FOURTH ANNUAL REPORT

FEDERAL COMMUNICATIONS COMMISSION

FISCAL YEAR ENDED JUNE 30, 1938

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1939

MEMBERS OF THE COMMISSION

AS OF JUNE 30, 1938

FRANK R. MCNINCH, *Chairman*
T. A. M. CRAVEN
GEORGE HENRY PAYNE
EUGENE O. SYKES
THAD H. BROWN
PAUL A. WALKER
NORMAN S. CASE

LETTER OF TRANSMITTAL

WASHINGTON, D. C., *December 14, 1938.*

To the Congress of the United States:

There is transmitted herewith the Fourth Annual Report of the Federal Communications Commission, for the fiscal year ended June 30, 1938.

That fiscal year and the succeeding months have been a period of significant developments and noteworthy progress both in American communications and in the administration of this Commission to which Congress has entrusted the duty of regulating them. The administrative and regulatory task for which the Congress made this Commission responsible under the Communications Act of 1934 and amendments thereto has increased both in scope and in importance.

In large part the increase in the Commission's work, and the changes in its character and direction, parallel or follow the trends in the development of the country's systems of communication. A few of the conspicuous trends in communications, as well as significant developments in regulation, may be specially mentioned.

The growth and development of the broadcasting industry continue, as evidenced, for example, by the number of applications for new broadcast stations and for increases in the facilities of existing stations. Establishment of 47 new stations was authorized during the fiscal year, upon findings by the Commission that the public interest, convenience, and necessity would be served thereby. This represented little more than a third of the new stations for which applications were filed. The applications numbered 127. The additions, after allowing for some stations ceasing to operate, brought the total number of broadcast stations holding authorizations from the Commission to 747. By December 1, 1938, this number had increased to 763.

Because of their large number, and the requirement that licenses be renewed every 6 months, the broadcast stations claim a large share of the Commission's attention. The time and study given to them, however, do not seem disproportionate to their importance. The technical perfection and the usefulness and potential usefulness of broadcast stations are increasing with their numbers and the facilities. As radio makes perhaps the most powerful of all impacts upon the mass-mind, capable of influencing importantly our destiny as a people, the responsibility resting upon this Commission is very great, even though our regulatory authority is limited.

Underlying our responsibility and our problem is the basic fact that all radio frequencies belong to the people. No broadcaster has or can acquire any vested interest or right in a frequency. Under our mandate from the Congress he is only licensed to use a frequency in the public interest. This definitely stamps radio with a peculiarly

high obligation to put public service ahead of all other considerations, and to use the frequencies primarily for programs that are informative, educational, entertaining, or now and then perhaps all three.

Besides the licensing of new stations and the renewing or withholding of privileges from stations previously licensed, the Commission has made changes in the allocation of frequencies to the various radio services in such a fashion as considerably to enlarge the radio spectrum for the use of which licenses will be granted, with a corresponding enlargement of its usefulness.

Pursuant to the direction of Congress the Commission has also adopted rules relating to the use of broadcast stations by legally qualified candidates for public office, with provisions to prevent discrimination. Since these rules were promulgated there have been fewer complaints.

Radio facilities for aviation have been advanced to the point that installations for instrument-landing systems are being made at several of the major airports, with the expectation that such systems will be in actual service in the United States within a few months. The Commission has set aside certain frequencies for the aviation service, including four for instructional aviation.

Arrangements have been made to license radio relay press stations to operate in the mobile press service, projected to provide a link between a reporter in an isolated area, or a point where wire communication is not available, and the nearest wire terminal from which his news matter may be transmitted.

To encourage the wider use of broadcasting facilities in education, the Commission has authorized a new class of stations, known as "noncommercial educational broadcast." Although this activity is quite new, it promises to be of large importance to organized nonprofit educational agencies, which may transmit to schools programs for use in connection with the regular courses of study. They may also broadcast educational and entertainment programs for the general public but not commercial programs. The program of the Federal Radio Education Committee, appointed by the Commission in 1935, has been carried forward through studies and other measures intended to bring about the most effective use of radio as an educational medium.

Meanwhile noteworthy progress has continued to be made in the field of wire communications. Telephone developments and improvements of the past year, with the improvements made in the few years preceding, have borne fruit in the development of several new types of carrier telephone systems which are expected to affect profoundly the future of telephony. One new system provides 12 additional carrier channels, so that a single pair of open wires may be used for a total of 16 telephone channels.

The coaxial cable system, capable of carrying a multitude of simultaneous conversations, has been the subject of extensive experiments, some dealing with the transmission of sound motion pictures and thus testing its possible value in the handling of television programs.

The Proposed Report on the Telephone Investigation, supervised by Commissioner Walker, has been transmitted to the Congress, and the Commission hopes to transmit a final report soon after the convening of the Congress.

The Commission is pursuing its study of methods of organizing all communication facilities, including radio, telephone, and telegraph services, to provide for their prompt and efficient use upon the arising of any sectional or national emergency. The measures this study contemplates would be adapted not alone to national defense in time of need but to disasters such as those caused by floods, fire, or hurricane.

A committee appointed by the Commission, composed of Commissioners Case, chairman, Payne and Craven, conducted a public hearing for several weeks to obtain evidence to guide the Commission in determining whether or not the new technical rules concerning broadcasting and the standards of engineering practice formulated by the Commission should be adopted. One of the rules in question was Commission's Rule 117, limiting the authorized power of dominant clear channel stations. Completion of this Committee's report is expected early in 1939. This committee's report will aid in formulating new policies with respect to the technical aspects of broadcasting, including a decision on the question of superpower.

The Great Lakes and Inland Waters Survey, which was provided for in Public Law No. 97, has been carried on under the direction of Commissioner Brown. In connection with this survey, various investigations are being conducted for the purpose of developing the radio requirements necessary or desirable for safety purposes for ships navigating the Great Lakes and the inland waters of the United States. A report, with recommendations, will be filed not later than December 31, 1939.

The Commission's investigation of chain and network broadcasting and of possible monopoly, being conducted in order to get the necessary information upon which to base regulations and possibly recommendations for legislation, promises to produce much information of value. On the committee supervising this investigation, besides the chairman of the Commission, are Commissioners Walker, Sykes, and Brown.

Continuing efforts are being made to increase the Commission's effectiveness as a regulatory agency through changes in practices, procedure, and organization, and substantial progress has been made.

The Congress will recognize that the Commission's functions are very broad, embracing as they do the regulation of radiobroadcasting, radiotelephony, radiotelegraphy, the wire telegraph and the wire telephone, as well as inquiry into the technical advances in the art of communications. The course of Federal regulation of this character is largely uncharted. Functional subdivisions are far more numerous and complex than is generally understood. Broadcast stations alone embrace seven separate classifications, one of them (visual), including television and facsimile stations with all their problems and potentialities.

Similarly, the broadcast authorizations applied for during the fiscal year numbered nearly 7,000, including the applications of emergency, temporary, and experimental character. Every such application requires some form of action by the Commission. Increasing use of radio for police, marine, fire, aviation, and other services has swelled the number of professional radio operators who must be licensed by the Commission, until the total number of licensed operators is rapidly nearing 40,000. While proceeding with this licens-

ing, it has been necessary to tighten up requirements in order to assure higher standards of service and maintenance work and to improve the qualifications of operators. The Commission also licenses approximately 50,000 operators of amateur stations.

The new responsibility placed upon the Commission by the Seventy-fifth Congress, to promote safety of life and property through wire and radio communication, has increased greatly the Commission's duties in maintaining radio on vessels, both American and foreign. Although inspectors during the year served some 3,000 deficiency reports on owners of radio installations, owing to lack of personnel only the more serious violations could be referred to the Law Department for further proceedings.

The administrative task throughout the range of the Commission's functions is accordingly large, varied, and difficult. Experience has demonstrated that the Commission is gravely understaffed for its task and that this condition is largely responsible for the accumulation of work and the inability to keep a great part of this work current. Overtime work by the staff is unavoidable, and excessive.

It amounted in the fiscal year to 2,062 days, or the equivalent of about 5 days for every person in the Commission's headquarters organization of less than 400 people. Since the end of the fiscal year the overtime condition has grown somewhat worse.

To remedy this situation of understaffing, overload, and accumulation, as well as to provide more adequate and effective facilities for regulation, the Commission has recommended this year a substantial increase in its budget.

Reorganization steps already taken have helped materially but they are not, and alone cannot be, a complete cure. The Commission was behind on its work on pending applications for broadcasting licenses, as well as some other phases of its work. Through speeding up, and a great deal of overtime work, this accumulation of cases and work has been handled and made practically current.

The divisional method of organization (i. e. Telephone, Telegraph and Broadcast Divisions), which divided responsibility for Commission action, was abandoned. The work was merged into a single organic whole.

Since the close of the fiscal year we have adopted measures to complete, or largely to complete, the reorganization of the Commission's administrative set-up, and the Examining Division, as well as the Information Office as formerly operated were abolished. Formerly, recommendations made by the examiners were, in part, the basis for a great majority of the Commission's decisions. Under the new practice each hearing is to be conducted by the Commission, by a commissioner, or by one or more suitably qualified employees, chiefly lawyers. The Commission, instead of the person who presided at the hearing, will file a proposed report of findings of fact and conclusions of law in each case, which report shall be public. Opportunity will be afforded for the filing of exceptions and oral argument before the Commission issues its final report or order. This procedure provides for "fair play" by apprising the parties of the proposed decisions before they are made final, as the Supreme Court advocated in its decisions in the Morgan and other cases.

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Part I
Administrative Functions of the Commission

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ORGANIZATION AND PROCEDURE

General background.—The Commission made an extended effort in the fiscal year 1938 to increase its effectiveness as a regulatory agency through changes in practices, procedure, and organization. While much remained to be done in this regard, the changes made resulted in substantial progress toward more useful and more effective administration.

Abolition of Divisions.—From its establishment in July 1934 until November 15, 1937, the Commission functioned largely through three Divisions set up under the authority contained in section 5 of the Communications Act. The composition of these Divisions and the duties that were assigned thereto are set forth in our Third Annual Report.[1] It was believed at that time that this method of dividing the work would tend toward a more efficient and expeditious handling of matters delegated to the Commission for its administration. However, after 3 years of experience with this method, it was found that to subdivide a small commission in such a manner had a devisive effect and was not conducive to cooperation and mutual understanding among the members of the Commission. In the case of each Division of the Commission it resulted in two members' carrying an unnecessary load of responsibility and exercising an undesirably large portion of the powers and functions assigned to the Commission. It denied each Commissioner any practical opportunity to participate in the decisions of the Commission that were made by Divisions other than the one to which he was assigned. Important decisions were rendered largely by two members of the Commission, constituting the majority of a Division, without an opportunity to exchange views with, and to profit by free discussion and expression of opinions by, other Commissioners who had been assigned to a different Division. Nonmembers of a Division felt a natural reluctance to participate or to display an interest in the work committed to others, hence they were not afforded an effective opportunity to express their views upon pending matters.

The organization of the members of the Commission into Divisions also prevented a rounded development of each Commissioner's knowledge and experience in the whole field of the Commission's activity.

In view of the foregoing, it was decided to abolish the Divisions of the Commission, effective November 15, 1937.[2] Changes in the Rules of Practice and Procedure were made to bring them into conformity with this change of organization.

Assignment of routine matters.—With the abolition of the Divisions, a great mass of detailed and routine work fell upon the whole Commission, resulting in a condition which, if it had been allowed to remain, would have rendered difficult a careful and expert treatment

[1] At p. 5.
[2] Commission Order No. 20, 4 F. C. C. 41.

of the larger problems facing the Commission. The detailed and routine work referred to did not involve the exercise of discretion, and was concerned for the most part with applying the rules and established policies to such matters. To relieve the Commission as a whole of this cumbersome and time-consuming activity, various of these routine matters were assigned to individual Commissioners and to the holders of specified offices on the Commission's staff.[3] The assignment of such duties to individual Commissioners is changed each month, thus permitting each Commissioner to be personally informed with reference to every phase of the Commission's activities and, by such procedure, conserving the principal portion of his time for the consideration of important problems of a general nature with which the Commission is constantly faced.

The Commission adopted an order [4] which provided in effect that private communications relating to the merits of any matter involved in formal proceedings before the Commission would not be considered by the Commission in arriving at a final decision. At the same time, the Commission realized that National, State, and local public officials, as well as private citizens, often have information which, if properly brought to the attention of the Commission, would have an important bearing on the question of public interest, convenience, and necessity. In order that the Commission might have the benefit of such information, therefore, it was further provided in the above-mentioned order that all parties who addressed communications to the Commission relative to the merits of a matter pending formal proceedings would be notified when a hearing was scheduled thereon, and would be given the opportunity to appear at the hearing and to testify with respect to the matter—subject, of course, to the applicable rules of evidence. Under this order valuable information known to any person can be offered for Commission consideration, but not unless and until it has been offered in a public proceeding so that all concerned may know what facts are being considered and may have the opportunity of attesting or refuting the truth of the facts offered.

Departments of the Commission.—In addition to the above-described assignment of duties to members of the Commission and certain officers of its staff, the personnel of the Commission during fiscal 1938 functioned through the following departments for administrative purposes: The Accounting, Statistical, and Tariff Department; the Engineering Department; the Examining Department; the Law Department; and the Secretary's Office.

Procedural questions affected by court decisions.[5]—The Communications Act provides that an appeal may be taken within 20 days after the effective date thereof from decisions of the Commission to the United States Court of Appeals for the District of Columbia by any applicant for a construction permit for a radio station, for a radio station license, or for a renewal or modification thereof, whose application is refused by the Commission and by any other person aggrieved or whose interests are adversely affected by any decision

[3] Commission Order No. 28 adopted November 29, 1937, and subsequent amendments adopted February 21, March 30, and April 13, 1938.
[4] Commission Order No. 25, 4 F. C. C. 47.
[5] All cases discussed hereunder are in connection with matters arising under title III of the Communications Act only.

of the Commission granting or refusing any such application.[6] The right to file before the Commission an application for rehearing upon such decisions of the Commission within 20 days after the effective date thereof is also given.[7] The effect of these provisions was considered by the court, and it was held that the filing of a petition for rehearing suspends the running of the appeal period and that an appellant has 20 days from the date of final action on the petition for rehearing within which to take his appeal.[8]

The question of whether an appellant must exhaust his administrative remedies before the Commission prior to taking an appeal was also presented to the court, and an appeal was dismissed in one case where the appellant had not applied for a rehearing before the Commission prior to taking his appeal to the court.[9] This indicates that the filing of a petition for rehearing before the Commission is a necessary administrative step that must be taken before an appeal will be entertained.

Since the above-mentioned decisions, the number of petitions for rehearing filed with the Commission has increased materially.

A recent decision of the court [10] held that in cases arising under title III of the Communications Act the statement of facts and grounds for its decision should be made by the Commission at the time it enters its order in the premises. Prior to this ruling it had been the practice of the Commission in some cases to enter its final order and at a subsequent date to publish its statement of facts and grounds for decision. The Commission now publishes its findings of facts, grounds for decision, and order at the same time.

Other decisions of the court [11] held that the Commission should include in its decisions the basic facts upon which its decision rests. The preparation of more detailed findings, accordingly, has considerably increased the amount of time required for the preparation of the statements of facts and grounds for decision.

The status of an application pending at the time of final decision by the Commission on another application was clarified somewhat in a court decision [12] wherein it was held that a person having on file an application conflicting with the rules of the Commission was not entitled to any consideration, even though the Commission's action complained of may preclude favorable consideration of such pending application.

The rules of evidence as applied to proceedings before the Commission were considered in a decision [13] in which it was held that certain evidence, admitted over objection, was hearsay and, therefore, incompetent.

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[6] Section 402, 48 Stat. 926, as amended by 48 Stat. 1093 and 50 Stat. 197; 47 U. S. C. 402.

[7] Section 405, 48 Stat. 1095, 47 U. S. C. 405.

[8] *Saginaw Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 282, 96 F. (2d) 554. Cert. denied October 10, 1938.

[9] *Red River Valley Broadcasting Co.* v. *F. C. C.*, — App. D. C. —, 98 F. (2d) 282, Cert. to U. S. S. C. denied October 10, 1938.

[10] *Missouri Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 124, 94 F. (2d) 623.

[11] *Heitmeyer* v. *F. C. C.*, 68 App. D. C. 180, 95 F. (2d) 91; *Tri-State Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 292, 96 F. (2d) 564; *Saginaw Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 282, 96 F. (2d) 554.

[12] *Pittsburgh Radio Supply House et al.* v. *F. C. C.*, Appeal Nos. 7024, 7025, and 7027, reported at 98 F. (2d) 303.

[13] *Tri-State Broadcasting Co.* v. *F. C. C., supra.*

LEGISLATION AND TREATIES

LEGISLATION

New legislation.—The basic law under which the Commission functions is reviewed in our Third Annual Report at page 5. There was one amendment to the Communications Act during this fiscal year.[14] Section 201 (b) was amended so as to allow carriers to furnish information regarding the positions of ships at sea to newspapers of general circulation at a nominal charge or without charge.

Proposed legislation.—Upon the request of various congressional committees, the Commission furnished comments in regard to proposed legislative measures introduced before either House of Congress.[15]

A number of situations have been studied by the Commission which may eventually result in recommendations for additional or amendatory legislation.

One of the most important of these is the difficulty of prosecuting cases involving the unlicensed operation of radio equipment by young persons of school age. We find that both United States attorneys and grand juries are loath to bring indictments in these cases, as is the Commission itself, since the maximum penalty involved is 2 years' imprisonment or a fine of ten thousand dollars ($10,000), or both. The conclusion is almost inevitable that a different type of penalty must be imposed, such as forfeiture, seizure of equipment, fine, or other punishment, so that the offense would be a misdemeanor under Federal law, rather than a felony.

During the year a bill was proposed by the Commission to add a new section 330 to the Communications Act which would have the effect of bringing within the jurisdiction of the Commission apparatus that utilize radio-frequency electric currents and thus have the possibility of interference with radio service, although not intended primarily for radio purposes. The proposed legislation is designed primarily to authorize the Commission to deal with a source of interference to radio communication arising from the operation of diathermy apparatus. This interference seriously impairs radio communication service at the present time and is rapidly growing in intensity. In advocating this legislation, the Commission expressed the opinion that unless measures for suppression or mitigation can be promptly undertaken, there is real danger that the usefulness of a large part of the radio spectrum for communication purposes will be destroyed. A discussion of the investigation of two such types of apparatus, the diathermy machine and the carrier telephone intercommunicating system, is found at pages 13 and 14 of our Third Annual Report.

TREATIES

The treaties that govern certain functions of the Commission are reviewed in our Third Annual Report at page 5. The international conferences held during the year looking toward the adoption of new treaties are discussed in the following section of this report.

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[14] Public Law No. 561, 75th Cong., approved May 31, 1938.
[15] *These proposed bills are identified in appendix A.*

INTERNATIONAL CONFERENCES

The Commission has assisted this Government in carrying on its international relations in respect to radio, wire, and cable by supplying experts to the United States delegations attending the various international conferences and by constant study of the many problems arising in those relations. For example, the Commission in the last fiscal year adjusted 464 radio-station complaints involving international aspects.

A vast amount of correspondence relative to international problems has been handled and an accurate record of all international communications statistics is maintained so that information upon international matters is available upon request. This Commission maintains up-to-date records of Canadian, Mexican, and Cuban broadcasting stations. Lists of these stations are published from time to time. The Commission also compiles and issues lists of the international broadcast stations of the world.

A number of important conferences were held during the year which required a large amount of preparatory work.

INTER-AMERICAN TECHNICAL AVIATION CONFERENCES

The first Inter-American Technical Aviation Conference was held in Lima, Peru, September 15 to 25, 1937, and considered an agenda, which was formulated by the Government of Peru after consultation with the various American Republics and was based upon the resolutions of the Seventh International Conference of American States, the Pan-American Commercial Conference, and the Inter-American Conference for the Maintenance of Peace.

As a result of the conferences, there was formed a Permanent American Aeronautical Commission composed of plenipotentiary delegates appointed by each Government to unify and codify public and private air laws and to formulate the laws and customs of aerial warfare.

In the field of radio and meteorology as well as in the other diversified activities of the Conference much was accomplished in coordinating the divergent views of the various American Republics. In addition to arriving at an agreement in regard to international aviation services, it is felt that one of the most important accomplishments of this conference was the promotion of good relations among the republics represented.

INTER-AMERICAN RADIO CONFERENCE

The First Inter-American Radio Conference was held at Habana, Cuba, November 1 to December 13, 1937. As a result of the careful detailed consideration of the agenda the following documents were signed: (1) Final Act of the First Inter-American Radio Conference, including (a) Resolutions, Motions, and Agreements, and (b) Recommendations to the International Telecommunications Conferences to be held at Cairo, Egypt, commencing February 1, 1938; (2) Inter-American Radio Communications Convention; (3) Inter-American Arrangement Concerning Radio Communications; and (4) North

American Regional Broadcasting Agreement. As a result of the formulation of these documents, the American Republics were practically in accord at the Cairo Telecommunications Conferences. Here was established, at least temporarily, in the city of Habana and under the auspices of the Government of Cuba an Inter-American Radio Office, which is intended to provide for closer cooperation among the member States and for a fuller and more rapid dissemination of technical, legal, and other data of interest in the field of communications, all for the purpose of an improvement of engineering practices and a better understanding of the legal problems in the field of communications in the participating countries.

The Inter-American Arrangement Concerning Radiocommunications seeks to effect a standardization throughout the Americas of technical matters involved in the art of radiocommunications, particularly with respect to allocations, tolerances, spurious emissions, and interference, use, and nonuse of certain air calling and distress frequencies, amateurs, and receipt and transmission by them of third-party messages, an international police radio system, and radio aids to air navigation.

The North American Regional Broadcasting Agreement undertakes to establish in that region, which consists of Canada, Cuba, Dominican Republic, Haiti, Mexico, Newfoundland, and the United States, frequency assignments to specified classes of stations in the broadcast band on clear, regional, and local channels with a view to avoiding interference which, in this region, has caused great inconvenience to radio listeners. It is believed that the principles laid down in this convention, if carried into effect, will result in general satisfaction, not only to the listening public but to the broadcasters as well.

The agreement is of primary importance to Canada, Cuba, Mexico, and the United States of America. If and when three of the four mentioned countries shall have ratified and the fourth signified its readiness pending notification as an administrative measure to put the provisions of the agreement into effect, then such countries may, by administrative agreement, fix a date upon which they shall give effect to the provisions, which date is preferably but one year from the date of such administrative agreement. The agreement has been ratified by the Government of the Republic of Cuba, and on June 30, 1938, it was ratified by the United States. Additional information with respect to this agreement is found hereinafter at p. 53.

The establishment of broad general principles on a sure basis, agreement on many technical matters involved in sound engineering practice, the conclusion of an arrangement for more effective frequency allocation and avoidance of interference in the North American region, the establishment of a centralized consultative office, the agreement of the American States upon recommendations for the forthcoming Cairo conference, and the common understanding evidenced by the Inter-American Resolutions are believed to afford an adequate basis for the more effective functioning of radiocommunications in the Americas and the better service of the public and of the Governments concerned. The maintenance of friendly relations among the American States and the effectuation of the "good neighbor" policy, as evidenced by the many expressions of good will on the part of

foreign representatives, make this conference one of extreme importance to the United States and to the other Governments participating therein.

INTERNATIONAL TELECOMMUNICATIONS CONFERENCES

The International Telecommunications Conferences were held at Cairo, Egypt, February 1 to April 8, 1938. These were divided into two conferences: The International Radio Conference and the International Telegraph and Telephone Conference.

Cairo International Radio Conference.—The General Radio Regulations annexed to the International Telecommunications Convention of Madrid have in general been satisfactory to the United States. However, the ever-increasing demands for additional radio frequencies due to a never-ceasing expansion of the mobile, fixed, and broadcasting services necessitated a further tightening of existing rules to make the most economical use possible of facilities at present available, as well as a reconsideration of the existing allocation of frequencies in the light of experience gained since the Madrid conference.

The following are some of the more important decisions of the Cairo Radio Conference which have been incorporated in the Revised Regulations adopted at that conference:

1. Adoption of a plan for radio channels for the world's seven main intercontinental air routes, including calling and safety service channels.
2. Widening of the high frequency broadcast bands to a total of 300 kilocycles and the adoption of special bands for tropical regions for regional use.
3. The limitation of the use of spark sets to three channels and the outlawing of spark sets except below 300 watts output.
4. Improved tolerance and bandwidth tables.
5. The extension of the allocation table to 200 megacycles for the European region. Other regions were given the right to effect their own arrangements above 30 megacycles.
6. Establishment of further restrictions on the use of 500 kilocycles frequency for traffic.
7. The bringing up to date of regulations relative to the maritime and aeronautical services.

The Commission participated actively in organizing the preparatory work for the Cairo Radio Conference, and furnished the secretariat, which turned out voluminous documents, finally leading to the adoption of the American proposals for this conference. It also furnished the Secretary-General for all the Cairo Radio Preparatory Committees. It is believed that, due to the thorough and adequate preparation of the United States Government at this conference, which lasted from February 1 to April 8, 1938, in Cairo, Egypt, no action was taken which was in any way prejudicial to the interests of the United States, and the results of the radio conference were on the whole extremely satisfactory. It may be mentioned in passing that the preparatory work with the other nations of the Americas, done at the Habana Inter-American Radio Conference, was of inestimable value in providing a united front among the Americas in connection with the problems in which they were particularly and vitally interested because of their common interests.

The final results of the conference are found in the General Radio Regulations of Cairo, which will no doubt be submitted to the Senate for its advice and consent to ratification early in the next session, inasmuch as the effective date of the treaty is January 1, 1939, except

for article 7, which becomes effective September 1, 1939. A full and complete discussion of the Cairo conferences is found in the Report of Senator Wallace H. White, Jr., chairman of the American Delegation to the Conferences.

Cairo International Telegraph and Telephone Conference.—Although the United States is not a party to the International Telegraph Regulations, four members of the American delegation to the Cairo Telecommunications Conferences were assigned to the Telegraph Conference. Two representatives of the Commission were included in this number. The United States is not a party to the International Telephone Regulations and did not participate in the International Telephone Conference.

Prior to the convening of the conference the United States submitted a proposal in principle which was included in the book of proposals of the telegraph conference, suggesting the division of the regulations into two groups: One group containing those articles of interest to the Government of the United States and to which the United States might become a party; the other group containing articles relating to management. At the first meeting of the Committee on Telegraph Regulations the chairman of the American delegation announced that, because of circumstances beyond the control of this Government, the work of separating the regulations into the two groups had not been completed. The chairman stated also that the Government of the United States was still interested in the telegraph regulations and would continue its study after the delegation returned home.

Although the delegation did not intend to sign the Telegraph Regulations at Cairo, it was welcomed to participate in the work of the conference. The American delegation played a major part in maintaining the "status quo" in the relationship of the rates for the various classes of telegraph messages in the extra-European regime, which was the most important question presented to the telegraph conference.

A study of these regulations will be commenced in the near future to determine the attitude of all interested parties in the United States toward adhering to them.

UNITED STATES-CANADIAN REGIONAL ARRANGEMENT GOVERNING THE USE OF RADIO FOR AERONAUTICAL SERVICES

In addition to the above conferences, an informal conference between the United States and Canada was held in Washington, January 10 to 15, 1938, in which an agreement was reached in regard to the radiocommunication service of aeronautics and air navigation services in the bands 200–400 kilocycles and above 30000 kilocycles.

THE COMMISSION'S PARTICIPATION IN THE INTERDEPARTMENT RADIO ADVISORY COMMITTEE

The Commission has 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, which is composed of representatives of 13 Government departments and agencies, including the Federal Communications Commission, has had frequent meetings and has approved the assignment of 1,639 frequencies for Government radio stations during the past year. At the present time there are 4,145 active assignments to Government radio stations, all of which have been recommended by the Committee since its establishment.

During the past year the Committee has been actively engaged in the allocation to Government services of frequencies in the radio spectrum from 25 to 300 megacycles and definite recommendations for these allocations have been made. Due to the greatly increased volume of work, it has been necessary for the Committee to draft new principles for its operation and there is now in course of preparation a draft of a proposed executive order, to be signed by the President, listing the classes of stations to which Government frequencies are now assigned.

EXPERIMENTAL, RESEARCH, AND TECHNICAL INVESTIGATION

A large number of requests for technical information have been handled during the year. The most numerous of these have been in connection with complaints as to interference with broadcast reception. Many of these complaints were attributable to "external cross modulation" caused by detector action in circuits or metallic structures in the neighborhood of the receiving sets. This type of interference is usually difficult for broadcast listeners to locate and eliminate. An investigation of this type of cross modulation was made, and a report was prepared for administrative purposes, discussing the interference and the best means of locating and correcting it.

The necessity for an investigation of the various types of modulated signals used in the communication services arose in connection with apparatus manufactured for installation as main or as main and emergency radiotelegraph transmitters on merchant vessels subject to Title III, Part 2, of the Communications Act of 1934, as amended. In paragraph 12 (c) of the Ship Radiotelegraph Safety Rules as modified, there are certain provisions defining the percentage of modulation of signals used in the marine service which must be complied with.

In the apparatus in question, modulation of the signal is accomplished by applying the unfiltered output of a full wave rectifier directly to the plate circuit of the transmitter. A theoretical study of the form of wave produced in this manner was made, from which it was determined that the modulated signal produced was of standard form and that the "percentage of modulation was measurable by the usual standard methods."

Because of the need for similar data with respect to the many different types of modulated signals used in the communication service, and particularly the interest shown during the past year in the use of frequency or phase modulated signals for television and broadcasting on the ultra-high frequencies and the direct bearing of information of this kind on the practical problems of allocation, the investigation is being conducted and broadened to include the necessary information with respect to all of the types of modulated signals used or proposed for use in communication circuits.

Research in interference from low-power devices.—Further work in connection with the interference capabilities of low-power devices, such as the interoffice communication system outlined in the Third Annual Report, has been necessary. The use of such low-power devices for alarms, remote control purposes, and so forth seems to be increasing, and their regulation is becoming a considerable problem, to the solution of which the Commission is giving attention.

Commission's participation in technical conferences and meetings.—The work of the Commission's engineering staff in maintaining contacts with developments in the communication arts by inspection trips, attendance at conventions and the meetings of the various committees listed in the Third Annual Report has been actively prosecuted. The participation in the work of the Standards' Committee of the Institute of Radio Engineers has been of particular value to the Commission in connection with the revision of the rules and regulations of the Commission.

Investigation of sky wave field intensities.—An investigation of sky wave field intensities at shorter and longer distances from the transmitter than were covered by the measurements of the broadcast allocation survey of 1935 was made. In this study a new theory of sky wave propagation was developed, and the results obtained using it were checked with all available experimental data. As a by-product of this investigation, the separate influence of such variables as the type of antenna, the ground conductivity, the frequency, and the seasons was determined. The usefulness of the theory as a guide to the influence of these variables (which may not be determined by experiments, which give only average values) in all allocation problems requiring the prediction of sky wave field intensities was clearly indicated. The principal results obtained may be summarized as follows:

(*a*) Beyond the distance at which the ground and sky waves have an equal intensity, the sky wave increases with increasing distance out to the distance at which the sky wave field intensity reaches a maximum (200 to 300 miles, depending on the type of transmitting or receiving antenna, frequency, ground conductivity, etc.).

(*b*) At distances shorter than the distance for maximum sky wave field intensity, the principal factors for the sky wave field intensity

are the type of transmitting and receiving antenna used and the characteristics of the ionosphere.

(*c*) At distances greater than the distance of maximum sky wave field intensity, the principal factors for the sky wave field intensity are the ground conductivity along the path and the frequency. The ionosphere characteristics are here less important.

Study of effect of antenna height.—A study was made of the effect of the transmitting and receiving antenna height on the propagation of ground waves at the ultra-high frequencies.

A theoretical investigation of these effects and of the polarization of the waves was made in order to check the results of published experimental data for the use of the Commission in connection with certain problems arising in the administration of the many services planning to use these frequencies on a commercial basis. A theoretical analysis verifies the fact that the ideal location for ultra-high frequency broadcast transmitting antennas is at the most elevated points near the center of metropolitan areas and that such locations provide the maximum field intensities and minimize the adverse shadow effects of tall buildings and hills. It also showed that propagation was practically independent of polarization, but that conditions were somewhat more favorable when using horizontal rather than vertical polarization because of less interference due to electrical noise.

Investigation of necessary power for ship transmitters.—An investigation was made of the power required for ship radio transmitters for the purpose of obtaining engineering data for use in formulating the rules and regulations for the proper administration of section 354 of Public Law No. 97, Seventy-fifth Congress. A study of the technical factors involved showed that the limiting factors were atmospheric noise and receiver sensitivity during the daytime and either atmospheric noise or fading at night. As a result of this investigation, it appeared to the Commission, based on the best experimental and theoretical data available, that an antenna power of 200 watts was insufficient to provide a reliable communication service operating on the frequency 500 kilocycles over a seawater path of 200 nautical miles.

It was recognized, however, that the data on the signal to noise ratio required for the grade of service, and particularly on the atmospheric noise conditions encountered in the service itself, were inadequate for a reliable solution of the problem. The Commission, therefore, has undertaken a survey of atmospheric noise in the marine service in order to establish a sound engineering foundation for a solution of the problem at a later date.

The inspector in charge at Baltimore, Md., was required to prepare apparatus and make installations on three vessels sailing to various ports throughout the world for the purpose of obtaining data for the Commission in connection with its determination of power requirements for ship transmitters. The apparatus is designed to record automatically the noise levels prevailing on the routes traveled by the ship. Commission personnel was furnished to operate this equipment, analyze the data, and compile the necessary reports needed for the Commission preparatory to the hearing to be conducted at a later date.

Investigation of distortion in broadcast transmission.—An investigation of distortion in broadcast transmission caused by selective fading was made necessary by the engineering problems encountered in the determination of the best allocation plan for the provision of the best broadcast service to listeners located in rural areas in the secondary service areas of broadcast stations. Theoretical studies of principles underlying the investigation of propagation lead us to the following conclusions:

(*a*) Selective fading occurs only when interfering waves arrive at the receiver along paths different in lengths by an amount comparable to the wave length of the audio frequency involved.

(*b*) When the path length difference is equal to one-quarter wave length of the audio-modulation frequency, selective fading will occur continuously for that frequency.

(*c*) For smaller path length differences, the modulation frequency will be affected for a smaller percentage of the time.

(*d*) For a given path length difference, selective fading is independent of the carrier frequency.

(*e*) Since the frequency of fading is directed proportionately to the carrier frequency, selective fading will occur more frequently at the higher carrier frequencies, although not for a greater percentage of the time.

(*f*) At the higher carrier frequencies, since reflections occur from both the E and F layers of the ionosphere, there is a greater probability of waves arriving at the receiver over paths with large path length differences.

Sky wave field of stations operating with power in excess of 50 kilowatts.—In connection with the hearing of June 6, 1938, on the proposed new Broadcast Rules and Regulations and Standards of Good Engineering Practice, the Commission desired further information on the sky wave field produced by stations operating with power in excess of 50 kilowatts, the service rendered in the secondary service areas of such stations, and interference produced by these fields of great intensity.

An interesting fact brought out by this study was the large departure from the 1935 sky wave propagation condition which took place during the recent period of high sunspot activity. The data showed that sky-wave field intensities were several times as strong in 1935 at the time of the broadcast allocation survey as they were in 1938; consequently, a power of 500 kilowatts in 1938 did not provide as much secondary service as was produced by 50 kilowatts in 1935.[16]

As a result of these measurements and of similar results from other sources reported in the testimony taken at the hearing, the importance of a field strength recording program, extending over the complete cycle of variation in solar activity as it affects radio communications, has been shown to be the outstanding requirement in allocation engineering. An almost equally important matter on which insufficient information is available is that of atmospheric and other electrical noise and its diurnal, seasonal, and long-period variations. As it is the ratio of signal strength to noise that determines

[16] See also further discussion of this matter hereinafter at p. 58.

the usefulness of a given signal to the listener, it is obvious that adequate information must be obtained on both factors in order to provide a sound engineering basis for the specification of grades of service and the proper allocation of frequencies.

New theory of ground wave propagation.—There has recently been developed by several investigators in Europe a new theory of ground wave propagation which more accurately takes into account the effect of the curvature of the earth. The theory previously used has been known to be only approximate in this respect. The new theory was approved and accepted at the fourth meeting of the International Radio Consulting Committee, hereinafter referred to by the abbreviation of its French title, C. C. I. R., held in Bucharest, but has only recently been put into such form as to be practicable for predictions over the entire range of frequencies and electrical ground constants met with in practice. As the theory more accurately represents the actual conditions in ground wave propagation, the work of revising the standard ground wave curves in conformity with it was begun.

Field strength recorders.—Receivers and automatic field strength recorders were installed at Baltimore, Md., Grand Island, Nebr., and Portland, Oreg., for the purpose of recording continuously the field intensities of certain broadcasting stations throughout a long period of time and in connection with the Commission's study of wave propagations, antenna characteristics and intensity, and characteristics of atmospheric noises.

Equipment studies.—During the past fiscal year, studies have been made, and are in progress, pertaining to the performance of auto-alarm equipment, transmitter, receiver, direction-finder, wiring and safety specifications, particularly in regard to new and future ship installations; also, pertaining to marine frequency allocations between 30 and 40 megacycles, degree of modulation, and band width. Numerous conferences have been held pertaining to the foregoing with representatives of commercial and Government organizations.

The American Committee on High Frequency Allocation preparing for the Cairo conference decided to obtain data on the actual use being made of the high-frequency channels. To this end a cooperative survey, participated in by the Commission, other Government agencies, and certain private organizations, was organized. The general supervision of the survey, instructions to the observers, preparation of the forms used, tabulation of results, and their reduction to exhibit form was put in the hands of the Commission's engineering staff.

Two observation periods of 6 weeks each, one in the early summer and the other in the fall of 1937, were completed.

From the material obtained, various large charts were prepared from which the relative activity in the various frequency bands and the classes of stations operating therein could be determined at a glance. The types of emissions recorded were broadcast, telephone, telegraph, and diathermy, as well as harmonics and unmodulated carrier waves. This material was of considerable value to the representatives of our Government in considering the allocations of the high frequencies at the Cairo conference.

During the course of the fourth meeting of the C. C. I. R., held in Bucharest in May and June 1937, further study of the contributions on "wave propagation" presented by the various nations participating was entrusted to a subcommission in which this Government was represented. The Commission's staff was requested to prepare any additional material on wave propagation accumulated as a result of further studies of the data of the broadcast allocation survey for the use of the American delegate at a meeting of this subcommission to be held in London in November 1937.

An extensive report was prepared for this purpose. The report contained a discussion of the importance of the conception of the surface and space waves in radio propagation. It also presented new curves of ground wave field intensity at various distances. These new curves extended the validity of the Sommerfeld theory of ground wave propagation to the high frequencies where the effect of the dielectric constant of the ground is an important factor. It also contained a theoretical discussion on the determination of the intensity of sky waves at intermediate frequencies, emphasizing in particular the importance of the conductivity of the ground along the path between transmitter and receiver in calculating broadcast frequency transmission at night.

PUBLICATIONS

Under Section 4 (m) of the Communications Act of 1934 it is mandatory that the Commission "shall provide for the publication of its reports and decisions in such form and manner as may be best adapted for public information and use, and such authorized publications shall be competent evidence of the reports and decisions of the Commission therein contained in all courts of the United States and of the several States without any further proof or authentication thereof."

During the present fiscal year volumes 3 and 4 of F. C. C. decisions and reports were prepared and released. These volumes cover the decisions and reports of the Commission from July 1, 1936, to February 28, 1937, and from March 1, 1937, to November 15, 1937, respectively. This latter date corresponds to the effective date of the abolition of the various Divisions of the Commission. There are reported 106 decisions of the Commission in volume 3, and 129 decisions in volume 4.

Each volume contains tables of cases reported according to applicants, call letters, and localities, and also a comprehensive index digest of the subject matter of the decisions. There are also included for the period covered by each volume (1) general orders of the Commission, (2) interlocking directorate decisions of the Commission, and (3) selected court decisions that are pertinent to the regulatory and licensing work of the Commission. Other publications relating to the work of the Commission are listed in appendix B.

New rules.—As the developments in the various industries under the jurisdiction of the Commission have taken place, changes in the Commission's rules, or new rules, have been adopted in order to accompany such developments. During this fiscal year, the Commission approved a revision of its rules governing emergency radio services. These services are more fully discussed hereinafter at page 83. Changes in the allocation of frequencies to the various radio services were made so as to considerably enlarge the spectrum for the use of which licenses would be granted by the Commission. The effect that such reallocation had on the various services involved is shown under the discussion herein of such services.

Such other changes in the rules and regulations of the Commission were made as experience in the administration of the old rules had indicated were needed.

The Commission adopted a series of rules relating to the use of broadcast stations by legally qualified candidates for public office, containing definitions and provisions for the prevention of discrimination in the use of broadcast facilities by such candidates.[17]

Proposed rules.—The Commission has created a committee on rules, which has the function of initiating recommendations to the Commission upon the adoption and revision of rules, and to which the Commission refers for study, comment, and recommendation matters relating to its rules and regulations.

During the year there was undertaken a complete revision of the Rules of Practice and Procedure. This revision was necessitated, in part, by the amendment to the Communications Act relating to the promotion of safety of life and property through the use of communications. Changes were also proposed in the light of the new Federal District Court rules. Other revisions were proposed as indicated by the experience gathered in the 4 years of the Commission's existence through the handling of hearings and investigations. The Commission released to the public for comment the redraft of the procedural rules submitted, and entered an order looking to the adoption of the revisions at an early date.

There was also begun the complete revision of the substantive rules and regulations of the Commission. This major undertaking is scheduled for completion within 2 years. In this regard, an important task was the rearrangement and renumbering of the rules. This task was done in accordance with the arrangement and numbering system recommended by the Codification Board for the codification of all Federal rules and regulations.

During the fiscal year there were presented for the Commission's consideration, in addition to the above-mentioned Rules of Practice and Procedure, the following chapters of rules: (1) General Substan-

[17] Pursuant to sec. 315, 48 Stat. 1088; 47 U. S. C. 315.

tive Rules (including definitions and general administrative and technical regulations); (2) Rules Governing Standard Broadcast Stations;[18] (3) General and Special Experimental Rules; (4) Rules Governing Emergency Radio Services; and (5) Rules Governing Noncommercial Educational Broadcast Stations.

With respect to the rules governing standard broadcast stations, the Commission ordered that a hearing be held before a Committee of Commissioners, which was participated in by the broadcast industry as a whole, and operated 4 weeks, and during which more than 2,000 pages of testimony were taken. At the close of the hearing, the report of the Committee was in the process of preparation.[19]

Study was given during the year to the revision of the forms in use for making application for new or increased broadcast facilities, and for renewal of license. The purpose of such study was to evolve questions that would secure a wide variety of data not heretofore available. As one step in this direction, a new rule was adopted requiring more complete information as to the ownership and contractual obligations of broadcast stations.

Informal hearings were held during the year on several sets of regulations, including those governing the municipal police, aviation, and special emergency services.

Codification of F. C. C. Regulations.—A codification of Federal Communications Commission Regulations was prepared during this fiscal year in accordance with the requirements of Section 11a of the Federal Register Act and the rules and regulations of the Codification Board. The documents submitted to the Board constitute all of the rules and regulations in effect on June 1, 1938, which are relied on by the Federal Communications Commission in carrying out the requirements of the Communications Act. Many of these regulations were originally approved by the Federal Radio Commission and the Interstate Commerce Commission, and their administration was conferred on this Commission by Section 604 of the Communications Act. They will be embraced in Title 47 of the C. F. R. (Codification of Federal Regulations), and are arranged in a systematic manner which results in convenience for reference and citation purposes. There is included for each section of F. C. C. Regulations in the code a statement as to the statutory authority under which it was enacted and the source thereof, including the date and form of its original passage, and the agency enacting same.

Arrangements are being made whereby rules adopted by the Federal Communications Commission since June 1, 1938, conform to the numbering system embodied in the Codification of Federal Regulations. This will result in the gradual elimination of any variance between the numbers assigned to rules when they receive Commission approval and when they are embodied in the Codification of Federal Regulations. It is also expected to make extensive use of reprints of the Codification of Federal Regulations for various units of the Commission's Regulations.

[18] More fully discussed hereinafter at p. 55.
[19] This hearing is discussed more fully hereinafter at p. 57.

PROSECUTIONS OF UNLICENSED ACTIVITIES

The Commission, in collaboration with the United States district attorney for the middle district of North Carolina, obtained indictments against two individuals for the unlicensed operation of radio-broadcast stations in the State of North Carolina. Pleas of guilty were entered, and fines of $50 were imposed on each defendant.

A number of other cases in which persons were discovered to be maintaining and operating unlicensed radio stations in violation of sections 301 and 318 of the Communications Act of 1934, as amended, were referred to the Attorney General for criminal prosecution. Some of the parties were convicted and sentenced and some of the cases are still pending.

With further reference to "The Baker case," fully discussed at page 33 of our Third Annual Report, it will be remembered that at the close of the fiscal year covered by that report there was an appeal by the defendants pending before the Fifth Circuit Court of Appeals. This court handed down its opinion on December 16, 1937, in which it held that the statute (sec. 325 (b) of the Communications Act) was not sufficiently clear to legally serve as the basis for an indictment in the instant case. This decision is reported at 93 F. (2d) 332. A petition for a writ of certiorari to the United States Supreme Court was denied February 28, 1938.

Part II

Regulation of Telephone and Telegraph Carriers

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INTRODUCTION

Carriers subject to the jurisdiction of the Commission are those engaged in interstate or foreign communication for hire by wire or radio; i. e., telephone and telegraph carriers. Their regulation by the Commission as carriers, whether by wire or radio, is discussed in this section of the report. The regulation of the rates and tariffs, the supervision of accounts, and the securing of financial and other statistical data of carriers employing radio facilities are discussed herein, whereas the consideration given to them by the Commission in the licensing thereof is discussed hereinafter.[1]

Jurisdiction over telephone carriers.—Since section 2 (b) (2) of the act exempts certain telephone carriers from the provisions of the act, except sections 201–205, it was necessary at the outset for the Commission to determine the extent of its jurisdiction over telephone carriers. The work of classifying the many thousands of telephone carriers, which was a tremendous task, had been completed to a large extent prior to this fiscal year. During the year there was classified a total of approximately 325 companies, of which 73 were classified as connecting carriers, 4 as subject to all provisions of the act applicable to wire-telephone carriers, and the remainder were small companies which do not engage in interstate communication for hire and therefore are not subject to the jurisdiction of this Commission in any manner. There remain to be classified approximately 150 companies, the majority of which are small companies, concerning which the Commission has not been able to receive information. The only group of larger companies not yet classified are the operating subsidiaries of a holding company which is in the process of reorganization under 77-B of the Bankruptcy Act. Hearings were conducted during the year in seven cases in order to determine whether certain carriers named were entitled to exemption under Sec. 2 (b) (2) of the Act. Decisions were rendered by the Commission upon records made in hearings held prior to this fiscal year in three cases.

Only one attempt has been made by court action to set aside an order of the Commission classifying a telephone company under this section, and this resulted in a decision in favor of the Commission. The Rochester Telephone Corporation, whose claim for exemption under this section was denied during the past fiscal year, brought suit in equity in the United States District Court for the western district of New York to enjoin, annul, and set aside the order of the Commission classifying it as a carrier subject to all provisions of the act applicable to wire-telephone carriers. A three-judge court on June 20, 1938, refused to set aside the order of the Commission. This case is more fully discussed hereinafter at page 44.

[1] Part V. p. 88.

TELEPHONE INVESTIGATION

On April 1, 1938, the Commission transmitted to the Senate and House Committees on Interstate and Foreign Commerce, respectively, a Proposed Report on the Telephone Investigation, prepared by the Special Telephone Investigation staff under the direction of Commissioner Paul A. Walker. This proposed report previously had been submitted to the Commission with a view to subsequent determination at the earliest practicable date as to the form and content of the report which the Commission will later submit to the Congress.

RATE SCHEDULES

Number of tariff publications filed.—Communication carriers filed with the Commission during the fiscal year 17,602 tariff publications (book, pamphlet, 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. Of this number, eight were rejected for failure to give lawful notice to the Commission and to the public. New or revised instruments of concurrence, whereby some carriers adopted as their own certain tariffs of other carriers, numbered 92.

Of the total number of tariff publications filed, 12,382 related to telephone services, 3,603 related to telegraph services, and 1,617 related to both telephone and telegraph services.

Examination and revisions of tariff schedules.—Each tariff publication received by the Commission was (1) cataloged; (2) reported to the public in press releases showing the date of receipt, the date effective, and the general nature of the publication; and (3) examined to determine whether or not it conformed with the provisions of the act and the regulations contained in the Commission's Tariff Circular No. 1 and particularly to determine whether or not any rate or regulation appeared to be unjustly discriminatory or otherwise unlawful.

Many of the schedules were defective in form or construction or failed to comply with certain other requirements of the Commission's Tariff Circular No. 1, which contains regulations governing the filing of tariffs. Also, several carriers subject to the tariff-filing requirements of the act had failed to file any schedules of charges. With few exceptions, these discrepancies were corrected by means of correspondence with the carriers or informal conferences between representatives of the Commission and representatives of the carriers.

Investigation ordered by the Commission.—Near the close of the fiscal year an investigation was ordered by the Commission, and is now 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 center, and the establishment by such carrier of alleged local exchange service through the alleged extension of the local service area of the metropolitan center for considerable distances to include the interstate points mentioned. The question at issue may be of importance in the case of various other large metropolitan areas in the United States and may involve the question of whether, through such arrangement, telephone carriers may avoid the jurisdiction of the Commission in many of their activities.

Special applications.—Under authority of rule 14 of the Commission's Tariff Circular No. 1, 59 applications for special permission were filed by telephone and telegraph carriers requesting authority

to publish schedules of charges on less than statutory notice or without regard to certain requirements of the tariff circular. The greater number of these applications pertained generally to reductions in charges or other changes clearly in the public interest. Upon good cause shown, the Commission granted 54 of the 59 applications received, 4 were denied, and no action was necessary with reference to one of the applications.

On November 15, 1937, rule 8 (b) of Tariff Circular No. 1 was amended to permit carriers to establish certain greeting services, such as Christmas and New Year greetings, for a period of less than 30 days without seeking special permission of the Commission.

Public inspection of tariff files.—Tariffs filed with the Commission are kept open for public inspection. During the year an increased use was made of the tariff files. When requested, the Commission's staff cooperated to the fullest extent in assisting those seeking information relating to rates, regulations, and services offered by communication carriers in interstate and foreign commerce. Copies of tariffs were furnished in several instances to the public at cost.

RATE REDUCTIONS

During the fiscal year many reductions were made in rates for interstate or foreign communication services. These reductions will result not only in material savings to the public but should also result in expanding the use of such services. Among the more important reductions were the following:

Telegraph.

1. Night letter rates to Cuba were reduced, amounting to approximately 50 percent for messages of 50 words and over.
2. The land-line zone charges for messages originating in Louisiana (except New Orleans), Mississippi, and Texas to destinations in Latin American countries were reduced from 11, 8, and 11 cents to 4, 5, and 6 cents per word, respectively, through negotiations by the Commission's staff with the carriers.
3. Rates for time-wire service over approximately 900 routes were reduced.
4. Changes were made in the method of counting figure groups in telegrams, and charges for certain punctuation marks were eliminated, resulting in considerable savings to the public.
5. Press and Government rates to many international points were reduced.
6. The Western Union Telegraph Co. changed its regulations to permit contract periods for leased wire service shorter than 1 month, and also made provision to allow branch offices of the subscribers to this service to be connected with the circuit.

Telephone.

1. The United States zone rates on overseas radiotelephone service were reduced approximately 25 percent.
2. Charges for coastal harbor radiotelephone services were reduced.
3. The radiotelephone rate to Iceland was reduced.
4. The Interstate Telephone Co., serving certain northwestern States, reduced the evening rates applicable to message toll telephone

service between 7 p. m. and midnight to the level of the rates applicable between midnight and 4:30 a. m.

5. New England Telephone and Telegraph Co. previously had two schedules of interstate toll rates in effect, one applying generally in New England territory and the other applying between certain points in New Hampshire and certain points in Maine and Vermont. This latter schedule was discontinued, resulting in a saving to the public as well as a simplification of the rate structure.

EXTENDED SERVICES

During the fiscal year many new points of communication were established, and other extensions of existing services were effected. Among such extensions of service were the following:

1. R. C. A. Communications, Inc., established program transmission service to China.

2. The Western Union Telegraph Co. established rates and regulations for private-line circuits between cities for program transmission or other leased wire services, equipment to be supplied by the customer.

3. The Western Union Telegraph Co. established baseball and stock quotation ticker service in 186 additional cities in the United States.

4. The American Telephone & Telegraph Co. established teletypewriter exchange service in 147 additional cities in the United States.

5. The Western Union Telegraph Co. established "telemeter" service between Boston and Chicago, Boston and Detroit, Boston and Los Angeles, Boston and San Francisco, Chicago and Los Angeles, Chicago and San Francisco, Cleveland and Los Angeles, Cleveland and San Francisco, New York and Salt Lake City, Chicago and Cleveland, and New York and Boston.

6. The American Telephone & Telegraph Co. inaugurated radiotelephone service to Bagdad, Iraq, and also established message toll-telephone service between land stations in the United States and the steamships *Washington* and *Manhattan*.

7. The Pacific Telephone & Telegraph Co. established rates and regulations for short period private-line telephone service.

RATE SURVEYS

Studies were made, and will be continued, relating to the level of rates and the regulations applicable to interstate telephone and telegraph service. Certain provisions in tariffs have been modified in the public interest through the cooperative efforts of the Commission's staff and representatives of carriers. Extensive studies were also made during the fiscal year by the Telephone Rate and Research Department and are reflected in a series of 13 reports (each constituting a volume), 9 of which are planographed for use by the Commission and other interested governmental agencies. Work of this nature will be continued in order to secure effective regulation of telephone rates.

RATES FOR GOVERNMENT TELEGRAPH MESSAGES

The annual order for the fixing of rates for Government telegraph messages, as authorized by the Post Roads Act of 1866, was issued

for the fiscal year 1938–39. There were no changes from the order effective during the past fiscal year except to make provision for possible changes which might be the result of Commission action on the then pending petitions of the telegraph companies to increase Government telegraph rates. In general, this order provides that Government communications shall have priority over all other business and shall be sent at rates not to exceed 40 percent of the rates applicable to commercial communications of the same class, of the same length, and between the same points in the United States, subject to certain minimum charges. Certain exceptions are made in the case of serial messages, timed-wire service, and communications between the continental United States and its possessions, between the United States and foreign countries, and between the United States and ships at sea, for which other provisions are prescribed.

DOMESTIC TELEGRAPH RATES

The most important case dealing with domestic telegraph rates affecting the general public during the year was that of the petition of carriers for increases in domestic telegraph rates.

The Postal Telegraph-Cable Co., the Mackay Radio & Telegraph Cos. of California and Delaware, and the Western Union Telegraph Co. filed a joint petition on December 22, 1937, seeking authority to make a general increase of 15 percent in all their rates and charges for domestic messages except for a limited number of specified exceptions. A separate petition by R. C. A. Communications, Inc., sought similar authority. An investigation was ordered by the Commission and an extended hearing was had, a number of interested parties being permitted to intervene. Western Union, Postal, and Mackay alleged a financial emergency brought about principally by increased operating expenses accompanied by declining revenues. R. C. A. Communications, Inc., while not claiming to be in a financial emergency itself, sought to share in the increases so as to avoid a possible defection of traffic which might bring about a disturbance in business and in the competitive practices of the domestic telegraph carriers. Upon consideration of the entire record the Commission found that the carriers were not entitled to the relief prayed for and, accordingly, the petitions were denied.

Another case of primary importance was that in connection with Telegraph Division Order No. 12 concerning double urgent rates. Upon motion of the Western Union Telegraph Co. for rehearing and for suspension of the effective date of certain portions of the Commission's order of June 14, 1937, the Commission suspended for a limited period the effective date of the provisions of that order relating to the ratio between ordinary and urgent messages and allowed Western Union to file appropriate schedules cancelling before the same became effective the new tariffs which had been filed for the purpose of complying with the order. On May 12, 1938, oral argument was had before the Commission on the motions of Western Union, R. C. A. Communications, Inc., and Commercial Cable Co. praying for (1) a permanent suspension of the provisions of the order relating to the ratio between ordinary and urgent messages or (2) a reopening of the matter for further evidence and a temporary

suspension of the order in the interim, and on the opposition of the Cable and Radio Users' Protective Committee to said motions. At the close of the year the above-mentioned provisions of the order were under temporary suspension pending decision by the Commission.

INTERNATIONAL TELEGRAPH RATES

Trans-Pacific rates.—Because of the activity of various far eastern foreign trade associations and chambers of commerce on the Pacific coast, and the representations made to the State Department, a study is being made of the trans-Pacific telegraph rate situation with a view to the elimination of any discriminatory conditions or practices found to exist.

Divisions of tolls.—Studies of the divisions of tolls between American carriers and the associated foreign administrations in international telegraph traffic were continued during the fiscal year. As stated in a previous report, special attention is given to the relationship of the American carriers with the foreign government administrations which normally operate foreign telegraph service, with special emphasis on the competitive problems resulting from foreign contracts, the divisions of tolls between the carriers sharing in the charges for the handling of international messages, and the settlement of accounts involving fluctuating foreign currencies.

International Telecommunications Conference, Cairo, Egypt.—Special preparation was made, in the nature of traffic studies, for the International Telecommunications Conference at Cairo, Egypt, held in February 1938, elsewhere discussed in this report. Among other things, a comprehensive study was made of all international traffic to and from the United States, all foreign traffic transiting the United States, and ship traffic, during 7 selected days in Setpember 1937.

ACCOUNTING REGULATIONS

Uniform systems of accounts, telephone carriers.—During the fiscal year considerable correspondence was conducted with telephone carriers in order to execute the requirements of the instructions in the new uniform system of accounts for class-A and class-B telephone carriers [2] which became effective on January 1, 1937, providing that there be submitted (1) copies of journal entries effecting transfers from the accounts previously maintained to the new accounts and (2) statements describing the nature and purpose of (a) subdivisions of accounts and (b) clearing, temporary, or experimental accounts established by them in addition to those prescribed. Preliminary data were assembled in connection with the drafting of certain needed revisions in this system of accounts.

A draft of a new uniform system of accounts for telephone carriers having average annual operating revenues in excess of $25,000, but not exceeding $50,000 (designated as class-C carriers), was completed during the fiscal year. While this system was prescribed (effective January 1, 1939) for class-C telephone carriers, it was also recommended for observance by the small carriers having average annual operating revenues not exceeding $25,000, designated as class-D carriers.

Perpetual record of plant and work-order systems.—Considerable work has been done looking to the completion of the continuing or perpetual detailed record of telephone property as at December 31, 1936, and of the changes in plant occurring during the calendar years 1937 and 1938. An order was adopted by the Commission extending to June 30, 1939, the latest date for completion of this work.

The tentative draft of rules governing work-order systems and perpetual records of property changes for telephone carriers (associated with the foregoing) is in process of revision.

Cost accounting.—Preliminary steps are being undertaken in connection with the drafting of cost-accounting procedure for wire-telephone companies.

Uniform systems of accounts, telegraph carriers.—At the end of the fiscal year, a draft of a new uniform system of accounts for telegraph and cable carriers (exclusive of radiotelegraph carriers) was undergoing final extensive revision after being the subject of extended conferences with representatives of State Commissions and the telegraph carriers.

A draft of a new uniform system of accounts for radiotelegraph carriers was likewise undergoing final extensive revision after being the subject of the same or related conferences with representatives of the radiotelegraph carriers.

[2] A class-A carrier is one having average annual operating revenues in excess of $100,000. A class-B carrier is one having such revenues in excess of $50,000 but not in excess of $100,000.

FIELD EXAMINATIONS

Telephone carriers.—One historical examination of the plant accounts of a large telephone carrier and a study of the accounting for costs incidental to the construction of a coaxial cable extending from New York to Philadelphia were completed during the fiscal year.

Only one field accounting office has been established by the Commission. This office is located at New York, N. Y., and has been engaged principally in the examination of the accounts and records of telegraph carriers. There is an urgent need (but insufficient funds) for the establishment of a few additional field offices in order to reach the accounts and records of the many large carriers subject to the jurisdiction of the Commission. This organization is necessary in order to gather factual information needed by the Commission in the discharge of its regulatory duties.

Telegraph carriers.—Examinations of the accounts and records of two important carriers, one being a cable company and the other a radiotelegraph company, were completed during the fiscal year. These examinations included historical audit examinations developing the lifetime history of the plant and equipment and related reserves; balance-sheet audits for certain years; and complete analytical audit examinations for certain years. They included also a development of operating statements; data regarding traffic interchanges, intercompany financing, and foreign exchange; and analyses of cable repairs.

One of the purposes of these examinations was to provide an outline of the accounting methods of these carriers which might be used in connection with the preparation of a uniform system of accounts for radiotelegraph carriers and the revision of the existing system of accounts for wire-telegraph and cable carriers, both mentioned above.

Two similar examinations were in progress at the end of the fiscal year. One of these is an examination of the records of a radiotelegraph company and the other is an examination of the accounts and records of a cable company. Some preliminary work was also done prior to the end of the fiscal year in connection with two other contemplated examinations relating to telegraph or cable carriers.

OTHER ACCOUNTING ACTIVITIES

Relief and pensions.—An order was adopted by the Commission which required that each telephone and telegraph carrier file copies of its original plan for relief and pensions adopted by it, if such a plan existed, or comprehensive outlines of the plan if a copy of the text was not available, together with copies of all changes therein and their effective dates. It also required that the Commission be informed of any future changes in the benefit plan and any contemplated changes in accounting.

Studies are being made of the data filed in compliance with this order, with a view to assurance that the accounting therefor is in conformity with the applicable regulations and with a view to the determination of the advisability of modifying or amplifying the accounting regulations with respect to new situations revealed.

Rate proceeding.—Financial and accounting data were assembled in connection with the application of telegraph carriers for a 15-percent increase in domestic telegraph rates.

Special investigation.—Careful attention was given to facts disclosed by the special telephone investigation to determine whether, and the extent to which, changes should be made in accounting regulations applicable to telephone carriers. This study is expected to be continued, and full consideration will be given to all findings and recommendations.

Depreciation.—Studies are being made of data assembled with a view to obtaining better information for use in the regulation of depreciation accounting practices by telephone and telegraph carriers.

Leasing arrangements.—A study of the several corporate histories and leasing arrangements existing in the telegraph industry was commenced during the fiscal year and will be continued for the purpose of determining the proper accounting required in the circumstances.

Extensions of lines.—Attention was given to accounting considerations involved in 48 applications received from telephone carriers and 25 applications received from telegraph carriers relating to extensions of lines and mergers or other acquisition by one carrier of the properties of another within the purview of sections 214 or 221 of the act. All progress and completion reports submitted in compliance with the orders granting such applications were reviewed.

COOPERATION WITH STATE REGULATORY BODIES

A policy of close cooperation with State regulatory bodies and with the National Association of Railroad and Utilities Commissioners—particularly with the Association's Committee on Statistics and Accounts—has been pursued in all matters relating to the regulation of telephone and telegraph accounts. This has been especially true in the formulation of new accounting systems and regulations. The cooperation, advice, and assistance of representatives of State regulatory bodies and of the association and committee mentioned above are gratefully acknowledged.

FINANCIAL AND OTHER STATISTICAL DATA

ANNUAL AND MONTHLY REPORTS

Requirement and content.—All telephone carriers subject to the jurisdiction of the Commission, having average annual operating revenues in excess of $50,000, were required to file annual reports, as in previous years, pursuant to section 219 of the act. Telegraph carriers subject to the jurisdiction of the Commission were also required to file annual reports. Only telephone carriers having average annual operating revenues in excess of $250,000 and telegraph carriers having such revenues in excess of $50,000 were required to file *monthly* reports.

The annual and monthly reports mentioned above contained financial and other statistical information regarding the reporting carriers of the nature specified in section 219 of the act.

In addition to the regular reports mentioned above, the larger telephone carriers having average annual operating revenues in excess of $1,000,000 were required to file an additional monthly report, beginning in January 1938, showing changes in selected income and balance-sheet items not covered in the other monthly report form required to be executed by the smaller carriers.

Changes in forms.—The monthly report form required of telegraph carriers was revised for use beginning in July 1938, in order to show separately the amount of depreciation of plant and equipment and the amount of relief department and pension expenses. Only minor changes were made in the annual report form required of telegraph carriers.

A considerable number of changes were made in the annual report form required of telephone carriers during the fiscal year. These were occasioned principally by changes in accounting regulations effected through the new uniform system of accounts prescribed for telephone carriers which became effective on January 1, 1937. The changes in the annual report form include the following:

1. The carriers were required to segregate their investment as follows: (a) Telephone plant in service; (b) telephone plant under construction; (c) property held for future telephone use; and (d) telephone plant acquisition adjustment. Likewise, they were required to show: (a) Data concerning contingent assets and liabilities; (b) amount of preferred-stock cumulative dividends in arrears; and (c) amount of matured long-term debt held by, or for, respondent and not canceled.

2. A new schedule was provided to secure an analysis of account 180, "Surplus reserved," showing the name of the reserve, purpose for which created, and amount.

3. An analysis of the amounts included in account 525, "Revenues from general services and licenses," was required.

4. The schedule for plant and operating statistics was revised to show more detailed data relative to the cable mileage used in telephone service.

5. The carriers were required to furnish more information concerning relief and pension payments; additions to, disbursements of, investments of, and balances in pension and benefit funds; and statistical data relative to pensions and benefits.

6. Important changes in service and rate schedules during the year were required to be reported and the carriers were required to show: (a) Estimated increase or decrease in annual revenues by reason of such changes; (b) estimated saving or additional cost to the public; and (c) the bases used in arriving at such estimates.

Reports required of holding companies.—Holding companies owning interests in communication carriers were required to file annual reports for the calendar year 1937. A similar requirement was made in the two preceding years and was mentioned in prior reports to Congress. Two report forms have been prescribed, one designed for holding companies owning large interests in communication carriers and one designed for holding companies owning only minor interests in communication carriers.

These reports reflect financial and other factual information somewhat similar to, but less exhaustive than, that required of carriers. Among other things, these reports reflect the capital structure, control, financial condition, and the relationship of the holding companies to the carriers concerned.

Data regarding intercorporate relations and other selected items of interest are compiled from these reports and from other sources of information including the reports filed by the carriers.

Manufacturing and other subsidiaries.—A tentative draft of an annual report designed for manufacturing subsidiaries, research organizations, and other similar corporations controlled by communication companies, or such companies under common control with communication carriers, was completed during the fiscal year and will be the subject of conferences with representatives of State regulatory bodies and the companies concerned before consideration is given to prescribing the form for use by such manufacturing and other subsidiaries mentioned above.

The Commission has previously inquired into the accounts of certain manufacturing subsidiaries by direct examinaton by Commission accountants to determine the cost of certain manufactured articles used by carriers in the construction of plant.

Number of reports filed by telephone, telegraph, and holding companies.—Annual reports for the calendar year 1937 were filed by 97 telephone carriers and 56 telegraph carriers. The telegraph carriers consisted of 36 companies engaged in wire communication (including cable companies) and 20 companies engaged in radiotelegraph communication. Monthly reports were filed by 91 telephone carriers and 17 telegraph carriers. A total of 34 telephone carriers filed monthly reports on the new form required of large carriers having average annual operating revenues in excess of $1,000,000. A total of 48 holding companies filed annual reports. Of this number, 24 reported on the form required of companies owning major interests in communication carriers, and 24 reported on the smaller form

required of companies owning only nominal interests in communication carriers.

Examination and correction of reports.—All accounting schedules and other statistical data contained in the reports filed by telephone, telegraph, and holding companies were carefully examined, and corrections were made where necessary following correspondence with the companies concerned.

Public reference room.—Annual and monthly reports filed by telephone, telegraph, and holding companies were made conveniently available to the public through the medium of a public reference room. There was an increased use of these reports by the public during the fiscal year 1937–1938. When requested, the Commission's staff assisted those who sought information reflected by these reports.

STATISTICAL COMPILATIONS

The statistical publications pertaining to telephone and telegraph carriers which were issued during the fiscal year are set out in appendix B. Various other statistical compilations, not included in this list of publications, were made during the fiscal year in order to assemble factual information required in the work of the Commission. These included a special study of economic aspects of competition affecting the land-wire telegraph industry and a study of trends in national income in so far as they relate to the communications industries.

The Commission cooperated with the Bureau of the Census in developing forms used in the quinquennial census of electrical industries for the year 1937.

STATISTICAL DATA CONTAINED IN APPENDIX

Summary of selected statistical data.—To indicate financial and other statistical trends during the calendar year 1937 in both telephone and telegraph industries, some of the more important items are shown in the following tables and comparisons are made with similar statistics for the previous year:

TELEPHONE (CLASS A)

	1937	1936	Increase or decrease	
			Amount	Ratio, percent
Investment in telephone plant	$4,678,893,476	$4,540,690,297	$138,203,179	3.04
Depreciation reserve	1,262,171,574	1,188,469,599	73,701,975	6.20
Capital stock	4,276,220,332	4,306,192,025	[1] 29,971,693	[1] .70
Funded debt	941,509,080	973,840,600	[1] 32,331,520	[1] 3.32
Total surplus	390,180,025	386,734,872	3,445,153	.89
Operating revenues	1,138,132,784	1,076,619,047	61,513,737	5.71
Operating expenses	774,549,427	721,975,372	52,574,055	7.28
Operating taxes	142,167,406	121,341,218	20,826,188	17.16
Net operating income	221,416,111	233,255,895	[1] 11,839,784	[1] 5.08
Number of telephones	17,005,401	16,059,625	945,776	5.89
Miles of wire	85,525,108	83,322,628	2,202,480	2.64
Number of employees (Dec. 31)	295,088	281,243	13,845	4.92
Total compensation	$488,797,654	$433,363,452	$55,434,202	12.79

[1] Decrease.

TELEGRAPH

	1937	1936	Increase or decrease	
			Amount	Radio, percent
Investment in plant and equipment	$536,883,818	$533,358,381	$3,525,437	0.66
Reserve for accrued depreciation	162,340,960	123,299,398	39,041,562	31.66
Capital stock	172,910,813	175,044,360	[1] *2,133,547*	[1] *1.22*
Unmatured funded debt	114,740,918	115,218,721	[1] *477,803*	[1] *.41*
Total corporate surplus	70,116,329	111,643,377	[1] *41,527,048*	[1] *37.20*
Operating revenues	146,299,718	141,541,707	4,758,011	3.36
Operating expenses	126,515,291	118,292,519	8,222,772	6.95
Operating taxes	7,626,530	5,636,349	*1,990,181*	*35.31*
Operating income	11,460,700	16,989,996	[1] *5,529,296*	[1] *32.54*
Miles of wire	2,428,750	2,425,904	2,846	.12
Number of revenue messages transmitted	222,431,477	208,891,814	13,539,663	6.48
Number of employees (Dec. 31)	72,820	76,390	[1] *3,570*	[1] *4.67*
Total compensation	$90,413,563	$83,052,726	$7,360,837	8.86

[1] Decrease.

Appendix.—Extensive statistical data relating to telephone and telegraph carriers are contained in appendix C to this report.

COMPLAINTS AND INVESTIGATIONS

The Commission continues to receive a considerable number of complaints. Many of these relate to local exchange service, over which this Commission does not have jurisdiction. Upon receipt of a complaint relative to a matter beyond the scope of the Commission's jurisdiction, the complainant is advised of such fact and referred to the proper local or state regulatory authority.

Many investigations have been conducted during the year upon complaints, informal and formal. In most instances these have been satisfactorily adjusted by informal means without the necessity of resorting to formal proceedings. The subject matter of these complaints covered a wide range, including rates, charges, services, discrimination, failure to interconnect facilities, and related matters. The procedure in handling complaints is established by the Rules of Practice and Procedure promulgated and adopted by this Commission.

Inductive interference.—The question of inductive interference between the power transmission lines and telephone lines has been studied, both from a standpoint of proposed legislation in Congress and in connection with informal complaints received during the year. No formal decision in connection with this question has been reached since the problem primarily relates to rural telephone exchange service over which the Commission has no jurisdiction.

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EXTENSIONS OF WIRE FACILITIES

The regulation of wire carriers, as contemplated by the act, includes the granting or denying of certificates of public convenience and necessity for the construction, extension, and transfer of wire facilities, as well as for the supplementing of existing facilities.

TELEPHONE

The 48 applications for extension of lines or facilities from telephone carriers handled during this year include those for (1) acquisition and construction under section 214, (2) supplementing of existing facilities under the second provision of section 214 (a), and (3) authority to consolidate under section 221 (a).

Acquisitions under section 214.—Among the applications for authority to acquire new or extended lines was one of Southwestern Bell Telephone Co. to acquire and operate all the interstate toll lines of the United Telephone Co. (of Kansas), a controlled subsidiary of the Southwestern Bell Telephone Co. A decision had not been rendered in the case at the close of the year. Another was the application of the Nebraska Continental Telephone Co. for permission to acquire and operate all the telephone lines, system, business, and assets of the Nebraska Continental Telephone Corporation, which had been filed during the previous year. This application was granted by the Commission.

The application of the American Telephone and Telegraph Co. to supplement its existing toll facilities between Dallas and San Antonio and between Dallas and Houston, Tex., which was filed during the previous fiscal year, and consolidated with the proposed plan of the Southwestern Bell Telephone Co. to supplement its existing facilities between the same points, is still pending before the Commission.

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 this fiscal year, 43 applications for authority to supplement existing facilities were received and granted. The expenditures in connection with the individual projects ranged from a few thousand to more than one-half million dollars, and totaled almost 4 million dollars. This represents a slight decrease from last year, both in number of applications handled and in the total expenditure. The major portion of these applications was filed by the Bell System, only three being filed by other companies.

In connection with these projects it is the policy of the Commission to require periodic construction and progress reports and a full report on their completion. The reports are regularly received and analyzed by the engineering and accounting departments.

Petitions for authority to consolidate.—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 acts. The applications filed during the fiscal year under this section include: (1) Application of the Indiana Bell Telephone Co. for a certificate that the proposed acquisition by it of the property of the Dugger Mutual Telephone Co. will be of advantage to the persons to whom service is rendered, and in the public interest, on which hearing was held on March 2, 1938, and which was still pending at the end of the fiscal year; and (2) the joint application of the Bell Telephone Co. of Pennsylvania and Pennsylvania Telephone Corporation for a certificate that the proposed acquisition of certain telephone properties in the Commonwealth of Pennsylvania will be of advantage to the persons to whom service is to be rendered and in the public interest, which application was, after hearing, granted. This latter application involved properties in Allegheny, Bedford, Blair, Cambria, Fayette, Indiana, Somerset, and Westmoreland Counties in Pennsylvania.

Physical connection between carriers.—Section 201 (a) of the act gives the Commission authority to require carriers to establish physical connection with other carriers and to establish through routes and charges applicable thereto, if, after opportunity for hearing, such action is found necessary or desirable in the public interest. The only petition for such connection now before the Commission is that of the *Oklahoma-Arkansas Telephone Co.* v. *Southwestern Bell Telephone Co.* for physical connection at Fort Smith, Ark. A hearing had been held before an examiner who had filed his report thereon, to which exceptions were filed during the past fiscal year. On August 10, 1937, the Commission (telephone division) issued its report and order reassigning the matter for hearing de novo. The respondent thereafter filed a petition for rehearing and modification of the order of August 10, 1937, which was denied by an order of the Commission (telephone division) issued September 15, 1937. The respondent then filed its application and petition for rehearing before the full Commission, which was dismissed on October 6, 1937, by an order of the Commssion. The hearing was thereafter held before an examiner, who had not issued his report thereon at the close of the year.

TELEGRAPH

The extension of telegraph wire facilities under the jurisdiction of the Commission has been small during this fiscal year and consisted entirely of leased circuits. No applications were received or acted on which had as their purpose the extension of existing facilities by new construction. A total of 169½ miles of circuits was authorized to be leased for permanent use and 569 miles for temporary use. The applications received were as follows:

Pending July 1, 1937	4
Received July 1, 1937, to June 30, 1938	29
Total	33
Granted July 1, 1937, to June 30, 1938	28
Pending June 30, 1938	[1] 5
Total	33

[1] Temporary authority has been granted in three of these cases.

One of the most important matters arising under section 214 of the Communications Act as applied to telegraph carriers was the investigation ordered by the Commission of the facts surrounding the acquisition by Mackay Radio & Telegraph Co. of a line or circuit extending from Washington, D. C., to Baltimore, Md., without first obtaining a certificate of convenience and necessity from the Commission; the lawfulness thereof; the determination of the requirements of section 214 of the Communications Act of 1934; and the issuance of rules and regulations applicable thereto. Other carriers having an interest in the proceeding were made parties. A hearing was held in the matter on April 18, 1938, and oral argument heard the following day. The case was pending at the end of the fiscal year.

TECHNICAL DEVELOPMENTS IN THE WIRE-TELEPHONE AND WIRE-TELEGRAPH ARTS

WIRE TELEPHONE

During the past year many technical developments and improvements were effected in wire-telephone communication, the most important of which are discussed herein.

Carrier systems.—During the past few years several new types of carrier telephone systems have been developed which are expected to have a profound effect on the future of telephony. Some of them—such as the types J and K carrier systems—will materially increase the number of high quality telephone circuits that may be obtained from existing types of line facilities.

The type J carrier system operates on open wires like the present standard type C system. The latter provides three carrier channels and operates in the frequency range from about 4,000 to 30,000 cycles. However, the new type J system operates in the range from 36,000 to about 140,000 cycles and provides 12 additional carrier channels. Thus, one pair of open wires may be used for a total of 16 telephone channels.

The type K system is employed with cable facilities and provides 12 carrier channels on four conductors by operating in the frequency range between 12,000 and 60,000 cycles. These 12 channels may be employed for 12 ordinary telephone circuits or for as many as 144 telegraph circuits. In practice, each type K system would be more likely to carry some telephone and some telegraph circuits. For program transmission, two or three adjacent carrier channels may be combined to give a single high quality program channel.

The use of the relatively high frequencies of the above new systems has introduced a large number of new problems and involved numerous radically new types of apparatus and techniques. Both systems make use of new types of quartz crystal band filters and amplifiers.

Extensive operating tests of the type K system have been made in existing cables between Toledo, Ohio, and South Bend, Ind. The operation of the type J system has also been tested in a trial installation between Lamar, Colo., and Wichita, Kans., and further testing of the same type of system is under way on open wire lines in Florida.

Plans have been made to put type K systems into service in cables between Toledo and Detroit, between South Bend and Detroit, between New York and Chicago, and between New York and Charlotte, N. C. These plans also anticipate extension of circuits between Charlotte, N. C., and points in Florida by means of type J open wire carrier systems. Plans are also under way to install type J carriers on the new fourth transcontinental line from Oklahoma City to Whitewater, Calif., and also between Salt Lake City, Utah, and Pocatello, Idaho.

Coaxial cable system.—Extensive experiments were made during the past year on the coaxial cable system between New York and Philadelphia.[3] One of the most important groups of experiments was the transmission of sound motion pictures from New York to Philadelphia for the purpose of testing the performance of the coaxial system in the handling of television programs.

In the arrangements employed, the motion picture was obtained by scanning motion-picture film with a rotating disc, using 240 lines, with 24 frames per second. This gave a signal band extending from 0 to about 800 kilocycles, which in two stages of modulation was shifted upward about 150 kilocycles for single sideband transmission over the coaxial line. At the receiving terminal the signal band was restored in two stages of modulation to its original frequency position and applied to a cathode ray tube for reproduction of the picture. Sound accompaniment for the picture, obtained from a sound track on the film, was transmitted simultaneously with the television pictures over the coaxial line.

The experiments were not to show improved television but were to demonstrate the unique and economical utilization for television currents of the frequency band of a long coaxial cable.

The 1-megacycle repeaters at the unattended points between New York and Philadelphia have now been removed. Preparation for trial of 2-megacycle repeaters between New York and Princeton, N. J., has been continued, as well as construction of experimental group modulating equipment for installation at New York, which will eventually permit obtaining 480 telephone circuits or accommodate television currents corresponding to about 350-line pictures from the 2-megacycle coaxial system.

Autodial.—A new automatic device has been developed which is designed to simplify the calling of persons whom the user calls most frequently. All that is required is to set a pointer opposite the name of the desired person on a list of those frequently called, a lever is then pushed and released, and the autodial does the dialing.

Switchboards.—Numerous improvements have been made in the design of switchboards, one of which is a new automatic switchboard of the relay type for small exchanges. There has also been developed a new multicontact rotor relay which has resulted in added simplicity of design and smoothness of operation in the field of this type of machine switching. These switchboards are designed for small exchanges and have ultimate capacities of 30, 60, and 100 lines.

Operator equipment.—A new breast-plate operator's set with a lightweight nonpositional transmitter and a featherweight operator's receiver has been developed. The entire set weighs 6⅜ ounces.

Station equipment.—New self-contained handset desk and wall type subscriber equipment has been developed. Improvement of the telephone ringer has been made so that it may be heard at a greater distance and yet the sound is not jangling or nerve wracking.

WIRE TELEGRAPH

Additional varioplex installations were made during the year and telemeter service was extended to several additional points.[4] Carrier

[3] Discussed at p. 108 of our Third Annual Report.
[4] See p. 80 of our Third Annual Report.

Telegraph Systems were installed between New York and Washington, D. C., and between New York and Atlanta, Ga.

A *new method* of automatic relaying, known as "reperforator switching," was installed at Richmond, Va., in order to eliminate manual retransmission of messages to be relayed at this point. The automatic equipment provides for all the relaying functions of this office more economically, more rapidly, and more accurately than manual retransmission. Special types of automatic repeater apparatus were installed at other points in order to provide for through operation of telegraph circuits to eliminate manual rehandling.

LITIGATION

The Mackay-Oslo case.[5]—On appeal to the United States Court of Appeals for the District of Columbia, the Commission's decision, denying the applications of Mackay Radio & Telegraph Co. for modification of certain radiotelegraph licenses to add Oslo, Norway, as a primary point of communication, was affirmed. The court held that the findings of fact made by the Commission were supported by substantial evidence and were a proper basis for the Commission's conclusion that public interest, convenience, and necessity would not be served by a grant of the applications. The Commission's findings were discussed in our Third Annual Report at page 66.

The Rochester case.[6]—The Rochester Telephone Corporation claimed exemption under section 2 (b) (2). The Commission, after a hearing, denied the company's claim and entered an order classifying the company as subject to all provisions of the act applicable to wire telephone carriers. The carrier filed a bill in equity to set aside, annul, and enjoin the order of the Commission. A hearing was had in Rochester in May 1938 before a three-judge statutory court composed of Justice Manton, of the Circuit Court of Appeals, and Judges Knight and Burke, of the District Court. On June 20, 1938, the three-judge court rendered its unanimous decision sustaining the order of the Commission.

The basic questions involved in this case are (1) what type of influence and control Congress intended to include by the phrase "directly or indirectly * * * controlled by" as used in section 2 (b) (2) of the act; and (2) whether the Rochester Telephone Corporation is controlled directly or indirectly by the New York Telephone Co., with which it has a physical connection whereby it engages in interstate and foreign commerce in the manner contemplated by the section.

Section 2 (a) makes all carriers engaged in interstate or foreign commerce by wire or radio subject to the provisions of the act, but Section 2 (b) (2) exempts a carrier from the Commission's jurisdiction, except as to sections 201–205, if it is engaged in interstate and foreign communication solely through physical connection with the facilities of another carrier and is not directly or indirectly controlled by such other carrier. In sustaining the Commission the court pointed out:

> Congress has recognized the fact that there are many ways in which actual control may be exerted, such as stock ownership, leasing, contract, and agency. Congress also realized that control may be exercised "through ownership of a small percentage of the voting stock of the corporation, either by the ownership of such stock alone or through such ownership in combination with other factors." Broadly used, "control" may embrace every form of control, actual or legal, direct or indirect, negative or affirmative.

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[5] *Mackay Radio & Telegraph Co., Inc.*, v. *F. C. C.*, 68 App. D. C. 336, 97 F. (2d) 641.
[6] *Rochester Telephone Corporation* v. *United States of America and Federal Communications Commission*, In Equity 2141, U. S. D. C., W. D. N. Y., decided June 20, 1938

Although the Commission has issued a number of orders under this section, this is the first construction of it by a court, and it is important not only to this Commission but to other governmental agencies operating under acts containing the phrase "directly or indirectly controlling or controlled by."

Brief in Pacific Gas & Electric case.—Members of the regular and special investigation staffs collaborated on the preparation of an amicus curiae brief which was filed on behalf of the Federal Communications Commission in the Supreme Court of the United States in the case of *Railroad Commission of the State of California et al., Appellants*, v. *Pacific Gas & Electric Company, Appellee*, decided January 3, 1938, and reported in 302 U. S. 388. The Commission had no interest in the outcome of this cause insofar as the merits of the proceeding were concerned. Its sole interest arose from its belief that the court below had enunciated an erroneous principle of law—one which, if not reversed, would doubtless have a direct and important effect upon this Commission's statutory duties, powers, and discretion, particularly in relation to the fixing by it of the rates of common carriers engaged in interstate or foreign commerce by wire or radio and the valuing of the property of those carriers. The lower court's decision was reversed by the United States Supreme Court.

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Part III

Regulation and Licensing of Broadcast Services

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INTRODUCTION

Throughout the fiscal year there was received in the Commission a total of 6,941 applications for the various types of broadcast authorizations. There were 5,263 applications for formal grants and 1,678 requests for authorizations of an informal character, such as the use of broadcast facilities in an emergency, the temporary use of a station beyond the terms of its license, or experimental authorizations that gave promise of substantial contribution to the advancement of the radio broadcast art.[1]

That the growth of the broadcast industry as reported in previous annual reports is continuing is evidenced by the number of applications for new broadcast stations and for increases in the facilities of existing stations. From 127 applications for new broadcast stations and as a result of the proceedings held with respect thereto, the Commission found that public interest, convenience, and necessity would be served by authorizing the establishment of 47 of the new stations sought. These additions, after allowing for some deletions, brought the total number of broadcast stations holding authorizations from the Commission to 747.

A new class of station was established in the high-frequency broadcast service known as the noncommercial educational broadcast station. It is more fully discussed hereinafter at page 66.

Study was given during the year to the preparation of a uniform system of accounts for licensees of broadcast stations, and a proposed system has been submitted for the consideration of the Commission.

The development and progress of the various broadcast services and the activities of the Commission with respect thereto are discussed in the following sections of this report.

[1] See appendix D for more detailed information.

STANDARD BROADCAST SERVICE

FACILITIES

Allocation plan.—The basic plan of allocation of standard 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. As in previous years, individual changes in assignment have occurred, however, as a result of the granting of applications, in the majority of cases after a hearing. Detailed discussions of the effect the new broadcast rules and standards of good engineering practice and the North American Regional Broadcasting Agreement will have on allocations within the regular broadcast band, are given in later sections dealing with these specific subjects.[2]

Number of stations.—As of June 30, 1938, there were 747 broadcast stations licensed or under authorized construction in the United States. Appendix E shows the total number of standard broadcast stations licensed or under construction, as well as the total number operating simultaneously during nighttime hours at the close of each of the fiscal years 1927 to 1938, inclusive.

Distribution of broadcast facilities.—In conjunction with the hearing of June 6, 1938, the Engineering Department made a study of the distribution of broadcast facilities within the United States. This study was made as of May 1, 1938, and the results are shown in this report as appendix F. On the basis of the assumptions made for this study, it was found that during the daytime 8.1 percent of the total population and 38.5 percent of the total land area are outside of the good-service area of any standard broadcast station, and that during the nighttime 17.4 percent of the total population and 56.9 percent of the total land area are outside of the good-service area of any standard broadcast station. The majority of the service received in these areas (which in general is far from satisfactory) is intermittent service [3] during the daytime and secondary service [4] during the nighttime from high-power clear-channel stations.[5] It will also be noted that during both daytime and nighttime approximately 15 percent of the urban population residing within the service areas specified do not receive satisfactory service from any station

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[2] See pp. 8, 53.

[3] The intermittent service is rendered by the ground wave and begins at the outer boundary of the primary-service area and extends to the value of signal where it may be considered as having no further service value. This may be down to only a few microvolts in certain areas and up to several millivolts in other areas of high noise level, interference from other stations, or objectionable fading at night. The intermittent-service area may vary widely from day to night and generally varies from time to time, as the name implies.

[4] Secondary service is delivered in the areas where the sky wave for 50 percent or more of the time has a field intensity of 500 uv/m or greater. It is not considered that satisfactory secondary service can be rendered to cities unless the sky wave approaches in value the ground wave required for primary service. The secondary service is necessarily subject to some interference and extensive fading, whereas the primary-service area of a station is subject to no objectionable interference or fading.

[5] See also pp. 100, 101.

due to the fact that the ratio of signal intensity to noise intensity ("man-made static" caused by power lines, electrical equipment, etc.) is too low.

The distribution of standard broadcast facilities throughout the United States on the basis of authorized hours of operation, as of July 1, 1938, is shown below:

	Clear	Regional	Local	Total
Unlimited time	33	205	226	464
Limited time	25			25
Daytime	23	37	55	115
Sharing time	18	43	30	91
Specified hours	5	17	30	52
Total stations	104	302	341	747

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 1938. This type of antenna has proven very useful in reducing interference and in directing the signals to desired areas, thus improving the service. The effectiveness of the North American Regional Broadcasting Agreement is dependent to a large extent on the proper use of directional antennas and it is doubtful whether an agreement on the distribution of facilities among the several countries could have been reached without the utilization of directional antennas. As in the past, the present policy of the Commission does not permit the use of directional antennas on local channel frequencies, since such use is not feasible from an allocation standpoint, due to the large number of stations on these frequencies.

Number of directional antennas in use or authorized for use

	Fiscal year ended June 30						
	1932	1933	1934	1935	1936	1937	1938
Stations on clear channels	0	2	4	7	8	9	11
Stations on regional channels	2	4	11	20	25	39	53
Total	2	6	15	27	33	48	64

Applications received.—During this fiscal year there were received 1,916 applications concerning standard broadcast stations. This does not include the regular renewal applications which must be filed every six months. The fact that this number is considerably less than that received the previous year is undoubtedly due to the pendency of the proposed new broadcast rules and the North American Regional Broadcasting Agreement. Applications seeking the consent of the Commission to an assignment of broadcast license or permit numbered 83, and those seeking its consent to a transfer of control of licensee corporations were 96. The number of broadcast applications received each fiscal year from 1931 to 1937 is set out in appendix G.

Where it was not clear from an examination of these applications and the material submitted in connection therewith that public interest, convenience, and necessity would be served through a grant thereof, the matter was set for hearing and the applicant was given an opportunity to offer proof with respect to the merits of his application. Over 350 such hearings were held during the year. The vast majority of such cases were heard before a member of the Examining Department of the Commission, who submitted a written report of the facts appearing of record, together with his recommendations as to the action to be taken thereon by the Commission. Applicants or parties who received an unfavorable recommendation were allowed to file exceptions to such report and to have oral argument before the Commisison, pursuant to the provisions of section 409 (a) of the act. After a full and complete consideration of the entire record, the Commission then entered its Statement of Facts, Grounds for Decision, and Order in the premises. More than 250 such formal decisions on broadcast applications were approved by the Commission during this fiscal year.

New stations.—Forty-seven new standard broadcast stations were authorized by the Commission in the last fiscal year. The following table shows the class and the hours of operation of these newly authorized stations.

Class of station	Hours of operation	Number
Local channel	Unlimited	20
Do	Daytime, sharing, and specified hours	20
Regional channel	Unlimited	3
Do	Daytime	3
Clear channel	Unlimited	0
Do	Daytime	1
Total		47

Stations deleted.—There were five oustanding authorizations for standard broadcast stations which were either not renewed by the Commission or were forfeited or surrendered by the holder of the authorization.

The renewal applications of stations KWTN (Watertown, S. Dak.) and KGDY (Huron, S. Dak.) were denied by the Commission on May 25, 1938, because the stations were found to have been operated in violation of the Commission's rules governing the technical operation of broadcast stations, because the licensees thereof, through formal action of their officers and directors, were parties to a violation of section 310 (b) of the Communications Act, and because the licensees had demonstrated an unfitness to continue further in the operation of these stations. An appeal from the denial of KWTN's renewal application was pending at the close of the fiscal year.

An authorization granted to J. B. Roberts for a new broadcast station at Gastonia, N. C., was defaulted by the holder thereof through his failure to take affirmative action leading to the construction and the initial operation of the station. Station WMBQ at Brooklyn, N. Y., was denied its application for renewal of license because of the failure of the licensee corporation to show itself legally

qualified to continue the operation of the station. The facilities of this station were in the same proceeding granted to the Long Island Broadcasting Corporation and increased the facilities of station WWRL. The authorization granted to S. George Webb to construct a new station at Newport, R. I., was canceled by the Commission because of the holder's failure to take affirmative steps to start the construction and operation of the station.

The authorization held by station WRAX, Philadelphia, was transferred, by means of a formal proceeding, to station WPEN at Philadelphia for the purpose of effecting a consolidation of those two stations.

NORTH AMERICAN REGIONAL BROADCASTING AGREEMENT

Scope.—The purpose and scope of the North American Regional Broadcasting Agreement [8] as set forth in the document "is to regulate and establish principles covering the use of the standard broadcast band in the North American region so that each country may make the most effective use thereof with the minimum technical interference between broadcast stations."

The part of the agreement which has to do with standard broadcasting will materially affect domestic broadcasting in the United States and is therefore discussed in detail.

Allocation of facilities.—The agreement provides a complete working basis for the allocation of facilities among the countries of North America. The 106 channels in the standard broadcast band between 550 and 1600 kilocycles are divided into three classes in order to enable the governments concerned to render service to the various types of people found throughout the North American region and at the same time to permit a maximum of service with a minimum of technical interference among the stations that share channels.

Classes of channels.—Three classes of channels are established, namely, local, regional, and clear. The purpose of a local channel is to accommodate low-power stations to serve centers of population and the immediately surrounding rural areas. Regional channels accommodate stations of medium power to serve large centers of population and extensive surrounding areas. The clear channels provide for high-power stations, which are primarily intended to serve large centers of population and the vast remote rural areas and the small urban communities scattered throughout North America that can be served in no other way with the limited physical facilities available. The agreement allocates the 106 channels as follows:

Local channels	6
Regional channels	41
Clear channels	59

The local channels are designed to accommodate numerous stations, and their use is shared by all of the governments that are parties to the agreement, provided the standards of allocation established by the agreement are complied with. The regional channels accommodate fewer stations than the local channels, and the clear channels in the main accommodate only a few stations.

[8] See also previous discussions of the conference and agreement at p. 8 of this report.

Classes of stations.—The agreement provides for the establishment of four classes of stations to be assigned to the three classes of channels described above. First, class IV stations (with low power, 0.1 to 0.25 kw), assigned to local channels; second, class III stations (with medium power, 0.5 to 5 kw), assigned to regional channels; third, class II stations (with a wide range of permissible power, 0.25 to 50 kw, depending on considerations of interference, service to be rendered, etc.), which are "secondary" stations operating on clear channels; and fourth, class I stations (with power of not less than 50 kw), operating on clear channels.

Service and interference.—The agreement provides for the protection of the service of the various classes of stations to established limits from interference due to stations operating on the same and adjacent channels. It provides for the protection of the primary service of class IV and class III stations and for the protection of the primary and secondary services of class I stations. To effectuate this reclassification of stations will require no drastic changes in the present allocation of, or service rendered by, stations in the United States. While the four classes of stations are new, all of these stations are now in existence as local, regional, daytime or limited-time, and clear-channel stations, and no new principles are established except that the stations operating experimentally on clear channels and the existing daytime or limited-time stations, which will become class II stations, are given a recognized status on the clear channels among the various countries. The class II station will enable the various governments to make the best possible use of clear channels without in any way impairing the rural service of the class I station.

Allocation of clear channels.—Under the provisions of the agreement "each country may use all of the 106 channels when technical conditions with respect to interference to established stations are such as to render such use practicable." However, priority of use on specified clear channels is recognized for the following number of class I and class II stations in each country:

Canada	*14
Cuba	9
Dominican Republic	1
Haiti	1
Mexico	*15
Newfoundland	2
United States	63

*Class II stations are to be operated on certain regional channels on condition that directional antennas to prevent objectionable interference to the existing class III stations are installed.

The agreement provides that in case of conflict between the allocations of broadcast stations proposed by or now existing within any two nations, these differences may be resolved prior to the effective date of the agreement.

Effect on United States stations.—Within the United States at the close of the fiscal year 1938 there were 747 licensed broadcast stations. Of this number 114 are provided for on the 59 clear channels established by the agreement. The remaining 633 stations are accommodated on the 41 regional and the six local channels. It will not be necessary to affect materially the service rendered by any one

existing station in order to put into operation the allocation provided for in the agreement. The principles of allocation and the engineering standards established are in the main those used at present within the United States or proposed by new rules governing broadcast stations. The agreement provides for possible increases in the maximum authorized power of most existing classes of broadcast stations in order that improved service may be rendered.

Effect of agreement.—At the present time there is no agreement for the allocation of broadcast facilities among the countries of North America, other than the bilateral treaty between Canada and the United States reserving certain channels for Canada that are not used by the United States. Heretofore the countries to the south have not been bound by any agreement that required them to respect the allocations and the service rendered by stations within the United States or Canada. This situation has resulted in a very serious problem of interference to numerous American stations. The North American Regional Broadcasting Agreement provides an equitable solution for these serious international problems without its being incumbent upon the United States to give up a single station, to change its plan of allocation, or to reassign operating frequencies in such a manner as to result in a material loss of service. The Commission has published the frequency changes that will result when the agreement is put into operation. Until the agreement is ratified by Canada and Mexico the date upon which it will become effective cannot be fixed.

NEW RULES AND STANDARDS

New broadcast rules.—The Commission, considering the continual and rapid advance in the art of broadcasting that has been brought about by the introduction of improved technical standards of operation, the refinements in equipment as applied to both transmitting and receiving installations, and the ever-expanding knowledge of the behavior of the transmission medium, has prepared and promulgated proposed new rules to govern the operation of standard broadcast stations. The existing rules, since their adoption by the Federal Radio Commission on October 3, 1933, have been modified only in certain details as the development of the art necessitated such action. The proposed new rules were prepared after an exhaustive study of the present technical state of the broadcast art. The Commission had the assistance during the preparation of the proposed rules of the voluminous testimony and the many exhibits presented at the broadcast-allocation hearing in Washington, D. C., from October 5 to 31, 1936. The purpose of this hearing was to afford the broadcast industry an opportunity to make recommendations concerning rules that it believed necessary for the good of the industry. The scope of the hearing, the types of data presented, and the specific recommendations made with respect to allocation problems were set forth in the Third Annual Report of the Commission.[10] The proposed rules will continue in effect most of the principles that are embodied in the

[10] See p. 41 of that report. For a detailed discussion of the social and economic aspects of radiobroadcasting as developed at this hearing, see the report thereon submitted to the Broadcast Division of the Commission by the engineering department, released July 1, 1937.

present rules, but with clarification and amplification wherever necessary to keep pace with technical developments. There are also proposed certain additional rules which are deemed desirable because of recent developments in the industry.

Separation of rules and engineering standards.—The complexity of the engineering problems encountered and the voluminous technical regulations and standards required by an industry such as broadcasting suggested the separation of the rules establishing certain methods and modes of operation from the detailed technical instructions as to how the rules should be carried out. This resulted in incorporating the former in the proposed "Rules and Regulations governing Standard Broadcast Stations" and the latter in the proposed "Standards of Good Engineering Practice concerning Standard Broadcast Stations (550–1600 kc)."

Enlarged scope of proposed new rules.—Among the new rules proposed to cope with the ever changing problems of broadcasting are the definitions of the "primary," "secondary," and "intermittent" service areas of a broadcast station.[11] The rules establishing the names of the several classes of broadcast stations are to be modified to provide for the use of the names established by the North American Regional Broadcasting Agreement.[12] The classes of channels are to be redefined to conform to the classifications established by the agreement. The classes, purposes, and power of stations will be established together with appropriate references to the "Engineering Standards of Allocation," which set forth the normally protected service contours for the various classes of stations. One of the proposed rules will establish the general requirements for obtaining an authorization for a new standard broadcast station or for increased facilities for an existing station.[13] The channels on which the different classes of stations will be allowed to operate are designated in section 31.5. Another rule will require the licensee of each standard broadcast station to provide a reliable clock in the transmitter room and in each studio control room.[14]

Standards of Good Engineering Practice.—Embraced within the Standards of Good Engineering Practice are the Engineering Standards of Allocation, in which are set forth the protected service signals and the permissible interfering signals for the different classes of stations, together with specific methods of making the field-intensity measurements and calculations necessary to determine the presence or absence of interference in a particular case; the specifications concerning directional antenna systems, transmitter locations, and minimum antenna heights or performance requirements; the specifications and established procedure for the determination of station power, the power rating of vacuum tubes, etc.; the minimum standards governing the construction, general operation, and safety-of-life requirements; the minimum specifications of indicating instruments, crystals, frequency-control units, modulation- and frequency-monitors; and the conditions under which the use of a common antenna for two or more stations would be authorized. Also included within the

[11] Sec. 30.11.
[12] See above, p. 54.
[13] Sec. 31.4.
[14] Sec. 33.16.

Standards of Good Engineering Practice are lists of approved frequency- and modulation-monitors and approved transmitting equipment, a list of the standard broadcast application forms and their use, a list of the Commission's field offices, and the average-sunset table.

Hearing concerning proposed standard broadcast rules.—The above-discussed rules were made the subject of a hearing that was held from June 6 to June 30, 1938, before a committee composed of three members of the Commission. At this hearing all parties were afforded an opportunity to appear and to present evidence concerning any rule. Preliminary to the hearing, the Commission made several extensive studies of the various phases of broadcasting in order to prepare exhibits that would assist the committee in its study of the issues involved in the hearing.[15]

Analysis of further survey of rural radio-reception conditions.—An analysis of the response to a postcard questionnaire sent to fourth-class postmasters during April 1937 was made by the Commission.[16] As set forth in the Third Annual Report of the Commission, this survey was conducted along the general lines of a similar survey of rural radio-reception conditions that was made in connection with the allocation survey conducted during the spring of 1935. The stations reported as being received by the listeners were divided between D. C. (dominant clear-channel stations) and R-L-D (regional, local, and daytime stations), and an analysis was made to determine the listeners' dependence upon the two general classes of stations for radio service both day and night. As an illustration of the type of data obtained from this questionnaire, there is incorporated the following table which shows for the United States the total class-of-station preferences of the listeners, based on the reports of their personal observations:

Class of station	First choice		Second choice		Third choice		Fourth choice	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	Day							
D. C.	7679	59.1	6096	51.2	5397	52.4	4318	52.2
R-L-D	5318	40.9	5819	48.8	4912	47.6	3959	47.8
	Night							
D. C.	9958	81.4	8817	78.0	7779	78.3	6313	76.0
R-L-D	2273	18.6	2482	22.0	2155	21.7	1992	24.0

A further analysis of the questionnaire is summarized in the table reproduced herewith, which is based on the reports on the conditions of reception and on radio-receiver data from the personal observations of the listeners:

[15] See p. 59, *infra*.
[16] See also p. 60, *infra*.

Clear reception	Unsatisfactory reception	Response indicating reason for unsatisfactory reception				
		Local interference	Station interference	Weather	Weak signals	Miscellaneous
7104–D 6334 N	5555 D 6215 N	1549 D 1057 N	615 D 2582 N	2193 D 1861 N	211 D 56 N	179 D 164 N

Number not owning radios	Total number owning radios	Number owning radios for—				
		1 year	2 years	3 years	4 years	5 years or over
652	12,204	4,108	2,241	1,459	1,052	3,344

Study of propagation conditions.—The engineering department conducted a series of field-intensity recordings on a single broadcast station at several selected locations for the period April 15 to May 14, 1938. The results of these recordings were analyzed and curves of field intensity versus distance were plotted for the signal exceeded 10 percent of the time and 50 percent of the time for distances to approximately 1,100 miles from the transmitter. These propagation curves were then compared with the curves derived as a result of the 1935 allocation survey and it was found that the propagation conditions for the 1-month period embraced by the measurements were materially poorer than they were during the period of the allocation survey. The fields received at different distances from the transmitter varied from approximately 30 percent to 4 percent of those obtained during the allocation survey.

Study of service rendered by standard broadcast stations.—The engineering department prepared a study showing the areas and population within the 0.5 mv/m contours of all standard broadcast stations. This study was separated into an analysis of the coverage of dominant clear-channel stations for both daytime and nighttime operating conditions; an analysis of the coverage of other than dominant clear-channel stations, which include regional, local, daytime, and limited time stations, for both daytime and nighttime conditions; and an analysis of the total coverage of all stations for both daytime and nighttime conditions. Maps were plotted from which the areas within and without the service areas were determined for each State of the United States. This study included a separation of the populations residing in urban and in rural areas and the determination of the cities (and their populations) not having a radio station and not located within a metropolitan area or contiguous to a city having a station. This study of service is included as appendix F.

Interests represented at the hearing.—The groups appearing at the hearing reflected the interests of the numerous organizations and persons connected with the broadcast industry. The National Association of Broadcasters, the National Committee on Education by Radio, and the American Civil Liberties Union appeared and presented evidence concerning phases of the broadcast industry in which

they were respectively interested. Numerous individual licensees appeared in person and by counsel to protest or to present evidence concerning specific rules which they believed affected them. The testimony adduced at the hearing extended to 2,170 pages. In addition, several hundred exhibits were introduced and made a part of the record.

Major subjects discussed at the hearing.—The matter to which the greatest portion of the evidence presented at the hearing was directed concerned the proposals incorporated in the rules with respect to the maximum authorized power of the various classes of standard broadcast stations. It is proposed to fix the power of class I–A stations at 50 kilowatts. More of the evidence adduced at the hearing had to do with the retention or removal of this power limitation than with any other single issue. In connection with this testimony much evidence was presented concerning station coverage and program and service duplication.

The engineers appearing at the hearing presented evidence concerning many of the technical phases of broadcast station allocation including evidence dealing with the methods of determining interference, the use of directional antennas, the efficiencies of antennas, and the methods of computing power of broadcast stations. Considerable attention was devoted to a discussion of the variations in the efficiency of the transmission medium and the possible effect of changes in the sun-spot activity upon conditions in the ionosphere. Evidence was presented concerning limitations to service from electrical interference and atmospheric static. The effect upon service principally in the rural areas of variations in the transmission medium and thunderstorm activity was discussed.

FINANCIAL AND OTHER STATISTICAL DATA

Questionnaires.—Each licensee of a standard broadcast station authorized to operate in the band of frequencies from 550 to 1600 kilocycles was required to file with the Commission statements regarding income and property investment and other information.[17] This was followed by a request for income statements, balance sheets, and other information to be filed by broadcast networks.

Such licensees were subsequently required to respond to a questionnaire designed to develop data regarding employees and also to a questionnaire regarding the nature and types of programs broadcast during a selected period prior to the date of the questionnaire.

These questionnaires represent the initial effort of the Commission to develop rather extensive financial, operating, and other statistical data regarding broadcast licensees and broadcast stations and networks in the United States. The responses to these questionnaires constituted the bases for rather extensive tabulations of factual data reproduced for the information and use of the Commission and introduced in evidence in the hearing on rules and regulations governing standard broadcast stations (Docket 5072–A) which began on June 6, 1938.[18]

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[17] Commission Order No. 38, approved April 25, 1938.
[18] See p. 57, *supra*. For more detailed information see appendix H.

Forms.—The Commission approved balance-sheet and income-statement forms to be used as a part of applications for broadcast licenses, designed to develop additional information of a financial or accounting nature.

Postcard survey.—A postcard questionnaire was directed to all fourth-class postmasters during the fiscal year, somewhat similar to the survey made in 1935, to develop certain limited information regarding broadcast reception in rural areas of the United States.[19]

[19] The results of this survey are discussed hereinbefore at p. 57.

THE FEDERAL RADIO EDUCATION COMMITTEE

Last year the Annual Report of the Federal Communications Commission gave a rather detailed report of the formation and organization of the Federal Radio Education Committee, appointed by the Commission in December 1935, for the purpose of eliminating controversy and misunderstanding among groups of educators and between the broadcasting industry and educators, and for promoting active cooperation between educators and broadcasters. The chairman of the Commission, at the annual meeting of the National Association of Broadcasters on February 14, 1938, called attention to the vital importance to the industry of giving such assistance as might be necessary to the Committee to enable it to carry out the constructive work which had been planned.

Originally, the program consisted of 18 studies. The executive committee reduced that number to 16 studies. By combining certain of the studies and eliminating others, the Committee of Six reduced the number to 9 studies, and the total amount of money estimated as being necessary to support the program from $257,800 to $250,500. This latter amount, it was agreed, would be divided three ways: two-thirds of it to be contributed by educational foundations and the remaining third by the broadcasting industry.

In June 1937 the Rockefeller Foundation completed negotiations to underwrite one of the major studies described at pages 45 ff. in our Third Annual Report. Funds were allocated to Princeton University to undertake the study which had been designed by Prof. Hadley Cantril. This study includes a detailed analysis of the effects of radio upon the listener. It involves many classifications of listeners, representing various ages, different cultural and economic levels, and a wide geographic distribution of residences. It seeks to ascertain the listening habits of these different groups, what information they have secured from radio, and what improvements or changes such listeners feel should be made. Still another aspect of the study will deal with the rather critical problem of grave concern to many, namely, the influences on children of certain types of radio programs.

Another of the studies has been undertaken by Ohio State University and is being financed for the first 2 years of its operation by a grant from the General Education Board. This study has to do with the question of evaluating radio broadcasts for schools. An examination is being made of selected programs in the more important subject-matter fields to ascertain what they are accomplishing and where they are falling short. Another phase of the study is expected to furnish guidance to teachers in selecting and using various types of school broadcast programs. Still another phase covers the development of techniques for evaluating various radio programs. The cooperation of some 60 schools, located at strategic points in four different areas of the United States, and representatives of

rural, town, and city districts, will be utilized during the progress of the study.

Details for carrying out the other phases of the program have not been completed, but the broadcasting industry has pledged its portion of the sum of money necessary to carry on the program, and it is expected that it will be undertaken in cooperation with the office of education and the executive committee. These remaining studies have been designed jointly by representatives of the broadcasting industry and specialists in the field of education. They are pointed at practical problems which confront both groups.

A survey to discover, analyze, and interpret successful efforts by local broadcasters to cooperate with civic and other nonprofit groups is expected to reveal ways and means of applying demonstrated successes to other communities. A study of the whole question of teacher training in the field of radio is another important aspect of the program. The increasing demand by teachers for assistance in the proper use of radio indicates the need for developing material which will be useful for prospective teachers in teacher-training institutions as well as for those in service. Still another phase of the study is the development of an experiment and idea exchange, from which the findings and resources of various experiments and experiences in commercial stations, universities, and other groups may be brought together and made available through a national clearing house. The first step in this experiment has been in operation for two years in the radio script exchange of the office of education. The enthusiastic reception of this service by schoolmen and broadcasters alike is a gratifying indication of the need for its further development. Effective methods of publicizing radio programs is still another problem to be studied with a view to developing specific ways in which educational programs may best be brought to the attention of radio audiences.

Out of these studies, it is expected, there will develop practical means for producing a workable piece of machinery for securing a pooling of experience through democratic processes, thus attaining working compromises and adjustments that will enable the educators and broadcasters to combine forces which will bring about the most effective use of radio as an educational medium.

BROADCAST SERVICES OTHER THAN STANDARD

There have been rapid growth, development, and progress in broadcast services such as relay, international, high frequency, television, and facsimile. However, few changes in the Commission's rules and regulations governing these services have been found necessary to keep step with this development. The effective date of rule 981 requiring frequency monitors for stations operating in these services has been continually extended until such time as it is considered that instruments of sufficient accuracy are obtainable.

The establishment of a new type of high frequency broadcast station to be licensed to nonprofit educational agencies and known as noncommercial educational broadcast stations was announced by the Commission January 26, 1938.[20] The steps leading to the establishment of this class of station are set forth on pages 45 to 50, inclusive, of the Third Annual Report of the Commission. The Rules and Regulations and Standards of Good Engineering Practice concerning this class of station have been established.

Twelve experimental authorizations have been issued to standard broadcast stations to broadcast facsimile signals on their assigned frequencies during the experimental period of 12 midnight to 6 a. m.

A complete analysis of the applications and the percentage increases of stations operating in the broadcast services other than standard is contained in appendix D.

INTERNATIONAL BROADCAST STATIONS

Reports of reception in foreign countries of programs transmitted by international broadcast stations in the United States indicate no material improvement in reception during the last year. This supports other evidence to the effect that the use of both increased station power and directional antennas is necessary to provide reliable broadcast service to certain foreign areas. Certain licensees have manifested an interest in better coverage as evidenced by the fact that several were increasing station power and erecting or improving directional antenna systems at the close of the fiscal year. The extent of the improvement in service which would result cannot be accurately predicted and it will necessarily take considerable time to collect information based upon actual observations.

Increases in station power result in a stronger signal and a better signal to noise ratio, thus improving reception through interference. With the use of conventional antenna systems the signals are radiated equally in all directions, and when the purpose is to reach a particular foreign area with a broadcast much of the energy radiated serves no useful purpose. The use of directional antennas concentrates the energy in the desired direction within the confines of certain horizontal and vertical angles determined by the design and adjustment of the system, thus materially improving the signal intensity in the country to be served. The International Radio Telegraph Conven-

[20] See p. 66, hereinafter.

tion, Washington, 1927, allocated certain frequency bands to the international broadcast services. Five of the frequencies assigned for use by the United States (6120, 9550, 11730, 15130, and 21500 kc) were subsequently known as the Pan-American frequencies and were assigned by executive order to the Navy Department for use by the Pan-American Union and were notified to the Bureau of International Telecommunications Union, Berne, Switzerland, as being United States Navy Department frequencies. These frequencies were included in the bands assigned to the international broadcast services under article 7 of the International Telecommunication Convention, Madrid, 1932. The frequency 6120 kc was subsequently made available to International Broadcast Station W2XE on a temporary basis, and the actual operation by W2XE has been largely responsible for that frequency's remaining comparatively free of occupancy by foreign stations.

The Seventh International Conference of American States, Montevideo, Uruguay, December 1933, adopted a resolution requesting that the Pan-American administrations utilize the five so-called Pan-American frequencies made available by the treaties, but it was not until the Pan-American broadcasting hour was inaugurated as a result of the Inter-American Conference for the Maintenance of Peace, Buenos Aires, 1936, that any real interest in the use of these frequencies was manifested by the Latin American countries.

The four unused Pan-American frequencies (9550, 11730, 15130, and 21500 kc) were made available for assignment for immediate use by the Commission on a temporary basis to existing international broadcast stations in the United States with the understanding that the frequencies would be surrendered to the Pan-American Union when desired and that share time operation of the frequencies would be permitted with the Pan-American countries. On this basis the Commission on September 22, 1937, amended rule 229 to include 9550, 11730, 15130, and 21500 kilocycles as "available for non-Government assignments to international broadcast stations on a temporary basis and subject to cancellation at the discretion of the Commission without advance notice or hearing."

On September 21, 22, and 23, 1937, a hearing together with oral argument was held on three applications for the Pan-American frequencies. The showing made by each applicant consisted principally of the past experimentation and programs and the future proposals with respect to research and program development. The Commission on February 1, 1938, issued its decision on the applications requesting the use of the Pan-American frequencies.

1. World Wide Broadcasting Co., Boston, Mass.—W1XAL (Docket No. 4843). The application of this licensee was granted in part to authorize the operation on the frequencies 11730 and 15130 kc.

2. National Broadcasting Co., Downers Grove, Ill.—W9XF (Docket No. 4844). The application of this licensee was denied.

3. The General Electric Co., Schenectady, N. Y.—W2XAD (Docket No. 4845). The application of this licensee was granted in full, authorizing the use of the frequencies 9550 and 21500 kc with power of 100 kw.

RELAY BROADCAST SERVICE

Stations licensed to operate in this service are used to relay programs from remote localities where wire lines are not available and

from boats, aeroplanes, or other moving conveyances for broadcast over standard broadcast stations. The popularity and need for relay stations are indicated by the percentage of increase in the number of such stations, as shown by appendix D.

Besides relaying customary events, the following unusual programs were among those transmitted to the public through relay broadcast stations:

1. Descriptions from planes in flight of the national parks in the United States, Boulder Dam, Grand Coulee Dam, Redwood Empire, and flood and fire-stricken areas.
2. Programs relayed in connection with the experimental transatlantic flight from New York to Europe July 3 to 5, 1937, and from the British plane Cavalier and the U. S.—Bermula clipper between Port Washington, N. Y., and Hamilton, Bermuda, May 27 and 28, 1938.
3. Test runs and races of Captain Eyston on the Bonneville Salt Flats, Utah, October 1937.
4. United States naval squadron flight from San Diego, Calif., to Honolulu, T. H., January 1 to 19, 1938.
5. Relay broadcasts in connection with the observance of National Air Mail Week, May 15 to 21, 1938.
6. Stratosphere balloon flight of Dr. Jean Picard, July 18, 1937.

VISUAL BROADCAST SERVICE

(*a*) *Television stations.*—Information available indicates that the technical phases of the television art are progressing in a satisfactory manner. However, it is generally agreed that television is not ready for standardization or commercial use by the general public. No applications for commercial authorizations were filed with the Commission during the fiscal year. Formal hearings were conducted on six applications for new experimental television stations.

Television has developed to the state where complete transmitting equipment is available on the market, but such equipment is costly and, because of the experimental status of the art, may become obsolete at any time due to new developments. A few of the existing licensees are attempting scheduled program transmissions as part of their research and development work.

(*b*) *Facsimile stations.*—There are two types of facsimile authorizations. Regular licenses may be issued to experimental facsimile broadcast stations intended for research, design, development, and service testing of facsimile equipment. Stations of this class generally operate on frequencies that can be received only by use of a special receiver or an all-wave broadcast receiver equipped with a facsimile recorder attachment. Special experimental facsimile authorizations may be issued to standard broadcast stations for the transmission of facsimile signals on their regularly licensed frequency during the experimental period (12 midnight to 6 a. m., L. S. T.).

The expectation of developing a service whereby the transmission of radio news flashes for record reception in the home will be made possible has resulted in the issuance of a greater number of authorizations for the transmission of facsimile signals by standard broadcast stations than by the experimental stations. It has also resulted in the development of several types of facsimile recording devices designed to operate either as a complete separate unit, incorporating the radio receiver, or as an attachment to a regular broadcast receiver.

HIGH-FREQUENCY BROADCAST SERVICE

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

The system of modulation known as amplitude modulation is the 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 representing voice, music, or other sound.

The other type of modulation, known as frequency modulation, involves a system whereby the frequency of the carrier current is varied in accordance with the electrical current corresponding to music, voice, or other sound. This type of modulation has been the subject of recent extensive investigation by several experimenters. For optimum operation, this system requires a frequency band of emission approximating 200 kc when operating on frequencies approximating 40 megacycles.

The engineering information submitted by the 37 licensees of high-frequency broadcast stations operating on an experimental basis has not been sufficiently comprehensive for a conclusive determination of the propagation characteristics of the frequencies allocated to these stations. However, more data are being accumulated and after a full analysis has been made it is believed that adequate technical information will be available for an allocation of frequencies above 30 megacycles for a high-frequency broadcast service. Stations of this class increased 39 percent during the last fiscal year.

Available data concerning the use of frequency modulation in the high-frequency broadcast service indicate a material gain in the effectiveness of reception through static, especially the type of static resulting from nearby thunderstorms and from some types of man-made electrical disturbances. It is also shown that the signal-to-noise ratio necessary for satisfactory reception is considerably less than that required for the same reception with a broadcast system employing amplitude modulation. This results in good reception at a greater distance from the transmitter and a correspondingly larger service area for the same power used at the transmitter. The present disadvantage of this system is that the frequency band necessary is increased several fold over that required by a system employing amplitude modulation. No information, other than reports on preliminary tests, is yet available from the holders of the five construction permits for the erection of stations employing frequency modulation of this class.

NONCOMMERCIAL EDUCATIONAL BROADCAST STATIONS [21]

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 show-

[21] See also the discussion herein of the Federal Radio Education Committee at p. 61.

ing that the station will be used for the advancement of the agency's educational program. Each station may transmit programs directed to specific schools in the system for use in connection with the regular courses as well as routine and administrative material pertaining to the school system and may transmit educational and entertainment programs to the general public. No sponsored or commercial programs may be transmitted nor may commercial announcements of any character be made. Such a station may not transmit the programs of any other class of broadcast station unless all commercial announcements and commercial references in the continuity are eliminated.

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 its establishment January 26, 1938. At the close of this fiscal year one construction permit had been granted to the Cleveland City Board of Education, and the erection of this station was well under way. One application for such a station was on file with the Commission at the close of the fiscal year. It appears that this class of station has every possibility of being highly valuable in the work of the educational systems throughout the country.

EXPERIMENTAL BROADCAST SERVICE

There were 15 licensed stations and two outstanding construction permits in the experimental broadcast service at the close of the fiscal year. Two applications were on file that had not received consideration by the Commission. There was an increase of 25 percent in the number of stations licensed in this service over those of last year.

Experimental research to determine the feasibility of operating a synchronized transmitter with a broadcast station without the use of wire-line connections between the two transmitters was successfully completed by one licensee with the following conclusions: (1) such a system may be utilized for improving coverage and broadcast service, and (2) synchronization with the transmitter of the broadcast station is practical without the use of wire-line connections between the two stations. An interesting technical feature characteristic of the system is that, under proper synchronous adjustment, the intensity of the resultant signal varies widely within very limited areas or zones without quality distortion. These minimum signal zones were comparatively small and were not found to be objectionable.

Another program of experimentation authorized to be carried out and of unusual interest is the development of the so-called telemobile station, designed to televise programs originating in remote localities for relay to the main television station for broadcast to the general public. It consists of two large motor vans containing the television-control apparatus and the 400-watt visual and 100-watt aural transmitters. This represents the first complete development of this type licensed for experimental operation.

USE OF BROADCAST FACILITIES IN EMERGENCIES

During the fiscal year broadcast facilities were used in several emergencies, generally in cooperation with other communication agencies. The emergencies which occurred during this year were mostly local in character and the use of broadcast facilities cannot be compared with the extensive use made thereof during the Ohio flood of the previous year. Undoubtedly there are numerous cases which do not come to the attention of the Commission wherein immeasurable service is rendered in giving warnings of storms and other hazards affecting the safety of life and property.

Investigations of chain and other broadcasting.—Under the provisions of section 303 of the Communications Act of 1934, as amended, the Commission is given authority to make special regulations applicable to radio stations engaged in chain broadcasting. On March 18, 1938, by its order No. 37 the Commission initiated an inquiry into all phases of chain broadcasting and into the broadcasting industry generally, for the purpose of obtaining factual information upon which to base such future regulations or recommendations for needed legislation as the public interest, convenience, and necessity should require. A committee was appointed to conduct the inquiry, consisting of Commission Chairman Frank R. McNinch, chairman; Commissioner Thad H. Brown, vice chairman; and Commissioners Eugene O. Sykes and Paul A. Walker.

Hearings will be conducted under this order by the above-mentioned committee, during which all national and regional networks will be called upon to present full and complete information on their network operations and business relations, and individual stations will be called for examination on management, lease contracts, and the multiple ownership and concentration of stations in the same or affiliated interests. In addition, radio transcription and recording companies will be called to furnish information on that rapidly developing phase of the broadcasting industry. It is expected that numerous other persons and organizations will also avail themselves of the opportunity to present information concerning the industry.

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 of applications for renewal of license for hearing.

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.[22] 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.

[22] This information is required to be filed under sec. 340.01 of the Federal Communications Commission Regulations.

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LITIGATION

Civil.—During the fiscal year, 29 appeals were taken from final action by the Commission on applications for new or improved broadcast facilities. The 13 cases pending at the beginning of this fiscal year [23] were either dismissed by action of the appellant or decided on their merits by the court. The cases in which the United States Court of Appeals handed down a decision during this year are fully discussed in appendix I.

Petitions for writs of certiorari were filed with the United States Supreme Court in three of these cases. Two such petitions were denied,[24] and one was pending at the close of this year.[25]

One suit for injunction was filed in the District Court of the United States for the District of Columbia, seeking to restrain the Commission from taking certain action in connection with a certain group of broadcast applications. In this case the court denied the request for a writ of injunction. An appeal therefrom was taken by the petitioner, which was pending before the United States Court of Appeals for the District of Columbia at the close of this fiscal year.

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[23] See p. 16 of Third Annual Report.
[24] *Eastland Co. et al.* v. *F. C. C.*, 302 U. S. 735, 58 S. C. 120, 82 L. Ed. 37, and *Missouri Broadcasting Corporation* v. *F. C. C.*, 303 U. S. 655, 58 S. Ct. 75, 82 L. Ed. —.
[25] *Gross & Shields* v. *Saginaw Broadcasting Co.*, No. 123.

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Part IV

Promotion of the Safety of Life and Property

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The Commission is continuing its study of methods for organizing all communication facilities, including all radio, telephone, and telegraph services, for the purpose of providing an immediate and efficient use of these facilities in connection with any sectional or national emergency.

The Seventy-fifth Congress added another purpose or objective to the functioning of the Federal Communications Commission in its administration of the Communications Act.[1] The new purpose is stated to be the promotion of "Safety of life and property through wire and radio communication." However, even prior to this amendment, the Commission had regularly licensed stations for operation in the police, marine, fire, aviation, and other safety services.

The ratification by the United States of the International Convention for the Safety of Life at Sea, London, 1929, and the passage of Public Law No. 97, approved May 20, 1937, have resulted in a great increase in the duties of the Commission with regard to maintaining radio for safety purposes on vessels of the United States and also with regard to the vessels of foreign countries that enter ports of the United States. The nature and effect of these laws were summarized in the Commission's Third Annual Report.[2] However, it was not until the past year that the additional work involved in the administration of the laws became fully apparent.

Under both the Safety Convention and Public Law No. 97, the Commission is authorized to grant exemptions from radio requirements 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 the radio unnecessary or unreasonable for the purposes of the act and the treaty. During the past fiscal year the Commission received some 310 applications for exemption from radio requirements of law, and of these some 68 were set for hearing. The remainder of the applications either were withdrawn or were handled satisfactorily without the necessity of a hearing.

The requirements of the act with regard to the operation and maintenance of marine radio equipment, together with the detailed regulations of the Commission that were adopted in order to give effect to the broad generalizations contained in the law, have resulted in a very great number of violations, ranging from failure to carry some small piece of spare equipment to serious disregard of definite requirements contained in the law itself. As a result, the inspectors of the Commission served some 3,000 deficiency reports during the year. Because of the lack of personnel only the more serious of these violations could be referred to the law department for

[1] Public Law No. 97, 50 Stat. 189; 47 U. S. C. 151.
[2] P. 73

further proceedings. However, it is contemplated that with the forfeiture and mitigation provisions as now incorporated in the amended act it will be possible to work out a method of imposing penalties proportionate to the violation, which, with sufficient inducement for payment of the penalty without cumbersome court procedure, may permit the Commission with its present personnel to enforce more strictly the more important provisions of the law. We have handled these matters thus far by correspondence, under the belief that this was the proper course to pursue until such time as all parties could be afforded reasonable opportunity to become familiar with the law and its application.

Particular difficulty has been had with vessels of countries that were not a party to the Safety Convention, since these vessels were subject to the more strict provisions of the Communications Act when sailing from a port of the United States. It became necessary to assess forfeitures against two of these vessels, although such forfeitures were later mitigated in full when the vessels complied with the act.

The tests of the Howton burglar alarm reported in the Third Annual Report [3] have not been completed. A number of installations have been made. However, the number of these installations and the extensiveness of their use have not been sufficient to permit a proper decision to be made on the applications. A final decision was still pending at the close of the fiscal year.

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[3] P. 73.

GREAT LAKES AND INLAND WATERS SURVEY

The Great Lakes and Inland Waters Survey was provided for in section 15, Public Law No. 97, which amended section 602 of the Communications Act of 1934, requesting and directing the Federal Communications Commission "to make a 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, and to report its recommendation, and the reasons therefor, to the Congress, not later than December 31, 1939."

The Commission on May 26, 1937, designated Commissioner Brown to be in charge of the survey, including the selection of the necessary personnel.

A conference has been held with officials of the Department of Transport of Canada, in order to exchange views and to develop plans for cooperation in the conduct of the survey. Investigations have been instituted into the number and types of vessels, navigation conditions, the nature and extent of marine casualties on the Great Lakes, land-wire facilities, and existing radiotelegraph and radiotelephone facilities. The factual basis for recommendations with respect to radio communication requirements has received first consideration. Substantial progress has been made in these basic studies, and several of them were nearing completion at the close of this fiscal year.

The vessel survey, which includes an analysis of the types, tonnage, equipment, ages, and services of all commercial vessels on the Great Lakes operating under the American flag, is virtually completed. This study has been based upon questionnaires returned by owning and operating companies on the Lakes.

A study of the channels, routes, distances, ship lanes, and navigation aids has been conducted. A series of surveys of weather conditions and hazards to navigation has been undertaken. An analysis of the nature and volume of the commerce of the Great Lakes, including the ports at which the commerce originates and to which it is destined, the routes of movement, and the types of commodities, is being made.

A comprehensive study of marine casualties on the Great Lakes during the last two decades is nearing completion. This study includes the trends in marine casualties involving loss of life and damage to property on the Great Lakes, and an analysis of these casualties according to cause, type of vessel or vessels involved, and whether or not radio communication might have prevented or mitigated the losses.

A study of radio facilities on the Great Lakes now in process includes an analysis of shore radio stations and vessel radio facilities. This study is based upon returns from radiotelephone and radiotelegraph stations to questionnaires prepared by the survey.

In its studies and investigations the survey has had the benefit of the data relating to navigation and commerce on the Great Lakes that have been collected and published by other Government departments.

A number of Federal Government departments have a vital relationship to the promotion of safety of life at sea and on the Great Lakes. In recognition of this interest a general advisory committee has been formed. The membership of this committee includes representatives of the following executive departments and independent agencies:

Department of State, Treaty Division.
Treasury Department, United States Coast Guard.
Department of War, Board of Engineers for Rivers and Harbors.
Department of the Navy, Communications Division, Office of Naval Operations.
Department of Agriculture, Weather Bureau.
Department of Commerce:
- Bureau of Lighthouses.
- Bureau of Standards.
- Bureau of Marine Inspection and Navigation.
- Coast and Geodetic Survey.

United States Maritime Commission, Technical Division.
Federal Communications Commission.

The investigation has been directed toward the determination of the efficiency of radiotelegraph and radiotelephone communication facilities in the Great Lakes area. An engineering group for the Great Lakes and Inland Waters Survey work was organized by utilizing the services of the regular personnel of the Commission and an engineer especially employed for this purpose. In addition, communication personnel of the United States Coast Guard, Navy, Signal Corps, Bureau of Standards, and Lighthouse Service have rendered valuable cooperative assistance and are regularly available for consultation. Radio station facilities, personnel, and vessels of the respective Government departments have also been made available. Radio communication tests under practical conditions were made on Lake Huron, for the purpose of comparing the effectiveness of radiotelephony and radiotelegraphy from the standpoint of emergency and distress communications. Test transmissions made from a Coast Guard cutter at various points on Lake Huron were observed aboard other Coast Guard vessels off shore near Alpena, Mich., and on the beach at North Point, near Alpena.

Preliminary hearings were scheduled to be held on the Great Lakes and Inland Waters Survey, commencing July 18, 1938, at Cleveland, Ohio.[4]

Inland waterways other than the Great Lakes will receive study by the Survey, and the results thereof will also be included in the final report.

[4] Federal Communications Commission, Docket No. 5222.

The following classes of stations are licensed to operate in the Marine service: Coastal Telegraph, Marine Relay, Coastal Harbor, Coastal Telephone, Ship Telegraph, and Ship Telephone.

Although this service is operated for other purposes than the promotion of safety of life and property at sea,[5] the major objective is such purpose, and for convenience the discussion will not be divided.

Coastal telephone.—There has been no change in the number of coastal telephone stations operated, as reported in the previous fiscal year. Three American vessels, namely, the *Manhattan*, the *Washington*, and the *Matsonia*, were authorized to handle public telephone communications with these stations. This brings the total number of vessels in the world equipped to communicate with these coastal telephone stations to 24. New coastal harbor stations were authorized at Hialeah, Fla., and Lake Bluff, Ill., during the past fiscal year. Applications have been received and hearings held, but no decision has, as yet, been rendered by the Commission, on applications for the establishment of coastal harbor stations in Seattle, Wash., Port Sulphur, La., Port Washington, Wis., and Duluth, Minn. An application filed requesting additional facilities for the coastal harbor station now authorized at Lake Bluff, Ill., has been designated for hearing. An application to construct a public coastal harbor station at Memphis, Tenn., to communicate with vessels plying the Mississippi River, particularly vessels in the vicinity of Memphis, was denied after formal hearing.

Ship telephone.—As of June 30, 1937, there were 257 ship telephone stations licensed by the Commission to communicate with coastal harbor stations. As of June 30, 1938, this number had increased to 765.

Automatic alarms.—During the past year, 1,121 automatic alarms, approved by the Commission as reported in the last Annual Report, have been installed on ocean-going cargo vessels of the United States subject to the provisions of Public Law No. 97. In connection therewith, 20,000 copies have been compiled and distributed of a form, prepared for monthly submission to the Commission by vessels, showing the performance of this equipment, which data are being correlated for presentation to the Commission when final approval of this equipment is due to be considered prior to December 31, 1938. Subsequent to the tentative approval of the two types of alarm, official tests have also been conducted and performance recorded by observing the operation of auto-alarms in field offices of the Commission.

Studies made of the performance of this equipment disclosed that the auto-alarm signal transmitted by the coastal stations of Tuckerton, N. J., WSC, and Hialeah, Fla., WAX, at the time of the sinking of the Greek freighter *Tzenny Chandris* off Cape Hatteras on No-

[5] For a discussion of the common carrier service rendered by these stations see part II.

vember 13, 1937, was received by auto-alarms on 54 vessels. The transmission of the auto-alarm signal by the coastal stations at Bolinas, Calif., KPH, and Jupiter, Fla., WMR, at the time of distress involving the steamship *Nabesna*, while en route to San Francisco, Calif., from Astoria, Oreg., was intercepted by auto-alarms on 157 vessels.

Direction-finder apparatus.—No approval has yet been given for direction-finder apparatus. As a preliminary to the issuance of standard specifications and type-approval, statistics have been compiled as to the number of ocean-going vessels that are required to install direction-finding equipment, and studies have been and are being made with the view of ascertaining the most efficient equipment for installation on present vessels and those that will be constructed. A conference pertaining to this subject was held on May 23, 1938, with representatives of Government departments for the purpose of obtaining the benefit of experience with the performance of direction-finding equipment, and for the purpose of recommending changes for incorporation in future specifications to increase the efficiency of this equipment.

Record of sea disasters.—There have been no major sea disasters in the 12-month period covered by this report. A master record is maintained by the Commission and studies have been made of each case where vessels have been involved in distress. These studies require investigation as to the position of the vessel in distress, the position of each vessel that responded at the time of distress, and confirmation as to whether the auto-alarm installation responded to the auto-alarm distress signal. This fact is confirmed by collection of the original radio logs of each vessel, of which photo copies are made for future reference and for association with the individual cases. Charts also are compiled showing the position of each responding vessel and of the vessels that failed to receive the auto-alarm signal either manually or by means of the auto-alarm equipment. In the latter cases an investigation is made to ascertain the reason for the failure to receive the auto-alarm or distress signal.

Equipment.—In order to insure compliance with section 354 (e) of the Communications Act of 1934,[6] the Commission on January 18, 1938, modified the Ship Radiotelegraph Safety Rules with respect to the minimum standards for ship radio equipment. This modification met with objection from the shipowners, and, after an informal conference held on April 21, 1938, the matter of the modification of the rules was designated for a formal hearing scheduled for November 14, 1938. A number of other modifications of the Ship Radiotelegraph Safety Rules were made in the interest of raising the standards of operation and for the sake of clarity. These modifications have in general been well received by the industry and have had the desired effect.

In accordance with section 356 (a) (2) of the Communications Act of 1934, inspections have been made, tests conducted, and ap-

[6] This section requires that the main installation shall have a normal transmitting and receiving range of at least 200 nautical miles, that is to say, it must be capable of transmitting and receiving clearly perceptible signals from ship to ship over a range of at least 200 nautical miles by day under normal conditions and circumstances. The reserve installation, by subsection (f) of this section, must have a range of at least 100 nautical miles under the same conditions and circumstances.

proval given to three types of radiotelegraph transmitters manufactured by a commercial firm which meet the specifications of the Ship Radiotelegraph Safety Rules of May 21, 1937, for a main transmitter. Also one type of transmitter manufactured by the same firm was approved as meeting the specifications of these rules for a combined main and emergency transmitter. Four transmitters manufactured by a second commercial firm and one manufactured by a third firm have been inspected and tested and are now awaiting consideration. Preliminary tests relative to possible specifications for ship radio receivers have been made, and are at present in progress.

Marine safety watch.—Special marine safety watches were established at Baltimore, Md., and Portland, Oreg., for the purpose of securing information in the marine radio service in connection with the Commission's study of the safety of life and property at sea. Special marine receivers, auto-alarms, and frequency-measuring apparatus were installed at these stations. They are manned on a 24-hour basis. 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, performance of auto-alarms, and general adherence to the international procedure in the marine service.

AVIATION SERVICES[1]

The aviation service in the past year has been marked by a steady but not spectacular growth. On October 13, 1937, in connection with the general allocation of frequencies above 30000 kilocycles, the Commission set aside certain frequencies for the aviation service. Four frequencies were provided between 30 and 60 megacycles for instructional aviation. Above 60000 kilocycles, frequencies were set aside for instrument-landing, markers, airport-traffic control, and general aviation-communication purposes. Great interest has been shown in their capabilities, and a great deal of research is being conducted. It is expected that within the next fiscal year instrument-landing systems and other facilities will be available within the United States.

At the present moment tests are being conducted for the use of the ultra-high frequencies between New York and Pittsburgh, and installations for instrument-landing systems are being made at several of the major airports.

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[1] See also p. 94 (under Experimental Services).

EMERGENCY SERVICES

In the emergency service, the Commission authorizes the operation of State and municipal police, marine fire, forestry, and special emergency stations. The function of this group of stations is regulated by the rules governing emergency services adopted in June 22, 1938, which embody the Commission's policy with respect to such stations.[8]

Before the adoption of these rules, no specific provision had been made for the licensing of forestry stations as such. All those interested in the use of radio for forest protection have been licensed to use special emergency stations. In view of the growing importance of the use of radio for these purposes, and since specific frequencies therefor have been allocated, it was decided to classify them separately. Inasmuch as this is a new service, in which very little experience has been obtained, the rules as now promulgated provide only generally for the operations of and restrictions on stations in this class. Further detailed rules may be found necessary, and if this proves to be the case they will be promulgated from time to time.

Under the policy of the Commission in force previous to the adoption of these rules, the use of the frequencies above 30000 kilocycles was authorized on an experimental basis only and all licensees were required to accept experimental licenses subject to cancelation and subject to changes in frequencies when permanent allocations were made. In adopting the rules and regulations on June 22, the Commission announced that the experimental licenses now outstanding, covering these emergency services, would not be renewed on their expiration, October 1, 1938, but that it was expected by that time that all licensees would request permanent licenses under the new rules and regulations. From all reports received from licensees up to the close of the fiscal year, it appeared that these new rules were meeting the needs of the services concerned and would materially aid in the use of radio in connection with the safety of life and property in the United States.

Several carriers (both telephone and telegraph) have requested and been granted licenses for special emergency stations to be used to replace interrupted wire or cable circuits and to aid in their rehabilitation. The details of interruption are discussed elsewhere in this report.[9] These stations have proved of great value in maintaining continuity of communication in case of disaster.

The use of radio in the emergency service has steadily grown and the expectations of the Commission as to its value, discussed in previous reports, have been fully realized.

[8] See also pp. 69, 70, and 72 of our Third Annual Report.
[9] See pp. 90 and 91.

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Part V
Other Licensing Functions of the Commission

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INTRODUCTION

The licensing of radio stations other than those in broadcast service experienced a very substantial increase in volume and demand for the consideration of the Commission.[1] This was brought about somewhat by the reallocation of the frequencies above 30000 kilocycles to various radio services.[2]

The Miscellaneous Radio Services discussed hereinafter[3] include geophysical, motion-picture, and mobile-press service.

The fixed services discussed hereinafter[4] include the stations that have been licensed to operate as common carriers in either the telephone or the telegraph service. To the extent that the Commission regulates their rates and tariffs, supervises their accounts, and gathers financial and other statistical data therefrom, they are mentioned in part II of this report. The licensing of these stations and the consideration given thereto by the Commission are discussed in this Part of the report.

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[1] The licensing activities of the Commission with respect to aviation, marine, and emergency radio stations is discussed at pp. 79, 82, 83. For more detailed information see appendix J.

[2] Commission Order No. 19, 4 F. C. C. 30.

[3] At p. 98.

[4] At p. 88.

All the licensees in these services (with the exception of the Alaskan stations and one licensee in the United States) are engaged in radio communication as carriers. The extent to which the Commission regulates their rates and tariffs, supervises their accounts, and secures financial and other statistical data from them, is discussed hereinbefore.[5]

FIXED PUBLIC RADIOTELEPHONE SERVICES

In addition to renewing the licenses for these services that had previously been granted by the Commission,[6] the Commission considered and acted on several requests for extensions or the establishment of new services.

American Telephone & Telegraph Co. application for special experimental license.—The application of the American Telephone & Telegraph Co. filed on February 9, 1937, seeking a special experimental license for communication to any fixed point beyond the continental limits of the United States, was heard before the Telephone Division on July 29 and 30, 1937. The applicant proposed to utilize 21 frequencies licensed for trans-Atlantic radiotelephone service at Lawrenceville, N. J., in connection with this project. The hearing disclosed that the applicant was interested at that time only in experimental research in connection with the establishment of direct circuits to Rome (Italy), Berne (Switzerland), Berlin (Germany), and Moscow (U. S. S. R.). The Division permitted an amendment to the application by limiting research to the four points mentioned above. Subsequently, on August 3, 1937, the American Telephone & Telegraph Co. filed 21 applications for modification of all the point-to-point radiotelephone licenses in the fixed public service, requesting the four additional points of communication for the establishment of commercial circuits. The hearing on the application for the special experimental license was continued until September 13 and the applications for modification of the fixed public licenses were designated for a hearing on the same date. As the applicant had made a previous motion to dismiss its application for experimental license insofar as it related to Berne (Switzerland), Rome (Italy), and Berlin (Germany), the Commission subsequently granted this motion. On November 10, 1937, the Telephone Division granted the application of the American Telephone & Telegraph Co. to establish commercial circuits to Berlin (Germany), Rome (Italy), and Berne (Switzerland). In addition, it authorized this company to conduct experimental research with the view of determining whether a direct radiotelephone circuit from the United States with Moscow (U. S. S. R.) would be commercially feasible. As a result of the prelimi-

[5] Rates and tariffs, p. 25; Supervision of accounts, p. 30; Financial and other statistical data, p. 33.

[6] See previous annual reports.

nary tests that were conducted, it did not appear that the volume of business that would be handled over a direct circuit between these two points would be of sufficient quantity to justify providing a commercial service. However, experimental research over the indirect route utilizing the New York-London radiotelephone circuit and wireline facilities between London and Moscow and an alternate route via Paris indicates a commercial possibility. Therefore, at the present time, efforts are being concentrated along these lines.

Application of the American Telephone & Telegraph Co. for an additional trans-Atlantic circuit.—On May 11, 1937, the American Telephone & Telegraph Co. filed an application for authority to operate on two additional frequencies to be used in connection with the establishment of an additional high-frequency radiotelephone circuit to Europe. These two frequencies represented two of a necessary complement of five frequencies required to establish a fifth circuit. The application was submitted for hearing before the Telephone Division on August 10, 1937, and was granted as of that date. On September 14, 1937, a hearing was held before the Division with respect to two additional frequencies to supplement the frequencies authorized by the Commission on August 10, 1937. These frequencies were granted on September 29, 1937. The American Telephone & Telegraph Co. later submitted an application for the fifth frequency to complete the complement of the frequencies necessary for the establishment of a radiotelephone circuit on a commercial basis, which application was granted without hearing.

Growth of overseas radiotelephone traffic.—Since the inauguration of trans-Atlantic radiotelephone service in 1927, the number of paid messages handled in both directions has steadily increased. For the calendar year 1927 only 2,296 paid messages were transmitted and received. This traffic increased to a total of 14,639 messages for the calendar year 1930 and to a total of 34,938 paid messages in both directions for the calendar year 1937. During the first 6 months of the calendar year 1938 a total of 15,865 messages were handled.

Extension of overseas services.—During the period July 1, 1937, to June 30, 1938, covered by this report, the overseas services offered by the American Telephone & Telegraph Co. have continued to expand as noted below.

While the present extension consists of service to a single point within a given country, it is reasonable to expect that service will be extended throughout those countries in the very near future as economic conditions tend to prove that such extensions are justified.

R. C. A. Communications, Inc., application to add Tokyo, Japan, as a primary point of communication.—On May 29, 1937, R. C. A. Communications, Inc., submitted an application to modify two of its point-to-point radiotelephone licenses at Kahuku, T. H., to add Tokyo, Japan, as a primary point of communication in addition to those now authorized at this location. The Commission designated the application for hearing and the hearing was conducted before the Telephone Division on October 18, 1937. As a result of this hearing the Telephone Division on November 3, 1937, granted the application for the modification of license requested. During March, 1938, the radiotelephone circuit between Honolulu, T. H., and Tokyo, Japan, was opened on a commercial basis, and telephone service is now avail-

able from all telephones in Hawaii to those in Japan through the facilities of connecting land lines.

Radio Corporation of Puerto Rico application to add Port au Prince, Haiti, as a primary point of communication.—On August 24, 1937, the Radio Corporation of Porto Rico, a subsidiary of the International Telephone & Telegraph Co., submitted an application to modify one of its point-to-point radiotelephone licenses in the fixed public service at San Juan, Puerto Rico, to add Port au Prince, Haiti, as a primary point of communication in order to establish a new radiotelephone circuit between Puerto Rico and Haiti. The application was designated for hearing and the matter was heard on March 3, 1938. From the evidence adduced at this hearing, the Commission determined that it was in the public interest and convenience to authorize the establishment of such a circuit and granted the application on June 28, 1938. The circuit was not open on a commercial basis as of June 30, 1938, but it is anticipated that telephone service will be available within a short time.

Disruption of radiotelephone facilities to Shanghai.—On October 12, 1937, the American Telephone & Telegraph Co. notified the Commission that all regular radiotelephone communications between the United States and Shanghai had been disrupted due to the existence of war conditions in Shanghai, and requested authority to communicate with Canton, China, for the purpose of handling paid-message traffic to the interior of that country. This temporary authority has been renewed from time to time, and service to Shanghai has not been resumed to date.

Additional extensions of overseas services.—In addition to the above-mentioned extensions of overseas radiotelephone services, the service of the American Telephone & Telegraph Co. has been expanded as follows:

July 1, 1937—Sofia, Bulgaria.
July 15, 1937—Jamaica interconnected via the United States with Europe, Bermuda, Hawaii, Philippine Islands, and Netherlands and with ship subscribers.
September 20, 1937—Port au Prince, Haiti.
December 15, 1937—Bagdad, Iraq.
April 27 and May 20, 1938—Additional localities in Sao Paulo, Brazil.

A table showing the overseas countries and territories to which telephone service is available from the United States as of June 30, 1938, is shown in Appendix K.

Failure of submarine telephone cable to Block Island, R. I.—On August 20, 1937, the New England Telephone & Telegraph Co. advised the Commission that partial failure of the submarine cable between Green Hill and Block Island, R. I., operated by the United States Coast Guard, carrying four telephone circuits, had occurred, and that complete failure appeared imminent, unless repairs were accomplished immediately. All communication facilities to the island would necessarily be completely interrupted during the period of time necessary to repair the cable. The New England Telephone & Telegraph Co., therefore, submitted an emergency request for special temporary authority to establish a connecting radiotelephone circuit between its coastal harbor station WOU, at Green Harbor, Mass., and a station on Block Island, in order to provide facilities for the

protection of life and property. Recognizing the serious emergency which existed, the Commission on that date granted authority for the establishment of such a temporary radiotelephone circuit. During the period of interruption, the telephone company handled a considerable number of telephone messages to the island. Repairs were completed on August 27, 1938, and the use of the temporary radiotelephone was then discontinued.

The use of radio during the Southern California flood.—On March 2, 1938, there occurred in the vicinity of Los Angeles a storm and flood which subsequently were reported to have been the worst experienced in 61 years. This storm resulted not only in considerable loss of life and property but in serious interruption of the land-wire facilities in that vicinity, creating a condition recognized as a major disaster. Considerable damage was done to the plant and trunk-line cable facilities as the result of numerous washouts on highways, bridges, and flood conditions in general. During the entire period of the flood, the telephone facilities within the area were taxed to capacity, and communication to the outside world was cut off except through the medium of radio communication. In order to provide communication from the disaster-struck counties surrounding Los Angeles, the Commission authorized the coastal harbor station at San Francisco to communicate with Los Angeles during the period of the emergency. Important distress communications were handled successfully during the evening and nighttime hours. However, due to the fact that the stations were not equipped for frequencies possessing the proper propagation characteristics for daylight transmission over land, it was impossible to operate successfully during daylight hours.

FIXED PUBLIC RADIOTELEGRAPH SERVICES

At the end of this fiscal year there were 434 point-to-point radiotelegraph stations licensed for fixed public service (a decrease of 5 stations for the past year), 58 licensed for fixed public press service (a decrease of 17 stations), and 7 licensed for agriculture service in the United States and its Territories (except Alaska) and possessions, subject to the jurisdiction of the Commission. Although the majority of these stations are licensed for, and operate primarily in, the international and overseas service, the figures include 175 stations that conduct domestic communications. Of this number, 69 stations operate exclusively in the domestic service, mainly between large cities. The use of frequencies above 6000 kilocycles for domestic service is granted on the condition that such use shall not interfere with international service. With the exception of those licensed for agriculture service, each licensee may transmit only public correspondence pursuant to tariffs filed with the Commission and service messages incidental to the expeditious movement of this traffic. Addressed program material to overseas points and press service to two or more fixed points and to ships at sea are included among the classes of traffic handled as public correspondence in conformity with the established tariffs.

Hearst Radio, Inc., informed the Commission that it was discontinuing all operations in the point-to-point fixed public press service of its stations located at Carlstadt, N. J., Tinley Park, Ill., and Redwood City, Calif., effective December 31, 1937, and relinquished its

frequencies to the Commission for reassignment to other services. This action leaves Press Wireless, Inc., as the only company licensed to operate a fixed public press service.

The Southern Radio Corporation also notified the Commission of the cessation of its operation of two point-to-point telegraph stations in the fixed public service located at Linden, N. J., which were licensed to communicate with Bolivia, effective May 31, 1938. However, very little public correspondence had been transmitted between the United States and Bolivia over the facilities of this company. Their deletion, therefore, had no material effect on the communication service between the United States and South America.

During the past year the Government of Puerto Rico deleted all points of communication authorized outside the island of Puerto Rico. Such points of communication had been inactive for a number of years and were being maintained solely for the purpose of emergency communications during flood, hurricane, etc. However, their maintenance was not deemed necessary in view of the provisions of Federal Communications Commission Rule 213, which may be invoked in time of disaster to obtain the same results.

Applications of R. C. A. Communications, Inc., Mackay Radio & Telegraph Co., Inc., Press Wireless, Inc., and Hearst Radio, Inc., for additional frequencies to be used in point-to-point telegraph service.—After hearings on these applications, R. C. A. Communications, Inc., was authorized to use two new frequencies in the 2000-kc band and Mackay & Radio Telegraph Co., Inc., two new frequencies in the 2000-kc band. Press Wireless, Inc., was granted renewal of licenses for two stations in conformity with its existing licenses, which permitted at each station the use of one frequency and the temporary use of an additional frequency for a limited period, and upon condition that one of the frequencies would be thereafter released. Hearst Radio, Inc., was granted the unlimited use of one frequency heretofore licensed for daytime operation only, the unlimited use of one new frequency in the 15000-kc band, and the use of one new frequency in the 7000-kc band for nighttime operation only. The grants to Hearst Radio, Inc., were made subject to certain conditions, including the requirement for filing certain traffic reports showing the extent to which such frequencies were used, and the Commission's future determination that the volume of traffic to primary points was sufficient to justify a need for the use of such frequencies.

Applications of Mackay Radio & Telegraph Co., Inc., to add Rome (Italy) and Warsaw (Poland) as primary points of communication.—Hearings were completed on these applications to modify certain licenses of the Mackay Radio & Telegraph Co., Inc., so as to add Rome and Warsaw as primary points of radiotelegraph communication for the extension of its existing international services. Examiners' reports were submitted recommending that the applications be denied. Exceptions were filed to the reports, and oral argument was held before the Commission. At the close of the fiscal year these matters were pending decision by the Commission.

Applications of Globe Wireless, Ltd., Press Wireless, Inc., and R. C. A. Communications, Inc., for new frequencies.—Near the close of the year a consolidated hearing was begun before an examiner upon the applications of Globe Wireless, Ltd., Press Wireless, Inc., and

R. C. A. Communications, Inc., for additional frequencies to be used in their public point-to-point radiotelegraph service, one frequency being requested by R. C. A. Communications, Inc., also for use in its public radiotelephone service. One frequency was applied for by all three companies, three frequencies by both Press Wireless, Inc., and Globe Wireless, Ltd., one frequency by Press Wireless, Inc., only, and three frequencies by Globe Wireless, Ltd., only. Seven of these frequencies were formerly licensed to Hearst Radio, Inc. The primary considerations involved were the extent to which a need could be shown for these frequencies and the use which would be made thereof if granted. The hearing had not been completed at the close of the year.

Applications of Press Wireless, Inc., to add telephone emission.—Near the close of the year covered by the Third Annual Report of the Commission, Press Wireless, Inc., which is licensed to transmit public press correspondence in both the domestic and international fields, submitted an application requesting authority to add telephone emission for the transmission of press material for public dissemination. This application departed from the existing rules and regulations governing the operation of stations in the fixed public press service and was, therefore, made the subject of a hearing. At the hearing the applicant submitted its proposal to establish three new types of service in addition to those now recognized. These were (1) transmission of multiple address messages by radiotelephony; (2) transmission of press material between two fixed points by radiotelephony; and (3) the transmission by radiotelephony of addressed program material for rebroadcast purposes, publication in newspapers, and other methods of public dissemination.

The hearing was held April 4, 1938, and was pending the decision of the Commission at the close of the fiscal year.

Applications of Globe Wireless, Ltd., to add Habana, Cuba, as a primary point of communication.—On January 25, 1937, Globe Wireless, Ltd., filed six applications to extend its radio-communication service to Habana, Cuba. The Commission on August 17, 1937, designated these applications for hearing. At the close of the fiscal year the hearing was still pending awaiting decision of the Commission on other Globe Wireless, Ltd., matters which might affect the proposed extension to Habana.

Investigations of propagation of radio waves.—Active research has been conducted by commercial communication companies during the past year on the propagation of radio waves. A large amount of data has been collected but there is still need for experimental data on the use and characteristics of the ultra-high frequencies.

Experimental investigations of the propagation of radio waves are being conducted both by means of the direct determination of the ionization of the upper atmosphere, commonly called Kennelly-Heaviside layer or the ionosphere, which is responsible for the propagation of radio waves to great distances by means of repeated refractions or reflections between the conducting surface of the earth and the ionized regions of the upper atmosphere, and by means of the transmission of messages on an experimental basis under conditions simulating those in practical operation.

Authority was granted by the Commission on January 25 to the Cruft Laboratory, Harvard University, to operate a special experimental station for the purpose of conducting ionosphere measurements. The equipment authorized operates in the same manner as that used by the Bureau of Standards and the Carnegie Institute of Washington. It is designed to make a complete record of the state of ionization of the upper atmosphere without causing interference to existing radio services.

During the past year approximately 2,505 stations conducted research in connection with the determination of the reliability and practicability of certain frequencies for specific services. Correlation and analysis of the technical data obtained from this experimentation will be extremely valuable to the Commission in assigning frequencies to specific services.

Developments of aids to aviation.[7]—In the past year considerable research has been conducted in connection with the development of aids to aviation. Results of this research indicate that there is a definite need for the ultra-high frequencies for aeronautical purposes.

During the past year continued improvements and new developments in instrument landing systems have been made. It is anticipated that such systems will be developed to the point where they can be established on a permanent or regular basis in the near future. These systems, when perfected, will permit aircraft to land at suitably equipped airports irrespective of the visibility.

From the beginning of aviation there has been a definite need for a positive and accurate method of indicating the height of aircraft above ground. Air-pressure types of altimeters have been highly developed and are in general use. These devices, however, are subject to error due to atmospheric conditions. Reports of experimentation with radio devices indicate that instruments that will provide a posi-

[7] See also p. 82.

tive and rapid determination of the altitude may soon be available. At present there are two methods under investigation. One method depends upon the reaction of the earth on an electrical circuit, the second is obtained by means of transmitting a short pulse of ultra-high frequency emission and determining the time interval elapsing before the echo returns, much in the same manner as the time delay of audio echoes is employed in depth finding in the marine service. A number of different systems are under investigation for determining the position of aircraft while in flight.

Apparatus for use on the ultra-high frequencies.—Considerable progress has been made in the development of the equipment for operation on the ultra-high frequencies. This is particularly true with respect to apparatus designed to operate on the frequencies above 300000 kilocycles. The equipment in general shows a marked dissimilarity to the conventional type operating on the lower frequencies not only with respect to the vacuum tubes employed but with respect to the associated circuits as well. Although such apparatus is not commercially available at the present time, recent developments in the laboratories indicate that such equipment can be constructed so as to give excellent operating characteristics.

Revision of experimental rules.—The Commission has been actively engaged in the study and revision of the rules and regulations governing the experimental service. The primary objective is to broaden the existing rules so as to encourage all forms of scientific research, and to facilitate the administration of the experimental service.

ALASKAN STATIONS

The Commission has now established an office at Anchorage, Alaska. However, because of the vast differences in, and the difficulty of, transportation, the Commission continues to employ a very lenient attitude with regard to the waiving of certain technical requirements in the matter of both operator and station licenses. Likewise, the Commission continues to function to some extent through the medium of the Alaska Communications System, a division of the Signal Corps of the Army, and very largely relies upon its recommendations with respect to station licenses. The procedure for bringing these matters to the attention of the Alaska Communications System was modified and clarified to some extent during the year. Over a period of years the communications system established by the Alaska Communications System has undergone a steady change, the main feature of which is that wire lines have been gradually abandoned in favor of radio systems.

On July 8, 1937, this system was extended by the establishment of a radiotelephone link between Seattle, Wash., and Juneau, Alaska, a distance of 890 statute miles, for the transmission of telephone messages between continental United States and the Territory of Alaska. The Alaska Communications System station at Seattle, Wash., connects with the land-line system of the American Telephone & Telegraph Co. and its associated companies. However, communication to Alaska is limited to the Alaska Communications System station at Juneau and one telephone in the territorial capitol at Juneau, due to lack of suitable land-line facilities within the Territory.

While the establishment of an office in Alaska has been of considerable benefit in its regulation of Alaskan stations, the Commission nevertheless recognizes the fact that there is much room for further improvement, and will therefore continue to cooperate in every manner possible with the Alaska Communications System and with other governmental agencies in Alaska.

A conference with the Alaska Aeronautics and Communications Commission was held at Juneau on August 6, 1937, and, as a result, the rules and regulations of the Commission governing the various classes of stations in Alaska, other than broadcast and amateur stations, were amended. Specific frequencies were set aside for various aviation chains in Alaska, and a policy of operation similar to that in effect in the continental United States was adopted. Under the plan, two specific chains of stations were provided for use in Alaska by aircraft flying normal routes, and what appears to be an adequate number of frequencies, considering aircraft operation, was assigned each of these chains. In addition, special frequencies were made available in Alaska for use by aircraft having no regular or specific route. These modifications of the rules have materially improved the communication situation in Alaska. However, there is further work to be done in coordinating operations, and it is expected that during the next fiscal year further improvement in safety and efficiency will be noted.

AMATEUR SERVICES

Many amateur stations rendered valuable service to the public during the past year. Considerable progress was made in the voluntary organization of amateur stations for emergency service. Throughout the winter months these stations provided emergency communication facilities for areas completely or partially isolated because of severe storms, particularly in Oregon, Oklahoma, Kansas, Indiana, and Nebraska.

In early March, during the lower California flood, amateus stations were valuable. Here, a number of amateurs with portable equipment preceded the flood waters to specified areas and established their stations in advance of actual isolation. Another instance of service to the public by an amateur station was the facsimile transmission of a picture of the flood area which was received by news agencies. The cooperation of amateurs with the American Red Cross and other relief organizations in furnishing the sole means of communication, in many instances, between stricken areas and outside aid enabled these organizations to function most efficiently.

A large number of amateur stations are affiliated with the Naval Communications Reserve and the Army Amateur Reserve System. These organizations offer excellent training, providing practice drills and instruction which enable their members to develop accuracy and speed in communication as well as to improve the technique in the operation of amateur stations.

During the year several scientific expeditions relied upon the amateur service for communication in the exchange of scientific data between the expeditions and their sponsors.

Technical improvements in equipment during the past year stimulated interest in radiotelephony in the 28000- to 30000-kilocycle amateur band, resulting in a tremendous increase in activity in this region. In order to provide for further technical developments and to accommodate the many additional amateur radiotelephone stations which had become active in this band, the Commission, on September 17, 1937, extended the frequency bands for radiotelephony, type A–3 emission, to include the frequencies between 28500 and 30000 kilocycles.

A study was completed during the year of the rules and regulations governing amateur stations and operators, and a general revision of these rules was in progress at the close of the fiscal year.

The development of inexpensive and efficient telephone equipment in recent years has led to a vast increase in the amount of unlicensed operation. This may be attributed in a large measure to the fact that it is unnecessary to be familiar with the international code and also because of the availability of cheap equipment which may be installed and operated with practically no technical knowledge.

Statistics with respect to the applications, examinations, and authorizations handled throughout the year are found in appendix L.

Geophysical and motion-picture services.—The purposes for which the stations in these services are authorized to operate are discussed at page 72 of our Third Annual Report. There has been no substantial change in the conditions surrounding the regulation or use of these stations, and they have continued to serve the purposes for which they were established. A statistical record of the growth of these stations is found at page 236 of this report.

Mobile-press service.—Relay press stations will be licensed to operate in the mobile-press service which is proposed to be established for the purpose of providing a link between a reporter at the scene of the news and the nearest wire terminal.

Frequencies for use by such stations were allotted by the Commission in the reallocation of the spectrum above 30000 mentioned previously. An informal conference was had with newspapers and newspaper associations with regard to the use to be made of such frequencies. The consensus of opinion was that these stations should be licensed only to newspapers and news associations for the purpose indicated above. Consideration was being given at the close of the year to a set of rules and regulations to govern the licensing and operation of these stations.

PROFESSIONAL RADIO OPERATORS

The general plan established by the Commission for the licensing of radio operators continued in force without change during the year. The increasing use of radio facilities for police and other services has been accompanied by a substantial increase in the number of persons holding licenses as radio operators, particularly radiotelephone third-class licenses, for which the requirements are relatively simple. The total number of licensed operators is rapidly nearing 40,000, more than half of whom are licensed as radiotelephone third-class operators. Nearly 10,000 are eligible as operators at broadcast stations by virtue of holding licenses as radiotelephone first-class operators or the equivalent endorsement on licenses as radiotelegraph first-class operators, while upwards of 7,500 hold radiotelegraph first- or second-class licenses, alone or in combination with one of the radiotelephone classes.

The Commission amended the rules with respect to the class of operator license required for the operation of the various classes of stations licensed by the Commission. This revised rule became effective April 1, 1938, except for the Territory of Alaska, where it is to become operative at a later date. The most significant change established by this amendment was with respect to the authority granted under the radiotelephone third-class license. Formerly, radiotelephone stations employing a licensed power of 50 watts or less could be serviced, maintained, and operated by radiotelephone third-class operators. The amended rule prohibits third-class radiotelephone operators from making adjustments that might result in improper transmitter operation, and requires that the service and maintenance work be performed by higher class operators holding licenses of the radiotelegraph or radiotelephone first or second class.

To permit quick service in qualifying radio operators, licenses are issued at Washington and 26 field offices of the Commission. The license issues and other related items are reported to the Washington office for a complete record at Washington. During the fiscal year 21,067 reports were received for posting. As a result of a study, specific rules and regulations have been proposed, which look to the improvement of the qualifications of radio operators and the simplification of the licensing by the Commission. An informal hearing on the proposed rules had been scheduled for July 11, 1938.

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APPENDIX A

Comments of the Commission on the following bills were requested by various Congressional Committees and furnished during this fiscal year:

S. 2700. A bill to provide for reorganizing the agencies of the Government, extending the classified civil service, establishing a General Auditing Office and a Department of Welfare, and for other purposes.

H. R. 7324 and 7474. A bill to amend the Interstate Commerce Act, as amended, to promote the safety of travel in air, and for other purposes.

S. 2407. A bill to amend the Communications Act of 1934 (U. S. C., 1934 edition, Title 47, Sec. 303) re qualifications of radio operators.

S. 2758. A bill to prohibit the transmission of gambling information in interstate commerce by communication facilities.

H. R. 8251. A bill to amend section 353 (b) of the Communications Act of 1934, for the purpose of promoting safety of life and property at sea through the use of wire and radio communications, to make more effective the International Convention for the Safety of Life at Sea, 1929, and for other purposes, approved May 20, 1937.

S. 2580. The Senate bill corresponding to H. R. 8251.

H. R. 8840. A bill to provide overtime pay for customs officers.

S. 3371. A bill for the purpose of defining certain terms used in the navigation and steamboat inspection laws, etc., relative to inspection.

S. 1273. A bill to adopt regulations for preventing collisions at sea.

S. 3676. A bill for establishing a United States Court of Appeals for administration to receive, decide, and expedite appeals from Federal commissions, administrative authorities, etc.

S. 3456–H. R. 9548. A bill proposing an amendment to section 094 of Rural Electrification Act. (Bills are identical.)

H. R. 9898–S. 3756. A bill to prohibit the use of communication facilities for criminal purposes and to permit the introduction in evidence of information obtained by "wire-tapping" under certain circumstances.

S. 2580. A bill to promote safety at sea by requiring proper design, construction, maintenance, inspection, and operation of ships; to give effect to the Convention for Promoting Safety of Life at Sea, 1929; and for other purposes.

S. 3875–H. R. 10348. A bill to amend section 313 of the Communications Act of 1934 by adding a new paragraph declaring it to be the Congressional policy "to prevent monopoly and to encourage competition in direct, foreign radiotelegraph communication."

H. R. 92. Authorizing the Speaker to appoint a committee of seven members of the House of Representatives to investigate the allegations and charges that a monopoly or monopolies exist in radio broadcasting.

H. R. 6440. A bill to provide for the taxation of operators of radio broadcast stations.

H. R. 9624. A bill to amend the Communications Act of 1934 to prohibit the advertising of alcoholic beverages by radio.

H. R. 10307 and 10724. A bill to amend paragraph (k) of section 303 and paragraph (b) of section 319 of the Communications Act of 1934 so as to exempt portable-mobile stations operated by forest-protection agencies exclusively for forest-protection communication purposes from certain requirements, including the requirement that a permit be obtained for the construction of such stations.

S. Res. 247. A resolution providing for the investigation of certain aspects of the wire-communications industry in the United States.

S. Res. 294. A resolution opposing the operation of radio stations in the standard broadcast band with power in excess of fifty kilowatts.

S. 3342. A bill to authorize the construction and operation of a radio broadcasting station designed to promote friendly relations among the nations of the Western Hemisphere.

S. 4074. A bill to amend an Act entitled, "The Communications Act of 1934, as Amended." (Interference from apparatus using radio-frequency electrical currents.)

S. 4098 (H. R. 10869). A bill to amend the Communications Act of 1934 so as to prevent monopolies and to prohibit the excessive duplication of broadcast programs in any area.

APPENDIX B

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.

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: Decisons, Reports, and Orders of the Federal Communications Commission of the United States, March 1937 to November 15, 1937.

Proposed Report, Telephone Investigation.

Periodic Reports of Broadcast and other Applications Received.

Reports of Action Taken by the Commission at its Weekly Meetings.

Reports of Examiners on Matters Heard by Them.

Reports of Statements of Facts and Grounds for Decision in all Formal Cases Decided by the Commission.

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.

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 Telecommunication Union, Berne, Switzerland.)

Selected financial and operating data from annual reports of telephone carriers for the year ended December 31, 1936.

Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1936.

Salary report of telephone and telegraph carriers, December 31, 1936.
Summary of monthly reports of large telephone carriers.
Selected financial and operating data from monthly reports of telegraph carriers.

Public reference rooms.—The Commission maintains public reference rooms for the purpose of opening to public inspection such records and material as are made public under the act and under the regulations of the Commission. This service to the public includes the annual and monthly reports and the schedules of charges filed by telephone and telegraph carriers; the annual reports filed by holding companies; formal dockets; and applications for radio or wire facilities.

Information of interest is made available to the public by means of frequent press releases.

APPENDIX C

FINANCIAL AND OTHER STATISTICAL DATA CONCERNING TELEPHONE AND TELEGRAPH CARRIERS AND CONTROLLING COMPANIES

The statistical tables and charts contained in this appendix are assembled in the following groups:

(A) Statistics relating to telephone and telegraph carriers, and holding companies, from annual reports, on pages 112 to 148 of this appendix;

(B) Statistics relating to telephone and telegraph carriers from monthly reports, on pages 149 to 169 of this appendix; and

(C) Data concerning intercorporate relations, on pages 170 to 175 of this appendix.

(A) STATISTICS RELATING TO TELEPHONE AND TELEGRAPH CARRIERS, AND HOLDING COMPANIES, FROM ANNUAL REPORTS

Arrangement of data.—There are contained in this part of the appendix tables and charts showing statistical data concerning telephone and telegraph carriers and holding companies, based principally on the annual reports of those companies filed with the Commission. With some exceptions, these tables and charts are arranged as follows: First, those relating to telephone carriers; second, those relating to telegraph carriers; and third, those relating to both telephone and telegraph carriers. Only tables XI and XXXVII relate, in whole or in part, to holding companies.

Bell telephone statistics.—The statistical data shown in this appendix for the Bell System carriers exclude returns from the Cincinnati and Suburban Bell Telephone Co. and the Southern New England Telephone Co. unless otherwise stated.

Geographical groupings.—For statistical purposes, telephone carriers have been grouped geographically into three districts, which have been subdivided into nine regions, as follows:

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

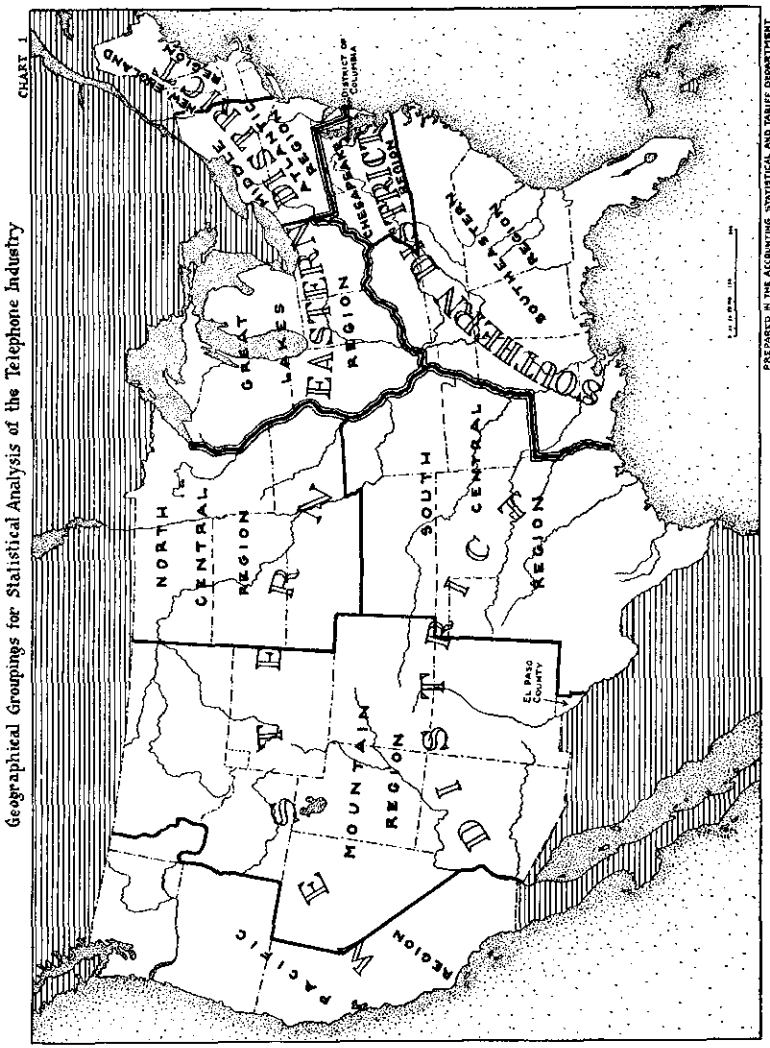
North Central region.—This region comprises the following States: Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

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.

These geographical groupings are shown by chart 2, which follows:



Names of telephone carriers.—The names of the 93 telephone carriers which filed annual reports with the Commission for the calendar year 1937 are listed in table I. There were 10 telephone carriers which filed reports for the year 1936 but which did not file reports for 1937, owing to the provisions of section 2 (b) (2) of the Communications Act of 1934, these carriers being deemed to be subject only to the provisions of sections 201–5 of the act, although 8 other carriers similarly situated voluntarily continued to file annual reports with the Commission for statistical purposes and are included in the 93 carriers listed in table I. The carriers listed in this table and comprehended by statistics contained in the following tables and charts based on the annual reports represent approximately 95 percent of the total telephone industry in the United States as determined by a comparison of revenues received by these respective carriers.

TABLE I.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1937 showing classification and geographical region to which each carrier has been assigned for statistical purposes* [1]

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.
Champaign Telephone Co	B	Great Lakes.
Chenango & Unadilla Telephone Corporation	A	Middle Atlantic.
*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.
*Dakota Central Telephone Co	A	North Central.
Del Rio & Winter Garden Telephone Co	A	South Central.
*Diamond State Telephone Co	A	Middle Atlantic.
Eastern Kansas Telephone Co	B	South Central.
*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.
Kansas Telephone Co	A	Do.
Keystone Telephone Co. of Philadelphia	A	Middle Atlantic.
Kittanning Telephone Co	A	Do.
*Lebanon Telephone Co.[2]	B	Great Lakes.
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	A	South Central.
**Moosehead Telephone & Telegraph Co*	B	New England.
*Mountain States Telephone & Telegraph Co	A	Mountain.
Nebraska Continental Telephone Corporation	A	North Central.
*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	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 Barbara Telephone Co	A	Pacific.
Santa Paula Home Telephone Co	B	Do.

* Represents carriers included in the Bell System.

[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] Merged with the Indiana Bell Telephone Co. as of June 30, 1937.

TABLE 1.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1937 showing classification and geographical region to which each carrier has been assigned for statistical purposes*—Continued

Name of carrier	Class of carrier	Geographical region
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.
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)	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.

Selected statistics of telephone carriers by geographical divisions.—Selected financial and operating data compiled from annual reports filed by 74 class A and 19 class B telephone carriers for the year ended December 31, 1937, are shown in table II. Intercorporate duplications have not been excluded. This summary includes operating data for the period of operations of one class B carrier that merged with a class A carrier during 1937.

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

[Year ended Dec. 31, 1937]

No.	Item	All carriers				Bell System carriers			
		United States	Eastern district [1]	Southern district	Western district	United States	Eastern district [1]	Southern district	Western district
1	Number of carriers	93	40	12	41	34	18	6	10
	Investment in telephone plant:								
2	Telephone plant in service	$4,612,012,594	$3,061,236,802	$415,024,548	$1,135,751,244	$4,329,588,998	$2,845,986,698	$403,995,495	$1,079,606,805
3	Telephone plant under construction	40,103,039	26,212,272	4,149,246	9,741,521	34,652,022	20,994,420	4,023,563	9,634,039
4	Property held for future telephone use	13,739,176	10,488,650	543,141	2,707,385	13,362,826	10,144,583	543,141	2,675,102
5	Telephone plant acquisition adjustment	19,376,574	5,530,931	4,267,090	9,578,553	15,027,612	4,557,271	4,136,277	6,334,064
6	Total investment in telephone plant	4,685,231,383	3,103,468,655	423,984,025	1,157,778,703	4,392,631,458	2,881,682,972	412,698,476	1,098,250,010
7	Investments other than telephone plant	2,691,759,142	2,487,443,868	5,740,424	198,574,850	2,682,822,443	2,482,920,578	5,679,870	194,221,995
8	Cash	64,658,263	50,869,684	4,318,422	9,470,157	59,105,054	47,027,120	4,196,073	7,881,861
9	Material and supplies	56,315,741	37,563,716	4,866,871	13,885,154	51,726,815	34,591,807	4,699,535	12,435,473
10	Total current assets	345,839,040	275,057,582	20,587,811	50,193,647	327,449,033	262,021,507	19,874,538	45,552,988
11	Capital stock	4,278,656,721	3,287,794,518	217,780,500	773,081,703	4,141,697,037	3,182,926,955	212,156,400	746,613,672
12	Funded debt	942,699,880	772,110,080	49,677,200	120,912,600	871,658,480	723,185,380	48,858,200	99,614,900
13	Total *long-term debt*	1,287,813,073	933,939,837	105,646,978	248,231,258	1,204,071,430	875,486,631	104,628,571	223,956,228
14	Total current liabilities	113,681,787	76,285,171	13,173,288	24,223,328	102,237,488	67,106,695	12,400,519	22,730,274
15	Taxes accrued	76,290,888	50,820,670	5,235,419	20,234,799	72,373,956	47,840,017	5,012,937	19,521,002
16	Unmatured interest, dividends, and rents accrued	56,104,620	51,741,507	589,587	3,773,526	53,521,353	49,538,720	551,755	3,430,878
17	Depreciation reserve	1,263,953,223	852,805,499	96,505,623	314,642,101	1,196,166,837	801,583,276	93,057,112	301,526,449
18	Amortization reserve	3,221,040	1,381,161	802,832	1,037,047	3,235,214	1,405,794	775,097	1,054,323
19	Total surplus	390,378,032	344,802,923	14,624,374	30,950,735	375,099,237	332,732,974	13,671,543	28,694,720
	Operating revenues:								
20	Local service	748,791,095	486,015,531	74,242,640	188,532,924	703,891,462	450,805,107	72,439,033	180,647,322
21	Toll service	334,993,843	226,341,114	28,926,554	79,726,175	321,690,916	217,981,370	27,745,304	75,964,242
22	Miscellaneous	59,882,685	44,089,934	4,733,580	11,059,171	57,464,400	42,191,840	4,658,195	10,614,365
23	Uncollectible—Dr.	4,133,289	2,611,103	404,180	1,118,006	3,955,482	2,499,590	389,009	1,066,883
24	Total operating revenues	1,139,534,334	753,835,476	107,498,594	278,200,264	1,079,091,296	708,478,727	104,453,523	266,159,046

[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.

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

No.	Item	All carriers				Bell System carriers			
		United States	Eastern district	Southern district	Western district	*United States*	Eastern district	Southern district	Western district
	Operating expenses:								
25	Maintenance	$214,240,888	$143,473,893	$18,949,411	$51,817,584	$203,634,242	$135,235,470	$18,527,759	$49,871,013
26	Depreciation and amortization	171,617,060	112,426,830	16,447,856	42,742,374	161,736,565	105,006,607	15,966,056	40,763,902
27	Traffic	168,185,896	106,295,264	18,361,880	43,528,752	158,951,255	99,478,206	17,850,429	41,622,620
28	Commercial	88,299,164	56,908,887	8,481,260	22,909,017	84,223,164	53,877,644	8,328,965	22,016,555
29	General office salaries and expenses	62,936,887	44,908,051	4,382,549	13,646,287	59,524,817	42,456,144	4,162,543	12,906,130
30	Other	70,328,322	53,064,845	5,544,321	11,719,156	67,966,456	51,208,031	5,429,885	11,328,540
31	Total operating expenses	775,608,217	517,077,770	72,167,277	186,363,170	736,036,499	487,262,102	70,265,637	178,508,760
32	Operating ratio—percent	68.06	68.59	67.13	66.99	68.21	68.78	67.27	67.07
	Operating taxes:								
33	Other than U. S. Government	$100,633,312	$65,335,842	$9,810,226	$25,487,244	$96,711,336	$62,611,691	$9,485,866	$24,613,779
34	U. S. Government	41,674,668	27,559,403	3,556,028	10,559,237	39,254,939	25,667,607	3,412,431	10,174,901
35	Total operating taxes	142,307,980	92,895,245	13,366,254	36,046,481	135,966,275	88,279,298	12,898,297	34,788,680
36	Net operating income	221,618,297	143,862,463	21,965,063	55,790,771	207,089,443	132,937,328	21,289,589	52,862,526
37	Other income	197,232,975	184,069,898	405,814	12,757,263	196,759,379	183,836,476	397,314	12,525,589
38	Miscellaneous deductions from income	1,980,978	1,124,246	178,823	677,909	1,780,230	1,003,492	151,301	625,437
39	*Interest deductions*	*52,281,585*	*38,705,034*	*4,192,326*	*9,383,625*	*48,419,130*	*36,121,019*	*4,152,471*	*8,145,640*
40	Miscellaneous fixed charges	790,720	562,584	167,262	60,874	646,204	485,853	165,469	[2] *5,118*
41	Net income	363,787,608	287,539,897	17,857,077	58,390,634	353,003,258	279,163,440	17,217,662	56,622,156
	Dividends declared:								
42	Common stock	339,528,040	271,466,661	18,000,298	50,061,081	331,484,436	264,908,679	17,046,920	49,628,837
43	Preferred stock	11,639,342	3,626,073	98,826	7,914,443	9,199,714	2,558,790	15,900	6,625,924
	Miles of wire in cable:								
44	Aerial	[3] 29,102,250	[3] 18,969,810	3,295,722	6,836,718	27,493,460	17,795,367	3,196,308	6,501,785
45	Underground	[3] 51,187,479	[3] 35,334,054	4,013,858	11,839,567	48,624,960	32,925,886	3,990,937	11,708,137
46	Buried	[3] 757,222	[3] 339,141	22,576	395,505	720,161	321,365	22,576	376,220
47	Submarine	[3] 197,181	[3] 132,515	17,547	47,119	188,174	123,801	17,449	46,924
48	Total miles of wire in cable	81,246,007	54,777,395	7,349,703	19,118,909	77,026,755	51,166,419	7,227,270	18,633,066
49	Miles of aerial wire	4,360,172	1,929,043	690,888	1,740,241	3,842,048	1,685,611	648,465	1,507,972
50	Total miles of wire	85,606,179	56,706,438	8,040,591	20,859,150	80,868,803	52,852,030	7,875,735	20,141,038
51	Miles of pole line	504,255	212,112	54,419	237,724	405,645	171,144	49,314	185,187
52	Miles of underground conduit (single duct)	128,043	90,861	8,666	28,516	118,263	81,616	8,603	28,044

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	Central offices-type of switchboard:							
53	Magneto-manual	4,221	1,421	690	2,110	3,275	1,112	670	1,493
54	Common battery-manual	2,946	1,271	506	1,169	2,521	1,082	462	977
55	Auto-manual	16	10		6	7	5		2
56	Dial (automatic) system	1,440	755	263	422	1,191	647	177	367
57	Total central offices	8,623	3,457	1,459	3,707	6,994	2,846	1,309	2,839
58	Company telephones	16,670,632	9,934,421	1,940,670	4,795,541	15,348,293	8,977,751	1,871,760	4,498,782
59	Service telephones	292,046	46 919	39,708	205,419	249,313	38,626	37,628	173,059
60	Private line telephones	84,908	53,344	6,068	25,496	82,184	50,930	6,051	25,203
61	Total telephones	17,047,586	10,034,684	1,986,446	5,026,456	15,679,790	9,067,307	1,915,439	4,697,044
62	Other stations	23,640	16,196	1,598	5,846	23,154	15,744	1,598	5,812
	Company telephones by type of switchboard: [4]								
63	Magneto-manual	763,707	367,500	125,022	271,185	601,320	292,215	121,976	187,129
64	Common battery-manual	7,758,622	4,550,926	1,072,010	2,135,686	7,106,609	4,098,888	1,022,419	1,985,302
65	Auto-manual	16,089	12,956		3,133	4,224	4,149		75
66	Dial (automatic) system	8,132,187	5,003,012	743,638	2,385,537	7,636,113	4,582,472	727,365	2,326,276
	Company telephones by type of customer:								
67	Business	6,506,362	3,935,059	783,173	1,788,130	6,043,717	3,590,408	757,357	1,695,952
68	Residential	10,163,666	5,998,758	1,157,497	3,007,411	9,304,576	5,387,343	1,114,403	2,802,830
	Company telephones by class:								
69	Main	11,821,605	6,897,881	1,375,425	3,548,299	10,807,567	6,194,193	1,320,204	3,293,170
70	P. B. X	3,161,605	2,041,309	350,041	770,255	2,993,642	1,897,311	344,419	751,912
71	Extension	1,687,422	995,231	215,204	476,987	1,547,084	886,247	207,137	453,700
	Average number of calls originated per month:								
72	Local calls	2,438,219,556	1,247,902,058	376,257,648	814,059,850	2,238,557,564	1,110,862,594	363,396,412	764,298,558
73	Toll calls	74,250,697	50,267,885	6,031,401	17,951,411	68,907,915	46,517,321	5,716,974	16,673,620
74	Average number of company and service telephones	16,550,364	9,768,026	1,911,916	4,870,422	15,215,344	8,824,927	1,844,212	4,546,205
	Private line service revenues: [5]								
75	Commercial, broadcasting	$7,214,980	$6,442,311	$172,884	$599,785	$7,172,648	$6,400,421	$172,884	$599,343
76	Commercial, miscellaneous	17,916,055	17,354,303	69,543	492,209	17,827,845	17,273,634	69,219	484,992
77	*Government*	971,578	923,551	43,047	4,980	971,452	923,425	43,047	4,980
78	Press	4,172,092	4,053,585	285	118,222	4,169,148	4,051,391	285	117,472
	Telegraph stations:								
	Private line Morse:								
79	Number	3,499	3,084	12	403	3,482	3,077	11	394
80	Revenue	$6,960,958	$6,458,026	$118,456	$384,476	$6,927,834	$6,443,846	$114,959	$369,029
	Private line teletypewriter:								
81	Number	7,640	6,205	246	1,189	7,464	6,062	245	1,157
82	Revenue	$11,592,135	$9,516,413	$246,161	$1,829,561	$11,484,110	$9,425,604	$242,438	$1,816,068

[3] Deficit or other reverse item.
[4] Does not include data of 1 telephone company which submitted returns in the aggregate only.
[5] Excludes 27 telephones of the American Telephone & Telegraph Co. which were not connected with exchange offices.
[6] Relates, except in minor instances, to interstate services furnished to customers and includes revenues from intrastate lines used in interstate communication.

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

[Year ended Dec. 31, 1937]

No.	Item	All carriers				Bell System carriers			
		United States	Eastern district	Southern district	Western district	United States	Eastern district	Southern district	Western district
	Telegraph stations—Continued.								
	Teletypewriter exchange service:								
83	Number	12,513	6,907	1,342	4,264	12,208	6,605	1,342	4,261
84	Revenue	$6,792,144	$4,836,251	$363,803	$1,592,090	$6,687,927	$4,736,982	$363,803	$1,587,142
85	Telephotograph service revenue	$475,240	$398,146	$288	$76,806	$475,240	$398,146	$288	$76,806
86	Other telegraph service revenue	$357,791	$64,043	$986	$292,762	$328,588	$57,036	$986	$270,566
87	Number of employees at close of June	302,164	180,938	35,878	85,348	282,523	167,725	34,641	80,157
88	Male employees	116,773	71,246	13,031	32,496	109,153	65,829	12,588	30,736
89	Female employees	185,391	109,692	22,847	52,852	173,370	101,896	22,053	49,421
90	Number of employees at close of year	295,774	178,005	34,956	82,813	276,225	164,893	33,741	77,591
91	Male employees	115,110	71,065	12,518	31,527	107,457	65,673	12,093	29,691
92	Female employees	180,664	106,940	22,438	51,286	168,768	99,220	21,648	47,900
93	Total compensation for year	$489,420,830	$320,682,949	$46,462,209	$122,275,672	$463,949,510	$301,174,459	$45,251,194	$117,523,857
94	Compensation chargeable to operating expenses	$415,144,840	$275,271,725	$37,301,725	$102,571,390	$394,304,525	$259,431,824	$36,328,710	$98,543,991
	Benefits:								
95	Number of cases handled during year	56,545	37,288	6,499	12,758	53,602	34,770	6,398	12,434
96	Amount paid during year	$7,852,777	$5,429,904	$772,398	$1,650,475	$7,516,787	$5,127,555	$763,648	$1,625,584
	Pensions:								
97	Number of cases being paid at end of year	7,720	5,379	708	1,633	7,280	4,998	698	1,584
98	Disbursements from pension fund	$5,466,270	$4,032,684	$385,436	$1,048,150	$5,226,694	$3,822,190	$379,886	$1,024,618
99	Relief and pension charges to operating expenses	$19,672,657	$13,090,477	$1,701,138	$4,881,042	$18,746,377	$12,304,481	$1,652,374	$4,789,522
100	Balance in pension fund at beginning of year	$169,406,830	$115,938,646	$14,045,036	$39,423,148	$163,378,249	$110,661,154	$13,888,210	$38,828,885
101	Balance in pension fund at end of year	$183,654,065	$124,722,050	$15,388,497	$43,543,518	$177,014,037	$118,921,834	$15,189,090	$42,903,113

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
1	Number of carriers	7	14	19	7	5	9	19	2	11
	Investment in telephone plant:									
2	Telephone plant in service	$397,862,867	$1,792,815,890	$870,558,045	$158,459,804	$256,564,744	$188,000,943	$370,996,972	$109,223,973	$467,529,356
3	Telephone plant under construction	4,467,637	12,279,167	9,465,468	2,721,193	1,428,053	2,697,001	3,072,042	820,354	3,152,124
4	Property held for future telephone use	1,070,665	5,985,451	3,432,534	288,838	254,303	48,461	905,504	242,367	1,511,053
5	Telephone plant acquisition adjustment	[2] *86,323*	2,773,118	2,844,136	1,544,259	2,722,831	608,121	3,789,018	600,808	4,580,606
6	Total investment in telephone plant	403,314,846	1,813,853,626	886,300,183	163,014,094	260,969,931	191,354,526	378,763,536	110,887,502	476,773,139
7	Investments other than telephone plant	6,641,902	2,470,400,037	10,401,929	279,769	5,460,655	34,973,404	15,382,027	405,443	147,813,976
8	Cash	2,480,508	37,924,789	10,464,387	737,820	3,580,602	1,237,143	4,673,511	686,316	2,873,187
9	Material and supplies	3,446,724	22,794,934	11,322,058	1,826,675	3,040,196	2,753,460	3,760,100	1,475,968	5,895,626
10	Total current assets	17,614,262	207,628,812	49,814,508	7,007,869	13,579,942	8,102,262	17,196,487	4,575,976	20,318,922
11	Capital stock	174,325,565	2,585,807,003	527,661,950	87,452,100	130,328,400	118,738,650	206,156,340	52,899,700	395,287,013
12	Funded debt	94,149,300	624,006,780	53,954,000	4,080,700	45,596,500	4,918,400	53,434,800		62,559,404
13	Total long-term debt	128,314,491	708,821,608	96,803,738	29,910,046	75,736,932	48,167,367	68,850,387	24,134,320	107,079,185
14	Total current liabilities	6,008,235	50,754,444	19,522,492	5,482,911	7,690,377	4,298,818	9,138,990	2,018,875	8,766,649
15	Taxes accrued	2,359,671	23,548,046	24,912,953	2,127,021	3,108,398	4,160,607	6,998,139	2,161,214	6,914,830
16	Unmatured interest, dividends, and rents accrued	1,424,617	48,416,028	1,900,862	89,966	499,621	368,081	798,439	997,515	1,609,491
17	Depreciation reserve	107,457,023	517,656,969	227,691,507	34,997,660	61,507,963	55,275,600	99,555,964	32,833,448	126,977,089
18	Amortization reserve	[2] *51,356*	187,109	1,245,407	[2] *9,768*	812,600	[2] *37,935*	845,128	[2] *17,562*	247,416
19	Total surplus	11,955,769	283,438,711	49,408,443	11,051,250	3,573,124	3,835,854	20,270,932	1,058,910	5,785,039
	Operating revenues:									
20	Local service	67,089,418	255,225,883	163,700,230	32,548,438	41,694,202	30,764,025	60,340,535	16,384,169	81,044,195
21	Toll service	23,046,825	157,539,911	45,754,378	8,223,719	20,702,835	11,787,852	28,197,099	7,944,771	31,796,453
22	Miscellaneous	3,221,090	32,931,841	7,937,003	1,944,516	2,789,064	2,217,167	4,643,250	1,004,621	3,194,133
23	Uncollectible-Dr	294,769	1,867,560	448,774	150,140	254,040	171,526	338,530	82,791	525,159
24	Total operating revenues	93,062,564	443,830,075	216,942,837	42,566,533	64,932,061	44,597,518	92,842,354	25,250,770	115,509,622

[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] Deficit or other reverse item.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographic 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
	Operating expenses:									
25	Maintenance	$19,147,712	$84,691,502	$39,634,679	$7,350,024	$11,599,387	$9,140,122	$16,143,862	$4,185,596	$22,348,004
26	Depreciation and amortization	14,961,624	65,277,605	32,187,601	6,342,288	10,105,568	6,624,638	14,347,201	3,745,990	18,024,545
27	Traffic	16,635,168	55,518,987	34,141,109	7,703,011	10,658,869	7,236,742	14,139,817	4,412,928	17,739,265
28	Commercial	7,306,189	32,806,236	16,796,462	3,801,284	4,679,976	3,711,539	7,255,659	2,401,441	9,540,378
29	General office salaries and expenses	4,160,979	30,448,641	10,298,431	1,995,410	2,387,139	2,613,584	4,150,737	1,417,900	5,464,066
30	Other	4,460,049	39,904,335	8,700,461	1,936,849	3,607,472	2,031,393	3,970,516	1,091,470	4,625,777
31	Total operating expenses	66,671,721	308,647,306	141,758,743	29,128,866	43,038,411	31,358,018	60,007,792	17,255,325	77,742,035
32	Operating ratio—percent	71.64	69.54	65.34	68.43	66.28	70.31	64.63	68.34	67.30
	Operating taxes:									
33	Other than U. S. Government	7,028,924	36,550,547	21,756,371	3,437,756	6,372,470	3,826,710	7,624,468	2,643,607	11,392,459
34	U. S. Government	2,574,668	16,325,480	8,659,255	1,621,387	1,934,641	1,621,995	3,808,816	754,582	4,374,044
35	Total operating taxes	9,603,592	52,876,027	30,415,626	5,059,143	8,307,111	5,448,705	11,433,084	3,398,189	15,766,503
36	Net operating income	16,787,251	82,306,743	44,768,469	8,378,524	13,586,539	7,790,795	21,401,778	4,597,286	22,000,912
37	Other income	367,882	182,838,125	863,891	130,374	275,440	979,994	755,113	105,759	10,916,397
38	Miscellaneous deductions from income	199,045	578,053	347,148	64,474	114,349	132,894	313,674	59,555	171,786
39	Interest deductions	5,497,145	29,319,049	3,889,440	1,097,551	3,094,775	2,069,372	2,710,943	1,064,156	3,539,154
40	Miscellaneous fixed charges	166,306	362,830	33,448	11,678	155,584	12,268	29,880	----------	18,726
41	Net income	11,292,637	234,884,936	41,362,324	7,335,195	10,521,882	6,521,263	19,102,394	3,579,334	29,187,643
	Dividends declared:									
42	Common stock	11,505,698	220,379,927	39,581,036	7,148,916	10,851,382	6,139,885	15,460,970	3,965,226	24,495,000
43	Preferred stock	----------	2,746,763	879,310	19,068	79,758	461,562	2,114,349	----------	5,338,532
	Miles of wire in cable:									
44	Aerial	2,652,769	11,145,002	[3] 5,172,039	1,007,260	2,288,462	957,727	2,649,517	530,651	2,698,823
45	Underground	4,098,895	19,552,506	[3] 11,682,653	1,796,786	2,217,072	1,711,418	3,812,010	811,638	5,504,501
46	Buried	36,459	246,654	[3] 56,028	8,167	14,409	84,611	262,003	13,714	35,177
47	Submarine	23,932	79,792	[3] 28,791	5,074	12,473	715	2,754	----------	43,650
48	Total miles of wire in cable	6,812,055	31,023,954	16,941,386	2,817,287	4,532,416	2,754,471	6,726,284	1,356,003	8,282,151
49	Miles of aerial wire	244,977	1,094,010	590,056	145,103	545,785	447,175	631,135	291,512	370,419
50	Total miles of wire	7,057,032	32,117,964	17,531,442	2,962,390	5,078,201	3,201,646	7,357,419	1,647,515	8,652,570
51	Miles of pole line	34,178	83,828	94,106	14,350	40,069	81,601	77,986	41,294	36,843
52	Miles of underground conduit (single duct)	10,720	51,094	29,047	4,042	4,624	4,206	8,316	1,969	14,025

	Central offices-type of switchboard:								
53	Magneto-manual	388	401	632	107	583	562	774	278	496
54	Common battery-manual	240	570	461	177	329	257	430	211	271
55	Auto-manual		1	9				3		3
56	Dial (automatic) system	100	399	256	101	162	91	127	19	185
57	Total central offices	728	1,371	1,358	385	1,074	910	1,334	508	955
58	Company telephones	1,564,490	4,695,920	3,674,011	799,329	1,141,341	892,315	1,563,792	485,478	1,853,956
59	Service telephones	1,890	19,395	25,634	8,121	31,587	62,980	80,222	15,118	47,099
60	Private line telephones	5,588	32,497	15,259	4,102	1,966	3,178	5,620	1,390	15,308
61	Total telephones	1,571,968	4,747,812	3,714,904	811,552	1,174,894	958,473	1,649,634	501,986	1,916,363
62	Other stations	1,665	9,721	4,810	554	1,044	549	1,509	508	3,280
	Company telephones by type of switchboard:[4]									
63	Magneto-manual	117,654	99,778	150,068	26,407	98,615	84,565	113,121	28,845	44,654
64	Common battery-manual	776,126	1,920,970	1,853,330	462,460	609,550	430,646	659,178	319,716	726,146
65	Auto-manual		89	12,867				424		2,709
66	Dial (automatic) system	670,710	2,675,056	1,657,246	310,462	433,176	377,104	791,069	136,917	1,080,447
	Company telephones by type of customer:									
67	Business	548,551	2,036,766	1,349,742	311,176	471,997	287,247	584,672	191,944	724,267
68	Residential	1,015,939	2,659,154	2,323,665	488,153	669,344	605,068	979,120	293,534	1,129,689
	Company telephones by class:									
69	Main	1,166,906	3,059,421	2,671,554	520,855	854,570	700,319	1,177,651	361,565	1,308,764
70	P. B. X	229,808	1,124,051	687,450	179,605	170,436	114,819	222,000	74,195	359,241
71	Extension	167,776	512,448	315,007	98,869	116,335	77,177	164,141	49,718	185,951
	Average number of calls originated per month:									
72	Local calls	201,453,301	562,583,059	483,865,698	113,602,141	262,655,507	149,495,231	321,080,240	76,455,979	267,028,400
73	Toll calls	9,798,868	27,789,951	12,679,066	2,477,779	3,553,622	2,325,490	5,348,168	1,455,252	8,822,501
74	Average number of company and service telephones	1,551,562	4,631,744	3,584,720	780,578	1,131,338	942,963	1,604,600	485,484	1,837,375
	Private line service revenues:[5]									
75	Commercial, broadcasting	$63,708	$6,159,494	$219,109	$58,572	$114,312	$94,871	$135,279	$41,048	$328,587
76	Commercial, miscellaneous	$247,384	$16,778,187	$328,732	$14,462	$55,081	$40,975	$94,652	$10,350	$346,232
77	Government		$922,906	$645	$5,211	$37,836	$1,248		$3,732	
78	Press		$4,051,391	$2,194		$285	$270			$117,952
	Telegraph stations:									
	Private line Morse:									
79	Number	130	2,253	701	2	10	17	122	46	218
80	Revenue	$36,406	$5,986,598	$435,022	$28,969	$89,487	$34,532	$101,052	$61,488	$187,404
	Private line teletypewriter:									
81	Number	560	4,327	1,318	126	120	84	213	30	862
82	Revenue	$292,075	$8,056,942	$1,167,396	$102,677	$143,484	$68,961	$280,717	$213,322	$1,266,561

[3] Does not include data of 1 telephone company which submitted returns in the aggregate only.
[4] Excludes 27 telephones of American Telephone & Telegraph Co. which were not connected with exchange offices.
[5] Relates, except in minor instances, to interstate services furnished to customers and includes revenues from intrastate lines used in interstate communication.

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

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
	Telegraph stations Continued.									
	Teletypewriter exchange services:									
83	Number	975	3,141	2,791	426	916	448	1,174	432	2,210
84	Revenue	$247,188	$3,233,547	$1,355,516	$101,604	$262,199	$134,544	$360,656	$113,918	$982,972
85	Telephotograph service revenue	$180	$374,365	$23,601	$288	----------	$486	$1,135	$23,477	$51,708
86	Other telegraph service revenue	$7,007	$42,208	$14,828	$986	----------	----------	$2,986	$12,505	$277,271
87	Number of employees at close of June	27,275	94,261	59,402	13,527	22,351	15,125	29,141	8,772	32,310
88	Male employees	9,959	39,588	21,699	4,625	8,406	5,900	10,506	3,337	12,753
89	Female employees	17,316	54,673	37,703	8,902	13,945	9,225	18,635	5,435	19,557
90	Number of employees at close of year	26,716	92,607	58,682	13,148	21,808	14,277	28,148	8,408	31,980
91	Male employees	9,968	39,434	21,663	4,574	7,944	5,472	10,165	3,134	12,756
92	Female employees	16,748	53,173	37,019	8,574	13,864	8,805	17,983	5,274	19,224
93	Total compensation for year	$44,423,293	$184,163,928	$92,095,728	$19,772,290	$26,689,919	$20,894,744	$36,504,259	$11,291,627	$53,585,042
94	Compensation chargeable to operating expenses	$37,468,851	$157,894,945	$79,907,929	$16,138,935	$21,162,790	$17,522,834	$30,554,664	$9,160,699	$45,333,193
	Benefits:									
95	Number of cases handled during year	5,354	21,561	10,373	2,120	4,379	2,063	3,705	1,275	5,715
96	Amount paid during year	$820,401	$3,128,566	$1,480,937	$268,373	$504,025	$246,015	$489,207	$148,375	$766,878
	Pensions:									
97	Number of cases being paid at end of year	1,004	3,017	1,358	244	464	360	521	133	619
98	Disbursements from pension fund	$701,819	$2,453,290	$877,575	$156,507	$228,929	$216,941	$314,748	$77,256	$439,205
99	Relief and pension charges to operating expenses	$2,394,496	$7,375,871	$3,320,110	$781,124	$920,014	$685,031	$1,236,544	$353,024	$2,606,443
100	Balance in pension fund at beginning of year	$12,210,387	$69,935,555	$33,792,704	$5,573,043	$8,471,993	$7,449,795	$13,703,661	$3,770,959	$14,498,733
101	Balance in pension fund at end of year	$13,823,249	$74,685,126	$36,213,675	$6,254,345	$9,134,152	$7,994,191	$14,670,115	$4,094,320	$16,784,892

Proportion of the telephone industry covered by annual reports.—In table III statistical data shown in the reports filed with the Commission for the year 1937 are compared with returns for 1937 from all classes A and B carriers obtained from unofficial sources. The data applicable to 1932 for the same group of carriers that reported to the Commission for 1937 are further compared with the figures for all telephone systems and lines in the United States shown in the "Census of Electrical Industries, Telephones and Telegraphs: 1932." Notwithstanding, the fact that the number of telephone carriers reporting to the Commission represent less than one-fourth of 1 percent of the total number of systems and lines, the returns indicate that they handle most 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 for 1932, and reports filed with the Commission and data secured from unofficial sources*

Item	Census figures 1932	Interstate Commerce Commission, 1932 [1]		Total classes A and B carriers 1937 [2]	Federal Communications Commission, 1937	
		Amount	Percent of census figures		Amount	Percent of total
Number of systems and lines	44,828	109	0.24	240	93	38.8
Investment in telephone plant	$4,791,902,525	$4,433,064,453	92.5	$4,881,358,487	$4,685,231,383	96.0
Operating revenues	$1,061,530,140	$1,012,489,161	95.4	$1,176,994,154	$1,139,534,334	96.8
Central offices	19,228	8,546	44.4	10,601	8,623	81.3
Total telephones	17,424,406	15,041,294	86.3	18,164,443	17,047,586	93.9
Number of employees	334,085	285,268	85.4	[3]	295,774	------
Total compensation	$458,116,677	[3]	------	[3]	$489,420,830	------

[1] Represents data applicable to 1932 for carriers reporting to the Federal Communications Commission in 1937.
[2] Data secured from annual reports filed with the Commission and from unofficial sources.
[3] Data not available.

Development of class A telephone carriers from 1926 to 1937.—Comparative selected data for the years 1926 to 1937, relative to class A telephone carriers that reported to the Commission for the year 1937, are shown in table IV and the trends reflected in chart 2. The difference in the number of carriers reporting is due to mergers and consolidations. The investment in telephone plant increased from $2,976,013,534 to $4,678,893,476 during this period.

TABLE IV.—*Comparative statement of selected data of class A telephone carriers which reported for the year 1937* [1]

[Years 1926 to 1937]

Year	Number of carriers	Investment in telephone plant	Depreciation reserve	Net book investment	Ratio of depreciation to investment
					Percent
1926	142	$2,976,013,534	$601,786,222	$2,374,227,312	20.22
1927	148	3,217,579,417	624,949,452	2,592,629,965	19.42
1928	143	3,483,470,950	674,832,705	2,808,638,245	19.37
1929	138	3,864,538,510	724,542,276	3,139,996,234	18.75
1930	136	4,220,599,066	762,716,877	3,457,882,189	18.07
1931	109	4,388,147,537	814,639,530	3,573,508,007	18.56
1932	91	4,427,116,207	846,648,365	3,580,467,842	19.12
1933 [2]	83	4,436,496,676	930,092,421	3,506,404,255	20.96
1934	84	4,445,731,817	1,008,438,956	3,437,292,861	22.68
1935	83	4,463,652,345	1,103,011,314	3,360,641,031	24.71
1936	77	4,540,690,297	1,188,469,599	3,352,220,698	26.17
1937 [2]	74	4,678,893,476	1,262,171,574	3,416,721,902	26.98

See footnotes at end of table on following page.

TABLE IV.—*Comparative statement of selected data of class A telephone carriers which reported for the year 1937* [1]—Continued

Year	Total telephone capital	Capital stock	Funded debt	Ratio of debt to capital	Total surplus
				Percent	
1926	$3,573,153,760	$2,583,975,569	$989,178,191	27.68	$344,775,313
1927	3,840,393,186	2,864,867,591	975,525,595	25.40	477,785,488
1928	4,156,679,033	3,181,692,285	974,986,748	23.46	545,598,868
1929	4,466,015,568	3,321,097,115	1,144,918,453	25.64	631,765,144
1930	5,187,103,339	4,091,078,134	1,096,025,205	21.13	638,479,342
1931	5,300,731,380	4,277,898,727	1,022,832,653	19.30	639,762,144
1932	5,215,077,810	4,218,756,373	996,321,437	19.10	589,969,990
1933 [2]	5,244,453,717	4,255,118,709	989,335,008	18.86	523,370,235
1934	5,261,049,672	4,274,556,849	986,492,823	18.75	460,023,014
1935	5,290,213,961	4,274,962,136	1,015,251,825	19.19	412,229,694
1936	5,280,032,625	4,306,192,025	973,840,600	18.44	386,734,872
1937 [2]	5,217,729,412	4,276,220,332	941,509,080	18.04	390,180,025

Year	Operating revenues	Operating expenses	Operating ratio	Operating taxes	Net operating income
			Percent		
1926	$880,084,511	$589,644,032	67.00	$73,341,652	$211,718,914
1927	948,849,488	637,605,336	67.20	79,539,070	225,777,258
1928	1,032,572,065	691,316,513	66.95	84,859,057	249,952,202
1929	1,133,081,398	766,268,193	67.63	87,150,919	272,289,897
1930	1,167,200,160	804,354,143	68.91	89,822,005	263,767,944
1931	1,137,235,546	768,625,570	67.59	94,004,725	265,476,177
1932	1,011,244,065	690,245,184	68.26	89,662,579	218,095,025
1933 [2]	933,469,503	666,878,438	71.44	87,901,688	178,588,274
1934	944,849,539	665,636,960	70.45	92,595,760	186,528,190
1935	997,325,438	702,567,537	70.45	98,996,370	195,693,862
1936	1,076,619,047	721,975,372	67.06	121,341,218	233,255,895
1937 [2]	1,138,132,784	774,549,427	68.05	142,167,406	221,416,111

Year	Miles of wire [3]	Total telephones	Number of employees	Total compensation	Average compensation per employee per annum
1926	54,630,161	14,389,261	322,793	[4]	
1927	66,462,194	15,202,803	328,149	[4]	
1928	65,899,972	16,044,270	350,159	[4]	
1929	73,678,373	16,991,193	387,166	[4]	
1930	80,577,114	17,108,141	346,511	[4]	
1931	84,353,020	16,815,165	314,934	[4]	
1932	85,926,212	15,000,335	284,633	[4]	
1933 [2]	82,369,325	14,310,699	267,268	$369,427,904	$1,382
1934	82,142,198	14,634,715	267,817	386,028,511	1,441
1935	82,492,473	15,130,285	265,053	402,136,977	1,517
1936	83,322,628	16,059,625	281,243	433,363,452	1,541
1937 [2]	85,525,108	17,005,401	295,088	488,797,654	1,656

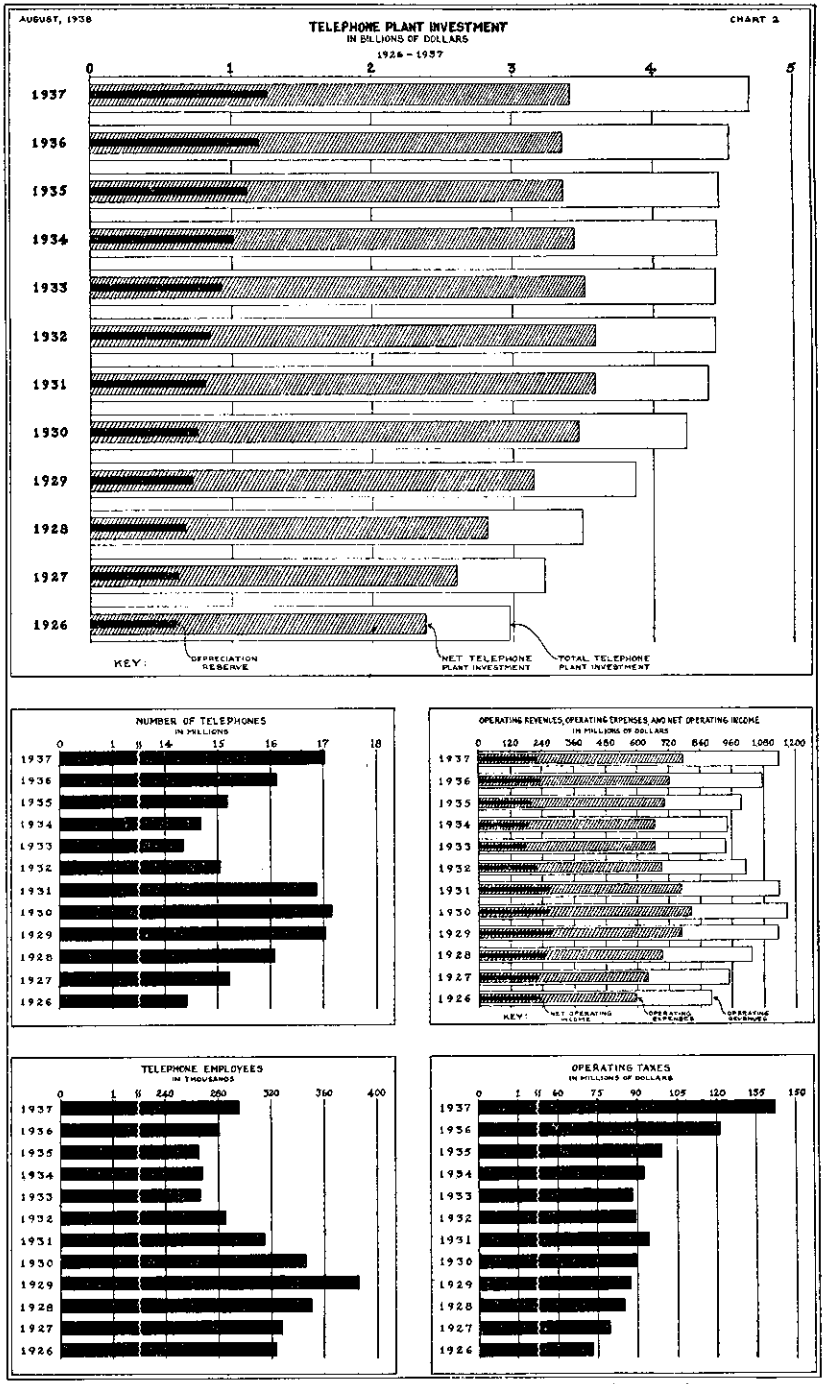
[1] Includes, for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercorporate duplications have not been excluded.

[2] In comparing data in this table, consideration should be given to the 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 and rearrangements of both the balance sheet and the income statement.

[3] The revision of the instructions in 1933 concerning the reporting of wire mileage by telephone carriers accounts for most of the decrease shown for that year.

[4] Data not reported.

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



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

Membership dues and contributions paid to noncommercial organizations.—The following statement pertains to membership dues and contributions paid by all telephone carriers reporting to the Commission during 1937, to organizations such as boards of trade, chambers of commerce, social and athletic clubs, professional and scientific societies, etc.:

Item	Number		Amount
	Organizations	Memberships	
Boards of trade, chambers of commerce, and other businessmen's organizations	4,635	7,666	$362,840
Social, athletic, and other clubs	384	474	21,304
Associations of telephone companies	106	144	83,093
Professional and scientific organizations	304	446	13,626
Other organizations	127	146	13,539
Total	5,556	8,876	494,402

Names and selected statistics of telegraph carriers.—The names of the 16 wire-telegraph and 20 radiotelegraph carriers that filed annual reports for the calendar year 1937 are listed in table V, and selected financial and operating data compiled from these reports are shown in table VI.

TABLE V.—*List of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission for the year 1937*

Name of carrier	Type of carrier
All America Cables, Inc	Ocean cable.
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.
Hearst Radio, Inc	Radiotelegraph.
Interstate Telephone & Telegraph Co	Land line telegraph.
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.
Northern 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	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.

TABLE VI.—*Statistics of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission classified by kinds of carriers*

[Year ended Dec. 31, 1937]

No.	Item	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
1	Number of carriers	16	20	36
2	Investment in plant and equipment	$504,251,121	$32,632,697	$536,883,818
3	Other investments	53,353,228	13,107,142	66,460,370
4	Cash	16,856,741	1,455,882	18,312,623
5	Materials and supplies	8,979,093	902,681	9,881,774
6	Total working assets	62,368,256	6,045,751	68,414,007
7	Capital stock	164,126,356	8,784,457	172,910,813
8	Unmatured funded debt	111,161,000	3,579,918	114,740,918
9	Total long-term debt	166,398,632	12,863,897	179,262,529
10	Total current liabilities	43,331,360	7,030,076	50,361,436
11	Reserve for accrued depreciation	144,957,979	17,382,981	162,340,960
12	Total corporate surplus	69,108,014	1,008,315	70,116,329
	Telegraph operating revenues:			
13	Transmission-telegraph	108,151,263	4,574,189	112,725,452
14	Transmission-cable	18,340,196	5,155,756	23,495,952
15	Nontransmission	10,682,458	1,002,959	11,685,417
16	Contract-Dr	1,607,103		1,607,103
17	Total operating revenues	135,566,814	10,732,904	146,299,718
	Telegraph operating expenses:			
18	Depreciation and extraordinary depreciation	8,385,326	1,548,824	9,934,150
19	All other maintenance	17,332,846	628,781	17,961,627
20	Conducting operations	85,206,614	5,638,982	90,845,596
21	Relief department and pensions	3,218,002	13,150	3,231,152
22	All other general	3,276,452	1,266,314	4,542,766
23	Total operating expenses	117,419,240	9,096,051	126,515,291
24	Other operating revenues		1,680,527	1,680,527
25	Other operating expenses		1,875,856	1,875,856
	Operating taxes:			
26	Other than U. S. Government	5,733,052	248,465	5,981,517
27	U. S. Government	1,217,363	427,850	1,645,013
28	Total operating taxes	6,950,415	676,115	7,626,530
29	Operating income	10,733,681	727,019	11,460,700
30	Nonoperating income	2,517,476	1,224,432	3,741,908
31	Total interest deductions	8,070,537	682,851	8,753,388
32	All other deductions	3,869,862	296,033	4,165,895
33	Net income	1,310,758	972,567	2,283,325
	Dividends declared:			
34	Preferred stock		17,318	17,318
35	Common stock	3,096,465	1,382,474	4,478,939
	Miles of wire in cable:			
36	Aerial	117,213		117,213
37	Underground	335,029		335,029
38	Submarine	115,488		115,488
39	Total miles of wire in cable	[1] 567,730		567,730
40	Miles of aerial wire	1,861,020		1,861,020
41	Total miles of wire	2,428,750		2,428,750
42	Miles of pole line	252,136		252,136
43	Miles of underground conduit (single duct)	6,247		6,247
	Service equipment furnished free to customers:			
	Average number:			
44	Telegraph printers	18,550	98	18,648
45	Telegraph printer tie lines	18,270	98	18,368
46	Morse tie lines	915	32	947
47	Telephones	8,686	212	8,898
48	Telephone tie lines	9,707	265	9,972
49	Pneumatic tubes	54		54
50	Call boxes	517,645	1,180	518,825
51	Automatic transmitting apparatus	14		14
52	Other	43	1	44

[1] Includes 59,389 nautical miles of wire.

TABLE VI.—*Statistics of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission classified by kinds of carriers*—Continued

No.	Item	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
	Leased wire revenues:			
	Commercial:			
53	Broadcasting	$15,596		$15,596
54	Miscellaneous	802,461	$2,342	804,803
55	Government	2,554		2,554
56	Press	617,694		617,694
	Telegraph offices:			
57	United States [1]	25,266	135	25,401
58	Foreign	187	34	221
59	Total offices	25,453	169	25,622
	Telegraph revenue messages transmitted:			
	Number of messages:			
60	Domestic	202,000,042	3,996,572	205,996,614
61	Foreign	10,620,499	4,941,014	15,561,513
62	Mobile		873,350	873,350
63	Total messages	212,620,541	9,810,936	222,431,477
	Amount of revenue:			
64	Domestic	$110,263,814	$1,995,623	$112,259,437
65	Foreign	17,095,007	6,579,387	23,674,394
66	Mobile		954,483	954,483
67	Total revenue	127,358,821	9,529,493	136,888,314
	Number of employees:			
68	Close of June	73,399	3,144	76,543
69	Close of year	69,680	3,140	72,820
70	Total compensation for year	$85,228,074	$5,185,489	$90,413,563
71	Compensation chargeable to operating expenses	76,720,654	4,551,447	81,272,101

[1] Includes Territories and possessions of the United States except the Philippine Islands.

Development of telegraph industry from 1926 to 1937.—Comparative data relative to wire-telegraph carriers that reported to the Commission for the year 1937 showing the development of such carriers through the years 1926 to 1937, inclusive, are shown in table VII. Similar data for radiotelegraph carriers from 1934 to 1937, inclusive, are given table VIII. The gross operating revenues of one of the larger reporting radiotelegraph carriers, the statistics of which are included in table VIII, include substantial amounts reported as other non-transmission revenues covering miscellaneous sales, rentals, service fees, etc.

TABLE VII.—*Selected data showing the development through the years 1926 to 1937, inclusive, of wire-telegraph carriers which reported for the year 1937* [1]

Year	Number of carriers	Investment in plant and equipment	Capitalization				Total corporate surplus
			Capital stock	Funded debt	Total capitalization	Ratio of debt to total capitalization	
						Percent	
1926	16	$393,364,255	$176,014,710	$117,058,158	$293,072,868	39.94	$124,271,528
1927	15	413,459,022	176,185,187	96,637,000	272,822,187	35.42	135,596,396
1928	16	428,965,837	178,892,559	97,187,000	276,079,559	35.20	143,667,517
1929	16	441,487,928	178,893,927	97,025,000	275,918,927	35.16	141,487,599
1930	16	486,095,374	178,896,158	132,005,000	310,901,158	42.46	137,890,928
1931	15	497,824,144	171,042,979	128,980,000	300,022,979	42.99	130,704,803
1932	15	500,010,818	170,408,910	127,955,000	298,363,910	42.89	108,308,323
1933	15	501,050,705	170,527,660	127,916,000	298,443,660	42.86	108,654,801
1934	15	501,753,560	166,398,823	126,564,000	292,962,823	43.20	107,178,422
1935	16	501,141,370	166,402,308	126,237,036	292,639,344	43.14	105,369,020
1936	16	502,005,481	166,349,603	114,250,913	280,600,516	40.72	109,683,479
1937	16	504,251,121	164,126,356	111,161,000	275,287,356	40.38	69,108,014

[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.

TABLE VII.—*Selected data showing the development through the years 1926 to 1937, inclusive, of wire-telegraph carriers which reported for the year 1937*—Continued

Year	Operating revenues	Operating expenses	Operating ratio	Operating taxes	Operating income	Total interest deductions	Net income
			Percent				
1926	$180,303,883	$145,647,745	80.78	$6,970,766	$27,086,661	$3,508,065	$22,999,900
1927	177,623,792	142,286,508	80.11	7,028,047	27,706,514	4,779,357	23,223,633
1928	185,194,759	149,189,598	80.56	6,824,541	28,642,023	4,817,449	24,065,296
1929	196,476,995	160,335,883	81.61	6,065,655	29,553,041	4,804,649	25,438,521
1930	176,723,620	151,213,665	85.57	5,246,794	19,776,108	7,057,065	13,298,884
1931	148,504,656	129,783,571	87.36	4,512,452	13,845,421	7,452,536	5,539,547
1932	115,037,160	103,228,598	89.74	4,419,662	6,658,999	7,716,658	[2] *2,428,471*
1933	114,350,700	96,753,445	84.61	4,434,454	12,257,562	7,789,755	4,045,362
1934	119,053,078	102,802,369	86.35	4,354,451	11,024,120	8,734,576	1,057,874
1935	122,207,928	102,575,187	83.93	4,337,300	14,426,334	8,801,467	4,251,329
1936	132,699,187	109,989,251	82.89	5,239,683	16,817,978	8,470,926	6,928,354
1937	135,566,814	117,419,240	86.61	6,950,415	10,733,681	8,070,537	1,310,758

Year	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 [3]
		In cable	Aerial wire				
1926	$14,854,851	374,522	1,754,281	199,936,424	87,213	[4]	
1927	14,359,339	393,321	1,858,323	197,282,600	83,668	[4]	
1928	15,031,275	417,362	1,942,116	226,249,325	85,388	[4]	
1929	22,328,254	453,032	1,954,924	213,703,866	95,068	[4]	
1930	23,680,247	473,995	1,956,980	188,996,181	92,709	[4]	
1931	11,668,081	515,736	1,880,753	148,899,958	79,568	[4]	
1932	4,460,782	526,647	1,856,706	130,583,323	67,136	[4]	
1933	2,815,756	531,278	1,857,618	147,425,409	64,206	[4]	
1934	1,796,498	542,645	1,856,402	160,700,029	68,621	$73,129,228	$1,066
1935	4,816,031	546,901	1,853,723	183,769,723	66,172	72,171,075	1,091
1936	1,845,035	570,354	1,855,550	200,470,722	69,998	78,483,418	1,121
1937	3,096,465	567,730	1,861,020	212,620,541	73,399	85,228,074	1,161

[1] Deficit or other reverse item.
[2] Represents total compensation for the year divided by the number of employees at the close of June.
[4] Data not reported.

TABLE VIII.—*Selected data showing the development through the years 1934 to 1937, inclusive, of radiotelegraph carriers which reported for the year 1937*

Year	Number of carriers	Investment in plant and equipment	Capitalization				Total corporate surplus
			Capital stock	Funded debt	Total capitalization	Ratio of debt to total capitalization	
						Percent	
1934	20	$30,905,975	$7,465,857	$3,789,000	$11,254,857	33.67	$4,078,411
1935	20	31,420,019	7,666,757	4,144,040	11,810,797	35.09	1,897,023
1936	20	31,352,900	8,694,757	967,808	9,662,565	10.02	1,959,898
1937	20	32,632,697	8,784,457	3,579,918	12,364,375	28.95	1,008,315

Year	Operating revenues	Operating expenses	Operating ratio	Operating taxes	Operating income	Total interest deductions
			Percent			
1934	$7,927,369	$7,424,139	93.65	$278,532	$165,849	$770,996
1935	8,454,357	8,232,106	97.37	213,764	[1] *275,578*	813,196
1936	9,407,679	8,698,225	92.46	396,666	172,018	703,347
1937	10,732,904	9,096,051	84.75	676,115	727,019	682,851

TABLE VIII.—*Selected data showing the development through the years 1934 to 1937, inclusive, of radiotelegraph carriers which reported for the year 1937*—Continued

Year	Net income	Dividends declared	Number of revenue messages transmitted	Number of employees at close of June	Total compensation	Average compensation per employee per annum
1934	[1] *$140,652*	$300,000	5,086,430	2,362	$4,041,538	$1,711
1935	[1] *641,301*	1,400,000	6,875,974	2,815	4,205,457	1,494
1936	[1] *45,768*	542,637	8,421,092	3,026	4,569,308	1,510
1937	972,567	1,399,792	9,810,936	3,144	5,185,489	1,649

[1] Deficit or other reverse item.

Revenue messages handled by telegraph carriers.—The number of each class of messages handled by wire-telegraph and radiotelegraph carriers during 1937 and the amount of revenues applicable to each class are shown in table IX and 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 was $0.55, "full-rate ordinary messages" in the foreign group $2.32, and "full-rate messages" in the mobile group $1.23. The returns for "Miscellaneous" in the foreign group include revenues from handling contract messages.

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

[Year ended Dec. 31, 1937]

Class of messages	Land-wire telegraph		Ocean cable [1]		Radiotelegraph		Total		
	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Average per message
Domestic—Telegraph: [1]									
Commercial messages:									
Full-rate messages	92,430,402	$50,787,837	103,985	$133,983	1,213,052	$648,426	93,747,439	$51,570,246	$0.55
Night messages	660,424	332,530	29,712	21,311	74,003	37,555	764,139	391,396	.51
Day letters	21,504,304	19,089,111	33,563	57,907	368,176	313,451	21,896,043	19,460,469	.89
Night letters	20,554,815	10,688,027	67,747	74,260	196,751	121,213	20,819,313	10,883,500	.52
Serial service (sections)	9,305,303	4,547,114			711,060	273,467	10,016,363	4,820,581	.48
Timed wire service	3,390,988	3,261,658			19,438	17,466	3,410,426	3,279,124	.96
Mobile messages (domestic haul)	550,822	223,410	841	1,077	224,624	26,244	776,287	250,731	.32
Foreign messages (domestic haul)	5,841,339	3,561,844			752,351	451,729	6,593,690	4,013,573	.61
Money-order messages	4,209,358	2,755,880	3,424	4,458			4,212,782	2,760,338	.66
Greeting messages	15,016,748	4,501,962	2,315	1,308			15,019,063	4,503,270	.30
Miscellaneous messages	746,956	724,530			25,350	14,865	772,306	739,395	.96
Stock and commercial news messages	4,748,484	5,315,740					4,748,484	5,315,740	1.12
United States Government messages:									
Ordinary messages	2,512,229	1,163,330	1,182	2,537	49,987	20,054	2,563,398	1,185,921	.46
Weather reports	5,988,909	375,935			550		5,989,459	375,935	.06
Press messages	14,286,524	2,629,811	9,668	8,254	371,230	71,153	14,667,422	2,709,218	.18
Total domestic	201,747,605	109,958,719	252,437	305,095	3,996,572	1,995,623	205,996,614	112,259,437	.54
Foreign—Cable and radiotelegraph: [2]									
Commercial messages:									
Full-rate urgent messages	7,537	33,588	9,704	46,481	7,812	41,167	25,053	121,236	4.84
Full-rate ordinary messages	226,850	516,043	180,239	508,202	212,931	416,179	620,020	1,440,424	2.32
CDE urgent messages	352,949	480,583	285,257	340,530	97,469	99,962	735,675	921,075	1.25
CDE ordinary messages	1,489,568	1,638,646	2,456,578	3,916,118	1,840,235	2,171,387	5,786,381	7,726,151	1.34
Deferred messages	1,361,257	1,544,818	1,616,956	2,315,168	1,312,825	1,261,100	4,291,038	5,121,086	1.19
Letter messages (DLT and NLT)	1,036,808	2,026,225	874,491	2,166,006	670,550	1,094,596	2,581,858	5,286,827	2.05
Greeting messages (GTG and XLT)	109,502	67,043	76,062	67,399	70,814	35,084	256,378	169,526	.66
Miscellaneous messages					189,764	431,346	189,764	431,346	2.27
Government messages (United States and foreign)	26,529	76,514	75,643	239,717	64,923	225,508	167,095	541,739	3.24
Press messages	138,187	443,070	295,288	668,526	465,723	652,304	899,198	1,763,900	1.96
Meteorological messages			1,094	330	2,247	2,116	3,341	2,446	.73
Miscellaneous					5,712	72,135	5,712	72,135	12.63
Total foreign	4,749,187	6,826,530	5,871,312	10,268,477	4,941,014	[3] 6,502,884	15,561,513	[3] 23,597,891	1.52

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

[2] Excludes $76,503 representing adjustments in connection with foreign exchange.

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

Class of messages	Land wire telegraph		Ocean cable		Radiotelegraph		Total		
	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Average per message
Mobile—Including marine:									
Commercial messages:									
Full-rate messages					258,257	$317,834	258,257	$317,834	$1.23
CDE messages					81,700	60,181	81,700	60,181	.74
Letter messages					4,238	6,695	4,238	6,695	1.58
Greeting and gift messages (GTG and XLT)					6,216	5,364	6,216	5,364	.86
Miscellaneous messages					26,400	38,163	26,400	38,163	1.45
Government messages:									
United States					44,066	30,294	44,066	30,294	.69
Foreign					6	21	6	21	3.50
Press messages					4,513	6,134	4,513	6,134	1.36
Meteorological messages					31,996	19,543	31,996	19,543	.61
Total mobile					[3] 873,350	[4] 954,483	[3] 873,350	[4] 954,483	1.09
Grand total	206,496,792	116,785,249	6,123,749	10,573,572	9,810,936	9,452,990	222,431,477	136,811,811	.62

[3] Includes 283,123 full-rate, 81,379 CDE, 3,308 letter, 18,772 greeting and gift, and 29,376 miscellaneous messages which were excluded from the number of such messages shown above for the reason that the revenues derived therefrom were not classified.

[4] Includes $470,254 applicable to the messages specified in footnote 3 and not reported separately for each class.

Selected statistics of telephone and telegraph carriers and controlling companies, 1937.—A summary of the returns shown in the annual reports of all telephone, wire-telegraph, and radiotelegraph carriers for the year 1937 is shown in table X. Similar data concerning holding companies that have large interests in carriers engaged in wire or radio communications are given in table XI. The consolidated returns in table X indicate that the investment in plant and equipment of telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission during 1937 amounted to $5,222,115,201, and the operating revenues were $1,285,834,052 of which $579,834,393 or 45 percent represents the amount of salaries and wages paid during the year.

TABLE X.—*Summary of selected data from annual reports of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Federal Communications Commission*

[Year ended Dec. 31, 1937]

Item	Telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Number of carriers	93	16	20	129
Investment in plant and equipment	$4,685,231,383	$504,251,121	$32,632,697	$5,222,115,201
Capital stock	4,278,656,721	164,126,356	8,784,457	4,451,567,534
Funded debt	942,699,880	111,161,000	3,579,918	1,057,440,798
Depreciation reserve	1,263,953,223	144,957,979	17,382,981	1,426,294,183
Total surplus	390,378,032	69,108,014	1,008,315	460,494,361
Operating revenues	1,139,534,334	135,566,814	10,732,904	1,285,834,052
Operating expenses	775,608,217	117,419,240	9,096,051	902,123,508
Operating taxes:				
Other than U. S. Government	100,633,312	5,733,052	248,465	106,614,829
U. S. Government	41,674,668	1,217,363	427,650	43,319,681
Total operating taxes	142,307,980	6,950,415	676,115	149,934,510
Net operating income	221,618,297	10,733,681	727,019	233,078,997
Dividends declared	351,167,382	3,096,465	1,399,792	355,663,639
Miles of wire	85,606,179	2,428,750		88,034,929
Number of employees (Dec. 31)	295,774	69,680	3,140	368,594
Total compensation for year	$489,420,830	$85,228,074	$5,185,489	$579,834,393

TABLE XI.—*Summary of selected data from annual reports of holding companies having large interests in the communications industry*

[Year ended Dec. 31, 1937]

Item	Amount
Number of companies	24
Investments in securities:	
Affiliated companies:	
Communication carriers	[1] $385,486,895
Other companies	[2] 208,128,162
Nonaffiliated companies:	
Communication carriers	[3] 2,201,526
Other companies	[4] 60,917,412
Investment advances to affiliated companies	146,456,468
Capital stock	381,426,500
Funded debt	195,093,865
Advances from affiliated companies	36,651,532
Total surplus	80,844,913
Dividend and interest income	22,029,006
Interest charges	12,281,632
Net income	8,223,762
Dividends declared	7,950,360

[1] Includes foreign investments amounting to $163,252,009.
[2] Includes foreign investments amounting to $22,968,758.
[3] Includes foreign investments amounting to $1,175,646.
[4] Includes foreign investments amounting to $8,533,269.

Averages and ratios of selected data relative to telephone and telegraph carriers.—In table XII some averages and ratios of selected data relative to all telephone and wire-telegraph carriers for the year 1937 are shown. As indicated in this table, the average investment in telephone plant per company telephone was $281.05 at the close of the year; the average amount of local revenue per telephone for the year was $45.24; and the average amount of toll revenue per telephone was $20.24. The amount of compensation chargeable to operating expenses was approximately 53.53 percent of all the gross operating expenses of telephone carriers during the year, and approximately 65.34 percent of the gross operating expenses of all wire-telegraph carriers. The operating ratio of telephone carriers was 68.06 percent and the operating ratio of wire-telegraph carriers was 86.61 percent.

TABLE XII.—*Averages and ratios of selected data of telephone and wire-telegraph carriers* [1]

[Year ended Dec. 31, 1937]

Item	Amount or percent
TELEPHONE CARRIERS	
Investment in telephone plant:	
Per mile of wire	$54.73
Per company telephone	$281.05
Ratio of operating revenues to investment in telephone plant ..... percent	24.32
Ratio of depreciation reserve to investment in telephone plant ..... percent	26.98
Total local service revenues per telephone [2]	$45.24
Total toll service revenues per telephone [2]	$20.24
Operating revenues per telephone [2]	$68.85
Operating expenses per telephone [2]	$46.86
Ratio of operating expenses to operating revenues ..... percent	68.06
Depreciation and amortization expenses:	
Ratio to investment in telephone plant ..... percent	3.66
Percent of operating revenues ..... percent	15.06
Percent of operating expenses ..... percent	22.13
Operating taxes:	
Ratio to investment in telephone plant ..... percent	3.04
Ratio to operating revenues ..... percent	12.49
Net operating income:	
Ratio to investment in telephone plant ..... percent	4.73
Ratio to operating revenues ..... percent	19.45
Wire mileage:	
Percent in cable ..... percent	94.91
Percent of aerial wire ..... percent	5.09
Calls originated per telephone per month: [2]	
Local	147.32
Toll	4.49
Employees at close of year, percent of total:	
Male ..... percent	38.92
Female ..... percent	61.08
Average compensation per employee per annum	[3] $1,654.71
Compensation chargeable to operating expenses:	
Percent of operating revenues ..... percent	36.43
Percent of operating expenses ..... percent	53.53
WIRE-TELEGRAPH CARRIERS [4]	
(Land line and ocean cable)	
Investment in plant and equipment:	
Per mile of wire	$207.62
Ratio of operating revenues to investment in plant and equipment ..... percent	26.88
Ratio of reserve for accrued depreciation to investment in plant and equipment ..... percent	28.75
Ratio of operating expenses to operating revenues ..... percent	86.61
Depreciation and extraordinary depreciation:	
Ratio to investment in plant and equipment ..... percent	1.66
Percent of operating revenues ..... percent	6.19
Percent of operating expenses ..... percent	7.14
Operating taxes:	
Ratio to investment in plant and equipment ..... percent	1.38
Ratio to operating revenues ..... percent	5.13
Operating income:	
Ratio to investment in plant and equipment ..... percent	2.13
Ratio to operating revenues ..... percent	7.92
Wire mileage:	
Percent in cable ..... percent	23.38
Percent of aerial wire ..... percent	76.62
Average compensation per employee per annum	[3] $1,223.14
Compensation chargeable to operating expenses:	
Percent of operating revenues ..... percent	56.59
Percent of operating expenses ..... percent	65.34

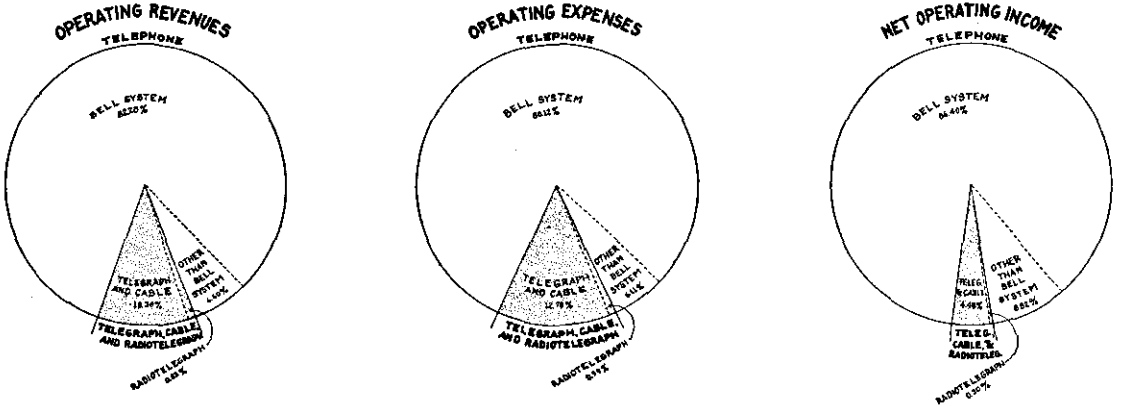
[1] For basic data underlying the computations in this table, see tables II and VI.
[2] Data computed on average number of company and service telephones.
[3] Represents total compensation for the year divided by the number of employees as of the close of the year.
[4] Excludes radiotelegraph carriers.

Analysis of operating statistics of communication carriers.—An analysis of the operating revenues, operating expenses, and net operating income of all telephone, wire-telegraph, and radiotelegraph carriers for the year 1937 is shown in chart 3. The figures shown in this chart were compiled principally from the annual reports but include returns from 43 telephone carriers that are subject only to the provisions of sections 201–5 of the act and filed monthly reports but did not file annual reports.

The operating revenues of the 138 telephone carriers filing annual or monthly reports, or both, with the Commission for the year 1937 were $1,165,697,353, as shown in chart 3. The operating revenues of the 16 wire-telegraph and 20 radiotelegraph carriers were $135,078,270 and $10,694,354, respectively. The total operating revenues for all the aforementioned carriers amounted to $1,311,469,977.

Under the uniform system of accounts prescribed for telephone carriers, "uncollectible operating revenues" are deducted from the gross operating revenues before the latter amount is transferred to the income statement; whereas, under the uniform system of accounts prescribed for telegraph carriers, the "uncollectible operating revenues" are not deducted from the gross operating revenues before the latter amount is transferred to the income satement, but are subsequently deducted from "net telegraph and cable operating revenues." Accordingly, the operating revenues of wire-telegraph and radiotelegraph carriers have been adjusted in chart 3 to exclude "uncollectible operating revenues," which amounted to $527,094 during 1937.

OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME FOR THE YEAR 1937 OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION



	OPERATING REVENUES	OPERATING EXPENSES	NET OPERATING INCOME
BELL SYSTEM CARRIERS	$1,079,651,296	$ 736,056,499	$ 207,089,445
OTHER THAN BELL SYSTEM CARRIERS	86,406,057	56,145,326	21,140,657
ALL TELEPHONE CARRIERS	1165,697,353	792,101,725	228,230,102
WIRE-TELEGRAPH CARRIERS	135,078,270	117,419,240	10,733,481
RADIOTELEGRAPH CARRIERS	10,694,354	9,096,051	727,019
ALL TELEGRAPH CARRIERS	145,772,624	126,515,291	11,460,700
ALL REPORTING CARRIERS	1311,469,977	918,697,016	239,690,802

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

Distribution of operating revenues.—The distribution of the operating revenues on a percentage basis showing the major groups of operating expense accounts, operating taxes, other deductions, and the net operating income of class A telephone carriers and of all wire-telegraph and radiotelegraph carriers reporting during 1937 is shown in table XIII. The distribution of each dollar of operating revenues on the same basis is indicated in chart 4. As shown in these statistical representations, telephone carriers paid 12.5 percent of their operating revenues for taxes whereas wire-telegraph carriers paid 5.2 percent during the year.

TABLE XIII.—*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, 1937]

Item	Amount	Percent of operating revenues
TELEPHONE CARRIERS		
Operating revenues	$1,138,132,784	100.0
Operating expenses:		
Maintenance	213,995,575	18.8
Depreciation and amortization	171,552,516	15.1
Traffic	167,906,406	14.8
Commercial	88,207,102	7.7
General office salaries and expenses	62,823,145	5.5
Relief and pensions	19,664,058	1.7
All other	50,600,625	4.5
Total operating expenses	774,549,427	68.1
Operating taxes:		
Other than U. S. Government	100,538,934	8.8
U. S. Government	41,628,472	3.7
Total operating taxes	142,167,406	12.5
Other deductions before net operating income	[1] *160*	[2]
Net operating income	221,416,111	19.4
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS [3]		
Operating revenues	146,299,718	100.0
Operating expenses:		
Depreciation	9,934,150	6.8
All other maintenance	17,961,627	12.3
Conducting operations	90,845,596	62.1
Relief department and pensions	3,231,152	2.2
All other general	4,542,766	3.1
Total operating expenses	126,515,291	86.5
Operating taxes:		
Other than U. S. Government	5,981,517	4.1
U. S. Government	*1,645,013*	1.1
Total operating taxes	7,626,530	5.2
Other deductions before operating income	697,197	.5
Operating income	11,460,700	7.8

[1] Deficit or other reverse item.
[2] Less than 1/10 of 1 percent.
[3] 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.

AUGUST, 1938 CHART 4

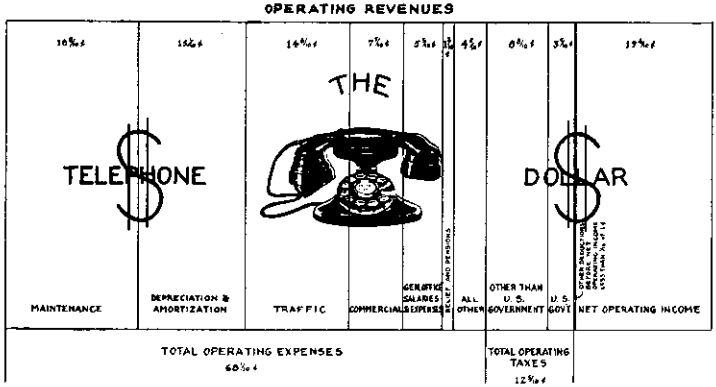
DISTRIBUTION OF EACH DOLLAR OF OPERATING REVENUES SHOWING OPERATING EXPENSES, OPERATING TAXES, AND NET OPERATING INCOME

SOURCE

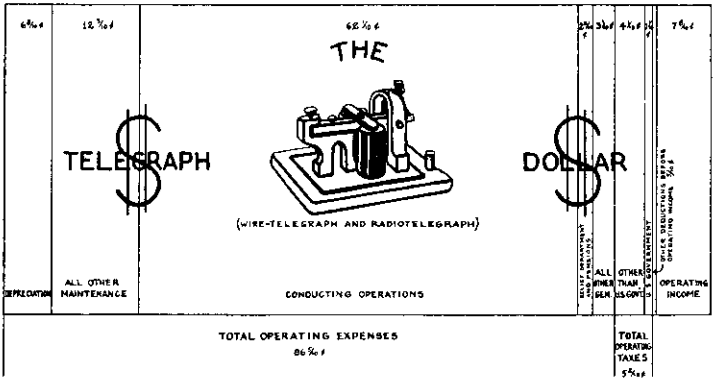
ANNUAL REPORTS OF TELEPHONE, WIRE-TELEGRAPH, AND RADIOTELEGRAPH CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION

1937

OPERATING REVENUES



OPERATING REVENUES



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

Operating tax accruals.—The operating tax accruals reported by classes A and B telephone carriers during 1937 are shown in table XIV. The amount of tax accruals applicable to State governments and subdivisions thereof was $100,632,312 while the portion applicable to the Federal Government amounted to $41,674,668 or 29.29 percent of the total. These figures exclude all excise taxes collected by telephone carriers from persons using telephone service.

TABLE XIV.—*Operating tax accruals, by State and the Federal Government, of telephone carriers reporting on an annual basis to the Commission*

[Year ended Dec. 31, 1937]

State	Class A carriers	Class B carriers	Total
Total, United States	[1] $142,166,406	$140,574	[1] $142,306,980
Alabama	617,623		617,623
Arizona	404,236		404,236
Arkansas	407,099	6,938	414,037
California	8,302,347	12,732	8,315,079
Colorado	1,018,380		1,018,380
Connecticut	835,528		835,528
Delaware	82,677	75	82,752
Florida	641,200		641,200
Georgia	798,976		798,976
Idaho	308,123		308,123
Illinois	10,246,971		10,246,971
Indiana	2,390,077	7,325	2,397,402
Iowa	1,124,724	3,996	1,128,720
Kansas	1,025,716	9,239	1,034,955
Kentucky	898,832		898,832
Louisiana	1,187,344		1,187,344
Maine	398,216	3,352	401,568
Maryland	1,552,366		1,552,366
Massachusetts	5,542,954	5,980	5,548,934
Michigan	3,308,063		3,308,063
Minnesota	1,548,043	2,703	1,550,746
Mississippi	619,036		619,036
Missouri	2,162,959	30	2,162,989
Montana	347,717		347,717
Nebraska	823,615		823,615
Nevada	176,440		176,440
New Hampshire	414,397		414,397
New Jersey	4,764,106	91	4,764,197
New Mexico	143,864		143,864
New York	23,764,844	8,055	23,772,899
North Carolina	1,015,296		1,015,296
North Dakota	240,416		240,416
Ohio	5,063,571	6,082	5,069,653
Oklahoma	1,376,237	31	1,376,268
Oregon	1,043,078		1,043,078
Pennsylvania	3,997,426		3,997,426
Rhode Island	276,156		276,156
South Carolina	496,709		496,709
South Dakota	279,443		279,443
Tennessee	902,696		902,696
Texas	2,983,331	19,347	3,002,678
Utah	358,577		358,577
Vermont	176,038	3,013	179,051
Virginia	785,430	5,389	790,819
Washington	1,968,528		1,968,528
West Virginia	638,546		638,546
Wisconsin	2,319,620		2,319,620
Wyoming	144,273		144,273
District of Columbia	616,090		616,090
U. S. Government	41,628,472	46,196	41,674,668

[1] Excludes $1,000 Canadian taxes.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues in excess of $109,000; Class B telephone carriers are those carriers having average annual operating revenues exceeding $50,000 but not more than $100,000.

Analysis of operating tax accruals and excise taxes.—The operating tax accruals and the excise taxes collected from persons using communication service, as reported by all telephone, wire-telegraph, and radiotelegraph carriers during 1937, are shown in Table XV, including an analysis of the amounts applicable to the Federal Government. Operating tax accruals amounting to $149,934,510 were reported during the year by the aforementioned carriers and, in addition, approximately $26,561,709 in excise taxes were collected from persons using communication service to be paid to the Federal Government or State governments.

TABLE XV.—*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, 1937]

Kind of tax	Telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Operating taxes:				
Other than U. S. Government	$100,633,312	$5,733,052	$248,465	$106,614,829
U. S. Government:				
Income	32,595,734	215,501	295,852	33,107,087
Capital Stock	3,329,461	109,419	19,790	3,458,670
Social Security	5,659,870	892,459	111,678	6,664,007
Messages and facilities	15,655	2		15,657
Miscellaneous	6,955	3		6,958
Unassigned	66,993	[1] 21	330	67,302
Total	41,674,668	1,217,363	427,650	43,319,681
Total operating taxes	[2] 142,307,980	6,950,415	676,115	[2] 149,934,510
Excise taxes collected from persons using communication service:				
Other than U. S. Government	3,110,465	65,638	7,713	3,183,816
U. S. Government	17,431,087	5,820,681	126,125	23,377,893
Total excise taxes collected	20,541,552	5,886,319	133,838	26,561,709
Total taxes accounted for during the year:				
Other than U. S. Government	103,743,777	5,798,690	256,178	109,798,645
U. S. Government	59,105,755	7,038,044	553,775	66,697,574
Grand total	[2] 162,849,532	12,836,734	809,953	[2] 176,496,219

[1] Deficit or other reverse item.
[2] Includes $1,000 Canadian taxes.

Advertising expenses.—The distribution of the advertising expenses of class A telephone carriers and of wire-telegraph and radiotelegraph carriers reporting during 1937 is shown in table XVI. As therein shown, class A telephone carriers spent $6,237,106 for advertising of which $4,076,749 (equivalent to 65.36 percent) was used for advertising in newspapers and periodicals. Advertising expenses reported by wire-telegraph and radiotelegraph carriers amounted to $794,826 during the year.

TABLE XVI.—*Distribution of advertising expenses of class A telephone carriers, wire-telegraph, and radiotelegraph carriers for the year 1937*

Item	Amount	
TELEPHONE CARRIERS		
Salaries and wages		$893,381
Publicity and advertisements:		
Newspaper and periodical advertising:		
Advertising space, newspapers, regular	$2,255,592	
Special newspaper advertising space and all other periodicals	1,381,166	
Preparation cost	352,665	
Unassigned expenses	87,326	
Total newspapers and periodicals advertising		4,076,749
Booklets, pamphlets, and bill inserts		390,124
Window display, exhibits, posters, and placards		232,819
Motion pictures		59,905
Other publicity and advertisements:		
General press service and special news stories	25,637	
Lectures, demonstrations, radio, central office visits, etc	276,378	
Miscellaneous	93,229	
Unassigned expenses	15,147	
Total other publicity and advertisements		410,391
Total publicity and advertisements		5,169,988
Other expenses		173,737
Grand total—class A telephone carriers		6,237,106
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS [1]		
Newspapers		28,284
Periodicals		51,664
Radio advertising		120,239
Contributions and donations charged to advertising		797
Advertising department salaries and expenses		200,248
All other advertising expenses		393,594
Grand total—Wire-telegraph and radiotelegraph carriers		794,826

[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.

Telegraph frank service.—The amount of frank service reported by wire-telegraph and radiotelegraph carriers during 1937 is shown in table XVII. No frank service was granted by carriers exclusively engaged in ocean cable operations during the year.

TABLE XVII.—*Amount of frank service granted by telegraph carriers during 1937*

Name of company	Number of franks outstanding	Number of messages transmitted	Revenue if charged
Globe Wireless, Ltd	18	11	$17
Mackay Radio & Telegraph Co. (California and Delaware corporations)	941	2,076	4,121
Mutual Telephone Co. (Wireless Department—Hawaii)	43	129	259
Postal Telegraph Cable Co. (land-line system)	611	5,478	4,712
Radiomarine Corporation of America	899	3,694	8,186
Tropical Radio Telegraph Co	123	582	1,710
Western Union Telegraph Co	6,018	90,517	62,847
Total	8,653	102,487	81,852

Telephone employees and their compensation.—The number of employees of class A telephone carriers, classified according to the type of service rendered, is shown in table XVIII together with the normal rates of weekly compensation. The returns indicate that approximately one-half of the male employees received weekly compensation amounting to $36 to $59.99 per week. There were 180,223 female employees at the close of the year, of which 57,853, or 32.10 percent, were reported in the $18 to $23.99 per week class, 58,963, or 32.72 percent, were in the $24 to $35.99 per week class, and 30,134, or 16.72 percent, were in the $15 to $17.99 per week class.

TABLE XVIII.—*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 December 31, 1937*

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	705	16	721	24	.....	9	.....	6	.....	4	.....	6	.....	19	1	48	5	589	10
Operating officials and assistants	7,959	485	8,444	.....	.....	.....	.....	.....	.....	.....	.....	9	2	135	138	1,990	313	5,825	32
Attorneys and right-of-way agents	562	2	564	1	.....	2	.....	.....	.....	1	.....	.....	2	20	.....	251	.....	287	.....
Engineers	4,992	15	5,007	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	80	.....	1,540	12	3,365	3
Draftsmen, surveyors, and student engineers	3,176	112	3,288	1	.....	3	.....	38	3	94	3	390	10	636	33	1,551	52	463	11
Accountants	1,344	18	1,362	1	.....	1	.....	.....	.....	.....	1	6	1	50	8	385	7	901	1
Clerical employees	11,291	44,172	55,463	55	126	16	179	214	1,577	548	4,726	783	12,081	1,875	22,171	6,669	3,245	1,131	67
Local managers	2,274	175	2,449	1	.....	.....	8	4	41	2	34	40	67	167	24	1,339	1	721	.....
Commercial agents	4,138	82	4,220	11	22	3	16	53	15	94	8	76	6	1,044	12	2,494	1	363	2
Experienced switchboard operators	172	111,691	111,863	36	2,651	28	3,199	22	8,887	16	18,843	36	41,658	15	34,360	17	1,979	2	114
Operators in training	7	16,102	16,109	3	1,148	.....	1,684	1	5,486	3	5,520	.....	2,263	.....	1	.....	.....	.....	.....
Service inspectors	112	1,900	2,012	.....	1	.....	2	.....	2	.....	5	.....	164	2	1,346	28	377	82	3
Supervising foremen	1,323	2	1,325	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	35	1	304	1	982	.....
Central office installation and maintenance men	21,511	43	21,554	1	.....	1	1	13	4	104	4	736	7	1,497	24	15,678	3	3,481	.....
Line and station construction, installation, and maintenance men	35,914	.....	35,914	72	.....	66	.....	128	.....	640	.....	3,598	.....	4,622	.....	23,706	.....	3,082	.....
Cable and conduit construction and maintenance men	8,080	.....	8,080	.....	.....	.....	.....	15	.....	208	.....	1,409	.....	1,666	.....	4,070	.....	712	.....
All other employees	11,305	5,408	16,713	548	677	224	407	438	639	550	990	1,351	1,592	4,254	844	3,776	253	164	6
Total employees	114,865	180,223	295,088	754	4,625	353	5,496	932	16,654	2,264	30,134	8,449	57,853	16,117	58,963	63,846	6,249	22,150	249
RECAPITULATION																			
Bell System carriers:																			
Full-time employees	106,405	161,057	267,462	7	8	77	2,413	726	13,493	1,930	27,202	7,399	54,309	14,000	57,385	60,870	6,010	21,396	237
Part-time employees	980	7,619	8,599	554	3,422	144	1,584	93	1,210	62	789	32	529	23	55	45	29	27	1

Other than Bell System carriers:																			
Full-time employees	7,376	11,082	18,458	128	919	123	1,418	99	1,898	265	2,103	1,013	3,000	2,092	1,523	2,929	210	727	11
Part-time employees	104	465	569	65	276	9	81	14	53	7	40	5	15	2		2			
Total class A carriers:																			
Full-time employees	113,781	172,139	285,920	135	927	200	3,831	825	15,391	2,195	29,305	8,412	57,309	16,092	58,908	63,799	6,220	22,123	248
Part-time employees	1,084	8,084	9,168	619	3,698	153	1,665	107	1,263	69	829	37	544	25	55	47	29	27	1

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

Telegraph employees and their compensation.—All employees of wire-telegraph and radiotelegraph carriers classified according to the type of service rendered are shown in table XIX, including the aggregate monthly rates of compensation. Wire-telegraph carriers reported a reduction of 3,719 employees in service during the period from June 30 to December 31, 1937, whereas the returns from radiotelegraph carriers show a reduction of 4 employees during this period.

TABLE XIX.—*Number of employees of wire-telegraph 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, 1937]

Class of employees	Wire-telegraph carriers [1]			Radiotelegraph carriers			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	161	160	$106,307	112	109	$24,131	273	269	$130,438
General office clerks	1,181	1,197	230,245	114	115	15,692	1,295	1,312	245,937
Other officers and staff	527	519	165,302	49	48	14,206	576	567	179,508
Other officers' clerks	2,062	1,849	290,742	16	15	1,516	2,078	1,864	292,258
Managers	4,775	4,568	622,650	119	120	31,810	4,894	4,688	654,460
Solicitors	581	554	89,311	61	61	10,531	642	615	99,842
Chief operators	1,749	1,760	331,365	105	105	10,477	1,854	1,865	341,842
Operators	18,294	17,136	1,917,958	802	758	117,067	19,096	17,894	2,035,025
Office clerks	11,008	10,017	978,167	389	419	39,254	11,397	10,436	1,017,421
Other office employees	1,588	1,498	144,246	254	249	29,572	1,842	1,747	173,818
Messengers	23,791	23,655	950,381	357	357	18,333	24,148	24,012	968,714
Testing and regulating force	1,760	1,742	336,238	217	204	31,703	1,977	1,946	367,941
Equipment and power men	920	864	128,988	83	122	18,468	1,003	986	147,456
Section linemen and foremen of construction and maintenance	2,181	2,003	328,842	19	20	3,093	2,200	2,023	331,935
Linemen, laborers, teamsters, etc.	1,644	1,055	119,931	98	75	9,491	1,742	1,130	129,422
Others	1,177	1,103	113,373	349	363	53,654	1,526	1,466	167,027
Total	73,399	69,680	6,854,046	3,144	3,140	428,998	76,543	72,820	7,283,044

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

Relief and pension data.—In table XX, a summary of relief and pension data of class A telephone, wire-telegraph, and radiotelegraph carriers, for the year 1937, is given. The returns indicate that 64,650 benefit cases were handled at a cost of $8,596,188, that 10,568 persons were receiving pensions at the close of the year, and that the amount paid for pensions was $7,517,674. The charges to operating expenses for relief and pensions amounted to $22,895,210. A portion of this amount, together with interest on the funds, was added to the benefit and pension reserves and to pension funds held by trustees during the year.

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

[Year ended Dec. 31, 1937]

Item	Class A telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Benefits:				
Number of cases handled during year	56,519	8,115	16	64,650
Amount paid during year	$7,850,466	$742,709	$3,013	$8,596,188
Pensions:				
Number of cases being paid at end of year	7,718	2,845	5	10,568
Amount paid during year	$5,489,412	$2,022,243	$6,019	$7,517,674
Benefit and pension reserve at end of year	$1,301,309	$10,480,734	$148,285	$11,930,328
Pension funds held by outside trustees	$183,613,349		$608,973	$184,222,322
Relief and pension charges to operating expenses [1]	$19,664,058	$3,218,002	$13,150	$22,895,210
Total number of employees	295,088	69,680	3,140	367,908
Total compensation for the year	$488,797,654	$85,228,074	$5,185,489	$579,211,217
Total operating revenues	$1,138,132,784	$135,566,814	$10,732,904	$1,284,432,502

[1] 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.

Accident statistics.—The number of employees and persons other than employees killed or injured in accidents, reported by class A telephone carriers and by wire-telegraph and radiotelegraph carriers during 1937, are shown in tables XXI and XXII, respectively.

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

[Year ended Dec. 31, 1937]

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						
Operating officials and assistants				9	1	10
Attorneys and right-of-way agents				2		2
Engineers				7		7
Draftsmen, surveyors, and student engineers				13		13
Accountants						
Clerical employees				20	106	126
Local managers				15	1	16
Commercial agents				60	2	62
Experienced switchboard operators					509	509
Operators in training					49	49
Service inspectors				3	9	12
Supervising foremen				8		8
Central office installation and maintenance men				53		53
Line and station construction, installation, and maintenance men	10		10	541		541
Cable and conduit construction and maintenance men	2		2	117		117
All other employees				95	109	204
Total for employees	12		12	943	786	1,729
Persons other than employees	75	10	85	1,677	1,075	2,752
Grand total—Employees and other persons	87	10	97	2,620	1,861	4,481

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

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

[Year ended Dec. 31, 1937]

Description of injury	Employees killed or injured			
	In plant work	In operation	Otherwise	Total
Killed:				
Male	4		7	11
Female				
Total	4		7	11
Injured:				
Male	325	379	3,358	4,062
Female		283	86	369
Total	325	662	3,444	4,431

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

Receiverships and trusteeships—Financial data relative to communication carriers and controlling companies in the hands of receivers or trustees are shown in table XXIII. No telegraph carrier reporting to the Commission was in receivership or trusteeship during the year and only one telephone carrier was in receivership as of December 31, 1937. The intercorporate relations of the companies shown in table XXIII which follows are indicated in table XXXVII.

TABLE XXIII.—*Summary showing statistics of reporting communication carriers and holding companies in the hands of receivers or trustees*

[Year ended Dec. 31, 1937]

Name of company	Receivers or trustees		Date of appointment	Investment in telephone plant	Capital stock	Funded debt	Matured funded debt
	Name	Title					
TELEPHONE CARRIERS							
CLASS A							
Kansas Telephone Co., The	M. B. Gourley and M. F. Cosgrove	Receivers	Feb. 27, 1932	$889,034	[1] $5,000	$620,500	
HOLDING COMPANIES *							
Ann Arbor Railroad Co., The	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	do	Dec. 4, 1931 [2]		7,250,000	9,164,341	$200
Chicago, Milwaukee, St. Paul and Pacific Railroad Co.	Henry A. Scandrett, Walter J. Cummings, and George I. Haight.	Trustees	Jan. 1, 1936		[3] 224,434,854	466,497,991	14,606,862
Indiana Central Telephone Co.	Christopher L. Ward, Jr.	Trustee	June 25, 1935 [4]		[5] 1,000,000		1,700,000
Postal Telegraph and Cable Corporation.	Alfred E. Smith, George S. Gibbs, and Raymond C. Kramer.	Trustees	Dec. 24, 1935 [6]		[7] 55,970,750	50,670,210	
United Telephone and Electric Co.	William C. A. Henry	Trustee	([8])		[9] 11,952,350		
Wabash Railway Co.	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	Receivers	Dec. 1, 1931 [10]		138,120,767	129,868,726	200
Total, holding companies					438,728,721	656,201,268	16,307,262
Grand total				889,034	438,733,721	656,821,768	16,307,262

* Comprises companies controlling communication carriers.

[1] Represents book liability for 1,000 shares of common stock without par value.

[2] Norman B. Pitcairn appointed receiver Oct. 29, 1933, to succeed Walter S. Franklin, resigned.

[3] Includes $105,127,554 book liability for 1,174,060 shares of common stock without par value.

[4] Christopher L. Ward, Jr., and Wm. J. Wardall were appointed receivers, May 1, 1933. Christopher L. Ward, Jr., was appointed temporary trustee June 25, 1935, which appointment was made permanent July 22, 1935.

[5] Represents book liability for 100 shares of common stock without par value.

[6] Date of temporary appointment of Alfred E. Smith and George S. Gibbs made permanent Jan. 27, 1936. Raymond C. Kramer was appointed temporary trustee Sept. 8, 1937, which appointment was made permanent Oct. 5, 1937. The resignation of Alfred E. Smith as trustee was accepted as of midnight Dec. 31, 1937.

[7] Includes $25,441,250 book liability for 1,017,500 shares of common stock without par value.

[8] Data not reported.

[9] Includes $3,999,350 book liability for 36,178 shares of common stock without par value.

[10] Norman B. Pitcairn appointed receiver Oct. 19, 1933, to succeed Walter S. Franklin, resigned.

Railway telegraph and telephone data.—The revenues from the telegraph and telephone operations of class I steam railways and the mileage are shown in table XXIV. The information was obtained from annual reports for the year 1937 filed with the Interstate Commerce Commission. The communication facilities are principally used in connection with the operation of railways, and the revenues shown in the following table represent the amounts received incidentally for telegraph and telephone services performed for the public.

TABLE XXIV.—*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 1937]

Name of railway	Operating revenues (account 138)			Mileage operated		
	Telegraph	Telephone	Total	Pole line	Telegraph wire	Telephone wire
Atchison, Topeka & Santa Fe Ry. Co.	$353,936	----------	$353,936	13,312	42,580	37,300
Baltimore & Ohio R. R. Co.	60,180	----------	60,180	5,753	16,600	18,720
Chicago, Burlington & Quincy R. R. Co.	150,275	----------	150,275	8,718	26,318	17,689
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	29,888	----------	29,888	10,199	20,742	22,251
Duluth, Missabe & Northern Ry. Co.[1]	1,324	$41,137	42,461	[2] 561	[2] 1,206	[2] 5,447
Duluth, Missabe & Iron Range Ry. Co.[3]	1,608	43,532	45,140	561	1,206	5,512
Great Northern Ry. Co.	117,795	----------	117,795	7,835	28,045	21,590
Louisville & Nashville R. R. Co.	51,166	----------	51,166	4,558	2,664	18,869
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	56,373	----------	56,373	4,100	15,802	817
New York, New Haven & Hartford R. R. Co.	32,971	----------	32,971	2,032	605	26,759
Northern Pacific Ry. Co.	87,602	----------	87,602	5,876	12,846	17,950
Pennsylvania R. R. Co.	128,481	----------	128,481	8,989	8,273	139,654
Southern Pacific Co.	434,936	30,005	464,941	8,399	23,717	19,298
Texas & New Orleans R. R. Co.	38,016	1,414	39,430	4,328	7,853	10,645
Union Pacific R. R. Co.	289,980	----------	289,980	9,321	24,748	23,543
Other class I steam railways [4]	219,028	18,063	237,091	126,905	285,220	359,888
Total, United States	2,053,559	134,151	2,187,710	220,886	517,219	740,485
Copper River and Northwestern Ry. Co. (Alaska)	----------	2,416	2,416	194	----------	241
Oahu Ry. and Land Co. (Hawaii)	----------	----------	----------	186	----------	186
Grand total	2,053,559	136,567	2,190,126	221,266	517,219	740,912

[1] Report for 6 months ended June 30, 1937.
[2] Excluded from totals.
[3] Report for 6 months ended Dec. 31, 1937.
[4] Represents returns from 66 class I steam railways in the United States, each having gross annual telegraph and telephone revenues less than $25,000, and 57 class I steam railways which did not report any telegraph or telephone revenues.

The following statement shows the number of employees and their compensation reported by class I steam railways during 1937 who were engaged in telegraph or telephone service. This information was obtained from the Interstate Commerce Commission.

Class of employees	Average number of employees middle of month	Total compensation
Station agents (telegraphers and telephoners)	14,623	$26,893,815
Chief telegraphers and telephoners or wire chiefs	805	2,069,684
Clerk-telegraphers and clerk-telephoners	8,339	15,929,050
Telegraphers, telephoners, and towermen	14,248	27,893,620
Total	38,015	72,786,169

(B) Statistics Relating to Telephone and Telegraph Carriers From Monthly Reports

Telephone carriers reporting monthly.—The names of the large telephone carriers reporting to the Commission on a monthly basis and the geographical regions in which they are located are shown in table XXV. The carriers included in the Bell System are marked with an asterisk.

TABLE XXV.—*List of 91 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.
Keystone 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.
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

* 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.

TABLE XXV.—*List of 91 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
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.
*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	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. (Kansas)	South Central.
United Telephone Co. (Missouri)	Do.
United Telephone Companies, Inc	Great Lakes.
United Telephone Co. of Pennsylvania	Middle Atlantic.
†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.

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

Summary of monthly reports of telephone carriers.—Statistical data compiled from the monthly reports of large telephone carriers for the month of December and cumulative figures for 12 months ended with December 1937, in comparison with similar data for the corresponding period in 1936 are shown in table XXVI. The reduction in net operating income, compared with 1936, was 27.73 percent. The operating revenues for the year 1937 were 5.75 percent larger than the revenues for the preceding year, whereas the net operating income decreased 4.96 percent during this period.

TABLE XXVI.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*

MONTH OF DECEMBER

Item	1937	1936	Increase or decrease	
			Amount	Ratio, Percent
Number of company telephones in service at end of month	17,195,471	16,221,582	973,889	6.00
Operating revenues:				
Subscribers' station revenues	$60,659,036	$58,366,266	$2,292,770	3.93
Public telephone revenues	4,079,780	4,062,648	17,132	0.42
Miscellaneous local service revenues	1,011,523	1,010,064	1,459	0.14
Message tolls	25,497,144	26,439,617	[1] *942,473*	[1] *3.56*
Miscellaneous toll service revenues	2,859,063	2,802,486	56,577	2.02
Revenues from general services and licenses	1,252,104	1,189,853	62,251	5.23
Sundry miscellaneous revenues	4,073,868	3,572,918	500,950	14.02
Uncollectible operating revenues—Dr	386,704	307,072	79,632	25.93
Operating revenues	99,045,814	97,136,780	1,909,034	1.97
Operating expenses:				
Depreciation and amortization expenses	14,529,910	12,722,175	1,807,735	14.21
All other maintenance	20,270,938	18,710,072	1,560,866	8.34
Traffic expenses	15,183,248	13,463,714	1,719,534	12.77
Commercial expenses	7,915,472	7,603,438	312,034	4.10
General office salaries and expenses	5,794,616	5,439,039	355,577	6.54
General services and licenses	1,225,756	1,170,157	55,599	4.75
All other operating expenses	5,197,031	5,157,784	39,247	0.76
Operating expenses	70,116,971	64,266,379	5,850,592	9.10
Income items:				
Net operating revenues	28,928,843	32,870,401	[1] *3,941,558*	[1] *11.99*
Rent from lease of operating property	732	401	331	82.54
Rent for lease of operating property	140	4,090	[1] *3,950*	[1] *96.58*
Net operating income before tax deduction	28,929,435	32,866,712	[1] *3,937,277*	[1] *11.98*
Operating taxes	11,659,123	8,970,845	2,688,278	29.97
Net operating income	17,270,312	23,895,867	[1] *6,625,555*	[1] *27.73*
Ratio of expenses to revenues.....percent	70.79	66.16	4.63	
Changes in capital items:				
Increase during month in "Telephone plant"	$5,875,223	$146,229		
Increase during month in "Capital stock"		[1] *$6,221,102*		
Increase during month in "Funded debt"	[1] *$11,131,084*	[1] *$51,917,620*		

[1] Deficit or other reverse item.

TABLE XXVI.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*—Continued

TWELVE MONTHS ENDED WITH DECEMBER

Item	1937 [2]	1936 [2]	Increase or decrease	
			Amount	Ratio, percent
Operating revenues:				
Subscribers' station revenues	$705,100,447	$665,678,474	$39,421,973	5.92
Public telephone revenues	46,138,452	44,309,567	1,828,885	4.13
Miscellaneous local service revenues	12,314,407	11,691,543	622,864	5.33
Message tolls	304,154,612	289,338,968	14,815,644	5.12
Miscellaneous toll service revenues	34,905,695	32,995,405	1,910,290	5.79
Revenues from general services and licenses	14,516,137	13,595,448	920,689	6.77
Sundry miscellaneous revenues	45,801,937	41,588,398	4,213,539	10.13
Uncollectible operating revenues—Dr	4,225,672	3,484,066	741,606	21.29
Operating revenues	1,158,706,015	1,095,713,737	62,992,278	5.75
Operating expenses:				
Depreciation and amortization expenses	174,892,864	173,879,511	1,013,343	0.58
All other maintenance	217,428,889	194,775,908	22,652,981	11.63
Traffic expenses	170,406,709	150,243,098	20,163,611	13.42
Commercial expenses	89,562,997	83,383,927	6,179,070	7.41
General office salaries and expenses	64,157,986	59,690,197	4,467,789	7.48
General services and licenses	14,215,743	13,329,838	885,905	6.65
All other operating expenses	56,651,934	58,379,394	[1] 1,727,460	[1] 2.96
Operating expenses	787,317,112	733,681,873	53,635,239	7.31
Income items:				
Net operating revenues	371,388,903	362,031,864	9,357,039	2.58
Rent from lease of operating property	6,434	6,042	392	6.49
Rent for lease of operating property	1,703	49,312	[2] 47,609	[1] 96.55
Net operating income before tax deduction	371,393,634	361,988,594	9,405,040	2.60
Operating taxes	144,579,252	123,337,882	21,241,370	17.22
Net operating income	226,814,382	238,650,712	[1] 11,836,330	[1] 4.96
Ratio of expenses to revenues—percent	67.95	66.96	0.99	
Changes in capital items:				
Increase during month in "Telephone plant"	$143,940,786	$78,855,306		
Increase during month in "Capital stock"	$29,322,364	$29,597,705		
Increase during month in "Funded debt"	$30,672,745	[1] $39,248,510		

[1] Deficit or other reverse item.
[2] Returns in this column reflect depreciation adjustments on property in Nebraska.

NOTE A.—The revised Uniform System of Accounts became effective January 1, 1937, but the changes had only a minor effect on the operating returns. 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."

NOTE B.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

Proportion of the telephone industry covered by monthly reports.—Statistical data are shown in the following statement applicable to the year 1932 concerning the large telephone carriers reporting to the Commission on a monthly basis for the year 1937 and are compared with similar data for all telephone systems and lines in the United States shown in the "Census of Electrical Industries—Telephones and Telegraphs: 1932." The operating revenues of the 91 telephone carriers reporting to the Commission were $1,030,729,335 for the year 1932 which constituted approximately 97 percent of the revenues of all telephone carriers in the United States.

Item	Total operating revenues for year 1932	Number of telephones Dec. 31, 1932
Census of electrical industries:		
44,828 systems and lines	$1,061,530,140	17,424,406
91 carriers reporting in 1937 to the Commission	$1,030,729,335	[1] 15,077,812
Percent of census total	97.10	86.53

[1] Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

Statistics of telephone carriers, by months, from January 1933 to June 1938, inclusive.—The operating revenues, operating expenses, and the net operating income of large telephone carriers which reported on a monthly basis from January 1933 to June 1938, inclusive, are shown in table XXVII and the trends during this period are reflected in chart 5. Among the changes during this period, it will be noted that the operating revenues from June 1933 to June 1938 increased from $80,428,967 to $96,305,464, operating expenses from $55,999,132 to $65,696,223, and net operating income from $16,144,719 to $17,752,080.

Refunds amounting to approximately $16,000,000 to Chicago coinbox subscribers, covering an 11-year period, were deducted during June 1934 by the Illinois Bell Telephone Co., but have been restored in chart 5 in order to preserve the consistency of the trend. The revisions in the Uniform System of Accounts for Telephone Carriers which became effective January 1, 1937, had only a minor effect on the operating returns.

TABLE XXVII.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to June 1938, inclusive*

Month	Operating revenues	Operating expenses	Net operating income
1933			
January	$79,449,395	$58,023,014	$13,963,345
February	75,790,288	55,371,291	13,044,592
March	78,662,241	57,198,070	14,204,427
April	77,783,389	55,467,873	14,837,852
May	80,522,404	57,107,246	15,937,320
June	80,428,967	55,999,132	16,144,719
July	79,144,340	55,301,474	15,874,309
August	79,077,956	55,517,814	16,313,527
September	78,338,834	55,091,537	15,757,741
October	80,115,279	56,026,901	16,499,848
November	78,970,252	56,584,655	14,950,379
December	80,409,359	58,788,744	15,376,226
Total	948,692,704	676,477,751	182,904,285
1934			
January	81,350,361	56,660,588	16,663,945
February	78,320,835	54,644,868	15,742,005
March	82,401,739	57,621,102	16,570,554
April	81,574,187	56,284,375	17,354,422
May	83,128,231	58,425,666	16,160,140
June	[1]66,384,381	[1]41,203,652	[1]17,411,909
July	80,315,541	58,638,170	13,743,752
August	81,005,655	58,463,602	14,609,328
September	79,805,693	56,822,773	15,143,451
October	83,377,342	59,169,699	16,691,177
November	81,341,489	58,138,980	15,645,035
December	[1]82,171,067	[1]60,004,837	[1]15,327,906
Total	[1]961,176,521	[1]676,078,312	[1]191,063,624
1935			
January	83,230,504	58,919,333	15,877,224
February	[1]79,608,659	[1]56,498,039	[1]14,754,980
March	82,982,488	58,398,745	16,297,776
April	83,938,786	58,612,389	16,751,327
May	85,211,685	60,170,503	16,580,350
June	83,589,582	58,566,170	16,568,547
July	83,889,282	60,820,407	14,907,080
August	84,201,767	59,382,059	16,563,590
September	84,526,140	58,531,657	17,531,376
October	88,193,336	60,530,810	19,014,030
November	[1]87,209,620	[1]60,894,797	[1]17,935,997
December	[1]88,044,772	[1]61,877,215	[1]18,042,773
Total	[1]1,014,626,621	[1]713,202,124	[1]200,825,050

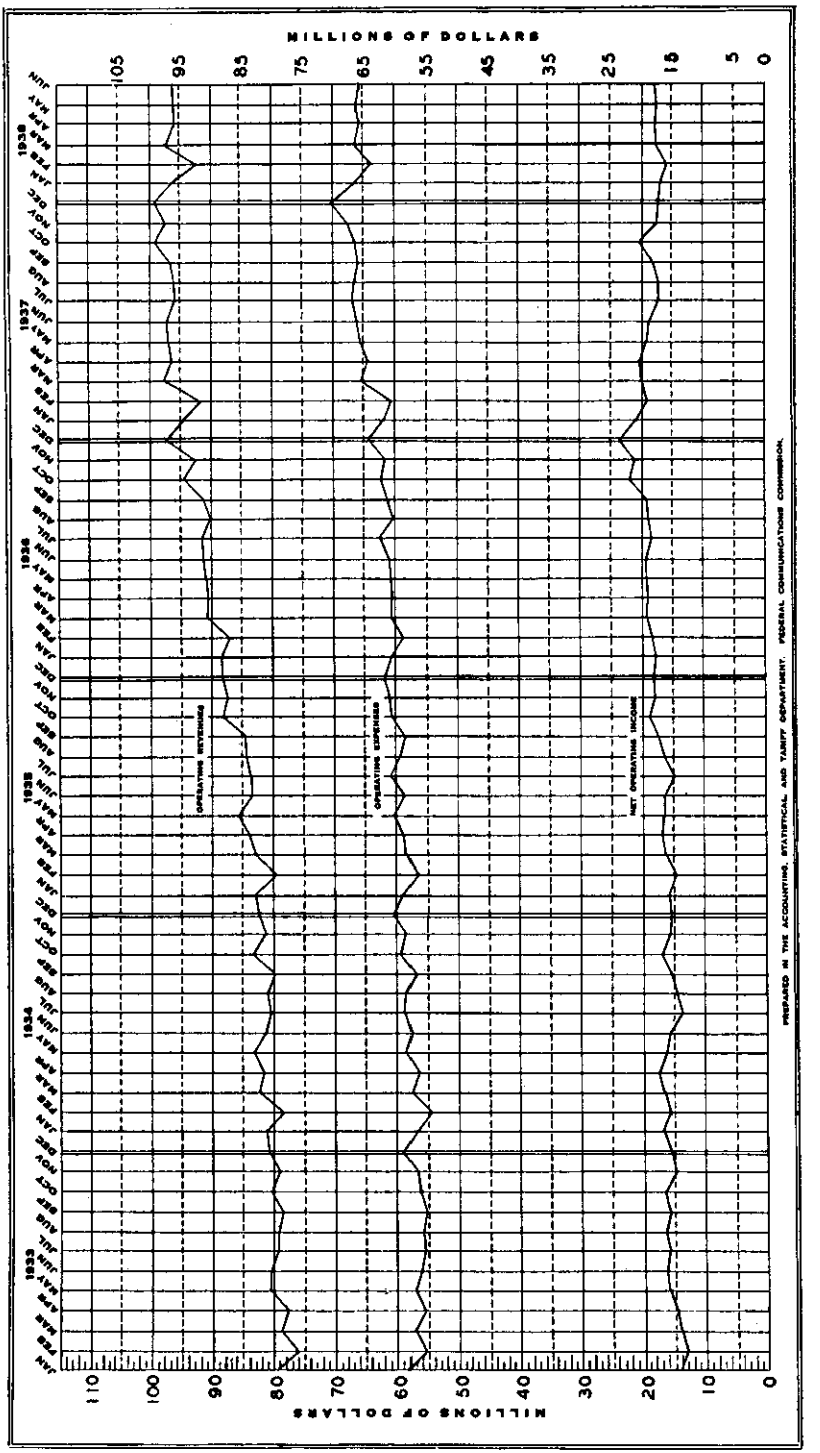
[1] These returns reflect adjustments covering estimated refunds.

TABLE XXVII.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to June 1938, inclusive*—Continued

Month	Operating revenues	Operating expenses	Net operating income
1936			
January	88,361,976	60,455,792	17,752,436
February	86,953,032	58,603,461	18,220,342
March	90,514,624	60,572,358	19,621,878
April	90,361,484	60,540,298	19,264,378
May	90,835,259	60,599,618	19,659,214
June	91,334,901	[1] 60,791,556	[1] 19,741,809
July	91,621,342	62,441,016	18,437,274
August	90,065,959	60,261,329	18,992,778
September	91,164,857	61,215,138	19,423,669
October	94,474,691	62,266,508	22,227,249
November	92,888,832	61,668,420	21,413,818
December	97,136,780	64,266,379	23,895,867
Total	1,095,713,737	[1] 733,681,873	[1] 238,650,712
1937			
January	94,779,883	[1] 61,761,759	[1] 20,913,482
February	91,765,272	60,601,384	19,219,424
March	97,552,766	65,180,065	20,176,734
April	96,657,583	64,273,685	20,262,358
May	96,931,883	65,350,866	19,298,848
June	97,205,606	66,084,114	19,077,687
July	95,894,942	67,003,600	17,166,329
August	95,904,902	66,682,231	17,164,032
September	96,614,793	66,040,651	18,183,595
October	99,156,085	66,513,657	20,524,179
November	97,196,486	67,708,159	17,557,402
December	99,045,814	[1] 70,116,971	[1] 17,270,312
Total	1,158,706,015	[1] 787,317,112	[1] 226,814,382
1938			
January	96,257,455	66,589,710	16,824,922
February	92,297,164	63,906,167	15,634,441
March	97,138,307	66,613,821	17,556,969
April	95,911,787	65,379,122	17,651,367
May	96,289,146	66,323,069	17,426,179
June	96,305,464	65,696,223	17,752,080
Total	574,199,323	394,508,112	102,845,958

[1] These returns reflect depreciation adjustments on property in Nebraska.

NOTE.—"Large telephone carriers" comprises a group of 91 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 5
MILLIONS OF DOLLARS
OPERATING REVENUES
OPERATING EXPENSES
NET OPERATING INCOME
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Monthly total and daily average message tolls.—The message tolls and the average amount per day reported by large telephone carriers from January 1933 to June 1938, inclusive, are shown in Table XXVIII. The revenues received from "Toll private-line services" and "Other toll service" are not included in this summary. The returns show that the daily average toll message revenues increased from $660,245 in June 1933 to $819,231 in June 1938. The monthly message tolls increased from $19,807,346 in June 1933 to $24,576,923 in June 1938. The trend of the average amount of message tolls per day during the period from January 1933 to June 1938 is shown in chart 6.

TABLE XXVIII.—*Summary showing monthly total and daily average message tolls of large telephone carriers from January 1933 to June 1938, inclusive*

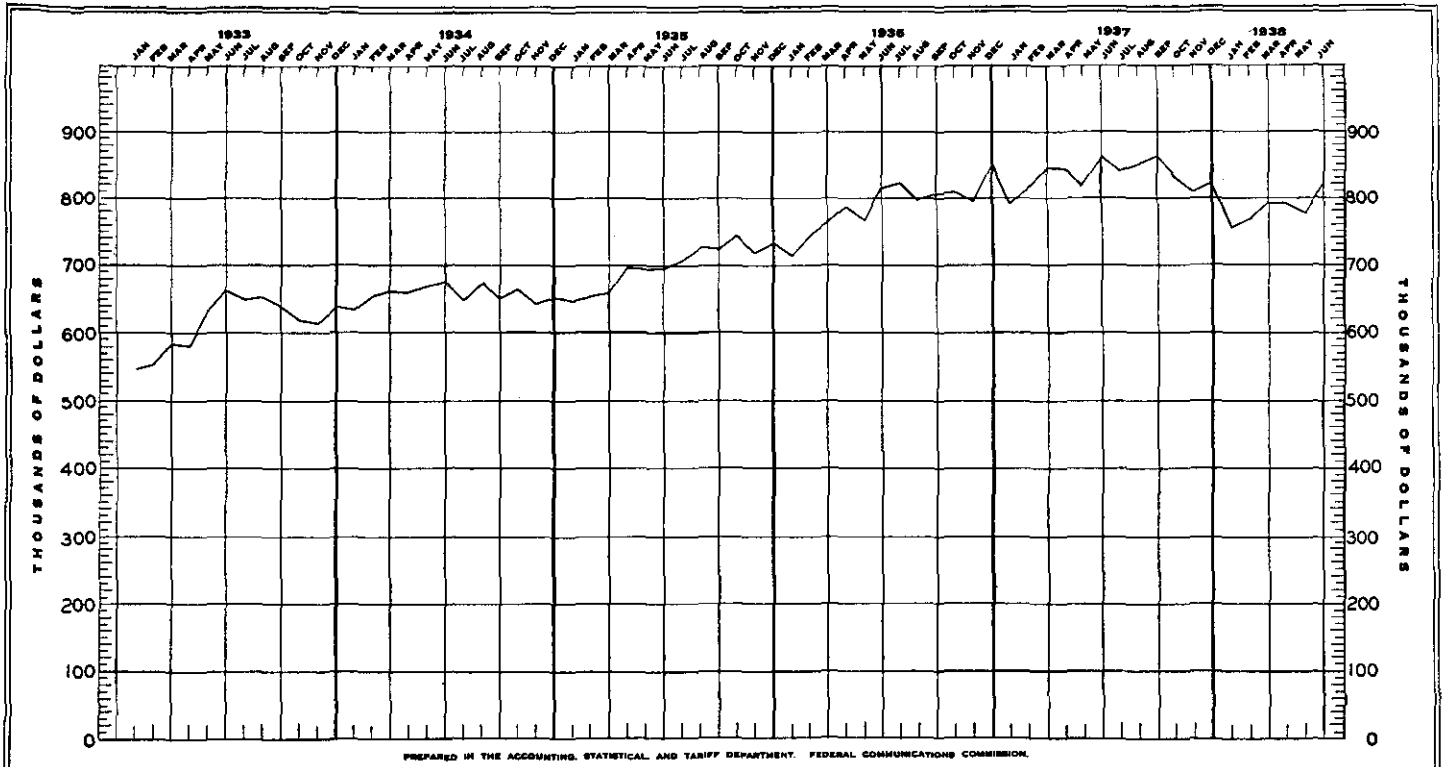
Month	1933		1934		1935	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Mesaage tolls	Average message tolls per day
January	$16,994,165	$548,199	$19,629,721	$633,217	$20,116,509	$648,920
February	15,488,724	553,169	18,311,989	654,000	18,258,711	652,097
March	18,133,417	584,949	20,480,088	660,648	20,378,715	657,378
April	17,423,065	580,769	19,805,806	660,194	20,916,570	697,219
May	19,478,575	628,341	20,767,992	669,935	21,594,346	696,592
June	19,807,346	660,245	20,305,817	676,861	20,925,023	697,501
July	20,135,960	649,547	20,139,894	649,674	21,882,664	705,892
August	20,261,511	653,597	20,964,208	676,265	22,558,102	727,681
September	19,174,859	639,162	19,541,690	651,390	21,782,681	726,089
October	19,185,590	618,890	20,597,693	664,442	23,051,814	743,607
November	18,393,599	613,120	19,333,804	644,460	21,591,993	719,733
December	19,789,889	638,384	20,251,714	653,281	22,714,300	732,719
Total	224,266,700	614,429	240,130,416	657,892	255,771,428	700,744

Month	1936		1937		1938	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	$22,190,303	$715,816	$24,519,237	$790,943	$23,533,358	$759,141
February	21,570,225	743,801	22,754,772	812,670	21,588,677	771,024
March	23,765,567	766,631	26,250,877	846,802	24,649,376	795,141
April	23,613,804	787,127	25,371,260	845,709	23,849,134	794,971
May	23,796,271	767,622	25,397,947	819,289	24,132,468	778,467
June	24,443,178	814,773	25,836,669	861,222	24,576,923	819,231
July	25,506,391	822,787	26,076,333	841,172		
August	24,797,028	799,904	26,401,979	851,677		
September	24,196,949	806,565	25,887,107	862,904		
October	25,080,140	809,037	25,860,549	834,211		
November	23,939,495	797,983	24,300,738	810,025		
December	26,439,617	852,891	25,497,144	822,489		
Total	289,338,968	790,544	304,154,612	833,300		

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

AVERAGE REVENUES PER DAY FROM TOLL MESSAGES, AS COMPILED FROM MONTHLY REPORTS FILED BY LARGE TELEPHONE CARRIERS

CHART 6



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

Number of telephones in service.—In table XXIX, the number of telephones, of large telephone carriers, in service from January 1933 to June 1938, inclusive, is shown, and the trend during this period is reflected in chart 7. It may be noted that the number of telephones in service increased from 14,400,533 in June 1933 to 17,343,739 in June 1938, or 16.97 percent.

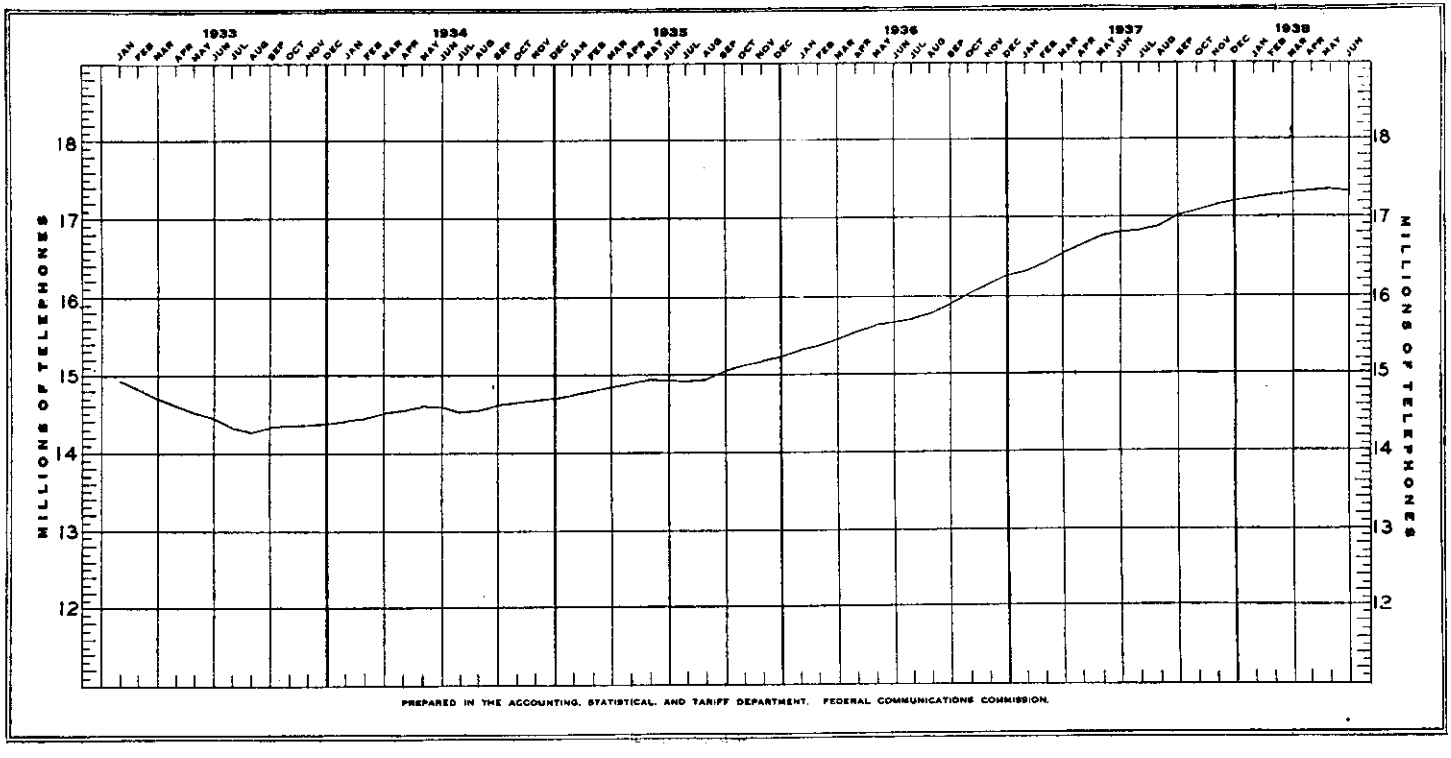
TABLE XXIX.—*Number of telephones in service in the United States as reported by large telephone carriers, by months, from January 1933 to June 1938 inclusive* [1]

Month	1933	1934	1935	1936	1937	1938
January	14,940,458	14,400,043	14,744,353	15,295,692	16,315,289	17,229,895
February	14,820,220	14,439,183	14,782,483	15,368,397	16,415,216	17,261,509
March	14,693,079	14,496,906	14,837,216	15,455,192	16,532,224	17,301,824
April	14,596,401	14,563,647	14,893,258	15,541,044	16,655,031	17,336,387
May	14,506,025	14,600,007	14,946,396	15,627,577	16,762,873	17,365,532
June	14,400,533	14,583,393	14,936,756	15,650,630	16,800,336	17,343,739
July	14,314,697	14,547,163	14,914,281	15,699,574	16,829,994	----------
August	14,286,795	14,557,047	14,943,768	15,773,584	16,891,361	----------
September	14,345,350	14,626,161	15,048,005	15,914,147	17,002,295	----------
October	14,360,902	14,662,525	15,117,838	16,033,442	17,084,607	----------
November	14,365,801	14,682,005	15,174,997	16,114,792	17,141,638	----------
December	14,376,947	14,703,888	15,231,070	16,221,582	17,195,471	----------

[1] Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

CHART 7


NUMBER OF TELEPHONES IN SERVICE AS REPORTED BY LARGE TELEPHONE CARRIERS
1933
1934
1935
1936
1937
1938
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
MILLIONS OF TELEPHONES
18
17
16
15
14
13
12
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Averages per telephone per day.—The average amounts of operating revenues and operating expenses per telephone per day of all large telephone carriers by geographical regions are shown in table XXX. The data applicable to the Bell System and for carriers not affiliated with the Bell System reporting to the Commission on a monthly basis are also reflected in this table. The returns from the American Telephone & 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 the data were included in the separate total for the United States. In computing these averages, the gross operating revenues and expenses were used. The averages are computed on the basis of 325 days to the year as used by the Bureau of the Census in similar computations.

It may be noted that the average gross operating revenues per telephone per day for the United States were $0.2215 in the case of Bell System carriers and $0.2122 in the case of all large telephone carriers reporting to the Commission. These amounts of operating revenues compare with average gross operating expenses per telephone of $0.1511 in the case of Bell System carriers and $0.1442 for all large telephone carriers.

TABLE XXX.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*

[Year ended Dec. 31, 1937]

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	$92,549,616	$66,299,572	1,539,228	$0.1850	$0.1325
Middle Atlantic region [1]	338,107,446	230,806,479	4,657,221	.2234	.1525
Great Lakes region	227,170,701	148,308,837	3,862,723	.1810	.1181
Eastern district [1]	657,827,763	445,414,888	10,059,172	.2012	.1362
Chesapeake region	42,322,021	28,949,402	769,765	.1692	.1157
Southeastern region	68,371,894	44,935,547	1,179,022	.1784	.1173
Southern district	110,693,915	73,884,949	1,948,787	.1748	.1167
North Central region	44,594,503	31,357,994	883,361	.1553	.1092
South Central region	94,116,583	60,819,272	1,553,304	.1864	.1205
Mountain region	25,250,769	17,255,325	471,517	.1648	.1126
Pacific region	118,882,951	79,632,815	1,886,053	.1939	.1299
Western district	282,844,806	189,065,406	4,794,235	.1815	.1213
United States [1]	1,051,366,484	708,365,243	16,802,194	.1925	.1297
United States [2]	1,158,706,015	787,317,112	16,802,194	.2122	.1442

BELL SYSTEM CARRIERS

New England region	$74,613,278	$53,848,715	1,207,563	$0.1901	$0.1372
Middle Atlantic region [1]	325,502,887	222,437,141	4,379,035	.2287	.1563
Great Lakes region	200,425,036	131,590,688	3,204,831	.1924	.1263
Eastern district [1]	600,541,201	407,876,544	8,791,429	.2102	.1428
Chesapeake region	41,860,760	28,637,368	760,854	.1693	.1158
Southeastern region	62,391,225	41,461,166	1,045,911	.1835	.1220
Southern district	104,251,985	70,098,534	1,806,765	.1775	.1194
North Central region	41,063,693	28,902,722	788,883	.1602	.1127
South Central region	87,878,511	56,866,540	1,405,524	.1924	.1245

[1] Excludes figures for American Telephone & Telegraph Co. inasmuch as its operations are *not confined to one geographical region.*

[2] Includes figures for American Telephone & Telephone Co.

TABLE XXX.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*—Con.

BELL SYSTEM CARRIERS—Continued

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
Mountain region	$25,250,769	$17,255,325	$471,517	$0.1648	$0.1126
Pacific region	111,909,137	75,417,225	1,715,051	.2008	.1353
Western district	266,101,500	178,441,812	4,380,975	.1869	.1253
United States [1]	970,894,686	656,416,890	14,979,169	.1994	.1348
United States [2]	1,078,234,217	735,368,759	14,979,169	.2215	.1511

OTHER THAN BELL SYSTEM CARRIERS

New England region	$17,936,338	$12,450,857	331,665	$0.1664	$0.1155
Middle Atlantic region	12,604,559	8,369,338	278,186	.1394	.0926
Great Lakes region	26,745,665	16,718,149	657,892	.1251	.0782
Eastern district	57,286,562	37,538,344	1,267,743	.1390	.0911
Chesapeake region	461,261	312,034	8,911	.1593	.1077
Southeastern region	5,980,669	3,474,381	133,111	.1382	.0803
Southern district	6,441,930	3,786,415	142,022	.1396	.0820
North Central region	3,531,420	2,455,272	94,478	.1150	.0800
South Central region	6,238,072	3,952,732	147,780	.1299	.0823
Mountain region					
Pacific region	6,973,814	4,215,590	171,002	.1255	.0759
Western district	16,743,306	10,623,594	413,260	.1247	.0791
United States	80,471,798	51,948,353	1,823,025	.1358	.0877

[1] Excludes figures for American Telephone & Telegraph Co. inasmuch as its operations are not confined to one geographical region.
[2] Includes figures for American Telephone & Telegraph Co.

NOTE.—"Large telephone carriers" comprise a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

Summary of monthly reports of telegraph carriers.—Operating data compiled from the monthly reports of large wire-telegraph and radiotelegraph carriers for the month of December 1937, and annual figures for the 12 months ended with December 1937 are shown in table XXXI. The gross operating revenues during 1937 of the 18 wire-telegraph and radiotelegraph carriers reporting on a monthly basis were $145,762,516, whereas the gross operating revenues of the three land-wire telegraph carriers during the year were $123,893,127 or 85 percent of the total.

TABLE XXXI.—*Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers*

FOR THE MONTH OF DECEMBER 1937

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Northern Telegraph Co	$5,259	$3,284	$1,412	$1,537
Postal Telegraph-Cable Co. (land-line system)	[1] 1,987,217	2,009,652	[2] *111,622*	[2] *359,864*
Western Union Telegraph Co	[3] *8,747,650*	*7,534,338*	828,669	410,281
Total, land-line telegraph carriers	10,740,126	9,547,274	718,459	51,954
All America Cables, Inc	458,000	306,844	102,852	46,079
Commercial Cable Co. (New York & Limited)	348,407	231,976	109,956	30,991
Commercial Pacific Cable Co	115,535	80,539	28,975	52,537
French Telegraph Cable Co	33,104	27,927	4,792	4,490
Mexican Telegraph Co	40,887	*23,955*	*15,981*	*13,064*
Total, ocean cable carriers	995,933	671,241	262,556	147,161
Globe Wireless Ltd	41,526	37,419	1,751	1,905
Mackay Radio & Telegraph Co. (California)	132,245	75,821	51,103	36,257
Mackay Radio & Telegraph Co. (Delaware)	94,347	31,670	61,649	29,425
Mutual Telephone Co. (wireless department, Hawaii)	5,063	5,580	[2] *448*	[2] *448*
Press Wireless, Inc	41,610	43,039	[2] *2,079*	[2] *2,079*
R. C. A. Communications, Inc	467,893	383,812	20,497	87,035
Radiomarine Corporation of America	107,538	98,887	3,756	3,932
Southern Radio Corporation	3,182	4,842	[2] *1,651*	[2] *28,676*
Tropical Radio Telegraph Co	64,888	57,798	[2] *2,680*	2,424
U. S.-Liberia Radio Corporation	7,139	5,177	1,743	1,743
Total, radio telegraph carriers	955,431	744,045	133,641	131,518
Grand total	12,691,490	10,962,560	1,114,656	330,633

FOR 12 MONTHS ENDED WITH DECEMBER 1937

Northern Telegraph Co	$62,998	$43,736	$15,203	$17,109
Postal Telegraph-Cable Co. (land-line system)	[1] 23,347,246	22,928,025	[2] *588,217*	[2] *3,509,945*
Western Union Telegraph Co	[3] 100,482,883	85,630,795	9,082,019	3,325,769
Total, land-line telegraph carriers	123,893,127	108,602,556	8,509,005	[2] *167,067*
All America Cables, Inc	*5,019,224*	*3,621,084*	929,337	981,241
Commercial Cable Co. (New York & Limited)	4,394,865	3,302,467	975,567	2,107
Commercial Pacific Cable Co	915,942	810,340	67,083	221,242
French Telegraph Cable Co	412,017	321,201	85,073	81,448
Mexican Telegraph Co	438,692	275,445	141,456	106,083
Total, ocean cable carriers	11,180,740	8,330,537	2,198,516	1,392,121
Globe Wireless Ltd	449,981	423,795	15,516	15,650
Mackay Radio & Telegraph Co. (California)	1,241,162	977,124	226,110	45,576
Mackay Radio & Telegraph Co. (Delaware)	1,093,484	981,105	101,474	[2] *267,886*
Mutual Telephone Co. (wireless department, Hawaii)	61,943	46,906	8,506	8,506
Press Wireless, Inc	480,126	455,941	16,965	16,965
R. C. A. Communications, Inc	5,225,144	4,293,982	427,987	1,060,749
Radiomarine Corporation of America	1,332,048	932,171	311,437	317,117
Southern Radio Corporation	36,922	66,043	[2] *29,260*	[2] *56,051*
Tropical Radio Telegraph Co	692,208	627,722	49,002	100,898
U. S.-Liberia Radio Corporation	75,631	62,833	11,249	11,249
Total, radio telegraph carriers	10,688,649	8,867,622	1,138,986	1,252,793
Grand total	145,762,516	125,800,715	11,846,507	2,477,847

[1] Includes revenues from telephone operations amounting to $59,938 for December 1937, and $697,403 for the year 1937, respectively.

[2] Deficit or other reverse item.

[3] Includes "Revenues from transmission-cable" amounting to $588,883 for December 1937, and $6,826,519 for the year 1937, respectively.

NOTE.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

Telegraph operations of large telephone carriers.—The revenues applicable to telegraph operations of 26 large telephone carriers for the month of December 1937 and annual figures for the 12 months ended with December 1937 in comparison with similar data for the corresponding period in 1936 are shown in table XXXII. This summary reflects only items that are readily available from the carriers' accounts. It includes returns from 24 Bell System carriers and from the Cincinnati & Suburban Bell Telephone Co. and Southern New England Telephone Co.

The volume of the telegraph business reported by the 26 telephone carriers increased from $24,283,926 in 1936 to $26,080,068 in 1937. The principal portion of the latter amount was derived from private-line teletypewriter and teletypewriter exchange service and $6,939,163 were derived from private-line Morse service.

TABLE XXXII.—*Summary of monthly reports of telephone carriers relative to available data concerning telegraph operations* [1]

Item	December 1937		December 1936	
	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	$56,967,896	$18,161	$54,862,001	$14,729
Public telephone revenues	4,025,806		4,005,628	
Miscellaneous local service revenues	948,149	226,874	947,753	230,745
Message tolls	24,398,740	558,757	25,369,072	557,783
Miscellaneous toll service revenues	2,840,689	1,288,652	2,784,983	1,379,855
Revenues from general services and licenses	1,251,640		1,189,143	
Sundry miscellaneous revenues	3,892,469	425	3,403,168	4,664
Uncollectible operating revenues—Dr.	369,323	1,409	286,804	1,084
Total	93,956,066	2,091,460	92,274,944	2,186,693

Item	1937 cumulative figures		1936 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	$662,141,424	$204,051	$625,108,955	$146,457
Public telephone revenues	45,522,456		43,732,688	
Miscellaneous local service revenues	11,565,416	2,739,499	10,959,093	2,541,028
Message tolls	290,770,047	6,788,515	276,817,267	5,694,311
Miscellaneous toll service revenues	34,645,813	16,355,941	32,757,831	15,911,347
Revenues from general services and licenses	14,508,580		13,582,542	
Sundry miscellaneous revenues	43,793,875	5,694	39,708,012	4,698
Uncollectible operating revenues—Dr.	3,960,185	13,632	3,203,381	13,915
Total	1,098,987,426	26,080,068	1,039,463,007	24,283,926

[1] Comprises 24 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.

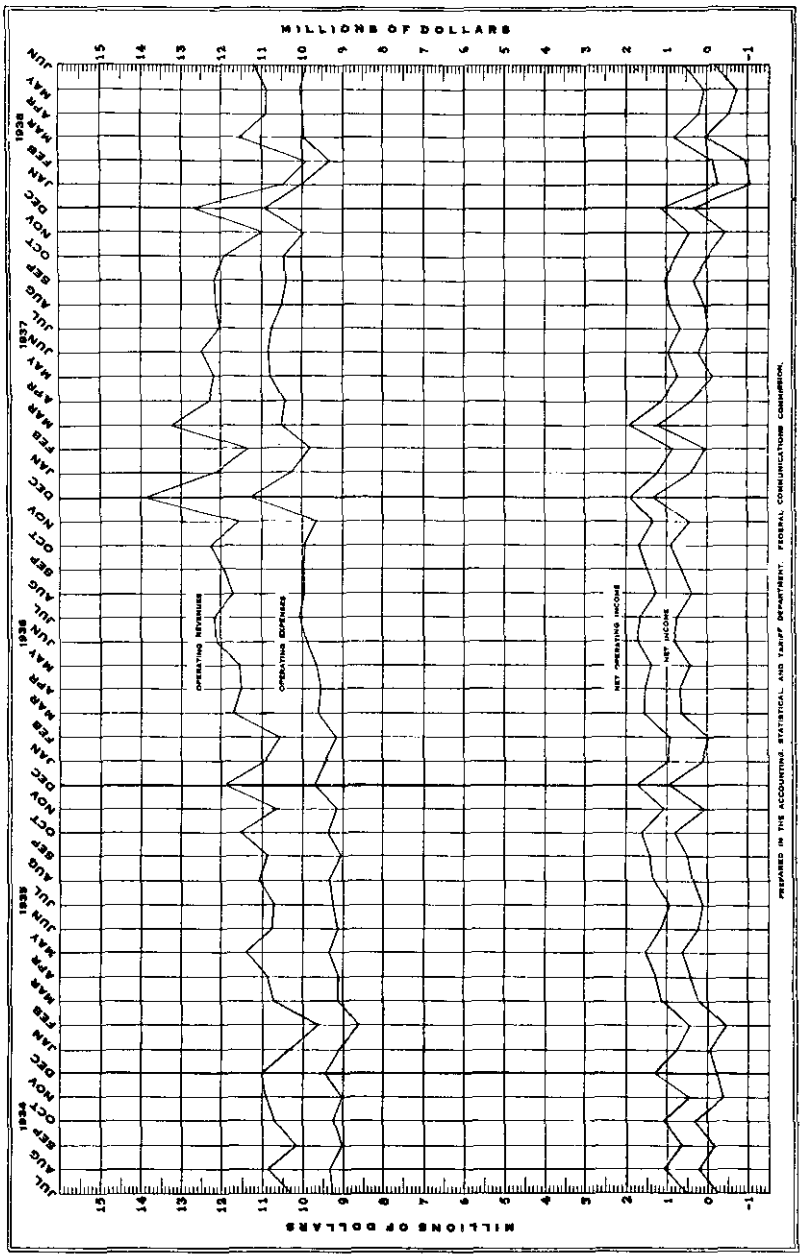
Statistics of telegraph carriers by months from July 1934 to June 1938, inclusive.—The operating revenues, operating expenses, operating income, and net income of large wire-telegraph and radiotelegraph carriers that reported to the Commission on a monthly basis from July 1934 to June 1938, inclusive, are shown in table XXXIII, and the trends during this period are indicated in chart 8. It may be noted that operating revenues and operating income received in June 1938 compare favorably with similar items in July 1934, but that operating results generally are less favorable in 1938 than in 1935, 1936, and 1937.

TABLE XXXIII.—*Monthly operating statistics showing revenues, expenses, operating income, and net income as reported by large telegraph carriers from July 1934 to June 1938, inclusive*

Month	Operating revenues	Operating expenses	Operating income	Net income
1934				
July	$10,288,243	$9,275,142	$527,309	[1] *$832,781*
August	10,886,673	9,326,337	1,074,209	244,478
September	10,178,062	9,028,709	668,071	[1] *169,840*
October	10,725,812	9,225,020	1,075,143	318,698
November	9,933,054	9,019,603	438,859	[1] *396,241*
December	11,004,971	9,458,110	1,330,026	[1] *207,085*
Total	63,016,815	55,332,921	5,113,617	[1] *442,751*
1935				
January	10,362,033	9,126,390	778,067	[1] *60,911*
February	9,611,350	8,686,579	470,181	[1] *463,886*
March	10,729,707	9,153,476	1,115,485	206,972
April	10,878,367	9,130,371	1,280,193	433,001
May	11,411,863	9,376,111	1,537,331	637,004
June	10,798,585	9,160,096	1,179,070	248,659
July	10,710,993	9,286,674	969,419	129,721
August	*11,086,297*	*9,314,022*	*1,314,097*	*391,400*
September	10,897,978	9,027,064	1,418,137	523,848
October	11,533,959	9,392,086	1,682,661	828,207
November	10,666,676	9,179,022	1,039,152	85,278
December	11,925,571	9,720,053	1,734,304	996,780
Total	130,613,379	110,551,944	14,518,097	3,956,073
1936				
January	10,911,897	9,420,527	981,459	131,091
February	10,585,074	9,159,483	919,278	[1] *24,895*
March	11,726,246	9,651,658	1,562,679	622,838
April	11,542,789	9,534,459	1,503,698	691,179
May	11,574,330	9,681,113	1,385,138	442,004
June	12,128,173	9,901,625	1,720,742	834,273
July	12,193,309	10,089,727	1,614,552	726,813
August	11,708,672	9,961,601	1,255,078	395,406
September	11,956,495	9,974,132	1,494,735	630,833
October	12,290,679	9,965,431	1,698,630	905,059
November	11,505,224	9,669,800	1,332,094	475,974
December	13,900,521	11,290,617	1,887,073	1,304,729
Total	142,023,409	118,300,173	17,355,156	7,135,304
1937				
January	12,138,754	10,228,400	1,217,302	406,918
February	11,367,430	9,818,929	876,114	40,986
March	13,254,213	10,560,681	1,958,710	1,244,868
April	12,314,263	10,463,515	1,154,295	422,440
May	12,198,274	10,801,348	710,961	[1] *157,641*
June	12,513,990	10,879,212	944,209	202,796
July	12,044,436	10,767,989	640,244	[1] *38,734*
August	12,139,603	10,507,788	947,968	92,755
September	12,189,750	10,418,334	1,077,425	342,584
October	11,912,047	10,435,171	788,888	[1] *11,189*
November	10,998,266	9,956,788	415,735	[1] *418,569*
December	12,691,490	10,962,560	1,114,656	330,633
Total	*145,762,516*	125,800,715	11,846,507	2,477,847
1938				
January	10,501,929	10,022,569	[1] *242,168*	[1] *1,065,223*
February	9,928,237	9,335,169	[1] *102,595*	[1] *965,080*
March	11,535,585	9,983,658	813,411	69,082
April	10,904,847	9,970,432	209,806	[1] *561,254*
May	10,888,993	10,076,615	83,585	[1] *755,004*
June	11,185,190	9,908,655	*549,981*	[1] *186,267*
Total	64,944,781	59,297,098	1,312,220	[1] *3,463,686*

[1] Deficit or other reverse item.

NOTE.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.



Index numbers of monthly operating revenues of telegraph carriers.—In the following tables, XXXIV and XXXV, the index numbers of the monthly operating revenues of large wire-telegraph and all radiotelegraph carriers, respectively, are shown. The comparative data for wire-telegraph carriers are based on the monthly returns for 1929. The figures for June 1938 indicate that the operating revenues decreased to 64.49 percent of the 1929 returns, but increased from 61.38 percent in June 1932.

The index numbers relating to radiotelegraph carriers are based on the returns for 1934 inasmuch as data pertaining to radiotelegraph carriers for the years 1929 to 1933 are incomplete. The figures shows substantial increases in the operating revenues of radiotelegraph carriers, amounting to 24.25 percent in June 1938 over June 1934.

TABLE XXXIV.—*Index numbers of monthly operating revenues of large wire-telegraph carriers from January 1930 to June 1938, inclusive*

[1929=100]

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
January	100	95.47	80.77	63.84	51.22	61.99	61.01	64.13	71.39	61.30
February	100	96.61	81.96	67.34	52.96	63.09	61.65	67.46	72.34	62.77
March	100	92.62	79.84	65.23	58.17	63.13	60.13	65.66	73.80	63.73
April	100	96.31	81.79	60.97	54.22	60.97	63.35	67.29	71.06	62.78
May	100	92.71	76.69	57.73	60.27	62.17	63.75	64.65	67.76	60.42
June	100	94.90	80.94	61.38	65.04	64.23	62.88	70.62	72.23	64.49
July	100	87.80	75.05	51.37	61.78	57.85	60.40	68.76	66.97	
August	100	84.10	69.32	55.36	58.58	59.68	60.90	64.18	65.60	
September	100	88.29	73.30	58.27	59.62	57.89	62.02	68.02	68.41	
October	100	82.11	67.27	50.85	54.09	56.33	60.46	64.38	61.90	
November	100	82.63	69.59	55.84	60.79	60.83	65.29	70.20	66.72	
December	100	87.89	72.56	56.36	61.54	62.65	67.98	79.03	71.50	
For year	100	90.09	75.64	58.56	58.22	60.84	62.46	67.82	69.05	

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 XXXV.—*Index numbers of monthly operating revenues of large radiotelegraph carriers from January 1935 to June 1938, inclusive*

[1934=100]

Month	1934	1935	1936	1937	1938
	Percent	*Percent*	*Percent*	*Percent*	*Percent*
January	100	111.54	120.35	132.50	126.39
February	100	102.07	122.77	134.32	127.18
March	100	105.72	116.89	142.48	136.43
April	100	113.78	118.84	145.90	133.05
May	100	110.10	111.97	127.66	115.68
June	100	104.32	117.05	137.04	124.25
July	100	99.54	113.53	135.33	
August	100	98.64	107.58	134.38	
September	100	106.74	117.84	143.37	
October	100	110.37	118.95	127.92	
November	100	108.67	122.49	126.05	
December	100	106.58	128.79	132.46	
For year	100	106.42	118.06	134.86	

NOTE.—"Large radiotelegraph carriers" comprises 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

Employees in service and their compensation.—The labor statistics shown in table XXXVI relate to the large telephone, wire-telegraph, and radiotelegraph carriers which report to the Commission on a monthly basis, but the returns were compiled from the annual reports and correspondence. The compensation of employees, by months, and the number of employees at the end of the years 1936 and 1937 are shown separately in this table for each group of carriers reporting to the Commission. The amounts applicable to the Bell System exclude the returns from the Cincinnati & Suburban Bell Telephone Co. and the Southern New England Telephone Co. The number of telephone employees and their compensation increased from 288,182 and $440,102,015, respectively, in 1936 to 301,771 and $496,694,574, respectively, in 1937. The number of wire-telegraph and radiotelegraph employees decreased from 76,221 in 1936 to 72,685 in 1937, whereas their compensation increased from $82,890,426 to $90,254,217 during the same period.

Comparative data pertaining to the number of employees of large telephone, wire-telegraph, and radiotelegraph carriers for 1936 and 1937 are shown in chart 9, and similar data relative to the annual compensation of employees in service are shown in chart 10.

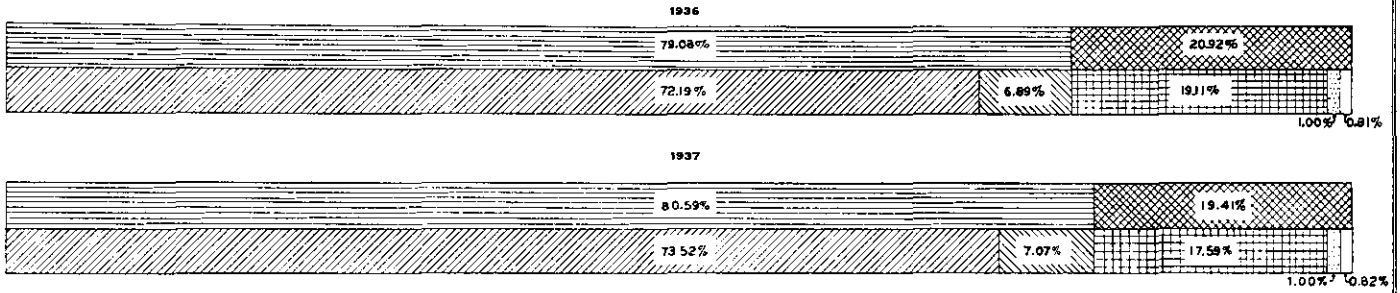
TABLE XXXVI.—*Compensation of employees, by months, and number of employees in service at the end of the year, as reported by large telephone and telegraph carriers for the years 1936 and 1937*

Month	Telephone carriers			Telegraph carriers				Grand total
	Bell system	Other than Bell system	Total	Land-line telegraph	Ocean cable	Radiotelegraph	Total	
1936								
January	$33,332,968	$2,413,572	$35,746,540	$5,787,500	$389,094	$357,961	$6,534,555	$42,281,095
February	31,495,518	2,277,864	33,773,382	5,534,771	392,856	351,051	6,278,678	40,052,060
March	33,326,406	2,500,176	35,826,582	5,952,906	381,881	353,343	6,688,130	42,514,712
April	33,153,022	2,485,324	35,638,346	5,942,554	385,525	361,447	6,689,526	42,327,872
May	33,691,575	2,461,905	36,153,480	6,047,327	385,936	367,794	6,801,057	42,954,537
June	33,713,922	2,484,053	36,197,975	6,190,331	383,379	372,106	6,945,816	43,143,791
July	35,344,894	2,590,754	37,935,648	6,293,499	387,426	386,205	7,067,130	45,002,778
August	33,986,181	2,504,560	36,490,741	6,238,709	385,310	379,143	7,003,162	43,493,903
September	35,055,625	2,544,364	37,599,989	6,251,972	379,386	374,598	7,005,956	44,605,945
October	35,506,615	2,568,390	38,075,005	6,382,984	395,733	378,301	7,157,018	45,232,023
November	34,722,627	2,535,358	37,257,985	6,040,083	389,577	372,222	6,801,882	44,059,867
December	36,748,730	2,657,612	39,406,342	7,123,795	409,304	384,417	7,917,516	47,323,858
Total	410,078,083	30,023,932	440,102,015	73,786,431	4,665,407	4,438,588	82,890,426	522,992,441
Number of employees in service Dec. 31, 1936	263,051	25,131	288,182	69,638	3,630	2,953	76,221	364,403
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	384,142	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	6,933,890	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	6,674,551	384,875	422,473	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

NOTE.—"Large telephone carriers" comprises a group of 91 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 10 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, 1936 AND DECEMBER 31, 1937

CHART 9



KEY

ALL LARGE TELEPHONE CARRIERS
BELL SYSTEM CARRIERS
OTHER THAN BELL SYSTEM CARRIERS
ALL TELEGRAPH CARRIERS
LAND LINE TELEGRAPH CARRIERS
OCEAN CABLE CARRIERS
RADIOTELEGRAPH CARRIERS

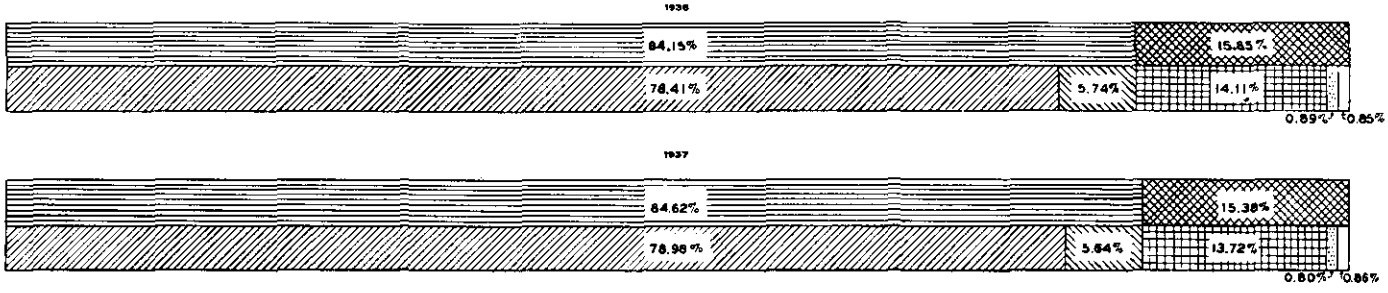
EMPLOYEES

	1936		1937	
BELL SYSTEM CARRIERS	261,051		275,306	
OTHER THAN BELL SYSTEM CARRIERS	25,131		26,465	
ALL LARGE TELEPHONE CARRIERS		286,182		301,771
LAND LINE TELEGRAPH CARRIERS	69,638		69,850	
OCEAN CABLE CARRIERS	3,630		3,758	
RADIOTELEGRAPH CARRIERS	2,953		3,077	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS		76,221		72,685
ALL LARGE REPORTING CARRIERS		364,403		374,456

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

TOTAL ANNUAL COMPENSATION OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS FOR THE YEARS 1936 AND 1937

CHART 10



KEY

ALL LARGE TELEPHONE CARRIERS	ALL TELEGRAPH CARRIERS
BELL SYSTEM CARRIERS	LAND LINE TELEGRAPH CARRIERS
OTHER THAN BELL SYSTEM CARRIERS	OCEAN CABLE CARRIERS
	RADIOTELEGRAPH CARRIERS

COMPENSATION

	1936		1937	
BELL SYSTEM CARRIERS	$410,075,083		$463,557,189	
OTHER THAN BELL SYSTEM CARRIERS	30,025,932		33,137,385	
ALL LARGE TELEPHONE CARRIERS		$440,102,015		$496,694,574
LAND LINE TELEGRAPH CARRIERS	73,786,431		80,530,356	
OCEAN CABLE CARRIERS	4,665,407		4,659,976	
RADIOTELEGRAPH CARRIERS	4,438,588		5,063,887	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE & RADIOTELEGRAPH CARRIERS		82,890,426		90,254,217
ALL LARGE REPORTING CARRIERS		522,992,441		586,948,791

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

(C) Data Concerning Intercorporate Relations

Intercorporate relations of communication carriers and controlling companies.—The intercorporate relations of all telephone, wire-telegraph, and radiotelegraph carriers and controlling companies filing reports with the Commission for the year 1937 are given in table XXXVII. 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 relation existing on December 31, 1937. The names of all companies listed alphabetically are shown in the index following this table for reference purposes. The number in the first column of this table opposite the name of each company corresponds with the number following the name of the same company in the index.

The form of annual report filed by the various companies is indicated by the symbol shown in the third column of table XXXVII. The following is a key to the symbols used:

M–A—Class A telephone carriers having average annual operating revenues exceeding $100,000, which file annual reports on form M.

M–B—Class B telephone carriers having average annual operating revenues exceeding $50,000 but not more than $100,000, which file annual reports on form M.

O—Wire-telegraph and radiotelegraph carriers, which file annual reports on form O.

H—Holding companies having large interests in communication carriers, which file annual reports on form H.

Cir—Holding companies having nominal interests in communication carriers, which file annual reports on the statistical circular form No. 1.

The operating revenues of all telephone, wire-telegraph, and radiotelegraph carriers reporting for the year 1937 and system totals are shown in the fourth column.

Table XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*

No.	Name of company	Form of annual report filed	Operating revenues
1	American Newspapers, Inc.	Cir.	
2	Hearst Radio, Inc.	O	$13,196
3	American Telephone & Telegraph Co.	M–A	107,339,531
4	Bell Telephone Co. of Pennsylvania	M–A	68,805,549
5	Chesapeake & Potomac Telephone Co.	M–A	11,137,467
6	Chesapeake & Potomac Telephone Co. of Baltimore City	M–A	14,835,276
7	Chesapeake & Potomac Telephone Co. of Virginia	M–A	9,535,029
8	Chesapeake & Potomac Telephone Co. of West Virginia	M–A	6,352,988
9	Diamond State Telephone Co.	M–A	2,256,366
10	Illinois Bell Telephone Co.	M–A	87,489,839
11	Crown Point Telephone Co.	M–B	59,257
12	Indiana Bell Telephone Co.	M–A	12,942,064
13	Lebanon Telephone Co.[1]	M–B	25,791
14	Michigan Bell Telephone Co.	M–A	40,557,974
15	Mountain States Telephone & Telegraph Co.	M–A	24,144,363
16	New England Telephone & Telegraph Co.	M–A	74,613,278
17	Eastern Telephone & Telegraph Co. (Maine)	M–A	127,378
18	Moosehead Telephone & Telegraph Co.	M–B	93,456
19	Westerly Automatic Telephone Co.	M–A	146,032
20	Western New England Telephone Co.	M–B	92,810
21	White River Valley Telephone Co.	M–B	53,271
22	New Jersey Bell Telephone Co.	M–A	48,144,509
23	New York Telephone Co.	M–A	206,296,463
24	Northwestern Bell Telephone Co.	M–A	33,594,356
25	Dakota Central Telephone Co.	M–A	1,275,641
26	Tri-State Telephone & Telegraph Co.	M–A	6,193,086
27	Nicollet County Telephone & Telegraph Co.	M–B	57,545
28	Ohio Bell Telephone Co.	M–A	41,920,140
29	Pacific Telephone & Telegraph Co.	M–A	67,005,268
30	Bell Telephone Co. of Nevada	M–A	1,106,406
31	Southern California Telephone Co.	M–A	44,903,869
32	Southern Bell Telephone & Telegraph Co.	M–A	62,391,224
33	Christian-Todd Telephone Co.	M–A	201,539
34	Southwestern Bell Telephone Co.	M–A	86,099,456
35	United Telephone Co. (Kansas)	M–A	1,779,055
36	Wisconsin Telephone Co.	M–A	17,515,019
	System total		1,079,091,295

See footnotes at end of table.

TABLE XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*—Continued

No.	Name of company	Form of annual report filed	Operating revenues
37	American Utilities Service Corporation	Cir.	
38	Bluefield Telephone Co.	M-A	$461,262
39	Ashtabula Telephone Co.[2]	M-A	178,250
40	Bangor & Aroostook R. R. Co.	Cir.	
41	Northern Telegraph Co.	O	26,998
42	Byllesby Corporation	Cir.[3]	
43	Byllesby, H. M., & Co.	Cir.[3]	
44	Standard Power & Light Corporation [4]	Cir.[3]	
45	Standard Gas & Electric Co.	Cir.[3]	
46	Northern States Power Co. (Delaware)	Cir.[3]	
47	Northern States Power Co. (Minnesota) [3]	M-A	110,141
48	Canadian National Ry. Co.	Cir.[3]	
49	Canadian Northern Ry. Co.	Cir.	
50	Canadian National Telegraph Co.	Cir.[3]	
51	Great North Western Telegraph Co. of Canada [5]	O	(6)
52	Minnesota & Manitoba R. R.[7]	O	7,064
53	Canadian Pacific Ry. Co. (lines in United States)	O	6,009
54	Carolina Telephone & Telegraph Co.	M-A	1,526,014
55	Champaign Telephone Co.	M-B	78,516
56	Chenango & Unadilla Telephone Corporation	M-A	236,431
57	Chesapeake & Ohio Ry. Co.	Cir.[3]	
58	Pere Marquette Ry. Co.	Cir.	
59	Central Land Co.	Cir.[3]	
60	Pere Marquette Radio Corporation	O	9,518
61	Chicago, Milwaukee, St. Paul & Pacific R. R. Co. (in trusteeship).	Cir.	
62	Continental Telegraph Co.	O	13,685
63	Cincinnati & Suburban Bell Telephone Co.	M-A	10,084,008
64	Citizens Utilities Co.	Cir.	
65	Public Utilities California Corporation	M-A	162,009
66	City of Seattle, Harbor Department	O	5,351
67	Colorado Fuel & Iron Corporation	Cir.[3]	
68	Colorado & Wyoming Telegraph Co.	O	16,991
69	Columbia Utilities Co.[8]		
70	Interstate Telephone & Telegraph Co. (Oregon)[9]	O	(6)
71	Colusa County Telephone Co.	M-B	56,676
72	Commercial Pacific Cable Co.[10]	O	915,942
73	Del Rio & Winter Garden Telephone Co.	M-A	263,880
74	Dollar, Robert, Co.	Cir.	
75	Globe Wireless, Ltd.	O	449,981
76	First-Chicago Corporation	Cir.	
77	North-Western Indiana Telephone Co.[11]	M-A	153,440
78	Firestone Plantations Co.	Cir.	
79	United States-Liberia Radio Corporation	O	75,624
80	French Telegraph Cable Co.[12]	O	855,026
81	General Telephone Corporation	H	
82	Indiana Associated Telephone Corporation	M-A	1,315,313
83	Indiana Central Telephone Co. (in trusteeship)	H	
84	Interstate Telephone Co.	M-A	846,496
85	Michigan Associated Telephone Co.	M-A	1,252,823
86	Southwestern Associated Telephone Co.	M-A	1,181,187
87	Ohio Associated Telephone Co.	M-A	726,892
88	Pennsylvania Telephone Corporation	M-A	2,321,037
89	United Telephone Co. (Delaware)	H	
90	Tri-State Associated Telephone Corporation	M-B	99,647
	System total		7,743,395
91	General & Telephone Investments, Inc.	H	
92	Gary, Theodore, & Co.	H	
93	Telephone Bond & Share Co.	H	
94	Continental Telephone Co.	H	
95	Nebraska Continental Telephone Corporation	M-A	320,568
96	Home Telephone & Telegraph Co. (Indiana)	M-A	1,357,172
97	Imperial Securities Co.	H	
98	Telephone Securities, Inc.	H	
99	Keystone Telephone Co. of Philadelphia	M-A	1,898,638
100	Eastern Telephone & Telegraph Co. (New Jersey).	M-A	162,118
	System total		3,738,496
101	Greenville Telephone Co.	M-B	101,422
102	Gulf Radio Service (George Collins Warner, Jr.)	O	(13)
103	Home Telephone & Telegraph Co. of Virginia	M-B	107,457
104	Huron Portland Cement Co.	Cir.[3]	
105	Huron Transportation Co.	Cir.	
106	Michigan Wireless Telegraph Co.[14]	O	6,512

See footnotes at end of table.

TABLE XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*—Continued

No.	Name of company	Form of annual report filed	Operating revenues
107	Inter-Mountain Telephone Co.	M-A	$665,514
108	International Telephone & Telegraph Corporation	H	
109	All America Cables, Inc.	O	5,019,224
110	Postal Telegraph & Cable Corporation (in trusteeship)	H	
111	Mackay Cos.	H	
112	*Commercial Cable Co.*	O	4,394,865
113	Mackay Radio & Telegraph Co. (California)	O	1,241,162
114	Postal Telegraph-Cable Co. (land-line system)	O	23,347,246
	Interstate Telephone & Telegraph Co. (Oregon).[15]	O	(6)
115	Radio Communication Co., Inc.[16]		
116	Mackay Radio & Telegraph Co. (Delaware)	O	1,093,484
	System total		35,095,981
117	Investments & Utilities Corporation	H	
118	Loveland & Co., Ltd.	H	
119	West Coast Utilities Corporation	H	
120	West Coast Telephone Co.	M-A	1,400,929
121	Investors Telephone Co.	H	
122	*Platte Valley Telephone Corporation*	M-A	223,295
123	Kansas State Telephone Co.	M-B	50,139
124	Kittanning Telephone Co.[2]	M-A	255,350
125	Lee Telephone Co.	M-A	137,054
126	Lincoln Telephone & Telegraph Co. (Delaware)[17]	M-A	2,738,750
127	Mayor and City Council of Baltimore, Md.	O	4,576
128	Michigan Alkali Co.	Cir.[3]	
129	Wyandotte Transportation Co.	Cir.	
	Michigan Wireless Telegraph Co.[14]	O	
130	Mid-West States Utilities Co.[18]		
131	Kansas Telephone Co. (in receivership) [2]	M-A	145,950
132	Nevada-California Electric Corporation	Cir.	
133	Interstate Telegraph Co.	M-A	162,066
134	Norfolk & Carolina Telephone & Telegraph Co.	M-A	147,770
135	North-West Telephone Co.	M-A	186,625
136	Olympic Radio Co.	O	2,100
137	Oregon-Washington Telephone Co.	M-A	204,488
138	Oxnard Home Telephone Co.	M-B	69,303
139	Ozark Central Telephone Co.	M-A	162,959
140	Palestine Telephone Co.	M-B	74,697
141	Phillips Petroleum Co.	Cir.	
142	Western Radio Telegraph Co.	O	32,664
143	Press Wireless, Inc.	O	477,757
144	Radio Corporation of America	H	
145	R. C. A. Communications, Inc.	O	5,225,144
146	Radiomarine Corporation of America	O	1,332,048
	System total		6,557,192
147	Rochester Telephone Corporation	M-A	5,001,399
148	San Angelo Telephone Co.	M-A	515,844
149	Santa Barbara Telephone Co.	M-A	642,771
150	Santa Paula Home Telephone Co.	M-B	54,847
151	Socony-Vacuum Oil Co., Inc.	Cir.	
152	Magnolia Petroleum Co.	Cir.	
153	Magnolia Radio Corporation	O	4,596
154	South Porto Rico Sugar Co. (New Jersey)	Cir.	
155	South Porto Rico Sugar Co. (of Puerto Rico)	O	6,850
156	*Southeast Missouri Telephone Co.*	M-A	755,985
157	Southern New England Telephone Co.	M-A	17,936,339
158	Southwest Telephone Co. (Kansas)	M-A	182,398
159	Standard Oil Co. (New Jersey)	Cir.	
160	Southern Radio Corporation	O	36,921
161	Telephone & Utility Investment Corporation	Cir.[3]	
162	Eastern Kansas Telephone Co.[2]	M-B	75,187
163	Tidewater Wireless Telegraph Co.	O	5,155
164	Two States Telephone Co.	M-A	314,322
165	United Fruit Co.	Cir.	
166	Tropical Radio Telegraph Co.	O	692,207
167	United States Rubber Co.	Cir.[3]	
168	Meyer Rubber Co.	Cir.	
169	Central Idaho Telegraph & Telephone Co.[19]	O	1,021
170	United States Steel Corporation [3]		
171	*Michigan Limestone & Chemical Co.*	Cir.	
172	Central Radio Telegraph Co.	O	10,487
173	United Telephone Co. (Texas)	M-B	92,132

See footnotes at end of table.

TABLE XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*—Continued

No.	Name of company	Form of annual relief field	Operating revenues
174	United Telephone & Electric Co. (in trusteeship) [20]	H	
175	New Jersey Telephone Co	M-A	$154,880
176	United Telephone Co. of Pennsylvania	M-A	858,157
177	United Telephone & Telegraph Co	H	
178	American Telephone Co	M-A	459,244
179	United Telephone Co. (Missouri)	M-A	367,005
180	United Telephone & Telegraph Corporation	H	
181	Interstate Telephone & Telegraph Co. (Indiana)	H	
182	Ohio Telephone Service Co	M-A	225,781
183	United Telephone Companies, Inc	M-A	704,360
184	United Telephone Investment Corporation	H	
185	Union Telephone Co. (Indiana)	M-A	169,573
	System total		2,939,000
186	Utilities Holding Corporation	H	
187	Middle States Utilities Co. (Delaware)	H	
188	*Middle States Utilities Co. of Iowa*	M-B	84,136
189	Middle States Utilities Co. of Missouri	M-A	146,431
	System total		230,567
190	Victor-American Fuel Co	Cir	
191	Mountain Telegraph Co	O	5,167
192	Wabash Ry. Co. (in receivership)	Cir	
193	Ann Arbor R. R. Co. (in receivership)	Cir	
194	Wabash Radio Corporation	O	12,147
195	Western Arkansas Telephone Co	M-B	75,262
196	Western Union Telegraph Co	O	100,482,884
	Great North Western Telegraph Co. of Canada [21]	O	(3)
197	Mexican Telegraph Co	O	438,692
	System total		100,921,576

[1] Merged with Indiana Bell Telephone Co., June 30, 1937.
[2] Subject only to secs. 201-205 of the act.
[3] Report for 1937 not received.
[4] Controlled jointly by H. M. Byllesby & Co. and the United States Electric Power Corporation through ownership of majority of voting capital stock.
[5] *Leased by the Western Union Telegraph Co. (No. 196).*
[6] None reported, lessor company.
[7] Telegraph facilities leased to and operated by the Canadian Northern Ry. Co.
[8] Files no report. Inserted to show intercorporate relation of subsidiary carrier.
[9] *Leased by the Postal Telegraph-Cable Co. (land-line system) (No. 114).*
[10] The Commercial Pacific Cable Co. is closely affiliated with the Mackay Cos.
[11] Purchased by the Indiana Associated Telephone Corporation Dec. 1, 1937, excepting 3 toll circuits.
[12] Operating revenues for New York City office, as shown on the December 1937 monthly report, are $412,017.
[13] Not included in tabulations, as returns were incomplete.
[14] Controlled jointly by the Huron Transportation Co. (No. 105) and the Wyandotte Transportation Co. (No. 129) through ownership of the entire capital stock, each company owning 50 percent.
[15] Operated under lease by Postal Telegraph-Cable Co. (land-line system). For control, see No. 70.
[16] Inactive company, files no report. Inserted to show intercorporate relation of subsidiary carrier.
[17] Formerly Lincoln Telephone Securities Co., which company, as of Jan. 1, 1937, acquired the assets and assumed the liabilities of the Lincoln Telephone & Telegraph Co. (Nebraska), dissolved that date; and changed its name to the Lincoln Telephone & Telegraph Co. (Delaware). Subject only to secs. 201-205 of the act.
[18] Files no report. Inserted to show intercorporate relation of subsidiary carrier. Subject only to secs. 201-205 of the act.
[19] Operated by the Union Pacific R. R.
[20] Jointly controlled by the United Trust Co. as trustee for Brown Memorial Foundation and C. L. Brown estate.
[21] *Lines in the United States, in New England* nd northern New York State, leased by the Western Union Telegraph Co. For control, see No. 51.

Index Pertaining to Intercorporate Relations

[For use in connection with table XXXVII]

	Number
All America Cables, Inc	109
American Newspapers, Inc	1
American Telephone & Telegraph Co	3
American Telephone Co	178
American Utilities Service Corporation	37
Ann Arbor Railroad Co	193
Ashtabula Telephone Co	39
Bangor & Aroostook Railroad Co	40
Bell Telephone Co. of Nevada	30
Bell Telephone Co. of Pennsylvania	4
Bluefield Telephone Co	38
Byllesby, H. M., & Co	43
Byllesby Corporation	42
Canadian National Railway Co	48
Canadian National Telegraph Co	50
Canadian Northern Railway Co	49
Canadian Pacific Railway Co. (lines in United States)	53
Carolina Telephone & Telegraph Co	54
Central Idaho Telegraph & Telephone Co	169
Central Land Co	59
Central Radio Telegraph Co	172
Champaign Telephone Co	55
Chenango & Unadilla Telephone Corporation	56
Chesapeake & Ohio Railway Co	57
Chesapeake & Potomac Telephone Co	5
Chesapeake & Potomac Telephone Co. of Baltimore City	6
Chesapeake & Potomac Telephone Co. of Virginia	7
Chesapeake & Potomac Telephone Co. of West Virginia	8
Chicago, Milwaukee, St. Paul & Pacific R. R. Co	61
Christian-Todd Telephone Co	33
Cincinnati & Suburban Bell Telephone Co	63
Citizens Utilities Co	64
City of Seattle, Harbor Department	66
Colorado & Wyoming Telegraph Co	68
Colorado Fuel & Iron Corporation	67
Columbia Utilities Co	69
Colusa County Telephone Co	71
Commercial Cable Co	112
Commercial Pacific Cable Co	72
Continental Telegraph Co	62
Continental Telephone Co	94
Crown Point Telephone Co	11
Dakota Central Telephone Co	25
Del Rio & Winter Garden Telephone Co	73
Diamond State Telephone Co	9
Dollar Co., Robert	74
Eastern Kansas Telephone Co	102
Eastern Telephone & Telegraph Co. (Maine)	17
Eastern Telephone & Telegraph Co. (New Jersey)	100
Firestone Plantations Co	78
First-Chicago Corporation	76
French Telegraph Cable Co	80
Gary, Theodore, & Co	92
General & Telephone Investments, Inc	91
General Telephone Corporation	81
Globe Wireless Ltd	75
Great North Western Telegraph Co. of Canada	51
Greenville Telephone Co	101
Gulf Radio Service (George Collins Warner, Jr.)	102
Hearst Radio, Inc	2
Home Telephone & Telegraph Co. (Indiana)	96
Home Telephone & Telegraph Co. of Virginia	103
Huron Portland Cement Co	104
Huron Transportation Co	105
Illinois Bell Telephone Co	10
Imperial Securities Co	97
Indiana Associated Telephone Corporation	82
Indiana Bell Telephone Co	12
Indiana Central Telephone Co	83
Inter-Mountain Telephone Co	107
International Telephone & Telegraph Corporation	108
Interstate Telegraph Co	133
Interstate Telephone & Telegraph Co. (Indiana)	181
Interstate Telephone & Telegraph Co. (Oregon)	70
Interstate Telephone Co	84
Investments & Utilities Corporation	117
Investors Telephone Co	121
Kansas State Telephone Co	123
Kansas Telephone Co	131
Keystone Telephone Co. of Philadelphia	99
Kittanning Telephone Co	124
Lebanon Telephone Co	13
Lee Telephone Co	125
Lincoln Telephone & Telegraph Co. (Delaware)	126
Loveland & Co., Ltd	118
Mackay Cos	111
Mackay Radio & Telegraph Co. (California)	113
Mackay Radio & Telegraph Co. (Delaware)	116
Magnolia Petroleum Co	152
Magnolia Radio Corporation	153
Mayor and City Council of Baltimore, Md	127
Mexican Telegraph Co	197
Meyer Rubber Co	168
Michigan Alkali Co	128
Michigan Associated Telephone Co	85
Michigan Bell Telephone Co	14
Michigan Limestone & Chemical Co	171
Michigan Wireless Telegraph Co	106
Mid-West States Utilities Co	130
Middle States Utilities Co. (Delaware)	187
Middle States Utilities Co. of Iowa	188
Middle States Utilities Co. of Missouri	189
Minnesota & Manitoba Railroad	52
Moosehead Telephone & Telegraph Co	18
Mountain States Telephone & Telegraph Co	15
Mountain Telegraph Co	191
Nebraska Continental Telephone Corporation	95
Nevada-California Electric Corporation	132
New England Telephone & Telegraph Co	16
New Jersey Bell Telephone Co	22
New Jersey Telephone Co	175
New York Telephone Co	23
Nicollet County Telephone & Telegraph Co	27
Norfolk & Carolina Telephone & Telegraph Co	134
North-West Telephone Co	135
North-Western Indiana Telephone Co	77
Northern States Power Co. (Delaware)	46
Northern States Power Co. (Minnesota)	47
Northern Telegraph Co	41
Northwestern Bell Telephone Co	24
Ohio Associated Telephone Co	87
Ohio Bell Telephone Co	28
Ohio Telephone Service Co	182
Olympic Radio Co	136
Oregon-Washington Telephone Co	137
Oxnard Home Telephone Co	138
Ozark Central Telephone Co	139
Pacific Telephone & Telegraph Co	29
Palestine Telephone Co	140
Pennsylvania Telephone Corporation	88
Pere Marquette Radio Corporation	60
Pere Marquette Railway Co	58
Phillips Petroleum Co	141
Platte Valley Telephone Corporation	122
Postal Telegraph & Cable Corporation	110
Postal Telegraph-Cable Co. (land-line system)	114

	Number
Press Wireless, Inc	143
Public Utilities California Corporation	65
Radio Communication Co., Inc	115
Radio Corporation of America	144
Radiomarine Corporation of America	146
R. C. A. Communications, Inc	145
Rochester Telephone Corporation	147
San Angelo Telephone Co	148
Santa Barbara Telephone Co	149
Santa Paula Home Telephone Co	150
Socony-Vacuum Oil Co., Inc	151
South Porto Rico Sugar Co. (New Jersey)	154
South Porto Rico Sugar Co. (of Puerto Rico)	155
Southeast Missouri Telephone Co	156
Southern Bell Telephone & Telegraph Co	32
Southern California Telephone Co	31
Southern New England Telephone Co	157
Southern Radio Corporation	160
Southwest Telephone Co. (Kansas)	158
Southwestern Associated Telephone Co	86
Southwestern Bell Telephone Co	34
Standard Gas & Electric Co	45
Standard Oil Co. (New Jersey)	159
Standard Power & Light Corporation	44
Telephone & Utility Investment Corporation	161
Telephone Bond & Share Co	93
Telephone Securities, Inc	98
Tidewater Wireless Telegraph Co	163
Tri-State Associated Telephone Corporation	90
Tri-State Telephone & Telegraph Co	26
Tropical Radio Telegraph Co	166
Two States Telephone Co	164
Union Telephone Co. (Indiana)	185
United Fruit Co	165
United States-Liberia Radio Corporation	79
United States Rubber Co	167
United States Steel Corporation	170
United Telephone & Electric Co	174
United Telephone & Telegraph Co	177
United Telephone & Telegraph Corporation	180
United Telephone Cos., Inc	183
United Telephone Co. (Delaware)	89
United Telephone Co. (Kansas)	35
United Telephone Co. (Missouri)	179
United Telephone Co. (Texas)	173
United Telephone Co. of Pennsylvania	176
United Telephone Investment Corporation	184
Utilities Holding Corporation	186
Victor-American Fuel Co	190
Wabash Radio Corporation	194
Wabash Railway Co	192
Warner, George Collins, Jr. (Gulf Radio Service)	102
West Coast Telegraph Co	120
West Coast Utilities Corporation	119
Westerly Automatic Telephone Co	19
Western Arkansas Telephone Co	195
Western New England Telephone Co	20
Western Radio Telegraph Co	142
Western Union Telegraph Co	196
White River Valley Telephone Co	21
Wisconsin Telephone Co	36
Wyandotte Transportation Co	129

APPENDIX D

Report of Broadcast Section for Fiscal Year Ending June 30, 1938

Applications received:
- Formal:
  - Renewals 2,347
  - Others 1,916
  - Total 4,263
- Informals 1,678

Authorizations issued:
- Formal:
  - Renewals 2,154
  - Others 2,252
  - Total 4,406
- Informals 399

Broadcast

Experimental stations for fiscal year ending June 30, 1938

Class of station	As of July 1, 1937	New	Deleted	As of July 1, 1938
High-frequency broadcast	40	12	4	48
Experimental broadcast	13	6	5	14
Television	18	2	1	19
International	12	1	0	13
Facsimile	5	4	3	6
Low-frequency relay	102	46	5	143
High-frequency relay	228	60	22	266
Noncommercial educational	0	1	0	1
	418	132	40	510
				Total
Broadcast	700	47	5	[1] 743
Special broadcast	4	0	0	4

[1] This includes the separation of WFLA-WSUN granted August 18, 1937, and authorizing operation of 2 separate stations (WFLA and WSUN).

New stations authorized for fiscal year ending June 30, 1938

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KARM	George Harm, Fresno, Calif	1310	100	Unlimited.
KBKR	Louis P. Thornton, Baker, Oreg	1500	100	Do.
			250–LS	
KBND	The Bend Bulletin, Bend, Oreg	1310	100	Do.
			250–LS	
KDNT	Harwell V. Shepard, Denton, Tex	1420	100	Daytime.
KDTH	Telegraph Herald, Dubuque, Iowa (issues being determined by Court of Appeals).	1340	500	Do.
KELA	Central Broadcasting Corporation, between Centralia and Chehalis, Wash.	1440	500	Unlimited.
KFAM	The Times Publishing Co., St. Cloud, Minn.	1420	100	Do.
			250–LS	
KFAR	Midnight Sun Broadcasting Co., Fairbanks, Alaska.	610	1000	Do.
KGCI	Clarence A. Berger and Saul S. Freeman, Coeur D'Alene, Idaho.	1200	100	Daytime.

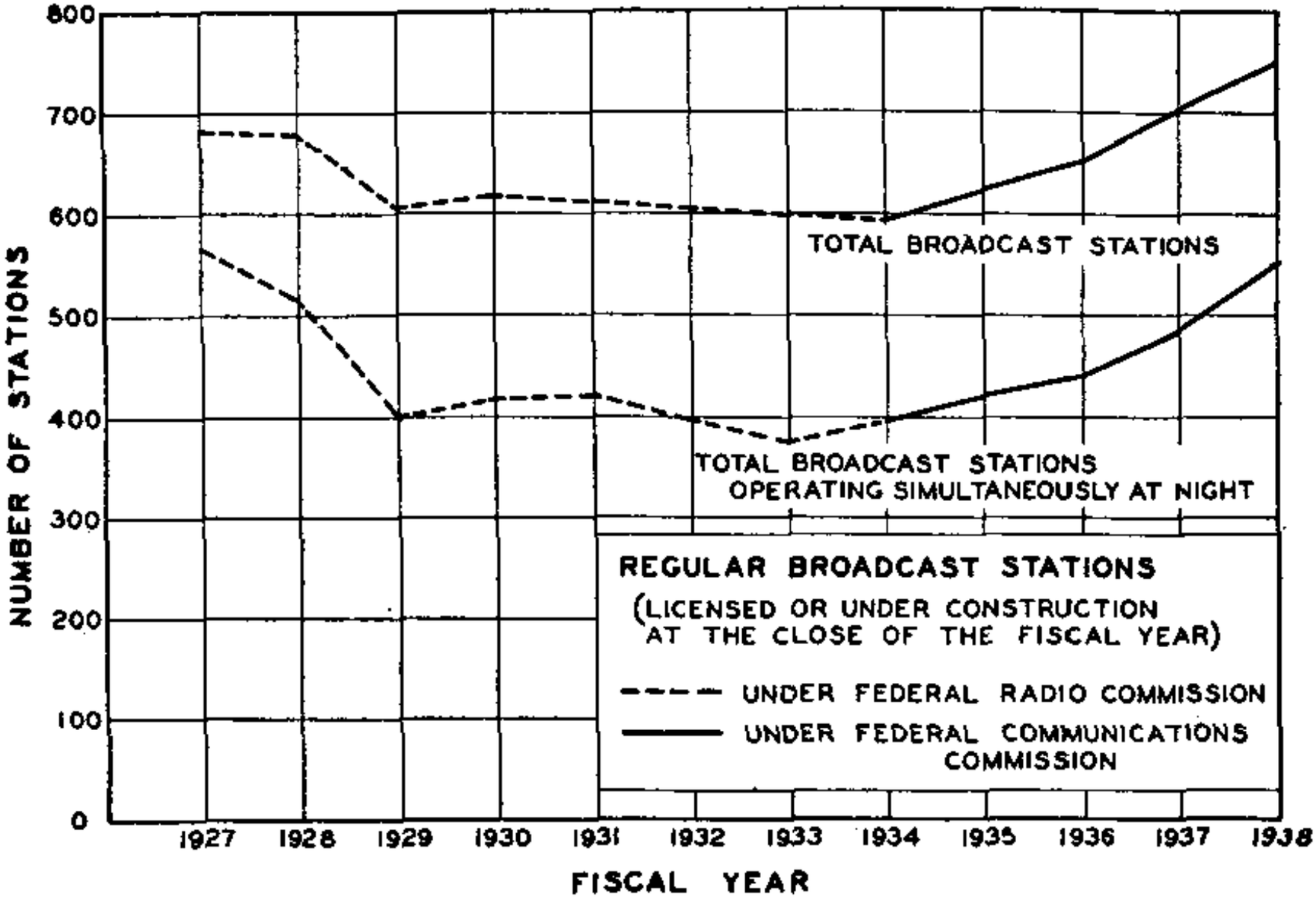
New stations authorized for fiscal year ending June 30, 1938—Continued

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KGLU	Gila Broadcasting Co., Safford, Ariz.	1420	100 250-LS	Unlimited.
KPAB	Mervel M. Valentine, Laredo, Tex.	1500	100 250-LS	Do.
KRBA	Red Lands Broadcasting Association (Ben T. Wilson, president) Lufkin, Tex.	1310	100	Daytime.
KRBM	Roberts MacNab Co. (Arthur L. Roberts, R. B. MacNab, A. J. Breitbach, general manager) Bozeman, Mont.	1420	100 250-LS	Unlimited.
KRIC	Beaumont Broadcasting Association (B. A. Steinhagen, president) Beaumont, Tex.	1420	100	Do.
KSAM	Sam Houston Broadcasting Association (H. G. Webster, president), Huntsville, Tex.	1500	100	Daytime.
			Kilowatt	
KTBC	State Capitol Broadcasting Association (R. B. Anderson, president), Austin, Tex.	1120	1	S. H. (Daytime WTAW).
			Watts	
KTFL	Harry Schwartz, Tulsa, Okla.	1310	250	Daytime.
KTRI	Sioux City Broadcasting Co., Sioux City, Iowa.	1420	100 250-LS	Unlimited.
KVAK	Carl Latenser, Atchison, Kans.	1420	100	Daytime.
KVNU	Cache Valley Broadcasting Co., Logan, Utah.	1200	100	Unlimited.
KVRS	Wyoming Broadcasting Co., Rock Springs, Wyo.	1370	100 250-LS	Do.
KWEW	W. E. Whitmore, Hobbs, N. Mex.	1500	100	Daytime.
KWFT	Wichita Broadcasting Co., Wichita Falls, Tex.	620	250 1000-LS	Unlimited.
KWJB	Sims Broadcasting Co. (Bartley T. Sims, manager), Globe, Ariz.	1210	100 250-LS	Do.
KWLK	Twin City Broadcasting Corporation, Longview, Wash.	780	250	Daytime.
KWOC	Don. M. Lidenton and A. L. McCarthy, Poplar Bluff, Mo.	1310	100	Do.
KYCA	Southwest Broadcasting Co., Prescott, Ariz. (granted Dec. 1, 1936; effective Jan. 12, 1937; effective date extended at intervals to Apr. 28, 1937, when application was remanded to hearing docket, never issued; granted June 22, 1938).	1500	100 250-LS	Unlimited.
KYSM	F. B. Clements and Co., a copartnership consisting of F. Braden Clements, Clara D. Clements, and C. C. Clements, doing business as Southern Minnesota Supply Co., Mankato, Minn.	1500	100 250-LS	Do.
WBRK	Harold Thomas, Pittsfield, Mass.	1310	100 250-LS	Do.
WCOU	Twin City Broadcasting Co., Inc., Lewiston, Maine.	1210	100	Do.
WCOV	John S. Allen and G. W. Covington, Jr., Montgomery, Ala.	1210	100	Daytime.
WDAN	Northwestern Publishing Co., Danville, Ill.	1500	250	Do.
WENY	Elmira Star-Gazette, Inc., Elmira, N. Y.	1200	250	Do.
WFMJ	Wm. F. Maag, Jr., Youngstown, Ohio	1420	100	Do.
WGAU	J. K. Patrick, Earl B. Braswell, Tate Wright, C. A. Rowland, and A. Lynne Brannen, doing business as J. K. Patrick and Co., Athens, Ga.	1310	100 250-LS	Unlimited.
WGIL	Galesburg Broadcasting Co., Galesburg, Ill.	1500	250	Daytime.
WHAI	John W. Haigis, Greenfield, Mass.	1210	250	Do.
WHLS	Harmon Leroy Stevens and Herman Leroy Stevens, doing business as Port Huron Broadcasting Co., Port Huron, Mich.	1370	250	Do.
WJMC	Walter H. McGenty, Rice Lake, Wis.	1210	250	Do.
WKST	Keystone Broadcasting Co., New Castle, Pa.	1250	250	Do.
WLAW	Hildreth and Rogers Co., Lawrence, Mass.	680	1000	Do.
WOCB	Harriett M. Alleman and Helen W. MacLellan, doing business as Cape Cod Broadcasting Co., Barnstable Township, Mass.	1210	100 250-LS	Unlimited.
WPIC	Sharon Herald Publishing Co., Sharon, Pa.	780	250	Daytime.
WSAL	Frank M. Stearns, Salisbury, Md.	1200	250	Do.
WSAV	Arthur Lucas, Savannah, Ga.	1310	100	Unlimited.
WSLI	Standard Life Insurance Company of the South, Jackson, Miss.	1420	100 250-LS	Do.
WTOL	Community Broadcasting Co., Toledo, Ohio.	1200	100	Daytime.

Stations deleted for fiscal year ended June 30, 1938

Call letters	Grantee and location	Date of deletion
KGDY	Voice of South Dakota, Huron, S. Dak. (application for renewal of license denied; decision May 25, 1938; effective June 4, 1938).	June 24, 1938
WJBR	J. B. Roberts, Gastonia, N. C. (application for modified construction permit denied July 6, 1937; effective Sept. 28, 1937).	Oct. 28, 1937
WMBQ	Metropolitan Broadcasting Corporation, Brooklyn, N. Y. (application for renewal of license denied; decision May 25, 1938; effective June 4, 1938; facilities granted to Station WWRL).	June 24, 1938
WNRI	S. George Webb, Newport, R. I. (application for modified construction permit denied May 18, 1937; effective date to July 20, 1937; facilities granted to Station WTHT).	Aug. 19, 1937
WRAX	WRAX Broadcasting Company, Philadelphia, Pa. (time surrendered to Station WPEN May 11, 1938).	May 11, 1938

APPENDIX E


800
700
600
500
400
300
200
100
0
NUMBER OF STATIONS
TOTAL BROADCAST STATIONS
TOTAL BROADCAST STATIONS
OPERATING SIMULTANEOUSLY AT NIGHT
REGULAR BROADCAST STATIONS
(LICENSED OR UNDER CONSTRUCTION
AT THE CLOSE OF THE FISCAL YEAR)
UNDER FEDERAL RADIO COMMISSION
UNDER FEDERAL COMMUNICATIONS
COMMISSION
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
FISCAL YEAR

APPENDIX F

Study of Service Rendered by United States Standard Broadcast Stations

In order to determine the service rendered by United States broadcast stations and to compare the service rendered by clear channel stations to that rendered by regional and local channel stations for both day and nighttime operation, it is essential that a detailed study be made of the service areas of the individual stations and the population and areas included therein. The following is the result of such study and included therein are the assumptions and basis used in making this study.

In determining the service areas of the individual stations, the actual measured service areas were used where available. Where measurements were not available it was necessary to make certain assumptions in regard to the efficiency of the antenna system and the conductivity of the surrounding area. The efficiency of the antenna system (where measurements were not available) was determined from a description of the antenna in the files of the Commission and standard curves of the efficiency of antenna systems of various types. Conductivities were determined from various sources of measurements, and where such were not available estimates were made on the basis of information available on the type of soil, terrain, and other conditions as compared to sections where the conductivities have been measured.

In this study no attempt has been made to show secondary service and all service contours are ground wave contours determined from the propagation curves of the Federal Communications Commission entitled "Curves Showing Distances to Ground Wave Field Intensity Contours versus Frequency, Ground Conductivity and Power", Federal Communications Commission Form 1741b and other propagation curves based on the Sommerfeld-Van der Pol-Niessen formulae.

In determining the service areas of individual stations, certain assumptions must be made with respect to the signal which will render satisfactory service. In the case of the day time studies, the boundary of satisfactory service was defined as the 0.5 mv/m ground wave contour regardless of the class of station under consideration. For the study of nighttime service conditions, this same contour was assumed to be the limit of satisfactory service from clear channel stations in the absence of cochannel interference resulting from duplicated operation. On the duplicated channels, the interference limitation was determined on the basis of the Commission's generally accepted standards and the second hour 10-percent curve from the allocation survey conducted in 1935. In determining the limitation to the interference free nighttime service of the regional stations, the limitation was assumed to be one-half the limitation resulting from 20 times the root-sum-square of the signals present on the channel at the location of the station under consideration, except when such value was below 1 millivolt, in which case the limitation was assumed to be 1 millivolt, or in certain isolated cases where the interference was from a single signal or predominantly so, that value was used without consideration of interference from other stations. The limit of the interference

free service from local stations at night was universally considered to be the 1 mv/m contour.

It is realized that during nighttime operation, particularly with respect to clear channel stations, that service in a portion of the area within the contours indicated may be materially deteriorated and in some cases entirely unsatisfactory due to the receiving location being within the rapid fading zone of the station. However, in view of the large number of variables which must be considered in determining these zones and the comparatively small area involved, no consideration was given thereto.

Below are tabulated the population residing in the night and day service areas of one or more stations of all classes; night and day service areas of one or more dominant clear channel stations; and night and day service areas of one or more other than dominant clear channel stations. It will be noted that these populations are given as total, urban, and rural populations. These figures were determined from the sums of the populations by counties within the service areas described above. Where the limiting service contour did not include full counties, the urban population (population in cities of 2,500 or greater) was subtracted from the total population and the rural population assumed to be uniformly distributed over the county and the percentage thereof taken equivalent to the percentage of the area included by the service contour, except in certain cases, particularly in the western States where it is known that the entire rural population is concentrated in one portion of the county, in which cases proper allowance was made therefor.

It is obvious that a portion of the urban population included herewith resides in areas where the signal (even though in excess of 0.5 mv/m) is insufficient to render satisfactory service as defined by generally accepted standards. However, this portion of the urban population which does not receive sufficient signal to render satisfactory service is small as compared with the total urban population. This is true to a greater extent with respect to the regional and local channel stations than with respect to the clear channel stations. In this regard, there is tabulated below the number and population by States of the cities of the various classifications lying within the service area of any station as above determined, but does not include the cities located in a metropolitan district as determined by the Bureau of Census, Department of Commerce, cities in which a station is located, or cities contiguous to another city where a station is located such that that city also receives primary service. It should be noted that in compiling this tabulation, stations sharing both day and nighttime hours were considered as unlimited time stations and stations sharing daytime hours only were considered as daytime stations, however, that limited time stations were considered as daytime stations.

There is also tabulated below the land areas within and outside the day and nighttime service areas of one or more standard broadcast stations of any class; the day and nighttime service areas of one or more dominant clear channel stations; and the day and nighttime service areas of one or more other than dominant clea rchannel stations.

All populations shown are based on the official 1930 census figures of the Bureau of Census, Department of Commerce.

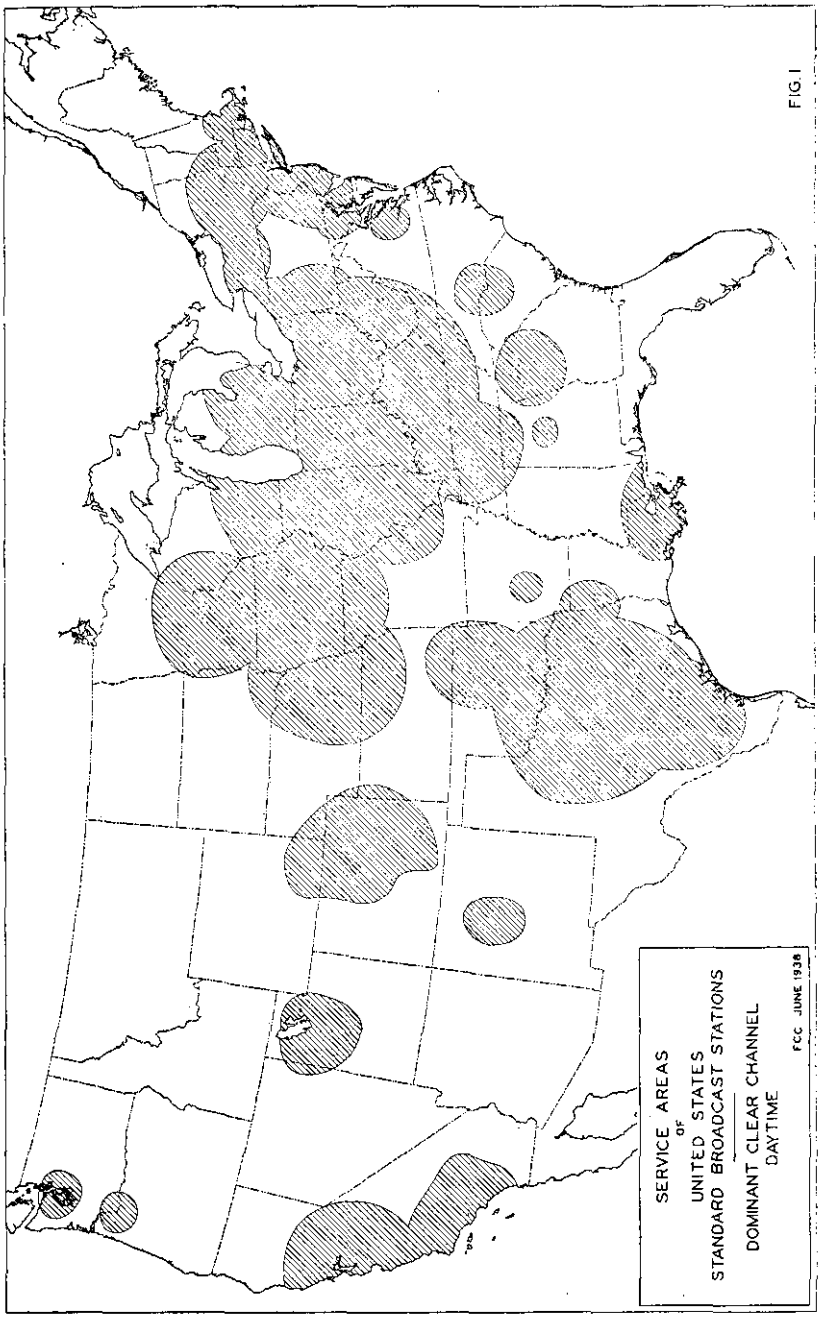

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
DOMINANT CLEAR CHANNEL
DAYTIME
FCC JUNE 1938

FIG. 1

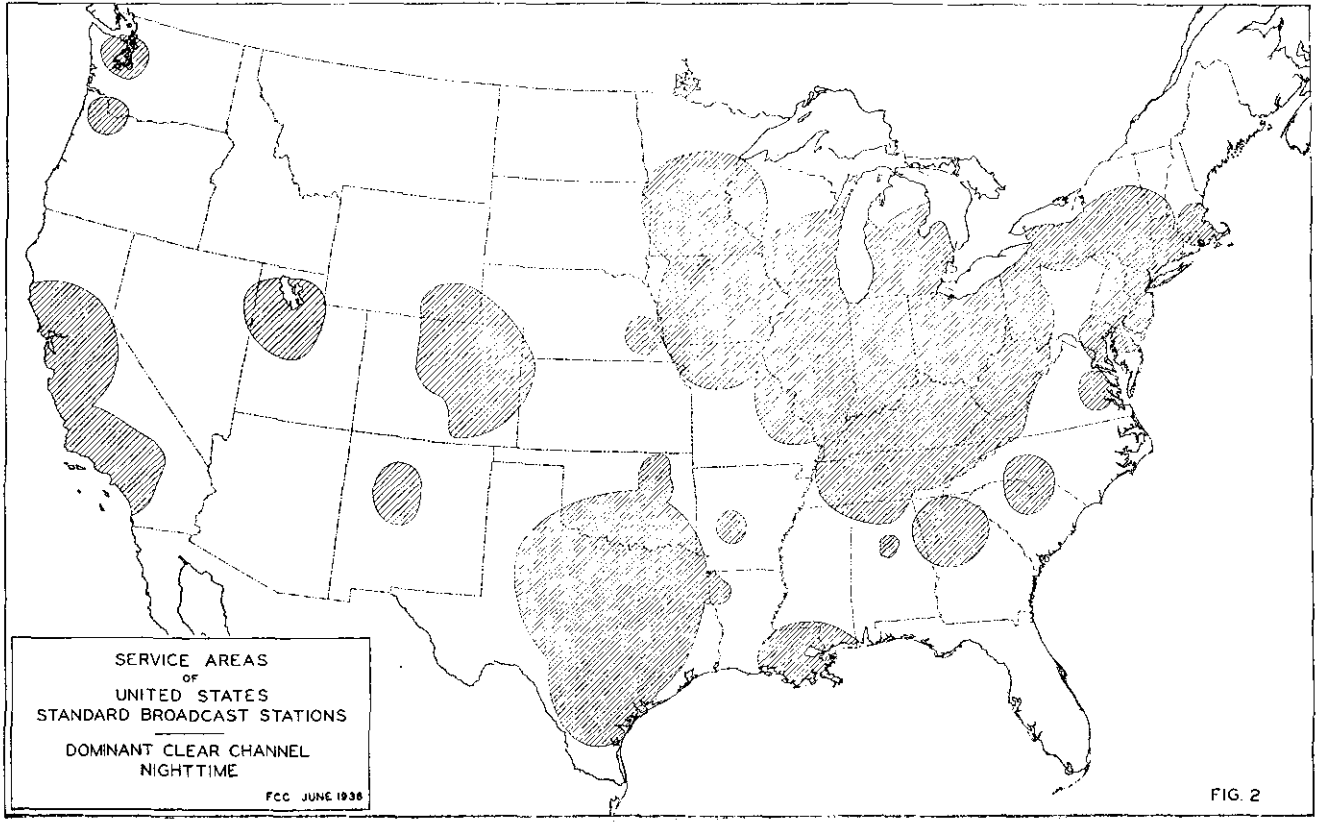

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
DOMINANT CLEAR CHANNEL
NIGHTTIME
FCC JUNE 1936

FIG. 2

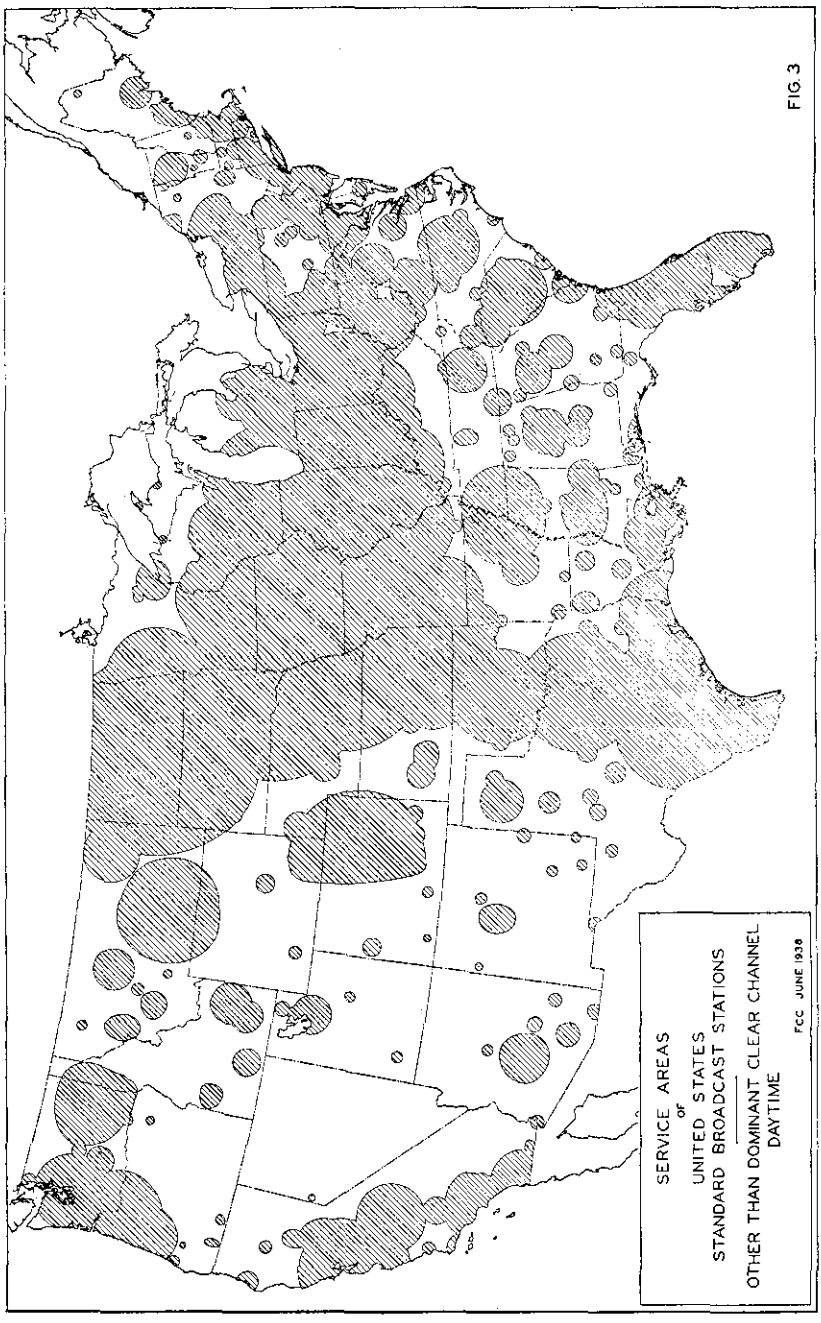

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
OTHER THAN DOMINANT CLEAR CHANNEL
DAYTIME
FCC JUNE 1936

FIG 3

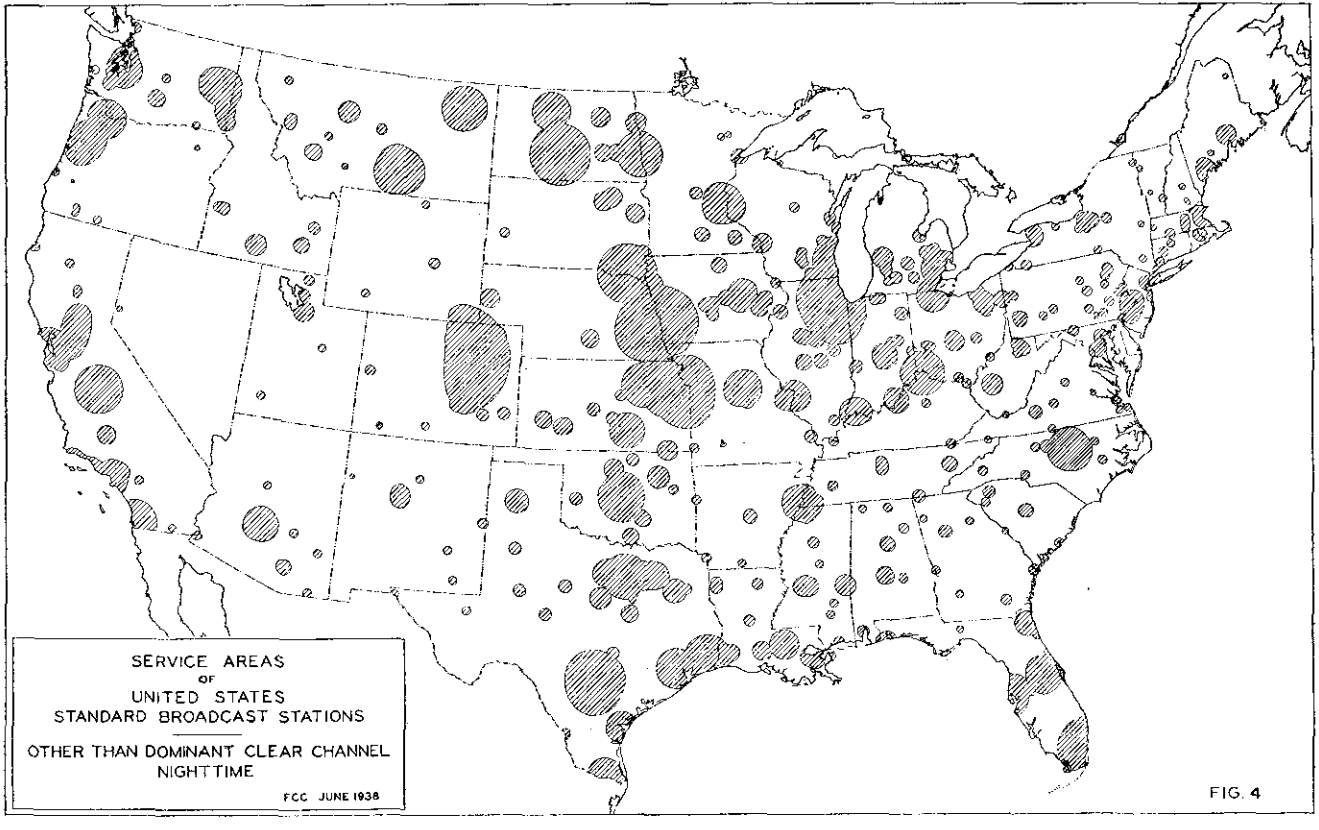

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
OTHER THAN DOMINANT CLEAR CHANNEL
NIGHTTIME
FCC JUNE 1938

FIG. 4

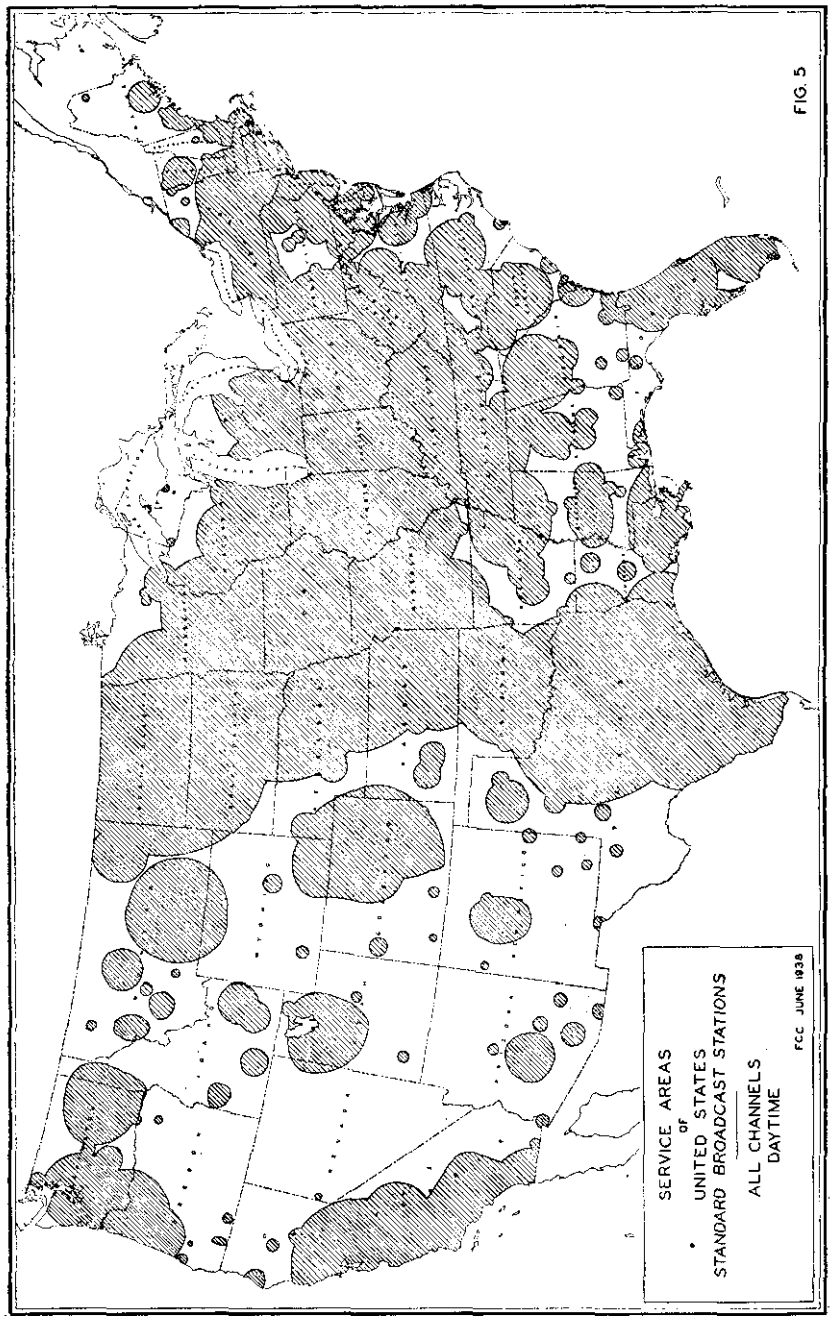

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
ALL CHANNELS
DAYTIME
FCC JUNE 1938

FIG. 5

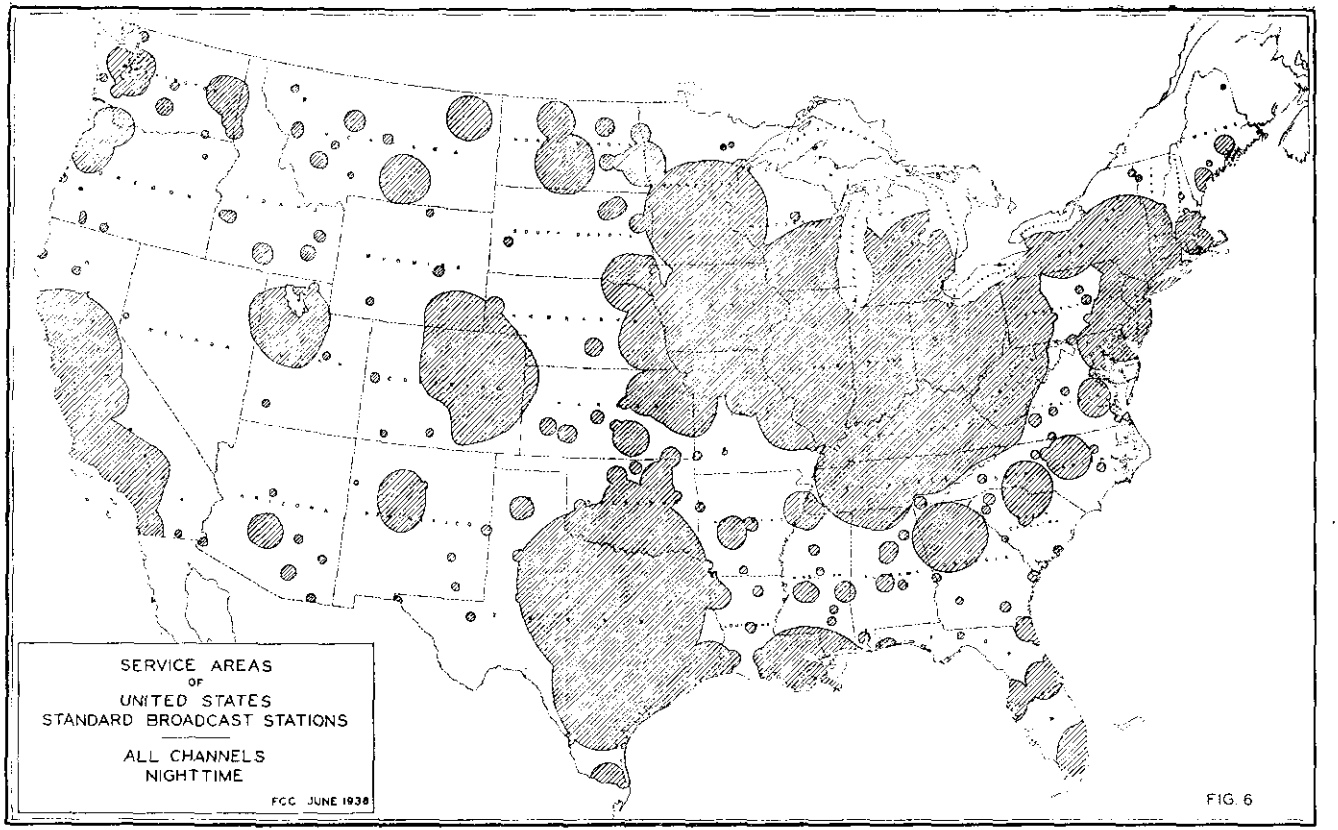

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
ALL CHANNELS
NIGHTTIME
FCC JUNE 1938

FIG. 6

TABLE I.—*Summary of daytime service rendered by United States broadcast stations*

[Dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	920,112	1,726,136	65.2	744,273	368,818	375,455	50.4	1,901,975	551,294	1,350,681	71.0
Arizona	435,573	0	435,573	100.0	149,856	0	149,856	100.0	285,717	0	285,717	100.0
Arkansas	1,854,482	153,200	1,701,282	91.7	382,878	32,178	350,700	91.6	1,471,604	121,022	1,350,582	91.8
California	5,677,251	4,977,659	699,592	12.3	4,160,596	3,828,002	332,594	8.0	1,516,655	1,149,657	366,998	24.2
Colorado	1,035,791	809,653	226,138	21.8	519,882	469,823	50,059	9.6	515,909	339,830	176,079	34.1
Connecticut	1,606,903	1,564,159	42,744	2.7	1,131,770	1,100,722	31,048	2.7	475,133	463,437	11,696	2.5
Delaware	238,380	223,150	15,230	6.4	123,146	123,146	0	0	115,234	100,004	15,230	13.2
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	0	1,468,211	100.0	759,778	0	759,778	100.0	708,433	0	708,433	100.0
Georgia	2,908,506	1,423,325	1,485,181	51.1	895,492	531,249	364,243	40.7	2,013,014	892,076	1,120,938	55.7
Idaho	445,032	0	445,032	100.0	129,507	0	129,507	100.0	315,525	0	315,525	100.0
Illinois	7,630,654	7,603,926	26,728	.4	5,635,727	5,619,647	16,080	.3	1,994,927	1,984,279	10,648	.5
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,470,939	0	0	979,292	979,292	0	0	1,491,647	1,491,647	0	0
Kansas	1,880,999	878,795	1,002,204	53.3	729,834	308,033	421,801	57.8	1,151,165	570,762	580,403	50.5
Kentucky	2,614,589	2,614,589	0	0	799,026	799,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,371,190	730,403	34.8	833,532	690,281	143,251	17.2	1,268,061	680,909	587,152	46.3
Maine	797,423	0	797,423	100.0	321,506	0	321,506	100.0	475,917	0	475,917	100.0
Maryland	1,631,526	1,392,425	239,101	14.7	974,869	914,338	60,531	6.2	656,657	478,087	178,570	27.2
Massachusetts	4,249,614	4,214,508	35,106	.8	3,831,426	3,805,825	25,601	.7	418,188	408,683	9,505	2.3
Michigan	4,842,325	4,358,515	483,810	10.0	3,302,075	3,102,374	199,701	6.0	1,540,250	1,256,141	284,109	18.4
Minnesota	2,563,953	2,079,990	483,963	18.9	1,257,616	1,054,072	203,544	16.2	1,306,337	1,025,918	280,419	21.5
Mississippi	2,009,821	187,758	1,822,063	90.7	338,850	49,382	289,468	85.4	1,670,971	138,376	1,532,595	91.7
Missouri	3,629,367	2,043,510	1,585,857	43.7	1,859,119	1,167,876	691,243	37.2	1,770,248	875,634	894,614	50.5
Montana	537,606	0	537,606	100.0	181,036	0	181,036	100.0	356,570	0	356,570	100.0
Nebraska	1,377,963	1,149,477	228,486	16.6	486,107	442,125	43,982	9.0	891,856	707,352	184,504	20.7
Nevada	91,058	774	90,284	99.1	34,464	0	34,464	100.0	56,594	774	55,820	98.6
New Hampshire	465,293	81,958	383,335	82.4	273,079	50,388	222,691	81.5	192,214	31,570	160,644	83.6
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	59,578	363,739	85.9	106,816	26,570	80,246	75.1	316,501	33,008	283,493	89.6
New York	12,588,066	12,323,445	264,621	2.1	10,521,952	10,401,507	120,445	1.1	2,066,114	1,921,938	144,176	7.0
North Carolina	3,170,276	713,189	2,457,087	77.5	809,847	205,974	603,873	74.6	2,360,429	507,215	1,853,214	78.5
North Dakota	630,845	0	630,845	100.0	113,306	0	113,306	100.0	567,539	0	567,539	100.0
Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0

Oklahoma	2,396,040	2,131,256	264,784	11.1	821,681	792,000	29,681	3.6	1,574,359	1,339,256	235,103	14.9
Oregon	953,786	453,381	500,405	52.5	489,746	317,456	172,290	35.2	▶464,040	▶135,925	328,115	70.7
Pennsylvania	9,631,350	8,378,179	1,253,171	13.0	6,533,511	5,982,741	550,770	8.4	3,097,839	2,395,438	702,401	22.7
Rhode Island	687,497	600,956	86,541	12.6	635,429	583,708	51,721	8.1	52,068	17,248	34,820	66.9
South Carolina	1,738,765	361,942	1,376,823	79.2	371,080	60,080	311,000	83.8	1,367,685	301,862	1,065,823	77.9
South Dakota	692,849	180,134	512,715	74.0	130,907	42,284	88,623	67.7	561,942	137,850	424,092	75.5
Tennessee	2,616,556	1,944,582	671,974	25.7	896,538	501,470	395,068	44.1	1,720,018	1,443,112	276,906	16.1
Texas	5,824,715	4,639,139	1,185,576	20.4	2,389,348	1,806,425	582,923	24.4	3,435,367	2,832,714	602,653	17.5
Utah	507,847	388,344	119,503	23.5	266,264	242,812	23,452	8.8	241,583	145,532	96,051	39.8
Vermont	359,611	102,690	256,921	71.4	118,766	44,092	74,764	63.0	240,845	58,688	182,157	75.6
Virginia	2,421,851	896,786	1,525,065	63.0	785,537	297,397	488,140	62.1	1,636,314	599,389	1,036,925	63.4
Washington	1,563,396	789,485	773,911	49.5	884,539	583,230	301,309	34.1	678,857	206,255	472,602	69.6
West Virginia	1,729,205	1,648,412	80,793	4.7	491,504	476,647	14,857	3.0	1,237,701	1,171,765	65,936	5.3
Wisconsin	2,939,006	2,491,931	447,075	15.2	1,553,843	1,412,381	141,462	9.1	1,385,163	1,079,550	305,613	22.1
Wyoming	225,565	48,535	177,030	78.5	70,097	25,970	44,127	63.0	155,468	22,565	132,903	85.5
Total	122,775,046	93,084,979	29,690,067	24.2	68,954,823	59,368,627	9,586,196	13.9	53,820,223	33,716,352	20,103,871	37.4

[1] See p. 180 for explanation of daytime service areas.

TABLE II.—*Summary of nighttime service rendered by United States broadcast stations*

[Dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	816,127	1,830,121	69.2	744,273	368,818	375,455	50.4	1,901,975	447,309	1,454,666	76.5
Arizona	435,573	0	435,573	100.0	149,856	0	149,856	100.0	285,717	0	285,717	100.0
Arkansas	1,854,482	128,202	1,726,280	93.1	332,878	32,178	350,700	91.6	1,471,604	96,024	1,375,580	93.5
California	5,677,251	4,977,659	699,592	12.3	4,160,596	3,828,002	332,594	8.0	1,516,655	1,149,657	366,998	24.2
Colorado	1,035,791	809,653	226,138	21.8	519,882	469,823	50,059	9.6	515,909	339,830	176,079	34.1
Connecticut	1,606,903	1,543,823	63,080	3.9	1,131,770	1,096,132	35,638	3.1	475,133	447,691	27,442	5.8
Delaware	238,380	223,150	15,230	6.4	123,146	123,146	0	0	115,234	100,004	15,230	13.2
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	0	1,468,211	100.0	759,778	0	759,778	100.0	708,433	0	708,433	100.0
Georgia	2,908,506	1,423,325	1,485,181	51.1	895,492	531,249	364,243	40.7	2,013,014	892,076	1,120,938	55.7
Idaho	445,032	0	445,032	100.0	129,507	0	129,507	100.0	315,525	0	315,525	100.0
Illinois	7,630,654	7,603,926	26,728	.4	5,635,727	5,619,647	16,080	.3	1,994,927	1,984,279	10,648	.5
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,282,170	188,769	7.6	979,292	889,463	89,829	9.2	1,491,647	1,392,707	98,940	6.6
Kansas	1,830,999	878,795	1,002,204	53.3	729,834	308,033	421,801	57.8	1,151,165	570,762	580,403	50.4
Kentucky	2,614,589	2,614,589	0	0	709,026	709,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,284,209	817,384	38.9	833,532	679,208	154,324	18.5	1,268,061	605,001	663,060	52.3
Maine	797,423	0	797,423	100.0	321,506	0	321,506	100.0	475,917	0	475,917	100.0
Maryland	1,631,526	1,392,425	239,101	14.7	974,869	914,338	60,531	6.2	656,657	478,087	178,570	27.2
Massachusetts	4,249,614	4,211,750	37,864	.9	3,831,426	3,805,825	25,601	.7	418,188	405,925	12,263	2.9
Michigan	4,842,325	4,358,515	483,810	10.0	3,302,075	3,102,374	199,701	6.0	1,540,250	1,256,141	284,109	18.4
Minnesota	2,563,953	2,070,919	493,034	19.2	1,257,616	1,051,428	206,188	16.4	1,306,337	1,019,491	286,846	22.0
Mississippi	2,009,821	187,758	1,822,063	90.7	338,850	49,382	289,468	85.4	1,670,971	138,376	1,532,595	91.7
Missouri	3,629,367	2,025,658	1,603,709	44.2	1,859,119	1,167,876	691,243	37.2	1,770,248	857,782	912,466	51.5
Montana	537,606	0	537,606	100.0	181,036	0	181,036	100.0	356,570	0	356,570	100.0
Nebraska	1,377,963	259,128	1,118,835	81.2	486,107	113,362	372,745	76.7	891,856	145,766	746,090	83.7
Nevada	91,058	774	90,284	99.2	34,464	0	34,464	100.0	56,594	774	55,820	98.6
New Hampshire	465,293	81,958	383,335	82.4	273,079	50,388	222,691	81.5	192,214	31,570	160,644	83.6
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	59,578	363,739	85.9	106,816	26,570	80,246	75.1	316,501	33,008	283,493	89.6
New York	12,588,066	12,323,445	264,621	2.1	10,521,952	10,401,507	120,445	1.1	2,066,114	1,921,938	144,176	7.0
North Carolina	3,170,276	648,540	2,521,736	79.5	809,847	205,976	603,871	74.6	2,360,429	442,564	1,917,865	81.2
North Dakota	680,845	0	680,845	100.0	113,306	0	113,306	100.0	567,539	0	567,539	100.0
Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0

Oklahoma	2,396,040	1,681,379	714,661	29.8	821,681	652,813	168,868	20.6	1,574,359	1,028,566	545,793	34.7
Oregon	953,786	453,381	500,405	52.5	489,746	317,456	172,290	35.2	464,040	135,925	328,115	70.7
Pennsylvania	9,631,350	8,378,179	1,253,171	13.0	6,533,511	5,982,741	550,770	8.4	3,097,839	2,395,438	702,401	22.7
Rhode Island	687,497	600,956	86,541	12.6	635,429	583,708	51,721	8.1	52,068	17,248	34,820	66.9
South Carolina	1,738,765	361,942	1,376,823	79.2	371,080	60,080	311,000	83.8	1,367,685	301,862	1,065,823	77.9
South Dakota	692,849	20,183	672,666	97.1	130,907	0	130,907	100.0	561,942	20,183	541,759	96.4
Tennessee	2,616,556	1,910,337	706,219	27.0	896,538	497,747	398,791	44.5	1,720,018	1,412,590	307,428	17.9
Texas	5,824,715	4,593,242	1,231,473	21.1	2,389,348	1,803,915	585,433	24.5	3,435,367	2,789,327	646,040	18.8
Utah	507,847	388,344	119,503	23.5	266,264	242,812	23,452	8.8	241,583	145,532	96,051	39.8
Vermont	359,611	102,690	256,921	71.4	118,766	44,002	74,764	63.0	240,845	58,688	182,157	75.6
Virginia	2,421,851	845,452	1,576,399	65.1	785,537	277,793	507,744	64.6	1,636,314	567,659	1,068,655	65.3
Washington	1,563,396	789,485	773,911	49.5	884,539	583,230	301,309	34.1	678,857	206,255	472,602	69.6
West Virginia	1,729,205	1,648,412	80,793	4.7	491,504	476,647	14,857	3.0	1,237,701	1,171,765	65,936	5.3
Wisconsin	2,939,006	2,491,931	447,075	15.2	1,553,843	1,412,381	141,462	9.1	1,385,163	1,079,550	305,613	22.1
Wyoming	225,565	48,535	177,030	78.5	70,097	25,970	44,127	63.0	155,468	22,565	132,903	85.5
Total	122,775,046	90,933,927	31,841,119	25.9	68,954,823	58,724,422	10,230,401	14.8	53,820,223	32,209,505	21,610,718	40.2

[1] See p. 180 for explanation of nighttime service areas.

TABLE III.—*Summary of daytime service rendered by United States broadcast stations*

[Other than dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	1,471,850	1,174,398	44.4	744,273	673,396	70,877	9.5	1,901,975	798,454	1,103,521	58.0
Arizona	435,573	223,323	212,250	48.7	149,856	120,697	29,159	19.5	285,717	102,626	183,091	64.0
Arkansas	1,854,482	1,115,978	738,504	39.8	382,878	297,485	85,393	22.3	1,471,604	818,493	653,111	44.4
California	5,677,251	5,369,260	307,991	5.4	4,160,596	4,128,901	31,695	0.8	1,516,655	1,240,359	276,296	18.2
Colorado	1,035,791	793,699	242,092	23.4	519,882	483,005	36,877	7.1	515,909	310,694	205,215	39.8
Connecticut	1,606,903	1,539,126	67,777	4.2	1,131,770	1,107,749	24,021	2.1	475,133	431,377	43,756	9.2
Delaware	238,380	169,449	68,931	29.9	123,146	114,627	8,519	6.9	115,234	54,822	60,412	52.4
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	1,229,526	238,685	16.3	759,778	717,164	42,614	5.6	708,433	512,362	196,071	27.7
Georgia	2,908,506	1,559,297	1,349,209	46.4	895,492	734,985	160,507	17.9	2,013,014	824,312	1,188,702	59.0
Idaho	445,032	292,968	152,064	34.2	129,507	101,386	28,121	21.7	315,525	191,582	123,943	39.3
Illinois	7,630,654	7,630,654	0	0	5,635,727	5,635,727	0	0	1,994,927	1,994,927	0	0
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,470,939	0	0	979,292	979,292	0	0	1,491,647	1,491,647	0	0
Kansas	1,880,999	1,715,099	165,900	8.8	729,834	712,764	17,070	2.3	1,151,165	1,002,335	148,830	12.9
Kentucky	2,614,589	1,601,052	1,013,537	38.8	799,026	683,133	115,893	14.5	1,815,563	917,919	897,644	49.4
Louisiana	2,101,593	1,569,937	531,656	25.3	833,532	790,021	43,511	5.2	1,268,061	779,916	488,145	38.5
Maine	797,423	463,833	333,590	41.8	321,506	272,940	48,566	15.1	475,917	190,893	285,024	59.9
Maryland	1,631,526	1,511,271	120,255	7.4	974,869	955,774	19,095	2.0	656,657	555,497	101,160	15.4
Massachusetts	4,249,614	4,100,796	148,818	3.5	3,831,426	3,767,747	63,679	1.7	418,188	333,049	85,139	20.6
Michigan	4,842,325	4,351,856	490,469	10.1	3,302,075	3,146,150	155,925	4.7	1,540,250	1,205,706	334,544	21.7
Minnesota	2,563,953	2,239,746	324,207	12.6	1,257,616	1,195,287	62,329	5.0	1,306,337	1,044,459	261,878	20.0
Mississippi	2,009,821	1,255,702	754,119	37.5	338,850	231,539	107,311	31.7	1,670,971	1,024,163	646,808	38.7
Missouri	3,629,367	3,546,675	82,692	2.3	1,859,119	1,850,048	9,071	0.5	1,770,248	1,696,627	73,621	4.2
Montana	537,306	402,515	135,091	25.1	181,036	171,861	9,175	5.1	356,570	230,654	125,916	35.3
Nebraska	1,377,963	1,216,871	161,092	11.7	486,107	453,842	32,265	6.6	891,856	763,029	128,827	14.4
Nevada	91,058	23,202	67,856	74.5	34,464	23,037	11,427	33.2	56,594	165	56,429	99.7
New Hampshire	465,293	251,752	213,541	45.9	273,079	191,173	81,906	30.0	192,214	60,579	131,635	68.5
New Jersey	4,041,334	3,875,813	165,521	4.1	3,339,244	3,227,134	112,110	3.4	702,090	648,679	53,411	7.6
New Mexico	423,317	103,377	319,940	75.6	106,816	66,646	40,170	37.6	316,501	36,731	279,770	88.4
New York	12,583,066	11,792,746	795,320	6.3	10,521,952	10,229,039	292,913	2.8	2,066,114	1,563,707	502,407	24.3
North Carolina	3,170,276	1,775,015	1,395,261	44.0	809,847	599,209	210,638	26.0	2,360,429	1,175,806	1,184,623	50.2
North Dakota	680,845	680,845	0	0	113,306	113,306	0	0	567,539	567,539	0	0
Ohio	6,646,697	6,605,489	41,208	0.6	4,507,371	4,507,371	0	0	2,139,326	2,098,118	41,208	1.9

Oklahoma	2,396,040	2,084,607	311,433	13.0	821,681	786,008	35,673	4.3	1,574,359	1,298,599	275,760	17.5
Oregon	953,786	754,884	198,902	20.9	489,746	451,878	37,868	7.7	464,040	303,006	161,034	34.7
Pennsylvania	9,631,350	8,942,681	688,669	7.2	6,533,511	6,359,815	173,696	2.7	3,097,839	2,582,866	514,973	16.6
Rhode Island	687,497	687,497	0	0	635,429	635,429	0	0	52,068	52,068	0	0
South Carolina	1,738,765	1,431,898	306,867	17.6	371,080	332,244	38,836	10.5	1,367,685	1,099,654	268,031	19.6
South Dakota	692,849	670,578	22,271	3.2	130,907	127,999	2,908	2.2	561,942	542,579	19,363	3.4
Tennessee	2,616,556	1,665,272	951,284	36.4	896,538	742,500	154,038	17.2	1,720,018	922,772	797,246	46.4
Texas	5,824,715	4,960,632	864,083	14.8	2,389,348	2,232,832	156,516	6.6	3,435,367	2,727,800	707,567	20.6
Utah	507,847	356,477	151,370	29.8	266,264	250,811	15,453	5.8	241,583	105,666	135,917	56.3
Vermont	359,611	112,630	246,981	68.7	118,766	21,193	97,573	82.2	240,845	91,437	149,408	62.0
Virginia	2,421,851	1,756,070	665,781	27.5	755,537	749,137	36,400	4.6	1,636,314	1,006,933	629,381	38.5
Washington	1,563,396	1,472,218	91,178	5.8	884,539	878,496	6,043	0.7	678,857	593,722	85,135	12.5
West Virginia	1,729,205	1,682,395	46,810	2.7	491,504	491,504	0	0	1,237,701	1,190,891	46,810	3.8
Wisconsin	2,939,006	2,755,932	183,074	6.2	1,553,843	1,509,956	43,887	2.8	1,385,163	1,245,976	139,187	10.0
Wyoming	225,585	113,246	112,319	49.8	70,097	62,154	7,943	11.3	155,468	51,092	104,376	67.1
Total	122,775,046	106,122,050	16,652,996	13.6	68,954,823	66,197,152	2,757,671	4.0	53,820,223	39,924,898	13,895,325	25.9

[1] See p. 180 for explanation of daytime service areas.

TABLE IV.—*Summary of nighttime service rendered by United States broadcast stations*

[Other than dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	775,094	1,871,154	70.7	744,273	546,845	197,428	26.5	1,901,975	228,249	1,673,730	88.0
Arizona	435,573	178,511	257,062	59.0	149,856	120,697	29,159	19.5	285,717	57,814	227,903	79.8
Arkansas	1,854,482	359,251	1,495,231	80.6	382,878	182,874	200,004	52.2	1,471,604	176,377	1,295,227	88.0
California	5,677,251	4,635,663	1,041,588	18.4	4,160,596	3,924,357	236,239	5.7	1,516,655	711,306	805,349	53.1
Colorado	1,035,791	675,906	359,885	34.7	519,882	477,982	41,900	8.1	515,909	197,924	317,985	61.6
Connecticut	1,606,903	735,404	871,499	54.2	1,131,770	591,097	540,673	47.8	475,133	144,307	330,826	69.6
Delaware	238,380	126,928	111,452	46.8	123,146	110,728	12,418	10.1	115,234	16,200	99,034	85.9
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	918,146	550,065	37.4	759,778	666,912	92,866	12.2	708,433	251,234	457,199	64.5
Georgia	2,908,506	725,828	2,182,678	75.0	895,492	548,373	347,119	38.8	2,013,014	177,455	1,835,559	91.2
Idaho	445,032	160,150	284,882	64.0	129,507	91,587	37,920	29.3	315,525	68,563	246,962	78.3
Illinois	7,630,654	6,135,489	1,495,165	19.6	5,635,727	5,134,590	501,137	8.9	1,994,927	1,000,899	994,028	49.8
Indiana	3,238,503	1,989,355	1,249,148	38.6	1,795,892	1,364,401	431,491	24.0	1,442,611	624,954	817,657	56.7
Iowa	2,470,939	1,231,224	1,239,715	50.2	979,292	649,576	329,716	33.7	1,491,647	581,648	909,999	61.0
Kansas	1,880,999	1,163,377	717,622	38.2	729,834	601,466	128,368	17.6	1,151,165	561,911	589,254	51.2
Kentucky	2,614,589	947,022	1,667,567	63.8	799,026	611,462	187,564	23.5	1,815,563	335,560	1,480,003	81.5
Louisiana	2,101,593	1,066,989	1,034,604	49.2	833,532	705,913	127,619	15.3	1,268,061	361,076	906,985	71.5
Maine	797,423	335,084	462,339	58.0	321,506	261,584	59,922	18.6	475,917	73,500	402,417	84.6
Maryland	1,631,526	1,045,554	585,972	35.9	974,869	852,778	122,091	12.5	656,657	192,776	463,881	70.6
Massachusetts	4,249,614	3,464,276	785,338	18.5	3,831,426	3,276,249	555,177	14.5	418,188	188,027	230,161	55.0
Michigan	4,842,325	3,447,301	1,395,024	28.8	3,302,075	2,862,082	439,993	13.3	1,540,250	585,219	955,031	62.0
Minnesota	2,563,953	1,318,688	1,245,265	48.6	1,257,616	1,029,796	227,820	18.1	1,306,337	288,892	1,017,455	77.9
Mississippi	2,009,821	397,470	1,612,351	80.2	338,850	156,562	182,288	53.8	1,670,971	240,908	1,430,063	85.6
Missouri	3,629,367	2,280,135	1,349,232	37.2	1,859,119	1,659,672	199,447	10.7	1,770,248	620,463	1,149,785	65.0
Montana	537,606	220,254	317,352	59.0	181,036	137,662	43,374	24.0	356,570	82,592	273,978	76.8
Nebraska	1,377,963	896,115	481,848	35.0	486,107	404,547	81,560	16.8	891,856	491,568	400,288	44.9
Nevada	91,058	23,243	67,815	74.5	34,464	23,037	11,427	33.2	56,594	206	56,388	99.6
New Hampshire	465,293	111,502	353,791	76.0	273,079	101,682	171,397	62.8	192,214	9,820	182,394	94.9
New Jersey	4,041,334	3,239,339	801,995	19.8	3,339,244	2,820,260	518,984	15.5	702,090	419,079	283,011	40.3
New Mexico	423,317	90,980	332,337	78.5	106,816	66,646	40,170	37.6	316,501	24,334	292,167	92.3
New York	12,588,066	9,712,922	2,875,144	22.8	10,521,952	9,212,845	1,309,107	12.4	2,066,114	500,077	1,566,037	75.8
North Carolina	3,170,276	966,910	2,203,366	69.5	809,847	354,713	455,134	56.2	2,360,429	612,197	1,748,232	74.1
North Dakota	680,845	335,166	345,679	50.8	113,306	100,039	13,267	11.7	567,539	235,127	332,412	58.6

Ohio	6,646,697	4,486,333	2,160,364	32.5	4,507,371	3,609,631	897,740	19.9	2,139,326	876,702	1,262,624	59.0
Oklahoma	2,396,040	1,085,550	1,310,490	54.7	821,681	593,276	228,405	27.8	1,574,359	492,274	1,082,085	68.7
Oregon	953,786	677,601	276,185	29.0	489,746	430,340	59,406	12.1	464,040	247,261	216,779	46.7
Pennsylvania	9,631,350	5,893,090	3,738,260	38.8	6,533,511	4,970,544	1,562,967	23.9	3,097,839	922,546	2,175,293	70.2
Rhode Island	687,497	605,876	81,621	11.9	635,429	589,143	46,286	7.3	52,068	16,733	35,335	67.9
South Carolina	1,738,765	317,284	1,421,481	81.8	371,080	165,184	205,896	55.5	1,367,685	152,100	1,215,585	88.9
South Dakota	692,849	281,444	411,405	59.4	130,907	90,309	40,598	31.0	561,942	191,135	370,807	66.0
Tennessee	2,616,556	981,882	1,634,674	62.4	896,538	683,769	212,769	23.7	1,720,018	298,113	1,421,905	82.7
Texas	5,824,715	3,069,471	2,755,244	47.4	2,389,348	1,816,772	572,576	24.0	3,435,367	1,252,699	2,182,668	63.5
Utah	507,847	304,741	203,106	40.0	266,264	216,196	50,068	18.8	241,583	88,545	153,038	63.3
Vermont	359,611	66,683	292,928	84.2	118,766	52,355	66,411	55.9	240,845	14,328	226,517	94.1
Virginia	2,421,851	819,872	1,601,979	66.1	785,537	604,083	181,454	23.1	1,636,314	215,789	1,420,525	86.8
Washington	1,563,396	1,139,172	424,224	27.1	884,539	800,954	83,585	9.4	678,857	338,218	340,639	50.2
West Virginia	1,729,205	487,535	1,241,670	71.8	491,504	191,448	300,056	61.0	1,237,701	296,087	941,614	76.1
Wisconsin	2,939,006	1,700,529	1,238,477	42.1	1,553,843	1,231,680	322,163	20.7	1,385,163	468,849	916,314	66.2
Wyoming	225,565	60,846	164,719	73.0	70,097	50,956	19,141	27.3	155,468	9,890	145,578	93.6
Total	122,775,046	72,174,054	50,600,992	41.2	68,954,823	56,232,523	12,722,300	18.5	53,820,223	15,941,531	37,878,692	70.4

[1] See p. 180 for explanation of daytime service areas.

TABLE V.—*Summary of daytime service rendered by United States broadcast stations*

[All classes of stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	1,684,725	961,523	36.3	744,273	688,821	55,452	7.5	1,901,975	995,904	906,071	47.6
Arizona	435,573	223,323	212,250	48.7	149,856	120,697	29,159	19.5	285,717	102,626	183,091	64.1
Arkansas	1,854,482	1,243,351	611,131	32.9	382,878	324,041	58,837	15.4	1,471,604	919,310	552,294	37.5
California	5,677,251	5,442,921	234,330	4.1	4,160,596	4,131,923	28,673	.7	1,516,655	1,310,998	205,657	13.6
Colorado	1,035,791	848,773	187,018	18.0	519,882	490,577	29,305	5.6	515,909	358,196	157,713	30.6
Connecticut	1,606,903	1,601,128	5,775	.4	1,131,770	1,131,770	0	0	475,133	469,358	5,775	1.2
Delaware	238,380	229,680	8,700	3.6	123,146	123,146	0	0	115,234	106,534	8,700	7.5
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	1,229,526	238,685	16.2	759,778	717,164	42,614	5.6	708,433	512,362	196,071	27.7
Georgia	2,908,506	1,984,315	924,191	31.8	895,492	799,232	96,260	10.7	2,013,014	1,185,083	827,931	41.2
Idaho	445,032	292,968	152,064	34.2	129,507	101,386	28,121	21.7	315,525	191,582	123,943	39.3
Illinois	7,630,654	7,630,654	0	0	5,635,727	5,635,727	0	0	1,994,927	1,994,927	0	0
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,470,939	0	0	979,292	979,292	0	0	1,491,647	1,491,647	0	0
Kansas	1,880,999	1,726,540	154,459	8.2	729,834	716,390	13,444	1.8	1,151,165	1,010,150	141,015	12.2
Kentucky	2,614,589	2,614,589	0	0	799,026	799,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,718,905	382,688	18.2	833,532	808,564	24,968	3.0	1,268,061	910,341	357,720	28.2
Maine	797,423	463,833	333,590	41.8	321,506	272,940	48,566	15.1	475,917	190,893	285,024	59.9
Maryland	1,631,526	1,570,693	60,833	3.7	974,869	959,866	15,003	1.5	656,657	610,827	45,830	7.0
Massachusetts	4,249,614	4,240,109	9,505	.2	3,831,426	3,831,426	0	0	418,188	408,683	9,505	2.3
Michigan	4,842,325	4,402,577	439,748	9.0	3,302,075	3,150,821	151,254	4.6	1,540,250	1,251,756	288,494	18.7
Minnesota	2,563,953	2,325,763	238,190	9.3	1,257,616	1,216,689	40,927	3.3	1,306,337	1,109,074	197,263	15.1
Mississippi	2,009,821	1,323,841	685,980	34.1	338,850	235,878	102,972	30.4	1,670,971	1,087,963	583,008	34.9
Missouri	3,629,367	3,554,475	74,892	2.1	1,859,119	1,850,048	9,071	.5	1,770,248	1,704,427	65,821	3.7
Montana	537,606	402,515	135,091	25.1	181,036	171,861	9,175	5.1	356,570	230,654	125,916	35.3
Nebraska	1,377,963	1,218,221	159,742	11.6	486,107	453,842	32,265	6.6	891,856	764,379	127,477	14.3
Nevada	91,058	24,202	66,856	73.4	34,464	23,037	11,427	33.2	56,594	1,165	55,429	97.9
New Hampshire	465,293	274,946	190,347	40.9	273,079	204,967	68,112	24.9	192,214	69,979	122,235	63.6
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	134,477	288,840	68.2	106,816	66,649	40,167	37.6	316,501	67,828	248,673	78.6
New York	12,588,066	12,509,630	78,436	.6	10,521,952	10,474,876	47,076	.4	2,066,114	2,034,754	31,360	1.5
North Carolina	3,170,276	2,234,801	935,475	29.5	809,847	718,387	91,460	11.3	2,360,429	1,516,414	844,015	35.8
North Dakota	680,845	680,845	0	0	113,306	113,306	0	0	567,539	567,539	0	0

Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0
Oklahoma	2,396,040	2,275,654	120,386	5.0	821,681	813,607	8,074	1.0	1,574,359	1,462,047	112,312	7.1
Oregon	953,786	754,884	198,902	20.9	489,746	451,878	37,868	7.7	464,040	303,006	161,034	34.7
Pennsylvania	9,631,350	9,193,711	437,639	4.5	6,533,511	6,425,886	107,625	1.6	3,097,839	2,767,825	330,014	10.7
Rhode Island	687,497	687,497	0	0	635,429	635,429	0	0	52,068	52,068	0	0
South Carolina	1,738,765	1,447,471	291,294	16.8	371,080	335,817	35,263	9.5	1,367,685	1,111,654	256,031	18.7
South Dakota	692,849	670,578	22,271	3.2	130,907	127,999	2,908	2.2	561,942	542,579	19,363	3.4
Tennessee	2,616,556	2,563,876	52,680	2.0	896,538	886,944	9,594	1.1	1,720,018	1,676,932	43,086	2.5
Texas	5,824,715	5,553,106	271,609	4.7	2,389,348	2,318,522	70,826	3.0	3,435,367	3,234,584	200,783	5.8
Utah	507,847	431,729	76,118	15.1	266,264	263,197	3,067	1.2	241,583	168,532	73,051	30.2
Vermont	359,611	299,020	60,591	16.8	118,766	113,672	5,094	4.3	240,845	185,348	55,497	23.0
Virginia	2,421,351	2,092,761	329,090	13.6	785,537	775,585	9,952	1.3	1,636,314	1,317,176	319,138	19.5
Washington	1,563,396	1,472,218	91,178	5.8	884,539	878,496	6,043	.7	678,857	593,722	85,135	12.5
West Virginia	1,729,205	1,726,005	3,200	.2	491,504	491,504	0	0	1,237,701	1,234,501	3,200	.3
Wisconsin	2,939,006	2,782,125	156,881	5.3	1,553,843	1,513,449	40,394	2.6	1,385,163	1,268,676	116,487	8.4
Wyoming	225,565	118,996	106,569	47.2	70,097	62,154	7,943	11.3	155,468	56,842	98,626	63.4
Total	122,775,046	112,786,299	9,988,747	8.1	68,954,823	67,535,864	1,418,959	2.1	53,820,223	45,250,435	8,569,788	15.9

[1] See p. 180 for explanation of daytime service areas.

TABLE VI.—*Summary of nighttime service rendered by United States broadcast stations*

[All Classes of Stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	1,146,008	1,500,240	56.7	744,273	577,863	166,410	22.4	1,901,975	568,145	1,333,830	70.1
Arizona	435,573	178,511	257,062	59.0	149,856	120,697	29,159	19.5	285,717	57,814	227,903	79.8
Arkansas	1,854,482	487,453	1,367,029	73.7	382,878	215,052	167,826	43.8	1,471,604	272,401	1,199,203	81.5
California	5,677,251	5,252,879	424,372	7.5	4,160,596	4,052,597	107,999	2.6	1,516,655	1,200,282	316,373	20.9
Colorado	1,035,791	835,417	200,374	19.3	519,882	490,577	29,305	5.6	515,909	344,840	171,069	33.2
Connecticut	1,606,903	1,543,823	63,080	3.9	1,131,770	1,096,132	35,638	3.1	475,133	447,691	27,442	5.8
Delaware	238,380	223,150	15,230	6.4	123,146	123,146	0	0	115,234	100,004	15,230	13.2
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	918,146	550,065	37.5	759,778	666,912	92,866	12.2	708,433	251,234	457,199	64.5
Georgia	2,908,506	1,597,980	1,310,526	45.1	805,492	667,969	227,523	25.4	2,013,014	930,011	1,083,003	53.8
Idaho	445,032	160,150	284,882	64.0	129,507	91,587	37,920	29.3	315,525	68,563	246,962	78.3
Illinois	7,630,554	7,603,926	26,728	.4	5,635,727	5,619,647	16,080	.3	1,994,927	1,984,279	10,648	.5
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,445,129	25,810	1.0	979,292	979,292	0	0	1,491,647	1,465,837	25,810	1.7
Kansas	1,880,999	1,185,559	695,440	37.0	729,834	609,828	120,006	16.4	1,151,165	575,731	575,434	50.0
Kentucky	2,614,589	2,614,589	0	0	799,026	799,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,452,783	648,810	30.9	833,532	761,529	72,003	8.6	1,268,061	691,254	576,807	45.5
Maine	797,423	335,084	462,339	58.0	321,506	261,584	59,922	18.6	475,917	73,500	402,417	84.6
Maryland	1,631,526	1,441,596	189,930	11.6	974,869	945,199	29,670	3.0	656,657	496,397	160,260	24.4
Massachusetts	4,249,614	4,211,750	37,864	.9	3,831,426	3,805,825	25,601	.7	418,188	405,925	12,263	2.9
Michigan	4,842,325	4,400,777	441,548	9.1	3,302,075	3,140,413	161,662	4.9	1,540,250	1,260,364	279,886	18.2
Minnesota	2,563,953	2,283,653	280,300	10.9	1,257,616	1,195,629	61,987	4.9	1,306,337	1,088,024	218,313	16.7
Mississippi	2,009,821	551,332	1,458,489	72.6	338,850	178,547	160,303	47.9	1,670,971	372,785	1,298,186	77.7
Missouri	3,629,367	2,865,542	763,825	21.0	1,859,119	1,750,695	108,424	5.8	1,770,248	1,114,847	655,401	37.0
Montana	537,606	220,254	317,352	59.0	181,036	137,662	43,374	24.0	356,570	82,592	273,978	76.8
Nebraska	1,377,963	913,289	464,674	33.7	486,107	407,853	78,254	16.1	891,856	505,436	386,420	43.3
Nevada	91,058	24,017	67,041	73.6	34,464	23,037	11,427	33.2	56,594	980	55,614	98.3
New Hampshire	465,293	195,595	269,698	58.0	273,079	152,070	121,009	44.3	192,214	43,525	148,689	77.4
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	93,223	330,094	78.0	106,816	55,470	51,346	48.1	316,501	37,753	278,748	88.1
New York	12,588,068	12,341,294	246,772	2.0	10,521,952	10,414,856	107,096	1.0	2,066,114	1,926,438	139,676	6.8
North Carolina	3,170,276	1,527,491	1,642,785	51.8	809,847	499,421	310,426	38.3	2,360,429	1,028,070	1,332,359	56.4
North Dakota	680,845	335,166	345,679	50.8	113,306	100,039	13,267	11.7	567,539	235,127	332,412	58.6
Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0

Oklahoma	2,396,040	1,918,236	477,804	19.9	821,681	759,530	62,151	7.6	1,574,359	1,158,706	415,653	26.4
Oregon	953,786	681,674	272,112	28.5	489,746	430,340	59,406	12.1	464,040	251,334	212,706	45.8
Pennsylvania	9,631,350	8,767,003	864,347	9.0	6,533,511	6,267,877	265,634	4.1	3,097,839	2,499,126	598,713	19.3
Rhode Island	687,497	600,956	86,541	12.6	635,429	583,708	51,721	8.1	52,068	17,248	34,820	66.9
South Carolina	1,738,765	594,274	1,144,491	65.8	371,080	170,768	200,312	54.0	1,367,685	423,506	944,179	69.0
South Dakota	692,849	300,184	392,665	56.7	130,907	90,309	40,598	31.0	561,942	209,875	352,067	62.7
Tennessee	2,616,556	2,051,495	565,061	21.6	896,538	617,545	278,993	31.1	1,720,018	1,433,950	286,068	16.6
Texas	5,824,715	5,290,507	534,208	9.2	2,389,348	2,269,220	120,128	5.0	3,435,367	3,021,287	414,080	12.1
Utah	507,847	425,129	82,718	16.3	266,264	263,197	3,067	1.2	241,583	161,932	79,651	33.0
Vermont	359,611	144,930	214,681	59.7	118,766	79,042	39,724	33.4	240,845	65,888	174,957	72.6
Virginia	2,421,851	1,405,441	1,016,410	42.0	785,537	670,892	114,645	14.6	1,636,314	734,549	901,765	55.1
Washington	1,563,396	1,182,551	380,845	24.4	884,539	804,533	80,006	9.0	678,857	378,018	300,839	44.3
West Virginia	1,729,205	1,648,412	80,793	4.7	491,504	476,647	14,857	3.0	1,237,701	1,171,765	65,936	5.3
Wisconsin	2,939,006	2,569,202	369,804	12.6	1,553,843	1,462,252	91,591	5.9	1,385,163	1,106,950	278,213	20.1
Wyoming	225,565	87,630	137,935	61.2	70,097	59,565	10,532	15.0	155,468	28,065	127,403	81.9
Total	122,775,046	101,466,593	21,308,453	17.4	68,954,823	65,074,955	3,879,868	5.6	53,820,223	36,391,638	17,428,585	32.4

[1] See p. 180 for explanation of nighttime service areas.

TABLE VII.—*Summary of daytime service rendered by United States broadcast stations, by land areas*

State	All stations				Dominant clear channel stations			Other than dominant clear channel stations		
	Total area in square miles, 1930	Area within service areas [1] (square) miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square) miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]
Alabama	51,279	26,083	25,196	49.1	10,829	40,450	78.9	20,527	30,752	60
Arizona	113,810	16,573	97,237	85.4	0	113,810	100	16,573	97,237	85.4
Arkansas	52,525	29,832	22,693	43.2	6,120	46,405	88.3	25,501	27,024	51.4
California	155,652	89,642	66,010	42.4	75,424	80,228	51.5	69,397	86,255	55.4
Colorado	103,658	55,273	48,385	46.7	52,637	51,021	49.2	45,292	58,366	56.3
Connecticut	4,820	4,773	47	1	4,726	94	2	4,169	659	13.7
Delaware	1,965	1,870	95	4.8	1,588	377	19.2	647	1,318	67.1
District of Columbia	62	62	0	0	62	0	0	62	0	0
Florida	54,861	39,607	15,254	27.8	0	54,861	100	39,607	15,254	27.8
Georgia	58,725	31,732	26,993	46	22,505	36,220	61.7	21,563	37,162	63.3
Idaho	83,354	21,940	61,414	73.7	0	83,354	100	21,940	61,414	73.7
Illinois	56,043	56,043	0	0	55,855	188	0.3	56,043	0	0
Indiana	36,045	36,045	0	0	36,045	0	0	36,045	0	0
Iowa	55,586	55,586	0	0	55,586	0	0	55,586	0	0
Kansas	81,774	58,798	22,976	28.1	29,379	52,395	64.1	56,915	24,859	30.4
Kentucky	40,181	40,181	0	0	40,181	0	0	20,030	20,151	50.2
Louisiana	45,409	38,418	6,991	15.4	22,223	23,186	51.1	31,733	13,676	30.1
Maine	29,895	7,910	21,985	73.6	0	29,895	100	7,910	21,985	73.6
Maryland	9,941	8,623	1,318	13.3	6,591	3,350	33.7	7,493	2,448	24.6
Massachusetts	8,039	7,945	94	1.2	7,851	188	2.3	6,532	1,507	18.7
Michigan	57,480	31,962	25,518	44.4	41,620	15,860	27.6	28,101	29,379	51.1
Minnesota	80,858	61,273	19,585	24.2	46,986	33,872	41.9	55,623	25,235	31.2
Mississippi	46,362	30,603	15,759	34	5,179	41,183	88.8	27,684	18,678	40.3
Missouri	68,727	65,620	3,107	4.5	33,051	35,676	51.9	65,243	3,484	5.1
Montana	146,131	78,437	67,694	46.3	0	146,131	100	78,437	67,694	46.3
Nebraska	76,808	68,521	8,287	10.8	41,902	34,906	45.4	68,239	8,569	11.2
Nevada	109,821	2,165	107,656	98	1,977	107,844	98.2	188	109,633	99.8
New Hampshire	9,031	6,960	2,071	22.9	1,036	7,995	88.5	6,583	2,448	27.1
New Jersey	7,514	7,514	0	0	7,514	0	0	6,478	1,036	13.8
New Mexico	122,503	14,971	107,532	87.8	13,182	109,321	89.2	7,156	115,347	94.2
New York	47,654	42,287	5,367	11.3	39,925	7,729	16.2	29,669	17,985	37.7
North Carolina	48,740	29,473	19,267	39.5	8,192	40,548	83.2	23,164	25,576	52.5
North Dakota	70,183	70,183	0	0	0	70,183	100	70,183	0	0
Ohio	40,740	40,740	0	0	40,740	0	0	39,893	847	2.1
Oklahoma	69,414	58,286	11,128	16	50,470	18,944	27.3	49,435	19,979	28.8

Oregon	95,607	23,729	71,878	75.2	4,802	90,805	94.9	23,729	71,878	75.2
Pennsylvania	44,832	35,322	9,510	21.2	29,284	15,548	34.7	31,649	13,183	29.4
Rhode Island	1,067	1,067	0	0	785	282	26.4	1,067	0	0
South Carolina	30,495	24,105	6,390	21	6,309	24,186	79.3	23,823	6,672	21.9
South Dakota	76,868	70,936	5,932	7.7	7,722	69,146	90	70,936	5,932	7.7
Tennessee	41,687	40,275	1,412	3.4	35,661	6,026	14.5	20,056	21,631	51.9
Texas	262,398	198,682	63,716	24.3	161,299	101,099	38.5	163,465	98,933	37.7
Utah	82,184	25,800	56,384	68.6	24,105	58,079	70.7	7,345	74,839	91.1
Vermont	9,124	6,676	2,448	26.8	2,448	6,676	73.2	4,793	4,331	47.5
Virginia	40,262	22,466	17,796	44.2	14,407	25,855	64.2	15,592	24,670	61.3
Washington	66,836	51,695	15,141	22.7	9,793	57,043	85.3	51,695	15,141	22.7
West Virginia	24,022	23,834	188	0.8	21,103	2,919	12.2	22,892	1,130	4.7
Wisconsin	55,256	45,086	10,170	18.4	36,252	19,004	34.4	42,638	12,618	22.8
Wyoming	97,548	22,034	75,514	77.4	10,923	86,625	88.8	19,021	78,527	80.5
Total	2,973,776	1,827,638	1,146,138	38.5	1,124,269	1,849,507	62.2	1,598,334	1,375,442	46.3

[1] See p. 180 for explanation of daytime service areas.

TABLE VIII.—*Summary of nighttime service rendered by United States broadcast stations—by land areas*

State	Total area in square miles, 1930	All stations			Dominant clear channel stations			Other than dominant clear channel stations		
		Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]
Alabama	51,279	12,571	38,708	75.5	9,134	42,145	82.2	4,857	46,422	90.5
Arizona	113,810	7,619	106,191	93.3	0	113,810	100	7,619	106,191	93.3
Arkansas	52,525	9,089	43,436	82.7	4,708	47,817	91	4,381	48,144	91.7
California	155,652	82,376	73,276	47.1	75,424	80,228	51.5	32,476	123,176	79.1
Colorado	103,658	53,399	50,259	48.5	52,637	51,021	49.2	28,667	74,991	72.3
Connecticut	4,820	4,349	471	9.8	4,349	471	9.8	1,143	3,677	76.3
Delaware	1,965	1,588	377	19.2	1,588	377	19.2	190	1,775	90.3
District of Columbia	62	62	0	0	62	0	0	62	0	0
Florida	54,861	19,143	35,718	65.1	0	54,861	100	19,143	35,718	65.1
Georgia	58,725	23,838	34,887	59.4	22,505	36,220	61.7	2,571	56,154	95.6
Idaho	83,354	6,857	76,497	91.8	0	83,354	100	6,857	76,497	91.8
Illinois	56,043	55,855	188	0.3	55,855	188	0.3	24,286	31,757	56.7
Indiana	36,045	36,045	0	0	36,045	0	0	14,095	21,950	60.9
Iowa	55,586	54,578	1,008	1.8	52,102	3,484	6.3	22,952	32,634	58.7
Kansas	81,774	29,810	51,964	63.5	1,130	80,644	98.6	27,048	54,726	66.9
Kentucky	40,181	40,181	0	0	40,181	0	0	6,095	34,086	84.8
Louisiana	45,409	22,640	22,769	50.1	19,021	26,388	58.1	10,952	34,457	75.9
Maine	29,895	3,429	26,466	88.5	0	29,895	100	3,429	26,466	88.5
Maryland	9,941	6,972	2,969	29.9	6,591	3,350	33.7	1,810	8,131	81.8
Massachusetts	8,039	7,757	282	3.5	7,757	282	3.5	3,048	4,991	62.1
Michigan	57,480	41,906	15,574	27.1	41,620	15,860	27.6	10,667	46,813	81.4
Minnesota	80,858	52,323	28,535	35.3	46,704	34,154	42.2	12,476	68,382	84.6
Mississippi	46,362	10,131	36,231	78.1	5,179	41,183	88.8	5,238	41,121	88.7
Missouri	68,727	41,048	27,679	40.3	32,392	36,335	52.9	19,048	49,679	72.3
Montana	146,131	24,571	121,560	83.2	0	146,131	100	24,571	121,560	83.2
Nebraska	76,808	26,096	50,712	66	11,770	65,038	84.7	23,429	53,379	69.5
Nevada	109,821	2,072	107,749	98.1	1,977	107,844	98.2	95	109,726	99.9
New Hampshire	9,031	1,131	7,900	87.5	1,036	7,995	88.5	190	8,841	97.9
New Jersey	7,514	7,514	0	0	7,514	0	0	3,333	4,181	55.6
New Mexico	122,503	14,060	108,503	88.6	13,182	109,321	89.2	3,429	119,074	97.2
New York	47,654	40,020	7,634	16	39,925	7,729	16.2	5,429	42,225	88.6
North Carolina	48,740	16,762	31,978	65.6	6,874	41,866	85.9	10,286	38,454	78.9
North Dakota	70,183	29,810	40,373	57.5	0	70,183	100	29,810	40,373	57.5
Ohio	40,740	40,740	0	0	40,740	0	0	13,905	26,835	65.9
Oklahoma	69,414	43,578	25,836	37.2	36,911	32,503	46.8	17,333	52,081	75

Oregon	95,607	12,666	82,941	86.8	4,802	90,805	94.9	12,476	83,131	87
Pennsylvania	44,832	30,617	14,215	31.7	29,284	15,548	34.7	7,521	37,308	83.2
Rhode Island	1,067	785	282	26.4	785	282	26.4	381	686	64.3
South Carolina	30,495	8,286	22,209	72.8	6,309	24,186	79.3	2,381	28,114	92.2
South Dakota	76,868	12,952	63,916	83.2	1,601	75,267	98	11,619	65,249	84.9
Tennessee	41,687	38,510	3,177	7.6	36,320	5,367	12.9	4,952	36,735	88.1
Texas	262,398	174,074	88,324	33.7	160,169	102,229	39	58,667	203,731	77.6
Utah	82,184	24,772	57,412	69.9	24,105	58,079	70.7	3,238	78,946	96.1
Vermont	9,124	2,571	6,553	71.8	2,448	6,676	73.2	381	8,743	95.8
Virginia	40,262	15,564	24,698	61.3	13,183	27,079	67.3	2,952	37,310	92.7
Washington	66,836	20,381	46,455	69.5	9,793	57,043	85.3	17,333	49,503	74.1
West Virginia	24,022	21,856	2,166	9	21,856	2,166	9	3,524	20,498	85.3
Wisconsin	55,256	36,919	18,337	33.2	36,252	19,004	34.4	12,286	42,970	77.8
Wyoming	97,548	11,714	85,834	88	10,923	86,625	88.8	3,524	94,024	96.4
Total	2,973,776	1,281,527	1,692,249	56.9	1,032,743	1,941,033	65.3	542,158	2,431,618	81.8

[1] See p. 180 for explanation of nighttime service areas.

TABLE IX.—*Analysis of urban population within the service areas[1] of all United States standard broadcast stations*

State	A	Day					Night				
		B	C	D	E	F	G	H	I	J	K
	Urban population of State	Urban population within service areas	Urban population within service areas outside metropolitan districts, etc.[1]	Percentage, $\frac{C}{B}\times 100$	Urban population within metropolitan districts, etc.,[1] B−C	Percentage, $\frac{B-C}{B}\times 100$	Urban population within service areas	Urban population within service areas outside metropolitan districts, etc.[1]	Percentage, $\frac{H}{G}\times 100$	Urban population within metropolitan districts, etc.,[1] G−H	Percentage, $\frac{G-H}{G}\times 100$
Alabama	744,273	688,821	47,708	6.9	641,113	93.1	577,863	33,547	5.8	544,316	94.2
Arizona	149,856	120,697	15,069	12.5	105,628	87.5	120,697	15,069	12.5	105,628	87.5
Arkansas	382,878	324,041	102,648	31.6	221,393	68.4	215,052	38,041	17.7	177,011	82.3
California	4,160,596	4,131,923	296,412	7.2	3,835,511	92.8	4,052,597	301,207	7.4	3,751,390	92.6
Colorado	519,882	490,577	59,793	12.2	430,784	87.8	490,577	63,219	12.9	427,358	87.1
Connecticut	1,131,770	1,131,770	110,663	9.8	1,021,107	90.2	1,096,132	117,068	10.7	979,064	89.3
Delaware	123,146	123,146	8,519	6.9	114,627	93.1	123,146	8,519	6.9	114,627	93.1
District of Columbia	486,869	486,869	0	0	486,869	100.0	486,869	0	0	486,869	100.0
Florida	759,778	717,164	149,944	20.9	567,220	79.1	666,912	105,864	15.9	561,048	84.1
Georgia	895,492	799,232	152,664	19.1	646,568	80.9	667,969	176,940	26.5	491,029	73.5
Idaho	129,507	101,386	28,652	28.2	72,734	71.8	91,587	17,747	19.4	73,840	80.6
Illinois	5,635,727	5,635,727	752,124	13.3	4,883,603	86.7	5,619,647	808,757	14.4	4,812,890	85.6
Indiana	1,795,892	1,795,892	545,974	30.4	1,249,918	69.6	1,795,892	545,974	30.4	1,249,918	69.6
Iowa	979,292	979,292	456,332	46.7	522,960	53.3	979,292	453,012	46.3	526,280	53.7
Kansas	729,834	716,390	286,472	40.0	429,918	60.0	609,828	193,319	31.7	416,509	68.3
Kentucky	799,026	799,026	198,068	24.8	600,958	75.2	799,026	198,068	24.8	600,958	75.2
Louisiana	833,532	808,564	141,797	17.5	666,767	82.5	761,529	88,152	11.6	673,377	88.1
Maine	321,506	272,940	128,487	47.1	144,453	52.9	261,584	117,321	44.9	144,263	55.1
Maryland	974,869	959,866	33,911	3.5	925,955	96.5	945,199	44,674	4.7	900,525	95.3
Massachusetts	3,831,426	3,831,426	302,409	7.9	3,529,017	92.1	3,805,825	311,707	8.2	3,494,118	91.8
Michigan	3,302,075	3,150,821	315,009	10.0	2,835,812	90.0	3,140,413	420,533	13.4	2,719,880	86.6
Minnesota	1,257,616	1,216,689	181,994	15.0	1,034,695	85.0	1,195,629	201,271	16.8	994,358	83.2
Mississippi	338,850	235,878	88,495	37.5	147,383	62.5	178,547	54,107	30.3	124,440	69.7
Missouri	1,859,119	1,850,048	284,679	15.4	1,565,369	84.6	1,750,695	312,429	17.8	1,438,266	82.2
Montana	181,036	171,861	42,360	24.6	129,501	75.4	137,662	20,655	15.0	117,007	85.0
Nebraska	486,107	453,842	130,929	28.8	322,913	71.2	407,853	82,699	20.3	325,154	79.7
Nevada	34,464	23,037	0	0	23,037	100.0	23,037	0	0	23,037	100.0
New Hampshire	273,079	204,967	101,167	49.4	103,800	50.6	152,070	66,833	43.9	85,237	56.1
New Jersey	3,339,244	3,339,244	129,084	3.9	3,210,160	96.1	3,339,244	134,783	4.0	3,204,461	96.0
New Mexico	106,816	66,649	0	0	66,649	100.0	55,470	0	0	55,470	100.0
New York	10,521,952	10,474,876	725,378	6.9	9,749,498	93.1	10,414,856	750,300	7.2	9,664,556	92.8
North Carolina	809,847	718,387	265,471	37.0	452,916	63.0	499,421	176,777	35.4	322,644	64.6
North Dakota	113,306	113,306	16,443	14.6	96,863	85.4	100,039	3,176	3.2	96,863	96.8
Ohio	4,507,371	4,507,371	1,144,375	25.4	3,362,996	74.6	4,507,371	1,209,963	26.8	3,297,408	73.2

Oklahoma	821,681	813,607	315,872	38.8	497,735	61.2	759,530	282,789	37.2	476,741	62.8
Oregon	489,746	451,878	32,390	7.2	419,488	92.8	430,340	21,201	4.9	409,139	95.1
Pennsylvania	6,533,511	6,425,886	896,067	13.9	5,529,819	86.1	6,267,877	850,770	13.6	5,417,107	86.4
Rhode Island	635,429	635,429	18,674	3.0	616,755	97.0	583,708	7,677	1.3	576,031	98.7
South Carolina	371,080	335,817	135,130	40.1	200,687	59.9	170,768	62,042	36.3	108,726	63.7
South Dakota	130,907	127,999	29,651	23.1	98,348	76.9	90,309	10,942	12.1	79,367	87.9
Tennessee	896,538	886,944	216,763	24.4	670,181	75.6	617,545	213,598	34.6	403,947	65.4
Texas	2,389,348	2,318,522	587,073	25.3	1,731,449	74.7	2,269,220	654,884	28.9	1,614,336	71.1
Utah	266,264	263,197	57,237	21.7	205,960	78.3	263,197	57,237	21.7	205,960	78.3
Vermont	118,766	113,672	49,697	43.7	63,975	56.3	79,042	18,944	24.0	60,098	76.0
Virginia	785,537	775,585	154,823	20.0	620,762	80.0	670,892	87,461	13.0	583,431	87.0
Washington	884,539	878,496	66,369	7.6	812,127	92.4	804,533	29,723	3.7	774,810	96.3
West Virginia	491,504	491,504	147,382	30.0	344,122	70.0	476,647	126,277	26.5	350,370	73.5
Wisconsin	1,553,843	1,513,449	332,269	21.9	1,181,180	78.1	1,462,252	352,339	24.1	1,109,913	75.9
Wyoming	70,097	62,154	28,559	45.9	33,595	54.1	59,565	25,970	43.6	33,595	56.4
Total	68,954,823	67,535,864	10,310,986	15.3	57,224,878	84.7	65,074,955	9,871,585	15.2	55,203,370	84.8

[1] See p. 181 for explanation.

TABLE X.—*Population and number of United States cities within the daytime service area [1] of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*

State	Total of all classes				Cities of 100,000 or more				Cities of 25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
Alabama	53	12	744,273	47,708	1	0	259,678	0	2	0	134,281	0
Arizona	14	3	149,856	15,069					2	0	80,624	0
Arkansas	49	24	382,878	102,648					[2] 3	0	123,872	0
California	155	53	4,160,596	296,412	5	0	2,446,532	0	16	1	764,609	29,696
Colorado	27	10	519,882	59,793	1	0	287,861	0	2	0	83,333	0
Connecticut	33	9	1,131,770	110,663	3	0	473,443	0	9	1	398,815	26,040
Delaware	5	2	123,146	8,519	1	0	106,597	0				
District of Columbia	1	0	486,869	0	1	0	486,869	0				
Florida	58	30	759,778	149,944	3	0	341,347	0	4	0	125,944	0
Georgia	64	28	895,492	152,664	1	0	270,366	0	4	0	242,326	0
Idaho	21	8	129,507	28,652								
Illinois	192	109	5,635,727	752,124	2	0	3,481,407	0	22	2	1,005,034	82,518
Indiana	95	72	1,795,892	545,974	5	0	785,975	0	12	2	474,215	59,578
Iowa	81	65	979,292	456,332	1	0	142,559	0	9	4	406,505	126,747
Kansas	62	46	729,834	280,472	2	0	232,967	0	2	0	91,205	0
Kentucky	53	37	799,026	198,068	1	0	307,745	0	5	0	203,347	0
Louisiana	48	31	833,532	141,797	1	0	458,762	0	3	0	133,412	0
Maine	26	12	321,506	128,487					3	1	134,507	34,948
Maryland	21	9	974,869	33,911	1	0	804,874	0	2	0	68,608	0
Massachusetts	122	27	3,831,426	302,409	9	0	1,774,375	0	21	2	1,036,878	78,047
Michigan	114	45	3,302,075	315,009	3	0	1,893,746	0	14	1	712,589	26,944
Minnesota	73	37	1,257,616	181,994	3	0	837,425	0				
Mississippi	39	15	338,850	88,495					2	0	80,236	0
Missouri	72	51	1,859,119	284,679	2	0	1,221,706	0	4	0	197,725	0
Montana	18	8	101,036	42,360					2	0	68,354	0
Nebraska	35	24	486,107	130,929	1	0	214,006	0	1	0	75,933	0
Nevada	5	0	34,464	0								
New Hampshire	18	9	273,079	101,167					3	1	133,525	31,463
New Jersey	169	21	3,339,244	129,084	6	0	1,254,210	0	20	0	936,186	0
New Mexico	16	0	106,816	0					1	0	26,570	0
New York	196	89	10,521,952	725,378	7	0	8,404,778	0	16	4	800,121	137,398
North Carolina	68	41	809,847	265,471					8	0	420,142	0
North Dakota	12	4	113,306	16,443					1	0	28,619	0
Ohio	174	102	4,507,371	1,144,375	8	0	2,663,801	0	18	7	734,964	269,545
Oklahoma	68	53	821,681	315,872	2	0	326,647	0	2	0	58,425	0
Oregon	28	9	489,746	32,390	1	0	301,815	0	1	0	26,266	0
Pennsylvania	354	123	6,533,511	896,067	5	0	2,991,349	0	22	1	1,113,014	25,561

Rhode Island	19	2	635,429	18,674	1	0	252,981	0	6	0	252,941	0
South Carolina	40	24	371,080	135,130					4	0	171,723	0
South Dakota	16	6	130,907	29,651					1	0	33,362	0
Tennessee	48	39	896,538	216,763	4	0	632,609	0	1	1	25,080	25,080
Texas	159	100	2,389,348	587,073	5	0	1,050,237	0	[1] 11	1	456,631	43,690
Utah	21	13	266,264	57,237	1	0	140,267	0	1	0	40,272	0
Vermont	14	8	118,766	49,697								
Virginia	45	25	785,537	154,823	2	0	312,639	0	5	1	218,552	28,564
Washington	38	15	884,539	66,369	3	0	587,914	0	2	0	61,390	0
West Virginia	39	24	491,504	147,382					5	0	256,128	0
Wisconsin	83	52	1,553,843	332,269	1	0	578,249	0	12	2	480,878	65,375
Wyoming	8	3	70,097	28,359								
Total	3,169	1,529	68,954,823	10,310,986	93	0	36,325,736	0	284	32	12,917,141	1,091,194
	Cities of 10,000 to 25,000				Cities of 5,000 to 10,000				Cities of 2,500 to 5,000			
Alabama	11	0	185,622	0	11	2	69,654	12,909	28	10	95,038	34,799
Arizona					6	1	44,224	7,693	6	2	25,008	7,376
Arkansas	6	0	97,261	0	9	6	56,416	37,537	31	18	105,329	65,111
California	28	5	409,460	60,877	48	15	342,421	101,459	58	32	197,574	104,380
Colorado	5	2	56,894	22,712	10	4	60,916	22,976	9	4	30,878	14,105
Connecticut	12	3	209,500	57,284	5	2	33,752	15,201	4	3	16,260	12,138
Delaware									4	2	16,549	8,519
District of Columbia												
Florida	7	2	91,359	22,931	17	10	112,719	67,396	27	18	88,409	59,617
Georgia	10	2	153,017	34,153	16	8	113,785	54,768	33	18	115,998	63,743
Idaho	2	0	38,015	0	5	0	44,122	0	14	8	47,370	28,652
Illinois	34	15	482,439	222,865	56	35	393,926	244,980	78	57	272,921	201,761
Indiana	17	15	237,807	214,981	27	25	172,871	161,989	[2] 34	30	125,024	109,426
Iowa	11	6	167,405	89,241	14	13	94,173	87,671	46	42	168,650	152,673
Kansas	16	10	216,992	128,573	12	8	81,815	59,194	30	28	106,855	98,705
Kentucky	7	3	89,511	34,720	16	12	112,451	83,373	24	22	85,972	79,975
Louisiana	4	1	67,480	14,029	11	9	72,564	56,414	29	21	101,314	71,354
Maine	6	3	93,503	47,011	9	5	64,962	35,362	8	3	28,534	11,166
Maryland	3	0	37,962	0	3	1	20,517	5,588	12	8	42,878	28,323
Massachusetts	43	9	693,428	141,243	39	8	287,939	53,424	10	8	38,806	29,695
Michigan	23	7	327,343	96,919	32	18	213,702	122,638	42	19	154,395	68,508
Minnesota	11	3	159,550	35,204	18	10	123,500	67,392	41	24	137,111	79,338
Mississippi	11	3	157,153	37,440	4	3	23,448	18,160	22	9	78,013	32,895
Missouri	10	3	165,060	57,339	21	17	151,136	115,753	35	31	123,492	111,587
Montana	4	1	55,334	12,494	6	2	33,245	13,566	6	5	19,103	16,300
Nebraska	6	4	78,013	55,235	9	5	62,216	31,819	18	15	55,939	43,875
Nevada	1	0	18,529	0	1	0	5,165	0	3	0	10,770	0
New Hampshire	7	4	96,937	49,953	4	2	24,460	10,511	4	2	18,157	8,940
New Jersey	40	2	609,321	34,736	50	8	351,371	54,580	53	11	188,156	39,768

[1] See associated text for explanation of daytime service areas.
[2] Includes 1 place counted also in another State.

TABLE X.—*Population and number of United States cities within the daytime service area of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*—Continued

State	Total of all classes				Cities of 100,000 or more				Cities of 25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
New Mexico	2	0	22,349	0	4	0	25,920	0	9	0	31,977	0
New York	47	20	730,349	316,424	41	14	277,831	91,720	85	51	308,873	179,836
North Carolina	13	8	172,672	115,304	17	12	113,693	78,886	30	21	103,340	71,281
North Dakota	[3]	0	44,301	0	6	2	34,074	10,131	2	2	6,312	6,312
Ohio	33	19	517,498	280,689	51	34	359,925	443,296	[1] 64	42	231,183	150,845
Oklahoma	12	6	168,698	74,647	22	18	162,358	139,841	30	29	105,553	101,384
Oregon	4	0	56,350	0	9	2	61,218	11 208	13	7	44,097	21,182
Pennsylvania	75	25	1,157,990	394,960	103	38	734,549	269,957	149	59	536,609	205,589
Rhode Island	7	1	95,671	10,997	4	1	30,170	7,677	1	0	3,666	0
South Carolina	5	3	63,279	34,122	12	11	73,855	68,773	19	10	62,223	32,235
South Dakota	5	1	58,971	10,942	2	1	11,805	5,733	8	4	26,769	12,976
Tennessee	[2] 3	1	46,091	11,914	14	13	99,184	93,781	26	24	93,574	85,988
Texas	20	8	292,594	99,799	47	38	314,208	251,476	76	53	275,678	192,108
Utah	1	1	14,766	14,766	4	2	25,379	10,228	14	10	45,580	32,243
Vermont	3	1	53,411	11,307	7	4	50,278	28,256	4	3	15,077	10,134
Virginia	[2] 9	3	118,830	33,588	10	6	68,993	40,703	19	15	66,523	51,968
Washington	10	2	142,702	20,358	4	1	27,976	6,564	19	12	64,557	39,447
West Virginia	[2] 5	2	87,952	31,043	12	10	85,750	73,448	17	12	61,674	42,891
Wisconsin	14	3	223,821	44,307	20	15	141,905	109,048	36	32	128,990	113,539
Wyoming	2	1	33,980	17,361	3	1	25,585	8,609	3	1	10,532	2,589
Total	608	208	9,097,200	2,992,528	851	452	5,897,156	3,291,988	1,333	837	4,717,590	2,935,276

[2] Includes 1 place counted also in another States.
[3] Includes 2 places counted also in other States.

TABLE XI.—*Population and number of United States cities within the nighttime service area [1] of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*

State	Total of all classes				100,000 or more				25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
Alabama	53	6	744,273	33,547	1	0	259,678	0	2	0	134,281	0
Arizona	14	3	149,856	15,069		0		0	2	0	80,624	0
Arkansas	49	10	382,878	38,041		0		0	[2] 3	0	123,872	0
California	155	52	4,160,596	301,207	5	0	2,446,532	0	16	1	764,609	29,696
Colorado	27	11	519,882	63,219	1	0	287,861	0	2	0	83,333	0
Connecticut	33	9	1,131,770	117,068	3	0	473,443	0	9	2	398,815	55,680
Delaware	5	2	123,146	8,519	1	0	106,597	0				
District of Columbia	1	0	486,869	0	1	0	486,869	0				
Florida	58	20	759,778	105,864	3	0	341,347	0	4	0	125,944	0
Georgia	64	25	895,492	176,940	1	0	270,366	0	4	1	242,326	53,829
Idaho	21	3	129,507	17,747								
Illinois	192	111	5,635,727	806,757	2	0	3,481,407	0	22	4	1,005,034	148,113
Indiana	95	72	1,795,892	545,974	5	0	785,975	0	12	2	474,215	59,578
Iowa	81	64	979,292	453,012	1	0	142,559	0	9	4	406,505	126,747
Kansas	62	29	729,834	193,319	2	0	232,967	0	2	0	91,205	0
Kentucky	53	37	799,026	198,068	1	0	307,745	0	5	0	203,347	0
Louisiana	48	18	833,532	88,152	1	0	458,762	0	3	0	133,412	0
Maine	26	9	321,506	117,321		0		0	3	1	134,507	34,948
Maryland	21	9	974,869	44,674	1	0	804,874	0	2	0	68,608	0
Massachusetts	122	27	3,831,426	311,707	9	0	1,774,375	0	21	2	1,036,878	78,047
Michigan	114	46	3,302,075	420,533	3	0	1,893,746	0	14	3	712,589	139,020
Minnesota	73	37	1,257,616	201,271	3	0	837,425	0				
Mississippi	39	8	338,850	54,107					2	0	80,236	0
Missouri	72	40	1,859,119	312,429	2	0	1,221,706	0	4	1	197,725	80,935
Montana	18	4	181,036	20,655					2	0	68,354	0
Nebraska	35	17	486,107	82,699	1	0	214,006	0	1	0	75,933	0
Nevada	5	0	34,464	0								
New Hampshire	18	5	273,079	66,833					3	1	133,525	31,463
New Jersey	169	22	3,339,244	134,783	6	0	1,254,210	0	20	0	936,186	0
New Mexico	16	0	106,816	0					1	0	26,570	0
New York	196	86	10,521,952	750,300	7	0	8,404,778	0	16	4	800,121	150,590
North Carolina	68	28	809,847	176,777					8	0	420,142	0
North Dakota	12	1	113,306	3,176					1	0	28,619	0

[1] See associated text for explanation of nighttime service areas.
[2] Includes one place counted also in another State.

TABLE XI.—*Population and number of United States cities within the nighttime service area of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*—Continued

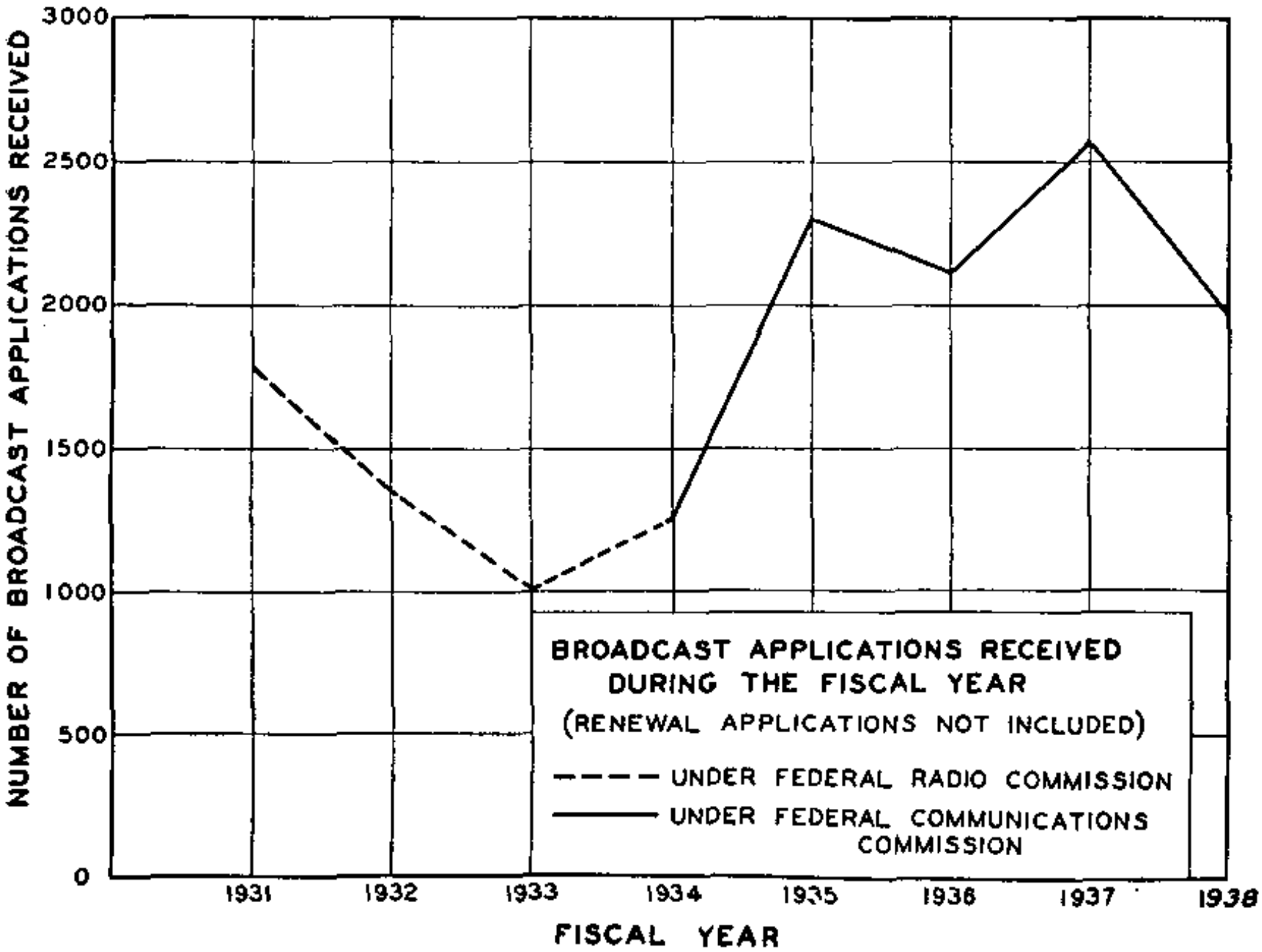
State	Total of all classes				Cities of 100,000 or more				Cities of 25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
Ohio	174	104	4,507,371	1,209,963	8	0	2,663,801	0	18	8	734,964	311,832
Oklahoma	68	45	821,681	282,789	2	0	326,647	0	2	0	58,425	0
Oregon	28	6	489,746	21,201	1	0	301,815	0	1	0	26,266	0
Pennsylvania	354	112	6,533,511	850,770	5	0	2,991,349	0	22	2	1,113,014	74,235
Rhode Island	19	1	635,429	7,677	1	0	252,981	0	6	0	252,941	0
South Carolina	40	12	371,080	62,042					4	0	171,723	0
South Dakota	16	1	130,907	10,942					1	0	33,362	0
Tennessee	48	39	895,538	213,598	4	0	632,609	0	1	1	25,080	25,080
Texas	159	99	2,389,348	654,884	5	0	1,050,237	0	[1] 11	2	456,631	104,592
Utah	21	13	266,264	57,237	1	0	140,267	0	1	0	40,272	0
Vermont	14	4	118,766	18,944								
Virginia	45	12	785,537	87,461	2	0	312,639	0	5	1	218,552	28,564
Washington	38	7	884,539	29,723	3	0	587,914	0	2	0	61,390	0
West Virginia	39	22	491,504	126,277					5	0	256,128	0
Wisconsin	83	51	1,553,843	352,339	1	0	578,249	0	12	3	480,878	91,662
Wyoming	8	2	70,097	25,970								
Total	3,169	1,341	68,954,823	9,871,585	93	0	36,325,736	0	284	43	12,917,141	1,624,611

State	Cities of 10,000 to 25,000				Cities of 5,000 to 10,000				Cities of 2,500 to 5,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
Alabama	11	1	185,622	15,593	11	0	69,654	0	28	5	95,038	17,954
Arizona		0		0	6	1	44,224	7,693	6	2	25,008	7,376
Arkansas	6	0	97,261	0	9	2	56,416	10,297	31	8	105,329	27,744
California	28	5	409,460	61,074	48	16	342,421	112,462	58	30	197,574	97,975
Colorado	5	2	56,894	22,712	10	4	60,916	22,976	9	5	30,878	17,531
Connecticut	12	2	209,500	34,363	5	2	33,752	15,201	4	3	16,260	11,824
Delaware									4	2	16,549	8,519
District of Columbia												
Florida	7	2	91,359	22,931	17	7	112,719	48,166	27	11	88,409	34,767
Georgia	10	1	153,017	20,131	16	7	113,785	46,608	33	16	115,998	56,372
Idaho	2	0	38,015	0	5	1	44,122	8,297	14	2	47,370	9,450
Illinois	34	14	482,439	209,333	56	35	393,926	244,980	78	58	272,921	204,331
Indiana	17	15	237,807	214,981	27	25	172,871	161,989	[1] 34	30	125,024	109,426

Iowa	11	6	167,405	89,241	14	13	94,173	87,671	46	41	168,650	149,353
Kansas	16	7	216,992	89,447	12	5	81,815	40,933	30	17	106,865	62,939
Kentucky	7	3	89,511	34,720	16	12	112,451	83,373	24	22	85,972	79,975
Louisiana	4	1	67,480	14,029	11	5	72,564	31,715	29	12	101,314	42,408
Maine	6	3	93,503	47,011	9	5	64,962	35,362	8	0	28,534	0
Maryland	3	1	37,962	14,434	3	1	20,547	5,588	12	7	42,878	24,652
Massachusetts	43	10	693,428	156,743	39	7	287,939	47,222	10	8	38,806	29,695
Michigan	23	7	327,343	96,919	32	17	213,702	116,086	42	19	154,695	68,508
Minnesota	11	5	159,580	66,283	18	9	123,500	60,190	41	23	137,111	74,798
Mississippi	11	2	157,153	27,397	4	1	23,448	6,220	22	5	78,013	20,490
Missouri	10	3	165,060	58,129	21	15	151,136	100,241	35	21	123,492	73,124
Montana	4	1	55,334	12,494	6	0	38,245	0	6	3	19,103	8,161
Nebraska	6	2	78,013	21,704	9	5	62,216	31,819	18	10	55,939	29,176
Nevada	1	0	18,529	0	1	0	5,165	0	3	0	10,770	0
New Hampshire	7	2	96,937	26,171	4	1	24,460	5,131	4	1	18,157	4,068
New Jersey	40	3	609,321	40,435	50	8	351,371	54,580	53	11	188,156	39,768
New Mexico	2	0	22,349	0	4	0	25,920	0	9	0	31,977	0
New York	47	21	730,349	342,007	41	15	277,831	96,781	85	46	308,873	160,922
North Carolina	13	6	172,672	79,756	17	6	113,693	40,796	30	16	103,340	56,225
North Dakota	3	0	44,301	0	6	0	34,074	0	2	1	6,312	3,176
Ohio	33	20	517,498	303,999	51	34	359,925	443,296	[3] 64	42	231,183	150,845
Oklahoma	12	7	168,698	91,744	22	14	162,358	106,889	30	24	105,553	84,156
Oregon	4	0	56,350	0	9	1	61,218	5,325	13	5	44,097	15,876
Pennsylvania	75	22	1,157,990	348,302	103	34	734,549	239,397	149	54	536,009	188,836
Rhode Island	7	0	95,671	0	4	1	30,170	7,677	1	0	3,666	0
South Carolina	5	1	63,279	11,322	12	5	73,855	30,015	19	6	62,223	20,705
South Dakota	5	1	58,971	10,942	2	0	11,805	0	8	0	26,769	0
Tennessee	[3] 3	1	46,091	11,914	14	13	99,184	90,030	26	24	93,574	86,574
Texas	20	9	292,594	115,715	47	37	314,208	249,472	76	51	275,678	185,105
Utah	1	1	14,766	14,766	4	2	25,379	10,228	14	10	45,580	32,243
Vermont	3	0	53,411	0	7	2	50,278	12,499	4	2	15,077	6,445
Virginia	[3] 9	2	118,830	21,598	10	2	68,993	13,395	19	7	66,523	23,904
Washington	10	1	142,702	10,170	4	0	27,976	0	19	6	64,557	19,553
West Virginia	[3] 5	1	87,952	16,186	12	9	85,750	67,200	17	12	61,674	42,891
Wisconsin	14	4	223,821	57,930	20	13	141,905	92,127	36	31	128,990	110,620
Wyoming	2	1	33,980	17,361	3	1	25,585	8,609	3	0	10,532	0
Total	608	196	9,097,200	2,849,978	851	393	5,897,156	2,898,536	1,333	709	4,717,590	2,498,460

[3] Includes two places counted also in other States.
[4] Includes one place counted also in another State.

APPENDIX G


NUMBER OF BROADCAST APPLICATIONS RECEIVED
3000
2500
2000
1500
1000
500
0
1931
1932
1933
1934
1935
1936
1937
1938
FISCAL YEAR
BROADCAST APPLICATIONS RECEIVED
DURING THE FISCAL YEAR
(RENEWAL APPLICATIONS NOT INCLUDED)
UNDER FEDERAL RADIO COMMISSION
UNDER FEDERAL COMMUNICATIONS COMMISSION

APPENDIX H

FINANCIAL AND OTHER STATISTICAL DATA CONCERNING BROADCAST STATIONS

STATISTICS RELATING TO BROADCAST STATIONS

Tables I to IX, inclusive, and chart 1, which follow, contain financial, operating, and other statistical data relating to broadcasting. These tables, as indicated on their face, are based upon responses to Commission Order No. 38 as supplemented by correspondence relating to broadcast networks; and upon *subsequent questionnaires relating to programs and employees* (all of which are mentioned on page 59 of this report), except table IX which is based, in part, on information from other sources as indicated. Chart 1 is associated with table IX and is based on the same sources of information.

The following statement shows the distribution of the returns (as of June 3, 1938) to Commission Order No. 38 mentioned above:

	Number
Total station licensees and construction permits authorized as of Dec. 31, 1937	721
Broadcast stations included in summaries	624
Broadcast stations filing joint reports embraced within the 624 responses	5
Noncommercial stations	32
Stations filing too late for tabulation	7
Stations filing reports that were incomplete and could not be used	6
Delinquent stations which did not file responses	5
Extraterritorial stations	10
Construction permits only	32
Total	721

Of the 32 noncommercial stations which filed returns to Commission Order No. 38, mentioned above, 21 were operated by educational institutions, 9 by religious groups, and 2 by miscellaneous organizations. Data concerning these stations are not contained in the following tables.

Tables I to IX, inclusive, and chart 1, referred to above, contain various analyses of revenue, expenses, income, and investment of broadcast stations and networks, and also concerning programs and employees of broadcast stations and other items indicated.

These tables and chart follow:

TABLE I.—*Analysis of net revenue from broadcast services and other financial data—all networks and 629 broadcast stations operating on a commercial basis, 1937*

[Combined summary of information submitted to the Commission by networks in response to letters requesting financial data in connection with network operations and by broadcast stations in response to Commission Order No. 38]

Item		*Amount*
(a) Revenues:		
1. Network portion of network time sales		$35,812,537
2. Time sales by stations	$80,055,694	
3. Time sales by stations, paid for commissions, sustaining programs, or other contract method	2,040,742	
		82,096,436
Total time sales by networks and stations		117,908,973
4. Sustaining program sales to stations		60,384
5. Sale of talent, booking commission, and miscellaneous sales		11,264,748
6. Other revenue incidental to broadcasting		1,759,631
7. Rent received for broadcast equipment and other fixed assets leased to others		212,130
Total sales and other revenues		131,205,866
8. Deduct: Commissions to agents and brokers		16,982,960
9 Balance: Total revenues of networks and stations		114,222,906

TABLE I.—*Analysis of net revenue from broadcast services and other financial data—all networks and 629 broadcast stations operating on a commercial basis, 1937*—Continued

Item	Amount
(b) Expenses:	
1. Salaries to officers	$4,817,466
2. Salaries to others, except program, advertising, and selling staffs	15,616,243
3. Payments for use of communication lines used in program transmission	7,489,065
4. Payments for rent of complete broadcast stations and equipment leased from others	693,438
5. Program and talent expense, including sustaining programs purchased	32,500,677
6. Advertising, selling, and publicity expense	5,551,202
7. Repairs, maintenance, and supplies	2,490,403
8. Light, heat, power, and miscellaneous rents	4,836,527
9. Depreciation of assets devoted to broadcasting	3,936,158
10. *Amortization of intangible assets devoted to broadcasting*	485,593
11. Taxes applicable to broadcasting (except Federal income taxes)	2,017,696
12. Unclassified broadcast expenses of stations	3,066,323
13. All other general expenses (including rents paid for use of land)	8,155,520
Total expenses	91,656,311
(c) Net revenue from broadcast services	22,566,595
(d) Other income (not included in (a), above)	840,845
(e) Gross income	23,407,440
(f) Deductions from gross income (not included in (b), above)	777,266
(g) Net income before Federal income taxes	22,630,174
(h) Estimated Federal income taxes (deduct)	3,746,239
(i) Net income for the period	18,883,935
References:	
Networks, Table II	[1] 3,471,807
Stations, Table III	[2] 15,412,128
Total	18,883,935

[1] Excluding 9 network key stations. If they were included, this amount would then be $6,395,954.
[2] Includes 9 network key stations. If they were excluded, the amount would then be $12,487,980.

TABLE II.—*Analysis of net revenues of networks from broadcast services and other financial data—all networks, not including key stations operated by networks, 1937*

[Summary of information submitted to the Commission by broadcast networks in response to letters requesting financial data in connection with network operations]

Item		Amount
(a) *Revenues:*		
1. Time sales to advertisers (after trade discounts)		$55,917,189
2. Received of other networks and stations for network broadcasting of their time sales to advertisers		214,763
3. Total commercial time sales		56,131,952
4. Less:		
Portion of sales paid to other networks	$219,020	
Portion of sales paid to stations	20,100,395	
		20,319,415
5. Balance: Time sales to advertisers retained by networks		35,812,537
6. Sustaining program sales to stations		60,384
7. Sale of talent, and booking commissions		5,533,056
8. Other revenue incidental to broadcasting		1,759,631
9. Rent received from broadcast equipment and other fixed assets leased to others		89,576
10. Total sales and other revenues of networks		43,255,184
11. Deduct: Commissions paid to agencies and brokers		8,585,359
12. Balance: Total revenues of networks		34,669,825
(b) Expenses:		
1. *Salaries:*		
Officers	$787,499	
Program staff	1,625,274	
Advertising and selling	1,275,048	
Other salaries	3,770,414	
		7,458,235
2. Payments for communication lines used in program transmission		5,710,222
3. Payments for rent of complete broadcast stations leased from others		36,550
4. Program expense, including sustaining programs purchased		9,945,867
5. Advertising and selling, not including salaries		1,056,915
6. Repairs, maintenance, and supplies		394,447
7. Light, heat, power, and miscellaneous rents		1,964,588

TABLE II.—*Analysis of net revenues of networks from broadcast services and other financial data—all networks, not including key stations operated by networks, 1937*—Continued

	Item	Amount
8.	Depreciation of assets devoted to broadcasting	$601,471
9.	Amortization of intangible assets applicable to broadcasting	290,412
10.	Taxes applicable to broadcasting (except Federal income taxes)	619,253
11.	All other general expenses (including rents paid for use of land)	2,407,827
12.	Total expenses	30,485,787
(c)	Net revenue from broadcast services	4,184,038
(d)	Other income (not included in (a), above)	384,981
(e)	Gross income	4,569,019
(f)	Deductions from income (not included in (b), above)	25,129
(g)	Net income before Federal income taxes	4,543,890
(h)	Estimated Federal income taxes (deduct)	1,072,083
(i)	Net income for the period	3,471,807

TABLE III.—*Revenues, expenses, and other income items of broadcast stations, by class of station and time designation*

[Summary of responses of broadcast stations to Commission Order No. 38]

1937

Item	Clear channel				Regional				Local			Grand total
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part time	Unlimited	Day	Part time	
	Unlimited	Part time	Unlimited	Part time	High power	Other						
STATIONS WITH NET SALES OF $25,000 OR MORE												
Number of stations	29	4	8	9	8	175	46	30	106	8	20	443
Time sales:												
Network	$9,508,283	$432,303	$839,478	$233,087	$599,486	$9,580,920	$70,635	$345,572	$492,333	$10,524	$28,516	$22,141,137
Local	5,176,548	156,823	607,907	664,643	736,368	14,978,025	2,712,971	2,525,901	5,350,141	292,532	822,806	34,024,665
National spot	10,038,441	956,760	716,086	475,711	579,727	8,235,765	776,707	618,826	644,955	6,159	67,999	23,117,136
Total	24,723,272	1,545,886	2,163,471	1,373,441	1,915,581	32,794,710	3,560,313	3,490,299	6,487,429	309,215	919,321	79,282,938
Talent and miscellaneous sales	2,136,458	336,139	162,824	120,983	96,320	2,264,418	187,932	155,070	239,849	7,767	23,932	5,731,692
Gross sales	26,859,730	1,882,025	2,326,295	1,494,424	2,011,901	35,059,128	3,748,245	3,645,369	6,727,278	316,982	943,253	85,014,630
Less:												
Agency commissions	2,564,441	44,221	124,993	83,710	153,352	2,314,702	277,609	329,369	201,858	16,049	68,106	6,178,410
Net sales	24,295,289	1,837,804	2,201,302	1,410,714	1,858,549	32,744,426	3,470,636	3,316,000	6,525,420	300,933	875,147	78,836,220
Expenses:												
Salaries to officers	520,821	80,931	47,926	78,852	73,852	1,969,463	271,058	242,093	625,284	26,677	93,010	4,029,967
Salaries to all others (except employees included under program expenses as detailed below)	2,421,138	156,392	318,399	209,181	334,207	5,483,620	660,758	625,084	1,415,357	53,846	167,847	11,845,829
Payments to national representatives, and other time brokerage commissions	516,284	53,996	56,461	74,549	61,998	1,046,140	112,876	76,943	198,839	275	20,830	2,219,191
Program expenses	6,509,871	585,802	506,096	347,364	399,816	8,187,038	1,077,771	828,658	1,589,087	70,779	222,112	20,324,394
Program and talent expenses—Extraordinary	332,450	----------	42,106	----------	19,301	184,562	198	11,460	14,493	----------	572	605,142
Advertising, sales promotion, miscellaneous selling, and publicity	893,538	76,895	66,825	81,999	87,346	1,291,094	193,089	165,588	314,546	11,074	37,245	3,219,239

Repairs, maintenance, and supplies	558,220	17,817	49,640	36,172	51,890	947,592	137,751	96,643	168,881	7,728	23,622	2,095,956
Light, heat, power, and miscellaneous rents	1,083,773	37,360	65,492	72,177	76,812	1,040,472	137,925	105,532	186,575	12,145	53,676	2,871,939
Rent for broadcasting equipment leased from others	138,955	140,676	1,264	5,189	1,500	324,838	15,991	8,400	16,454	201	3,420	656,888
Wire costs	378,433	56,785	24,569	40,648	47,048	742,658	114,168	114,235	227,817	10,472	22,010	1,778,843
All other general expenses not detailed above	1,229,474	82,241	125,961	142,358	171,131	2,520,988	393,474	338,416	627,491	48,655	67,504	5,747,693
Depreciation	862,425	18,186	60,806	68,086	157,603	1,454,295	170,900	166,941	317,344	15,604	42,497	3,334,687
Amortization of intangibles applicable to broadcasting	21,901	20,000	3,318	1,563		103,030	7,097	7,270	30,727		275	195,181
Taxes (applicable to broadcasting, except Federal income taxes)	358,403	26,454	35,627	23,858	34,804	645,979	71,393	56,326	119,445	4,692	21,462	1,398,443
Total expenses	15,825,686	1,353,535	1,404,490	1,181,996	1,517,308	25,941,769	3,364,449	2,843,589	5,852,340	262,148	776,082	60,323,392

ALL COMMERCIAL STATIONS

Number of stations	29	4	8	10	8	188	68	37	187	35	50	624
Net sales	$24,295,289	$1,837,804	$2,201,302	$1,422,263	$1,858,549	$33,037,389	$3,809,346	$3,402,676	$7,800,050	$658,982	$1,326,068	$81,649,718
Total expenses	15,825,686	1,353,535	1,404,490	1,205,218	1,517,308	26,249,543	3,828,385	2,939,769	7,190,347	652,967	1,222,467	63,389,715
Net revenue from broadcasting services	8,469,603	484,269	796,812	217,045	341,241	6,787,846	[1] 19,059	462,907	609,703	6,015	103,601	18,260,603
Rent from broadcasting equipment leased to others		58,338				50,117	21	4,049	7,483	1,750	796	122,554
Total broadcasting services income	8,469,603	542,607	796,812	217,045	341,241	6,837,963	[1] 19,018	466,956	617,186	7,765	104,397	18,382,557
Other income	152,563	7,909	5,380	15,576	7,914	178,300	12,694	9,152	28,434	579	38,263	455,864
Gross income	8,622,166	549,616	802,192	232,621	349,155	7,016,263	[1] 6,324	476,108	645,620	8,344	142,660	18,838,421
Income deductions	196,591	42	2,743	72,326	7,475	281,911	34,896	24,684	69,819	16,342	45,308	752,137
Net income before Federal income taxes	8,425,575	549,574	799,449	160,295	341,680	6,734,352	[1] 41,220	451,424	575,801	[1] 7,998	97,352	18,086,284
Estimated Federal income taxes (deduct)	929,019	72,295	107,124	56,424	44,501	1,207,668	42,906	81,321	114,774	5,549	12,575	2,674,156
Net income	7,496,556	477,279	692,325	103,871	297,179	5,526,684	[1] 84,126	370,103	461,027	[1] 13,547	84,777	15,412,128

[1] Deficit or other reverse item.

NOTE A.—Of the 624 responses accounted for in this table, 5 cover 2 stations each. Thus the table actually embraces data for 629 stations.
NOTE B.—The term part time as used in this table refers to share-time and specified-hour stations.

TABLE IV.—*Income items of broadcast stations by States and broadcast regions*

[Summary of responses of broadcast stations to Commission Order No. 38]

1937

State and broadcast region	Stations with net sales of $25,000 or more								All commercial stations				
	Number of stations	Time sales				Talent and miscellaneous sales	Gross sales	Less agency commissions	Net sales	Number of stations	Net sales	Total expenses	Net broadcast revenue	Net income
		Network	Local	National spot	Total									
Northern district	254	$16,290,112	$22,856,032	$17,232,824	$56,378,968	$4,273,610	$60,652,578	$4,745,969	$55,906,609	328	$57,147,840	$43,476,075	$13,671,765	$11,514,462
Northeastern region, total	111	7,701,234	11,552,578	6,408,520	25,662,332	1,776,049	27,438,381	2,140,551	25,297,830	140	25,751,497	19,694,341	6,057,156	5,053,092
Connecticut	8	392,913	429,066	294,282	1,116,261	37,291	1,153,552	72,094	1,081,458	9	1,105,619	968,141	137,478	34,019
Delaware, Maryland, Maine	8	423,802	763,380	283,904	1,471,086	37,810	1,508,896	98,779	1,410,117	9	1,411,852	994,655	417,197	349,177
New Hampshire, Vermont	5	167,558	198,937	110,597	477,092	25,767	502,859	19,761	483,098	13	600,830	473,223	127,607	77,205
Massachusetts	15	1,098,865	1,680,394	399,267	3,178,526	78,999	3,257,525	280,217	2,977,308	15	2,977,308	2,425,470	551,838	449,207
New Jersey	4	366,693	941,062	1,548,364	2,856,119	421,771	3,277,890	422,341	2,855,549	9	2,914,967	2,392,045	522,922	475,621
New York	35	3,357,527	3,805,634	2,326,866	9,490,027	639,438	10,129,465	649,550	9,479,915	45	9,660,264	7,229,672	2,430,592	2,099,570
Pennsylvania	29	1,261,939	2,830,461	1,198,512	5,290,912	431,383	5,722,295	441,209	5,281,086	33	5,351,358	3,915,350	1,436,008	1,202,662
Rhode Island	3	310,348	245,638	134,952	690,938	1,474	692,412	46,077	646,335	3	646,335	423,564	222,771	186,577
District of Columbia	4	321,589	658,006	111,776	1,091,371	102,116	1,193,487	110,523	1,082,964	4	1,082,964	872,221	210,743	179,054
Great Lakes region, total	89	6,181,728	7,786,530	7,478,687	21,446,945	1,689,166	23,136,111	1,998,273	21,137,838	112	21,610,899	16,114,575	5,496,324	4,716,449
Illinois	23	1,128,708	2,262,599	2,597,431	5,988,738	610,572	6,599,310	552,336	6,046,974	30	6,180,421	4,734,561	1,445,860	1,280,199
Indiana	12	262,093	739,302	377,141	1,378,536	63,498	1,442,034	54,476	1,387,558	16	1,457,829	1,117,890	339,939	298,378
Kentucky	6	326,632	359,559	324,149	1,010,340	1,164	1,011,504	61,471	950,033	6	950,033	753,729	196,304	151,795
Michigan	14	1,017,776	1,497,032	1,278,968	3,793,776	248,651	4,042,427	373,984	3,668,443	17	3,714,294	2,674,233	1,040,061	838,774
Ohio	18	3,176,119	1,841,879	2,296,947	7,314,945	595,971	7,910,916	895,121	7,015,795	22	7,074,042	4,998,524	2,075,518	1,810,577
West Virginia	5	44,488	363,861	180,755	589,104	42,204	631,308	26,420	604,888	7	670,635	574,948	95,687	80,432
Wisconsin	11	225,912	722,298	423,296	1,371,506	127,106	1,498,612	34,465	1,464,147	14	1,563,645	1,260,690	302,955	256,244
Midwest region, total	54	2,407,150	3,516,924	3,345,617	9,269,691	808,395	10,078,086	607,145	9,470,941	76	9,785,444	7,667,159	2,118,285	1,744,921
Iowa	9	408,557	535,973	841,763	1,786,293	158,129	1,944,422	142,542	1,801,880	11	1,821,734	1,417,606	404,128	316,784
Kansas	8	121,638	321,024	210,661	653,323	31,461	684,784	21,948	662,836	13	731,203	690,308	40,895	26,021
Minnesota	10	483,017	883,875	602,423	1,969,315	200,218	2,169,533	153,814	2,015,719	12	2,042,269	1,547,043	495,226	422,384
Missouri	14	896,428	1,248,841	1,153,967	3,299,236	321,447	3,620,683	204,357	3,416,326	17	3,473,621	2,604,751	868,870	700,412

Nebraska	7	341,740	296,396	378,584	1,016,720	93,779	1,110,499	60,598	1,049,901	10	1,096,369	874,052	222,317	211,877
North Dakota	3	125,960	112,125	97,077	335,162	3,179	338,341	13,393	324,948	8	384,025	308,595	75,430	63,050
South Dakota	3	29,810	118,690	61,142	209,642	182	209,824	10,493	199,331	5	236,223	224,804	11,419	4,393
Southern district	105	2,981,109	5,444,675	3,765,015	12,190,799	684,345	12,875,144	631,944	12,243,200	166	13,138,725	10,273,775	2,864,950	2,539,752
Southeastern region, total	70	1,955,681	3,312,862	2,414,992	7,683,535	328,079	8,011,614	371,364	7,640,250	111	8,225,516	6,497,319	1,728,197	1,513,903
Alabama	6	93,776	293,054	94,204	481,124	22,301	503,425	17,584	485,841	11	556,225	432,862	123,363	88,262
Arkansas, Mississippi	6	85,308	181,473	117,035	383,816	23,822	407,638	18,235	389,403	17	514,697	458,686	56,011	46,808
Florida	10	332,535	427,676	340,128	1,100,339	20,012	1,120,351	33,972	1,086,379	15	1,141,724	947,909	193,815	167,733
Georgia	6	273,703	364,278	343,661	981,642	13,382	995,024	65,948	929,076	13	1,015,856	701,524	314,332	291,533
Louisiana	9	306,420	382,456	326,167	1,015,043	29,346	1,044,389	49,662	994,727	12	1,050,722	727,892	322,830	296,655
North Carolina	9	238,939	416,848	393,857	1,049,644	63,223	1,112,867	63,600	1,049,267	13	1,123,457	837,425	286,032	236,186
South Carolina	5	34,377	242,043	71,351	347,771	9,714	357,485	34,017	323,468	6	329,292	330,595	[1] 1,303	[1] 259
Tennessee	12	403,892	704,705	433,804	1,542,401	67,434	1,609,835	76,084	1,533,751	13	1,570,134	1,306,640	263,494	245,360
Virginia	7	186,731	300,329	294,695	781,755	78,845	860,600	12,262	848,338	11	923,409	753,786	169,623	141,605
South Central region, total	35	1,025,428	2,131,813	1,350,023	4,507,264	356,266	4,863,530	260,580	4,602,950	55	4,913,209	3,776,456	1,136,753	1,025,849
Oklahoma	6	286,114	413,800	303,984	1,003,898	62,856	1,126,764	58,317	1,068,447	14	1,188,873	1,001,702	187,171	150,394
Texas	29	739,314	1,718,013	986,039	3,443,366	293,400	3,736,766	202,263	3,534,503	41	3,724,336	2,774,754	949,582	875,455
Western district	84	2,869,916	5,723,958	2,119,297	10,713,171	773,737	11,486,908	800,497	10,686,411	130	11,363,153	9,639,865	1,723,288	1,357,914
Mountain region, total	24	621,865	1,581,174	451,625	2,654,664	236,706	2,891,370	154,980	2,736,390	47	3,027,614	2,560,640	466,974	359,086
Arizona	3	52,535	167,717	51,829	272,081	42,451	314,532	8,131	306,401	6	333,629	284,870	48,759	42,983
Colorado, Wyoming	7	262,539	647,056	102,669	1,012,264	102,175	1,114,439	92,002	1,022,437	15	1,126,634	1,028,192	98,442	64,378
Idaho	4	----------	127,480	22,721	150,201	63	150,264	3,907	146,357	6	193,335	173,452	19,883	18,376
Montana	4	27,883	155,918	92,563	276,364	55,732	332,096	11,378	320,718	7	361,185	278,137	83,048	62,262
Nevada, New Mexico	3	8,838	118,536	26,813	154,187	5,531	159,718	5,032	154,686	8	210,559	192,486	18,073	7,837
Utah	3	270,070	364,467	155,030	789,567	30,754	820,321	34,530	785,791	5	802,272	603,503	198,769	163,250
Pacific region, total	60	2,248,051	4,142,784	1,667,672	8,058,507	537,031	8,595,538	645,517	7,950,021	83	8,335,539	7,079,225	1,256,314	998,828
California	38	1,565,636	2,886,421	1,083,213	5,535,270	331,535	5,866,805	515,842	5,350,963	49	5,505,111	4,782,932	722,179	564,208
Oregon	7	261,183	374,479	259,175	895,837	33,048	918,885	31,351	884,534	13	998,432	772,520	225,912	192,637
Washington	15	421,232	881,884	334,284	1,627,400	172,448	1,800,848	95,324	1,714,524	21	1,831,996	1,523,773	308,223	241,983
United States	443	22,141,137	34,024,665	23,117,136	79,282,938	5,731,692	85,014,630	6,178,410	78,836,220	624	81,649,718	63,389,715	18,260,003	15,412,128

[1] Deficit or other reverse item.

NOTE.—*Of the 624 responses accounted for in this table, 5 cover 2 stations each.* Thus the table actually embraces data for 629 stations.

TABLE V.—*Investment in broadcasting property according to maximum licensed power, 1937*

[Summary of responses of broadcast stations to Commission Order No. 38]

Class of station and maximum power	Original cost			Depreciated value			Replacement value new		
	Number of stations	Technical equipment	Total investment	Number of stations	Technical equipment	Total investment	Number of stations	Technical equipment	Total investment
Clear channel stations:									
500,000 watts, 50,000 watts, 25,000 watts	32	$7,929,427	$14,244,069	31	$2,339,190	$7,071,708	25	$7,924,397	$14,634,747
10,000 watts, 7,500 watts	10	689,571	1,007,987	10	347,233	596,070	10	930,143	1,278,964
5,000 watts	8	495,898	758,695	8	163,994	333,736	6	339,351	547,193
Total	50	9,114,896	16,010,751	49	2,850,417	8,001,514	41	9,193,891	16,460,904
Regional stations:									
25,000 watts, 20,000 watts, 10,000 watts	4	856,145	1,041,874	4	353,927	500,147	4	579,608	827,915
5,000 watts	90	6,874,865	11,961,566	88	3,852,432	7,582,900	82	5,947,427	10,761,092
2,500 watts	11	642,236	940,617	11	262,766	487,998	11	562,113	845,752
1,000 watts	113	4,800,956	7,416,936	109	2,286,720	4,010,545	104	3,861,199	6,234,858
500 watts	49	1,502,744	2,106,835	45	789,850	1,222,156	43	1,255,300	1,834,388
250 watts	22	375,935	609,216	22	258,553	427,270	21	337,586	557,123
200 watts, 100 watts	7	117,549	136,261	8	68,818	86,393	6	92,351	110,330
Total	296	15,170,430	24,213,305	287	7,873,066	14,317,409	271	12,635,584	21,171,458
Local stations:									
250 watts	134	2,227,476	3,405,357	128	1,293,772	2,084,029	121	1,726,970	2,826,605
100 watts, 50 watts	133	1,870,216	2,610,715	121	937,405	1,392,152	123	1,571,967	2,288,902
Total	267	4,097,692	6,016,072	249	2,231,177	3,476,181	244	3,298,937	5,115,507
Grand total	613	28,383,018	46,240,128	585	12,954,660	25,795,104	556	25,128,412	42,747,869

NOTE A.—Of the 613 responses showing original cost data, 5 cover 2 stations each. Thus the table actually embraces data for 618 stations.

NOTE B.—The figures shown in this table include the investment of networks in network-owned stations. However, the figures exclude network investment in other broadcasting property in the amount of $8,820,880 (before depreciation), making a total reported investment of $55,061,008.

TABLE VI.—*Functional employment and pay-roll data for the week beginning Mar. 6, 1938*

[Summary of responses from broadcast stations to employee questionnaire]

UNITED STATES

Class of employee	Number employed				Weekly pay roll			
	Full time		Part time		Full-time paid	Average weekly pay	Part-time paid	Average weekly pay
	Paid	Not paid	Paid	Not paid				
I. Executives:								
General managerial	671	30	142	19	$77,639	$115.70	$9,857	$69.46
Technical	373	4	33	6	23,247	62.35	709	21.72
Program	349		16	2	21,649	62.12	375	22.87
Commercial	289	6	13		26,055	90.09	659	51.09
Publicity	88	1	14	1	5,294	59.89	406	29.74
Miscellaneous	9				1,672	185.78		
Total I	1,779	41	218	28	155,556	87.44	12,006	55.20
II. Employees:								
A. Technical:								
Research and development	397		28	1	14,880	48.45	376	13.67
Operating	2,869	7	243	5	121,134	42.22	3,100	12.76
Miscellaneous	17		1		400	23.53	21	21.00
Total	3,193	7	272	6	136,414	42.72	3,497	12.88
B. Program:								
Production	872	3	61	10	39,884	45.72	955	15.70
Writers	614	1	63	36	21,920	35.68	1,058	16.70
Announcers	1,890	12	293	14	65,011	34.40	3,352	11.43
Staff musicians	2,318	11	991	19	136,176	58.74	16,996	17.16
Other artists	684	1	2,849	300	23,504	34.36	58,303	20.46
Miscellaneous	547		285	112	19,132	35.00	4,023	14.12
Total	6,925	28	4,542	491	305,627	44.13	84,687	18.65
C. Commercial:								
Outside salesman	1,276	52	149	8	64,742	50.75	3,526	23.59
Promotion and merchandising	250	7	27	1	12,251	48.90	721	27.21
Miscellaneous	96				2,951	30.74		
Total	1,622	59	176	9	79,944	49.28	4,247	24.13

TABLE VI.—*Functional employment and pay-roll data for the week beginning Mar. 6, 1938*—Continued

Class of employee	Number employed				Weekly pay roll			
	Full time		Part time		Full-time paid	Average weekly pay	Part-time paid	Average weekly pay
	Paid	Not paid	Paid	Not paid				
II. Employees—Continued								
D. General and administration:								
Accounting	593	4	168	7	$20,000	$33.71	$1,993	$11.87
Clerical	839	2	92	1	18,628	22.20	748	8.14
Stenographic	1,015	2	87	2	23,240	22.90	994	11.44
Miscellaneous	964	2	265		23,988	24.90	2,244	8.44
Total	3,411	10	612	10	85,856	25.17	5,979	9.76
E. Miscellaneous	155				7,497	48.37		
Total II	15,306	104	5,602	516	615,338	40.20	98,410	17.57
III. Grand total	17,085	145	5,820	544	770,894	45.12	110,416	18.97

NOTE A.—Of the 626 responses accounted for in this table, 5 cover 2 stations each. Thus the table actually embraces data for 631 stations.
NOTE B.—Includes data for employees whose services at certain key stations include network and other operations.

TABLE VII.—*Types of programs broadcast for the week beginning Mar. 6, 1938*

[Summary of responses from broadcast stations to program questionnaire]

UNITED STATES

Type of program	Commercial																Percent
	Live talent																
	Taken from national networks		Taken from regional networks		Originated locally		Electrical transcriptions		Records		Announcements		Total				
	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.			
I. *Music:*																	
Serious	189	44	5	51	83	34	140	46	176	19	28	39	624	53			1.60
Light	252	1	11	3	333	51	364	55	333	42	73	6	1,368	38			2.20
Popular	387	33	35	16	1,010	19	1,722	55	1,542	14	298	12	4,996	29			8.01
Other	27	9	34	14	328	52	177	40	153	3	32	34	753	32			1.21
Total I	856	27	86	24	1,756	36	2,406	16	2,205	18	432	31	7,743	32			12.42
II. Dramatic:																	
General drama	1,948	33	106	10	132	17	626	2	2	15	14	38	2,829	55			4.54
Comedy scripts	300	29	6	45	45	2	46	1			1	31	399	48			.64
Children's drama	165	10	48	25	57	25	266	14	1	30	3	46	542	30			.87
Total II	2,414	12	161	20	234	44	938	17	3	45	19	55	3,772	13			6.05
III. Variety	1,652	15	79	19	626	4	343	59	111	33	54	57	2,868	7			4.60
IV. Talks and dialogues:																	
Social and economic	76	33	32	43	144	26	22	5	4	45	22	13	302	45			.49
Literature, history, and general cultural	73	41	6	8	115	5	15	28	1		6	13	217	35			.34
Household and others of special interest to women	275	22	47	42	437	37	102	46	3	48	91	40	958	55			1.54
Farm management and others of special interest to farmers	3	45	6	45	88	41	24	3	1	30	17	29	142	13			.23
Political	2	14	12	7	65	49	10		1		2	3	93	13			.15
Others	162	9	16	46	312	11	32	3	4		159	7	686	16			1.10
Total IV	593	44	122	11	1,163	49	206	25	16	3	298	45	2,400	57			3.85
V. *News:*																	
News reports	315	20	118	26	1,135	12	5	57			47	54	1,622	49			2.60
Sport flashes	9	48	25	35	184	39	5	48			3	32	229	22			.37
Market, crop, and weather reports		44	5	53	102	4	1	20			27	22	137	23			.22
Total V	325	52	149	54	1,421	55	13	5			78	48	1,989	34			3.19
VI. Religious and devotional	75	26	65	36	1,032	22	57	42	6	25	12	16	1,249	47			2.00

TABLE VII.—*Types of programs broadcast for the week beginning Mar. 6, 1938*—Continued

Commercial

Type of program	Live talent: Taken from national networks	Live talent: Taken from regional networks	Live talent: Originated locally	Electrical transcriptions	Records	Announcements	Total	Percent
VII. Special events:								
Meetings and occasions of civic interest	2 39	------ 15	38 27	5 22	----------	2 9	48 52	.08
Sports	23 49	40 9	311 1	1 22	----------	5 4	381 25	.61
Other	2 ------	1 ------	42 16	1 2	----------	1 9	47 27	.08
Total VII	28 28	41 24	391 44	7 46	----------	8 22	477 44	.77
VIII. Miscellaneous	18 3	12 32	111 41	22 44	13 45	861 51	1,040 36	1.67
IX. Grand total	5,964 27	718 40	6,738 55	3,996 14	2,356 49	1,767 25	21,542 30	34.55

Sustaining

Type of program	Live talent: Taken from national networks	Live talent: Taken from regional networks	Live talent: Originated locally	Electrical transcriptions	Records	Announcements	Total	Percent
	Hr. min.	*Hr. min.*	*Hr. min.*	*Hr. min.*	*Hr. min.*	*Hr. min.*	*Hr. min.*	
I. Music:								
Serious	1,534 39	108 23	369 44	925 10	463 7	18 27	3,419 30	5.48
Light	1,378 35	178 57	726 28	1,776 59	741 9	32 18	4,834 26	7.75
Popular	4,615 28	528 ------	2,284 44	4,436 30	3,169 44	88 35	15,123 1	24.26
Other	210 32	40 1	578 3	438 50	299 47	18 24	1,585 37	2.54
Total I	7,739 14	855 21	3,958 59	7,577 29	4,673 47	157 44	24,962 34	40.03
II. Dramatic:								
General drama	481 57	94 19	240 8	398 17	6 31	6 3	1,227 15	1.96
Comedy scripts	69 14	11 55	58 6	70 17	----------	------ 30	210 2	.34
Children's drama	256 45	15 3	137 57	61 9	----------	2 20	473 14	.76
Total II	807 56	121 17	436 11	529 43	6 31	8 53	1,910 31	3.06
III. Variety	1,260 16	156 33	551 49	462 14	190 6	20 52	2,641 50	4.24

IV. Talks and dialogues:															
Social and economic	479	56	60	26	526	35	65	26	-------	15	15	13	1,147	51	1.84
Literature, history, and general cultural	456	27	54	6	675	53	49	9	-------	38	7	36	1,243	49	2.00
Household and others of special interest to women	110	19	48	13	502	------	32	25	1	32	15	2	709	31	1.14
Farm management and others of special interest to farmers	432	28	33	3	397	29	15	3	2	20	16	33	896	56	1.44
Political	37	18	10	7	50	45	2	19	----------	----------	-------	11	100	40	.16
Others	140	16	28	36	388	9	26	53	-------	30	29	53	614	17	.98
Total IV	1,656	44	234	31	2,540	51	191	15	5	15	84	28	4,713	4	7.56
V. News:															
News reports	215	57	119	34	2,079	20	6	7	----------	----------	45	16	2,466	14	3.96
Sport flashes	43	40	18	1	294	57	4	43	----------	----------	4	58	366	19	.59
Market, crop, and weather reports	17	54	51	38	403	39	-------	5	----------	----------	32	58	506	14	.81
Total V	277	31	189	13	2,777	56	10	55	----------	----------	83	12	3,338	47	5.36
VI. Religious and devotional	285	34	44	17	1,482	56	129	59	5	46	15	19	1,963	51	3.15
VII. Special events:															
Meetings and occasions of civic interest	80	9	20	51	290	9	9	41	-------	21	28	29	429	40	.69
Sports	98	39	35	16	220	------	12	59	2	30	4	59	374	23	.60
Other	25	33	2	15	57	56	3	18	2	15	3	37	94	54	.15
Total VII	204	21	58	22	568	5	25	58	5	6	37	5	898	57	1.44
VIII. Miscellaneous	30	41	19	20	132	2	29	24	2	55	166	10	380	32	.61
IX. Grand total	12,262	17	1,678	54	12,448	49	8,956	57	4,889	26	573	43	40,810	6	65.45

Type of program	Total														
	Live talent						Electrical transcriptions		Records		Announcements		Grand total		Percent
	Taken from national networks		Taken from regional networks		Originated locally										
	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	
I. Music:															
Serious	1,724	23	114	14	453	18	1,065	56	639	26	47	6	4,044	23	6.48
Light	1,630	36	190	------	1,060	19	2,141	54	1,074	51	105	24	6,203	4	9.95
Popular	5,003	1	563	16	3,295	3	6,159	25	4,711	58	386	47	20,119	30	32.27
Other	237	41	74	15	906	55	616	30	452	50	50	58	2,339	9	3.75
Total I	8,595	41	941	45	5,715	35	9,983	45	6,879	5	590	15	32,706	6	52.45
II. Dramatic:															
General drama	2,430	30	200	29	372	25	1,024	19	8	46	20	41	4,057	10	6.50
Comedy scripts	369	43	18	40	103	8	116	18	----------		2	1	609	50	.98
Children's drama	421	55	63	28	195	22	327	23	1	30	6	6	1,015	44	1.63
Total II	3,222	8	282	37	670	55	1,468	------	10	16	28	48	5,682	44	9.11
III Variety	2,912	31	235	52	1,177	53	806	13	301	39	75	49	5,509	57	8.84

TABLE VII.—*Types of programs broadcast for the week beginning Mar. 6, 1938*—Continued

Type of program	Total																	
	Live talent						Electrical transcriptions		Records		Announcements		Total		Percent			
	Taken from national networks		Taken from regional networks		Originated locally													
	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.				
IV. Talks and dialogues:																		
Social and economic	556	29	93	9	671	1	87	31	5	----	37	26	1,450	36	2.33			
Literature, history, and general cultural	530	8	60	14	790	58	64	37	1	38	13	49	1,461	24	2.34			
Household and others of special interest to women	385	41	95	55	939	37	135	11	5	20	106	42	1,668	26	2.68			
Farm management and others of special interest to farmers	436	13	39	48	486	10	39	6	3	50	34	2	1,039	9	1.67			
Political	39	32	22	14	116	34	12	19	1	----	2	14	193	53	.31			
Others	302	25	45	22	700	20	58	56	4	30	189	----	1,300	33	2.08			
Total IV	2,250	28	356	42	3,704	40	397	40	21	18	383	13	7,114	1	11.41			
V. News:																		
News reports	531	17	238	----	3,214	32	12	4	----		93	10	4,089	3	6.56			
Sport flashes	53	28	43	36	479	36	10	31	----		8	30	595	41	.96			
Market, crop, and weather reports	18	38	57	31	505	43	1	25	----		60	20	643	37	1.03			
Total V	603	23	339	7	4,199	51	24	----	----		162	----	5,328	21	8.55			
VI. Religious and devotional	361	----	109	53	2,515	18	187	41	12	11	27	35	3,213	38	5.15			
VII. Special events:																		
Meetings and occasions of civic interest	82	48	21	6	328	35	15	3	----	21	30	38	478	32	.77			
Sports	122	28	75	25	531	1	14	21	2	30	10	3	755	48	1.21			
Other	27	33	3	15	100	12	4	20	2	15	4	46	142	21	.23			
Total VII	232	49	99	46	959	49	33	44	5	6	45	27	1,376	41	2.21			
VIII. Miscellaneous	48	44	31	52	243	43	52	8	16	40	1,028	1	1,421	8	2.28			
IX. *Grand total*	18,226	44	2,397	34	19,187	44	12,953	11	7,246	15	2,341	8	62,352	36	100.00			

NOTE A.—Of the 629 responses accounted for in this table, 4 cover 2 stations each. Thus the table actually embraces data for 633 stations.

NOTE B.—Rebroadcast programs reported by 11 stations amounting to 15 hours 5 minutes of commercial time and 144 hours 41 minutes of sustaining time are included under the heading, "Live talent—Taken from regional networks."

NOTE C.—In addition to the time for announcements separately shown above, a total of 10,121 announcements and 15 hours 20 minutes for an unreported number of announcements are included in the total commercial time, and 1,487 announcements and 4 hours 22 minutes for an unreported number are included in the total sustaining time. The time of these announcements is included in the program time according to the type of rendition.

TABLE VIII.—*Types of programs broadcast for the week beginning Mar. 6, 1938, on a percentage basis*

[Summary of responses from broadcast stations to program questionnaire]

CLASS OF STATION AND TIME DESIGNATION

Type of program	Clear channel				Regional				Local			All classes
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part time	Unlimited	Day	Part time	
	Unlimited	Part time	Unlimited	Part time	High power	Other						
I. Commercial:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Music	10.887	14.400	9.902	11.160	6.450	11.075	16.227	15.396	12.112	13.439	18.428	12.419
Dramatic	20.787	16.165	12.227	6.873	13.069	8.863	2.031	3.586	1.998	.951	1.856	6.050
Variety	8.603	11.945	8.036	4.212	7.531	6.007	2.267	5.959	2.908	1.707	2.910	4.600
Talks and dialogues	6.989	6.526	5.009	3.721	5.486	4.460	3.546	3.028	2.924	2.475	2.866	3.850
News	4.026	1.057	2.818	2.752	3.606	3.626	2.586	1.991	3.073	2.437	2.987	3.191
Religious and devotional	.654	1.450	1.679	4.540	.853	1.779	2.806	2.165	2.201	1.589	2.472	2.004
Special events	.196		.091	.778	.209	.814	.337	.873	.978	.523	1.121	.766
Miscellaneous	.898	.696	.924	2.159	1.268	1.589	1.771	2.392	1.693	1.781	2.352	1.669
Total I	53.040	52.239	40.686	36.195	38.472	38.213	31.571	35.390	27.887	24.902	34.992	34.549
II. Sustaining:												
Music	28.172	23.091	37.061	34.363	36.649	37.920	38.889	34.245	45.799	50.063	38.154	40.034
Dramatic	2.215	1.643	1.905	3.697	2.358	2.929	2.759	2.991	3.496	3.699	2.969	3.064
Variety	3.181	6.172	3.673	6.164	4.007	4.439	2.973	4.759	4.489	3.213	4.575	4.237
Talks and dialogues	6.955	6.998	8.000	9.454	8.463	7.579	9.706	9.830	6.880	5.832	6.621	7.559
News	3.388	6.011	3.280	5.963	4.076	4.624	7.695	5.929	5.842	5.706	5.655	5.355
Religious and devotional	2.095	2.319	3.218	1.860	2.929	2.430	4.256	4.466	3.422	4.400	4.135	3.150
Special events	.658	1.379	1.721	1.769	2.374	1.382	1.335	1.760	1.529	1.411	1.694	1.442
Miscellaneous	.298	.148	.456	.535	.672	.484	.816	.630	.656	.774	1.205	.610
Total II	46.960	47.761	59.314	63.805	61.528	61.787	68.429	64.610	72.113	75.098	65.008	65.451
III. Total:												
Music	39.059	37.491	46.963	45.523	43.099	48.995	55.116	49.641	57.911	63.502	56.582	52.453
Dramatic	23.002	17.808	14.132	10.570	15.427	11.792	4.790	6.577	5.494	4.650	4.825	9.114
Variety	11.784	18.117	11.709	10.376	11.538	10.446	5.240	10.718	7.397	4.920	7.485	8.837
Talks and dialogues	13.944	13.524	13.009	13.175	13.949	12.039	13.252	12.858	9.804	8.307	9.487	11.409
News	7.412	7.068	6.098	8.715	7.682	8.250	10.281	7.920	8.915	8.143	8.642	8.546
Religious and devotional	2.749	3.769	4.897	6.400	3.782	4.209	7.062	6.631	5.623	5.989	6.607	5.154
Special events	.854	1.379	1.812	2.547	2.583	2.196	1.672	2.633	2.507	1.934	2.815	2.208
Miscellaneous	1.196	.844	1.380	2.694	1.940	2.073	2.587	3.022	2.349	2.555	3.557	2.279
Total III	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000

NOTE.—Of the 629 responses accounted for in this table, 4 cover 2 stations each. Thus the table actually embraces data for 633 stations.

TABLE IX.—*Analysis of total population, total families, families owning radios, total retail sales of all retail stores, and total net sales (time, talent, etc.) of commercial broadcast stations, in the United States by States and broadcast regions*

State	Total United States population July 1, 1937 [1]	Total United States families July, 1937 [2]	Families owning radios Jan. 1, 1938 [2]			Retail sales of all United States retail stores, 1935 [3]		Total net sales (time, talent, etc.) of commercial broadcast stations, 1937 [4]		
			Number	Percent of total United States families	Percent of radio families	Amount (thousands)	Percent of total	Amount	Percent of total	Average per radio family
United States	129,257,000	32,641,000	26,666,500	82.00	100.00	$33,161,276	100.00	$81,649,718	100.00	$3.06
Northern district	83,087,000	21,167,000	18,673,100	88.00	70.02	23,466,400	70.76	57,147,840	69.99	3.00
Northeastern region	38,642,000	9,733,000	8,917,700	92.00	33.44	12,053,392	36.35	25,751,497	31.54	2.89
Connecticut	1,741,000	437,000	402,100	92.00	1.51	556,722	1.68	1,105,619	1.35	2.75
Delaware	261,000	67,000	57,600	86.00	.22	76,877	.23	1,411,852	1.73	3.42
Maryland	1,679,000	410,000	355,100	87.00	1.33	462,874	1.40			
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	600,830	.74	1.45
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	2,977,308	3.65	2.92
New Jersey	4,343,000	1,098,000	1,022,500	93.00	3.84	1,220,299	3.68	2,914,967	3.57	2.85
New York	12,959,000	3,372,000	3,132,300	93.00	11.75	4,749,708	14.32	9,660,264	11.83	3.08
Pennsylvania	10,176,000	2,452,000	2,206,400	90.00	8.27	2,490,910	7.51	5,351,358	6.55	2.43
Rhode Island	681,000	169,000	155,500	92.00	.58	219,706	.66	646,335	.79	4.16
District of Columbia	627,000	168,000	152,900	91.00	.57	330,813	1.00	1,082,964	1.33	7.08
Great Lakes region	30,626,000	7,854,000	6,893,500	88.00	25.85	7,891,054	23.79	21,610,899	26.47	3.13
Illinois	7,878,000	2,063,000	1,857,100	90.00	6.96	2,173,069	6.55	6,180,421	7.57	3.33
Indiana	3,474,000	934,000	816,800	87.00	3.06	780,508	2.35	1,457,829	1.79	1.78
Kentucky	2,920,000	708,000	494,900	70.00	1.86	388,278	1.17	950,033	1.16	1.92
Michigan	4,830,000	1,220,000	1,122,200	92.00	4.21	1,388,236	4.19	3,714,294	4.55	3.31
Ohio	6,733,000	1,777,000	1,641,500	92.00	6.15	1,956,941	5.90	7,074,042	8.66	4.31
West Virginia	1,865,000	417,000	348,300	84.00	1.31	332,190	1.00	670,635	.82	1.93
Wisconsin	2,926,000	735,000	612,700	83.00	2.30	871,832	2.63	1,563,645	1.92	2.55
Midwest region	13,819,000	3,580,000	2,861,900	80.00	10.73	3,521,954	10.62	9,785,444	11.98	3.42
Iowa	2,552,000	680,000	577,800	85.00	2.17	650,029	1.96	1,821,734	2.23	3.15
Kansas	1,864,000	501,000	367,800	73.00	1.38	448,261	1.35	731,203	.90	1.99
Minnesota	2,652,000	652,000	556,200	85.00	2.09	820,010	2.47	2,042,269	2.50	3.67
Missouri	3,989,000	1,072,000	822,800	77.00	3.08	946,125	2.85	3,473,621	4.25	4.22

CHART 1

COMPARISON OF BROADCAST STATION NET SALES, 1937[1]

WITH

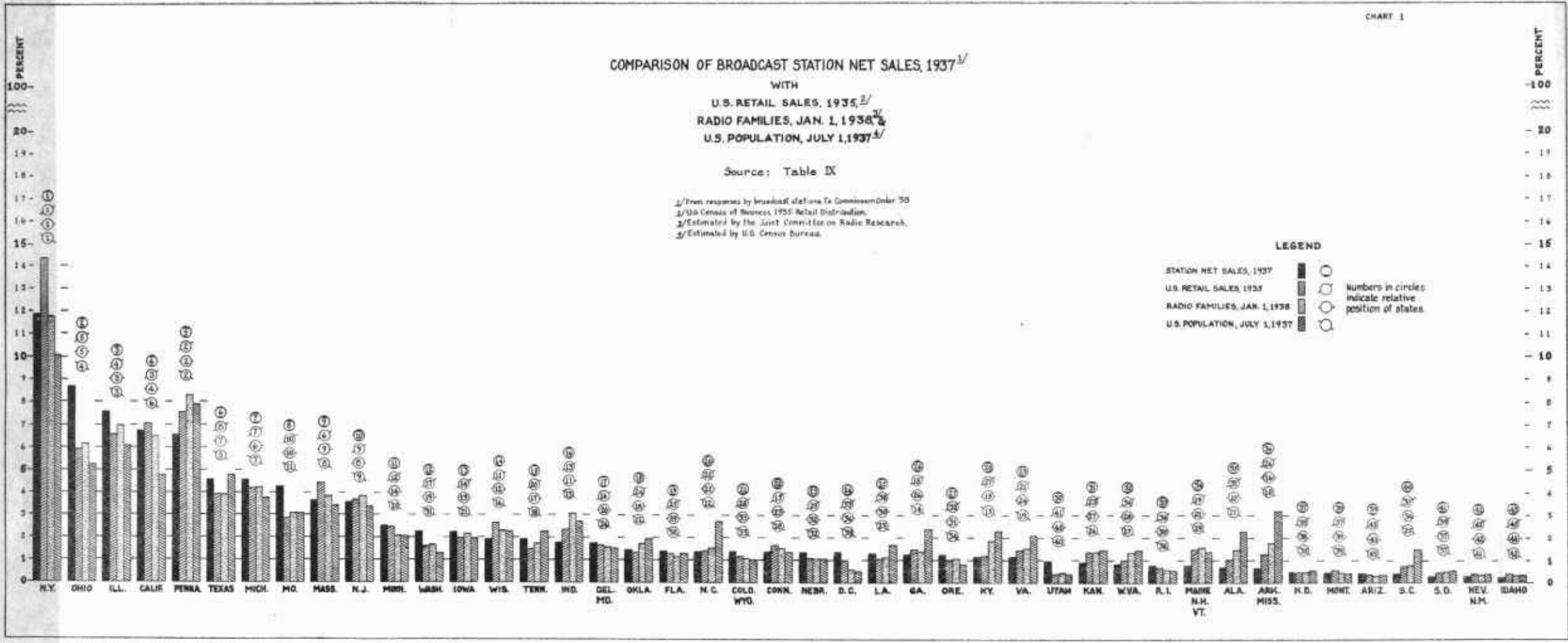
U.S. RETAIL SALES, 1935,[2]

RADIO FAMILIES, JAN. 1, 1938,[3] &

U.S. POPULATION, JULY 1, 1937[4]

Source: Table IX

1/ From responses by broadcast stations to Commission Order 38
2/ U.S. Census of Business 1935 Retail Distribution.
3/ Estimated by the Joint Committee on Radio Research.
4/ Estimated by U.S. Census Bureau.



Nebraska	1,364,000	352,000	284,100	81.00	1.06	359,757	1.09	1,096,369	1.34	3.86
North Dakota	706,000	156,000	119,600	77.00	.45	150,208	.45	384,025	.47	3.21
South Dakota	692,000	167,000	132,900	80.00	.50	147,564	.45	236,223	.29	1.78
Southern district	33,539,000	7,914,000	4,766,900	60.00	17.88	5,400,579	16.29	13,138,725	16.09	2.76
Southeastern region	24,819,000	5,779,000	3,279,100	57.00	12.30	3,676,522	11.09	8,225,516	10.07	2.51
Alabama	2,895,000	670,000	375,200	56.00	1.41	337,217	1.02	556,225	.68	1.48
Arkansas	2,048,000	501,000	254,800	51.00	.96	240,724	.73	514,697	.63	1.11
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	1,141,724	1.40	3.83
Georgia	3,085,000	716,000	370,800	52.00	1.39	484,693	1.46	1,015,856	1.24	2.74
Louisiana	2,132,000	510,000	297,400	58.00	1.11	344,393	1.04	1,050,722	1.29	3.53
North Carolina	3,492,000	736,000	408,600	55.00	1.53	463,219	1.40	1,123,457	1.38	2.75
South Carolina	1,875,000	407,000	207,300	51.00	.78	248,206	.75	329,292	.40	1.59
Tennessee	2,893,000	689,000	459,900	67.00	1.72	482,586	1.45	1,570,134	1.92	3.41
Virginia	2,706,000	613,000	400,200	65.00	1.50	471,329	1.42	923,409	1.13	2.31
South central region	8,720,000	2,135,000	1,487,800	70.00	5.58	1,724,057	5.20	4,913,209	6.02	3.30
Oklahoma	2,548,000	619,000	454,300	73.00	1.70	434,793	1.31	1,188,873	1.46	2.62
Texas	6,172,000	1,516,000	1,033,500	68.00	3.88	1,289,264	3.89	3,724,336	4.56	3.60
Western district	12,631,000	3,560,000	3,226,500	91.00	12.10	4,294,297	12.95	11,363,153	13.92	3.52
Mountain region	3,792,000	975,000	778,000	80.00	2.92	1,100,728	3.32	3,027,614	3.71	3.89
Arizona	412,000	104,000	79,600	77.00	.30	121,083	.37	333,629	.41	4.19
Colorado	1,071,000	288,000	233,500	81.00	.87	302,559	.91	1,126,634	1.38	3.98
Wyoming	235,000	62,000	49,800	80.00	.19	82,681	.25			
Idaho	493,000	124,000	98,700	80.00	.37	140,167	.42	193,335	.24	1.96
Montana	539,000	142,000	114,600	81.00	.43	189,457	.57	361,185	.44	3.15
Nevada	101,000	30,000	28,500	95.00	.11	43,932	.13	210,559	.26	2.32
New Mexico	422,000	102,000	62,300	61.00	.23	88,751	.27			
Utah	519,000	123,000	111,000	90.00	.42	132,098	.40	802,272	.98	7.23
Pacific region	8,839,000	2,585,000	2,448,500	95.00	9.18	3,193,569	9.63	8,335,539	10.21	3.40
California	6,154,000	1,818,000	1,719,800	95.00	6.45	2,329,009	7.02	5,505,111	6.74	3.20
Oregon	1,027,000	299,000	285,400	95.00	1.07	335,851	1.01	998,432	1.22	3.50
Washington	1,658,000	468,000	443,300	95.00	1.66	528,709	1.60	1,831,996	2.25	4.13

[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 responses by broadcast stations to Commission Order No. 38.

APPENDIX I

Decisions of the United States Court of Appeals for the District of Columbia in Broadcast Cases and Principles Enunciated Therein

The Great Western Broadcasting Association, Inc. and Intermountain Broadcasting Corporation Cases (Nos. 6852, 6853, and 6854)

These cases deal with the applications of Great Western Broadcasting Association for new radiobroadcast stations at Logan and Provo, Utah, and the application of Jack Powers and associates for a new station at Salt Lake City, Utah. The court held that the Commission did not err in denying the applications of Great Western Broadcasting Association because the evidence sustained the findings that the applications did not furnish complete information as to the ownership of the applicant and that the applicant did not have sufficient finances to insure the successful operation and construction of the stations.

The court dismissed the appeal of Intermountain Broadcasting Corporation, licensee of station KDYL, Salt Lake City, from the decision granting the application of Jack Powers and associates on the ground that this appellant had no appealable interest. The court said that appellant had not alleged in its notice of appeal that it would suffer pecuniary damage by the granting of the application and that appellant is restricted to the points urged in its notice of appeal. Appellant contended merely that the city of Salt Lake enjoyed all the service to which it was entitled but did not contend that the grant of the additional station would adversely affect its interests. Consequently, the court held the appellant had no appealable interest under section 402 (b) (2) of the Communications Act of 1934 and dismissed the appeal.

The Heitmeyer Case (No. 6762)

This was an appeal under section 2 (b) (1) of the Communications Act of 1934 from a decision of the Commission denying appellant's application for a permit to construct a new radiobroadcast station at Cheyenne, Wyo. The court reversed the Commission and remanded the case with instructions to proceed in accordance with the court's opinion.

The Commission found the applicant not financially qualified because he did not have sufficient capital unless he relied upon borrowed money which was obtained without giving security, except stock in a corporation to which the license was to be assigned in the event the applicant was successful in obtaining a license. The court held that in the absence of a Commission regulation to the contrary, an appellant can rely upon borrowed capital to prove his financial ability to construct and maintain a station, and that this is so even though the money lent to the applicant is not secured by collateral. The court also held that the Commission's "Statement of Facts and Grounds for Decision" did not constitute findings of fact as required by statute.

Upon receipt of the certified copy of opinion and judgment, the Commission recalled its "Statement of Facts and Grounds for Decision and Order" and reopened the case for further consideration. Thereafter, it designated the application of Heitmeyer for further hearing, together with several conflicting applications which were pending. Thereupon, the applicant, Heitmeyer, filed a bill of complaint for injunction in the United States District Court for the District of Columbia (No. 76291, *Heitmeyer* v. *McNinch, et al*). The Commission moved to dismiss the bill of complaint for injunction on the ground that the District Court of the United States for the District of Columbia had no jurisdiction in the cause for the reason that it involved the discretion and judgment of an administrative body authorized by law to act in the premises. That court denied the Commission's motion to dismiss, whereupon it took an appeal to the United States Court of Appeals for the District of Columbia, which appeal is now pending.

The Pulitzer Publishing Company Case (No. 6866)

This was an appeal from an order of the Commission granting a construction permit to the Star-Times Publishing Co., St. Louis, Mo., for a new radio station at that place. The appellant, Pulitzer Publishing Co., owner and operator of KSD in St. Louis, objected to the grant on the ground that it would adversely affect its economic interests in the city of St. Louis. It further contended that if any new or additional faciilties were to be added to the city of St. Louis, appellant's pending application for increased facilities should be granted before a new licensee is permitted to enter the field. The court held, however, that a radio-broadcast station is not a public utility in the sense in which a railroad is a public utility and that the Commission, as a matter of positive duty, is not required to give the owner of an existing station priority to enlarge or extend its facilities because alone of the primacy of its grant. The court said that where the effect of granting an application for new license will be to destroy the ability of the holder of the old license to carry on in the public interest, the application should be denied. But that is not this case. The court sustained the Commission on the ground that the evidence sustained the findings made by the Commission.

Missouri Broadcasting Company Case (No. 6869)

This was an appeal by the Missouri Broadcasting Co. operating station WIL from a decision of the Commission granting the application of Star-Times Publishing Co. for a new station at St. Louis, Mo. Appellant contended that the decision of the Commission was invalid because the order was made first and the Commission's "Statement of Facts and Grounds for Decision" later. The court said:

> "* * * the act unquestionably requires the Commession in every case of appeal to file not only the record and its decision but a statement of the facts and a statement of the grounds of its decision. The exact language is—file a full statement in writing of the facts and grounds for its decision *as found and given by it*. The six words we have emphasized imply, we think, that the grounds of decision and a brief factual statement of the reasons therefor have been previously given, that is, previously to the filing of the full statement, i. e., findings of fact in this court. Certainly, this would be the reasonable and ordinary course because no commission exercising the judicial function ought to give a decision without knowing the grounds therefor and the statement of those grounds necessarily must be drawn from the facts found. If this rule be adopted the appellant will, when the Commission enters its order, know the grounds of the decision and will know whether he desires to appeal and will be able to frame intelligently his assignments of error. On the other hand, the Commission will not be inconvenienced by being required to include in its order a succinct statement of facts and grounds therefor since necessarily in every case the Commission will know why it is deciding as it is. We are not unmindful that the reduction of the factual findings to a concise statement in writing takes time and undoubtedly it was this consideration which moved Congress to afford the Commission extra time for filing its "full" statement in writing. And in this view there is no reason why the formal findings of fact—as is not unusual in cases either in law or equity—should not await the taking of the appeal. * * * "

The Tri-State Broadcasting Company Case (No. 6931)

This case arose from a decision of the Commission granting the application of Dorrance Roderick for a construction permit to erect a new station at El Paso, Tex. Appellant was the existing station at El Paso, Tex., and its appeal is predicated upon the contention that it would be adversely affected economically by the grant of the Roderick application. Appellant raised three points. First, that the Commission's finding of public need was not sufficient as a finding of fact. The court agreed with appellant. Second, that the Commission erred in failing to find on the question of whether or not ownership of the proposed station by Roderick would result in unfair and destructive competition to the appellant's station because Roderick is the owner of a

newspaper in El Paso so that as asserted his joint control of newspaper and broadcasting facilities would give him an unduly advantageous competitive position. The court held that there was no provision of statute or rule of law which forbids broadcasting by an owner of a newspaper and, hence, the absence of a finding on the topic of Roderick's ownership of a newspaper was not error. Third, appellant complained that certain testimony of Roderick, which was admitted by the Commission over objection was incompetent. The Commission urged that it was competent as the testimony of an expert but the court said the testimony admitted was clearly hearsay and that the witness had not qualified as an expert. The court, therefore, reversed the Commission and remanded the case to it for further proceedings.

The Saginaw Broadcasting Company Case (No. 6990)

This was an appeal from a decision of the Commission granting the application of Gross and Shields and denying the application of Saginaw Broadcasting Co. for a construction permit to erect a station at Saginaw, Mich. Prior to the appeal, appellant filed a petition for rehearing before the Commission under section 405 of the Communications Act of 1934. The Commission took no action with reference to the petition until the 20-day period from the effective date had expired. The petition for rehearing was denied on June 2, 1937, and an appeal was noted in the court of appeals on June 18, 1937. The first question presented to the court was whether or not the notice of appeal had been filed within the time limit fixed by section 402 (c) of the Communications Act of 1934, namely, 20 days from the effective date of the Commission's order. The court held the filing of the petition for rehearing suspended the running of the statutes and that therefore the appeal was timely. The court reversed the Commission on the ground that its decision was made without proper findings of fact.

The Red River Broadcasting Company Case (No. 6906)

This was an appeal from a decision of the Commission granting a construction permit to Fred A. Baxter, Superior, Wis., to erect a new broadcast station at that place. A motion to dismiss the appeal was filed by intervener on the ground, among others, that appellant failed to exhaust all its remedies before the Commission and has not brought itself into position to invoke jurisdiction of the court. The court sustained the motion to dismiss. The court said appellant's duty was to seek the first administrative remedy available to it from the Commission, and not having done so, the motion to dismiss must be granted.

Appellant complained it had not been given notice of hearing on the Baxter application and consequently the obligation to pursue its administrative remedies was not operative, but the court said:

> "There is nothing in the act which requires such notice under the circumstances here present or makes it a prerequisite to the seeking of administrative remedies which are otherwise available."

The court further said:

> "The right to administrative relief is a privilege afforded by law to persons who consider themselves interested or aggrieved; unless the interests of such a person are brought to the attention of the Commission through established procedual channels it will be impossible for it to give them proper consideration. The act and the rules of the Commission have made adequate provision therefor. The burden, therefore, is and properly should be upon an interested person to act affirmatively to protect himself. It is more reasonable to assume in this case a legislative intent that an interested person should be alert to protect his own interests than to assume that Congress intended the Commission to consider on its own motion the possible effect of its action in each case upon every person who might possibly be affected thereby. Such a person should not be entitled to sit back and wait until all interested persons who do so act have been heard and then complain that he has not been properly treated. * * *"

The Pottsville Case (No. 7016)

The Pottsville Broadcasting Co. appealed from the Commission's decision denying its application for a new broadcast station at Pottsville, Pa. The denial was based upon an alleged lack of financial ability because of a mutual mistake of law of appellant and the Commission. The applicant testified before the Commission to the effect that certain stock subscriptions would be paid "if and when the present application is granted and the requisite order secured from the Pennsylvania Securities Commission." The Commission held that the subscription was not binding without the approval of the Pennsylvania Securities Commission. The court said this was a mutual mistake of law and that it would be a silly business to perpetuate the error.

The Commission found that Drayton, the principal stockholder of the appellant corporation, was not a resident of Pottsville, was not familiar with its local broadcasting needs, and was interested in the proposed grant primarily for investment purposes. The court said that as this was intended to be a statement of policy that it should be applied with substantial uniformity, and that since it had not been so applied that it was arbitrary and capricious, and reversed the Commission, remanding the case to it for further proceedings.

The Pittsburgh Radio Supply House, Intermountain Broadcasting Corporation, and Head of the Lakes Broadcasting Company Cases (Nos. 7024, 7025, and 7027)

These appeals all arose out of the Commission's decision granting an application of WATR to change frequency and increase power and hours of operation. All three appellants are licensees of stations operating on 1290 kilocycles. Pittsburgh Radio Supply House and Head of the Lakes Broadcasting Co. filed applications with the Commission for increase in power from 1 to 5 kilowatts prior to the filing of the application of WATR. These applications were in violation of the Commission's rule 120 restricting the power of stations upon regional frequencies to 1 kilowatt at night. Those applications were designated for hearing but no date determined. Appellants' arguments are as follows: That the Commission erred in granting WATR's application prior to deciding the applications of Head of the Lakes and Pittsburgh Radio Supply House and that the granting of the application of WATR was arbitrary and capricious and not in accord with the weight of the evidence. The court dismissed all three applications and held that it was plain none of the appellants could appeal under section 402 (b) (1) because none of its applications had been refused, and since it was clear that none of them would suffer economic injury or objectionable interference they had no appealable interest.

With respect to the application of Pittsburgh Radio Supply House, which was in violation of rule 120, the court said:

> "Here Pittsburgh has applied for a grant which would be in direct violation of rule 120, and it can succeed in its objective only by inducing the Commission to change the rule. This is a matter so wholly of policy under the provisions of the act and so peculiarly within the special and expert knowledge of the Commission that to undertake to control it judicially would be clearly an impingement upon the jurisdiction of the Commission. The Commission has in the past considered whether rule 120 ought to be changed in the manner Pittsburgh requests, but no change has been made; and, while the question may be said to be still open, we have no reason to assume it will be changed and certainly no right to say that the Commission should suspend its functions pending its determination of that question. Hence, we think Pittsburgh has no appealable interest which we may consider here."

The Southland Industries and Woodmen of the World Life Insurance Association Cases (Nos. 7018 and 6994)

Appeals were taken in these cases while petitions for rehearing before the Commission were pending and undecided. The court dismissed both appeals on the ground that it had no jurisdiction in the case until action on the motion

to dismiss by the Commission had been had. The court refused to hear arguments on the merits in either case.

The Evangelical Lutheran Synod Case (No. 7150)

In this case the Commission moved to dismiss on the ground that the appeal was not in time, having been taken 21 days after the Commission had denied the petition for rehearing. Appellant contended that it was in time because a petition for rehearing on a related application had been denied some months later and that its appeal was filed within 20 days from the date of that denial. The court said that the motion to dismiss must be granted for two reasons:

> "If the applications of Evangelical Lutheran Synod and Pulitzer Publishing Co. were consolidated for hearing, with the result, as contended, that they were presented to and decided by the Commission as a single case so that for appeal purposes there is but a single decision of the Commission disposing of both applications (as to which we express no opinion), the pendency of a motion for rehearing by Pulitzer made the filing of the notice of appeal by Evangelical Lutheran Synod premature, and therefore this court has no jurisdiction (*Southland Industries, Incorporated,* v. *Federal Communications Commission,* — F. (2d) —, — App. D. C. — (decided June 15, 1938)).
>
> "If the applications were not so consolidated for hearing and if the decision of the Commission on the applications of Pulitzer Publishing Co. and Evangelical Lutheran Synod permits separate or separable appeals (which we need not decide to dispose of this motion), then we have no jurisdiction, because Evangelical Lutheran Synod's notice of appeal was filed late."

APPENDIX J

Applications for Radiotelegraph and Radiotelephone Authorizations

TELEGRAPH SECTION

For the period July 1, 1937, to June 30, 1938, there were received 14,935 applications and there were issued 13,088 authorizations. There are listed below the number of applications received and authorizations issued according to service and class of station.

	Applications received	Authorizations issued
Agriculture: Point-to-point telegraph	8	8
Aviation:		
Aeronautical	595	612
Aeronautical, Point-to-point	239	226
Aeronautical and aeronautical Point-to-point	67	67
Aircraft	1,880	1,802
Airport	141	75
Obstruction marker beacon	3	0
Instruction aircraft	1	0
Coastal, private:		
Coastal telegraph	5	2
Coastal harbor	0	0
Coastal, public:		
Coastal telegraph	149	122
Coastal harbor	120	98
Emergency:		
Marine fire	3	3
Police, municipal	621	523
Police, State	355	240
Police, zone	60	44
Police, interzone	45	36
Special emergency	128	126
Police, municipal and zone	7	2
Police, municipal and interzone	2	2
Police, State and zone	12	20
Police, State and zone, and special emergency	1	0
Experimental:		
General experimental	4,647	3,726
Special experimental	493	434
Fixed, private: Point-to-point telegraph	1	0
Fixed, public: Point-to-point telegraph	735	627
Fixed, public press: Point-to-point telegraph	109	83
Geophysical	255	252
Marine relay	58	53
Mobile press	5	3
Temporary: Motion picture	8	16
Ship	4,137	3,835
Joint applications: [1]		
Marine relay and coastal telegraph	6	8
Coastal and Point-to-point telegraph	4	8
Point-to-point telephone and point-to-point telegraph	1	1
Point-to-point telegraph, Point-to-point telephone, and aeronautical	1	0
Coastal, Point-to-point telegraph, and marine relay	1	2
Special	5	0
Aeronautical, aeronautical Point-to-point, special experimental, and aircraft	1	0
Wire certificates	26	32
	14,935	13,088

[1] Construction permits to be licensed for more than 1 service.

TELEPHONE SECTION

For the period July 1, 1937, to June 30, 1938, there were received 1,643 applications and there were issued 1,375 authorizations. There are listed below the number of applications received and authorizations issued according to service and class of station.

	Applications received	Authorizations issued
Coastal, private:		
Coastal harbor	6	5
Coastal telephone	1	0
Coastal, public:		
Coastal harbor	25	15
Coastal telephone	11	5
Ship	1,141	944
Experimental:		
General experimental	20	10
Special experimental	36	28
Fixed, private: Point-to-point telephone	6	0
Fixed, public: Point-to-point telephone	336	313
Joint applications:[1] Point-to-point and coastal harbor	24	10
Telephone wire certificates	37	45
Total	1,643	1,375

[1] Construction permits to be licensed for more than 1 service.

The following is a detailed report, arranged according to service, showing the number of new stations authorized, number of stations deleted, and the total number of authorized radio stations as of June 30, 1938:

	Number of stations June 30, 1937	New stations authorized	Stations deleted	Total number of stations June 30, 1938
Agriculture: Point-to-point telegraph	7	0	0	7
Aviation:				
Aeronautical	298	74	48	324
Aeronautical point-to-point	133	15	11	137
Aircraft	734	462	250	946
Airport	43	11	1	53
Obstruction marker beacons	[1] 4	0	4	0
Coastal, private:				
Coastal telegraph	3	0	0	3
Coastal harbor	2	0	0	2
Coastal, public:				
Coastal telegraph	101	10	0	111
Coastal harbor	79	27	4	102
Coastal telephone	4	0	0	4
Emergency:				
Municipal police	302	44	7	339
State police	136	40	10	166
Interzone police	14	7	0	21
Zone police	14	24	1	37
Marine fire	3	0	0	3
Special emergency	66	41	11	96
Experimental:				
General experimental	1,833	1,052	162	2,723
Special experimental	138	38	57	119
Fixed, private:				
Point-to-point telegraph	0	0	0	0
Point-to-point telephone	0	0	0	0
Fixed, public:				
Point-to-point telegraph	439	16	21	434
Point-to-point telephone	199	43	15	227
Fixed, public press: Point-to-point telegraph	75	0	17	58
Geophysical	201	27	10	218
Marine relay	40	0	0	40
Mobile press	5	0	2	3
Temporary: Motion picture	8	0	4	4
Ships	2,193	1,236	175	3,254
Total	7,074	3,167	810	9,431

[1] Class of station abolished.

Radiotelegraph and radiotelephone applications

	1934	1935	1936	1937	1938	Percent
Applications	8,139	8,221	9,751	12,192	16,578	+36
Authorizations	7,336	7,772	8,427	11,834	14,463	+22
Stations	-------	-------	5,693	7,151	9,431	+32

MISCELLANEOUS

	1936	1937	1938	Percent
Call letters assigned [1]	1,812	2,313	2,742	+19
Letters written	1,433	1,925	2,106	+14
Telegrams sent	688	1,174	1,133	-------

[1] Does not include blocks of call letters allocated to Government departments for assignment.

The Radio Service Bulletin, containing in tabular form a complete record of all new assignments, changes, and deletions relative to all classes of radio stations, commercial and Government, in the United States and its possessions, was issued semimonthly.

The following publications were prepared by the Commercial License Section: Municipal, State, zone, and interzone police stations; point-to-point telephone, telegraph, and press stations; aeronautical and aerounatical point-to-point stations; and coastal stations.

APPENDIX K

International telephone circuits showing connections to various foreign countries and distant possessions of the United States

Circuit terminals	Direct radio circuit or first link beyond the United States (1)	Extension from the United States to foreign country shown in preceding column (1) or to terminal of second radio circuit (2)	Extension from preceding column (2) to foreign country indicated (3)
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		
	Miami-Tegucigalpa		
Honduras	Miami-La Lima		
Jamaica	Miami-Kingston		
Nicaragua	Miami-Managua		
Panama and Canal Zone.	Miami-Panama		
Puerto Rico	Miami-San Juan		
Bahamas	Miami-Nassau		
Bermuda	New York-Hamilton		
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	Submarine cable and land wires.	
Gibraltar	do	do	
Great Britain (also Northern Ireland).			
Hungary	New York-London	Submarine cable and land wires.	
Iceland	do	London-Reykjavik	
Ireland	do	Submarine cable	
Italy	do	Submarine cable and land wires.	
Jugoslavia	do	do	
Latvia	do	do	
Lithuania	do	do	
Luxemburg	do	do	
Netherlands	do	Submarine cable	
Norway	do	Submarine cable and land wires.	
Poland	do	do	
Portugal	do	do	
Roumania	do	do	
Spain	do	do	
Sweden	do	do	
Switzerland	do	do	
South America:			
Argentina	New York-Buenos Aires		
Brazil	New York-Rio de Janeiro		
Chile	New York-Buenos Aires	Land wires	
	Miami-Bogota		
	Miami-Barranquilla		
	Miami-El Centro		

International telephone circuits showing connections to various foreign countries and distant possessions of the United States—Continued

Circuit terminals	Direct radio circuit or first link beyond the United States (1)	Extension from the United States to foreign country shown in preceding column (1) or to terminal of second radio circuit (2)	Extension from preceding column (2) to foreign country indicated (3)
Paraguay	New York–Buenos Aires	Land wires	
Peru	New York–Lima		
Uruguay	New York–Buenos Aires	Land wires	
Venezuela	Miami–Caracas		
Asia:			
China	San Francisco–Shanghai (Canton).		
French Indochina	New York–Paris	Paris–Saigon	
India	New York–London	London–Bombay	
Iraq	do	London–Cairo	Land wires.
Japan	San Francisco–Tokyo		
Palestine	New York–London	London–Cairo	Do.
Siam	do	Submarine cable and land wires to Berlin.	Berlin–Bangkok.
Syria	do	London–Cairo	Land wires.
Oceania:			
Australia (including Tasmania).	do	London–Sydney	
Hawaiian Islands	San Francisco–Honolulu		
Netherlands Indies:			
Java	San Francisco–Bandoeng		
Sumatra	do	Bandoeng–Medan	
Madeira	do	Submarine cable	
Bali	do	do	
Celebes	do	Bandoeng–Makassar	
Philippine Islands	San Francisco–Manila		
Africa:			
Canary Islands	New York–London	Submarine cable and land wires to Madrid.	Madrid–Teneriffe.
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 cable and land wires.	
Tunisia	New York–Paris	Paris–Algiers	
Union of South Africa.	New York–London	London–Cape Town	

APPENDIX L

AMATEUR SECTION

Applications for amateur radio privileges continued to reach the Commission at a rate exceeding a hundred per business day. In the following figures a defective application, corrected and filed again, is counted a second time, but in much larger numbers applications made jointly for operator and station licenses are counted as one:

Amateur radio applications

Receipts:		
Pending July 1, 1937	536	
Received during the fiscal year	36,402	
		36,938
Disposals:		
Approved	23,427	
Returned to applicants	6,533	
Referred to other Federal agencies, etc	283	
Failed required examinations	5,805	
		36,048
Pending, close of June 30, 1938		890

About a third of the applications were for new or increased privileges, entailing examinations, given at Washington and many points in the States, Territories, and possessions. In the following figures an individual is counted twice if he failed and after a required wait of 3 months repeated the examination, or if a single examination comprised both classes A and B envelopes:

Amateur radio examinations

Nature	Number	Passed	Failed	Percent failed
Code tests	10,249	7,060	3,189	31
Written tests:				
Class A envelope [1]	2,137	1,416	721	34
Class B envelope [1]	4,832	3,612	1,220	25
Class C envelope	2,062	1,500	562	27
Abridged (rules 405–406)	956	764	192	20
Total	9,987	7,292	2,695	27

[1] In 247 instances the examination included both A and B envelopes.

A radio amateur ordinarily holds two licenses, one for his station and one for himself as an operator, commonly joined in card form. Some hold one without the other and occasionally an amateur holds a second station license, ordinarily in behalf of an amateur radio society or a group of amateurs connected with a military or Naval Reserve unit.

Amateur radio authorizations

Station licenses:		
New	5,606	
Renewed	7,948	
Modified and reissued	7,755	
		21,309
Operator licenses	21,239	
Operator-license endorsements	1,480	
Duplicates of lost or destroyed licenses	525	
		23,244
Total		44,553

While the issuance of new licenses added many newcomers to the holders of amateur licenses, there were also many eliminations due to licenses expiring without renewal, etc. However, the net effect of all such changes was a continued increase in numbers represented by licenses valid of record.

Amateur radio-station licenses valid of record

Valid at close of fiscal year 1937		47,444
Plus:		
Expired but not deleted June 30, 1937	1,336	
New issues, fiscal year 1938	5,606	
		6,942
		54,386
Less eliminations, fiscal year 1938:		
Revocations	2	
Cancelations	153	
Deletions	3,247	
Expirations (renewal yet possible)	1,073	
		4,475
Valid of record, close of June 30, 1938		49,911

The amateur license holders are distributed widely. The division between call areas in terms of station licenses valid of record June 30 was approximately as follows:

Amateur radio stations, June 30, 1938

Call area	States, etc.	Stations
1	New England	4,925
2	Southern New York, northern New Jersey	5,600
3	Southern New Jersey, eastern Pennsylvania, and Delaware to Virginia	3,500
4	North Carolina to Florida, Alabama, Tennessee, Puerto Rico, and the Virgin Islands	2,750
5	Arkansas, Oklahoma, and Mississippi to New Mexico	3,225
6	Arizona, California, Nevada, Utah, and Pacific Islands	7,100
7	Alaska, Idaho, Montana, Oregon, Washington, and Wyoming	3,150
8	Ohio, West Virginia, and parts of Michigan, New York, and Pennsylvania	8,350
9	Balance of interior United States	11,300