584	*Cohoes.....	23,226
Niles.....	11,326	Corning.....	15,777
Owosso.....	14,493	Cortland.....	15,043
*River Rouge.....	17,314	Dunkirk.....	17,802
Sault Ste. Marie.....	13,755	*Endicott.....	16,231
Traverse City.....	12,539	*Floral Park.....	10,016
Ypsilanti.....	10,143	Fulton.....	12,462
Minnesota:		Geneva.....	16,053
Austin.....	12,276	*Glen Cove.....	11,430
Brainerd.....	10,221	Glens Falls.....	18,531
Faribault.....	12,767	Gloversville.....	23,099
*South St. Paul.....	10,009	*Hempstead.....	12,650
Mississippi:		*Herkimer.....	10,446
Biloxi.....	14,850	Hornell.....	16,250
Clarksdale.....	10,043	Hudson.....	12,337
Columbus.....	10,743	Irondequoit (town).....	18,024
Greenville.....	14,807	Ithaca.....	20,708
Greenwood.....	11,123	*Johnson City.....	13,567
McComb.....	10,057	Johnstown.....	10,801
Natchez.....	13,422	*Kenmore.....	16,482
Missouri:		*Lackawanna.....	23,948
Hannibal.....	22,761	Little Falls.....	11,105
*Independence.....	15,296	Lockport.....	23,160
*Maplewood.....	12,657	*Lynbrook.....	11,993
Moberly.....	13,772	*Mamaroneck.....	11,766
*St. Charles.....	10,491	Massena.....	10,637
Sedalia.....	20,806	Middletown.....	21,276
*Webster Groves.....	16,487	*North Tonawanda.....	19,019
Montana:		Ogdensburg.....	16,915
Anaconda.....	12,494	Oneida.....	10,558
Nebraska:		Oneonta.....	12,536
Beatrice.....	10,297	*Ossining.....	15,241
Fremont.....	11,407	Oswego.....	22,652
Grand Island.....	18,041	*Peckskill.....	17,125
Hastings.....	15,490	*Port Chester.....	22,662
New Hampshire:		Port Jervis.....	10,243
Berlin.....	20,018	*Rensselaer.....	11,223
Claremont (town).....	12,377	*Rockville Centre.....	13,718
Dover.....	13,573	Saratoga Springs.....	13,169
Keene.....	13,794	*Tonawanda.....	12,681
Rochester.....	10,209	*Valley Stream.....	11,790
New Jersey:		*Watervliet.....	16,083
*Burlington.....	10,844	North Carolina:	
*Carteret.....	13,339	Concord.....	11,820
*Cliffside Park.....	15,267	Elizabeth City.....	10,037
*Collingswood.....	12,723	Fayetteville.....	13,049
*Cranford Township.....	11,126	Gastonia.....	17,093
Dover.....	10,031		

*Within 1 of the 96 metropolitan districts defined by the Bureau of Census.

†Contiguous to a larger city in which a station is located.

TABLE X-B.—Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio stations at present—Continued

North Carolina—Continued.		Pennsylvania—Continued.	
Goldsboro.....	14, 985	Ellwood City.....	12, 323
New Bern.....	11, 981	*Farrell.....	14, 359
Salisbury.....	16, 951	Franklin.....	10, 254
Shelby.....	10, 789	Hanover.....	11, 805
Statesville.....	10, 490	*Hanover Township.....	17, 770
Thomasville.....	10, 090	*Harrison Township.....	12, 387
Ohio:		*Haverford Township.....	21, 362
*Alliance.....	23, 047	*Homestead.....	20, 141
Ashland.....	11, 141	*Jeannette.....	15, 126
*Barberton.....	23, 934	*Kingston.....	21, 600
*Bellair.....	13, 327	*Latrobe.....	10, 644
Bucyrus.....	10, 027	Lewiston.....	13, 357
Cambridge.....	16, 129	*McKees Rocks.....	18, 116
*Campbell.....	14, 673	Mahanoy City.....	14, 784
Chillicothe.....	18, 340	Meadville.....	16, 698
Coshocton.....	10, 908	*Monessen.....	20, 268
*Cuyohoga Falls.....	19, 797	Mount Carmel.....	17, 967
East Liverpool.....	23, 329	*Mount Lebanon Township.....	13, 403
*Euclid.....	12, 751	*Munnhall.....	12, 995
Findlay.....	19, 363	*New Kensington.....	16, 762
Fostoria.....	12, 790	*North Braddock.....	6, 782
Fremont.....	13, 422	Oil City.....	22, 075
*Garfield Heights.....	15, 589	*Old Forge.....	12, 661
*Ironton.....	16, 621	*Olyphant.....	10, 743
Lancaster.....	18, 716	*Phoenixville.....	12, 029
Marletta.....	14, 285	*Pittston.....	18, 246
*Martin Ferry.....	14, 524	*Plains Township.....	16, 044
New Philadelphia.....	12, 365	*Plymouth.....	16, 543
*Niles.....	16, 314	Pottstown.....	19, 430
Painesville.....	10, 944	Pottsville.....	24, 300
*Parma.....	13, 899	Shamokin.....	20, 724
Piqua.....	16, 069	Shenandoah.....	21, 782
Salem.....	10, 622	*Steeltown.....	13, 291
Sandusky.....	24, 622	*Stowe Township.....	13, 368
*Shaker Heights.....	17, 783	*Swissvale.....	16, 029
*Struthers.....	11, 249	Tamaqua.....	12, 936
Tiffin.....	16, 428	*Taylor.....	10, 428
Wooster.....	10, 742	*Turtle Creek.....	10, 690
Xenia.....	10, 507	Vandergrift.....	11, 479
Oklahoma:		Warren.....	14, 863
Bartlesville.....	14, 763	*Washington.....	24, 545
Chickasha.....	14, 099	Waynesboro.....	10, 167
Lawton.....	12, 121	West Chester.....	12, 325
McAlester.....	11, 804	Rhode Island:	
Okmulgee.....	17, 097	*Bristol (town).....	11, 953
*Sapulpa.....	10, 533	*Cumberland (town).....	10, 304
Seminole.....	11, 459	*Lincoln (town).....	10, 421
Wewoka.....	10, 401	*North Providence (town).....	11, 104
Pennsylvania:		*Warwick (town).....	23, 196
*Abington Township.....	18, 648	Westerly (town).....	10, 997
*Ambridge.....	20, 227	*West Warwick (town).....	17, 696
*Arnold.....	10, 575	South Carolina:	
Beaver Falls.....	17, 147	Greenwood.....	11, 020
*Bellevue.....	10, 252	Rock Hill.....	11, 322
Berwick.....	12, 660	Sumter.....	11, 780
*Braddock.....	19, 329	South Dakota:	
Bradford.....	19, 306	Mitchell.....	10, 942
*Bristol.....	11, 799	Tennessee:	
Butler.....	23, 568	Kingsport.....	11, 914
*Canonsburg.....	12, 558	Texas:	
*Carbondale.....	20, 061	Brownwood.....	12, 789
Carlisle.....	12, 596	Cleburne.....	11, 539
*Carnegie.....	12, 497	Del Rio.....	11, 693
Chambersburg.....	13, 788	Denison.....	13, 850
*Charlerot.....	11, 260	Harlingen.....	12, 124
*Cheltenham Township.....	15, 731	Marshall.....	16, 293
*Clairton.....	15, 291	San Benito.....	10, 753
Coatesville.....	14, 582	Sweetwater.....	10, 848
*Columbia.....	11, 349	Utah:	
Connellsville.....	13, 290	Provo.....	14, 766
*Conshohocken.....	10, 815	Vermont:	
*Corapolis.....	10, 724	Barre.....	11, 307
*Dickson City.....	12, 395	Virginia:	
*Donora.....	13, 905	*Alexandria.....	24, 149
*Dormont.....	13, 190	Hopewell.....	11, 327
Du Bois.....	11, 595	Staunton.....	11, 990
*Dunmore.....	22, 627	Suffolk.....	10, 271
*Duquesne.....	21, 396	Winchester.....	10, 855

* Within 1 of the 96 metropolitan districts defined by the Bureau of Census.

TABLE X-B.—*Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio station at present—Continued*

Washington:		Wisconsin—Continued.	
Bremerton	10, 170	*Cudahy	10, 631
†Hoquiam	12, 766	*Marinette	13, 734
Port Angeles	10, 188	*Shorewood	13, 479
*Vancouver	15, 766	*South Milwaukee	10, 706
West Virginia:		Two Rivers	10, 083
Martinsburg	14, 857	Watertown	10, 613
Morgantown	16, 186	*Waukesha	17, 176
*Moundsville	14, 411	*Wauwatosa	21, 194
Wisconsin:		Wyoming:	
Ashland	10, 622	Cheyenne	17, 361
Beloit	23, 611		

TABLE XI-B.—*Cities in the United States having, in 1930, in excess of 25,000 inhabitants, and no radio stations at present*

California:		Michigan:	
*Alameda	35, 033	Ann Arbor	26, 944
*Alhambra	29, 472	*Dearborn	50, 358
*Belvedere Township	33, 023	*Hamtramck	56, 268
Riverside	29, 696	Highland Park	62, 959
*Santa Monica	37, 146	*Pontiac	64, 928
Connecticut:		*Wyandotte	28, 368
*Bristol	28, 451	Missouri:	
*Meriden	38, 481	*University City	25, 809
*Norwalk	36, 019	New Hampshire:	
*Stamford	46, 346	Concord	25, 228
Torrington	26, 040	Nashua	31, 463
*West Haven (town)	25, 808	New Jersey:	
Illinois:		*Bayonne	88, 979
*Alton	30, 151	*Belleville	26, 974
Aurora	46, 589	*Bloomfield	38, 077
*Belleville	28, 425	*Clifton	46, 875
*Berwyn	47, 027	*East Orange	68, 020
Elgin	35, 929	*Elizabeth	114, 589
*Evanston	63, 338	*Garfield	29, 739
*Granite City	25, 130	*Hoboken	59, 261
*Maywood	25, 829	*Irvington	56, 733
*Moline	32, 236	*Kearny	40, 716
*Oak Park	63, 982	*Montclair	42, 017
Waukegan	33, 499	*New Brunswick	34, 555
Indiana:		*North Bergen Township	40, 714
*East Chicago	54, 784	*Orange	35, 399
Kokomo	32, 843	*Passaic	62, 959
Michigan City	26, 735	*Paterson	138, 513
*Mishawaka	28, 630	*Perth Amboy	43, 516
Iowa:		*Plainfield	34, 422
Burlington	26, 755	*Union City	58, 659
Clinton	25, 726	*West New York	37, 107
*Council Bluffs	42, 048	*Woodbridge Township	25, 266
Ottumwa	28, 075	New York:	
Waterloo	46, 191	Amsterdam	34, 817
Kentucky:		Kingston	28, 088
*Newport	29, 744	*Mount Vernon	61, 499
Maine:		*New Rochelle	54, 000
Lewiston	34, 948	*Niagara Falls	75, 460
Massachusetts:		Poughkeepsie	40, 288
*Arlington (town)	36, 094	*Rome	32, 338
*Beverly	25, 086	Watertown	32, 205
*Brookton	63, 797	*Yonkers	134, 646
*Brookline (town)	47, 490	Ohio:	
*Cambridge	113, 643	*Cleveland Heights	50, 945
*Chelsea	45, 816	*East Cleveland	39, 667
*Chicopee	43, 930	Elyria	25, 633
*Everett	48, 424	Hamilton	52, 176
Fitchburg	40, 692	*Lakewood	70, 509
*Haverhill	48, 710	Lorain	44, 517
*Holyoke	56, 537	Mansfield	33, 525
*Lynn	102, 320	Marion	31, 084
*Malden	58, 036	*Massillon	26, 400
*Medford	59, 714	Middletown	29, 992
*Newton	65, 276	Newark	30, 596
*Quincy	71, 983	*Norwood	33, 411
*Revere	35, 680	Springfield	68, 743
*Salem	43, 353	Steuernville	35, 422
*Somerville	103, 908	*Warren	41, 062
Taunton	37, 355	Pennsylvania:	
*Waltham	39, 247	*Alliquippa	27, 116
*Watertown (town)	34, 913	*Bethlehem	57, 892

* Within 1 of the 96 metropolitan districts defined by the Bureau of Census.
 † Contiguous to a larger city in which a station is located.

TABLE XI-B.—*Cities in the United States having, in 1930, in excess of 25,000 inhabitants, and no radio stations at present—Continued*

Pennsylvania—Continued.		Rhode Island—Continued.	
*Chester.....	59, 164	*Woonsocket.....	49, 376
Lebanon.....	25, 561	Tennessee:	
*Lower Marion Township.....	35, 166	Johnson City.....	25, 080
*McKeesport.....	54, 632	Texas:	
*Nanticoke.....	26, 043	Wichita Falls.....	43, 690
*Norristown.....	35, 853	Virginia:	
*Upper Darby Township.....	46, 626	Petersburg.....	28, 564
*Wilksburg.....	29, 639	*Portsmouth.....	45, 704
Rhode Island:		Wisconsin:	
*Central Falls.....	25, 898	Appleton.....	25, 267
*Cranston.....	42, 911	*Kenosha.....	50, 262
*East Providence (town).....	29, 995	Oshkosh.....	40, 108
*Newport.....	27, 612	*West Allis.....	34, 671
*Pawtucket.....	77, 149		

* Within 1 of the 96 metropolitan districts defined by the Bureau of Census.

AMATEURS

Numbers of amateur radio applications, examinations, and licenses continued to show substantial increase although changes in governing regulations eliminated numerous applications and licenses, notably when holders of class C privileges moved to locations ineligible for that class.

Amateur radio applications

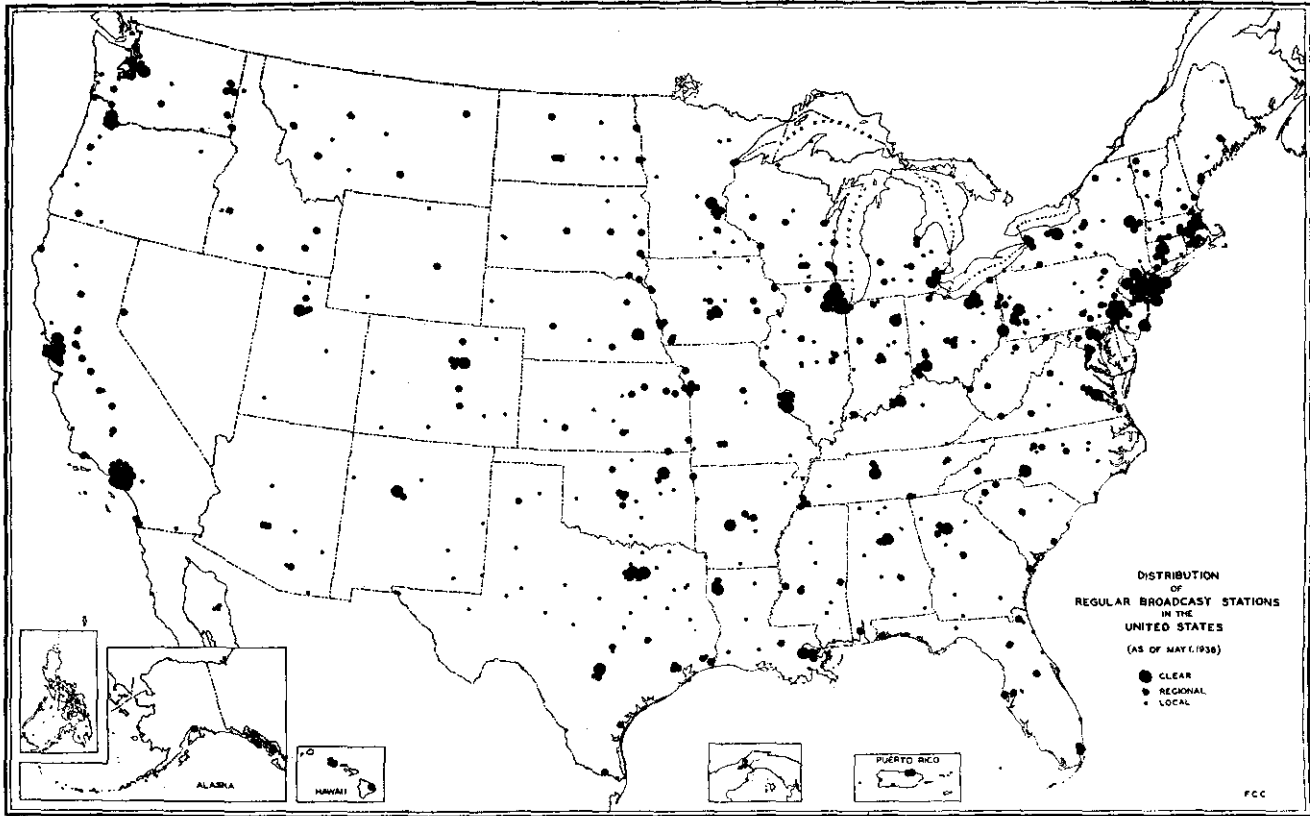
Received:		
Pending July 1, 1938.....		890
Received during the fiscal year.....		38, 655
Total.....		39, 545
Disposed:		
Approved.....		25, 737
Returned to applicants.....		6, 303
Referred to other Federal agencies, etc.....		398
Failed required examinations.....		5, 878
Total.....		38, 316
Pending, close of June 30, 1939.....		1, 229

Ordinarily an amateur uses a joint form for two applications—for his license as an amateur operator and for license of his transmitter as an amateur station. The two applications are not counted separately unless filed separately, but in smaller number an application is counted twice if filed twice and otherwise one individual may within the year make several applications for license issues, renewals, or modifications. Similarly the figures for examinations include more than one for those who fail and later repeat, or who pass and later try for higher class of privileges.

Amateur radio examinations

Nature	Number	Passed	Failed	Percent failed
Code tests.....	12, 314	8, 311	4, 003	33
Written tests:				
Class A envelope ¹	2, 219	1, 701	518	23
Class B envelope ¹	5, 602	4, 601	1, 001	18
Class C envelope.....	2, 145	1, 770	375	17
Abridged (rules 405 and 406, now 151.20).....	1, 159	1, 007	152	13
Total.....	11, 125	9, 079	2, 046	18

¹ In 329 instances the examination included both A and B envelopes.



Heretofore an amateur gaining higher class of privileges received an endorsement on his license card without extending its term. Under the amended regulations the practice was changed so that in most instances such qualifications for change of operating privileges was recognized as basis for beginning a full license term. This is reflected in the distribution of figures in the following tabulation as compared to the previous year, increasing license issues and decreasing endorsements.

Amateur radio authorizations

Station licenses:	
New	6,762
Renewed	7,900
Modified and reissued	9,875
Total	24,337
Operator licenses	24,353
Operator license endorsements	662
Duplicates of lost or destroyed licenses	477
Total	25,492
Grand total	49,829

The net effect of issues and eliminations was an increase in the number of outstanding amateur licenses, as shown in terms of stations. The number of licensed amateur operators is somewhat less, but also passed 50,000 during the year.

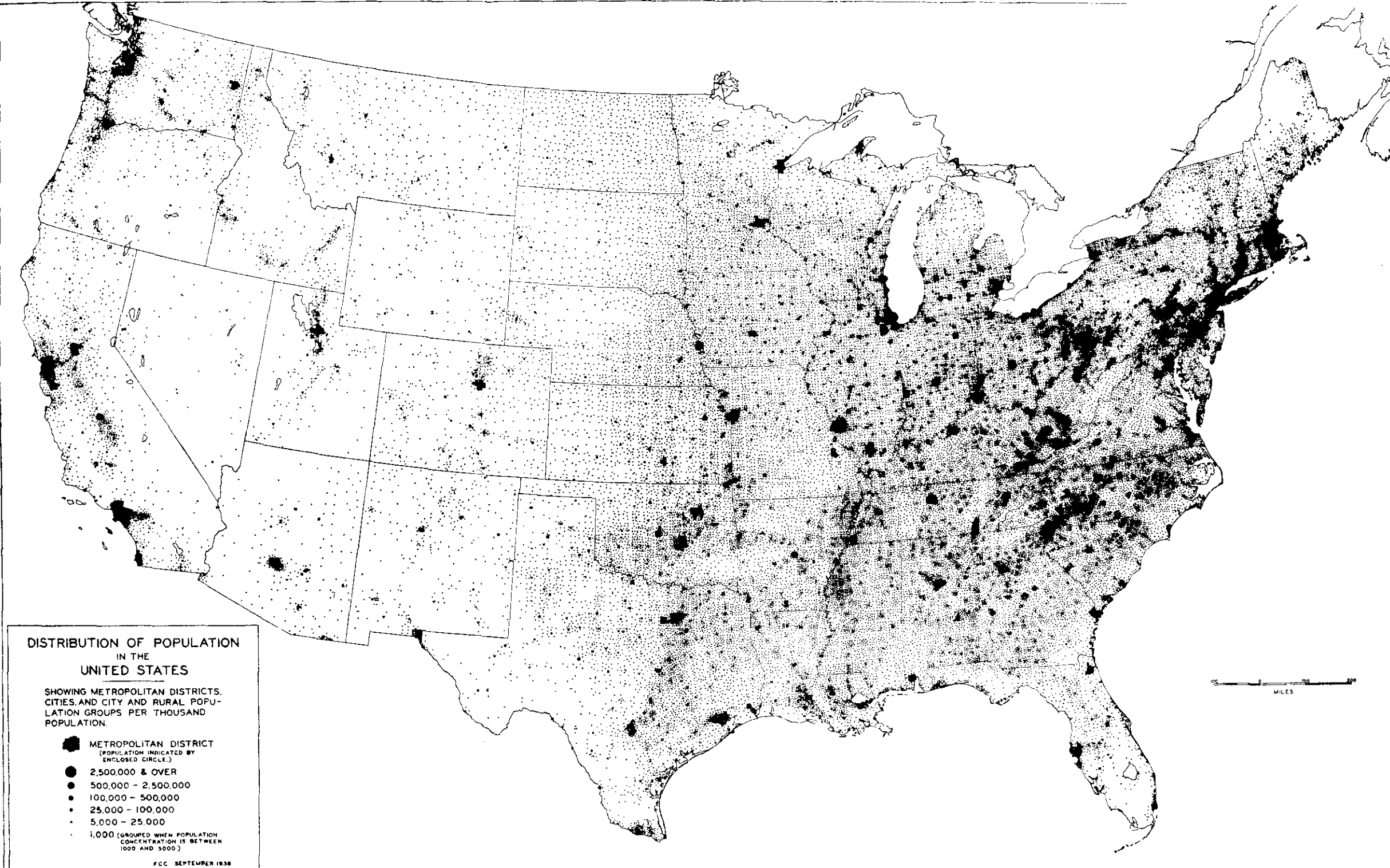
Amateur radio station licenses

Valid at close of fiscal year 1938	49,911
Plus:	
Expired but not deleted June 30, 1938	1,073
New issues, fiscal year 1939	6,762
Total	7,835
Total valid	57,746
Less eliminations, fiscal year 1939:	
Revocations	0
Cancelations	124
Deletions	2,953
Expirations (renewal yet possible)	1,111
Total	4,188
Valid of record close of June 30, 1939	53,558

COMMERCIAL RADIO OPERATORS








To permit quick service in qualifying operators for land, sea, and air radio stations, such licensing is largely decentralized, with 27 offices of issue. License issues and related items are reported for a central record and during the year aggregated 31,585. This was an increase of nearly 50 percent over the previous year, reflecting increased use of radio facilities for police purposes and other services. (See also Field inspections, Investigations, and Other activities in these appendices.)

A detailed report arranged according to service appears in the following table:



**DISTRIBUTION OF POPULATION
IN THE
UNITED STATES**

SHOWING METROPOLITAN DISTRICTS,
CITIES AND CITY AND RURAL POPU-
LATION GROUPS PER THOUSAND
POPULATION.

- 
METROPOLITAN DISTRICT
 (POPULATION INDICATED BY
 ENCLOSED CIRCLE.)
- 
2,500,000 & OVER
- 
500,000 - 2,500,000
- 
100,000 - 500,000
- 
25,000 - 100,000
- 
5,000 - 25,000
- 
**1,000 (GROUPED WHEN POPULATION
 CONCENTRATION IS BETWEEN
 1000 AND 3000)**

FCC SEPTEMBER 1938

0 100 200
MILES

Commercial licenses

	Applica- tions received	Authori- zations issued	New sta- tions authorized	Stations deleted	Total sta- tions June 30, 1939
EMERGENCY					
Municipal police.....	3,154	2,229	468	20	787
State police.....	485	312	68	77	227
Interzone police.....	70	45	5	0	26
Zone police.....	161	111	16	0	53
Marine fire.....	29	13	1	0	4
Forestry.....	542	457	247	0	247
Special emergency.....	492	397	99	3	192
AVIATION					
Aircraft.....	2,286	2,255	506	215	1,237
Aeronautical.....	808	653	68	14	378
Aeronautical point to point.....	320	251	23	8	152
Airport.....	120	80	4	0	67
FIXED PUBLIC					
Point to point:					
Telegraph.....	945	864	35	12	467
Telegraph-press.....	274	103	11	0	69
Telephone.....	359	357	58	11	274
FIXED PRIVATE					
Point to point:					
Telegraph.....	None	None	None	None	None
Telephone.....	None	None	None	None	None
PUBLIC COASTAL					
Coastal harbor.....	153	161	24	0	126
Coastal telegraph.....	174	132	0	8	106
Coastal telephone.....	5	5	0	0	4
Marine relay.....	47	45	1	0	41
PRIVATE COASTAL					
Coastal harbor.....	0	0	0	0	0
Coastal telegraph.....	3	3	0	0	3
AGRICULTURE					
Point to point:					
Telegraph.....	7	7	0	0	7
EXPERIMENTAL					
General experimental.....	650	707	18	0	372
Special experimental.....	370	357	10	0	
Class I.....	69	0	0	0	
Class II.....	73	0	0	0	
Class III.....	0	0	0	0	
MISCELLANEOUS GEOPHYSICAL					
Geological.....	410	345	111	49	280
INTERMITTENT					
Motion picture.....	25	24	6	0	10
Provisional.....	8	5	2	0	2
SPECIAL PRESS					
Relay press.....	15	6	5	0	5
Mobile press.....	5	3	0	0	3
Ship.....	5,632	5,281	962	860	3,756
Total.....	17,566	15,208	2,748	1,277	8,375

Wire certificates, telephone—received, 46, granted, 41; telegraph—received, 14, granted, 16.
Grand total applications received, 17,626; grand total applications granted, 15,265.

APPENDIX F

FINANCIAL AND OTHER STATISTICAL DATA RELATING TO STANDARD BROADCAST STATIONS

Tables I to X, and charts 1 to 3, shown in this appendix, contain financial, operating, program, employment, and other statistical data relating to the broadcasting industry in 1938. These data are, for the most part, based upon annual reports from licensees of standard broadcast stations, filed pursuant to section 15.11 (now section 1.361) of the Commission's Rules of Practice and Procedure, and upon the responses of the three major networks to the Commission's requests for certain information.

The following statement shows the status of the returns from stations as of June 28, 1939, when the data mentioned were compiled:

Commercial broadcast stations included in the summaries.....	660
Noncommercial stations (not included in the summaries).....	138
Extraterritorial stations (not included in the summaries).....	10
Stations filing incomplete reports (not included in the summaries).....	14
Construction permits for new stations.....	42
	764

¹ Includes 24 stations operated by educational institutions, 12 by religious groups, and 2 by miscellaneous organizations.

Geographical groupings.—All broadcast stations operating in the United States have been grouped geographically for statistical purposes into three districts. These districts have been further subdivided into seven regions as follows:

NORTHERN DISTRICT

Northeastern region.—Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

Great Lakes region.—Illinois, Indiana, Kentucky, Michigan, Ohio, West Virginia, and Wisconsin.

Midwest region.—Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

SOUTHERN DISTRICT

Southeastern region.—Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

South Central region.—Oklahoma and Texas.

WESTERN DISTRICT

Mountain region.—Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

Pacific region.—California, Oregon, and Washington.

Investment of networks and stations.—As shown in tables IV and V, the investment, after depreciation, of the major networks and commercial stations in broadcast property (exclusive of goodwill) aggregated \$33,826,792 at the end of 1938. This investment is made up as follows:

Investment of networks:	
In network plant.....	\$6, 917, 630
In managed and operated stations.....	2, 358, 390
Investment of stations (excluding network-owned stations detailed above).....	24, 550, 772
Total.....	33, 826, 792

Revenue and expenses of network and stations.—The broadcasting industry in 1938 sold time for which advertisers and others paid \$117,379,459 (after trade discounts). After deducting certain sales commissions to agencies, representatives, and brokers and adding miscellaneous revenues, the balance, termed total revenues, was \$111,358,378. Broadcast expenses were \$92,503,594, leaving broadcast income in the amount of \$18,854,784. (See table I.)

The financial data shown above are divided between the networks and the stations as follows:

	Networks (excluding owned and operated stations)	660 stations
Time sales.....	\$35,455,510	\$81,923,949
Total revenues.....	32,229,618	79,128,760
Broadcast expenses.....	27,880,172	64,623,422
Broadcast income.....	4,349,446	14,505,338

Program service of broadcast stations.—The annual reports from licensees of standard broadcast stations, mentioned above, contained a schedule showing the types of programs broadcast during the week beginning December 11, 1938. During that week the 660 commercial stations mentioned herein operated a total of 67,283 station-hours. Of this total time, 22,780 hours (or 33.9 percent) were commercially sponsored, while 44,503 hours (or 66.1 percent) were furnished by the stations on a sustaining basis. (See table VIII.)

These station hours are further classified as follows:

	Station hours	Percent of total
Personal rendition:		
Taken from national networks.....	19,644	29.2
Taken from regional networks.....	2,896	4.3
Originated and broadcast locally.....	22,616	33.6
Subtotal.....	45,156	67.1
Mechanical rendition:		
Transcriptions.....	14,773	22.0
Phonograph records.....	7,354	10.9
Subtotal.....	22,127	32.9
Grand total.....	67,283	100.0

Employment in the broadcasting industry.—During the week beginning December 11, 1938, the major networks and 660 commercial broadcast stations had 18,359 full-time employees and 4,377 part-time employees. These employees received \$830,003 and \$103,134, respectively, in the form of compensation during that week, or an average of \$45.20 and \$23.55, respectively. At December 31, 1938, there were 23,060 employees in the service of the above-indicated networks and stations, and the total compensation in 1938 of all employees, including officers, was \$45,663,757. (See table IX.)

Tables and charts.—Tables I to X and charts 1 to 3, referred to above, follow:

TABLE I.—Combined income statement of 3 major networks and licensees of 660 broadcast stations (including 1 major network not the licensee of any such station)

[Year ended Dec. 31, 1938]

Item	Network operations ¹	23 stations ²	637 stations	Networks and stations
Revenues:				
Network time sales.....	\$35,455,510	\$5,347,388	\$15,810,027	\$56,612,926
Other time sales (less payments to other stations of \$745,452).....		7,837,258	52,929,276	60,766,534
Total time sales by networks and stations.....	35,455,510	13,184,646	68,739,303	117,379,459
Deduct: Commission to agencies, representatives, and brokers.....	8,165,742	1,102,486	7,218,972	16,487,200
Net revenue received from sale of time.....	27,289,768	12,082,160	61,520,331	100,892,259
Sale and placing of talent.....	2,381,964	388,818	3,310,562	6,081,344
Other incidental broadcast revenues.....	2,537,416	161,971	1,664,918	4,364,305
Sustaining programs sold to stations.....	20,470			20,470
Total revenues of networks and stations.....	32,229,618	12,632,949	66,495,811	111,358,378
Expenses:				
Technical expenses.....	2,301,069	1,597,133	9,150,386	13,048,588
Program, talent, and communication-line expense (including sustaining programs purchased, royalties, and similar items).....	14,872,981	3,060,424	20,163,589	38,196,994
Advertising, promotional, and selling expenses.....	2,715,298	906,664	6,341,174	9,963,136
General and administrative expenses.....	3,635,724	861,360	10,591,634	15,088,718
Unallocated direct broadcast expenses.....	481,163	142,640	4,585,296	5,209,099
Indirect broadcast expenses (depreciation, amortization, taxes, uncollectible revenue, and rents).....	3,873,937	1,106,439	6,016,683	10,997,059
Total broadcast expenses.....	27,880,172	7,674,660	56,948,762	92,503,594
Broadcast income.....	4,349,446	4,958,289	9,547,049	18,854,784
Income from broadcast assets leased to others.....				277,165
Income from others who use licensee stations for their own time sales.....				928,218
Income from general services to licensees.....				92,958
Total income derived from activities related to broadcasting.....				20,153,115

¹ Excludes stations managed and operated by networks.

² Represents stations managed and operated by networks.

PERCENTAGE DISTRIBUTION OF TIME SALES OF NETWORKS AND COMMERCIAL STATIONS

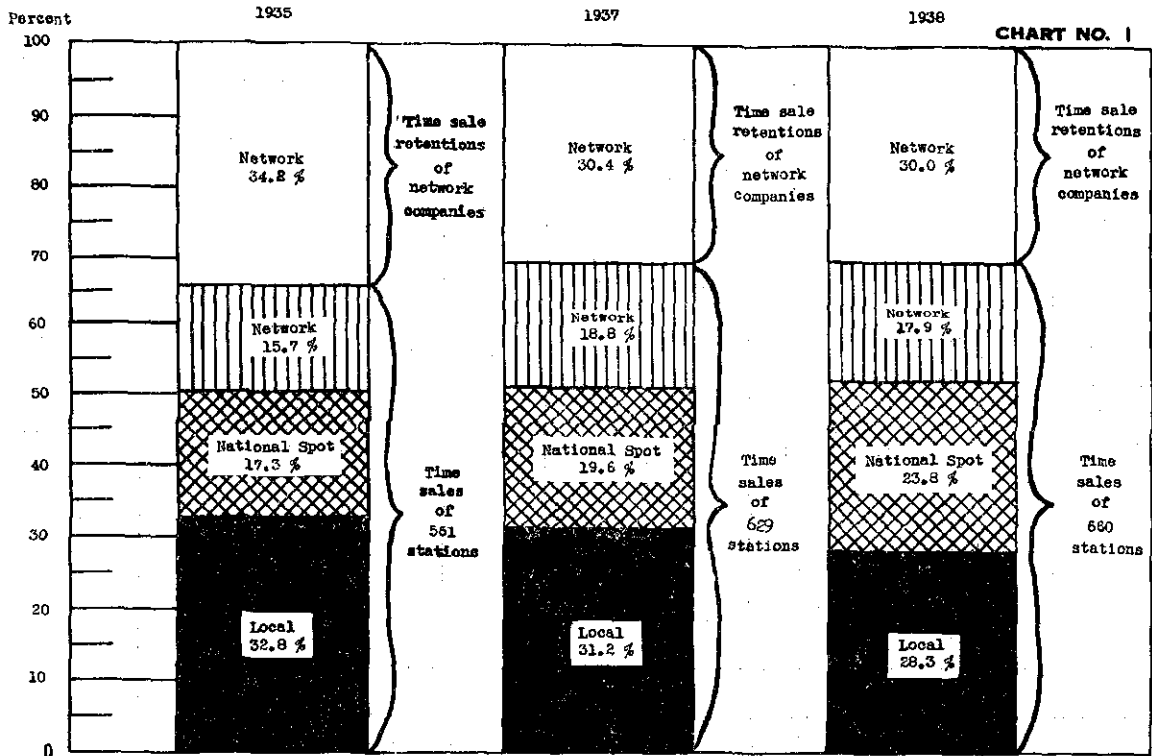


TABLE II.—Broadcast income items of stations by class and network affiliation, 1938

STATIONS AFFILIATED WITH NATIONAL NETWORKS

Item (1)	Clear channel				Regional				Local		Grand total (12)
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day (8)	Part-time (9)	Unlimited (10)	Day and part-time (11)	
	Unlimited (2)	Part-time (3)	Unlimited (4)	Part-time (5)	High-power (6)	Other (7)					
Stations with time sales of \$25,000 or more:											
Number of stations.....	31	4	14	4	8	161	11	14	64	5	316
Revenue from sale of station time:											
To national networks.....	\$9,302,760	\$341,822	\$928,070	\$45,355	\$645,132	\$7,661,101	\$20,559	\$373,672	\$318,108	\$10,868	\$19,645,447
To regional networks.....	53,695		6,968	319	21,577	874,712	3,805	13,956	89,902	21,307	1,086,241
To stations.....	67,023			4,240	6,467	187,281	5,368	17,949	8,785	210	297,323
To national and regional users.....	12,139,067	977,970	1,213,512	252,350	670,167	8,676,102	225,943	401,801	597,259	10,444	26,164,615
To local users.....	3,363,589	325,844	837,960	216,159	672,203	11,250,916	661,439	649,776	2,674,165	139,422	20,791,477
Sale of other station time.....	73,597	1		2,435		308,579	14,154	986	44,090		443,842
Total sale of station time.....	24,999,731	1,645,637	2,984,510	520,858	2,015,546	28,958,691	931,268	1,458,140	3,732,309	182,251	67,428,941
Deductions:											
Payments to networks and stations (from sale of time).....	320,679	65,222	6,515	649	5,881	222,055	14,961	16,470	16,805	3,822	673,059
Commissions to regularly established agencies.....	2,551,376	27,251	236,104	37,044	163,654	1,872,341	41,352	68,863	87,292	4,339	5,089,616
Commissions to representatives, brokers, and others.....	538,058	34,673	97,641	12,996	42,852	994,696	23,917	36,427	82,503	2,351	1,866,114
Total deductions from sale of station time.....	3,410,113	127,146	340,260	50,689	212,387	3,069,092	80,230	121,760	186,600	10,512	7,628,789
Balance, net time sales.....	21,589,618	1,518,491	2,644,250	470,169	1,803,159	25,869,599	851,038	1,336,380	3,545,709	171,739	59,800,152
Incidental broadcast revenues:											
Revenue from the sale and placing of talent.....	1,299,904	190,609	89,173	35,673	58,063	1,286,271	36,607	62,251	68,027		3,126,668
Miscellaneous sales.....	434,394	39,781	208,464	23,362	28,514	668,213	38,814	25,823	75,774	197	1,543,336
Total incidental broadcast revenues.....	1,734,298	230,480	297,637	59,035	86,577	1,954,484	75,421	88,074	143,801	197	4,670,004
Total broadcast revenues.....	23,323,916	1,748,971	2,941,887	529,204	1,889,736	27,824,083	926,459	1,424,454	3,689,510	171,936	64,470,156

Expenses:												
Technical expenses.....	3,245,187	164,600	506,407	90,155	264,348	3,684,077	134,680	190,193	553,170	27,431	8,862,347	
Program expenses.....	6,646,934	607,077	834,859	157,401	548,287	7,999,576	379,005	425,446	1,120,510	57,782	18,776,577	
Advertising, promotional, and selling expenses.....	1,397,967	112,304	316,704	64,622	199,614	2,875,614	146,923	178,960	529,973	26,330	5,849,011	
General and administrative ex- penses.....	2,304,038	213,162	411,479	108,626	294,901	4,411,071	151,220	239,912	712,442	26,165	8,873,016	
Other broadcast expenses.....	386,385	94,609	92,100	10,691	67,080	908,251	26,142	49,386	117,577	4,480	1,756,701	
Total broadcast expenses.....	13,980,511	1,191,842	2,161,249	431,495	1,374,230	19,878,589	839,979	1,083,897	3,033,672	142,188	44,117,652	
Net broadcast revenues.....	9,343,405	557,129	780,638	97,709	515,506	7,945,494	86,480	340,557	655,838	20,748	20,352,504	
Deductions from net broadcast re- venues ¹	1,700,960	173,034	347,552	43,782	197,871	2,617,358	94,088	102,317	314,291	3,342	5,594,595	
Broadcast income.....	7,642,445	384,095	433,086	53,927	317,635	5,328,136	-7,608	238,240	341,547	26,406	14,757,009	
All commercial stations:												
Number of stations.....	31	4	14	4	8	161	12	15	91	10	350	
Broadcast revenues.....	\$23,323,916	\$1,748,971	\$2,941,887	\$529,204	\$1,889,736	\$27,824,083	\$945,381	\$1,447,701	\$4,109,908	\$251,850	\$65,012,637	
Broadcast expenses.....	13,980,511	1,191,842	2,161,249	431,495	1,374,230	19,878,589	872,125	1,107,584	3,468,133	203,456	44,667,214	
Net broadcast revenues.....	9,343,405	557,129	780,638	97,709	515,506	7,945,494	73,256	340,117	643,775	48,394	20,345,423	
Deductions from net broadcast revenues ¹	1,700,960	173,034	347,552	43,782	197,871	2,617,358	98,723	103,308	367,538	40,852	5,890,978	
Broadcast income.....	7,642,445	384,095	433,086	53,927	317,635	5,328,136	-25,467	236,809	276,237	7,542	14,654,445	

STATIONS AFFILIATED WITH REGIONAL NETWORKS ONLY

Stations with time sales of \$25,000 or more:										
Number of stations.....						4	5	5	3	17
Revenue from sale of station time:										
To national networks.....						\$478				\$478
To regional networks.....						26,582	\$13,256	\$10,655	\$18,028	68,521
To stations.....						280	1,230	5,709	1,695	8,914
To national and regional users.....						44,022	56,295	54,210	25,459	179,986
To local users.....						398,501	135,333	210,234	78,713	822,781
Sale of other station time.....							5,240			5,240
Total sale of station time.....						469,863	211,354	280,808	123,895	1,085,920
Deductions:										
Payments to networks and sta- tions (from sale of time).....						5,309		732	8,255	14,296
Commissions to regularly estab- lished agencies.....						41,624	5,860	6,197	3,067	56,738

See footnotes at end of table.

TABLE II.—Broadcast income items of stations by class and network affiliation, 1938—Continued

STATIONS AFFILIATED WITH REGIONAL NETWORKS ONLY—Continued

Item (1)	Clear channel				Regional				Local		Grand total (12)
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day (8)	Part-time (9)	Unlimited (10)	Day and part-time (11)	
	Unlimited (2)	Part-time (3)	Unlimited (4)	Part-time (5)	High-power (6)	Other (7)					
Stations with time sales of \$25,000 or more—Continued.											
Deductions—Continued.											
Commissions to representatives, brokers, and others						\$28,817	\$2,932		\$100	\$2,400	\$34,249
Total deductions from sale of station time						75,750	8,782		7,029	13,722	105,283
Balance, net time sales						394,113	202,572		273,779	110,173	980,637
Incidental broadcast revenues:											
Revenue from the sale and placing of talent						106,363	1,111				107,474
Miscellaneous sales						98,862	3,630			935	103,427
Total incidental broadcast revenues						205,225	4,741			935	210,901
Total broadcast revenues						599,338	207,313		273,779	111,108	1,191,538
Expenses:											
Technical expenses						95,510	34,545		46,939	15,716	192,710
Program expenses						384,114	63,115		78,835	27,613	553,677
Advertising, promotional, and selling expenses						48,647	19,342		59,588	16,481	144,058
General and administrative expenses						135,870	43,249		21,488	26,214	226,821
Other broadcast expenses						10,342	9,212		20,331	2,601	42,486
Total broadcast expenses						674,483	169,463		227,181	88,625	1,159,752
Net broadcast revenues						-75,145	37,850		46,598	22,483	31,786

Deductions from net broadcast revenues ¹					66,074	22,781		31,791	23,485	144,131
Broadcast income.....					-141,219	15,069		14,807	-1,062	-112,345
All commercial stations:										
Number of stations.....					4	5		8	3	20
Broadcast revenues.....					\$599,338	\$207,313		\$337,659	\$111,108	\$1,255,418
Broadcast expenses.....					674,483	169,463		284,371	88,625	1,216,927
Net broadcast revenues.....					-75,145	37,850		53,288	22,483	38,476
Deductions from net broadcast revenues ¹					66,074	22,781		38,560	23,485	160,900
Broadcast income.....					-141,219	15,069		14,728	-1,062	-112,424

STATIONS NOT AFFILIATED WITH NETWORKS

Stations with time sales of \$25,000 or more:					23	33	13	63	20	152
Number of stations.....										
Revenue from the sale of station time:										
To national networks.....					\$12,133			\$690		\$12,823
To regional networks.....					28,658	\$1,384		494	\$208	30,834
To stations.....					6,634			1,200		6,834
To national and regional users.....					951,131	740,564	\$497,097	525,285	60,507	2,764,584
To local users.....					2,271,471	1,739,483	1,137,499	2,817,463	769,399	8,735,325
Sale of other station time.....					12,269	28,041	37,328	5,746	730	84,114
Total sale of station time.....					3,281,296	2,509,482	1,671,924	3,350,878	820,934	11,634,514
Deductions:										
Payments to networks and stations (from sale of time).....					52,847		5,250			58,097
Commissions to regularly established agencies.....					368,331	174,937	124,762	68,999	14,541	751,570
Commissions to representatives, brokers, and others.....					151,207	154,736	90,445	107,862	18,921	523,171
Total deductions from sale of station time.....					572,385	329,873	220,457	176,861	33,462	1,332,838
Balance, net time sales.....					2,708,911	2,179,809	1,451,467	3,174,017	787,472	10,301,676
Incidental broadcast revenues:										
Revenue from the sale and placing of talent.....					222,802	117,899	61,184	60,212	3,141	465,238

See footnotes at end of table.

TABLE II.—Broadcast income items of stations by class and network affiliation, 1938—Continued

STATIONS NOT AFFILIATED WITH NETWORKS—Continued

Item (1)	Clear channel				Regional				Local		Grand total (12)
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day (8)	Part-time (9)	Unlimited (10)	Day and part-time (11)	
	Unlimited (2)	Part-time (3)	Unlimited (4)	Part-time (5)	High-power (6)	Other (7)					
Stations with time sales of \$25,000 or more—Continued.											
Incidental broadcast revenues—Con.											
Miscellaneous sales.....						\$94,446	\$27,524	\$8,740	\$46,038	\$3,378	\$180,126
Total incidental broadcast revenues.....						317,248	145,423	69,924	106,250	6,519	645,364
Total broadcast revenues.....						3,026,159	2,325,232	1,521,391	3,280,267	793,991	10,947,040
Expenses:											
Technical expenses.....						474,252	395,974	233,671	469,052	119,513	1,692,462
Program expenses.....						1,253,901	840,056	569,245	1,094,595	235,962	3,993,759
Advertising, promotional, and selling expenses.....						270,312	273,951	159,816	430,988	119,702	1,254,789
General and administrative expenses.....						680,375	483,406	280,315	764,094	144,967	2,353,157
Other broadcast expenses.....						82,050	70,315	83,140	151,194	21,535	408,234
Total broadcast expenses.....						2,760,890	2,063,702	1,326,187	2,909,923	641,679	9,702,381
Net broadcast revenues.....						265,269	261,530	195,204	370,344	152,312	1,244,659
Deductions from net broadcast revenues ¹						305,050	232,371	114,300	299,423	83,038	1,034,182
Broadcast income.....						-39,781	29,159	80,904	70,921	69,274	210,477
All commercial stations:											
Number of stations.....						30	51	18	128	63	290
Broadcast revenues.....						\$3,159,662	\$2,579,573	\$1,598,336	\$4,157,396	\$1,355,738	\$12,860,705

Broadcast expenses.....						2,875,061	2,390,066	1,410,257	3,748,982	1,191,778	11,616,144
Net broadcast revenues.....						284,601	189,507	188,079	408,414	173,960	1,244,561
Deductions from net broadcast revenues ¹						320,523	267,944	123,054	416,254	153,469	1,281,244
Broadcast income.....						-35,922	-78,437	65,025	-7,840	20,491	-80,683

TOTAL STATIONS

Stations with time sales of \$25,000 or more: Number of stations.....	31	4	14	4	8	188	49	27	132	28	485
Revenue from the sale of station time:											
To national networks.....	\$9,302,760	\$341,822	\$926,070	\$45,355	\$645,132	\$7,673,712	\$20,559	\$373,672	\$318,798	\$10,868	\$19,658,746
To regional networks.....	53,695	6,968	6,968	319	21,577	929,952	18,445	13,956	101,051	39,633	1,185,596
To stations.....	67,023			4,240	8,467	193,195	6,598	17,949	15,694	1,905	313,071
To national and regional users.....	12,139,067	977,970	1,213,512	252,350	670,167	9,671,255	1,022,802	898,898	1,176,754	86,410	28,109,185
To local users.....	3,363,589	325,844	837,960	216,159	672,203	13,920,888	2,536,265	1,787,275	5,701,862	987,534	30,349,879
Sale of other station time.....	73,597	1		2,435		320,848	47,435	38,314	49,830	730	533,196
Total sale of station time.....	24,999,731	1,845,637	2,984,510	520,858	2,015,546	32,709,850	3,652,104	3,190,064	7,363,995	1,127,080	80,149,375
Deductions:											
Payments to networks and stations (from sale of time).....	320,679	65,222	6,515	649	5,881	280,211	14,961	21,720	17,537	12,077	745,452
Commissions to regularly established agencies.....	2,551,376	27,251	236,104	37,044	163,654	2,282,296	222,139	193,625	162,488	21,947	5,897,924
Commissions to representatives, brokers, and others.....	638,038	34,673	97,641	12,996	42,852	1,174,720	181,585	126,872	190,465	23,672	2,423,534
Total deductions from sale of station time.....	3,410,113	127,146	340,260	50,689	212,387	3,737,227	418,685	342,217	370,490	57,696	9,066,910
Balance, net time sales.....	21,589,618	1,518,491	2,644,250	470,169	1,803,159	28,972,623	3,233,419	2,787,847	6,993,505	1,069,384	71,082,465
Incidental broadcast revenues:											
Revenue from the sale and placing of talent.....	1,290,904	190,699	89,173	35,673	58,063	1,615,436	155,617	123,435	128,239	3,141	3,699,380
Miscellaneous sales.....	434,394	39,781	208,464	23,362	28,514	861,521	69,968	34,563	121,812	4,510	1,826,889
Total incidental broadcast revenues.....	1,734,298	230,480	297,637	59,035	86,577	2,476,957	225,585	157,998	250,051	7,651	5,526,269
Total broadcast revenues.....	23,323,916	1,748,971	2,941,887	529,204	1,889,736	31,449,580	3,459,004	2,945,845	7,243,556	1,077,035	76,608,734

See footnotes at end of table.

TABLE II.—Broadcast income items of stations by class and network affiliation, 1938—Continued

TOTAL STATIONS—Continued

Item (1)	Clear channel				Regional				Local		Grant total (12)
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day (8)	Part-time (9)	Unlimited (10)	Day and part-time (11)	
	Unlimited (2)	Part-time (3)	Unlimited (4)	Part-time (5)	High-power (6)	Other (7)					
Stations with time sales of \$25,000 or more—Continued.											
Expenses:											
Technical expenses.....	\$3,245,187	\$164,690	\$506,407	\$90,155	\$264,348	\$4,253,839	\$567,208	\$423,864	\$1,069,161	\$162,660	\$10,747,519
Program expenses.....	6,646,934	607,077	834,559	157,401	548,287	9,637,591	1,282,176	994,691	2,293,940	321,357	23,324,013
Advertising, promotional, and selling expenses.....	1,397,967	112,304	316,704	64,622	199,614	3,194,573	440,216	338,776	1,020,549	162,513	7,247,838
General and administrative expenses.....	2,304,038	213,162	411,479	108,626	294,901	5,227,316	677,875	520,227	1,498,024	197,346	11,452,994
Other broadcast expenses.....	386,385	94,609	92,100	10,691	67,080	1,000,643	105,669	132,526	289,102	28,616	2,207,421
Total broadcast expenses.....	13,980,511	1,191,842	2,161,249	431,495	1,374,230	23,313,962	3,073,144	2,410,084	6,170,776	872,492	54,979,785
Net broadcast revenues.....	9,343,405	557,129	780,638	97,709	515,506	8,135,618	385,860	535,761	1,072,780	204,543	21,628,949
Deductions from net broadcast revenues ¹	1,700,960	173,034	347,552	43,782	197,871	2,988,482	349,240	216,617	645,505	109,865	6,772,908
Broadcast income.....	7,642,445	384,095	433,086	53,927	317,635	5,147,136	36,620	319,144	427,275	94,678	14,856,041
All commercial stations:											
Number of stations.....	31	4	14	4	8	195	68	33	227	76	660
Broadcast revenues.....	\$23,323,916	\$1,748,971	\$2,941,887	\$529,204	\$1,889,736	\$31,583,083	\$3,732,267	\$3,046,037	\$8,604,963	\$1,728,696	\$79,128,700
Broadcast expenses.....	13,980,511	1,191,842	2,161,249	431,495	1,374,230	23,428,133	3,431,654	2,517,841	7,499,486	1,483,859	57,500,300
Net broadcast revenues.....	9,343,405	557,129	780,638	97,709	515,506	8,154,950	300,613	528,196	1,105,477	244,837	21,628,460
Deductions from net broadcast revenues ¹	1,700,960	173,034	347,552	43,782	197,871	3,003,955	389,448	226,362	822,352	217,806	7,123,122
Broadcast income.....	7,642,445	384,095	433,086	53,927	317,635	5,150,995	-88,835	301,834	283,125	27,031	14,505,338

¹ Includes depreciation, amortization, plant losses, taxes, uncollectible revenue, and rents, all assignable to broadcast services.

NOTE A.—The term "part-time" as used in this table refers to share-time and specified-hour stations.

NOTE B.—Dash [—] indicates a deficit or other reverse item.

TABLE III.—Income items of broadcast stations by broadcast region and State

Broadcast region and State	Number of stations	Stations with time sales of \$25,000 or more						Deductions from time sales ¹	Incidental broadcast revenues ²	Broadcast revenues
		Time sales			Spot	To local users	Total			
		To national networks	To regional networks	To other networks and stations						
NORTHERN DISTRICT										
Northeastern region:										
Connecticut.....	9	\$318,054	\$97,126	\$528	\$355,062	\$396,732	\$1,167,502	\$99,949	\$39,314	\$1,106,867
Delaware.....	8	423,825	9,784	1,178	365,117	571,108	1,371,012	143,456	193,949	1,421,505
Maryland.....										
Maine.....										
New Hampshire.....	5	120,607	37,745		115,647	177,754	451,753	32,373	20,258	439,638
Vermont.....										
Massachusetts.....	19	861,582	158,768	1,318	879,707	1,274,881	3,176,256	369,031	81,339	2,883,614
New Jersey.....	5	448,517			1,889,973	693,533	3,032,023	513,509	341,965	2,860,479
New York.....	34	2,630,230	4,354	4,298	2,878,997	3,341,470	8,869,349	996,825	487,752	8,350,276
Pennsylvania.....	29	1,314,228	62,342	82,637	1,915,273	2,057,661	5,432,141	571,143	336,216	5,197,214
Rhode Island.....	3	234,109	42,340		131,581	244,790	652,820	65,494	7,071	684,397
District of Columbia.....	4	308,110	3,175		284,788	483,593	1,079,672	126,019	37,134	990,787
Total, Northeastern region.....	116	6,659,262	415,634	89,959	8,816,145	9,241,528	25,222,528	2,917,799	1,545,048	23,849,777
Great Lakes region:										
Illinois.....	25	1,124,098	8,352		2,778,465	2,033,303	5,944,218	601,946	498,060	5,840,332
Indiana.....	14	237,683		245	371,198	702,691	1,311,817	72,165	68,872	1,308,524
Kentucky.....	6	350,724		4,318	310,671	377,164	1,042,877	105,785	42,206	979,298
Michigan.....	16	755,003	57,630	280	1,468,156	1,186,090	3,467,159	552,074	464,156	3,379,241
Ohio.....	21	2,999,473		22,590	2,712,295	1,327,152	7,061,510	1,349,704	496,834	6,208,640
West Virginia.....	6	39,730		1,900	189,278	344,930	575,838	49,823	29,151	555,166
Wisconsin.....	12	190,883	319	576	318,926	872,471	1,383,175	79,196	100,101	1,404,080
Total, Great Lakes region.....	100	5,697,594	66,301	29,909	8,148,989	6,843,801	20,786,594	2,810,693	1,699,380	19,675,291

See footnotes at end of table.

TABLE III.—Income items of broadcast stations by broadcast region and State—Continued

Broadcast region and State	Number of stations	Time sales						Deductions from time sales	Incidental broadcast revenues	Broadcast revenues
		Network			Spot	To local users	Total			
		To national networks	To regional networks	To other networks and stations	To national and regional users					
Stations with time sales of \$25,000 or more										
NORTHERN DISTRICT—continued										
Midwest region:										
Iowa.....	\$19	\$414,915			\$853,668	\$524,206	\$1,792,789	\$189,303	\$143,437	\$1,746,923
Kansas.....	0	123,792	\$1,423		219,875	398,947	744,037	37,171	55,733	702,599
Minnesota.....	12	434,972		\$726	742,162	1,000,415	2,178,275	194,679	167,868	2,151,464
Missouri.....	18	898,516		4,050	1,268,979	1,327,386	3,498,931	337,301	361,006	3,522,576
Nebraska.....	7	353,935			413,888	299,886	1,007,709	145,797	64,339	986,251
North Dakota.....	4	53,828			157,577	144,089	355,494	38,467	4,945	321,972
South Dakota.....	3	22,830			121,978	101,535	246,343	22,968	1,379	224,754
Total, Midwest region.....	63	2,302,788	1,423	4,776	3,778,127	3,796,464	9,883,578	965,746	798,707	9,716,539
Total, Northern district.....	279	14,659,644	483,358	124,644	20,743,261	19,881,793	55,892,700	6,694,238	4,043,135	53,241,597
SOUTHERN DISTRICT										
Southeastern region:										
Alabama.....	6	78,996		649	148,182	340,329	568,156	29,600	33,489	572,045
Arkansas.....	5	78,466	319	2,925	135,563	145,659	362,932	36,624	43,038	369,346
Mississippi.....										
Florida.....	11	207,912		300	289,981	594,200	1,182,489	71,150	9,843	1,121,182
Georgia.....	8	216,972		8,346	414,256	443,884	1,083,458	121,574	26,123	988,007
Louisiana.....	9	238,538		5,300	299,423	424,864	968,125	109,442	30,343	888,026
North Carolina.....	10	185,487			456,293	406,418	1,078,198	91,768	83,817	1,070,247
South Carolina.....	4	28,667		1,373	111,918	125,418	267,405	30,098	10,794	248,102
Tennessee.....	13	351,927		4,573	569,935	654,268	1,580,703	158,752	79,193	1,501,144
Virginia.....	10	163,175	778	2,684	291,269	430,792	918,698	86,600	43,225	875,323
Total, Southeastern region.....	76	1,670,170	1,097	26,150	2,746,820	3,565,928	8,010,165	735,608	350,865	7,634,422

South Central region:										
Oklahoma.....	7	265,048	555	43	417,877	387,392	1,070,915	113,441	46,331	1,003,805
Texas.....	30	639,175	36,514	153,180	1,185,682	1,761,035	3,755,586	387,195	247,228	3,615,619
Total, South Central region.....	37	904,223	37,069	153,223	1,583,559	2,148,427	4,826,501	500,636	293,559	4,619,424
Total, Southern district.....	113	2,574,393	38,166	179,373	4,330,379	5,714,355	12,836,663	1,236,244	653,424	12,253,846
WESTERN DISTRICT										
Mountain region:										
Arizona.....	3	47,799	806		57,122	188,061	293,788	23,802	30,333	300,319
Colorado.....	6	276,164		8,900	268,901	444,063	998,058	98,120	106,544	1,006,482
Wyoming.....										
Idaho.....	4	522			33,012	127,783	166,317	7,066	204	159,425
Montana.....	4	20,527			122,807	159,652	302,986	8,086	33,094	327,994
Nevada.....										
New Mexico.....	3	16,175			43,217	124,248	183,640	8,712	5,579	180,507
Utah.....	3	260,386			191,824	287,795	740,005	50,804	8,850	698,051
Total, Mountain region.....	23	621,573	806	8,900	721,883	1,331,632	2,684,794	160,620	184,804	2,672,778
Pacific region:										
California.....	45	1,106,835	639,043		1,766,522	2,607,107	6,119,597	760,880	423,697	5,782,414
Oregon.....	8	273,677	17,769		211,908	457,707	900,461	61,684	31,923	930,500
Washington.....	17	423,226	6,454	154	335,232	890,091	1,655,157	117,044	189,486	1,727,599
Total, Pacific region.....	70	1,803,738	663,266	154	2,313,662	3,954,905	8,735,215	939,608	645,106	8,440,513
Total, Western district.....	93	2,424,711	664,072	9,054	3,035,545	5,286,627	11,420,009	1,136,428	820,710	11,113,291
Total, United States.....	485	19,658,743	1,185,596	313,071	28,109,185	30,882,775	80,149,375	9,066,910	5,526,269	76,608,734

¹ Includes payments to networks and stations (from sale of time), commissions to regularly established agencies, commissions to representatives, brokers, and others.

² Includes revenue from the sale and placing of talent, and miscellaneous sales.

Note—Dash [—] indicates deficit or other reverse item.

TABLE III.—Income items of broadcast stations by broadcast region and State—Continued

Broadcast region and State	Stations with time sales of \$25,000 or more—Con.				All commercial stations					
	Broadcast expenses	Net broadcast revenues	Deductions from net broadcast revenue †	Broadcast income	Number of stations	Broadcast revenues	Broadcast expenses	Net broadcast revenues	Deductions from net broadcast revenues †	Broadcast income
NORTHERN DISTRICT										
Northeastern region:										
Connecticut.....	\$871, 375	\$235, 492	\$137, 975	\$97, 517	9	\$1, 106, 867	\$871, 375	\$235, 492	\$137, 975	\$97, 517
Delaware.....	931, 469	490, 036	88, 452	401, 584	9	1, 423, 010	933, 062	489, 948	88, 714	401, 234
Maryland.....										
Maine.....										
New Hampshire.....	290, 195	149, 443	32, 461	116, 982	15	603, 452	485, 876	117, 576	54, 767	62, 809
Vermont.....										
Massachusetts.....	2, 007, 884	880, 730	459, 659	421, 071	19	2, 888, 614	2, 007, 884	880, 730	459, 659	421, 071
New Jersey.....	2, 288, 726	571, 753	187, 239	384, 514	10	2, 940, 199	2, 369, 706	570, 493	195, 539	374, 954
New York.....	6, 021, 681	2, 328, 595	763, 018	1, 565, 577	41	8, 435, 976	6, 119, 263	2, 316, 713	786, 769	1, 529, 944
Pennsylvania.....	3, 150, 269	2, 037, 945	573, 751	1, 464, 194	36	5, 309, 412	3, 265, 361	2, 044, 051	588, 508	1, 455, 543
Rhode Island.....	355, 892	238, 505	57, 920	180, 585	3	594, 397	355, 892	238, 505	57, 920	180, 585
District of Columbia.....	718, 393	272, 394	210, 509	61, 885	4	990, 787	718, 393	272, 394	210, 509	61, 885
Total, Northeastern region.....	16, 644, 884	7, 204, 893	2, 510, 984	4, 693, 909	146	24, 292, 714	17, 126, 812	7, 165, 902	2, 530, 360	4, 585, 542
Great Lakes region:										
Illinois.....	4, 283, 608	1, 556, 724	436, 526	1, 120, 198	31	5, 937, 304	4, 402, 881	1, 534, 423	445, 970	1, 088, 453
Indiana.....	1, 053, 615	254, 909	92, 816	162, 093	18	1, 351, 713	1, 101, 476	250, 237	104, 630	145, 607
Kentucky.....	712, 569	260, 729	97, 173	169, 556	7	999, 548	735, 583	263, 965	101, 974	161, 991
Michigan.....	2, 610, 421	768, 820	257, 558	511, 262	19	3, 456, 693	2, 676, 009	780, 684	263, 690	516, 994
Ohio.....	3, 926, 907	2, 281, 733	455, 272	1, 826, 461	23	6, 222, 602	3, 944, 343	2, 278, 259	459, 371	1, 818, 888
West Virginia.....	470, 848	84, 318	59, 334	24, 984	7	578, 692	493, 943	84, 749	64, 439	20, 310
Wisconsin.....	1, 067, 380	336, 700	113, 906	222, 794	15	1, 445, 864	1, 105, 244	340, 620	118, 263	222, 357
Total, Great Lakes region.....	14, 125, 348	5, 540, 933	1, 512, 585	4, 037, 348	120	19, 992, 416	14, 459, 479	5, 532, 937	1, 558, 337	3, 974, 600
Midwest region:										
Iowa.....	1, 238, 855	508, 068	174, 271	333, 797	11	1, 777, 741	1, 277, 100	500, 641	181, 487	319, 154
Kansas.....	680, 749	81, 850	56, 651	25, 199	13	803, 835	716, 774	87, 061	60, 703	26, 358
Minnesota.....	1, 490, 606	660, 858	156, 189	504, 669	16	2, 230, 098	1, 572, 340	657, 758	165, 677	492, 081
Missouri.....	2, 540, 764	981, 812	243, 124	738, 688	19	3, 533, 469	2, 549, 530	983, 939	243, 124	740, 815
Nebraska.....	762, 057	224, 194	82, 123	142, 071	10	1, 088, 676	811, 597	227, 079	86, 924	140, 155
North Dakota.....	239, 206	82, 766	32, 403	50, 363	8	366, 558	286, 095	80, 463	40, 532	39, 931

South Dakota.....	199,573	25,181	23,503	1,678	6	270,439	254,851	15,588	27,554	-11,966
Total, Midwest region.....	7,151,810	2,564,729	768,264	1,796,465	83	10,020,816	7,468,287	2,552,529	806,001	1,746,528
Total, Northern district.....	37,922,042	15,319,555	4,791,833	10,527,722	349	54,305,946	39,054,578	15,251,368	4,944,698	10,306,670
SOUTHERN DISTRICT										
Southeastern region:										
Alabama.....	457,311	114,734	36,509	78,225	12	653,031	524,664	128,367	47,597	80,770
Arkansas.....	280,749	88,597	17,855	70,742	17	521,575	428,156	93,419	43,034	50,385
Mississippi.....	821,748	299,434	69,962	229,472	15	1,168,683	910,590	258,093	72,981	185,112
Florida.....	619,084	368,923	84,935	283,988	14	1,065,823	677,538	388,285	94,247	294,038
Louisiana.....	580,334	308,692	63,712	244,980	12	939,857	617,138	322,719	67,096	255,623
North Carolina.....	767,547	302,700	94,504	208,196	13	1,120,944	815,968	304,981	96,035	208,946
South Carolina.....	212,977	35,125	12,341	22,784	5	267,350	227,936	39,414	14,529	24,885
Tennessee.....	1,210,094	291,050	99,589	191,461	13	1,501,144	1,210,094	291,050	99,589	191,461
Virginia.....	639,407	235,916	98,796	137,120	11	897,020	691,573	205,447	98,796	106,651
Total, Southeastern region.....	5,589,251	2,045,171	573,203	1,466,968	112	8,135,427	6,103,652	2,031,775	633,904	1,397,871
South Central region:										
Oklahoma.....	712,755	291,050	95,691	195,359	14	1,117,443	844,643	272,800	112,081	160,719
Texas.....	2,376,809	1,238,810	283,445	955,365	45	3,601,185	2,551,952	1,249,233	311,122	938,111
Total, South Central region.....	3,089,564	1,529,860	379,136	1,150,724	59	4,918,628	3,396,595	1,522,033	423,203	1,098,830
Total, Southern district.....	8,678,815	3,575,031	957,339	2,617,692	171	13,054,055	9,500,247	3,553,808	1,057,107	2,496,701
WESTERN DISTRICT										
Mountain region:										
Arizona.....	258,537	41,782	16,675	25,107	8	347,578	294,920	52,658	21,535	31,123
Colorado.....	734,627	271,855	182,033	89,822	13	1,098,915	815,848	283,067	187,556	95,511
Wyoming.....					3	53,803	40,562	13,241	5,756	7,485
Idaho.....	134,614	24,811	13,061	11,750	6	207,165	173,089	34,076	21,332	12,744
Montana.....	231,110	96,884	28,753	68,131	7	376,458	264,737	111,671	37,404	74,267
Nevada.....										
New Mexico.....	143,668	36,839	26,600	10,239	9	252,413	205,348	47,065	36,650	10,415
Utah.....	559,712	138,339	43,624	94,715	6	728,212	588,746	139,466	47,763	91,703
Total, Mountain region.....	2,062,268	610,510	310,746	299,764	52	3,064,544	2,383,300	681,244	357,996	323,248
Pacific region:										
California.....	4,442,164	1,340,250	515,620	824,630	52	5,881,632	4,528,139	1,353,493	553,116	800,377
Oregon.....	588,104	342,396	59,101	283,295	14	1,019,899	680,378	339,521	65,864	273,657
Washington.....	1,286,392	441,207	138,269	302,938	22	1,802,684	1,353,658	449,026	144,341	304,685
Total, Pacific region.....	6,316,660	2,123,853	712,990	1,410,863	88	8,704,215	6,562,175	2,142,040	763,321	1,378,719
Total, Western district.....	8,378,928	2,734,363	1,023,736	1,710,627	140	11,768,759	8,945,475	2,823,284	1,121,317	1,701,967
Total, United States.....	54,979,785	21,628,949	6,772,908	14,856,041	660	79,128,760	57,500,800	21,628,460	7,123,122	14,505,338

¹ Includes depreciation, amortization, plant losses, taxes, uncollectible revenue and rents, all assignable to broadcast services.

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TABLE IV.—Analysis of investment of broadcast stations assignable to broadcast service (including 23 stations managed and operated by networks)

[Year ended Dec. 31, 1938]

Item	Replacement value new	Cost to the licensee	Depreciation to date under ownership by the licensee	Depreciated value at close of year
Broadcast plant in service of the licensee ¹	\$45, 732, 227	\$46, 273, 936	\$21, 510, 828	\$24, 763, 108
Broadcast plant leased to others ²	10, 290	10, 540	2, 517	7, 923
Improvements and replacements of broadcast plant leased from others ³	1, 757, 873	1, 494, 386	380, 661	1, 113, 725
Leaseholds and other intangibles in broadcast service of licensee ⁴	-----	1, 341, 064	318, 658	1, 024, 406
Total	47, 500, 390	49, 119, 926	22, 210, 764	28, 909, 162

¹ Represents data for 651 stations.

² Represents data for 2 stations.

³ Represents data for 44 stations.

⁴ Represents data for 106 stations.

NOTE.—Data shown for 656 stations, 5 stations reporting no owned plant.

TABLE V.—Investment in plant assignable to broadcast service of major networks as at the close of the year

[Year ended Dec. 31, 1938]

Item	Allocated to network service	Allocated to 23 managed and operated stations		Total
		9 key stations	14 non-key stations	
Owned broadcast plant in service of licensee (depreciated value).....	\$5, 571, 332	\$862, 912	\$628, 572	\$7, 062, 816
Improvements and replacements of broadcast plant leased from others (depreciated value).....	772, 659	38, 798	828, 106	1, 639, 563
Broadcast plant leased to others (depreciated value).....	89, 921	-----	2	89, 923
Subtotal.....	6, 433, 912	901, 710	1, 456, 680	8, 792, 302
Plant under construction.....	483, 718	-----	-----	483, 718
Goodwill.....	4, 135, 082	-----	-----	4, 135, 082
Grand total	11, 052, 712	901, 710	1, 456, 680	13, 411, 102

NOTE.—Aggregate cost to the present owners of all the foregoing items before depreciation, \$22,116,096.

TABLE VI.—Analysis of total population, total families; families owning radios, total retail sales of all retail stores, and total broadcast revenues (time sales, talent, etc.) of commercial broadcast stations, in the United States, by States and broadcast regions

Broadcast region and State	Total United States population July 1, 1937 ¹	Total United States families July 1937 ²	Families owning radios Jan. 1, 1938 ³			Retail sales of all United States retail stores, 1935 ⁴		Total broadcast revenues (time sales, talent, etc.) of commercial stations, 1938 ⁴		
			Number	Ratio to total United States families	Percent of total	Amount (thousands)	Percent of total	Amount	Percent of total	Average per radio family
NORTHERN DISTRICT										
Northeastern region:										
Connecticut.....	1,741,000	437,000	402,100	92.00	1.51	\$556,722	1.68	\$1,106,867	1.40	\$2.75
Delaware.....	261,000	67,000	57,600	86.00	.22	76,877	.23			
Maryland.....	1,679,000	410,000	355,100	87.00	1.33	462,874	1.40	1,423,010	1.80	3.45
Maine.....	856,000	221,000	201,100	91.00	.75	232,599	.70			
New Hampshire.....	510,000	136,000	124,400	92.00	.47	152,583	.46	603,452	.76	1.46
Vermont.....	383,000	99,000	88,600	90.00	.33	99,121	.30			
Massachusetts.....	4,426,000	1,104,000	1,019,200	92.00	3.82	1,461,180	4.41	2,888,614	3.65	2.83
New Jersey.....	4,343,000	1,098,000	1,022,500	93.00	3.84	1,220,299	3.68	2,940,199	3.72	2.88
New York.....	12,959,000	3,372,000	3,132,300	93.00	11.75	4,749,708	14.32	8,435,976	10.66	2.69
Pennsylvania.....	10,176,000	2,452,000	2,206,400	90.00	8.27	2,490,910	7.51	5,309,412	6.71	2.41
Rhode Island.....	681,000	169,000	155,500	92.00	.58	219,706	.66	594,397	.75	3.82
District of Columbia.....	627,000	168,000	152,900	91.00	.57	330,813	1.00	990,787	1.25	6.48
Total.....	38,642,000	9,733,000	8,917,700	92.00	33.44	12,053,392	36.35	24,292,714	30.70	2.72
Great Lakes region:										
Illinois.....	7,878,000	2,063,000	1,857,100	90.00	6.96	2,173,069	6.55	5,937,304	7.50	3.20
Indiana.....	3,474,000	934,000	816,800	87.00	3.06	790,508	2.35	1,351,713	1.71	1.65
Kentucky.....	2,920,000	708,000	494,900	70.00	1.96	388,278	1.17	999,548	1.26	2.02
Michigan.....	4,830,000	1,220,000	1,122,200	92.00	4.21	1,388,236	4.19	3,456,693	4.37	3.08
Ohio.....	6,733,000	1,777,000	1,641,500	92.00	6.15	1,956,941	5.90	6,222,602	7.87	3.79
West Virginia.....	1,865,000	417,000	348,300	84.00	1.31	332,190	1.00	578,692	.73	1.66
Wisconsin.....	2,926,000	735,000	612,700	83.00	2.30	871,832	2.63	1,445,864	1.83	2.36
Total.....	30,626,000	7,854,000	6,893,500	88.00	25.85	7,891,064	23.79	19,992,416	25.27	2.90

TABLE VI.—Analysis of total population, total families, families owning radios, total retail sales of all retail stores, and total broadcast revenues (time sales, talent, etc.) of commercial broadcast stations, in the United States, by States and broadcast regions—Continued

Broadcast region and State	Total United States population July 1, 1937	Total United States families July, 1937	Families owning radios Jan. 1, 1938			Retail sales of all United States retail stores, 1935		Total broadcast revenue ((time sales, talent, etc.) of commercial stations, 1938		
			Number	Ratio to total United States families	Percent of total	Amount (thousands)	Percent of total	Amount	Percent of total	Average per radio family
NORTHERN DISTRICT—continued										
Midwest region:										
Iowa.....	\$2,552,000	\$680,000	\$577,800	\$85.00	\$2.17	\$650,029	\$1.96	\$1,777,741	\$2.25	\$3.08
Kansas.....	1,864,000	501,000	367,800	73.00	1.38	448,261	1.35	803,835	1.02	2.19
Minnesota.....	2,652,000	652,000	556,900	85.00	2.09	820,010	2.47	2,230,098	2.82	4.00
Missouri.....	3,989,000	1,072,000	822,800	77.00	3.08	946,125	2.85	3,533,469	4.46	4.29
Nebraska.....	1,364,000	352,000	284,100	81.00	1.06	359,757	1.09	1,038,676	1.31	3.66
North Dakota.....	706,000	156,000	119,600	77.00	.45	150,208	.45	366,558	.46	3.06
South Dakota.....	692,000	167,000	132,900	80.00	.50	147,564	.45	270,439	.34	2.03
Total.....	13,819,000	3,580,000	2,861,900	80.00	10.73	3,521,954	10.62	10,020,816	12.66	3.50
Total, Northern district.....	83,087,000	21,167,000	18,673,100	88.00	70.02	23,466,400	70.76	54,305,946	68.63	2.91
SOUTHERN DISTRICT										
Southeastern region:										
Alabama.....	2,895,000	670,000	375,200	56.00	1.41	337,217	1.02	653,031	.82	1.74
Arkansas.....	2,048,000	501,000	254,800	51.00	.96	240,724	.73	521,575	.66	1.13
Mississippi.....	2,023,000	494,000	207,000	42.00	.78	178,348	.54			
Florida.....	1,670,000	443,000	297,900	67.00	1.12	425,807	1.28	1,168,683	1.48	3.92
Georgia.....	3,085,000	716,000	370,800	52.00	1.39	484,693	1.46	1,065,823	1.35	2.87
Louisiana.....	2,132,000	510,000	297,400	58.00	1.11	344,393	1.04	939,857	1.19	3.16
North Carolina.....	3,492,000	736,000	408,600	55.00	1.53	463,219	1.40	1,120,944	1.41	2.74
South Carolina.....	1,875,000	407,000	207,300	51.00	.78	248,206	.75	267,350	.34	1.29
Tennessee.....	2,893,000	689,000	459,900	67.00	1.72	482,586	1.45	1,501,144	1.90	3.26
Virginia.....	2,706,000	613,000	400,200	65.00	1.50	471,329	1.42	897,020	1.13	2.24
Total.....	24,819,000	5,779,000	3,279,100	57.00	12.30	3,676,522	11.09	8,135,427	10.28	2.48

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South Central region:										
Oklahoma.....	2,548,000	619,000	454,300	73.00	1.70	434,793	1.31	1,117,443	1.41	2.46
Texas.....	6,172,000	1,516,000	1,033,500	68.00	3.88	1,289,264	3.89	3,801,185	4.81	3.68
Total.....	8,720,000	2,135,000	1,487,800	70.00	5.58	1,724,057	5.20	4,918,628	6.22	3.31
Total, Southern district.....	33,539,000	7,914,000	4,766,900	60.00	17.88	5,400,579	16.29	13,054,055	16.50	2.74
WESTERN DISTRICT										
Mountain region:										
Arizona.....	412,000	104,000	79,600	77.00	.30	121,083	.37	347,578	.44	4.37
Colorado.....	1,071,000	288,000	233,500	81.00	.87	302,559	.91	1,098,915	1.39	4.71
Wyoming.....	235,000	62,000	49,800	80.00	.19	82,681	.25	53,803	.07	1.08
Idaho.....	493,000	124,000	98,700	80.00	.37	140,167	.42	207,165	.26	2.10
Montana.....	539,000	142,000	114,600	81.00	.43	189,457	.57	376,458	.47	3.28
Nevada.....	101,000	30,000	28,500	95.00	.11	43,932	.13			
New Mexico.....	422,000	102,000	62,300	61.00	.23	88,751	.27	252,413	.32	2.78
Utah.....	519,000	123,000	111,000	90.00	.42	132,098	.40	728,212	.92	6.56
Total.....	3,792,000	975,000	778,000	80.00	2.92	1,100,728	3.32	3,064,544	3.87	3.94
Pacific region:										
California.....	6,154,000	1,818,000	1,719,800	95.00	6.46	2,329,009	7.02	5,881,632	7.43	3.42
Oregon.....	1,027,000	289,000	285,400	95.00	1.07	335,351	1.01	1,019,899	1.29	3.57
Washington.....	1,658,000	468,000	443,300	95.00	1.66	528,709	1.60	1,802,684	2.28	4.07
Total.....	8,839,000	2,585,000	2,448,500	95.00	9.18	3,193,569	9.63	8,704,215	11.00	3.55
Total, Western district.....	12,631,000	3,560,000	3,226,500	91.00	12.10	4,294,297	12.95	11,768,759	14.87	3.65
United States.....	129,257,000	32,641,000	26,666,500	82.00	100.00	33,161,276	100.00	79,128,760	100.00	2.97

¹ Estimated by U. S. Census Bureau.

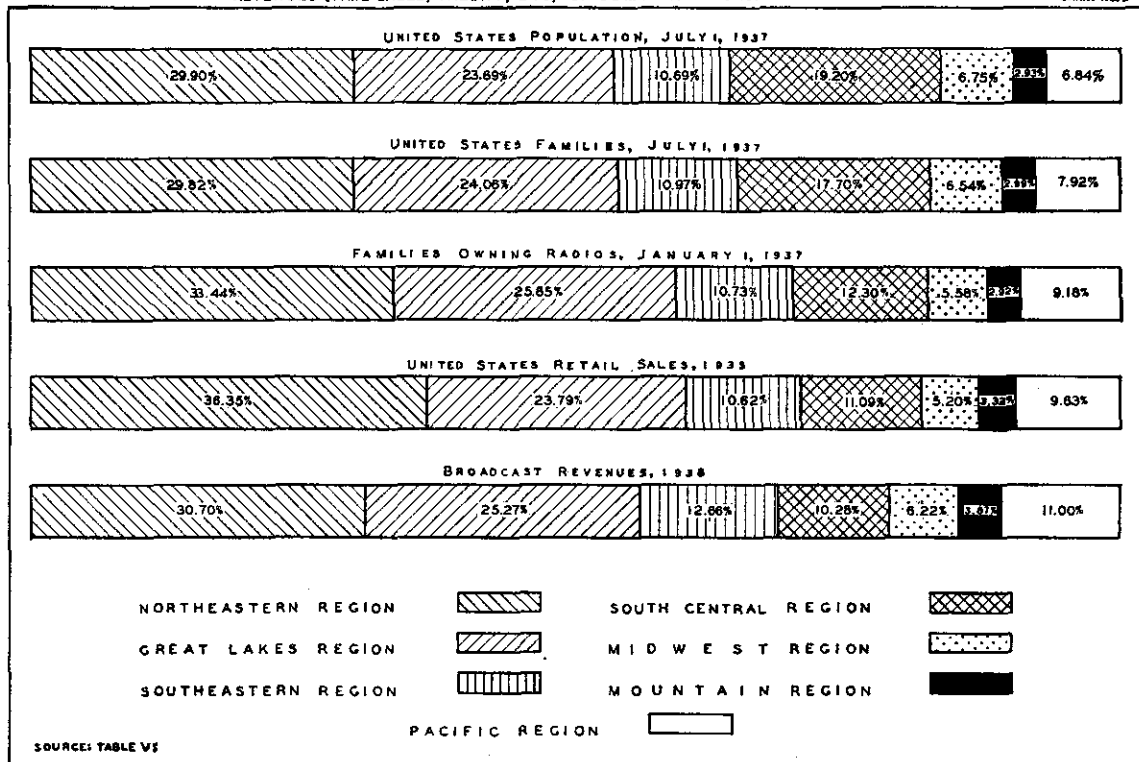
² Estimated by the Joint Committee on Radio Research.

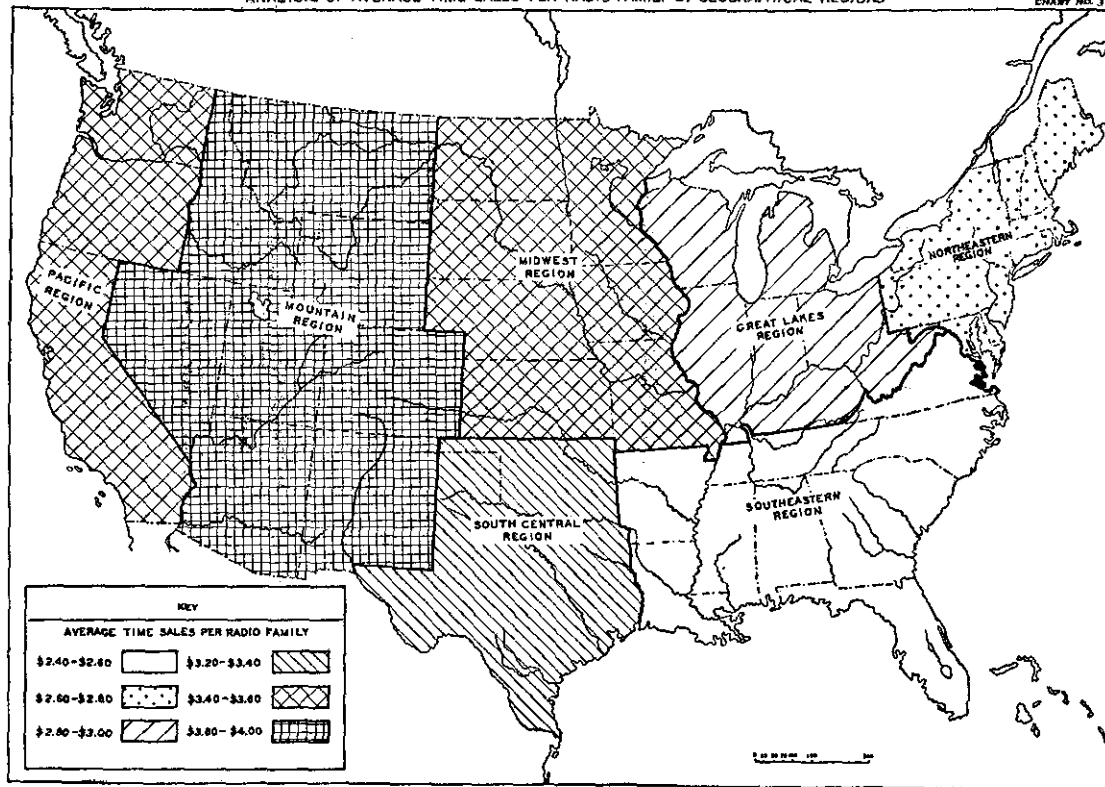
³ U. S. Census of Business, 1935: Retail Distribution.

⁴ From information furnished by licensees of standard broadcast stations on forms 705 and 706 for 1938.

PERCENTAGE DISTRIBUTION BY BROADCAST REGIONS IN THE UNITED STATES OF POPULATION, FAMILIES, FAMILIES OWNING RADIOS, RETAIL SALES OF ALL RETAIL STORES, AND TOTAL BROADCAST REVENUES (TIME SALES, TALENT, ETC) OF COMMERCIAL BROADCAST STATIONS

CHART NO. 2





UNITED STATES

TABLE VIII.—*Analysis of total program time broadcast according to media of rendition*

[During the week beginning Dec. 11, 1938]

Media of rendition	329 stations in metropolitan districts		331 stations in other places		Total, 660 stations	
	Station hours	Per cent	Station hours	Per cent	Station hours	Per cent
Commercial time:						
Personal rendition:						
Taken from national networks.....	4,808	13.5	1,021	3.2	5,829	8.7
Taken from regional networks.....	329	.9	353	1.1	682	1.0
Originated and broadcast locally.....	5,269	14.9	4,506	14.1	9,775	14.5
Mechanical rendition:						
Electrical transcriptions.....	2,061	5.8	2,207	7.0	4,268	6.4
Phonograph records.....	1,570	4.4	656	2.1	2,226	3.3
Total, commercial.....	14,037	39.5	8,743	27.5	22,780	33.9
Sustaining time:						
Personal rendition:						
Taken from national networks.....	8,177	23.1	5,638	17.8	13,815	20.5
Taken from regional networks.....	779	2.2	1,435	4.6	2,214	3.3
Originated and broadcast locally.....	6,296	17.7	6,546	20.6	12,841	19.1
Mechanical rendition:						
Electrical transcriptions.....	3,664	10.3	6,841	21.5	10,505	15.6
Phonograph records.....	2,553	7.2	2,575	8.1	5,128	7.6
Total, sustaining.....	21,468	60.5	23,035	72.5	44,503	66.1
Total time:						
Personal rendition:						
Taken from national networks.....	12,985	36.6	6,659	21.0	19,644	29.2
Taken from regional networks.....	1,108	3.1	1,788	5.6	2,896	4.3
Originated and broadcast locally.....	11,564	32.6	11,052	34.7	22,616	33.6
Mechanical rendition:						
Electrical transcriptions.....	5,725	16.1	9,048	28.5	14,773	22.0
Phonograph records.....	4,123	11.6	3,231	10.2	7,354	10.9
Grand total.....	35,505	100.0	31,778	100.0	67,283	100.0

TABLE IX.—*Employee and compensation data for networks and stations*

Item	Stations and networks	660 stations
Employees, and their compensation for the week beginning Dec. 11, 1938:		
Full-time employees:		
Number.....	18,359	14,879
Compensation.....	\$830,003	\$612,609
Average weekly compensation.....	\$45.20	\$41.17
Part-time employees:		
Number.....	4,377	3,716
Compensation.....	\$103,134	\$67,867
Average weekly compensation.....	\$23.55	\$1,826
Number of employees in service Dec. 31, 1938.....	23,060	18,638
Total compensation of employees for 1938.....	† \$45,663,757	* \$33,451,894

† Includes \$4,239,470 paid to officers of licensee companies.

* Includes \$3,626,871 paid to officers of licensee companies.

TABLE X.—Functional employment and pay-roll data for the week beginning Dec. 11, 1938

[660 commercial stations]

Class of employee	Full-time employees				Part-time employees			
	Compensated			Number not compensated	Compensated			Number not compensated
	Number	Compensation	Average weekly compensation		Number	Compensation	Average weekly compensation	
Executives:								
General managerial.....	646	\$72,414	\$112.10	36	129	\$10,015	\$77.64	42
Technical.....	443	23,423	52.87	1	21	612	29.14	3
Program.....	357	19,425	54.41	1	8	193	24.13	3
Commercial.....	281	22,875	81.41	2	6	215	35.83	8
Publicity.....	88	5,100	57.95	1	2	45	22.50	4
Miscellaneous.....	46	2,862	62.22	3	12	534	48.67	4
Total, executives.....	1,861	146,099	78.51	44	178	11,664	65.53	60
Employees (other than executive):								
Technical:								
Research and development.....	105	4,649	44.28	1	5	103	20.60	4
Operating.....	2,704	105,658	39.07	1	130	1,950	14.03	20
Miscellaneous.....	126	3,462	27.48	1	15	175	11.67	1
Total.....	2,935	113,769	38.76	1	159	2,228	14.01	24
Program:								
Production.....	499	19,047	38.17	1	59	1,120	18.98	7
Writers.....	463	14,996	32.39	2	51	1,433	28.10	15
Announcers.....	2,016	64,889	32.19	4	206	2,532	12.29	33
Staff musicians.....	1,942	87,533	45.07	2	664	12,913	19.45	220
Other artists.....	703	25,446	36.20	11	1,815	29,135	16.05	169
Miscellaneous.....	354	11,067	31.26	1	126	1,604	12.73	21
Total.....	5,977	222,978	37.31	19	2,921	48,737	18.69	465
Commercial:								
Outside salesman.....	1,298	62,830	48.41	8	71	1,734	24.42	6
Promotion and merchandising.....	187	7,383	39.48	1	16	188	11.75	2
Miscellaneous.....	115	3,624	31.51	1	7	83	11.86	1
Total.....	1,600	73,837	46.15	9	94	2,005	21.33	9
General and administrative:								
Accounting.....	435	13,031	29.96	2	80	1,145	14.31	30
Clerical.....	677	14,077	20.79	2	37	298	8.05	10
Stenographic.....	742	15,917	21.45	1	50	494	9.88	3
Miscellaneous.....	481	9,274	19.28	1	117	807	6.90	3
Total.....	2,335	52,299	22.40	4	284	2,744	9.68	46
Miscellaneous¹.....	171	3,627	21.21	1	80	489	6.11	1
Total, employees.....	13,018	466,510	35.84	33	3,538	56,203	15.89	544
Total, executives and employees.....	14,879	612,609	41.17	77	3,716	67,867	18.26	604

¹ Includes all employees not previously classified.

APPENDIX G

FIELD INSPECTIONS, INVESTIGATIONS, AND OTHER ACTIVITIES

During the past year there was marked increase in the number of commercial radio-operator examinations and licenses issued by the 22 offices of the Field Division. There were 24,837 such examinations as compared with 17,203 the year previous, or an increase of 7,624. The number of such licenses issued jumped from 16,966 to 29,601, an increase of 12,635.

There were 12,677 amateur radio operators' field examinations during the year, which was an increase of 1,665 over the year previous.

Inspection of ship radio installations was made in 16,431 instances, compared with the previous figure of 13,949, an increase of 2,482.

Land stations inspected last year numbered 5,917, an increase of 603.

During the year the following volume of work was handled by the Monitoring Section:

Frequency measurement reports received.....	15, 879
Violation reports received (Forms 792-793).....	3, 559
Reports of infractions; International Telecommunication Convention....	1, 243
Reports of unsatisfactory condition of radio installation other than ship stations.....	159
Inspection record reports (Form 813).....	2, 540
Reports of unlicensed operation.....	129
Total.....	23, 509

Violation notices served as a result of inspection were 969, an increase of 43.

Investigation of unlicensed stations and interference complaints numbered 3,728, an increase of 179.

There is noted the following decreases in work performed and the reasons therefor:

Notices served for violation of law, treaty, and regulations as a result of inspections were 1,623, a decrease of 122. This decrease is due to stricter compliance with the laws and regulations as a result of increased inspections, and familiarity on the part of the licensees with the laws and regulations as well as improvements in new apparatus installed.

Advisory notices of unsatisfactory conditions were served in 2,001 cases, a decrease of 108. This decrease is due to the same conditions explained in preceding paragraph.

Frequency measurements, all classes of stations, including Government and foreign, totaled 35,822, a decrease of 8,844. This decrease is due to the fact that some of the inspectors ordinarily engaged in monitoring work were assigned to special projects, gathering data for ship power hearing, continuous recording of field and noise intensities, and analyses of records.

Notices served for deviations beyond the prescribed frequency tolerance amounted to 744, a decrease of 371. This decrease is due to improved performance of stations in the art of frequency maintenance, and method of measurements of frequency on the part of licensees.

Violation and harmonic notices served as a result of monitoring last year were 2,603, a decrease of 329. This decrease is due to the same condition as shown in the previous paragraph.

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More detailed statistical information concerning the activities of the Field Division is shown in the following tables:

TABLE I.—*Applicants for radio operator licenses examined*

District No. and location	Commercial							Amateur except class C	
	First telegraph	Second telegraph	Third telegraph	First telephone	Second telephone	Third telephone	Code test only	Class A	Class B
1. Boston, Mass.....	18	112	3	278	13	1,407	138	217	686
2. New York, N. Y.....	23	164	20	339	52	2,885	151	418	1,319
3. Philadelphia, Pa.....	9	47	2	78	36	646	55	115	357
4. Baltimore, Md.....	3	37	9	71	16	277	51	49	116
5. Norfolk, Va.....	15	9	2	45	29	336	27	71	170
6. Atlanta, Ga.....	2	29	5	90	45	239	33	107	253
7. Miami, Fla.....	16	66	9	73	33	693	29	73	136
8. New Orleans, La.....	10	109	7	126	29	884	46	80	120
9. Galveston, Tex.....	3	53	5	97	16	204	114	62	116
10. Dallas, Tex.....	5	48	27	127	57	520	48	126	425
11. Los Angeles, Calif.....	55	93	16	358	49	2,455	106	246	753
12. San Francisco, Calif.....	27	85	7	202	71	908	81	165	407
13. Portland, Oreg.....	10	24	5	104	17	367	22	72	171
14. Seattle, Wash.....	34	49	21	93	59	850	30	115	298
15. Denver, Colo.....	0	14	5	58	29	147	30	107	150
16. St. Paul, Minn.....	7	35	11	102	25	897	10	82	220
17. Kansas City, Mo.....	5	86	30	364	90	484	96	253	706
18. Chicago, Ill.....	2	90	14	276	76	1,760	114	321	831
19. Detroit, Mich.....	13	96	45	288	91	1,354	63	328	1,358
20. Buffalo, N. Y.....	5	80	10	193	37	612	37	145	760
21. Honolulu, T. H.....	4	8	6	9	2	83	26	37	118
22. San Juan, P. R.....	2	5	1	4	0	7	4	10	13
Total.....	268	1,339	260	3,372	872	17,415	1,311	3,199	9,478

TABLE II.—Commercial operators licensed

District No. and location	First telegraph	First telegraph with first telephone endorsement	First telegraph with second telephone endorsement	First telegraph with third telephone endorsement	Second telegraph	Second telegraph with first telephone endorsement	Second telegraph with second telephone endorsement	Second telegraph with third telephone endorsement	Third telegraph	Third telegraph with first telephone endorsement	Third telegraph with second telephone endorsement	Third telegraph with third telephone endorsement	First telephone	First telephone with telegraph endorsement	Second telephone	Second telephone with telegraph endorsement	Third telephone	Third telephone with telegraph endorsement
1. Boston, Mass.....	166	32	0	0	135	42	0	0	4	0	0	0	263	0	14	0	1,557	8
2. New York, N. Y.....	393	100	3	1	150	80	5	0	21	9	4	2	346	10	60	2	3,286	15
3. Philadelphia, Pa.....	69	15	1	1	54	28	1	0	2	0	0	0	99	2	37	1	655	7
4. Baltimore, Md.....	96	33	1	0	52	23	1	0	10	6	2	0	106	3	20	5	358	14
5. Norfolk, Va.....	33	9	1	0	15	6	0	1	1	1	0	0	63	5	26	1	350	1
6. Atlanta, Ga.....	37	9	6	0	48	33	4	0	3	1	1	0	119	2	43	0	277	0
7. Miami, Fla.....	47	25	7	0	57	33	2	0	4	2	2	0	62	2	22	0	755	7
8. New Orleans, La.....	170	41	1	0	113	51	5	0	14	3	2	0	142	0	29	0	283	0
9. Galveston, Tex.....	70	15	0	0	76	47	2	0	6	1	2	0	105	55	18	1	210	3
10. Dallas, Tex.....	10	13	2	0	21	33	5	1	9	7	3	0	187	4	48	2	698	2
11. Los Angeles, Calif.....	160	72	3	0	127	79	4	1	8	3	0	1	377	5	62	4	2,568	14
12. San Francisco, Calif.....	186	37	0	0	95	55	3	0	11	5	3	0	220	3	93	1	1,028	1
13. Portland, Oreg.....	41	8	1	0	19	12	0	0	1	3	0	0	119	1	15	0	883	0
14. Seattle, Wash.....	101	18	1	0	41	23	5	3	19	4	4	5	95	1	51	0	949	6
15. Denver, Colo.....	0	12	0	0	3	25	0	0	1	2	0	0	89	1	46	0	201	0
16. St. Paul, Minn.....	11	6	0	0	30	22	6	0	10	8	0	0	118	0	20	0	916	0
17. Kansas City, Mo.....	26	21	0	0	95	86	4	0	23	17	3	0	367	8	66	8	674	20
18. Chicago, Ill.....	63	43	5	0	137	129	8	1	17	11	2	1	350	11	85	1	2,212	16
19. Detroit, Mich.....	28	31	2	0	44	35	8	1	7	22	13	3	334	2	83	2	1,579	1
20. Buffalo, N. Y.....	24	15	1	0	67	50	4	1	6	5	0	1	154	0	32	0	638	2
21. Honolulu, T. H.....	30	9	1	0	14	2	0	0	5	2	0	0	11	1	2	0	84	9
22. San Juan, P. R.....	12	1	0	0	5	0	0	0	1	1	0	0	5	0	0	0	8	0
Total.....	1,773	565	36	2	1,407	943	67	9	183	120	41	13	3,731	116	872	28	19,569	123

TABLE III.—Ship stations, inspections, and notices

District No. and location	United States ships						Foreign ships					
	Stations inspected		Notices served				Stations inspected		Notices served			
	Compulsorily equipped	Voluntarily equipped	Violation of laws	Violation of regulations	Advisory notices	Violations cleared during inspection	Compulsorily equipped	Voluntarily equipped	Violation of law and S. Conv.	Violation of treaty	Advisory notices	Violations cleared during inspection
1. Boston, Mass.....	940	106	64	66	169	46	629	2	88	0	4	10
2. New York, N. Y.....	1,736	7	147	18	313	667	1,051	7	18	3	7	75
3. Philadelphia, Pa.....	613	14	24	21	128	266	321	0	40	7	7	20
4. Baltimore, Md.....	1,206	10	50	19	231	145	577	6	107	7	129	16
5. Norfolk, Va.....	484	7	20	11	79	232	266	3	60	0	0	34
6. Atlanta, Ga.....	231	1	19	6	19	194	97	0	11	0	0	0
7. Miami, Fla.....	552	65	44	45	168	194	186	1	14	0	21	16
8. New Orleans, La.....	539	10	40	8	108	373	585	1	40	3	12	105
9. Galveston, Tex.....	740	8	27	24	142	197	223	0	24	0	7	11
11. Los Angeles, Calif.....	1,011	276	44	158	141	297	849	1	92	0	1	71
12. San Francisco, Calif.....	679	12	61	39	105	84	272	0	11	0	0	7
13. Portland, Oreg.....	337	2	10	11	61	42	191	0	22	0	34	4
14. Seattle, Wash.....	497	61	17	17	42	356	229	0	2	0	0	1
17. Kansas City, Mo.....	0	10	0	0	0	0	0	0	0	0	0	0
18. Chicago, Ill.....	13	1	0	0	0	0	0	0	0	0	0	0
19. Detroit, Mich.....	10	13	0	0	0	0	0	0	0	0	0	0
20. Buffalo, N. Y.....	7	61	0	0	0	0	0	0	0	0	0	0
21. Honolulu, T. H.....	230	14	7	18	54	24	129	0	1	0	2	15
22. San Juan, P. R.....	222	3	24	4	15	183	68	4	8	2	2	22
Total.....	10,047	686	598	465	1,775	3,300	5,673	25	538	22	226	407

TABLE IV.—Land station inspections

District No. and location	Telegraph											Telephone					Broadcast						Violation notices served as result of inspection	
	Aircraft	Emergency	Special emergency	Coastal	Marine relay	Aeronautical	Amateur	Forestry	Marine fire	Experimental	Point-to-point	Coastal	Coastal harbor	Ship	Experimental	Point-to-point	Regular	International	High-frequency	Experimental	Relay	Television		Facsimile
1. Boston, Mass.....	29	58	0	6	4	18	7	3	1	1	1	0	1	0	0	0	90	3	3	4	10	1	0	42
2. New York, N. Y.....	133	68	10	5	2	11	24	11	0	2	13	0	3	0	0	0	55	6	2	4	40	6	4	130
3. Philadelphia, Pa.....	35	51	2	2	1	7	7	7	0	0	35	0	1	0	0	0	58	1	0	0	19	5	0	39
4. Baltimore, Md.....	16	19	1	1	0	17	8	11	0	0	3	0	0	0	0	0	25	0	0	3	13	0	0	4
5. Norfolk, Va.....	3	12	0	0	0	5	1	0	0	0	21	0	1	0	0	0	39	0	0	0	13	0	0	0
6. Atlanta, Ga.....	29	61	12	4	4	62	9	0	0	0	32	0	1	0	0	0	112	0	4	12	23	0	0	86
7. Miami, Fla.....	83	32	15	5	5	23	6	0	0	15	0	0	1	0	0	0	30	1	0	0	9	0	0	33
8. New Orleans, La.....	11	32	5	2	3	19	4	0	0	2	20	0	1	0	4	1	59	0	0	5	7	0	0	28
9. Galveston, Tex.....	18	16	1	8	4	16	1	0	0	1	0	0	0	0	0	0	19	0	0	0	2	0	0	27
10. Dallas, Tex.....	127	37	1	0	0	39	7	0	0	26	5	0	0	0	2	0	121	0	4	0	27	0	0	133
11. Los Angeles, Calif.....	63	58	17	5	3	27	5	0	0	38	0	0	0	0	0	0	38	0	5	28	34	3	0	72
12. San Francisco, Calif.....	53	66	10	5	5	22	3	0	0	61	0	0	1	35	0	0	51	1	0	0	7	0	0	57
13. Portland, Oreg.....	4	15	2	2	2	10	1	0	0	2	0	0	0	0	0	0	36	0	0	0	1	0	0	4
14. Seattle, Wash.....	83	66	3	17	2	44	10	0	0	4	33	0	20	0	4	43	69	0	0	3	18	0	0	37
15. Denver, Colo.....	18	5	2	0	0	26	1	0	0	7	0	0	0	0	0	0	52	0	1	0	25	0	0	13
16. St. Paul, Minn.....	12	23	2	6	1	20	2	10	0	3	0	0	0	0	0	0	102	0	8	0	38	0	0	27
17. Kansas City, Mo.....	41	74	1	1	0	16	5	0	0	11	0	0	0	0	0	0	111	0	11	0	43	3	2	9
18. Chicago, Ill.....	73	169	7	1	1	31	0	0	0	63	6	0	2	0	0	0	123	2	6	0	101	8	2	54
19. Detroit, Mich.....	88	156	5	8	6	34	21	6	1	11	15	0	1	0	0	0	100	2	7	12	123	1	3	67
20. Buffalo, N. Y.....	9	25	7	1	1	8	6	0	0	3	3	0	0	0	0	0	130	4	3	13	22	0	0	28
21. Honolulu, T. H.....	6	5	0	2	2	4	2	0	0	2	39	0	0	0	4	17	7	0	0	0	0	0	0	21
22. San Juan, P. R.....	5	0	3	1	0	4	2	0	0	2	2	0	0	1	0	0	9	0	0	0	1	0	0	5
Total.....	942	1,098	106	82	46	463	130	38	4	360	134	0	33	140	17	64	1,479	20	66	81	576	27	11	969

TABLE V.—Complaints and investigations

District No. and location	Cases received						Cases closed						Outstanding cases
	Amateur	Unlicensed broadcast	Unlicensed other	Electric and power	Broadcast	Miscellaneous	Amateur	Unlicensed broadcast	Unlicensed other	Electric and power	Broadcast	Miscellaneous	
1. Boston, Mass.....	173	0	11	74	6	45	173	0	10	74	6	45	1
2. New York, N. Y.....	294	23	26	70	44	46	294	23	26	70	44	46	0
3. Philadelphia, Pa.....	86	1	9	12	9	53	82	1	7	12	8	51	10
4. Baltimore, Md.....	42	0	7	9	1	18	42	0	6	9	1	15	4
5. Norfolk, Va.....	30	3	4	28	0	13	29	3	4	28	0	12	2
6. Atlanta, Ga.....	54	12	16	6	2	12	52	11	15	8	2	12	4
7. Miami, Fla.....	24	1	0	33	17	25	23	1	0	33	17	23	3
8. New Orleans, La.....	57	0	8	28	5	12	56	0	8	28	5	12	1
9. Galveston, Tex.....	7	1	2	1	0	6	7	1	2	1	0	6	0
10. Dallas, Tex.....	40	4	8	1	4	20	40	4	7	1	4	19	2
11. Los Angeles, Calif.....	303	1	42	108	11	144	290	0	21	107	11	136	54
12. San Francisco, Calif.....	127	0	1	173	5	1	120	0	1	173	5	1	7
13. Portland, Oreg.....	38	0	0	6	6	7	38	0	0	6	6	7	0
14. Seattle, Wash.....	55	0	8	9	9	15	52	0	4	9	9	14	8
15. Denver, Colo.....	23	0	1	0	0	0	23	0	1	0	0	0	0
16. St. Paul, Minn.....	30	0	2	3	0	1	28	0	2	2	0	1	3
17. Kansas City, Mo.....	60	4	21	10	0	7	54	2	9	8	0	5	24
18. Chicago, Ill.....	281	1	81	24	0	6	278	1	69	24	0	5	16
19. Detroit, Mich.....	194	2	134	52	5	53	185	1	115	50	4	53	32
20. Buffalo, N. Y.....	129	2	26	1	3	48	118	2	19	1	3	46	20
21. Honolulu, T. H.....	42	0	0	29	9	8	42	0	0	29	9	8	0
22. San Juan, P. R.....	1	1	1	2	0	0	1	0	1	2	0	0	1
Total.....	2,090	56	408	679	136	540	2,027	50	327	673	134	517	192

TABLE VI.—Frequency measurements

District No. and location	Telegraph										Telephone					Broadcast					Violation notices served as result of monitoring	Harmonic notices served as result of monitoring			
	Ship	Aircraft	Special emergency and emergency	Coastal	Aeronautical	Amateur	Forestry	Point-to-point	Government	Foreign	Deviations beyond tolerance	Point-to-point	Coastal	Coastal harbor	Ship	Experimental	Deviations beyond tolerance	Regular	International	High frequency			Relay	Experimental	Deviations beyond tolerance
1. Boston, Mass.....	0	154	724	368	331	1	0	133	279	8	33	0	0	19	0	3	0	1,527	1	0	1	0	1	130	9
2. New York, N. Y.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0
3. Philadelphia, Pa.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
4. Baltimore, Md.....	87	373	560	893	618	18	0	402	175	17	168	0	17	33	0	1	0	2,186	8	11	0	0	3	877	0
5. Norfolk, Va.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Atlanta, Ga.....	1	82	479	51	1,062	38	0	13	49	29	41	0	0	0	0	0	0	1,624	0	0	0	1	3	40	3
7. Miami, Fla.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8. New Orleans, La.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Galveston, Tex.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
10. Dallas, Tex.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11. Los Angeles, Calif.....	126	62	140	222	120	125	0	70	153	135	123	9	9	205	2	53	972	24	13	4	8	2	2	225	4
12. San Francisco, Calif.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
13. Portland, Oreg.....	511	309	1,633	376	860	60	0	1,156	304	186	117	23	11	13	190	13	0	1,126	33	3	0	8	17	881	3
14. Seattle, Wash.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
15. Denver, Colo.....	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
16. St. Paul, Minn.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
17. Kansas City, Mo.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18. Chicago, Ill.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19. Detroit, Mich.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46
20. Buffalo, N. Y.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
21. Honolulu, T. H.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
22. San Juan, P. R.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Great Lakes, Ill.....	24	53	347	81	179	45	0	18	292	28	38	0	18	25	6	0	3,010	11	0	7	6	4	72	6	
Grand Island, Nebr.....	191	563	750	567	1,794	229	0	1,588	29	134	134	40	6	1	37	6	4,052	153	7	0	0	6	136	49	
Total.....	940	1,596	4,633	2,558	4,904	516	0	3,380	1,281	537	655	72	34	93	457	25	53	14,497	230	34	12	23	36	2,528	75

APPENDIX H

RADIOTELEPHONE SERVICES TO FOREIGN COUNTRIES AND DISTANT TERRITORIES AND POSSESSIONS OF THE UNITED STATES

[As of Jan. 1, 1939. Circuits inaugurated in 1938 indicated by *]

	A. Direct radio circuit or first link beyond the United States land-lines system	B. Extension from A to place listed or to the terminal of a second radio circuit	C. Extension from B to place listed
1. NORTH AMERICA			
Alaska.....	Seattle-Juneau.....		
Canada.....	Land wires.....		
Cuba.....	Submarine cables.....		
Mexico.....	Land wires.....		
Costa Rica.....	Miami-San Jose.....		
Dominican Republic.....	Miami-Trujillo.....		
El Salvador.....	Miami-San Salvador.....		
Guatemala.....	Miami-Guatemala.....		
Haiti.....	Miami-Port-au-Prince.....		
Honduras.....	Miami-Tegucigalpa.....		
Jamaica.....	Miami-La Lima.....		
Nicaragua.....	Miami-Kingston.....		
Panama and Canal Zone.....	Miami-Managua.....		
Puerto Rico.....	Miami-Panama.....		
Bahamas.....	Miami-San Juan.....		
Bermuda.....	Miami-Nassau.....		
	New York-Hamilton.....		
2. EUROPE			
Austria.....	New York-London.....	Submarine cable and land wires.....	
Balearic Islands.....	do.....	do.....	Radio Barcelona-Palma.
Belgium.....	do.....	Submarine cable.....	
Bulgaria.....	do.....	Submarine cable and land wires.....	
Czechoslovakia.....	do.....	do.....	
Danzig.....	do.....	do.....	
Denmark.....	do.....	do.....	
Finland.....	do.....	do.....	
France.....	New York-Paris.....		
Germany.....	New York-London.....	do.....	
Gibraltar.....	do.....	do.....	
Great Britain (also Northern Ireland).....	do.....		
Hungary.....	do.....	do.....	
Iceland.....	do.....	London-Reykjavik.....	
Ireland.....	do.....	Submarine cable.....	
Italy.....	do.....	Submarine cable and land wires.....	
Jugoslavia.....	do.....	do.....	
Latvia.....	do.....	do.....	
Lithuania.....	do.....	do.....	
Luxembourg.....	do.....	do.....	
Netherlands.....	do.....	Submarine cable.....	
Norway.....	do.....	Submarine cable and land wires.....	
Poland.....	do.....	do.....	
Portugal.....	do.....	do.....	
Rumania.....	do.....	do.....	
Spain.....	do.....	do.....	
Sweden.....	do.....	do.....	
Switzerland.....	do.....	do.....	
3. SOUTH AMERICA			
Argentina.....	New York-Buenos Aires.....		
Brazil.....	New York-Rio de Janeiro.....		
Chile.....	New York-Buenos Aires.....	Land wires.....	
	Miami-Bogota.....		
Colombia.....	Miami-Barranquilla.....		
	Miami-El Centro.....		
Paraguay.....	New York-Buenos Aires.....	do.....	
Peru.....	New York-Lima.....		
Uruguay.....	New York-Buenos Aires.....	do.....	
Venezuela.....	Miami-Caracas.....		

RADIOTELEPHONE SERVICES TO FOREIGN COUNTRIES AND DISTANT TERRITORIES
 AND POSSESSIONS OF THE UNITED STATES—Continued

	A. Direct radio circuit or first link beyond the United States land-lines system	B. Extension from A to place listed or to the terminal of a second radio circuit	C. Extension from B to place listed
4. ASIA			
China.....	San Francisco-Shanghai.....	Canton.....	
French Indo-China.....	New York-Paris.....	Paris-Saigon.....	
India.....	New York-London.....	London-Bombay.....	
Iraq.....	do.....	London-Cairo.....	Land wires.
Japan.....	San Francisco-Tokyo.....	do.....	do.
Palestine.....	New York-London.....	Submarine cable and land wires to Berlin.....	Berlin-Bangkok.
Siam.....	do.....	London-Cairo.....	Land wires.
Syria.....	do.....		
5. OCEANIA			
Australia (including Tasmania).....	San Francisco-Sydney.....		
Hawaiian Islands.....	San Francisco-Honolulu.....		
Netherlands Indies:			
Java.....	San Francisco-Bandoeng.....		
Sumatra.....	do.....	Bandoeng-Medan.....	
Madeira.....	do.....	Submarine cable.....	
Hall.....	do.....	do.....	
Celebes.....	do.....	Bandoeng-Makassar.....	
Philippine Islands.....	San Francisco-Manila.....		
6. AFRICA			
Canary Islands.....	New York-London.....	Submarine cable and land wires to Madrid.....	Madrid-Tenerife.
Algeria.....	New York-Paris.....	Paris-Algiers.....	
Egypt.....	New York-London.....	London-Cairo.....	
French Morocco.....	New York-Paris.....	Paris-Rabat.....	
Kenya.....	New York-London.....	London-Nairobi.....	
Spanish Morocco.....	do.....	Submarine cables and land wires.....	
Tunisia.....	New York-Paris.....	Paris-Algiers.....	Land wires.
Union of South Africa.....	New York-London.....	London-Cape Town.....	

TABLE I.—Countries and points to which direct communications or direct circuits are available for international communications through the facilities of the American common carriers ¹

[Legend: X=direct communication; C=direct circuits; W=direct land-wire circuits]

Countries	Radiotelegraph						Cable and wire telegraph ²						Radiotelephone ³			
	R.C.A. Communications, Inc.	Mac-Kay Radio & Telegraph Co. (Del. and Calif.)	Globe Wire-less, Ltd.	Press Wire-less, Inc.	Tropical Radio Telegraph Co.	United States-Liberia Radio Corporation	South Puerto Rico Sugar Co. ⁴	All America Cable & Radio, Inc.	Commercial Cable Co.	Postal Telegraph Co.	Commercial Pacific Cable Co.	Western Union Telegraph Co.	French Telegraph Co.	American Telephone & Telegraph Co.	Radio Corporation of Puerto Rico	R.C.A. Communications, Inc.
Alaska ⁴				X												
Argentina	X	X		X			C				C		X			
Australia	X			X									X			
Austria (Germany)	X	X		X									X			
Bahama Islands, British West Indies					X								X			
Belgium	X												X			
Bermuda													X			
Bolivia				X									X			
Brazil	X	X		X			C				C		X			
British Honduras					X											
Canada	X			X						W			W			
Chile	X	X		X												
China	X	X		X			C									
Colombia	X	X		X							X		X			
Costa Rica	X	X		X	X		X						X			
Cuba	X	X		X	X		X						X			
Curacao, Dutch West Indies	X	X		X			X						X			
Czechoslovakia	X	X		X									X			
Denmark	X	X		X									X			
Dominican Republic	X			X			X						X	X		
El Salvador		X											X			
Dutch Guiana	X						X						X			
Ecuador				X												
England	X			X			X						X			
Fiji Islands	X			X				X					X			
France	X	X		X									X			
French Indochina	X	X		X									X			
Germany	X	X		X									X			
Guadeloupe, French West Indies							X						X			
Guam			X								X		X			
Guatemala	X			X	X								X			

Haiti	X	X					X	XC					X	⁵ X
Hawaii	X	X	X										X	
Holland	X			⁷ X					C			XC	C	
Honduras					X									X
Hungary		X												
Iceland	X													
Italy	X			X										⁶ X
Italy (Vatican City)	⁴ X	X												
Japan	X	X		X							X		X	⁴ X
Jamaica, British West Indies				⁷ X								X	X	
Java	X													X
Liberia	X					X								X
Manchukuo	X			⁸ X										
Martinique, French West Indies							⁵ X							
Mexico	X			X	X					W			XCW	W
Nicaragua	⁵ X				X									X
Newfoundland									X				X	
Norway	X													
Panama	X			⁷ X	X									X
Persia	⁶ X								XC					X
Peru				⁷ X					C					X
Philippine Islands	X	X	X	⁷ X								X		⁵ ⁸ X
Poland	X													
Portugal	X													
Puerto Rico	X			⁷ X	X				C				C	X
Siam	⁵ X													
Spain	X	⁵ X		⁴ X										
Sweden	X													
Switzerland	X												C	⁶ X
Syria	X													
Tahiti	X													
Trinidad				⁷ X										
Turkey	X													
Union of Soviet Socialist Republics	X			X										
Union South Africa				⁷ X	X									
Uruguay				X										
Venezuela	X			⁷ X			X							X

¹ As a practical matter American carriers in general offer service to practically any point either through their own facilities (direct or indirect) or the facilities of associated or connecting carriers.

² Includes wire line communication to Mexico, Canada, and Cuba.

³ Operates from Puerto Rico only.

⁴ Direct radio telephone and telegraph service available via facilities of the Alaska

Communications System (U. S. Government operated).

⁵ Inactive points of communication.

⁶ Service not yet inaugurated.

⁷ Multiple addressed press service only (blind reception).

⁸ Operates from Hawaii only.

APPENDIX I

LIST OF APPROVED TYPES OF MARINE RADIO EQUIPMENT

AUTOMATIC ALARMS:

Manufacturer:		<i>Type or Model No.</i>
Federal Telegraph Co. for Mackay Radio & Telegraph Co.....		101-A.
Do.....		101-B.
Radiomarine Corporation of America.....		AR-8600.

TRANSMITTERS:

Manufacturer	Type No.	Approved as--
Federal Telegraph Co.....	104-M.....	Main and emergency transmitter in accordance with par. 12 (c) (2) and (4) of the Ship Radiotelegraph Safety Rules.
Do.....	120-M.....	Main transmitter in accordance with par. 12 (c) (2) of the Ship Radiotelegraph Safety Rules.
Do.....	123-B.....	Main and emergency transmitter in accordance with par. 12 (c) (1) and (4) of the Ship Radiotelegraph Safety Rules.
Do.....	142-A, B, and C.....	Emergency transmitter in accordance with par. 12 (c) (4) of the Ship Radiotelegraph Safety Rules.
Do.....	147-A and M.....	Main and emergency transmitter in accordance with par. 12 (c) (2) and (4) of the Ship Radiotelegraph Safety Rules.
Do.....	149-A.....	Emergency transmitter in accordance with par. 12 (c) (4) of the Ship Radiotelegraph Safety Rules.
Do.....	150-A and B.....	Main transmitter in accordance with par. 12 (c) (1) of the Ship Radiotelegraph Safety Rules.
Heintz & Kaufman, Ltd.....	935.....	Main and emergency transmitter in accordance with par. 12 (c) (1) and (4) of Ship Radiotelegraph Safety Rules.
Radiomarine Corporation of America.....	3627-S, A S, and BS.....	Main transmitter in accordance with par. 12 (c) (2) of the Ship Radiotelegraph Safety Rules.
Do.....	ET-8003.....	Emergency transmitter in accordance with par. 12 (c) (4) of Ship Radiotelegraph Safety Rules.
Do.....	ET-8006.....	Main transmitter in accordance with par. 12 (c) (1) of Ship Radiotelegraph Safety Rules.
Do.....	ET-8010.....	Do.
Do.....	ET-8010-A.....	Main and emergency transmitter in accordance with par. 12 (c) (1) and (4) of Ship Radiotelegraph Safety Rules.
States Steamship Co.....	HF-100 and 100-A.....	Main transmitter in accordance with par. 12 (2) (1) of the Ship Radiotelegraph Safety Rules.

¹ Approval of automatic alarms is on a temporary basis until Mar. 31, 1939, pending consideration for final approval on or before that date.

² Transmitters are approved as capable of meeting the applicable requirements of par. 12 (c) of the Ship Radiotelegraph Safety Rules, as amended.

