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FCC ALLOCATION HEARING BEGINS

Nearly 300 representatives of all phases of the broadcast industry were present today at the opening of the allocation hearings called by the Federal Communications Commission. Judge Eugene O. Sykes, chairman of the Broadcast Division, acted as chairman. During part of the sessions today all of the members of the Commission participated.

Today officials of the Commission, representatives of educational broadcasters and the clear channel group presented their testimony. The latter group had not concluded as the hearings adjourned until Tuesday.

Judge Sykes as chairman opened the hearing with a short statement in which he outlined the procedure and spoke of the general subjects which the Commission desired to have discussed.

Judge Sykes said:

"On behalf of the Broadcast Division, permit me to express to you our appreciation for your interest in and presence at this hearing. The notice of appearances indicates that the educational interests, radio engineering associations, station organizations, individual stations, and others interested in broadcasting are well represented. We are, therefore, assured of the presentation of thorough and extensive testimony on the subject of broadcasting.

"The notice of this informal hearing (Docket 4063) was sent to all broadcast licensees, various manufacturers of radio equipment, trade organizations and associations, and government departments. It has also been given wide publicity by the press and by magazines which are read by persons and organizations interested in broadcasting.

"In calling this conference, the Broadcast Division of the Commission desires to obtain from the industry the most complete information available with respect to their view of this broad subject of allocation, not only in its engineering phases but also the social and economic phases to the end that such regulations and standards as it may retain or adopt will provide maximum service (both transmission and reception) in the public interest. The improvements in, and the increased knowledge of, the engineering aspects of broadcasting since the inauguration of the present allocation system in 1928 will be taken into consideration; also the amendment of June 5, 1936, to the Communications Act of 1934, repealing Section 302 and modifying Section 307 (h).

"There have been no basic changes in the plan of allocation adopted by the Radio Commission in 1928 but since that time there have been many important developments in radio engineering as well as in the social and economic phases of broadcasting. It was felt that opportunity should be given to the industry to present to the Commission at an informal hearing of this type the facts concerning broadcasting as it sees it today.

"The general subjects on which it was desired that the respondents give testimony are outlined as follows:

- "1. Classification of broadcast stations.
- "2. Allocation of frequencies to different classes of stations.
- "3. Standards to be applied in determining coverage and the presence or absence of objectionable interference.
- "4. Geographic distribution of broadcast facilities.

"5. Standards and methods of measurements with respect to essential engineering phases of operation of broadcast stations.

"6. Apparatus performance requirements to be imposed on broadcast stations.

"7. Effect of any proposals regarding the foregoing subjects.

"This outline in general covers the scope of the hearing, however, testimony along other lines may be presented by respondents, but individual applications, individual assignments, and requests for allocation of broadcast facilities to particular groups or organizations will not be considered.

"The procedure to be followed at this hearing is that persons desiring to be heard may either present statements, which may be read if desired, or they may have their attorneys read such statements or ask questions to which the person may reply. Since this

is a fact-developing hearing, rather than one whereby it is sought to prove or disprove some preconceived idea, persons will not be sworn, and no one will be compelled to answer questions which he may indicate he does not desire to answer.

"Cross-examination of witnesses appearing in behalf of respondents will be limited to questions by the Commissioners and other members of the Commission's staff. If others desire to ask questions of witnesses,

this should be done by submitting the questions, in writing, to the Chairman or any other member of the Commission's staff present. If deemed desirable, the questions will be asked of the witnesses.

"Upon the completion of cross-examination, the witness, with or without the aid of counsel, may amplify or explain any of his statements. At the close of the hearing, counsel representing the various groups will be permitted a summation or argument of not more than 30 minutes duration for each group appearing on the calendar.

"Doctor Wheeler and Mr. Ring of the Commission's Engineering Staff will present testimony concerning factual data on the allocation survey. These two witnesses may be cross-examined directly by any respondents on questions of fact only.

"There has been distributed for the convenience of those attending this hearing a mimeographed copy of the order in which persons or organizations will be heard. This list contains only those who have notified the Commission of their intention to present evidence at the hearing. However, anyone desiring to be heard who does not appear on the list of respondents should notify the Chairman, in writing, stating the subject on which he wishes to speak and the approximate time required.

"The ushers will pass registration cards to those present. It is requested that you complete these cards to assist the Commission in determining the attendance and to assist in locating persons when inquiries are received. After completing the cards, they may be passed to the end of the row on your left where the ushers will collect them.

"The Chief Engineer will now present his statement on broadcast allocation and engineering."

T. A. M. CRAVEN

T. A. M. Craven, chief engineer of the Commission, made a statement in connection with broadcast allocation and engineering

During the course of the allocation hearings by the Federal Communications Commission, NAB Reports will be published daily.

in which he called attention, among other things, to the fact that he is of the opinion that the time has arrived for cooperation between radio manufacturers and the governmental regulating agency in an effort to render and plan for efficient engineering in the public's broadcasting system.

Mr. Craven said:

The Chairman of the Broadcast Division has already indicated to you that this hearing is for the purpose of securing facts with respect to the engineering principles of allocation within the broadcast band 550-1600 kc, and facts and opinions concerning the social and economic consequences of any proposed changes in the existing regulations of this Commission with reference to the engineering principles of allocation within the frequency band 550-1600 kc.

I might add that the conception of the hearing was pervaded with the spirit of reviewing the progress that has been made in the art of broadcasting since 1928, securing from the industry a practical interpretation of this progress and cooperating with the industry in an intelligent planning in the application of this progress to the betterment of broadcasting service to the public.

Broadly speaking, technical progress should be inevitable and cannot be stopped by artificial measures engendered by fear of the results. To attempt to retard progress by artificial measures is unsound, and leads only to confusion. On the other hand, an intelligent survey of new developments and a logical evolutionary application, by practical people, of new principles resulting from such new developments should be beneficial to all.

This hearing commencing today gives an opportunity to all concerned, to both government and to private individuals, groups and organizations, to discuss publicly a phase of the national broadcasting problem in a cooperative and orderly manner. Such an opportunity has not existed for several years, and we are certain that we shall benefit from the hearing, even though it should result merely in a clarification of thought on controversial subjects.

Some persons have expressed to me the view that the issues at this hearing are not sufficiently specific, and that we should have a definite set of issues upon which several schools of thought could give expressions of opinion. Perhaps the present would be premature for such a procedure, because from the information I can secure, there is still not a unity of engineering thought with respect to practicable standards of service and interference. Until we can secure at this hearing such an expression from the practical engineers of the country, it would appear to me that the reduction to a few isolated issues might not be entirely beneficial.

Growing out of the vast experience, both in engineering and in the economics of broadcasting, which has been gained since 1928, the year in which the present principles were established, there have been certain developments which may enable progressive steps to be taken if the evidence at this hearing should show a need therefor. And, certainly today we are in a position more clearly to distinguish between the effects of the depression and the effects of engineering and other economic factors upon the broadcasting industry, and hence we are in a better position to attempt progressive steps than we have been at any time heretofore since the establishment of the existing allocation system.

The industry in the past few years has learned much with respect to broadcasting. For example, much data have been collected with respect to the performance of radio stations and their ability to render service under various conditions. From this we are able more clearly to understand the difference in value between various frequencies in various parts of the country. Also much data have been secured with respect to the sky wave propagation characteristics of stations, and while factual information with respect to this phase of engineering may not enable us to deal with the question in a precise manner, we have, however, secured sufficient information to be very useful as a guide in determining questions of both service and interference.

Next, by reason of practical studies made by the engineers of various stations, we should be in a position to understand better today than heretofore the relation between signal intensity and useful service under various conditions of interference, both man-made and natural.

In addition, much information has been obtained in the design of receivers, a most essential factor in any engineering plan of allocation of radio broadcasting frequencies. And in this connection, we have an opportunity to accomplish something today which was not accomplished in 1928 because of the lack of facts at that time. In my opinion the receiver, its manufacture, its performance and its distribution to the public, has a most important relationship to the problems of broadcasting, both from an eco-

NAB WILL NOT PARTICIPATE IN ALLOCATION HEARING

The Board of Directors of the NAB, at a meeting held in Washington October 2, decided that by reason of the character of the allocation hearing as described in the Commission's notice, the NAB should not participate in it.

nomic and an engineering standpoint. In a sense, it is the other end of the circuit, since both transmitters and receivers are required to complete the service to the public. Therefore, unless we thoroughly understand the relationship between the receiver and transmitter, and in turn, their coordination in a system of allocation, we have not provided properly for a sound engineering system of allocation.

It seems to me that the time has now arrived for an effective cooperation and coordination between the receiver manufacturers, the manufacturers of transmitters, and the government regulating agency, in a cooperative effort to render and plan for efficient engineering in the public's broadcasting system. It is hoped that evidence with reference to this phase of the problem will be presented at this hearing.

Naturally, with the experience gained since 1928 in the economics of broadcasting, whether operated by commercial concerns, social groups, or by any other method, we should be in a position to know better today the relationship between the engineering of allocation and the economics of allocation. Having had some personal experience in the practical end of broadcasting, it appears to me that possibly there is a definite relationship between economics and engineering of radio broadcasting, and therefore it appears that if we are to have a sound system of allocation in the future, the Commission should receive facts with reference to this phase of the broad problem which confronts us today. The notice of hearing comprehends this part of the problem and it is hoped that we shall hear some constructive evidence with reference to the subject.

Another factor which should be considered with reference to the hearing is, first, that persons in the practical operation, particularly engineers, are concerned with practical operation from perhaps a local viewpoint, while others are concerned from a national viewpoint, but by reason of their very closeness to the practical business affairs of everyday life, they may sometimes not appreciate the difficulties of administering the regulation of such a vast organization in the public interest.

On the other hand, the engineers of the Commission, as a result of unavoidable limitations, are unable to secure continuous practical experience in the field in the actual operation of stations, and therefore may be somewhat handicapped, through no fault of their own, in sensing a relationship between engineering and the economics of a broadcasting station. However, they do have expert knowledge with respect to the problems of administration and regulation. This hearing thus affords the engineers of the Commission an opportunity more thoroughly to understand the problems confronting the engineer engaged in practical operation.

I have faith in the engineer of the country, and in his desire to render, broadly speaking, a service. I have faith in his honesty and sincerity of purpose, and therefore it seems to me that here today, through the process of this hearing, we can perhaps secure the unity of engineering opinion with respect to the problems of broadcasting which may be of the utmost service to the country as a whole, and particularly to the individual members of this Commission in their daily problems with respect to regulation. If this can be accompanied with data from experienced persons with reference to the economic phases of broadcasting, it seems to me that the Commission will have a most excellent and thorough background upon which to base the fundamental regulations dealing with the engineering problems of allocation in the future.

Before concluding, I believe it desirable to inform the industry that as a result of the June 15 hearing, the Interdepartment Radio Advisory Committee is making progress in its study of the allocation of frequencies above 30,000 kc to government services. It is my opinion that we may expect with confidence the allocation of sufficient frequencies above 30,000 kc to accommodate aural, facsimile and television broadcasting in the future on an initial experimental basis. In my opinion, the date when these new services will cease to be experimental depends upon many factors, and in particular, upon the rate of progress in development.

It is our understanding that the industry has given great effort and incurred much expense in preparation for this hearing. I know the Commission appreciates this, and feels that constructive results will be obtained thereby.

A. D. RING

The next two witnesses included A. D. Ring, assistant chief engineer of the Commission and Dr. L. P. Wheeler, chief of the technical information section. They presented statements concerning the procedure and the factual data on the allocation survey of the Commission made public some time ago.

Mr. Ring also summarized the post card allocation survey by the Commission and its results and he gave some evidence as to the weight to be given to this particular survey.

In discussing this survey Mr. Ring pointed out that the results as published were not sufficient to be of value in competitive commercial broadcasting.

L. P. WHEELER

Dr. Wheeler spoke of the establishment of his section and the assignment which he was given of analyzing the technical data accumulated in the allocation survey.

"There are," said Dr. Wheeler "now upwards of eighty paths throughout the continental United States for which reliable ground conductivities are available. It is believed "that the method of computation used is a most satisfactory and accurate way of determining ground conductivity. It is theoretically sound, provided care is taken to include no field intensity measurements at distances where diffraction effects complicate the problem, and the results are in gratifying agreement with the work of other investigators." In concluding his remarks Dr. Wheeler said that "it is my personal belief that the material already accumulated, including that of this survey, affords the basis for a very considerable extension of the theory of sky-wave propagation in the desired direction, any such theoretical discussion lies beyond the scope of this statement, which is merely to place before you the facts developed by the allocation survey from which we are all free to draw our own conclusions."

S. HOWARD EVANS

S. Howard Evans, speaking on behalf of the National Committee on Education by Radio, took up both the economic and social uses of radio.

"In broadcasting," said Mr. Evans "two rather distinct and mutually exclusive formulas have developed. One is strictly education. It largely makes its appeal to specialized minority groups. Its purpose is to supply special kinds of information, to elevate the cultural and intellectual level of the nation, and to stimulate individuals in their powers of discrimination and critical analysis. It gets its support from some public or at least non-commercial source."

"The other formula is commercial," he said. "It is financed by advertising. It makes its appeal to a mass audience. It tries to attract people through entertainment and to hold their attention for advertising announcements which, if successful, repay the sponsors and make them willing to continue financing commercial programs. It has to supply variety and interest as the only means of holding an audience for its purpose."

Mr. Evans told the committee that "the situation in which education finds itself under the commercial broadcasting formula has been outlined for the single purpose of showing the inherent capacity of that formula to make a proper place for education or to fulfill the responsibility of public service broadcasting which commercial broadcasters have undertaken in accordance with the terms of their federal licenses." In concluding his statement Mr. Evans said "the only conclusion which can be drawn from this failure of the present broadcasting structure to supply a service which is socially sound and economically fair is that the Federal Communications Commission has a responsibility to see that this condition is corrected. I believe that the place to make such a correction is in connection with the reallocation of facilities. If there is to be a classification of services in the 1936 allocation as there was in the 1928 allocation the considerations I have outlined should be taken into account in making up that classification."

A. G. CRAIN

Dr. A. G. Crain of the University of Wyoming, chairman of the National Committee on Education by Radio and also chairman

of the sub-committee on Conflicts and Cooperation of the Federal Radio Education Committee, also made a statement on behalf of the National Committee.

Dr. Crain explained that he is not a technician and claimed no competence as a radio engineer. He called attention to the fact that radio is a great influence for education in the United States. The plan for broadcasting educational matters, however, is not now satisfactory to the educators of the country. A further plan must be evolved he said for enlightenment of the people by radio and he urged the Commission to look beyond the technical question to the social consequences of its decisions.

Dr. Crain complained that education is being subordinated to advertising and he said that this creates inescapable trouble. The Commission, Dr. Crain said, must be the umpire in connection with educational facilities. He called attention to the fact that many educational stations have been forced off the air and it is difficult for many of them to remain operating. The few remaining educational stations he told the Commission should be protected.

The stations he testified should not be forced to defend themselves against commercial inroads. He referred to the educational stations as demonstrational laboratories and called the Commission's attention to the fact that they have a regional service to perform.

Dr. Crain told the Commission also that the educational stations have made good and they have thousands of satisfied listeners.

Radio, said Dr. Crain, is a potent influence in education in the schools as a supplemental teacher. He stated that in his opinion these stations should have a fair and equitable use of radio. The school programs and advertisers cannot be synchronized and there should be no free sponsored educational programs by radio.

Dr. Crain stated that reservation should be made in the high frequency band of certain frequencies for educational stations and this has been endorsed by the Commissioner of Education, he stated. The educators of the country should have a chance to prove they can operate broadcasting Dr. Crain said. In closing he urged the protection and expansion of educational stations and said that the educators have more hope in the high frequency band than they have in the present broadcast band.

EDWARD BENNETT

Dr. Edward Bennett, engineer of the University of Wisconsin and instructor in the electrical engineering division of that University, testified on behalf of the national association of educational broadcasters.

He stated that one of the fundamental problems of the Commission is to establish non-monopolistic rights in radio. He said that ninety per cent of the radio facilities of the country are in the hands of commercial broadcasters with only three per cent in the hands of educational stations. He told the Commission that radio must be safeguarded against centralized radio ownership.

Dr. Bennett spoke of the factions in control of time and told the Commission that it should uphold non-centralized and non-monopolized rights in radio. He testified that in his opinion the Commission should draw plans to facilitate the handing over of certain radio facilities to public bodies such as state and federal authorities. This he said will certainly be in the public interest.

His purpose, Dr. Bennett said, was not to destroy commercial broadcasters nor to supplant them but merely to give additional facilities for educational purposes. There should be competition, he stated, between those having radio stations in public use and commercial stations. He had no specific recommendations to make relative to a general engineering plan for public agencies and he stated that he too hoped that new high frequencies may help in the educational situation.

H. B. MCCARTHY

H. B. McCarthy, president of the National Association of Educational Broadcasters, told the Commission of the shrinkage of educational stations in the United States and called their attention to the fact that that group has now dwindled from 100 stations to some 25 or 30.

He told the Commission that it should plan now for the future of educators. Many of the educational stations of the old days, he said, were not educational stations in the true sense. Many of these early stations, he said, really blazed the trail in radio developments. Many of them have been crowded off the air by commercial stations.

Mr. McCarthy told the Commission of the operation of the two

broadcast stations in Wisconsin with which he is familiar; one being that of the State University and the other of the State Agricultural Department. In this connection he spoke of the broadcast made directly from the class rooms of the University and told in some detail of the experiments of both of these stations which, however, he said, are limited to daylight hours.

Many people, Mr. McCarthy said, want some education at night as well as listening to entertainment. Education by Radio, he contended, should be done by state and federal authorities and not by commercial interests. He complained of the restricted hours, the low power and the poor frequencies now in the hands of the educational stations.

Mr. McCarthy pointed out in his testimony the success rather than the failures of the educational stations. He told the Commission that in his opinion it should plan wisely for the educational stations of the future as it has planned for experimental stations in the past.

Mr. McCarthy also read into the record a statement on behalf of the Ohio State University which has operated a station for over 14 years.

"The Commission," says the Ohio University statement, "we are sure recognizes the importance of making suitable provision for educational radio services, as evidenced by the education hearing in May, 1935, and the subsequent appointment of the Federal Radio Education Committee. We in Ohio regard radio broadcasting channels as a valuable natural resource that can effectively be used in the state educational system and trust that the favorable attitude of the Commission in continuing channel assignments for state services will be continued."

The University's statement said further that "it is practically possible to provide a state radio educational service in the majority of the states through the proper application of allocation principles which it is our intention to point out. While it is true that in some few states geographical and physical conditions make such a service impossible at a cost which can be justified, such cases are few and represent a small proportion of the population of the United States. We believe that it should be possible for those states favorably situated, and which are in the majority, to have such a service through the proper assignment of radio broadcast channels, economically suited to their use.

EDWIN W. CRAIG

Edwin W. Craig of Nashville, Tennessee, licensee of broadcasting station WSM, made a statement on behalf of the clear channel group to the Commission as follows:

My name is Edwin W. Craig, residing in Nashville, Tenn. I am vice-president of the National Life and Accident Insurance Company, licensee of broadcasting station WSM of Nashville, Tenn. I appear at this hearing in the capacity of chairman of what has come to be known as the Clear Channel Group.

The Clear Channel Group is an informal organization composed of the licensees of thirteen independently-owned clear channel broadcast stations. They are, in the order of their frequencies, as follows:

Licensee	Location	Call letters	Frequency	Power
Earle C. Anthony, Inc.	Los Angeles, Cal.	KFI	640 kc.	50 kw.
Nat'l Life & Accident Ins. Co.	Nashville, Tenn.	WSM	650 kc.	50 kw.
Crosley Radio Corp.	Cincinnati, Ohio	WLW	700 kc.	50 kw.
WGN, Inc.	Chicago, Illinois	WGN	720 kc.	50 kw.
Atlanta Journal Co.	Atlanta, Georgia	WSB	740 kc.	50 kw.
Carter Publications, Inc.	Ft. Worth, Texas	WBAP	800 kc.	50 kw.
A. H. Belo Corp.	Dallas, Texas	WFAA	800 kc.	50 kw.
The Courier-Journal Co. & The Louisville Times Co.	Louisville, Ky.	WHAS	820 kc.	50 kw.
WWL Development Co.	New Orleans, La.	WWL	850 kc.	10 kw.
	(Application for 50 kw. pending)			
Agricultural Broadcasting Co.	Chicago, Illinois	WLS	870 kc.	50 kw.
Central Broadcasting Co.	Des Moines, Iowa	WHO	1000 kc.	50 kw.
Stromberg-Carlson Tel. Mfg. Co.	Rochester, N. Y.	WHAM	1150 kc.	50 kw.
Southland Industries, Inc.	San Antonio, Tex.	WOAI	1190 kc.	50 kw.

In only one instance is a city represented by more than one station in our Group; this is Chicago where two members are located. In only two instances is a state represented by more than one station, Illinois and Texas. Our member stations are located at ten widely separated points scattered over the country, each station in an important centre of population in the midst of a large agricultural, rural and small-town area. Let me name these cities from east to west: Rochester, N. Y.; Atlanta, Georgia; Cincinnati, Ohio; Louisville, Kentucky; Nashville, Tennessee; Chicago, Illinois; New Orleans, Louisiana; Des Moines, Iowa; Dallas, Fort Worth and San Antonio, Texas; and Los Angeles, California.

Our membership comprises most of the clear channel stations which are independently owned and whose channels have not already been subjected to duplication. In terms of frequencies we represent twelve out of the forty designated as clear channels under the Commission's regulations, although one of the twelve is shared between one of our members and a national network company, and therefore technically we represent eleven and a half. Of the remaining clear channels, twenty and one-half are occupied by stations owned, leased, operated or managed by one or the other of the two major networks or (in two instances) owned by a network and leased to others. Six and three-quarters of these network channels are already subject to duplication. The remaining eight channels are occupied by independently-owned stations but only four and three-quarters of these are free from duplication at present. To summarize, there are only thirty channels which are now actually clear; of these, thirteen and three-quarters are occupied by network-owned or-controlled stations; eleven and one-half by stations owned by members of our Group, and four and three-quarters by stations owned by others.

My role in the presentation of the case in behalf of the Clear Channel Group is not, strictly speaking, that of a witness testifying to technical or economic facts. I am neither engineer, lawyer nor economist, but merely an executive official of a company which owns and operates a clear channel station. Our members have felt, however, that it would be helpful to a correct understanding of the contentions that will be urged in their behalf, and that will be supported by the testimony of later witnesses, if one of us should first provide you with a background from a layman's point of view which would tell you of the origin and purposes of the Group, a history of its allocation problems, and, in broad outline, its position on the principal issues to be determined at this hearing. It is unnecessary to tell you that I have had the assistance of our lawyers and engineers, and of several of the members of our Group, in gathering the information that has gone into this statement and in actually preparing it.

ORIGIN OF THE CLEAR CHANNEL GROUP

The Group originated somewhat over two years ago, in a meeting which it was my privilege to call, early in May 1934, at Chicago, and which was attended by a majority of the present members. Our common interest arose out of the fact that we were all representatives of clear channel stations and that we, together with others, were greatly disturbed by the danger of duplication and loss of rural service areas which seemed to threaten the channels to which our stations were assigned.

I think it important that you understand the reasons for our apprehension; they are as valid today as they were in 1934. To explain them requires an excursion into the history of broadcast station allocation, particularly as it affects clear channels. To find myself talking about "history" in connection with the broadcasting industry gives me somewhat of a shock as I realize that it is less than sixteen years since radio waves were first harnessed for the broadcasting of a program and that, as an industry, broadcasting has hardly lived more than a decade. Nevertheless, short as has been this history in terms of years, it has been crowded with events that can be matched by most other industries only in terms of centuries. I am reminded of that oft-quoted remark of a well-known broadcaster, made several years ago, that "broadcasting is the only industry that wakes up to a new crisis every morning."

What I am about to relate is an old story to Commissioner Sykes who, alone of the present members of the Federal Communications Commission, was a member of the original Federal Radio Commission appointed under the Radio Act of 1927, and who is a veteran of all the major allocation battles since the first meeting of that Commission on March 15, 1927. Commissioner Brown lived through some of these events; also so did Lieutenant-Commander Craven, the Commission's chief engineer, Mr. Ring, the Commission's assistant chief engineer, and undoubtedly other

members of the Commission's staff who are here today. I must ask the indulgence of all these as I review historical matters. After all, the allocation in effect today, which you will preserve or change depending on the evidence and the arguments presented to you in this hearing, is, in essence, the allocation of November 11, 1928. There are, it is true, improvements here and there and, I am afraid, also some scar tissue and evidences of corrosion, but on the whole the principles have remained the same. The allocation of November 11, 1928, was, in turn, the culmination of earlier events to which I now invite your attention, because of the lessons they teach and the evidence they furnish on the issues raised in this hearing.

CLEAR CHANNEL ALLOCATION UNDER THE DEPARTMENT OF COMMERCE, PRIOR TO FEBRUARY 23, 1927

For present purposes it is unnecessary to go as far back as the prehistoric era when people talked about wave-lengths and meters instead of frequencies and kilocycles, and when 550 broadcast stations in the United States were nominally all assigned to two wave-lengths, 360 meters and 400 meters (833 kc., and 750 kc.), the former for low power stations and the latter for "high power" stations, having an output from 500 to 1000 watts. In the list of these early stations you will find all but two of the thirteen of our Group, and at least nine of them had the same call letters and were under the same ownership as at present. Most of their stations began their career with small haywire outfits of 50 watts or less.

This primitive age came to an end on May 15, 1923, when, as a result of recommendations by the Second National Radio Conference, regulations were put into effect which to a remarkable extent have been the foundation of broadcast allocation ever since. These regulations made available the band 550-1350 kc. for broadcasting, a total of 81 channels, and inaugurated the principle of 10 kc. separation between channels; and divided this band into three parts for use by different classes of broadcast stations, one of which was the class we now know as clear channel stations.

The Second National Radio Conference had presented a plan under which a band of fifty 10 kc. channels at the lower end of the band was set aside, and proposed that those channels

"be distributed, over five zones throughout the country, such that no stations in adjacent zones are closer together in frequency than 20 kilocycles, and that within each zone there be 10 stations separated by 50 kilocycles."

and "that only one wave frequency be assigned to" such a station "which should transmit exclusively on the wave frequency designated and reserved exclusively for that station."

The plan referred to these channels as "territorial wave frequencies" and expressly recognized that a different quality and purpose of program was expected of stations assigned to these channels than of lower powered stations assigned to duplicated channels.

The Department of Commerce adopted the principal features of this plan, calling the three different classes, Class A, Class B and Class C. Class B broadcast stations were, in general, the "high power" stations (500 to 1000 watts) most of which had previously been operated on the nominal frequency of 750 kc. They were assigned to the bands 550-800 kc. and 870-1000 kc. They were required to maintain high standards with regard to character of program and quality of transmission.

Thus the new régime began with forty Class B channels. It was not long, however, before it became obvious that forty was not enough, and by the time the Third National Radio Conference was convened in October, 1924, there were 44, which had been obtained by extending the upper limit of the Class B band from 1000 kc. to 1040 kc. In his opening address, Mr. Herbert Hoover, Secretary of Commerce, said:

"Our chief trouble is with the Class B situation. They are all assigned within the band 288 to 545 meters (1040 to 550 kc.), within which there are, under the present system of allocation and excluding the Class C band, only 44 available wave bands and only 33 that seem desirable at present. To assign these among the 57 stations necessarily means duplication, although it was the theory of the last conference that individual wave-lengths could be assigned to each."

The pressure for duplication on clear channels is, therefore, not a new phenomenon. As a result of that Conference the upper limit of the broadcast band was extended from 1350 to 1500 kc., and the band from 550 to 1070 kc. became the Class B band. This created a total of 53 Class B channels.

In the meantime, however, just complaint has been voiced by our neighbor to the north that in 1923 the United States had allotted to its own licensees practically every channel in the broadcast band and in so doing had duplicated the channels already in use by the Canadian stations, causing severe interference to the latter. To remedy this state of affairs, at the time of this Third Conference our Department of Commerce agreed to regard six of the Class B channels as belonging exclusively to Canada, and that Canada might also use the channels occupied by the southern United States stations which were sufficiently removed from Canada to lessen the possibility of interference. Here, we have the origin of the so-called Canadian-exclusive and Canadian-shared channels.

The six Canadian exclusive channels, instead of being treated on the bloc principle and grouped either into one series of six adjacent channels or into two series of three adjacent channels, were scattered throughout the Class B band. As a result of this historical accident, they now present potential problems for twelve adjacent channels in the United States when only two need to have been involved; nine of those adjacent channels are designated as clear channel under the Commission's regulations and three as regional.

What are now called Canadian regional channels grew, in large measure, out of the even greater historical accident as to the chance location of certain of our Class B stations in the southern part of the United States. Of the eleven such channels, six still have formal recognition in the Commission's regulations; these six are likewise scattered without reference to the bloc principle, and create potential problems for six adjacent channels designated as clear in this country.

To return to the Third National Radio Conference, its fruits were a net of 47 Class B channels, some of them not clear because of joint occupancy with Canada. In fact, there was already some duplication on Class B channels within the United States. Because of the ever-increasing pressure on the part of new applicants, because of the limitations imposed on the authority of the Secretary of Commerce by decisions of the Court of Appeals of the District of Columbia construing the Radio Act of 1912, and because of the congestion of broadcast stations in some sections of the country, the Department of Commerce was unable to carry out completely the plan proposed at the Second Conference. Channel separations set up for stations in the same and contiguous zones had to be reduced in some cases and a few channels were, with reluctance, assigned in duplicate to widely separate zones.

It is interesting and instructive to note the sequel of such duplication. Remember that until the Third Conference in October, 1924, the maximum power of Class B stations was 1000 watts, that most of them had only 500 watts, and that, judged by present-day standards, very few if any of them really had a power output corresponding to their authorizations. Yet even with coast-to-coast duplication at this power trouble occurred. For example, one of our Group, KFI, Los Angeles, operated (as it still does) on 640 kc.; WRC at Washington was assigned to the same frequency. The resulting interference in intervening areas, and the public complaint, necessitated a shift between the two stations so that WRC remained on 640 kc. and KFI was assigned a frequency intermediate between 640 kc. and 650 kc. Such were the early lessons in the need for clear channels.

POWER REGULATION UNDER THE DEPARTMENT OF COMMERCE PRIOR TO FEBRUARY 23, 1927

Now let us retrace our steps to follow the history of power regulation of Class B stations. Here also the past is eloquent with lessons for the present. The First National Radio Conference, held in May, 1922, when most stations were using 50 watts or less, adopted recommendations that

"broadcasting stations should not be allowed to use unlimited power."

and that

"The Secretary of Commerce assign to each radio telephone broadcasting station a permissible power based on the normal range of the station."

Let me digress to note that this First Conference took the optimistic view that the average value for the normal range of "public broadcasting stations" was 250 miles. I am told that in some quarters the leap in power from 50 to 500 watts was viewed with fully as much alarm as any increase proposed since then.

As I have already told you, the Second Conference of March, 1923, classified stations of 500 and 1000 watts as high power stations and, in its regulations effective May 15, 1923, prescribed the maximum power of 1000 watts for such stations. It remained for the Third Conference, in October, 1924, to provide the dramatic climax of debate on the issue of high power, a debate which reached heights that have not been touched before or since and which I believe (and hope) will not be equalled at this hearing.

Before the Conference opened it became generally known throughout the country that the owners of certain stations were seeking and preparing to increase their power to the high peak of 5000 watts. These included, I believe, a gentleman named Earle C. Anthony of Los Angeles, California, another named Powel Crosley of Cincinnati, Ohio, and what is now the Central Broadcasting Company, now of Des Moines and then of Davenport, Iowa. Perhaps there were others from our Group; I am not sure. There were also stations owned by General Electric, Westinghouse, and American Telephone & Telegraph Company with somewhat the same plans. There was talk that some of the latter desired to go beyond 5000 watts and as high as 50,000 watts. It was even said that some of them had gone so far as actually to order or to build 5-kilowatt transmitters in anticipation of a change in the Department of Commerce regulations.

During the ten days prior to the Conference, the Secretary of Commerce, to quote his own words, had

"received thousands of letters from men, women, and children all over the country protesting against what they honestly believe would result in depriving them of the chance to listen to the local stations or to use their will in selecting the ones they want to hear. They fear a monopoly of the air."

Mr. Hoover's approach to the question in his opening address was not exactly violently on one side of the issue or the other. He recommended the subject for the conferees' most careful consideration and hoped that they might be able to reach a satisfactory conclusion. The Conference referred the matter to a sub-committee which had some points of resemblance to the group in this room, although much smaller in size. Among those who spoke in favor of increasing the maximum power limitation were Earle C. Anthony and Powel Crosley. To show how history repeats itself, among those opposing the increase was our good friend John Shepard, 3rd, of Boston.

I should like to read into the record all that Mr. Shepard said in October, 1924, twelve years ago, for I suspect that his reasons for opposing higher power now will not differ materially from his reasons then. The same is true of those who argued in favor of increasing the power maximum; their reasons will not differ greatly from those that we shall urge. Time will not permit me to read at length from this earlier testimony but I cannot resist the temptation to read some of what Mr. Shepard said, as follows:

"Station WGY, Schenectady, N. Y., has been testing late at night on a power of five thousand watts or more, and when they conduct these tests they come into Boston, which is over 150 air miles from Schenectady, with the following result on the average selective set: They are heard with good volume fifty kilocycles on either side of their wave length; and when I say the average selective set, I am not talking about a broad single circuit receiver, nor am I talking about a super heterodyne or other loop set.

* * *

"If the power is increased without any limitation of hours or season, it will result in less enjoyment to millions of people, and for that reason it should not be done at this time.

"With the wire connections that can be made, I can not see that the public need be deprived of any programs of a national character because of an increase in power not being allowed. It has been stated that those opposed to the increase were standing in the way of progress. I don't feel that I am, because I feel that the experiments should be continued and proof submitted to the people by actual demonstration as to just what a super power station can do, and proof that it will not blanket other stations. (Applause.)"

I also must yield to the temptation to give you one short excerpt from a statement made by Mr. Crosley, because of its prophetic character. He said:

"To crystallize my thoughts in a few words, in conclusion, the higher power station should come. The limit I do not know, but the limit should be controlled by the distance from any thickly populated district; and if there is such a station

as two hundred kilowatts some time in the future,—perhaps it will come,—it should perhaps be located in the wilds of Maine, or perhaps down on the great American desert, (Laughter) or some other point where it will cause the minimum of interference. But it's bound to come, just as they are building such stations abroad . . ."

The Department of Commerce proceeded immediately to announce regulations pursuant to the recommendations of the Conference. It declared that it would issue licenses for power up to 5000 watts on a gradual and purely experimental basis.

It was not long, however, before the increased power amply demonstrated its advantages. By the time the Fourth National Radio Conference convened, in November, 1925, the apprehension had disappeared and we find the Secretary of Commerce, Mr. Hoover, saying the following in his opening address:

"A year ago we were fearful of the effect of greater power. We were told by some that the use of anything more than 1,000 watts would mean excessive blanketing, the blotting out of smaller competitors, the creation of large areas into which no other signals could enter. Some of the most pessimistic even warned us that our tubes would explode under the impact of this tremendous force. But our experience so far leads to the opinion that high power is not only harmless in these respects but advantageous. Power increase has meant a general rise in broadcasting efficiency; it has meant clearer reception; it has helped greatly to overcome static and other difficulties inherent in summer broadcasting, so as to give us improved all-year service. Whatever the limit may be, I believe that substantial power increase has come to stay, and the public is the gainer from it."

This time the Conference Committee having to do with the subject reported the following on "high-power broadcasting Stations."

"The fear which was felt a year ago that high power would adversely affect the reception of a large number of listeners has been shown to be without foundation. The increase of power by transmitting stations has improved general conditions of reception. It is recommended that the present attitude of the Department of Commerce of authorizing experimental development of high-power broadcasting stations be continued."

In the meantime, experimentation with the use of fifty kilowatts was, with the approval of the Department of Commerce, being carried on. The trend of progress under the administration of radio regulation of the Department of Commerce was definitely in the direction of high power on clear channels, so far as the limitations imposed by an inadequate law permitted it to give effect to these objectives.

THE CHAOS OF 1926

We come now to the great disaster in the history of American Broadcasting, the imprint of which still remains on some portions of our allocation structure. I refer to what is commonly known as the breakdown of the law which occurred in the period beginning July 9, 1926. Within a few months some two hundred new broadcast stations crowded into the already over-congested ether, while existing stations "jumped" their wave-lengths and increased their power. By the time the Radio Act of 1927 became law, there was not a clear channel left and, consequently, there was no radio reception in the rural sections of the country or, indeed, anywhere except in the immediate vicinity of those cities that had broadcast stations. If ever the necessity for clear channels was demonstrated it was in this lawless period when, for the rural listener, the broadcast band became a radio desert inhabited only by shrieks, howls, whistles and a Babel of unintelligible cross-talk.

In a radio sense, civilization based on law and regulation had broken down and the savage tribes had swarmed in. For almost six years the Department of Commerce had, with fair success, resisted the repeated assaults on the part of those who would break down the allocation so as to provide for new stations. How great this pressure was became all too apparent when the resistance disappeared. This mediaeval era in the history of broadcasting came to an end with the enactment of a new radio statute on February 23, 1927, and the creation of the Federal Radio Commission, the chief and immediate mission of which was to bring order out of chaos.

CLEAR CHANNEL AND POWER REGULATION UNDER THE FEDERAL RADIO COMMISSION

The period between the first meeting of the Federal Radio Commission on March 15, 1927, and the allocation of November 11, 1928, may be called the revival of learning in the history of broadcasting. The events of this period are so recent and are so familiar to all of you that I would be imposing on your good nature and your patience were I to discuss it at length. There are, however, mile posts which must be mentioned briefly.

One of the first important actions of the Federal Radio Commission was to arrange a public hearing, very much of the same character as that in which we are now engaged, to which all interested parties were invited to appear and make known their views. At this public hearing the Commission was strongly urged to re-establish the system of two classes of stations, the former to be of low power to serve local areas and the latter to be of high power to serve large territories, including remote points and rural areas. This was urged, for example, by the Committee on Radio Broadcasting of the American Engineering Council. The Committee recommended that the broadcast band be divided at any chosen point into two bands for the two classes of stations, suggesting that from 550 to 1250 kc. be assigned to national stations and from 1250 to 1500 kc. to local stations. Excluding the six Canadian exclusive channels, this would have provided 64 so-called national channels for the United States. Because of the interference range of this class of stations, the Committee stated that

"the repetition of assignment of these frequencies is not feasible, except if the power used is not greater than 5 kilowatts and the stations in question are not less than 2,000 miles apart."

With respect to power, the Committee stated:

"It is not necessary nor desirable to impose power limits on the national stations (except as above-noted for frequency duplication for stations more than 2,000 miles apart). They will more effectively serve all listeners the greater the power they use."

Later on, the report says:

"Any plan which provides for a greater number of stations will evidently diminish rather than increase the actual radio service to the several communities of the United States."

In the main, as most of you will remember, the Commission did not give effect to these recommendations in its first re-allocation, which went into effect on June 15, 1927. Stations were not classified with respect to power, frequency or area to be served. No recognition was given to the necessity for clear channels, and no channel was left clear. The results of this allocation appear in the Commission's Second Annual Report, as follows:

"Radio-reception conditions were far from satisfactory as the result of the Commission's re-allocation of June 15, 1927. The re-allocation had succeeded to a marked extent in reducing interference arising from congestion in the larger metropolitan centers, where the stations had been crowded together without adequate frequency separation; it had not, however, succeeded in remedying the heterodyne interference (resulting from two or more stations operating simultaneously on the same channel), which was ruining reception in rural areas, and indeed in all parts of the country. The complaints which deluged the commission immediately made it apparent that changes would have to be effected.

* * *

"With the approach of winter conditions in the fall of 1927 the widespread development of heterodyne interference, in rural areas particularly, made immediate action imperative. On November 14, 1927, the commission, in an effort to ameliorate the situation, issued its General Order No. 19."

In the light of the Commission's present rather definite regulations on the subject, General Order No. 19 must necessarily appear as a curiosity. It designated the band 600-1000 kc.

"as frequencies to be maintained free from heterodynes or other interference."

and then proceeded to order all stations operating on the frequencies designated "to clear these channels of heterodyning during the present license period." Obviously, the Commission did not know broadcasters as well as it now knows them. Simultaneously, however, the Commission ordered a number of changes in station assignments, and further changes were made during

the early months of 1928. Some improvement resulted but the situation still was very bad; very few channels were actually clear, and good rural reception was almost non-existent in a large part of the country.

The next important event was the enactment of the late lamented Davis Amendment by Congress on March 24, 1928. I should like to skip this unpleasant chapter of allocation history entirely, when Joshua commanded the sun to stand still and Congress attempted to prescribe by law how radio waves should perform. It must be mentioned, however, because it was the prelude to another very interesting and important series of conferences and a public hearing of the same general character as this, in which the Commission sought information as to the principles which should govern it in applying the Davis Amendment and in effecting a re-allocation so as to improve reception. Various plans were submitted to the Commission. That which was ultimately adopted was based in large measure on a plan presented by a group of experts, consisting of well-known radio engineers, to whom the Commission had submitted the problem. It "proposed to allocate 50 channels for rural as well as urban service, each channel to be exclusive."

On April 23, 1928, Dr. Dellinger, who was acting chief engineer of the Commission, published a statement discussing certain proposals which had been made to the Commission by other groups that were opposed to this plan. Among the opponents, incidentally, was the Congressman from Tennessee who insisted that there should be only 25 clear channels. Dr. Dellinger said:

"Perhaps the chief point of the engineers' recommendations which has been overlooked is the outstanding importance of providing not less than 50 exclusive channels, together with the fact that very much more power can be used on exclusive channels than on shared channels. It is only on exclusive channels that listeners at a distance can receive service. The rural population of the country will be heavily discriminated against unless a large number of exclusive channels are provided. Furthermore, when channels are exclusive there is no necessity of holding their power down to any particular limit. While the engineers' recommendations stated that the limit for the exclusive channels might be 50 kilowatts at the present time, the only power limit need be that fixed by the production of interchannel interference. In other words, it is contemplated that with improvements in the radio art the power used on the exclusive channels may be increased without limit, thus increasing service to the rural population."

These and other statements of Dr. Dellinger, published at that time, are valuable because they afford unmistakable evidence of the original purpose for which clear channels were established and the need they were intended to fill. In these statements, incidentally, Dr. Dellinger made several references to the then-chaotic condition of reception and the fact that the rural listener was receiving no service at all. In other words, away from the urban centres of population, the broadcast band was still a radio desert.

Passing over events not directly related to the history of clear channels, we come now to that memorable event, the adoption of General Order No. 40 on August 30, 1928, and the far-reaching re-allocation effective November 11th of that year. As you all know, the difference of opinion as to the desirable number of clear channels was resolved by a compromise, and the total was fixed at forty. In the light of the almost insuperable difficulties which faced the Commission at the time, this number seems to have been a sensible compromise. Instead of beginning at the low frequency end of the broadcast band as had been regularly advocated by the engineers since 1923, the forty clear channels were all contained in the band from 640 kc. to 1190 kc., again a compromise. Instead of being all in one *bloc*, they were interspersed with the six Canadian exclusive channels, a bloc of regional channels, and isolated regionals which were also Canadian-shared, a third compromise.

In a statement which accompanied and explained General Order No. 40, the Commission said:

"On these 40 channels only one station will be permitted to operate at any time during night hours, thus insuring clear reception of the station's program, up to the extreme limit of its service range."

In describing General Order No. 40 in its Second Annual Report, the Commission said:

"Forty channels were set apart for stations of sufficient power on cleared channels to give good service to rural and remote listeners."

In a published analysis of the Order and of the proposed re-allocation on September 14, 1928, Dr. Dellinger said:

"It is only when a station has exclusive use of its channel that program service free from interference can be furnished at great distances."

With this re-allocation, the Renaissance period was over and our modern era began. Not all that had been lost during the dark days of chaos was recovered but enough was, and the advances of science and particularly the use of better apparatus and better operating methods, together with higher power, have helped to make up for the losses. The rural listener was restored to his seat at the radio show at least in the evening and when the static was not too great. In some parts of the country, his feat was (and is) still pretty much in the back row, particularly in the daytime but it is better than the worse-than-nothing which came out of his radio set during the nightmare period of radio history.

That conditions were still far from the millenium was, of course, obvious. In its report to the United States Senate on January 1, 1932, the Federal Radio Commission stated that only 46 per cent of the total area of the continental United States had consistent radio reception at night and only 56.2 per cent in the daytime. A large portion of the area and population receiving consistent service was served only by clear channel stations, and the remaining area and population receiving an intermittent service obtained that service only from clear channel stations. One attempt was made, late in 1929, to persuade the Commission to increase the number of clear channels from 40 to 50 in a *bloc*, beginning at 550 kc. and extending to 1140 kc. (including the six Canadian exclusive channels). The attempt took the form of a petition in behalf of several clear channel stations which were dividing time on clear channels. This petition was denied. It probably could not have been granted without undue hardship on the many regional and local stations affected.

During the spring and summer of 1929, the Commission itself endeavored to ascertain the nature and extent of the improvements brought about by the re-allocation. To this end, it sent out thousands of questionnaires to amateurs and farmers. Some 4,200 replied. Of these, 72 per cent listed a clear channel station as their first choice, and most of the remaining 28 per cent came from listeners in the comparatively immediate vicinity of particular regional stations. Seventy-one per cent of the replies listed clear channel stations as the first four stations preferred. These results were imposed on maps of the United States. These maps showed that over the greater part of the country, in terms of area, listeners relied upon clear channel stations for broadcasting service. The percentages I have given are strikingly close to those which resulted six years later from the clear channel survey. Remember that no 500 kilowatt station was in operation in 1929, and that only a handful of stations were licensed to use 50 kilowatts. Most of them were using 5 kilowatts.

Shortly afterwards the Commission solicited and received from the Department of Commerce supervisors in the several districts, reports on the same subject. These reports left no room for doubt. For example, the Radio Supervisor at Detroit reported:

"The use of high power on clear channels is the only factor at this time which makes possible any degree of good radio reception to the rural broadcast listener. . . . It would be of far greater benefit to the radio industry and to the public if the number of cleared channels were increased to provide still more diversified reception. . . . When it is remembered that most broadcast listeners, especially those in the country, rely on their radio set entirely for weather reports, time signals, news, education, information and entertainment, it will be appreciated that they should have the best receiving conditions which it is possible from an engineering point of view to furnish, and to impair their reception by abandoning the use of cleared channels is very comparable to placing their radio service on a 1920 basis when it was a plaything and not a public necessity."

If further evidence were desired, I could cite later reports and decisions of the Commission, but surely it is unnecessary to prove the obvious.

It remains only to bring the account of the Commission's regulation of maximum and minimum power on clear channels up to date. Until the re-allocation of November 11, 1928, no power restrictions were composed by any regulation. In General Order No. 42, promulgated in connection with the re-allocation, the Commission imposed a limitation of 50 kilowatts, of which 25

kilowatts was experimental. On June 16, 1930, the Commission amended this order so as to provide that not more than four out of the eight clear channels assigned to each zone should be authorized to use 50 kilowatts, and it was because of this amendment that the extended so-called high-power hearings took place in the fall of 1930. At that time ten 50-kilowatt stations were in operation and five were under construction on a total of 13 clear channels. Later on, the Commission removed this restriction and opened all clear channels to the use of 50 kilowatts. Nearly all clear channel stations have availed themselves of this privilege, with a vast improvement in service to the listening public in both urban and rural areas, an increase in the rural areas provided with service, and no substantial complaint based either on interference or economic considerations. In 1932, the Commission granted a construction permit to one of the members of our Group (WLW) to construct a 500 kilowatt station. This station was first placed in operation in the closing days of 1933, and beginning with the spring of 1934 it was licensed continuously thereafter to use 50 kilowatts regularly and an additional 450 kilowatts experimentally.

This brings my story of the modern civilized era in broadcast allocation regulation up to the present date. What, now, are the dangers that threaten this civilization? Are there any signs that it is crumbling?

THE BREAKDOWN OF CERTAIN CLEAR CHANNELS

With knowledge of the historical background which I have related at some length, you will readily appreciate the concern with which most licensees of clear channel stations regard any effort to subject clear channels to duplication. The members of our Group, who for the most part have been broadcasters since the prehistoric days, have seen the tides of pressure for duplication ebb and flow for thirteen years. They saw the flood break through the dikes in 1926. They know the havoc which was wrought, not merely from technical theory but from actual experience, as they watched their rural audiences cut off from all broadcast service and submerged with interference, and as complaints poured in from all directions. They know that the havoc resulted from the pressure for new stations, and for improved facilities for existing stations. It was with growing apprehension, therefore, that they watched holes appear here and there in the dikes during the period from November 11, 1928, to the time when they met in Chicago in May, 1934.

These holes in the dikes consisted in duplication which, in one form or another, the Commission had authorized on ten clear channels. The first of these was not of the Commission's doing; it resulted from a court decision rendered shortly after the re-allocation went into effect. The next duplication to occur was in 1931, almost three years later. Two more duplications occurred in 1933 and five more in the early part of 1934. In addition, under an agreement dated May 5, 1932, between the United States and Canada, two clear channels were made available for use in Canada by proposed 50-kilowatt stations; one of these channels, however, is included among the five subjected to duplication in the United States in 1934. These two channels are now described as "Canadian-shared" in the Commission's allocation lists and as "clear" in its regulations. The net result was that by July 1, 1934, there were actually 30 and not 40 clear channels in the United States.

In and of itself, these duplications, while a cause for regret among the members of our Group because of their effect on rural broadcasting service, would not necessarily have occasioned apprehension over the fate of the clear channels on which our members' stations were operating. Except for the two duplications brought about by the Canadian Agreement, they were all based on the consent of the dominant clear channel stations.

Let me digress at this point to say that our Group hopes and urges that this Commission shall never again give recognition to the principle that the licensee of a clear channel station has the right to bargain away the rights of the listening public by a so-called consent, whether given for a consideration or gratuitously, and whether given for an evening or for a whole license period. It seems to us that nothing could be more inconsistent with the fundamental meaning of public interest as applied to clear channels than this. As I say this, I realize, of course, that there were peculiar circumstances of hardship which led to several of the ten duplications referred to, particularly in cases where two dominant clear channel stations divided time in widely separated cities, and where formidable economic factors were present. Such duplications seem excusable.

The example set by these "consents" has, however, proved con-

tagious. Every one of our members whose station is on a channel inhabited by one or more daytime or limited time stations is subjected to constant direct and indirect pressure from the owners of those stations for "consent" to the destruction of its rural service, sometimes permanently and sometimes only for a single evening or a small portion of an evening. Needless to say, those requests for duplication often involve hours and programs when it is most important that the channel be kept clear so that the rural public may listen to events or talks of national interest. In any event, unnecessary embarrassment and ill-feeling are all too frequently engendered by a refusal of the requests.

More significant than any of these factors in our minds, perhaps, was the increasing pressure for new stations, or for better facilities for existing stations, at the expense of clear channels. This was evidenced in a mounting number of applications filed with the Commission in the first few months in 1934, totalling some very large number of which I have no record. Still others were openly threatened. One of the most persistent of these applicants was our friend John Shepard who applied for full time on two clear channels (640 kc. and 830 kc.) and, with the aid of Dr. Pickard as his technical counsel, forced the licensees of the dominant stations on those channels through two long and expensive hearings in the latter part of 1934 and the early part of 1935. Several of us were the object of every conceivable sort of pressure to consent to the granting of such applications, sometimes proceeding from Senators, Congressmen and other public officials who had been somehow enlisted in the cause of the applicant for a new station and who understood neither the purpose of clear channels nor the technical facts which make them a necessity. That this should be possible in the face of the Commission's regulations can be explained only by the widespread feeling at the time that, in view of the duplications which had already taken place by consent, the Commission might authorize duplication without consent, and in spite of its regulations to the contrary. The uncertainty persisted until the spring of 1936, when Shepard's applications were denied, only to be renewed a few weeks later when he began to rally an incredibly large number of regional station licensees to his cause of breaking down clear channels, of destroying rural reception, and of thus increasing the number of regional stations in the United States.

It is one thing to prepare for a hearing in which some question is raised as to the coverage of your station in its immediate vicinity; it is quite another to prepare for a hearing in which you must defend your secondary or clear channel coverage extending perhaps over several hundred thousand square miles and produce field intensity measurements over this wide area. Yet all of this effort and expense had to be borne by the licensee of each clear channel station that was subjected to such an attack,—and to prove what? Merely what was common knowledge and obvious but had not been proved by actual measurements taken in approved legal and technical fashion—something that was known at the time of the Second National Radio Conference in 1923 and recognized at each succeeding Conference, something that was given effect in the re-allocation of November 11, 1928, something about which there could be no reasonable doubt, namely, that the listening public in rural and remote areas is dependent on clear channel stations for broadcasting service!

Such were the thoughts that were in our minds when we met in Chicago in May, 1934.

THE CLEAR CHANNEL PETITION AND THE SECONDARY COVERAGE SURVEY

Prior to our meeting I had discussed the matter with our counsel, Mr. Louis G. Caldwell, and had asked him to prepare for us a plan of defense for the remaining clear channels. The plan he suggested was unanimously approved by those present. It was incorporated in the petition which he prepared and filed with the newly created Federal Communications Commission on August 7, 1934.

The licensees of thirteen clear channel stations joined in that petition. Eleven of the thirteen are still members of the Group, one of the others having since then sold its station to a network company and the other having dropped out for other reasons. Two new members have been added. Before the petition was filed, the few remaining independently owned clear channel stations were invited to join. You will be interested to know the reasons which some of them (or their attorneys) gave for not joining; it was that the proposed survey might furnish an excuse to the Commission for a drastic reallocation!

We did not invite the network companies to join. One reason was that both of them had been parties to several of the duplica-

tions by "consent" which had already been authorized. Another reason was that to our minds it was, and is, important to preserve as much independent ownership of clear channel stations as possible. I shall return to this point later. In fairness, let me say, however, that both of the networks, and I think, two regional broadcasters (one of which was Mr. Shepard) cooperated in the survey, both financially and with the generous use of their technical staffs.

The contents of our petition is familiar to all of you and need not be stated. It recited the importance of and purpose served by clear channels, the apprehensions felt by our members and others as to their preservation, and the need for a technical study and investigation of clear channels to determine, among other things,

"the extent to which the people of the United States, and particularly those located in rural areas, are dependent upon clear channel stations for broadcast reception. * * *

and

"the extent to which such service should be protected from interference."

The Group proposed that the Commission authorize and direct the undertaking of such a survey

"under the supervision of a radio engineer of recognized ability, integrity and independence and preferably a member of the Commission's technical staff, and with the cooperation of all broadcasters and radio laboratories willing to give such cooperation."

In reply to those who, I understand, are complaining that the survey does not cover a sufficient period of time, let me point out that the petition stated that the survey

"should be carried on for a period of not less than a year so as to permit a proper study of the varying conditions due to the seasons as well as the care and completeness which should attend such a report."

The petition asked that upon the conclusion of the survey

"the Commission adopt and promulgate such new regulations, or such clarifications and amendments of existing regulations, regarding clear channels, as will accurately reflect and give effect to the scientific facts and principles thereby developed, and thereafter rigidly and uniformly apply and enforce such regulations unless and until formally amended."

The principal request in our petition, for a survey, was granted by the Commission in October, 1934, although the survey authorized was not for as long a period as requested. The story of this survey and of its results has been related by the Commission's witnesses. Some \$30,000 was expended on apparatus alone, and the contributions in the form of continuous services by technical experts over a period of several months cannot be even approximately stated.

It may be that this survey is incomplete because it did not cover all hours of the day, all the seasons of the year, and all the eleven years of the sunspot cycle. It may be that it has other defects and imperfections. We know, and even if we did not, we have learned in the course of this study, that information is still lacking or inadequate on many questions that may have a bearing on broadcast allocation problems. Our technical witnesses will undoubtedly refer to some of these questions. Whatever may be the degree of perfection or imperfection ascribed to the survey, the fact remains that it furnishes us with coordinated facts collected on a systematic basis under trustworthy auspices where we had nothing before but scattered measurements and technical theory. Furthermore, it checks so closely with what was already known from other sources that it cannot be much in error.

The survey is a splendid demonstration of the ability of representatives of Government and of private industry to cooperate in the quest for information on which to build regulation. The Clear Channel Group takes a pardonable pride in having originated the project and in having participated in its carrying out, and it feels that both the industry and the public are deeply indebted to the Commission for having authorized it, and to the Commission's technical staff for the capable and efficient manner in which they conducted it.

Let me say in passing that to me as a layman it is little short of remarkable how closely the various sources of information agree with each other. The questionnaires sent out to farmers and amateurs in the summer of 1929, when there was no 500 kilowatt

station and there were only a few 50 kilowatt stations, showed, as I have already told you, that 72 per cent of the replies listed clear channel stations as first choice and 71 per cent listed them as the first four choices. The recent questionnaire survey showed a 76.3 per cent preference for clear channel stations, and the data obtained by the inspectors showed a 75.1 per cent first choice of such stations, together with an overall 73.3 per cent selection of clear channel stations for the first three choices, win, place and show. An examination of the questionnaires shows, I am told, that where regional stations were chosen it was almost invariably within their expected normal service areas, and in any event within a comparatively short distance of the transmitters. When such evidence is combined with what the engineers tell us as to scientific facts and principles, which have enabled them to forecast substantially what the surveys have proved, it seems to us that little remains to be said.

In this connection let me say one thing more. I am authorized by our Group to say that should it appear from this hearing that there is need for further study and investigation, whether along the lines of the survey of 1935 or along different lines, our members tender to the Commission their full and complete cooperation, and offer to place their technical staffs and apparatus at the disposal of such person as the Commission may select to supervise and direct the undertaking. We believe that other groups would gladly make the same tender. It would be little short of a tragedy if, simply for lack of information that can be secured, unsound regulations leading to an impairment of rural service should be adopted. For making such studies the United States enjoys an advantage over all other countries in the world, because of its large area under a single flag and its many stations equipped to assist. Whatever may be the result of this hearing, let us continue this cooperation between Government and industry.

CONTENTIONS OF THE CLEAR CHANNEL GROUP AT THIS HEARING

The Commission's notice of this hearing sent out last July is a formidable and somewhat disconcerting document. The issues indicated by the long list of headings and subheadings reveal how varied and complicated are the factors that enter into the Commission's allocation problems. Obviously, most of these subjects are of a technical character and detailed discussion of them must be left to technical experts. I am told that really to furnish answers to all the issues raised, we should have to employ a university full of experts and set them to work for eleven years or so, and that even then there would be more to do. I am confident the Commission will forgive me, therefore, if I refrain from stating my views on such matters as sunspots and the Heaviside layer.

The fundamental issues, however, at least so far as they concern clear channels, may, I think, be understood and discussed even by a layman broadcaster. These issues, as I see them, are two in number; first, to what extent shall the Commission preserve and protect clear channels, and second, what shall be the minimum and maximum power permitted on those channels. Mind you, I do not say that there are not other important issues. In fact, there are a number of them, as you will hear presently, from our technical experts, although most of them are subordinate aspects of the two major problems.

With the indulgence of the Commission, therefore, I propose to depart from the order of subjects set forth in the Commission's notice and to proceed straightway to give you as clear a picture as I can, in a preliminary way, of the position of our Group on these fundamental issues.

In approaching these, and all other issues raised by the notice, I hope that we shall be able to distinguish carefully between three entirely different sets of questions. They have not always been treated separately, and not a few of our allocation difficulties, past and present, are traceable to the confusion. The first set of questions is the one in which, I take it, you are primarily interested at this hearing; they are primarily of a technical engineering character, and are concerned with how best to divide up and regulate the use of the broadcast band so as to provide a maximum of tracks of good reception over the area and for the people of the United States. The second set has to do with regulation of what programs shall be transported to the people over those tracks. The third set has to do with a determination of what persons shall be licensed to use those tracks.

If I were limited to contributing but one thought to this discussion it would be to urge that you treat the first set of questions separately and on their merits, on the basis of sound technical facts and principles, and that you do not allow the cause of good radio reception to suffer because of considerations arising out of

the second and third sets. The latter can be treated and regulated separately on their own merits. In the words of one of the original members of the Federal Radio Commission:

"Having laid the tracks for good reception, one can then decide what is going to be supplied on those tracks. But the first thing is to get the tracks laid."

I need not tell you why I am giving emphasis to this thought. There are two bogey-men that have their perennial abode in the second and third sets of questions, and that invariably sally forth at the mention of either clear channels or high power. One of these bogey-men is the so-called duplication of network programs. The other is the closely related cry of monopoly dating back to the early national radio conferences.

Neither I, nor, I venture to say, anyone in this room is in a position to say that there is too much duplication of network programs or that there is *not* too much. The necessary study and investigation simply have not been made. The answer lies not in loose assertions but in technical data, showing the actual coverage of stations in terms of field strength and showing the signal intensities necessary to give service in city, residential and rural areas throughout the country. I do not envy the task of anyone who attempts to find out how much duplication is going on, what with the multitude of variations in programs that obtain as between affiliate stations and even over a given affiliate station from time to time. Chain connections come and go, particularly if a station is kept under independent ownership; some of our members have had affiliations first with one network and then another, and, subject to contracts for specified periods of time, they are all free to change these affiliations in the future.

No expert is needed to see that *some* duplication is unavoidable, once you grant that the rural population of this country is entitled to reception and at the same time that the dwellers in cities and towns are entitled to a sufficient signal intensity to overcome local electrical noise levels. To say that all net work programs should be broadcast by regional stations is simply to say that our farmers and the inhabitants of our sparsely settled areas have no right to listen to the programs of music, entertainment, education, religious services and news that, on the whole, are available in far better quality and much greater quantity in a few large populous and cultural centres than in the smaller centres. I know of no more effective way in which to destroy one of the greatest advantages which radio has brought to our civilization.

To say that not more than three clear channel stations, or five, or some other small number, whatever their power, may broadcast the same program differs only in degree from the contention that I have just answered. It means that extensive areas and much of our population must be satisfied with a very low signal strength which will frequently or regularly not be sufficient to overcome static and electrical noise.

We have progressed far since the days of the Third National Radio Conference in 1924 when we find Mr. Hoover and the Conference bending effort to encourage and bring about what is now so lightly condemned. He declared that a station

"must be able to bring to its listeners the greatest music and entertainment of the Nation, but far beyond this it must be able to deliver important pronouncements of public men; it must bring instantly to our people a hundred and one matters of national interest. To this it must add its matters of local interest. This can only be accomplished by regularly organized interconnection on a national basis with nationally organized and directed programs for some part of the day in supplement to local material."

The Conference adopted a report expressing belief that network broadcasting "deserves every encouragement and stimulation." By 1925, Mr. Hoover was able to report to the Fourth Conference that network broadcasting now "is commonplace," and said:

"The number of people who throbbed with joys and sorrows at the dramatic presentation of minute-to-minute events of the world's series is one of the most astonishing landmarks in radio broadcasting."

Now, such programs have become so much of a commonplace that we sometimes forget what they really mean to broadcasting and to the listening public.

Please note that I do not say that program duplication is not a matter deserving the careful attention of the Commission. Somewhere, undoubtedly, there is a limit. Somewhere a decision must be made between the comparative advantages of giv-

ing a certain percentage of our area and population a choice of, say, three programs delivered with satisfactory signal strength, and of giving a smaller percentage of our area and population a choice of four programs with the same signal strength; or perhaps the decision must be made between four and five, or five and six. I do not pretend to know the answer. There are some programs with regard to which I suspect you will not prohibit duplication but welcome it, such as an address by the President during a national crisis.

Most of us who are in the business of broadcasting feel sure that, so far as commercial programs are concerned, the man who will effectively prevent excessive duplication is the advertiser. In fact, we think we have detected signs of his unwillingness to pay for double coverage for a long time. If we are wrong in this belief, the Commission has ample power to settle the matter under the Communications Act of 1934 which specifically authorizes it

"to make special regulations applicable to radio stations engaged in chain broadcasting."

This power holds good whether there are fifty clear channels or five, and the fact that it has not been exercised should not, in our opinion, affect the Commission's decision as to whether the number of clear channels should be fifty or five.

From what quarters does this charge of excessive duplication of programs emanate? It seems to us that this question should be answered before the complaint is taken too seriously. If the complaint comes in substantial volume from the listening public, uninspired by any broadcaster or interested party, it must give us concern. If it comes from persons who have a direct interest in breaking down clear channels, it should be scrutinized carefully before it is made the basis for any drastic action.

The third set of questions has to do with what persons should be licensed to operate on clear channel stations. The cry of "monopoly" is occasionally raised, usually based on an indiscriminate confusion of network-owned stations and independently-owned stations that take a certain amount of network programs, and some vaguely conceived relationship between that factor and the alleged excessive duplication of programs. Frankly, I have no idea whether too many broadcasting stations, on clear channels or otherwise, have been allowed to fall into the hands of either network company. I believe that there is a point beyond which the acquisition of further stations would be unhealthy. I know that the Commission has ample power under the statute to prevent such a state of affairs by refusing to approve assignments, transfers of control and the like. Surely we all agree it would be unfortunate if the control of broadcasting should come under the arbitrary power of any person or group of persons.

It is important, we believe, tremendously important, to give due recognition to the principle of independent ownership in the licensing of broadcast stations. By "independent" I mean not merely absence of network ownership but the presence of ownership by people who are in and of the community or region in which the station is located and which it primarily serves, as contrasted with absentee ownership or control. Stations that are independently owned in this sense can best render the service needed or desired by their listeners; they can also best meet the needs of the community or region for an outlet on the air. They can best make the choice, which they should always be free to make, between programs of national, regional and local interest, and the proportion to observe between these classes of programs, just as publishers choose the contents of newspapers from material furnished by a national press association, a city news bureau and their own reporters. Underlying this principle of independent ownership there is something very fundamental. In one aspect it is the time-honored principle of competition; under another aspect it is closely akin to freedom of speech and liberty of expression. There is no more effective method of protecting this country against any danger of monopoly, actual or threatened, than by preserving and strengthening the position of the independently-owned clear channel station.

The first of the two fundamental issues I have mentioned is raised by the very first item of your notice dealing with the desirability of establishing new classes of broadcast stations, or of abolishing any existing class. The Clear Channel Group has no new class of station to suggest or to add to the four existing classes, clear channel, high power, regional and local. Needless to say, it vigorously opposes abolishing the clear channel class, as is proposed by at least one group appearing at this hearing. The question as to what should be a proper definition for this class, I shall return to later.

What has happened since the spring of 1923 or the fall of 1928 to make the exclusive use of a channel after sunset less necessary to provide broadcast reception to rural and remote areas? Sometimes I hear, in answer to my inquiry, that certain technical improvements have changed the picture. Our technical experts will show you, I think, that these improvements, valuable though they may be for some purposes, have not made clear channels any the less vitally necessary. The problem of rendering rural service remains the same. Furthermore, whatever be the entering wedge by which duplication comes, the result is the same for the future, whatever may be the case for the transient present. A barrier which may prove insuperable has been thrown up on the duplicated frequency against progress toward better rural service through higher power. We cannot afford this gamble.

You have asked for views as to the number of channels in the broadcast band to be assigned to each class of station. In answering we shall confine ourselves to the clear channel class. Our answer to this question cannot, in the very nature of things, be categorical. So much depends on what you want to accomplish. Our country has an area over 3,000,000 square miles, a population of 130,000,000 very unevenly distributed over this area, with a large concentration in the northeast. To add to the complication, the locations of our centres of population, our metropolitan areas, cities and larger towns follow no pattern whatsoever. Their contours and boundaries defy analysis or classification. Some are so large or so irregular in size that no regional station under present conditions, power limitations, and regulations on regional channels can deliver a sufficient, interference-free signal, day and night, to all their population, and many are of such size that no local station under present conditions and regulations on local channels can deliver such service.

It is interesting, of course, but not particularly profitable, to speculate on what could be done if our cities and towns were symmetrically dotted on the map, and all the ninety broadcast channels were clear channels on the one hand, or regional and local channels on the other. Out of curiosity, on the first theory, I have checked to see which is the ninety-first city in population, the largest that would not get a clear channel station. I find that if you count all the separate municipalities, the empty honor would fall to Tampa, Florida, with a population of 101,161 under the 1930 census; if you count the metropolitan areas, then the honor falls to Manchester, New Hampshire, with a population of 76,834. Then I have checked on the other theory to see how many cities and towns there are that would probably want at least one station, not to mention a choice of three, four or a dozen programs. I find that there are 467 cities and towns with population in excess of 20,000 and 1849 with population in excess of 5000.

Manifestly, such speculations only lead up blind alleys. Neither extreme fits in with any reasonable conception of public interest or with the needs and desires of the listening public. Neither fits in with the law which requires the Commission to make such a distribution of broadcast facilities among the several States and communities "as to provide a fair, efficient and equitable distribution of radio service to each of the same." This means fair, efficient and equitable to rural communities just as much as to urban communities. We do not want to be unfair to either the city-dweller or the farmer. Nor do we want to limit either of them to one program if we can help it; we would like to give him a choice of several. Some balance between many different considerations must be found. The matter is, of course, complicated by a multitude of bewildering technical factors. One is strongly tempted to say: Let us not make any rule or regulations at all; let us leave the matter to the process of evolution, to the old method of trial-and-error, fit in a station here and another there.

This temptation is, I think, a great danger to good broadcast reception. The human animal is so constituted that he needs rules, in other words, laws, to guide him. This is true both of the citizen and the government official. It is always possible for an individual to drive on the left hand side of the road without danger to anyone, if no one else is on the road or likely to come on the road. There is the space and it is not being used. So, also, it is possible, with an ingenious array of directional antennas and an elaborate showing of statistics on field strength and conductivity, and under peculiar circumstances, to show that there are a tiny number of instances where clear channels can be duplicated in this country—if you assume that the future hold forth no hope of progress and that, unlike every other agency of communication, the clear channel broadcast station is condemned to remain at a standstill with respect to power and coverage. Once you have yielded to this assumption, the result is somewhat like

what happens when an unexpected pedestrian steps in front of the automobile speeding on the wrong side of the road. The damage is done and cannot usually be remedied. What happens without rules, strictly and uniformly applied and enforced, is all too clearly shown by the radio anarchy of 1926.

I am stressing this thought because there is at least one group that will appear before you, the National Association of Regional Broadcast Stations, that will urge you to abandon any semblance of a rule protecting clear channels and keeping them clear. That group's proposal, on file with the Commission, is that you delete the word "clear" wherever it appears in your regulations and substitute the word "high-power"; that you delete every other expression in your regulations that indicates that these channels are to be used by only one station after sunset; and that you close the door to any increase of power on these channels so that this aim of duplication may be easier to accomplish. Thus, the last line of defense of the rights of the rural listening public in the Commission's regulations would be torn down; a bait is dangled before the eyes of every applicant who wants a new station or better facilities for an existing station while every clear channel station must defend its rural coverage and even its nearby coverage, over and over again, against any and all comers without help from the regulations. Oh, I know that it is easy to take a map of the United States and to impose lines on it showing that two five-kilowatt stations or even two fifty-kilowatt stations can be placed on opposite coasts, with directional antennas wasting electrical energy out over the two oceans, and that it is easy to take the census book and to show that the two areas covered contain more people than one of these stations can cover with a given signal. But to do this you have to say to yourself that the copperminer in Arizona or the rancher in Idaho is not entitled to service, or that he is getting too much and that some coastal city which may already have a choice of six, eight or ten programs is entitled to still another. This matter of clear channel protection cannot be decided from case to case and from channel to channel, depending on the evidence introduced in each case by interested parties and on the ingenuity of lawyers and engineers employed by those parties. It should be decided by regulation, scrupulously adhered to until repealed or amended. We urge, therefore, that whatever may be the number of clear channels that you decide upon, you at least continue to provide in your regulations that they shall be *clear*, and that you class the channels on which you permit duplication for what they are, high power regional.

How many frequencies should be allotted to the clear channel classification? Our Group believes that the original number of forty established in 1928 represented a sensible compromise between the conflicting objectives and the complicated factors that had to be considered. It regrets, for the sake of the future as well as the present interests of rural and remote listeners, that ten of them have been deteriorated into high-power regionals. It does not, however, advocate that these duplicated channels be restored to their virgin condition. We recognize that there may be practical obstacles to such a step. Representatives of a number of those stations will appear before you at this hearing and we have no desire to prejudge or prejudice their cases. In any event, that is a question for the Commission to decide and it would be presumptuous for us to intervene in it.

We do earnestly urge that the present *actual* number, thirty, be maintained inviolate and that they be kept clear not only within the confines of the United States but also, so far as possible under existing and future international treaties and agreements, they be kept clear throughout the continent of North America and the West Indies.

We would be burying our heads in the sand, however, if we did not recognize the formidable character of the pressure which is being exercised on this Commission to permit duplication and the impressive character of the considerations that are being urged in support of such duplication in a few particular cases. This pressure, it seems to me, falls into three classes.

Some of it may come, as it has in the past, from the licensees of clear channel stations themselves who are in peculiar and difficult situations. Such, for example, is the case where two clear channel stations are dividing time and are located at substantial distances from each other. We can readily appreciate and sympathize with the economic hardship imposed on them. Some of them, I understand, will appear before you at this hearing; what they will propose I do not know. Again, we do not want to be so presumptuous as to attempt to tell them or the Commission what public interest and justice require in such cases.

The second kind of pressure for duplication seems to arise

because of instances, of which unfortunately there are a few, where the clear channel licensee is not making the best use of his channel for the purposes for which it was intended. The deficiency may be with respect to power, or antenna efficiency, or some other aspect of the technical side of station operation. Let us consider the matter of power. With one exception, all of our members' stations are using 50 kilowatts, the maximum permitted under the Commission's regulations, and one member's station is using an additional 450 kilowatts experimentally. The one exception involves a station now operating with 10 kilowatts; it has an application for 50 kilowatts pending.

There are, however, several other stations using only five or ten kilowatts on clear channels that are still clear. I have heard it argued that the licensees of these stations have failed to make proper use of their channels, that there is no serious obstacle to duplication at their present power, and that they should, so to speak, be punished for their neglect of duty, by introducing one or more other stations on the channel. Who, I may ask, is being punished? The rural public, of course, which is receiving at least some service on such channels and may look forward to a future when it will receive a much better service. The way to discipline such licensees, it seems to me, is to require them to make proper use of their channels, to install 50-kilowatt transmitters with efficient antennas, and to take any other steps that will *remedy* the defect and not to make the defect permanent. The rural public wherever such stations are located has the right to look forward to the same quality of broadcast reception as is made possible in the rest of the country under the Commission's regulations.

The third kind of pressure comes, needless to say, from applicants who want new stations or better facilities for their existing stations. In this respect the problem is not very different from what it was in 1923 and in every succeeding year. It is not only interesting, but very important, to note in what localities this pressure arises. If it comes from cities that have no service either of their own or from contiguous cities, that is one thing. If it comes from cities like Boston, New York, and Los Angeles that already have several stations, it is quite another. Perhaps a listener who already has a choice of anywhere from six to twelve programs and who also has access to the original sources of entertainment and instruction, such as theatres, movies, the lecture hall and the concert auditorium needs another program; for myself, I do not believe his need is great enough to compensate for any impairment, no matter how slight, to the meagre measure of reception that the rural listener now has and that is his only contact with the talent of this nation.

In the notice of this hearing, the Commission has asked for discussion of the social and economic effects upon the public and the industry of any proposals that are made at this hearing. If it is true, however, as I believe it is, that the breaking down of clear channels simply means a lot of new regional stations in communities that already have stations, the economic effects of the proposals on existing regionals in those communities seems more or less obvious. I can understand the point of view of the man who hopes to pluck a better assignment out of the wreckage. I cannot understand how other regional broadcasters expect to gain any advantage from having such a proposal adopted. What, incidentally, is the significance of the tendency, which has been so manifest during recent years, to move regional stations from the medium-sized and smaller cities and towns into the larger cities? Is it not more and more to concentrate regional stations in the larger cities and to leave the others to be served by clear channel stations?

Our Group hopes, therefore, that you will not effect any reduction in the present actual number of clear channels and that in no event will you effect any reduction beyond what may be necessary to meet the isolated cases of extreme hardship that I have referred to. If we are to be disappointed in this hope and you are persuaded to make even a further reduction, then I want to leave one more thought with you. We implore that you do not make such a reduction at the expense of any independently owned clear channel station. This thought is not uttered in any spirit of antagonism to either network or with any desire to see their clear channels destroyed. I think I have made it clear that our position is the very opposite of such a desire. The thought is based on the same fundamental principle which I have already dwelt on at length—the importance of keeping the independently owned station strong and healthy and in a position of bargaining equality with the most powerful broadcasting organization that may arise. We all agree—and I am sure the networks agree with this as heartily as anyone else in this room—that monopoly is not to be

tolerated in broadcasting. If all the high-power clear channel stations, or too many of them, should fall into the hands of two organizations with headquarters in New York we shall have gone a long way toward what we all agree is bad. There will be at least a partial monopoly of that very important part of the radio audience that lives in rural areas.

Our Group's fundamental position on the preservation of clear channels does not require or call for any amendment to the Commission's regulations, unless and to the extent that you change or reduce the number of clear channels. In the latter event, the amendment would consist of simply making appropriate changes in the lists of frequencies appearing under your Rules 116 and 119, transferring to the list of high-power regional channels those frequencies on which you permit duplication. You may even want to subdivide these high-power regionals, and provide a special subclassification for frequencies on which real synchronization is being carried on in good faith. But do not call such frequencies clear channels.

You have also asked for definitions. Frankly it has puzzled us to know how to meet this request. In certain respects it may be said that your present regulations are ambiguous and that they really do not define clear channels. Rule 72 says that:

"The term 'clear channel' station means a station licensed to operate on a frequency designated as a clear channel. (See par. 116)"

Rule 116 simply designates and lists the clear channels. Taken by themselves these rules seem incomplete in that they do not say, in so many words, that the channel is to be used exclusively by one station after sunset. On the other hand, this essential feature is manifestly implied in the word "clear" and no doubt on the subject is left when the definitions of limited time and daytime stations are examined. Furthermore, the term "clear channel" has been frequently given its correct meaning in decisions and other pronouncements of the Commission, and this meaning is generally accepted and understood. We do not, therefore, believe any amendment is necessary to denote that a clear channel is exclusively used by one station after sunset and that its purpose is to provide broadcast service over large areas to the rural and remote public.

This matter of sunset, limited time stations and daytime stations is a more difficult matter. Really the only difference between these two classes under the Commission's regulations is that a limited time station is authorized to operate "during night hours, if any, not used by the dominant clear channel station". Thus the limited time station is of a class which, by its very definition, will be found only on clear channels. I do not know whether there are still any instances of limited time stations using this additional privilege. If there are, they must be only a handful in number, in view of the constant tendency of all stations, including clear channel stations, to use the early morning hours, and to extend broadcast service throughout the night. It seems to us that there is no longer any occasion for this classification and that its continuance simply means eventual hardship for the licensee of the limited time station who may have built up an audience and a business in part on the unused hours when the time comes for the clear channel station to reclaim those hours. It also means embarrassment to the clear channel licensee, and probably litigation. We, therefore, propose that either the classification of limited time stations be abolished by repeal of Rule 77, or that the rule be amended by adding a sentence somewhat as follows:

"On and after October . . . , 1936, no application for the construction or operation of a new limited time station will be granted."

We have no desire to work any hardship on any existing limited time station licensee. Limited time stations that are not using any nighttime hours should be changed over to the daytime station classification.

Daytime stations present a number of serious problems for clear channel service. There are, of course, positions on clear channels that can be occupied by daytime stations without interference to anyone, not, however, as many as sometimes thought or claimed. There are certain problems of interference which will be discussed by our technical expert, particularly due to the advancing curtain of sunset in different time zones. In addition, there is a very practical problem that is constantly raised for the dominant clear channel station by requests for consent to evening operation on the part of the daytime station and by pressure for duplication on the plea that daytime operation is uneconomic. To express

our thoughts frankly, we could wish that there were no daytime stations but we realize that a proposal to this end would be impracticable and would work injustice to established stations. We are, therefore, contenting ourselves with asking no amendment to the regulations and instead we are, through our technical expert, suggesting standards of protection that should be applied to insure protection from interference.

The second of the two fundamental issues in which the Clear Channel Group is interested at this hearing is the matter of the minimum and maximum power to be required on clear channels. I can best introduce my statement of our position on this question by reading the exact amendment which we propose to your regulations. Your Rule 117 now reads as follows:

"The authorized power of a dominant clear channel station shall be not less than 5 kilowatts nor more than 50 kilowatts."

We request that you amend it to read:

"The authorized power of a dominant clear channel station shall be not less than 50 kilowatts."

This proposal has, of course, two aspects, the increase of minimum power from 5 to 50 kilowatts and the removal of any limitation on maximum power.

With respect to the increase of minimum power there is little to be added to what I have already said. The charge that the use of 5 kilowatts on a clear channel is not an efficient use of that power for the purpose for which it is intended, can hardly be denied. It gives *some* rural service, and at times a great deal, but not what it should. Of the few clear channel stations that still use less than 50 kilowatts, several have applications pending to go to that amount and, so far as I know, all would be willing to take the step.

The minimum should not, however, be increased above 50 kilowatts for the present. I mention this because it was rumored last fall that the Commission might require a minimum of 500 kilowatts of every clear channel station. I think practically every clear channel licensee, and certainly everyone in our Group, would be willing to meet such a requirement if in no other way could he keep the channel clear of duplication. But the economic side of the question must be frankly faced. The cities in which clear channel stations are located, and the surrounding rural areas which rely on those stations for service, differ vastly in their ability to support the necessary outlay. These differences are reflected in statistics as to population, receiving-sets per capita, and purchasing power, not to mention other factors. It is not alone the city which must be considered but the large territory which may be tributary to it in a trade sense.

Some cities and regions are able to support 500-kilowatt stations immediately. With the present trend toward prosperity, others may be expected to acquire this ability in the very near future, in one, two or three years. A few others may take a little longer. Some owners of these stations are dismayed at the original cost without realizing that, once the outlay is made, the increased cost of operation does not account for a very large proportion of the total expense of operating a station. Some have peculiar problems of their own, such as those whose stations divide time with others and who may need more time in which to resolve their problems.

It would, therefore, be unfair and unjust to such clear channel licensees to impose a minimum requirement of 500 kilowatts, at least at this time. That can be left for the future. It would be even more unfair and unjust to the rural audiences of such stations, however, if the way were blocked to the future use of this power by any restriction in the Commission's regulations which would leave the door open to some and closed to others. We urge that all clear channel stations be treated on equal terms in this regard.

What, now, are our reasons for urging that you remove the maximum limitation? We have little that is not an old story, a story that was told by Mr. Crosley, Mr. Anthony and others in support of increases in the maximum from one kilowatt to five kilowatts in October, 1924, and that was told again throughout those memorable five weeks of 50-kilowatt hearings in the fall of 1930. It is the story of improved rural coverage, both in quality and extent, and of improved urban coverage as well, made possible by the advance of applied science to the point where 500-kilowatt transmitters are available, have been tried, and have demonstrated their merits. Demonstration of these merits is a matter of proof in terms of field intensity contour maps and the like, which will be presented to you by our technical expert. I am told, and I believe it is true, that from an engineering point of view there is no valid reason against, and there is every reason for, the installation of such transmitters on clear channels.

Thirteen years ago one kilowatt was the highest power permitted on a clear channel; now a clear channel station operating with such power is a museum-piece. Generally speaking, in 1928 five kilowatts was the highest power used by any broadcast station; a clear channel station using such power now has all but become an extinct species. Now, when we are ready to advance forward another step, which after all is of exactly the same order and the same proportionate effect as the leap from five to fifty kilowatts, why should there be opposition?

Part of the opposition is, I suppose, psychological. Five hundred thousand watts sounds like a lot of electricity. It is, however, the equivalent of only 675 horse-power, or less than one-third of the power it takes to drive a new Douglas airplane.

Some of the opposition, I gather, comes from those who are apprehensive of interference, whether through blanketing or adjacent channel interference. Our technical experts will show that these apprehensions are unfounded. Let me digress at this point, however, to point out the perfectly obvious fact that an increase in the power of a regional station from five hundred watts to five thousand watts is exactly the same relative increase, with exactly the same relative effect as an increase in the power of a clear channel station from fifty to five hundred kilowatts. The relative difference in signal strengths resulting from the increases contemplated by one-kilowatt regional stations to five kilowatts and by 50-kilowatt clear channel stations to 500 kilowatts is one that is imperceptible to the human ear when translated into sound in the loudspeaker of a receiving set.

A third type of opposition is, I am told, based on so-called economic considerations. I confess that I am more puzzled by the various meanings that are attributed to this word "economic" in this era of modern thought. It seems to cover all thoughts that cannot be classified under some other heading, and to bob up, like a woman's last word, when all other arguments have been demolished. I find no help in the classic treatises of Adam Smith or John Stuart Mill and must take comfort in the thought that all is not economics that is called economics. This much I say without fear of challenge from any reasonable man; no theory, whether tagged as economics or with any other imposing label, can possibly be sound that blocks progress or that says that because a scattered few may be apprehensive of some imaginary injury the people of the country must be denied the benefits of advancing civilization.

Apparently, those who use the word in opposition to increased power on clear channels are pursuing one or both of two lines of thought. One of these has to do with the ability of the higher power station to support itself. The other has to do with the commercial welfare of other stations that may lie within the orbit of its service. There is much I should like to say on both subjects but, since they are in charge of another of our witnesses, I shall confine myself to a few words of a general character.

Whether a man is wise or foolish in making an investment which he believes will improve his ability to serve is often a very difficult question to answer. The advance of civilization would have been at an immeasurably slower pace if men had not been free to hazard their fortunes on the uncertain and the unforeseeable. I do *not* think, however, that a hearing of this character can possibly be the proper forum for deciding such a question. In a way, this hearing is legislative in character. You are deciding what regulations to adopt, *not* what applications to grant. The removal of the maximum power limitation does not mean that you will permit any and all clear channel licensees to increase the power of their stations to 500 kilowatts. You are free to do so; on the other hand, you are free to deny any application or to grant it only in part, depending upon the evidence heard in each case. It is at such a hearing that consideration of a particular applicant's ability or the community's ability to bear and support the increased financial burden is a legitimate issue, not here. Nevertheless, we have assembled some information of a general character that may have a bearing on the issue which a later witness will summarize.

On the other line of thought, namely, the effect of a 500-kilowatt station on the economic welfare of other stations, the same later witness will, I think, demonstrate that any apprehensions on this subject are perfectly groundless, and I shall not try to anticipate his testimony, which is the fruit of a very earnest and intensive study of the question. The apprehension seems to be, not so much that regional and local stations serving the same community will suffer; almost the exact contrary seems more likely. It is rather that such stations in other cities and towns may lose their audiences or their advertising. The answer to this is found partly in technical facts, that is, the actual increase in signal strengths

involved. It is also found in the psychology of listeners who turn to the station located where they live in preference to the station of another city, if the program service is of equal interest. If the program service is not of equal interest, is it a sound principle of economics that the listener should be deprived of the better program so as not to cause any loss of listening public or revenue to the broadcaster of the inferior program? Does public interest mean the interest of the broadcaster or of the public? Should an air transport company be forbidden to place a new and improved model of plane in use because it may attract passengers from a competing line? Where would civilization be if we had followed such a philosophy? Finally, the conclusive answer is found in the actual financial record, present and past, of regional and local stations located within areas served by clear channel stations.

While we have temporarily been halted on the 50-kilowatt line, our neighbors to the south have already advanced the ball to the 100 and 150 kilowatt lines. In Europe, some 23 broadcast stations have power in excess of 50 kilowatts and 19 use 100 kilowatts or more. There are two 500-kilowatt stations.

So far I have spoken as if the proposed change in the regulations contemplated an increase in the maximum to 500 kilowatts. As you know, our proposal is that the maximum be not fixed at any limit. There are convincing reasons for this, of an engineering character, to be discussed by our technical expert. In lay language, there are no valid reasons that can be urged against unlimited increases in the power used on a clear channel, subject, of course, to such questions as adjacent-channel interference and economic obstacles, if any, which may arise and can best be disposed of in hearings on individual applications. Each increase means an improvement in rural coverage, advantageous at nighttime and vitally necessary in the daytime, if the entire country is to have some measure of broadcasting service. It is perfectly possible, that the future may bring forth as the next step forward in power an increase to 5 megawatts. At least we should take such a possibility into consideration in building the present frame-work of regulations. Consequently, we have asked our technical experts to prepare a showing of the rural broadcasting service that may be expected when the five-megawatt era arrives. Without attempting to play the rôle either of a Jules Verne or a Buck Rogers, we cannot avoid the responsibility of taking the future into account and of trying to forecast the shape of things to come.

Whatever may be your decision as to the proper maximum power, we urge you to make the privilege available to *all* clear channel stations. I do not mean that on a particular application, heard and decided at a later date, you may not find adequate reasons for refusing to withhold the privilege, but rather that the regulation leave the way open to all. The claims of particular applicants cannot be heard at this hearing and an advance decision should not be made against them by limiting the number of clear channels eligible for the higher power. If you are not anxious to encourage such applications, it seems to me that the experience of the Federal Radio Commission with the 50-kilowatt hearings in 1930 demonstrates that the most effective way to encourage them is to give the impression through your regulations that the privileges will be limited in number and consequently to the first-comers, and that some dire consequence such as duplication may descend upon those who do not come immediately to the box-office for seats on the 500 yard line.

We have no quarrel with the claims that will be made in behalf of the regional stations for an amendment in the regulations so as to permit a horizontal nighttime power increase to five kilowatts. We believe it is reasonable, based on sound engineering facts and principles, and should be granted. So far as we have any knowledge, we have no quarrel with the claims to be made by any other group at this hearing for improvement in the regulations governing their channels. Our interest is solely in the two major issues which I have discussed.

Underlying these two issues, as well as some of the issues that will arise from the claims of other groups, there are international problems which we all must recognize. There are steps that might well be taken in the field of international and diplomatic negotiations which would simplify solution of the allocation problems in this country. There are contentions that might well be made by the delegations from the United States to the next C. C. I. R. meeting at Bucharest and the next International Telecommunications Conference at Cairo in 1938 to the same end. I have in mind, of course, difficulties such as were faced by one of our members because of the fact that the channel used by his station is adjacent to a Canadian exclusive channel and such as are

faced, I understand, by several stations, particularly in the regional group, in the United States because of interference from high power Mexican stations. This does not seem the proper time or place to discuss such problems or to offer any proposals for their solution. This much can be said, however. If, by reason of any change in the regulations, provision is made for additional facilities that can be used in Mexico, then those facilities should not be consumed in establishing additional stations in the United States until the needs of Mexico, so far as they prove well-founded, are met. Any other course of action would be a deep injustice to the broadcasting industry in this country, which stands to suffer as a whole from interference borne in from the south.

You have asked for discussion of the matter of geographical distribution of broadcast facilities, and of the desirability of establishing a quota system. We see no need or occasion for establishing a quota system or any other yardstick method, so far as clear channels are concerned. The Commission's re-allocation of November 11, 1928 accomplished a remarkably fair distribution of clear channel stations, with due regard to such factors as area, population and economic support. The first four zones, which are of very unequal size, were approximately equal in population. The fifth zone, with about two-fifths the area of the United States, had only about half the population of each of the other zones. Within the zones, the distribution was also fair. The principal centers of population, which were also in most cases the principal sources of talent for broadcast programs, received more than one clear channel station, thus automatically assuring the rural public of a choice of programs. The lesser centers, strategically located over the country, received one each. You have only to consider the scattered locations of the stations belonging to our Group to realize that a very sensible pattern was laid down. If there is to be another quota system, we suggest that you avoid one injustice that was inherent in the one recently abandoned. The state in which a clear channel station is located

should not be exclusively charged with the units represented by that station, since reception from such a station may be shared by several states. Otherwise, the state is disabled from having its fair share of regional and local facilities that it might otherwise easily accommodate.

We feel confident that the Commission does not, as a result of this hearing, contemplate any drastic or radical changes in the existing allocation. We believe that its statement made public on July 25th last was intended as an assurance to this effect. Certainly it would be unfortunate if the industry had to undergo a major operation such as was performed on it in 1928, or if the great industry which has been built upon the present state of affairs and the immense public which has attuned its listening habits to it should awake tomorrow to find many stations changed in frequency or curtailed in hours of operation or cut off from the listener by interference. Opening the door to higher power, such as is proposed by our Group, the Regional Group and perhaps by other groups, is necessary to keep abreast of the technical art in the public interest. It comes within the description of evolution and voluntary action. As to other proposals that may be urged upon you in the name of "evolution," we know that you will scrutinize them carefully to see if they are not really throwbacks, attempts to have you surrender ground gained in the past, reversions to the dark ages in the history of broadcasting.

In conclusion, I take pleasure in expressing to the Commission the feeling shared by all members of the Clear Channel Group that a hearing such as this is of great benefit to the cause of good radio broadcasting. There is no better route to the adoption of sound regulations than the hearing of evidence and arguments from those who may be affected. We are all deeply indebted to the Commission and its Chief Engineer and his staff for having conceived and carried out this method approach to the important problems with which both the Commission and the industry are faced.

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FCC Allocation Hearing Continues

On the second day of the allocation hearings before the Federal Communications Commission the Radio Manufacturers Association, the Institute of Radio Engineers and the Columbia Broadcasting System were given an opportunity to present their case. Also the clear channel group which made an extended statement yesterday as reported in NAB REPORTS made a full statement from the engineering standpoint.

Most of the members of the Commission whether they belonged to the Broadcast Division or not were in attendance at today's hearing as well as apparently the 300 persons who registered with the Commission.

William S. Paley, President of the Columbia Broadcasting System, made a statement to the Commission on "The Direction of Progress in Radio Broadcasting."

Mr. Paley's complete statement follows:

Mr. Chairman, Members of the Federal Communications Commission: Less than four months ago I stood in this same place, before this same official body, and, I would say, before very much this same audience. And reviewing the program of speakers who have appeared and those still to appear in this hearing, it strikes me forcibly that I am one of much the same group of spokesmen for radio broadcasting who presented their views and offered their counsel to you at that time.

Then we dealt with an adventurous future. Now we are dealing with the practical present. Then we were scanning the newest miracles of the laboratory—weighing the imponderables of television—of aural broadcasting in frequencies so high they are barely within the ken of engineers—of facsimile printing of magazines and newspapers with invisible ink through the air.

Today we are faced with the problems of today—and of a visible tomorrow. We are dealing with practical but far-reaching questions of change in the domain in which we live and work and solve our daily problems—the present band of American broadcasting.

You, the members and the counsel of the Commission, and we, the broadcasters, "are at it again"—restlessly striving to improve the standards and service of American broadcasting, jointly seeking, as your announcement of this hearing phrased it, "to secure maximum service in the public interest" from the use of the frequency band of 550 to 1600 kilocycles.

I believe any thoughtful observer who has attended both the June hearing and this one must realize how striking in itself is the fact of our being re-gathered here now, to attack with fresh impact a wholly different set of problems, re-focussing all the resources of the broadcasting industry on a new field of possibilities and advancements—while the ink is barely dry on the reports of evidence submitted in that recent exploration.

I find, in this sequence, a real significance. I believe it is a tribute to the energy and ideals of both the industry and the Commission. But in it I find something else. I find proof of a grave need for great wisdom.

Searching ourselves, I find an instinctive impatience to be done with the old and on with the new. That is typical. I believe it is wholesome. But, by our very impatience, I believe we are throwing upon you—as stewards of this public domain—a heavier load, a more serious responsibility for wise and far-sighted guidance than we have ever thrown before. I believe that the last few years in the laboratory and the next few years in the field will long be viewed, in subsequent perspective, as the catalytic period of broadcasting in which its ultimate form and function will have been most largely crystallized. I believe that we are forming, in a sense, the present fulcrum of a future lever "long enough to move the world." We must move wisely.

A Triple Approach

Our study of the field of proposed changes in the regulations governing the allocation and use of frequencies in the present broadcast band has followed three lines of approach. One is represented by our technical staff, which has analyzed the engineering facts which bear upon part or all of the contemplated modifications. A second approach has been made by our Market Research Division, which has related the known and the implied effects of this engineering data to population distribution and to the coverage and service of market areas, attempting to orient its conclusions to the economic life of America and to the constructive service that broadcasting renders to American industry.

Our third approach to the problem, while it depended for facts on both the other two, expressly freed itself from the limitations of both. This third approach was, in a sense, a social approach, or a public service approach, and represented the sum of what we feel the Columbia Broadcasting System is and should be—with all the serious responsibilities which it embraces in our network relations with more than a hundred separate broadcasting stations—and with more than eighty million radio listeners. Subsequently, our thinking moved on to still another plane, but I will come to that later.

What I want to say now is that the Columbia Broadcasting System appears at this hearing not as a technical organization, although our technicians will present certain exhibits which I believe the Commission will find to be original and helpful contributions. Nor does Columbia appear here primarily as a business organization, except to the extent that economics are a necessary means to any social end. Surely any stress of economics as an end in themselves would betray a lack of understanding of the vital role which broadcasting plays on every plane of American life. I should therefore like to emphasize the point that further exhibits which will be presented by our Market Research Division are not offered as ends in themselves, but as additional data which may be of assistance to the Commission in its complex problem of interrelating the parts to the whole.

Columbia is appearing at this hearing primarily as a service organization—because our record in broadcasting, and our proper role, is one of service to the public. Only to the extent that we have rendered such a service—broadly and well—have we grown and progressed.

One Star Is Fixed

Of the many suggested topics and sub-topics outlined by the Commission for discussion in this hearing, I have therefore felt free to select only those basic proposals which we believe contain the greatest potential effect on public service. And because we are fundamentally committed to this concept, I should like to say at once that any modification in the Commission's rules, any change in its regulations which will advance the public service which the Columbia Network or the broadcasting industry as a whole can render, must and will receive our enthusiastic support. By the same unvarying compass, any changes which threaten to lower present standards of public service we must as resolutely oppose.

From this viewpoint it seems to me that the most important topics which lie within the scope of this hearing are the increases in power above fifty kilowatts—presumably to five hundred kilowatts—on clear channels, the duplicated use of other clear channel frequencies by two 50-kilowatt stations, and the horizontal increases in power applicable to regional stations and permitting many of them now limited to one thousand watts to operate simultaneously with five thousand watts at night. I do not mean to minimize the

importance of many of the other topics named for consideration in this hearing. But I believe their importance is relative and, in many instances, corollary to or parallel to these three basic shifts of standards.

What Is Public Service In Broadcasting?

I have promised to view these changes from the standpoint of public service. I should now like further to clear the ground by defining what we of the Columbia Broadcasting System believe service to the radio listening public must essentially involve. Stripped of all controversial questions, reduced to the bare essentials which we believe command universal agreement, we define it as two things: a signal service and a program service.

These, we feel, are the two basic dimensions of public service in radio broadcasting—the delivery of a clear signal to radio receiving sets, and the use of that signal to bring to listeners programs of the highest standards of creative art in the field of entertainment, the highest standards of intellectual integrity in the field of education and public affairs, the highest standards of honesty and good taste in the fields of merchandising and advertising. I call these two things—radio programs and radio signals—the two dimensions of *a single thing*, public service, because it is self-evident that public service in broadcasting cannot exist with only one of them. They are related to each other as length and breadth, as form and substance.

It is the essential indivisibility of these two factors which forms the keynote of our thinking about contemplated changes in the present broadcast structure. We have *made* it a keynote because we believe there may be a danger, which I will touch on more fully later, of seeing too clearly the advantages in signal service which more and more power promises, without seeing as clearly the need for searching analysis of any threat to program service which might be the ultimate result.

This note of caution may seem a strange approach to what I am going to say next.

Because I am prepared to state that, subject only to variables which do not permit too specific a prediction, we believe the public service offered by the Columbia Broadcasting System, judged in terms of rendering the greatest good to the largest number, will not be conspicuously affected by the general advent of super-power, of duplicated 50-kilowatt stations, or of horizontal increases in power by regional stations.

That is our best judgment of the changes and counter-changes, the additions and subtractions, the adjustments and readjustments, which we believe would result from those three basic changes in the broadcast structure.

Let me touch separately on our attitude, as a network, toward each of the three moves, because our conclusions as to their combined effect are, of course, based on the separate effects of each. I shall do this briefly, at this point, only to pave the way for a more detailed analysis, which I wish to offer from a fresh and different viewpoint shortly.

Super-power and the Network

First, super-power. To protect our thinking in terms of super-power, it was necessary to make certain assumptions. Since the effect of super-power would naturally vary in degree with the number and location of 500-kilowatt stations, we assumed what seemed to be a probable outside limit for the development of super-power stations. In other words, we asked ourselves the question, "How would the public service which Columbia renders be affected if a *maximum* number of super-power stations were built?" We estimated that maximum, under any general ruling which encouraged super-power on unimpaired clear channels, to permit as many as twenty-five 500-kilowatt stations in the United States.

We then further assumed—although I think I would be justified in calling this "expert opinion", rather than mere assumption—that we would be forced to drop from our network any stations which lay within the primary service area of each new super-power station. Conversely, we assumed that we would *not* be forced to drop any stations in fair-sized or larger cities which lay outside that primary area, but which did lie in the secondary area of the super-power stations—that is, in the area of their distant night-time coverage.

When I say "forced to drop certain stations", I mean simply this: we owe certain things to each station on the Columbia Network. Chief among these things are programs. They are of two kinds, commercial and non-commercial programs. Whichever they

are, they are aimed at so high a standard of entertainment or education or information that they will build and maintain for that network station a large and steady audience. This audience must be large enough and dependable enough to permit the station profitably to render a corresponding local service in its own community.

I am not unmindful of the striking examples of distinguished programs which these stations, out of their own local resources, have frequently originated—some of them so worthwhile that we have been proud to carry them over the coast-to-coast CBS Network. But this in no way alters the fact that the network station depends—and has a right to depend—on the fullest support of network programs. This is a creative, competitive, constructive kind of support and lies at the base of much that is vital to American radio.

I say we *owe* that support to each station on our network. Now it would be obviously unfair for us to undermine the very stations to whom we have pledged that support by providing the same programs to several stations that lay in each other's primary service area. Instead of building audience for each, this would divide it. That is true of both sponsored and non-sponsored network programs, and lest it be overlooked, let me point out that today many of the most popular programs from the audience standpoint, as well as many of the finest musical and educational programs, are sponsored programs.

Need I add, that even were we willing as a network, to supply the same sustaining programs to stations that lie in each other's primary service area, the sponsor of commercial programs would not make the same mistake. He would not and could not buy wasteful duplication. The smaller stations in the primary area of super-power stations, even were they kept nominally on the network, would thus fail to receive the strong schedule of sponsored network programs and would fight a losing battle.

In short, so far as we can estimate its effect on Columbia as a network, it is our reasoned conclusion that super-power would result in the substitution by advertisers of one super-power station for several of the smaller stations now on the network in the area encircling any new super-power station. The net result should increase our service to remote rural areas at night—at the possible expense of providing parts of certain cities with a remote signal wholly satisfactory for reception, but of lower level than the present signal of the network stations now within those cities. So much, for the moment, about super-power.

50,000-Watt Duplication and the Network

Our network viewpoint of the second of the three possible moves I am discussing can be summarized almost in a sentence. In the duplicate use of certain clear channels by two 50-kilowatt stations, we see a real improvement in public service, particularly on those clear channels already impaired by the presence of two stations sharing time, and thereby limiting the over-all public service rendered by each in its area. But here, too, I must point out that any corresponding gain in *our network service* would be reduced by two interlocking factors. (Although we know of no probable area in which both of these factors are apt to occur, we must admit their possibility and be prepared to cope with it.) On the one hand, any such 50-kilowatt stations which lay within the primary area of new 500-kilowatt stations would, like lower power stations, *tend* to be dropped from the network. On the other hand, the gain in service from any station remaining on the network which increased its power to 50 kilowatts under this move would sooner or later force us to drop regional or local stations which lay, in turn, within the enlarged primary service area of the 50-kilowatt station.

5000-Watt Regional Stations and the Network

The third contemplated move is negligible in its effect on network service, compared to the two I have touched on. In the increase of power for many regional stations from 1000 to 5000 watts, we see gains for each station in signal service. It must be remembered, however, that to the extent such stations were forced off the networks by the other two moves, these gains in coverage would not be reflected in the service rendered by the networks themselves.

Revised Network Structure

Broadly then, and still speaking from the viewpoint of the service which we of the Columbia are rendering as a network, we believe that all three moves toward super-power, toward duplication and toward 5000-watt regional stations, combine to force a new pattern of network coverage—a pattern involving the use of fewer stations

of greater power . . . with a stronger signal service in rural areas . . . with a satisfactory, if sometimes lesser signal service in cities where stations must be dropped from the network to maintain a balance of economics and of public service. We foresee no material effect upon our *program service*, in such a network structure. We believe that it is salable, perhaps at somewhat higher cost, to those leaders of American industry whose use of broadcasting as a medium for nation-wide advertising has provided the economic base for the finest program service of any country in the world.

Under the present broadcast structure, \$10,000,000 annually for talent alone is poured into sixteen hours a day of Columbia programs. Under the possible new structure I have outlined, we believe this generous endowment would not be threatened. It is upon this kind of reasoning, based on innumerable maps and charts and work-sheets which I have gone over in the past few weeks, that I venture the statement which I have made that Columbia's service to the public, super-power or no super-power, will be steadfastly maintained.

Another Viewpoint

Up to this point in my comments, I have discussed the contemplated changes in the broadcast structure solely from the viewpoint of the Columbia Network. I have done this deliberately. I have tried to do it dispassionately. I think that it would be less than honest not to admit that this viewpoint must be our first viewpoint. More than that, I believe that the program service Columbia is rendering to the nation is a sufficiently important part of the total public service in radio broadcasting to constitute, if it *did* hang in the balance, a factor to be weighed by the Commission in its review of the entire problem. That we find it does *not* hang in the balance, that we find no *vital* issue involved, from our own standpoint, is the focal point of everything else that I have to say.

I mentioned at the outset of this talk that our thinking moved from one plane onto another, as we progressed in our analysis of the problems. The first plane was the one I have described—the interests of Columbia as a network, in terms of the public service which we render. The second plane was that of Columbia, not as a whole, but as the various parts of that whole.

Our identity is, in reality, the identity of 105 stations which compose our network. Those 105 stations include clear channel stations, regional stations, and local stations. And because we found that Columbia as a whole could view with essential neutrality all or any of the proposed changes, we were placed in a position to study impartially and sympathetically the effect of these changes on our member stations in each classification.

These stations are not, to us, mere kilocycle numbers on the wave-band or power ratings at transmitters. They are station owners and managers. They are people and groups of people who have grown with us and worked with us through the last eight years of broadcasting. They have helped us solve our problems and we have been able to help them with theirs. And I propose to outline briefly here the specific effects, the disadvantages and the advantages, which we believe super-power, as the most drastic single change under consideration, promises to each of these three groups of stations.

In this effort to divide ourselves into the identities of our affiliated stations, I believe we have at once projected our thinking beyond even those boundaries. I mean that our inferences in behalf of Columbia stations on clear, regional and local channels, have necessarily been extended to stations in these classifications regardless of what their network affiliation may be.

A Broader Evaluation

I hope that such a listing of the pros and cons of super-power, from a source within the industry which numbers affiliates in each class of station, will add something of sound perspective to the evidence submitted at this hearing. I should like to offer it without the presumption that we know any station's individual problems as well as it knows its own, but only with the assumption that we are in a unique position to attempt this broad evaluation.

Some of the advantages and disadvantages which we see will be stated as conclusions, some will be stated as questions, either because we believe that more searching and complete data are needed than are now available, or because regardless of data only the play and counter-play of practical experience can write the final answers.

If I seem, in this further analysis, to refer more frequently to the economics of broadcasting from the standpoint of individual

stations, I think you will find, before I have concluded, that again we have given thought to these considerations only as essential strands in the fibers and cross-fibers of the service to listeners which these stations render.

Effects of Super-power on Super-power Stations

First, what are the benefits and dangers of super-power to the super-power stations themselves? Are there pitfalls in the path of those stations which hope to benefit most from super-power?

The *advantages* of super-power to the super-power station itself are self-evident. A stronger signal throughout its entire area, an extension of that area of service, an increase in rural audience, a greater theoretical revenue because its time should be more valuable.

The *disadvantages* are, on one hand, less specific, on the other hand, more numerous. First, if the station's own program standards are not to suffer, its greater theoretical sales revenue must carry the load of an investment in the neighborhood of half a million dollars and an operating cost estimated to be \$150,000 higher annually than that of even a 50,000-watt station. This presumes no profit whatever on the additional investment or operating cost. If its increased sales fail to provide all of this differential, then funds now going into program service and management must be taken out of programs and management and put into transmitter operation.

A second disadvantage emphasizes the first: Except in the largest cities, and except for the largest merchants, the increased card rate necessary to a 500-kilowatt station will tend to make it a prohibitive medium for local advertisers. Single exceptions notwithstanding, the record of local advertising media whose circulation has grown well beyond their trading areas reveals that they have been forced to lose local retail advertising, or to offer it at a special and lowered rate. This is feasible for a newspaper, for instance, which can sell its city circulation at a lowered rate, because it can exclude the local merchants' advertising from its state-wide or inter-state editions. That, however, is impossible for a super-power radio station. If it does lower its rate to local advertisers, while delivering the same coverage as it delivers to national advertisers, the net result is apt to be an actual operating loss on the sale of local advertising, which must be compensated by an artificially high rate to national advertisers. An economic paradox results which makes the super-power station's problems harder.

The third disadvantage for the super-power station lies in the multiplication of its numbers. Here I should like to fall back upon questions. Can twenty or twenty-five super-power stations be as successful as one? Will the existence of many 500-kilowatt stations tend to equalize and nullify the advantages of each, although it does nothing to nullify the heavy investment and operating cost of each? In other words, isn't it dangerous to project the phenomenon of one superpower station into the commonplace of many?

Defensive Necessity

And now I should like to abandon, for a moment, these pros and cons, to make a point which I think is essential to all our thinking about super-power. I said in the first part of this report that in our analysis, we had assumed a maximum number of super-power stations—as many as twenty-five. We assumed this because we believe it is exactly what will happen if super-power is once admitted by new regulations. There has been, I think, some belief that super-power would limit itself, by reason of common sense and economics, to a few of our largest markets. I do not believe this is so. I believe that once the bars are let down, no one can stop it. Stations which do not want it and cannot support it will be driven defensively to apply for it and build it—either to protect their own service areas from invasion or to maintain their competitive position in prestige and sales. I think we must face honestly the almost certain fact that if super-power is generally admitted under the rules, it will appear in cities and in markets that have little possibility of supporting it without detriment to local program service, and will extend so widely that it becomes a commonplace.

Effects of Super-power on Regional Network Stations

Turning now to the effect which super-power stations are likely to exert on regional stations throughout the United States, we find the likelihood of strong repercussions. There appear to us to be definite advantages which should accrue to certain regional stations. It is our belief that regional stations located in the same cities as new super-power stations may well strengthen rather than weaken their competitive position. These regional stations are now competing locally with clear channel stations whose present maximum power is 50,000 watts. For the most part, it is a successful competition. In the field of retail advertising by local merchants, com-

petition with a super-power station should favor the regional station. It will remain a lower-cost medium for reaching the metropolitan market without waste, and should "inherit" the advertising accounts of many local merchants who find super-power prohibitive in cost and wasteful in circulation.

Again, however, the disadvantages of super-power in its effect upon regional stations are more numerous, and, in this class of station, more specific. For instance, the one *advantage* I have just cited in behalf of regional stations in large cities becomes a serious *disadvantage* when we move out of those metropolitan markets. Let's look at the problems of regional stations in medium-size and smaller cities, in which an outside super-power station will deliver a strong signal. Such regional stations have no local business to *gain* from the distant super-power station, but they have a substantial amount of national business to *lose*. The national advertiser who has used these stations for transcriptions or spot announcements will be able to reach the regional station's market satisfactorily with super-power. He will tend, just as the network advertiser will tend, to pay a higher price for fewer stations. How can such regional stations expect to stay on his list?

But perhaps the most serious problem which confronts these regional stations which are now on one of the networks, and which lie within the future service area of a super-power station, is the fact that they must face the probable loss of their network affiliation. Without trying to glorify the importance of network service to regional stations, but looking at this service realistically, its loss is apt to prove a serious detriment to the survival of such stations, or at least to the standard of public service which they now render. This loss is of three kinds. First, a loss of audience, and on this point we need not rely upon theory or opinion. Authentic and authoritative data are available, running back over a six-year period, to show what difference in a station's audience network programs make. Our data cover the addition and subtraction of stations to and from both the Columbia and NBC Networks. The addition of network programs seldom fails to double the habitual audience of a station, even within its own city. The subtraction of network programs seldom fails to reduce that audience by half. I need hardly add that when a station's audience is cut in half, many consequences follow. Its time is substantially less salable, its revenues are threatened, it is faced with the choice, usually, of accepting undesirable business not in the public interest, or for foregoing that business and stinting its own program service.

The second loss involved in dropping a station from the network is the station's loss of actual revenue from the network for its time. This loss in turn has two aspects, a positive and a negative aspect. The positive aspect represents the amount of money which the station no longer receives from the network. The negative aspect is the consequent additional cost to the station in building its own programs to fill the hours previously filled by sponsored network programs, except to the extent that it can sell those hours locally.

The third loss which such a station faces is the loss of many hours a day of non-commercial network programs available to it now, representing many of the high points of station prestige and of audience appeal. It must find the funds, out of a diminishing return, to fill those hours, too, with its own programs.

I have dwelt on these three losses separately, not with any wish to dramatize them, but because they reflect the essential nature of the relationship between the network and the stations which it serves.

Effect of Super-power on Local Network Stations

As to the effect of super-power on *local stations*, we find only disadvantages and dangers. All of the disadvantages which I have mentioned in behalf of regional stations will hit first and hardest at local stations. Obviously, those which lie within the service areas of super-power stations will be the first to be forced off the networks. Because they tend to lie in still smaller communities, their task of finding both local revenue and programs to maintain their service to the public will be still harder.

As an example of the specific effect of super-power in two cities on the present Columbia Network, we found that seven stations would, in all probability, have to be dropped from the network. This was determined by the simple yardstick which I mentioned earlier. We mapped conservative contours of the primary service area of a theoretical 500-kilowatt station in each of these two cities. These contours were based upon careful engineering research, upon carefully chosen transmitter sites, upon detailed knowledge of terrain, soil conductivity, and attenuation. The seven stations of which I speak, both regional and local, fell clearly within the primary service areas of the two super-power stations. May I add that we would have no *desire* to drop these or any

other stations, but that it is our inescapable conclusion, for reasons already set forth, that we should be forced to do so.

Effect of Super-power on Non-Network Stations

It was inevitable that our thinking along these lines, once it was freed from any threat to the service Columbia renders as a network, should go one step further. All of the stations I have considered up to this point are network stations. There remains another group of stations upon whom the effect of super-power would be considerable. These are stations not on any network, nor within the primary service area of any present network station. They are stations, for the larger part, located in cities with populations ranging from less than 1000 to over 100,000. Their average population is 26,173. These stations range in power from 5,000 watts down to 50 watts. Most of them are 500-watt, 250-watt and 100-watt stations. There are 203 such stations in the United States. They are stations which, for the most part, have established a balance, even though a precarious balance, in the economic life of their communities. Taking the broadcasting day as a whole, they rarely command a sizable portion of the audience within their limited trading areas, because in practically all of them they are competing with the distant signal of more powerful stations, carrying outstanding programs. But they enjoy sufficient audience for the local sale of time at modest rates. And for perhaps an hour in the morning, or a half-hour at noon, or in some period early or late in the evening, they do a giant's job for their communities, because they reflect the life and express the pulse of their own people. They deliver, to those communities, a signal which is at least good enough to compete with present signals from outside stations. Moreover, many of these smaller stations render a regular service to outlying farms—a service keyed to the special crops and the special soil of the community, to county agricultural problems, to community blight problems—a service, in other words, which no remote station can render. What will happen to most of these 203 stations if the signal from distant stations sweeps through their communities with three and four times its present strength, and if the number of distant stations now competing with these local stations in their own towns is also substantially increased? Can they continue to hold an average audience large enough for them to preserve their modest revenues from the sale of time? Are we threatening, by means of super-power, the actual existence of these stations, these "innocent bystanders" of super-power—and the splendid role they play in the social and civic life of their communities?

The Strong Will Grow Stronger

I think it will be clear from what I have said that, in contrast with our interests as a network, we are seriously concerned with the many problems super-power raises outside the network field, in the interests of radio broadcasting as a whole. I am not trying to plead two sides of a case, but all the evidence at our disposal and all the logic we can bring to bear on the issue of super-power tends to show simply this: super-power, if awarded to anyone, can only be awarded to the stations which today have the highest power. Its threat lies against the stations with lower power, its worst threat against those of lowest power. In effect, it will make the big fellow stronger, it will make the little fellow weaker.

Unless some way can be found to check or counteract this tendency, it would seem destined to hurt, not to help, the complex local, regional and national service which radio broadcasting now renders, if *all* of America's audience is given equal consideration. In attempting to give farm areas themselves a better national service, it might well undermine the valuable local service which many of those farms now depend on.

In fact, I wonder if there has been any clear evaluation of the *degree* of improvement in signal service throughout the nation generally—and in farm areas specifically—which super-power would, in reality, achieve. I wonder if advocates of super-power have been thinking in terms of black and white, in which the black is too black and the white is too white. If we consider super-power not in terms of the stations which would benefit by it or the stations which would suffer from it, but in terms of *the listening public*, what do we find? We find that the difference between 500 kilowatts and 50 kilowatts is clearly *not* the difference between good service and bad service. Even in deep rural areas, it is rarely the difference between a usable and a non-usable signal. The Commission's own study of farm reception showed that practically every farm home actually listened to three or four stations, and named them as *favorite* stations. Perhaps in one-half of one percent of the radio homes of the United States, and there only

at night, super-power, as such, would make the difference between an adequate and an inadequate signal. And in about half of these homes, the replacement of obsolete sets with new sets could effect an equal improvement, since they are preponderantly farm homes, the only class of homes in which the replacement of old sets has lagged behind.

I believe we should cling, in shaping the direction of progress in radio broadcasting, to the sound principle of providing "the greatest good for the largest number." If, to achieve merely "a moderate good for the smallest number", super-power threatens the full and varied service now rendered to all radio homes in the United States, including the farm homes it is most meant to benefit, it is self-indicted at the outset.

A Familiar Cross-roads

Let me diverge for a moment from the hard ground of cause and effect I have been treading to make a more general observation. Too often in the history of scientific or inventive achievement, the physical development of an invention is allowed to eclipse its proper place in human life. Too often the machine runs away with itself, as it were, instead of keeping pace with the social needs it was created to serve.

I believe that in the indiscriminate use of super-power in radio broadcasting, we may well face the same kind of threat. I hope and believe that, in this enlightened day and in this enlightened industry, we can avoid so needless a mistake. For the progress of radio is already marked by a striking change in interest—a qualitative change from *mechanical* interest to *social and mental and human interest*. Eight years ago we maintained a complete department to answer radio listeners in remote sections of the country who sent in records of the stations they had heard, the call letters of the stations, the wave-length on the dial, the hour at which they tuned it in. These correspondents asked just one thing—that we verify the fact that such a station did broadcast such and such a program on such and such a wave-length at the stated hour. The listener was interested in the mechanical phenomenon as such.

Today that department is no longer in existence. Today listeners write about the significance of a broadcast message they have heard, the validity of a talk they have tuned in, the arrangement of music, the character of a performer, the spiritual quality of a sermon, the performance of a symphony.

Dynamic Equilibrium

That shift from radio's domination by the machines which transmit it—that shift to radio's liberation as an art—typifies not only the listening audience. It typifies the actual work of the broadcasters. Our own energies have found new outlets. Today we are in the middle of a quarter-million dollar program of research into new studio techniques, new acoustical principles for broadcasting, new dimensions of sound to create symphonies which composers of the past could not have dreamed of. We have endowed a group of contemporary composers to do something they have never tried to do before: to write serious music expressly for radio broadcasting, music freed from the intrinsic limitations of the instruments which will play it, by virtue of the microphone and sound control. Instruments of such delicate tone that they could be heard only in the hush of small drawing-rooms of the past may reappear to dominate brasses and drums in great orchestras of the air. New experiments are going on in surges of creative zeal. A dozen young men are seeking new forms of the dramatic art in Columbia's Dramatic Workshop. Millions of children are finding history brought to life through the new artistic forms of Columbia's School of the Air. I may seem to draw too heavily on our own creative work. But I am sure it is typical of the broadcasting field. I am sure it represents the true purpose of radio. I do not mean to infer that vigilance has been relaxed, or should be relaxed, from the physical facilities of radio, but that preoccupation with those physical facilities should not subtract from our contributions in other fields. We have, I am sincerely convinced, struck what might be called a dynamic equilibrium between the physical resources of radio—and the vital and moving forces which promise its fullest social usefulness. Let us not upset that equilibrium. Above all, let us not reverse the nature and direction of the progress broadcasting has made.

Coming back from this foray into the abstract truths which, I believe, lie behind our concrete problems, I should like to urge upon the Commission and the industry one basic consideration on the subject of super-power:

Study it.

I do not believe any of us knows enough about the immediate effects and the subsequent effects of super-power, both in itself and in relation to the progress and welfare of radio broadcasting and radio listening in American life. Many of the doubts I have raised have been, expressly, doubts. Many of them have been questions, not answers. We need those answers. I believe the Commission needs those answers before altering the basic structure of broadcasting. I believe that a dozen studies of the most exhaustive sort are in order. Studies which will tell us more than we know now about listening and signals in rural areas. Studies which will tell us more about super-power as it bounds and rebounds against itself and against regional and local stations. Studies which will tell us whether super-power, held within rigid geographical and numerical limits, might render a service free from the threats of widespread super-power. Studies which will determine if it has a sphere of real usefulness.

We need specific facts to answer such questions as these: Can a 500-kilowatt station located on either seaboard be as efficient as one located in the center of the country? Isn't half the coverage of a super-power station which is squandered on an ocean a proof of self-evident waste? By barring super-power, at least from east and west coasts, how many more channels would be open for duplicated 50-kilowatt stations? Might not these additional 50-kilowatt stations, strategically placed, produce a greater total public service?

Members of our Market Research Division will outline, at this hearing, the specific nature of the further research which we hope may precede any change in the Commission's regulations on this score.

There is one final point which I wish to throw into the balance against any drastic change in the broadcast structure at the present time. That is the threshold of new pioneering into other fields upon which the broadcasters stand. I spoke of the June hearing at the opening of this talk. I would like to close with the same reference—put into more definite terms. The industry as a whole is faced with capital expenditures that many individual broadcasters may still have no conception of. In television alone, it is my opinion, after a study of European developments and a knowledge of television's status here, that the broadcasters are less than two years away from commitments of many millions of dollars. Columbia's budget alone is over \$2,000,000—for experimental broadcasting work in this new field. Many more millions must follow, in the public interest, before there is any hope of return.

Now what about the cost of super-power? Our careful estimates of the cost of 500-kilowatt stations indicate a burden of over \$10,000,000 of capital investment by the broadcasters—with an additional operating cost of between \$3,000,000 and \$4,000,000 per year. These are not guesses, but careful estimates by engineers and accountants. Knowing the economics of broadcasting as well as we do, I feel justified in saying that if the burden of cost of super-power is thrown upon the industry at almost the same time it is faced with costly developmental work in new fields, one or the other is very apt to suffer.

Meanwhile, the Columbia Broadcasting System stands ready to accept its share of the load, if super-power is admitted as a full-fledged member of the broadcast family. If the Commission sees fit, in the light of all the evidence, to sanction super-power, Columbia will apply for its full quota. Three of our affiliate stations, WJR, Detroit, WHAS, Louisville, and KSL, Salt Lake City, have already applied. Certain of our other affiliate stations *will* apply. Six more of the clear channel stations on the Columbia Network, six stations which we own ourselves, will similarly file applications for five hundred kilowatts in New York, Chicago, Charlotte, Minneapolis, St. Louis, and Los Angeles. We have, in fact, no other choice. If the individual station, to protect its own signal from disparity or to protect its signal area from invasion, is forced to build super-power in its *own* market, this is still more true of the network. Because *all* markets are the markets of the network. *All* areas are its service areas. *All* listeners, in a constant creative bidding for their interest, are its listeners. Therefore, if super-power is to come we will build and operate 500 kilowatt stations wherever the Commission will sanction them at strategic points on the Columbia Network.

The engineering conception of the clear channel, Dr. Alan Hazeltine, President of the Institute of Radio Engineers told the Commission, "has always been the absolute absence of duplication of assignments in the North American region during night hours. If more than one station is assigned for night operation on a given channel that channel automatically becomes shared and it is believed that it should be so classified by the Commission."

Dr. Hazeltine said that the Institute recognizes that engineering

problems involved in broadcast allocation are intimately interwoven with problems of social, legal and economic character.

Dr. Hazeltine continued:

In the announcement of this hearing the Commission has outlined in considerable detail the topics on which discussion is desired. Many of these items are essentially technical and quite fundamental in their nature. It has been felt, therefore, that comment by a purely engineering group, such as the Institute of Radio Engineers, should be helpful and would be welcomed. Accordingly, the statement which follows has been prepared by the Institute's Broadcast Committee and is presented to you with the approval of its Board of Directors.

Engineering Problems

At the outset, the Institute of Radio Engineers recognizes that the engineering problems involved in broadcast allocation are intimately interwoven with problems of social, legal and economic character. Such latter problems are inherently less capable of precise formulation than engineering problems; and their tentative solutions are best described under the term general policy.

Among the matters of general policy lies that of maintaining both reasonable stability in the broadcast structure and its healthy growth. On the one hand, no sudden and drastic change, regardless of its technical merits, would be possible from a practical standpoint. For we have a great body of listeners who collectively have an investment in over 25,000,000 radio receivers and behind them a well established industry employing tens of thousands of people and representing a large capital outlay. Thus for the time being at least the country will look to the 550-1600 kilocycle band for the bulk of its broadcast service. On the other hand, provision is needed for the application in service of technical advances, both in improving conditions in the 550-1600 kilocycle band and in making use of other portions of the spectrum that may be found suitable and available for broadcasting. Thus the present policy of granting experimental licenses to qualified applicants for exploratory work is sound and should be continued. The questions that must be answered before a decision can be reached on the establishment of a broadcast service at frequencies remote from the present broadcast band are so wide in scope and so involved that, in general, only actual operation over a reasonable period of time will afford adequate information. The pioneering work that is now being done in the high frequency and very high frequency bands is thought to be particularly worthy of encouragement. It is firmly believed to be in the public interest that such changes as are found desirable in methods of operation or in the bands allocated to broadcasting should be made on an evolutionary basis after experimental trial.

Clear Channels

An important matter of policy is the establishment of *clear channels* and the determination of their number and their geographical and frequency distributions. The engineering conception of the clear channel has always been the absolute absence of duplication of assignments in the North American region during night hours. If more than one station is assigned for night operation on a given channel, that channel automatically becomes *shared*; and it is believed that it should be so classified by the Commission.

Some three years ago, the Institute's Broadcast Committee prepared a statement dealing with the question of the relative number of clear and shared channels. This statement was transmitted to the Radio Commission and subsequently published in the IRE Proceedings (vol. 21, p. 331, March, 1933) under the title "The Clear Channel in American Broadcasting." Subsequent developments have not affected the validity of the conclusions; and the following quotations from it may serve to indicate more clearly the existing situation with regard to such matters and to point out the direction in which remedial measures should be applied.

Statement

The statement first points out that:

1. "The field of the shared channel is to afford broadcasting service to important detached centers of population, such as our cities and larger towns.
2. "The field of the clear channel is to afford service to those vast intervening areas in which the density of population is so low that a broadcast service could not otherwise be supported, and in addition to a single large center."

From these definitions it is concluded that:

1. "Decreasing the number of clear channels by assigning additional stations (for nighttime operation) to channels now used by only one station at a time would have the effect of affording additional services to certain localized urban groups but at the expense of decreasing the service to rural listeners and to those at remote points.

2. "Increasing the number of clear channels at the expense of the shared channels would have the opposite effect, assuming that assignments for the stations thus displaced could not be provided for on the remaining shared channels."

And finally the situation is summarized in the final paragraph as follows:

"Assuming that service to distant listeners is to be maintained it is evident that continued provision must be made for an adequate number of clear channels. Whether the number should be forty, or more, or less, however, is a matter that can be determined only by careful study. The balance of service between the rural listener and the urban listener is determined in considerable measure by the relative number of allocated clear and shared channels. Decision as to the correct balance point is a matter of general policy."

Adequate Channels

From the engineering standpoint, it is believed that the continuance of an adequate number of clear channels is the only economic way of extending broadcast service worthy of the name to the scattered populations of the nation's farms and country towns and thus to comply with the provision of the law that "the Commission shall make such distribution of licenses, frequencies, hours of operation and of power among the several States and communities as to provide a fair, efficient and equitable distribution of radio service to each of the same" (recent revision of the Communications Act, Section 307 (b)). If there were ever any doubt concerning the extent to which rural listeners depend upon clear channel stations for their service, the results of the Allocation Survey recently published by the Commission should serve to remove it.

Define Clear Channels

It is believed that, to avoid confusion of thought and action, it would be helpful to include in the Commission's regulations a definition of a clear channel station as one adapted to serve a substantial portion of the whole country. Essential elements in achieving this purpose are recognized in the "empirical standards" employed by the Engineering Department of the Commission. The incorporation of standards of this character into the regulations is also recommended.

The exclusive nature of the clear channel assignment can only be justified by the night-time service to remote points which is made possible thereby. Such an exclusive assignment, therefore, carries with it a responsibility for extended rural service that should be fully recognized by all concerned. Of prime importance in this connection is the matter of power. After sixteen years of experience there is certainly ample technical evidence with regard to the dependence of satisfactory service on adequate power. Under the circumstances, it seems only logical and consistent to require on channels that are set aside at some sacrifice to serve the more distant rural sections of the country the use of the highest power that is technically and economically feasible. In view of the great success of the experiments with high power at WLW, which is strikingly confirmed by the results of the Allocation Survey, it is evident that a desirable power for at least some clear channel stations is 500 kilowatts or more. Many of the reputed limitations of clear channel coverage which have come up for discussion in recent years are undoubtedly merely the inevitable consequences of inadequate power for this type of assignment.

Allocations

Turning now to the *shared channel allocations*, we are fortunate in having available for guidance the principle embodied in the distance tables of the Commission of affording protection against interference to the good service area of a station. Here the Institute recognizes the policies necessitated by other than engineering considerations of classifying stations in accordance with the different degrees of protection afforded and of modifying the degree of protection in specific instances when this appears to be in the public interest. However, it is felt that distance tables, revised from time to time as the radio art advances and as more transmission data become available, constitute a valuable general guide, and it is

recommended that they be given formal recognition in the Commission's regulations. In applying and in revising these distance tables, the Institute invites attention to the engineering factors outlined in the following paragraphs.

Distance Tables

In applying the distance tables, the data which should determine whether or not a particular assignment is satisfactory from the interference standpoint should preferably not be average values computed to be reasonably representative of conditions throughout the whole country, but actual measurements made within the area under consideration, whenever these are available. The wide variations in earth conductivity known to exist in the country, and the recognized change of attenuation with frequency, combine to produce wide departures from the national average in particular cases. Under the circumstances, it is believed that better balance within the allocations structure and increased capacity for service within the broadcast band will be promoted by allowing the distance tables to be superseded in specific instances by an adequate showing of fact.

In revising the distance tables, it is recommended that the most recent transmission data be employed. In particular, the transmission data resulting from the Allocation Survey is evidently based upon a much greater number of observations and should be much more complete and reliable than those previously available.

Service Area

The good service area of a station is bounded by a contour at which its field intensity has some specified value, as one millivolt per meter, and within which the listeners to that station are protected against interference from other stations. The proper value or values to be selected for the limiting intensities are associated with the general power level of the stations. Engineering considerations call for adequate power as the primary means for minimizing natural and man-made noise. The noise background is an extremely important factor in determining the entertainment value of a reproduced program. This has been very clearly demonstrated in the experience of the radio industry during the past few years with high fidelity receivers. It has been shown that in urban areas under many conditions even the local stations do not establish sufficiently strong fields to bring out the inherent qualities of the apparatus and the artistic excellence of the programs. On the shared channels, for obvious reasons, higher night-time power cannot be regarded as a measure for reaching a larger group of listeners, but rather as a desirable step to improve the service being received by the audience which already exists. It is believed that in many cases 1 kilowatt is wholly inadequate for affording the grade of service which the local communities served by regional stations have a right to expect at the present stage of the art. Doubling the limiting field intensity, as from 1 to 2 millivolts per meter, would permit quadrupling the powers of a group of stations without altering their mutual interference.

Limiting Ratio

The assumed limiting ratio of 20:1 between wanted and unwanted signals is thought to be a fairly representative figure and it is recommended that it be retained as a minimum. A 20:1 ratio represents a fair grade of service when the relatively low fields to which it is applied and the correspondingly high noise levels due to natural and man-made disturbances are kept in mind. To attempt to apply a much higher ratio generally under existing conditions is undoubtedly impractical. It is also recommended that the 20:1 ratio be understood to apply for 90% of the time, or in other words, intermittent interference that does not exceed the specified value more than 10% of the time should be taken to indicate compliance. This procedure is consistent, it is believed, with the practice now being followed by the Commission's engineers.

Receiver Selectivity

There is considerable evidence to the effect that the receiver selectivity curve assumed for the present distance tables is appreciably below the capabilities of modern receivers. It is understood that the Radio Manufacturers Association will present data on this point. In undertaking to establish a new average curve for regulatory purposes, it is felt that the Commission is justified in setting a reasonably high standard in fairness to the owners of the better classes of modern receivers. It seems neither logical nor equitable to base the service for the entire country on the poorest receivers now being bought, nor on receivers that were

bought so long ago that they are effectively obsolete. Since good selectivity must necessarily be reflected in the purchase price, it is practically certain that receivers below any reasonable standard adopted by the Commission will continue to be sold for some time to come. There are undoubtedly locations in which such receivers will give very acceptable service, and, in any event, the listener should be permitted to choose his own price and obtain a curtailed service if he so desires. In so far as obsolescence is concerned, the receiver data resulting from the Allocation Survey are most interesting and seem to indicate that consideration for early types of receivers is not as important as has sometimes been assumed.

Allocation Factor

In recomputing the distance tables, it is believed that special consideration should be given to the "allocation factor." This factor was evidently employed in the original calculations because the data then available were relatively meager and empirical methods were necessary. Since the factor employed in evaluating adjacent channel interference varies over a range of several hundred per cent, however, it is thought to play an unjustifiably prominent part in fixing the minimum geographical spacings. With more adequate information on transmission and on receiver characteristics, it should now be possible to employ more accurate methods and unless its use can be shown to be essential, the avoidance of any arbitrary factor of this character is recommended.

Service Conditions

In the course of its work, the Commission is undoubtedly confronted at relatively frequent intervals with the necessity of deciding upon an appropriate course of action in the absence of adequate information with regard to actual service conditions. There is evidently need for a much more detailed and accurate engineering survey of radio service throughout the entire country than is now available. Such a survey should not only chart the service areas of individual stations but should also endeavor to integrate the service available to listeners in various sections so that some picture may be obtained of the structure as a whole. This is obviously an undertaking of large magnitude which will require the slow and painstaking assembly and analysis of a mass of engineering data relating to conditions at numerous points in the country. It will undoubtedly take years for its completion and will have to be started as a skeleton structure, to be supplemented, clarified and developed in greater detail as further information becomes available. It is firmly believed, however, that this is the course that the Commission and its engineers must follow to make fully effective the provisions of Section 307(h). Radio transmission over a large heterogeneous area such as the North American continent is too complex a phenomenon and is subject to too many exceptions and variations to be fully represented by so rudimentary a concept as the distance tables, useful as these are for obtaining a first approximation to the minimum geographical spacing between stations. No amount of measuring and averaging of conditions throughout the entire country, however, will give a simple formula which can hope to express in the same terms the results achieved by a low-frequency station on the plains of Texas and a high-frequency station in New England. In our efforts to make intensive use of the broadcast band, we have passed the point where nation-wide averages will afford adequate guidance and it is only by recognizing the fact that the phenomena with which we have to deal are subject to wide variations in various sections of the country that we can hope to rectify the service deficiencies which now exist and to effect further improvements.

In conclusion, the Institute of Radio Engineers wishes to express its appreciation for this opportunity of appearing before the Commission and its desire to aid the Commission, whenever possible, in clarifying the technical and engineering principles underlying frequency allocation.

Bond Geddes, Executive Vice-President of the Radio Manufacturers Association at this point read into the record resolutions adopted by the Board on September 24 in New York City in connection with the hearing as follows:

Resolutions

WHEREAS the Radio Manufacturers Association is of the opinion that the clear channel stations render a distinct service to the listening public of the United States, due both to the fact that no other stations are on the same wave length, and, just as important, because the clear channel stations, as a general rule, are high-powered stations serving large territories and affording good re-

ception to communities remote from broadcasting stations. The elimination or impairment of clear channels would thus result in poor and practically unintelligible response to many listeners by reason of the interference of stations who might be on the same wave length, thereby greatly restricting the use and quality of reception of a large majority of people, particularly in the remote and rural areas, and also would tend to restrict the power used by stations.

THEREFORE, *Be It Resolved*, That the Board of Directors of the Radio Manufacturers Association recommend to the Federal Communications Commission that clear channels be retained as they now are; that restrictions as to increase of the power used by these stations on clear channels be withdrawn and that the Commission establish minimum power requirements for such clear channel stations.

Short Wave

WHEREAS the Radio Manufacturers Association is of the opinion that short wave broadcasting in this country is far behind that offered by foreign short wave stations, and that because of this situation many of our nationals residing in foreign countries, as well as citizens of other countries, are thus deprived of the opportunity of listening to the United States programs, and

WHEREAS good short wave broadcasting would reach and serve many locations in this country where, because of remoteness from regular broadcasting stations, bad static conditions, and other natural conditions, day time reception on the standard broadcast band is practically impossible and night time reception is poor, and

WHEREAS the Radio Manufacturers Association is of the opinion that the building of higher-powered, more efficient short wave broadcasting stations with better and more regular programs is being retarded, if not entirely stopped, because licenses for the operation of short wave stations in this country are on an experimental basis only, and commercial use and sale of the time of these stations is denied to their owners and operators,

THEREFORE, *Be It Resolved*, That the Board of Directors of the Radio Manufacturers Association recommend to the Federal Communications Commission that restrictions as to commercial use in the sale of time by the short wave stations of this country be eliminated, and that said short wave broadcasting stations be placed on the same commercial basis as the broadcasting stations on the standard broadcast band.

Pick Up

WHEREAS under the present rules it is unlawful for any broadcast station to pick up a short wave program and rebroadcast it, and

WHEREAS there are many low-powered, local stations serving communities, who because of their lack of power and consequent small coverage are unable to maintain and broadcast good programs, therefore, necessitating the use of phonograph records and in some cases the pick up of programs of larger broadcast stations and their rebroadcast with the permission of the originating station, the latter is very successfully done where the broadcast station whose program is picked up is not too far remote, and where static and natural conditions do not interfere too greatly. In the latter case, if these stations were allowed to pick up good short wave programs from the larger stations with, of course, the permission of the originating station, these programs could be picked up at a greater distance and with greater clarity and less interference from static and other natural conditions.

THEREFORE, *Be It Resolved*, That the Board of Directors of the Radio Manufacturers Association recommend to the Federal Communications Commission that the restrictions regarding the pick up and rebroadcast of short wave programs be eliminated and be on the same basis as those regulations governing the pick up and rebroadcast of programs from stations broadcasting on the standard broadcast band; such pick ups and rebroadcasting only to be done with the expressed permission of the originating station.

Horle On Technical Aspects

L. C. F. Horle who presented the technical aspects of the case on behalf of the Radio Manufacturers Association at today's hearing told the Commission that the Engineering Division of the Association had been instructed by the Board of Directors "to provide all available data of value to the Commission in this hearing and it here presents that data along with certain recommendations based not only on the data that is offered but on its general experiences in apparatus design and its experience in the use of that apparatus in the field."

Mr. Horle stated that several of the research and development groups in its membership which are largely concerned with technical problems of the industry were encouraged to gather this data.

Fidelity of Receivers

The data he stated falls into two categories. "The first concerns itself with the selectivity and fidelity of receivers as commonly defined and, in fact, comprises the results of measurements made on a host of receivers manufactured during the last three years from which measurements the engineering division believes the Commission can make useful deductions as to receiver performance in the field of value in the solution of some of the problems which it faces in the allocation and assignment of frequencies to broadcasting."

Mr. Horle testified that "the engineering division does not feel that its limited experience and familiarity with allocation and frequency assignment problems provide sufficient basis for the interpretation of the data given in terms of suggested rules or regulations."

Chambers Uses Slides

J. A. Chambers, radio technician, appearing at the hearing today on behalf of the clear channel group, showed elaborate lantern slides together with sound effects. He showed during the course of his statement the results of duplication and conditions on duplicated channels. He made an analysis of the results now being obtained under present conditions and stated that it would be most undesirable to change the allocation at once. He spoke in some detail of the present use of the broadcast spectrum and of the geographic distribution of broadcasting stations throughout the country.

Distribution of Stations

Mr. Chambers also talked on the distribution of stations on clear channels and took up the night coverage of a typical 500-kilowatt station. He spoke not only of clear channels but of regional and local stations and stated that all of them are needed. No one of these types, he said, can serve the public exclusively or should be abandoned. The rural and small town listeners, Mr. Chambers said, need the operation of clear channel stations. He contended that the high frequencies will not be good for clear channels.

The present clear channel stations, Mr. Chambers testified, should be allowed to remain as they are. During the course of his illustrated talk he took up the soil conductivity in the United States and also spoke at length on the constant development in radio receivers. He stated that eleven million receivers have been sold in this country from the beginning of 1935 up to the 1st of September this year.

Mr. Chambers spoke also of field intensities and showed by the use of records the absence of blanketing by WLW.

Among those attending the conference were:

A

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